

# Guide to Best Practice at Resource Recovery Centres



## **Guide to Best Practice**

at Resource Recovery Centres

### **Disclaimer**

Information in this document is current as of September 2009. While all professional care has been taken in preparing this document, Sustainability Victoria accepts no liability for loss or damages incurred as a result of reliance placed upon its content.

### **Acknowledgements**

Sustainability Victoria acknowledges Blue Environment Pty Ltd for preparing this report.

© Sustainability Victoria 2009

# Contents

<b>Appendices</b>	<b>2</b>	<b>4</b>	<b>Operation and management</b>	<b>15</b>
<b>Glossary</b>	<b>2</b>		4.1 Risk control	15
<b>Abbreviations</b>	<b>2</b>		4.2 Management systems	16
<b>1 Introduction</b>	<b>3</b>		4.3 Managing for sustainability	17
1.1 Purpose and application of the guide	3		4.4 Managing for resource recovery	17
1.2 Existing facilities	4		4.5 Managing for environmental protection	19
1.3 Statutory framework	4		4.6 Hazardous waste	20
<b>2 Planning and siting</b>	<b>5</b>		4.7 Emergency response and fire control	21
2.1 Needs assessment	5		4.8 Community consultation and education	22
2.2 Material pathways	5		4.9 Equipment operation and maintenance	22
2.3 Infrastructure	6		4.10 Traffic management	23
2.4 Site suitability	6		4.11 Monitoring	23
2.5 Community consultation	8		4.12 Other management aspects	24
2.6 Planning approval	8	<b>5</b>	<b>Rehabilitation</b>	<b>26</b>
<b>3 Design and construction</b>	<b>9</b>	<b>6</b>	<b>Further information</b>	<b>27</b>
3.1 Design for risk control	9		<b>Appendix A</b>	<b>29</b>
3.2 Site layout	9		<b>Planning and siting assessment checklist</b>	<b>30</b>
3.3 Design for sustainability	9		<b>Design and construction assessment checklist</b>	<b>34</b>
3.4 Design for resource recovery	10		<b>Operation and management assessment checklist</b>	<b>38</b>
3.5 Design for environmental protection	11		<b>Closure and Rehabilitation</b>	<b>45</b>
3.6 Infrastructure and equipment	12			
3.7 Access and traffic flow	13			
3.8 Signage	14			
3.9 Construction	14			

# Appendices

Appendix A      Assessment Checklist for Resource Recovery Centres

## Glossary

Amenity	The quality of a local environment in relation to health and pleasantness.
Amenities	Things provided for the health, safety, welfare and personal hygiene needs of employees. These include toilets, shelter, seating, dining rooms, drinking water, personal storage and washing facilities.
Best practice	Best practice represents the current 'state-of-the-art' and aims to produce outcomes consistent with the community's social, economic and environmental expectations. Continuous improvement is an important component of best practice.
Buffer distance	The distance between a centre and residential or other sensitive land use.
Composting	Composting means causing the aggregation of one or more types of organic matter such that it undergoes decay.
Container	The term used to describe a bin, skip or other receptacle at a centre.
Contamination	Materials and items within a recycling process that are not readily recycled by that process.
Garbage	Residual waste unsuited to reuse or recycling
Green organics	Grass clippings, tree cuttings, plants or leaves.
Groundwater	Any water contained in or occurring in a geological structure or formation or an artificial landfill.
Hard waste	Waste such as old furniture, whitegoods or other household waste that is too large to fit in the conventional kerbside waste collection service.
Landfill	A facility used for disposal of waste to land.
Leachate	Liquid released by waste, or contaminated water that has percolated through or drained from waste, and containing dissolved or suspended material from the waste.
Litter	Any material, generally waste, left where it should not be.
Prescribed waste	As defined in the <i>Environment Protection (Prescribed Waste) Regulations 1998</i> . These wastes require careful management and regulation because of their potential impact on human health or the environment.
Processing	Activities that recover resource value from waste or prevent harmful emissions from residual materials.
Putrescible waste	Waste containing a significant proportion of material able to be decomposed by bacterial action.
Residual waste	See 'garbage'
Resource recovery centre	A facility where unwanted materials can be taken for subsequent transport to recycling operations or landfill.
Sensitive land use	Land in a residential zone, Business 5 Zone, Capital City Zone or Docklands Zone, land used for a hospital or an education centre or land in a Public Acquisition Overlay to be acquired for a hospital or an education centre (Section 52.10 of the Victorian Planning Provisions).
Transfer station	See 'resource recovery centre'
Waste	Material deposited at a resource recovery centre. (A detailed definition of waste is provided in the <i>Environment Protection Act 1970</i> .)

## Abbreviations

EPA	Environment Protection Authority
OHS	Occupational health and safety

# 1. Introduction

This Guide results from a review and update of the 2004 *Guide to Best Practice at Resource Recovery and Waste Transfer Facilities*<sup>1</sup>. The updated Guide encompasses subsequent changes to legislation (especially occupational health and safety legislation), a greater focus on recovery initiatives arising from the Victorian Government's 2005 *Sustainability in Action Towards Zero Waste Strategy*<sup>2</sup>, changes to infrastructure and equipment and operation and management practices at Victorian facilities.

The *Guide to Best Practice at Resource Recovery Centres* incorporates these changes and reflects the fundamental role of waste management facilities in recovery, reuse and recycling of discarded materials.

Some existing facilities use different names (e.g. transfer stations), however this guide's title acknowledges the change of focus to resource recovery centres and the increasingly important function they play as alternative technologies change the way we manage waste in the future.

The role of resource recovery centres is to receive used resources from a range of suppliers and separate it into constituent materials for recovery; any residual waste which is not recoverable is aggregated for appropriate disposal. The recovered materials may be processed on-site or transported to an alternative facility for further processing.

Resource recovery centres also play an important function in increasing the awareness of their users and local communities on the efficient use and reuse of materials, and the role that recovery plays in establishing sustainable consumption behaviours.

## 1.1 Purpose and application of the guide

This guide is intended to promote best practice in the establishment and operation of resource recovery centres. It provides recommended and preferred approaches only; compliance is not mandatory unless required by a planning approval, tender brief or similar.

Adoption of best practice at a resource recovery centre can:

- > improve environmental performance
- > improve resource diversion from landfill
- > reduce the risk of community complaints
- > reduce environmental and social risk
- > improve occupational health and safety at the facility
- > improve operational efficiencies
- > assist in developing a long-term sustainable business
- > assist when applying for funding.

Facilities that do not achieve best practice standards may increase the risk of exposure to environmental, social, health, safety and insurance problems.

The guide contains details of what **should** be done to achieve best practice. The word '**must**' is used where legal requirements are referred to.

The guide should be used by all stakeholders involved in the establishment, operation or management of resource recovery centres open to the public in Victoria including:

- > those involved in planning, siting, design, construction and operation
- > operators, managers, equipment suppliers and contractors
- > local communities that use or accommodate resource recovery centres.

<sup>1</sup> EcoRecycle Victoria 2004

<sup>2</sup> see [www.sustainability.vic.gov.au/resources/documents/Towards\\_Zero\\_Waste\\_Strategy\\_\(Sep\\_05\)2.pdf](http://www.sustainability.vic.gov.au/resources/documents/Towards_Zero_Waste_Strategy_(Sep_05)2.pdf)

Facilities are classified into three categories according to the throughput range of all materials received at the site shown in the table below. The guidance provided is tailored to the varying needs and capabilities of the different categories.

Classification	Throughput (tonnes per annum)
Category 1	0 – 1,000
Category 2	1,001 – 30,000
Category 3	> 30,000

The guide addresses best practice resource recovery centres in terms of planning and siting, design and construction, operation and management, and rehabilitation. Some topics may appear in more than one section, for example green organics and traffic management, as issues are addressed at different stages throughout the lifecycle of the facility.

## 1.2 Existing facilities

The guide provides direction to existing facilities towards reaching best practice standards. Owners and operators should review their operations against the guide and, where necessary, prepare an improvement plan to upgrade their facility in line with the recommendations of the guide. The improvement plan should describe the changes to be made and a timetable for implementation. Where changes are made incrementally, all works should be undertaken within a broader vision of the final site plan.

Where changes are not considered appropriate, a rationale for that decision should be documented together with alternative measures which may be in place (or put in place) to address the specific issue.

## 1.3 Statutory framework

Resource recovery centres should be developed as part of an integrated waste management system. They must be consistent with all statutory planning, environmental and occupational health and safety requirements.

The *Planning and Environment Act 1987* sets out the framework for land use, planning and development in Victoria, including the preparation and administration of planning schemes. There is a planning scheme for each municipality that is binding on all people and corporations.

The *Environment Protection Act 1970* is a key legislative tool used in Victoria to protect the environment. Subordinate legislation under the Act includes:

- > state environment protection policies for specific segments of the environment (e.g. air, groundwater)
- > waste management policies governing the management of specific wastes
- > environment protection regulations.

Resource recovery centres must comply with all relevant legislation, policies and regulations. Facilities should also be consistent with the local, regional and state waste management plans relevant to their location.

The *Occupational Health and Safety Act 2004* establishes the statutory framework for providing a safe working environment. Like the *Environment Protection Act 1970*, this Act has subordinate legislation and several guidance documents relevant to resource recovery centres.

Additional statutes also apply; a full list of relevant legislation and regulations is included in Section 6.

## 2. Planning and siting

This section provides guidance on the planning and siting processes involved in establishing a resource recovery centre. It covers preliminary assessments, community consultation, site selection and planning approvals. Metropolitan and regional waste management groups often carry out the preliminary assessments (of need, material pathways and type of residual waste infrastructure) as part of their planning processes. Other elements of the planning and siting process are usually the responsibility of the proponent. The checklist provided at Appendix A is useful to see if best practice is being followed.

### 2.1 Needs assessment

The need for a resource recovery centre should be justified, for example by demonstrating that it will:

- > increase resource recovery
- > reduce the amount of waste disposed to landfill
- > reduce total waste management costs
- > improve transport efficiencies of garbage and recovered resources
- > reduce detrimental impacts on the environment
- > reduce small vehicle access to operating landfills
- > reduce the number of landfills operating in an area
- > address a local infrastructure need
- > provide a safe environment that is supervised and/or controlled by suitably trained staff.

A needs assessment should be made by or in consultation with the relevant waste management group. This should consider existing and planned waste management facilities, the level of service expected by the local community, potential resource recovery increases, state and waste management programs and targets and broad economic impacts. The results of the assessment should be documented.

The checklist provided at Appendix A is useful to see if best practice is being followed.

### 2.2 Material pathways

When the need for a facility is established, material pathways to, within and out of the proposed facility should be predicted to determine broad siting, design and operational requirements. This will involve determining:

- > the customer base (residential, municipal and/or commercial and industrial)
- > OHS requirements for material pathways and their management
- > the materials to be accepted (e.g. inert, putrescible, green organics)
- > the expected quantity and composition of deposited materials now and in the future
- > potential markets or disposal options for deposited material
- > the segregated material types to be transferred.

Materials should be recycled where feasible in order to conserve natural resources and landfill airspace, provide an income from sale of materials, reduce greenhouse gas emissions and other environmental impacts and meet community expectations for recycling. The following materials are commonly received at resource recovery centres and are readily recyclable. Category 2 and 3 centres (see classification table on page 4) should normally be able to recover all of these:

- > glass bottles and jars
- > plastic containers
- > aluminium cans
- > steel
- > other metals (ferrous and non-ferrous)
- > newspapers, cardboard, magazines and office paper
- > green organics
- > timber (uncontaminated e.g. with chemicals or lead-based paint)
- > lead acid batteries
- > waste oil
- > gas bottles
- > computers, televisions and electronic goods (e-waste)
- > bricks, concrete and tiles
- > clean soil (not deemed contaminated under EPA regulations).

Additional materials should be recovered where feasible (e.g. furniture, mattresses, textiles, agricultural chemical containers, agricultural plastics, polystyrene).

Consideration should be given to the advantages and/or disadvantages of processing materials on-site versus sorting and transport to alternative facilities for additional processing.

## 2.3 Infrastructure

The most appropriate type of infrastructure should be selected for safe segregation of material types and management of any residual waste. Considerations should include health and safety, throughput, transport economics, capital requirement, projecting operating budget, resource recovery opportunities and regulatory compliance. The main infrastructure options currently in use are discussed below. While these are the main types of infrastructure currently used, the resource recovery industry is a dynamic industry, and new types of infrastructure and equipment are likely to be developed in the future.

- > **Containers:** Segregated materials or garbage is deposited directly into containers (including skips, bins and cages) that may range in size from 1m<sup>3</sup> to 35m<sup>3</sup> depending on throughput. Containers may be trucked directly to material outlets or landfill, or emptied into vehicles for transport.
- > **Push-pits:** Waste is emptied into a push-pit; a machine is then used to separate recoverable items from residual waste and/or push the waste into a container or truck. Push-pits are generally wide and shallow and may allow for some compaction of garbage by the loading vehicle. Operators sometimes use prime movers with trailers of up to 90m<sup>3</sup> to haul the residual waste to landfill.
- > **Mechanical ram:** Residual waste is deposited into a deep pit incorporating a mechanical ram that compacts the material into a transport vehicle. The transport efficiency gains from compacting the garbage are maximised when a large enclosed trailer is used, usually pulled by a prime mover.
- > **Moving floor:** Waste is deposited onto a moving floor from which facility operators can remove materials for recovery. Residual waste remaining on the moving floor is emptied into a trailer or truck for disposal at landfill.

In order to increase transport efficiencies and for ease of handling, some facilities may use compactors and/or balers in conjunction with any of the above equipment.

All of these types of infrastructure can result in risks to the health and safety of facility operators and public users unless adequately managed. Appropriate safety measures must be put in place to address identified hazards at the site; this may include the construction or installation of equipment (such as safety barriers and kerbs) or the establishment of operational measures (such as public deposition of materials on a concrete floor for later removal to push-pits by facility staff) which reduce and/or manage the risk accordingly. Materials processing activities must be physically separated from material drop-off activities.

## 2.4 Site suitability

Potentially suitable sites should be identified taking into account the issues below. Some criteria may be weighted as more important than others; final site selection should be done in consultation with the local community and planning consent authority.

### Planning requirements

Facilities must be sited in accordance with local planning schemes. Consideration may also be given to siting facilities within complementary precincts, for example resource recovery parks.

### Area required

Potential sites should provide sufficient land, taking into consideration:

- > current and projected waste handling requirements
- > infrastructure for resource recovery, equipment storage and maintenance
- > vehicle movements and queuing requirements (including peak events)
- > potential processing operations (such as composting, concrete crushing and sorting equipment)
- > storage and stockpiling of recyclables (if required)
- > future expansion capacity (including recovery of additional materials)
- > projected community growth surrounding the site.

## Buffer distances

An appropriate buffer distance should be kept between the site and designated residential areas or other sensitive land uses. All planning schemes set out a minimum threshold distance between transfer stations or resource recovery centres and residential or other sensitive land uses. It may be possible to have shorter buffer distances if it can be shown that effective controls are in place to prevent any environmental nuisance. Where relevant, reference should be made to the EPA's *Recommended Buffer Distances for Industrial Residual Air Emissions*.

## Site history

New resource recovery centres should not be located at sites listed on the Victorian Heritage Register or containing Indigenous Heritage. Proponents should investigate previous site uses and planning controls to identify any restrictions placed on site functions and activities. The risk of pre-existing soil pollution should also be assessed.

The siting of new facilities at an established waste management site (such as a rehabilitated landfill) may be better accepted by the community than a new site.

## Transport distances

The facility should be located within an acceptable distance from the community it is designed to serve. The distance will be based on how far the local community is willing to travel to use the facility; this should be established by consultation, for example by conducting a community survey.

The distances from the facility to material processing plants and landfills should be minimised. Larger facilities will have economies of scale that enable transport of materials greater distances than smaller facilities. Using compaction equipment will extend the economically viable transport distance of some materials.

## Natural conditions

Natural site conditions will influence the design, management practices and control measures adopted at a facility. The following should be considered:

- > **Topography:** For most facility designs, it is useful to have a site with a slope in order to minimise necessary earthworks; it can also facilitate drainage and prevent ponding. A sloping site may also allow for better site supervision and reduced traffic risks through an enhanced line of sight.
- > **Climate:** Local climatic conditions should be considered as these can affect litter generation, storage requirements, odour generation, site amenity and stormwater management requirements. Prevailing wind direction is of particular relevance.
- > **Hydrological and hydrogeological features:** Sites with high water tables or in groundwater recharge or discharge areas should be avoided where possible. Sites with a large catchment area should also be avoided so that works associated with diverting and treating surface water flows are minimised.
- > **Ecology:** If previously undisturbed land or land containing areas of remnant vegetation is being considered, a flora and fauna study should be conducted to determine whether any unique, endangered or threatened species or vegetation communities are present. Such sites should be avoided if possible.

## Supporting infrastructure

A resource recovery centre should have good road access that does not pass through residential or other sensitive areas such as schools and hospitals. A traffic impact assessment should be undertaken for Category 2 and 3 facilities. Category 3 facilities should have access to power, sewer, water and phone lines or mobile phone coverage; this should include Category 2 facilities where feasible.

## 2.5 Community consultation

Resource recovery centres are generally developed to serve the local community and should be tailored to particular community circumstances. The community should be involved as early as possible in the development process so that expectations and concerns can be identified and addressed. Proposed extensions or modifications to existing facilities should also involve community consultation.

The level of community consultation will vary depending on the type, size and location of the planned facility. A community consultation plan should be developed and implemented, detailing:

- > who will be consulted (e.g. local residents, waste contractors, others)
- > how information will be communicated (e.g. public meetings, newsletters, formation of a community consultative committee)
- > what information is to be communicated
- > how the community can comment on proposals (e.g. written/verbal submissions)
- > the consultation period.

Proponents of Category 3 facilities may consider establishing a community reference group for consultation during both the planning and operational stages.

Consultation outcomes should be documented and distributed to relevant stakeholders and/or the local community. Ongoing community consultation requirements are discussed in Section 4.8.

## 2.6 Planning approval

Once a site has been chosen, it should be determined whether a planning permit is required. This should be done through discussion with a council planning officer. Early discussion will also identify any other council requirements which may need to be met.

Where a planning permit is required, applicants will need to provide supporting information to the local council or other responsible authority. This information may include an assessment of the potential impacts of the facility on the environment, traffic and surrounding land use.

An EPA works approval and licence is required for the establishment of organics processing facilities designed or having a capacity to process more than 100 tonnes of waste each month. An application for approval should be completed in consultation with the EPA as all EPA works approvals and licences will reflect specific site and process circumstances. Reference should be made to *Instruction for Completing Works Approval, Licence and Licence Amendment Applications* (EPA Publication 375.7) and to *Environmental Guidelines for Composting and Other Organic Recycling Facilities* (EPA Publication 508).

## 3. Design and construction

### 3.1 Design for risk control

Resource recovery centres should be designed to minimise risks to the safety of workers, facility users, site neighbours and the environment. Risks should be considered throughout the design process through consultation with employees, contractors, manufacturers and other relevant parties. The draft design should be subjected to a risk assessment and be revised as needed. The checklist provided in Appendix A can be used to check that best practice is being followed.

### 3.2 Site layout

Safety, efficiency and maximisation of resource recovery are key considerations in site layout. The design of the facility will be dependent on the constraints of each site but should:

- > allow for separation of truck, car and pedestrian traffic movements
- > encourage recovery of materials by placing recycling drop-off areas before any residual waste disposal area
- > utilise natural site features to minimise the works required
- > provide a separate area for processing operations which is not accessible to facility users.

### 3.3 Design for sustainability

Design of new and upgraded facilities should consider green building principles and opportunities for enhanced sustainability.

#### Building materials

When selecting building materials, consideration should be given to the ecological footprint of comparable products. Where practicable, priority should be given to materials which have a recycled content, low embodied energy, do not deplete non-renewable resources and/or have been produced locally.

#### Water and energy efficiency

Design of the facility should incorporate the following to minimise use of water and energy:

- > use low maintenance and preferably local native vegetation for site screening and landscaping
- > use natural light and ventilation
- > use energy-efficient lighting (e.g. compact fluorescent globes)
- > install rainwater tanks for collection from roofed areas and collect stormwater for reuse on site
- > where feasible, consider using waterless urinals, composting toilets and other facilities that minimise use of water and other resources
- > where feasible, consider installation of a greywater collection, treatment and reuse system
- > where feasible, consider solar power or other renewable energy options for energy requirements.

#### Greenhouse emissions

The emission of greenhouse gases should be minimised wherever practicable. Design considerations should include:

- > segregation and processing options for organic waste
- > minimising transport requirements for facility users and disposal of material off-site
- > use of processing equipment with low energy needs
- > use of renewable energy at the facility.

#### Ecology and aesthetics

Any areas of ecological significance should be protected and left undisturbed. Consideration should be given to using existing vegetation to visually screen the site, provide a windbreak, limit litter dispersion and improve site amenity. Facilities should be designed to blend in with the surrounding environment. Vegetation should be planted to screen unpleasant views.

### 3.4 Design for resource recovery

All facilities should be designed to maximise recovery of resources and minimise contamination of materials. Designers should make provision for users to drop-off particular materials in dedicated areas using visually distinct containers (e.g. using different colours) and standard signage.

#### Green organics

Category 2 and 3 facilities should provide areas for the separate collection of green organics. Category 1 facilities should provide for this where feasible. Designers should ensure that green organics collection areas:

- > have sufficient space for stockpiles
- > are not adjacent to flammable materials stores or screening vegetation
- > are equipped with fire control measures
- > have a water supply for dust suppression
- > are located on level hardstand areas
- > are protected from the wind to prevent wind-blown litter
- > have stormwater run-off diverted to appropriate leachate management.

Where green organics processing is to occur on-site, reference should be made to the EPA's *Environmental Guidelines for Composting and Other Organic Recycling Facilities*.

#### Construction and demolition waste

Where stockpiling of construction and demolition waste is planned, provision should be made for a hardstand area with adequate drainage to divert and manage run-off. Measures to control dust, such as sprinkler systems, may be needed, as well as potential noise buffers when crushing.

#### Commercial and industrial waste

Facility designers should provide adequate infrastructure and space to maximise, to the extent feasible, the recovery of recyclable materials from commercial operators expected to use the site. Consideration should be given to the vehicle types and configurations likely to use the facility.

#### Waste oil

Waste oil facilities should be provided at Category 2 and 3 facilities, and smaller sites where feasible and should provide the following:

- > Tanks should have full rust protection and be hot dip galvanised after fabrication.
- > Units should be double-skinned or provided with an adequate bund complying with EPA guidelines.
- > They should be fitted with a graduated dipstick or similar device so that operators can readily assess the amount of oil in the tank.
- > Spill protection should be provided around the drain points.
- > Users should be able to pour in oil without using ladders or platforms.
- > Units should be fully lockable.

Waste oil units should be as far as possible away from stormwater drains, battery stores or potential sources of acid leaks or sparks. They should be placed on a flat, impervious surface (preferably a concrete slab) and incorporate a bund (in accordance with the EPA's *Bundling Guidelines*). The bunded area should be roofed and of sufficient size to allow for storage of emptied containers.

#### Batteries

Facilities for recovery of lead acid batteries from vehicles should be provided at Category 2 and 3 facilities, and smaller sites where feasible. The type of batteries collected may be extended (e.g. to nickel cadmium) where feasible. All batteries collected should be stored in a roofed and bunded area (consistent with the EPA's *Bundling Guidelines*) to contain any spills.

#### Resale shops

Resale shops provide an outlet for goods recovered from the waste stream to be sold directly to the public, after repair if necessary. They provide a community service and may operate on a non-profit basis but are not necessarily feasible at all sites. Resale shops should be readily accessible and provide separate access to pedestrians and vehicles.

Resale shops should be operated from a roofed and enclosed building, be lockable for security purposes and be equipped with adequate fire detection/fire fighting devices. Sufficient floor area should be allocated for display of items with clearly marked aisles for customers to browse the items safely.

A management plan should be prepared to document how the resale shop will operate successfully. Reference should be made to Sustainability Victoria's management plan templates for large and small resale shops.

### 3.5 Design for environmental protection

Facility design should encompass measures which protect the surrounding environment from impacts arising from the establishment of the facility.

#### Litter

Design of the facility should include the following to minimise litter:

- > covers or lids for exposed bins
- > walls on three sides of waste unloading, loading and storage areas (excluding Category 1 facilities)
- > where possible, locate enclosed facility entrances and exits away from the prevailing wind
- > litter traps to protect the stormwater drainage system
- > trees and shrubs around the site as windbreaks
- > where necessary, locate litter screens within and around the site to reduce wind-blown litter
- > prominent signs warning of penalties for uncovered loads.

#### Odour

Potential odour sources include stored putrescible waste, contaminated stormwater and green organics. Design of the facility should include the following to minimise odour problems:

- > locate potential odour sources away from and downwind of sensitive receptors
- > pave and grade unloading and waste storage areas (including skip storage areas) to facilitate cleaning
- > ensure putrescible waste is not stored for more than 24 hours (excluding Category 1 facilities); check local regulations or planning permit requirements for overnight storage

- > provide roofs for unloading and waste storage areas to stop ingress of water (excluding Category 1 facilities)
- > allow for retrofitting of odour control devices, such as deodorant sprays or odour fences, if necessary
- > ensure enclosed facilities are well ventilated
- > ensure any ponds accepting leachate maintain aerobic conditions (this may require mechanical aeration and/or sludge removal).

#### Dust

Design of the facility should include the following to minimise dust:

- > paving of all operating, storage, unloading and loading areas
- > sealing of roads if dust is considered likely to be an issue
- > minimising areas of exposed earth through suitable landscaping.

#### Vermin

The need for covers or mobile screens to deter vermin should be considered during the design phase. Structures should be designed to minimise bird infestation and nesting where appropriate.

#### Stormwater

Design of the facility should include the following to prevent stormwater run-off from the site becoming contaminated with waste or leachate:

- > design structures to minimise water absorption
- > incorporate appropriate infrastructure to manage peak rainfall events
- > divert off-site stormwater around the site
- > include sufficient drainage to collect stormwater at the site
- > ensure that potentially contaminated stormwater is kept separate from non-contaminated stormwater
- > bund and roof hazardous waste (e.g. batteries, waste oil) collection areas to prevent stormwater infiltration and contain potential spills
- > roof areas where waste is unloaded, stored, loaded into transport vehicles or processed to prevent rainwater from carrying litter and contaminants from the waste (excluding Category 1 facilities)
- > manage all run-off collected from the receipt, storage, unloading and processing areas as leachate (excluding Category 1 facilities)
- > use stormwater pre-treatment systems where feasible.

Category 2 and 3 facilities may still generate leachate in sufficient quantities to require management. This should preferably be discharged to sewer; on-site pre-treatment (e.g. interceptors) may be required by the sewerage authorities. If no sewer connection exists, leachate management options include transporting leachate off-site or on-site evaporation pond or alternate treatment. Following effective treatment, water may be reused on the site.

### Noise

Facilities should not cause a noise nuisance to surrounding areas. Where necessary the facility design could incorporate the following to control noise:

- > location of noisier operations to minimise impact on surrounding areas
- > design access and internal roads to minimise noise
- > provide earthen embankments around the site
- > enclose noisy operations within screens or similar noise barriers (care should be taken that noise levels within the enclosure do not exceed safety levels for operators).

## 3.6 Infrastructure and equipment

### Site structures

Site structures must comply with relevant building codes, building regulations and planning regulations, and should be designed in accordance with the needs of the community the facility serves.

### Gatehouse

Category 2 and 3 facilities should have a gatehouse to allow for management of traffic, inspection of incoming waste, recording of waste types and quantities, collection of gate charges and direction of users to appropriate unloading areas. Gatehouses should have facilities for viewing the waste load on incoming vehicles, such as an elevated mirror or platform, and appropriate control and supervision features. For example, closed circuit television with time lapse recording has proven highly effective, including for dispute resolution.

Category 3 facilities should have a weighbridge to ensure accurate recording of waste quantities; where feasible, Category 2 facilities should also have a weighbridge.

### Asbestos

Category 3 facilities should establish a designated receptacle for asbestos received from domestic sources. The receptacle should be lined with plastic (minimum 200 micron thickness), have appropriate warning labels and a lockable lid, and be located in a secure area of the facility away from the general public. Category 2 facilities may also consider establishing an asbestos receptacle where it is deemed warranted.

Any establishment of asbestos receipt facilities should be undertaken in consultation with the EPA and conform to requirements outlined in WorkSafe Victoria's *Compliance Code: Managing asbestos in workplaces 2008*.

### Plant and equipment

Equipment must comply with Australian Standard AS4024.1 *Safety of Machinery*. Controls for all equipment must be:

- > clearly labelled
- > operable only from inside the cabin or control room
- > be protected from accidental operation by shielding or by their location.

Equipment must be operated and maintained in accordance with the manufacturer's specifications.

There must be an emergency stop button that can be used in case of emergency to immediately stop all operations. The button(s) must be clearly labelled and, for stationary equipment, should be clearly sign-posted.

### Safety barriers and fall prevention devices

Where possible, the need for facility operators or public users to operate at heights of more than 2 metres should be designed out. All facilities must conduct a site risk assessment and take appropriate measures to ensure that persons do not fall in containers, push-pits, etc. The outcomes of the assessment should be documented in the site's risk control plan. These measures should provide protection for people operating at a variety of heights. They should not present a trip hazard to facility users or operators. Any potential fall of more than 2 metres should be prevented in accordance with the *Occupational Health and Safety Regulation 2007*.

## Utilities

Design of facilities should include:

- > adequate fire fighting facilities
- > sufficient lighting to allow work to be performed safely on dull days in accordance with Australian Standard AS1680
- > adequate water supply to meet requirements for fire control, drinking, washing, cleaning and dust suppression
- > a suitable method of communication from the site in case of emergency.

Amenities should be provided in accordance with WorkSafe Victoria's *Compliance Code: Workplace amenities and work environment 2008* and include:

- > staff toilets, washing facilities, dining areas and drinking water
- > where relevant, staff change rooms, showers and storage facilities
- > appropriate lighting, cooling and heating measures.

The *Compliance Code: Workplace amenities and work environment 2008* also specifies design requirements (such as size and placement) for certain amenities and equipment.

## Security

Adequate site security measures should be incorporated to keep intruders and animals out of the facility, prevent theft and vandalism and prevent illegal dumping of unacceptable waste. All facilities should have a perimeter fence, lockable gates and be attended when open. A wire mesh fence at least 2m high should be constructed around the site boundary.

## 3.7 Access and traffic flow

Roads and traffic management devices should comply with relevant Australian Standards. All facilities should have a traffic management plan.

### Site access

The entrance to the facility should provide:

- > safe and orderly entry
- > all-weather access
- > sufficient queuing area for vehicles using the facility so that external traffic flows are not interrupted
- > preferential access to recycling areas
- > access for emergency vehicles at all times (possibly through a separate entrance)
- > if appropriate, separate access from the public road network (e.g. a turn-off or slip lane).

The entry should be controlled so that the type of material entering the facility can be scrutinised.

### Traffic flow and control

Effective on-site traffic circulation should be maintained to minimise vehicle accidents and increase operational efficiency. Design of the facility should incorporate:

- > maximisation of vision across the site for supervisory staff
- > one-way flow throughout the site with a minimum number of intersections or roundabouts
- > consideration of traffic peaks during popular events (e.g. Detox Your Home collections)
- > separation of cars, trucks and pedestrians
- > effective traffic control devices (e.g. directional lines, traffic lights)
- > line marking of sealed roads to guide traffic flow
- > prominent traffic information signs
- > where practicable, kerbs at the edge of the unloading area to prevent vehicles rolling into the skips or pits
- > roads wide enough to accommodate at least two passing trucks.

Interaction between cars and trucks should be minimised by:

- > channelling trucks through the weighbridge by delineation of lanes (at Category 3 facilities)
- > providing separate access for cars and trucks where possible
- > limiting access hours for compactor trucks and transfer trucks to times when car movements are low.

## Guide to Best Practice

at Resource Recovery Centres

Unloading areas should be on stable, level ground to eliminate the risk of overturning or runaway vehicles when users are dropping off materials.

Consideration should also be given to local wind conditions where tipping vehicles are involved. In some cases, the installation of a windsock and warning signage may be appropriate.

Vehicle reversing should be kept to a minimum. Where vehicles need to reverse into drop-off areas, sufficient space should be allowed for users unfamiliar with reversing trailers. Drivers should have a clear line of sight between the rear of their vehicle and the drop-off area.

Buildings that are accessed by vehicles should be designed so that:

- > there is sufficient height clearance for transport vehicles proposed to use the facility now and in the future
- > there are sufficient areas for such vehicles to turn
- > vehicles do not need to turn more than 180° in a single movement
- > there is sufficient illumination.

### 3.8 Signage

Signage should comply with relevant Australian Standards, provide consistent information and be clearly and prominently displayed. Schematics should be used where feasible for the benefit of people with poor literacy or English language skills.

There should be signage on major approach roads to direct users to the facility and signs on approach roads warning of penalties for uncovered loads.

If the site is open outside daylight hours, illumination must be provided for signs within the site and at the entrance. Illumination must always be provided for signs in dim areas.

Signage at the site entrance should state:

- > the opening hours
- > waste types which may be deposited and those which may not
- > materials to be separated for recovery
- > disposal costs for waste type and quantity
- > directions to unloading and recyclable drop-off areas
- > name and contact details of the site operator
- > after-hours contact details
- > where applicable, that hazardous chemicals may be present on site.

Internal signage may also be needed to:

- > provide directions to unloading areas
- > control traffic (e.g. directional lines, speed limits)
- > protect safety of workers and the general public
- > identify fire control equipment and emergency exits
- > point out hazards at particular locations
- > establish evacuation assembly areas for site users and staff.

Signage should be provided to indicate where particular materials should be placed. Standard recycling signage developed by Sustainability Victoria for use at resource recovery centres can be downloaded from:

<http://www.sustainability.vic.gov.au/www/html/1946-signs-for-transfer-stations-and-landfills.asp>

### 3.9 Construction

Proponents should ensure that potential environmental and nuisance impacts during the construction phase are well managed. Category 2 and 3 facilities that are close to neighbours or that pose particular environmental risks should prepare an environment improvement plan in accordance with EPA's *Guidelines for the Preparation of Environment Improvement Plans*. Reference should also be made to EPA's *Construction Techniques for Sediment Pollution Control*.

## 4. Operation and management

### 4.1 Risk control

A formal organisational risk control process should be established encompassing risks to health and safety, the environment and other contingencies such as the breakdown of equipment. A formal risk control process will help management to identify, analyse and treat risks.

The organisation's risk control process should be documented in plain English, communicated throughout the organisation and regularly reviewed.

#### Occupational health and safety risks

Employers must provide and maintain so far as is practicable a working environment that is safe and without risk to health. To do this, they should identify OHS hazards, determine the level of risk presented by these hazards, and implement appropriate hazard control strategies. Site managers' responsibilities cover their staff, public users, site visitors and independent contractors and their employees working at the facility (to the extent of the site manager's control). Guidance is provided in WorkSafe Victoria's *Guidelines for Non-hazardous Waste and Recyclable Materials 2003*.

Hazards can be identified in a number of ways such as:

- > observation
- > consultation with employees about any hazards they have experienced or identified
- > knowledge of other competent people
- > safety audits
- > job safety analysis
- > analysis of workplace injury and illness records (including near misses)
- > regular workplace inspections.

Risk assessment is used to determine the level of risk of identified hazards and to prioritise actions required. Risk assessments should consider the level of risk (the likelihood, frequency and severity of an injury or illness occurring as a result of the identified hazard) and assess the likelihood and consequence that the hazard may cause an injury or illness. The risk may increase depending on the length or intensity of exposure to the hazard. All risk assessments should be recorded in writing.

A job safety analysis should be conducted and documented for all tasks that occur on site. Employees who perform the work and health and safety representatives should be involved in this process.

Risk control strategies should be determined using the hierarchy of control (see below). When introducing a new control measure, training must be provided and it must be ensured that the control measure is safe. Risk control strategies should be recorded in writing; the site operations manual is a good place for this information. A review of risk controls should be undertaken on a periodic basis (at least annually), including when a near miss, notifiable incident or injury occurs.

The OHS hierarchy of control:

1. Eliminate the risk by discontinuing the activity or not using that particular piece of equipment.
2. Minimise the risk by substituting the system of work or plant with something safer, modifying the system of work or plant to make it safer, isolating the hazard (e.g. introducing a restricted work area) or introducing engineering controls (e.g. guarding, fencing).
3. As a last resort or as an interim measure, control the risk by using personal protective equipment such as eye, respiratory and hearing protection or adopting administrative controls such as hazard warning signs and specific training and work instructions.

## Environmental and other risks

Environmental and other risks (such as breakdown of key equipment) should be periodically assessed and controls put in place. The main elements of the risk management process outlined in Australian Standard AS4360 are outlined below:

1. Establish the context, establish criteria against which risk will be evaluated and define the structure of the analysis.
2. Identify what, why and how problems can arise as the basis for further analysis.
3. Determine the existing controls and analyse risks in terms of consequence and likelihood in the context of those controls. The analysis should consider the range of potential consequences and how likely those consequences are to occur. Consequence and likelihood may be combined to produce an estimated level of risk.
4. Compare estimated levels of risk against the pre-established criteria to identify management priorities. If levels of risk established are low, they may fall into an acceptable category and treatment may not be required.
5. Accept and monitor low priority risks. For others, develop and implement a management plan which includes consideration of financial costs.
6. Monitor and review the risk management system.
7. Communicate and consult with internal and external stakeholders as appropriate at each stage of the risk management process and concerning the process as a whole.

## 4.2 Management systems

A site management system is needed to ensure the facility is run efficiently and effectively, it is safe for staff and users, does not impact on the local environment and does not cause a nuisance for neighbours.

Category 2 and 3 facilities should document operational and management procedures and make these available to staff. Preferably all procedures should be combined in a site operations manual. This should be written in plain English with visual interpretations and translations into other languages where necessary. The manual should take into account the outcomes of the risk control process and external obligations such as any planning permit conditions.

Good reference documents for preparing the manual include relevant Australian Standards and EPA's *Guidelines for the Preparation of Environment Improvement Plans*.

The site operations manual should include:

- > senior management endorsement and commitments to safety, environmental protection and continuous improvement
- > an organisational chart and an outline of site staff roles and responsibilities
- > risk assessments of the site, including environmental and OHS risks
- > procedures for the induction and ongoing training of all employees and contractors
- > emergency response procedures
- > crisis management procedures for any mishap which may occur and present an OHS hazard
- > safe operating procedures for all aspects of the site operation, including waste receipt, user supervision, traffic management, dealing with hazardous waste, and use and maintenance of plant and equipment
- > procedures for environmental management and control covering litter, odour, dust, stormwater, noise, vermin, water and energy efficiency, and aesthetics
- > procedures for collecting and maintaining relevant workplace records such as workplace inspection records, training records, hazard report forms, OHS committee records and action plan
- > procedures for complaint response and customer service
- > procedures for monitoring and reporting
- > a strategy for improving environmental, OHS and operational performance
- > forms to support the operating procedures
- > a timetable for regular review of the manual and all procedures (at least every three years).

At least one copy of the site operations manual should remain on the site at all times. Staff should be trained to follow the procedures in the site operations manual.

A site operations manual may not be appropriate for Category 1 facilities, but the site operator must be trained in operating and OHS procedures for the facility. Where a number of small facilities are operated by the same organisation, a single operations manual should be prepared to cover them all.

## 4.3 Managing for sustainability

### Material use

When purchasing materials and products, including consumables for staff amenities and office equipment, to be used at the facility, consideration should be given to the environmental footprint of competing products. Where practicable, preference should be given to materials which have a recycled content, low embodied energy and do not deplete non-renewable resources.

### Water and energy efficiency

Water and energy should be used efficiently. On-site taps and hoses should be maintained to prevent leakage. Where appropriate, consideration should be given to the use of recycled water on-site. Equipment using power should be turned off when not in use. Purchasing decisions on plant and equipment should be made with consideration of its energy efficiency.

Category 3 facilities should audit water and energy use regularly.

### Greenhouse emissions

The emission of greenhouse gases should be minimised as much as possible through measures such as:

- > de-gassing of waste electrical equipment (such as refrigerators and air-conditioners)
- > the use of energy-efficient equipment and fuel-efficient vehicles
- > collection and processing of organic waste.

Category 3 facilities should give consideration to measurement of their carbon footprint and opportunities for becoming carbon neutral.

## 4.4 Managing for resource recovery

### Facilitation

Resource recovery operations should be affordable and easy to use in order to encourage patronage by the community, commerce and industry. The operating hours should be structured to cater for all sectors of the community using the facility. Where feasible, it should be open during weekdays and the weekend.

A clean and tidy facility can increase patronage and encourage users to maintain a high standard when using the facility. A regular cleaning schedule should be established to minimise litter, dust and other contaminants.

The objectives of recycling and the facility's role in resource recovery should be promoted in the local community by:

- > media promotion and/or advertising
- > on-site signage
- > financial incentives for customers to segregate recyclable material from waste
- > public education on the reasons why proper separation of waste is desirable.

### Recovery of materials

Decisions on which materials to segregate for recycling should be based on an analysis of markets, transport costs for processing, savings in disposal and environmental benefits. A list of normally recyclable materials is provided in Section 2.2. The material types recovered at a resource recovery centre should be regularly reviewed and added to where feasible.

Site operators should inspect material entering the facility to identify recyclable materials and potentially hazardous material, and indicate to the customer the locations where materials should be unloaded. At Category 2 and 3 facilities, supervision should be provided where material is unloaded.

### On-site processing

Where viable, selected materials may be processed on-site to increase their value (e.g. concrete crushing, wood chipping). Processing should be conducted away from site users and managed so that it does not affect the amenity of the surrounding area, disrupt normal operations or create an OHS risk to operators or facility users.

### Green organics

Green organics should not be burnt. As far as possible, contaminants should be removed prior to processing operations. Appropriate controls should be in place to minimise odour during all stages of collection, storage and processing. This is best achieved by ensuring that materials are kept aerobic by having well aerated piles or turning materials as required.

Stormwater and other run-off from stockpiles and processed materials should not be allowed to directly enter stormwater or surface waters. Bunds should be used to contain stormwater in storage and processing areas. Where stormwater with a high organic load is contained on-site, the stored water should be managed to prevent odour problems (e.g. aerated). Storage areas should be maintained to ensure that the base of storage piles and the land underneath them does not become waterlogged and odorous.

Mulching and chipping operations should be conducted during normal working hours to prevent nuisance noise. Prevailing wind conditions should be checked prior to processing to ensure particles do not become airborne.

Stockpiles of unprocessed material should not exceed 1,000m<sup>3</sup>. To minimise fire risk, stockpiles should be at least 5m apart and no more than 2m in height, should be kept clear of flammable materials and should be protected by well maintained fire control measures. Regular monitoring should be undertaken to record stored quantities and to ensure stockpiles are not posing a fire risk, impacting on the environment or causing a nuisance (e.g. through dust). Long term stockpiling is unacceptable.

Any green organics sold or given away should comply with the relevant Australian Standard unless it is to be further processed. At a minimum, processed materials should be turned and fully mixed at least three times over at least a three week period to ensure that all materials are exposed to temperatures exceeding 55°C for at least three days. The turning both aerates the pile and ensures that material on the outside of the pile is exposed to higher temperatures. This material is then pasteurised and should be free of viable weed seeds, cuttings and disease organisms. Materials from open turned windrow processing that have not been through at least eight weeks of controlled processing and maturation should not be sold or given away as compost.

Where relevant, further reference should be made to EPA's *Environmental Guidelines for Composting and Other Organic Recycling Facilities*, the *Australian Standard for Compost, Soil Conditioners and Mulches (AS4454)* and Sustainability Victoria's *ResourceSmart Guide to Organics Recovery*.

### Construction and demolition waste

Recycling of construction and demolition waste should adhere to WorkSafe Victoria's *Recycling Construction and Demolition Material* guidance on complying with asbestos regulations. Construction and demolition materials suitable for recycling should be segregated as much as possible and kept free of contamination. Stockpiles should be regularly monitored to ensure they are not impacting on the environment or causing a nuisance (e.g. through dust). Stockpile sizes should be regularly monitored and recorded. Indefinite stockpiling is unacceptable.

### Waste oil

Check with your local council on what do with waste oil. For a link to council web sites visit: [www.sustainability.vic.gov.au/www/html/2053-council-waste-and-recycling-services.asp](http://www.sustainability.vic.gov.au/www/html/2053-council-waste-and-recycling-services.asp)

### Resale shops

Resale shops should be supervised at all times and kept clean and tidy. An inspection and testing program should be established for all second-hand goods sold; the program should follow relevant Australian Standards where applicable (e.g. AS5761 and AS5762).

Legal advice should be taken concerning the obligations of the facility operator arising from the sale of goods, especially electrical items and items for which safety standards apply. The legal advice should be periodically updated to ensure facility operators are aware of new regulations and guidelines affecting the resale of items.

The management plan should be reviewed at least annually and updated where necessary.

Staff should undergo continual training to ensure they have current information on items that should and should not be resold.

## 4.5 Managing for environmental protection

Work procedures in the site management plan should ensure that the local environment is protected in accordance with the following guidance.

### Litter

A litter inspection and removal program should be established for on-site, off-site and litter entrapment device cleaning. Sites should be inspected at the end of each operating day and litter removed as required. Lids or covers should be placed over bins when they are not in use, and regularly inspected to ensure they are not damaged. Vehicles depositing and collecting waste and recyclables should be covered where possible.

For facilities exposed to the wind, consideration should be given to establishing an appropriate protocol for operations on days with significant wind, for example, temporary closure of some drop-off areas, additional litter patrols and screens.

### Odour

There should be no odour at the boundaries of the site where this may cause offence. Category 2 and 3 facilities should clear putrescible waste within 24 hours of receipt in order to prevent odour generation. Hard waste should be removed within seven days at most.

Skips and pits that receive putrescible waste should be cleaned daily when in use and a disinfectant should be used regularly. Wastewater from cleaning activities should be treated as leachate. Where the site contains a leachate pond, control measures and practices should be adopted to avoid odour generation.

### Dust

Any dust transported off-site must not affect the amenity of the surrounding area. Where necessary, dust should be managed by:

- > utilising dust suppressants (e.g. light water spray)
- > installing wind breaks to prevent particulates becoming airborne
- > regular suction sweeping of surfaces
- > where appropriate, stopping some operations on windy days (e.g. mulching).

Where water or chemicals are used as a dust suppressant, they must not create contaminated run-off from the site.

### Stormwater

Stormwater diversion drains and litter entrapment devices should be inspected prior to and after major rainfall events and regularly maintained to ensure they are not impaired. All facilities should have procedures for dealing with spills, and appropriate equipment and materials should be available (e.g. dry mulch, sand or other absorbents) to deal with it. Site operators should be trained in spill management techniques and should implement control measures as soon as spills are detected.

### Vermin

Poor quality housekeeping, litter and uncovered bins and storage areas are major factors in attracting vermin. Odour controls outlined above (i.e. regular cleaning and removal of putrescible waste) should minimise vermin. If vermin problems persist, implementation of a pest control program should be considered (e.g. baiting, spraying, traps).

### Noise

Noise from resource recovery centres should not cause a nuisance to surrounding areas. Facilities in the Melbourne metropolitan area must comply with the *State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade, No. N1)*. Other facilities should take guidance from the EPA on noise control. It is recommended that:

- > processing operations such as concrete crushing and mulching of green organics should be undertaken only during normal working hours
- > noise screens are provided where operations prove particularly noisy.

Occupational noise should be managed by:

- > consulting with employees and OHS representatives to identify noise hazards and minimise employee exposure through application of the hierarchy of control (see Section 4.1)
- > establishing noise management procedures that consider noise elimination, reduction and control and noise risk assessment
- > providing personal protective equipment to employees where exposure to noise is above 85 dB(A) average over an 8-hour work shift, or above a peak of 140 dB(A)
- > audiometric testing of employees (in accordance with *Occupational Health and Safety Regulations 2007*)
- > implementing a 'buy quiet' policy where feasible
- > regularly reviewing employee exposure to noise, considering the number of exposed persons and the duration and intensity of exposure
- > providing training to employees in hearing conservation.

### Aesthetics and amenity

Aesthetics and a visually pleasing site can assist in site user compliance. The aesthetic appearance of resource recovery centres should be maintained by vegetation screening and regular cleaning and maintenance. Consideration may be given to the establishment of gardens or other visual enhancements where feasible.

## 4.6 Hazardous waste

Incoming loads should be inspected to ensure that only acceptable materials from domestic sources are deposited and in the appropriate place. The site operations manual should specify procedures for the safe storage, handling and emergency response of potentially hazardous waste likely to be received at the facility (such as asbestos, batteries or oils).

Personnel handling hazardous waste must be appropriately trained, equipped and clothed. Employees should be trained in emergency procedures and suitably trained personnel should be available to respond in the event of an emergency. Prominent signs regarding the appropriate handling of hazardous waste should be displayed. Material Safety Data Sheets should be held on-site for any hazardous substances or dangerous goods commonly received, stored or used on-site. Care should be taken to ensure that potentially reactive materials are not stored together or in close proximity.

All efforts should be made to ensure that hazardous materials are removed from the site for appropriate disposal or recycling as soon as practicable. Arrangements need to be made for a licensed contractor to collect hazardous materials as soon as practicable, making sure that relevant transport certification requirements are adhered to. A list of the licensed contractors used by the facility should be documented in the site operations manual and the list should be regularly updated.

Any loading or unloading of hazardous materials should occur only in the presence of trained staff or contractors.

### Unacceptable waste

Resource recovery centres often have to cope with customers presenting unacceptable wastes for disposal. Good signage and information is the first safeguard against this.

Gate staff should be trained to identify risk loads and recognise unacceptable materials (e.g. asbestos, chemical liquids) and should know what to do should they find them. This may require training in materials recognition as well as communication so that operators know to ask customers the age of the materials (renovation debris from homes built prior to 1990 may contain asbestos).

Where unacceptable materials are identified, operators should inform the customer where these materials can be safely taken and if necessary and practicable, provide advice and assistance to make the materials safe to transport.

Operators should have procedures in place dealing with hazardous waste identified after disposal (e.g. in a push-pit). Dumped hazardous waste should be separated from the waste stream, where it is safe to do so, appropriately stored and taken by a licensed transporter to an appropriately licensed facility as soon as practicable. The operator should ensure that the EPA is satisfied with these procedures.

### Asbestos

As asbestos poses health risks during removal, transport and disposal, it is important that it is handled appropriately. The disposal of waste asbestos, whether of industrial or domestic origin, is controlled by the EPA who also control the transportation of asbestos from industrial, commercial or trade origins. Reference should be made to the EPA publication *The Transport and Disposal of Waste Asbestos* (Publication 364.1).

Reference should also be made to WorkSafe Victoria's *Compliance Code: Managing asbestos in workplaces 2008* which outlines OHS requirements for management of asbestos. The code outlines regulated responsibilities in areas such as:

- > controlling risks to health
- > preparation of an asbestos management plan
- > establishment and maintenance of an asbestos register
- > appropriate staff training
- > provision of personal protective equipment
- > decontamination procedures
- > signage and labelling
- > bins, bags and wrapping.

Any asbestos accepted at the facility should be removed from the site as soon as practicable by a licensed transporter and disposed of at an EPA licensed disposal site.

### Prescribed industrial waste banned from landfill

Certain types of prescribed industrial waste have been judged by the EPA as having available opportunities for recycling and are prohibited from disposal to landfill. This currently includes used oil filters, large containers contaminated with prescribed industrial waste and grease interceptor trap waste. Where these types of waste are accepted under licence, EPA-mandated procedures must be followed for the safe, secure containment and management of these materials pending transport off-site by a licensed transporter. Reference should be made to the EPA publications *Classification for Large Containers Contaminated with Prescribed Industrial Waste* (Publication 1100) and *Classification for Used Oil Filters* (Publication 1102).

### Gas bottles

Gas bottles should be stored in a secure area with adequate ventilation and safety signs (e.g. no smoking). This storage area should be away from direct sunlight, other hazardous wastes, materials or equipment which may pose a risk of explosion or fire (e.g. batteries).

### Batteries

Batteries should be stored in a secure, roofed and bunded area to protect staff, users and the environment in the event of acid spills.

### Liquid waste

Where liquid waste is accepted, it should be stored in a distinct and secure area with adequate ventilation, safety signs (e.g. no smoking), roofing and bunding. Different liquid wastes should not be mixed under any circumstances as mixing some liquids (such as oil and chlorine) may create an explosion hazard.

### Hazardous waste programs

There are established recovery programs dealing with particular hazardous wastes that some facilities may participate in. The major programs include the following:

- > Detox Your Home ([www.sustainability.vic.gov.au/www/html/2057-detox-your-home-timetable.asp](http://www.sustainability.vic.gov.au/www/html/2057-detox-your-home-timetable.asp)) is a Victorian program for the recovery of domestic paint, cleaners, pesticides and other hazardous items.
- > drumMUSTER ([www.drummuster.com.au](http://www.drummuster.com.au)) is the national program for the collection and recycling of empty, triple-rinsed, non-returnable crop production and on-farm animal health chemical containers.
- > Chemclear ([www.chemclear.com.au](http://www.chemclear.com.au)) is a rural waste chemical program. You can register interest in collection and disposal of rural chemicals.

## 4.7 Emergency response and fire control

An emergency management plan must be developed in accordance with WorkSafe Victoria's *Compliance Code: Workplace amenities and work environment 2008*. Emergency response procedures must be developed for accidents, injuries, fires, spills, explosions and similar potential incidents such as bomb threats and workplace violence. Reference should be made to *Worksafe Victoria, Workplace violence and bullying June 2005*. The procedures must document after-hours contacts (name, address and phone number) and relevant authorities to be contacted. Site operators must ensure that staff are aware of the procedures to be followed in the event of an emergency. These procedures should be practised at least twice a year to maintain readiness and enable improvements to be made. Where appropriate, trials with local emergency services should be undertaken.

In an emergency, facility operators may agree to temporarily store unacceptable waste. Procedures must be in place to ensure this is done only with the written approval of the EPA and any other relevant authorities, and that correct environmental and safety measures are followed.

Site operators must be equipped with adequate fire fighting facilities and must take immediate action if a fire occurs. To minimise fire risk, a limited number of tyres (no more than 200) should be stored. Green organics storage areas must incorporate adequate fire protection measures (see Section 4.4).

## 4.8 Community consultation and education

### Consultation

As part of the local community, facility managers should engage with and take into consideration community views. A contact number should be included on signs and any suggestions to improve the facility should be noted and assessed. The site operations manual should cover procedures for complaints, including:

- > recording details of the complaint (including date and time)
- > identifying the cause of the complaint
- > taking action to prevent further complaints where necessary
- > providing feedback to the complainant detailing actions taken
- > reporting complaints received on an annual basis.

### Education

The efficient operation of the facility depends on community support and appropriate use. Facility operators should help users to understand the operation through guidance, supervision, signs, posters and/or pamphlets as appropriate.

Where appropriate, Category 2 and 3 facility operators may give additional consideration to the establishment of a dedicated education area, community open days and tours, or other community engagement activities (e.g. an artist-in-residence program).

## 4.9 Equipment operation and maintenance

### Plant and equipment

Facility operators should provide appropriate equipment and machinery to enable workers to carry out their responsibilities effectively and safely. Equipment should comply with relevant standards and legislation. Employees, particularly the site health and safety representative(s), should be consulted before any new equipment or plant is purchased and a risk assessment of the new plant carried out.

Only licensed and trained personnel should operate equipment. Training records should be maintained and there should be documented risk assessments and safe operating procedures for all plant and equipment. Employees should be made aware of any known hazards associated with the work, vehicle, plant or equipment with which they will be required to work. The operator should ensure that users complete pre-start inspections/checklists prior to daily use and that records of these actions are maintained. Training should be provided in the procedure for reporting any defect in a vehicle, plant item, machine, equipment or work system, and a 'tag out' procedure should be implemented for faulty equipment. Back-up equipment or contingency arrangements should be in place to enable the continued operation of the facility.

Plant, equipment, vehicles and tools should be properly certified, maintained and inspected on a regular basis. Responsibility for these tasks should be assigned to employees or contractors having the required competencies, licences or certificates. A maintenance program should be developed in accordance with manufacturers' guidelines, together with a maintenance register that links to the defective plant/equipment reports and 'tag out' procedure. Maintenance records and faulty equipment reports must be maintained, and where feasible a maintenance history file for each item of plant and equipment should be kept.

### Signage

Signage at the centre should be maintained to ensure that all site directions, traffic control measures and safety instructions are clear and legible to facility users.

## 4.10 Traffic management

Traffic management procedures should be developed in consultation with employees. These should address vehicles entering or leaving the site, or vehicles used at the workplace, and should ensure that:

- > adequate staff supervision is provided to ensure that no employee, contractor or customer stands in the body of trucks, utes or other vehicles while moving; this is strictly prohibited and all such incidents involving employees or contractors should be reported and followed up with disciplinary processes
- > all transfer vehicles are fitted with appropriate visible safety signs and roof-mounted flashing lights
- > transfer trailers are fitted with an audible warning device and flashing rear lamps, and these are used during unloading
- > employees and contractors wear high visibility and reflective clothing when working in areas where vehicle movement occurs
- > fall protection systems are established for staff or contractors who need to climb on their vehicle to place or remove tarpaulins
- > all employees and contractors are inducted to the site OHS and traffic management procedures.

## 4.11 Monitoring

### OHS workplace inspections

Regular workplace hazard inspections should be conducted. Working with the site OHS representative or committee, the site management should document hazards to be inspected and prepare inspection checklists and an inspection calendar. Any issues identified should have appropriate risk controls put in place and staff advised of the revised requirements.

Daily pre-start checklists should be completed for all items of plant and equipment. Completed inspection checklists should be kept in a place that can be accessed by all employees.

### Other monitoring

Regular monitoring of litter, stormwater drains, leachate ponds and litter entrapment devices should be conducted to ensure the facility does not negatively impact on the surrounding environment. Where applicable, regular monitoring should also be conducted of green organics stockpiles and storage areas for oil, batteries and chemicals.

All facilities should also monitor and record:

- > the number of users of the facility
- > the quantity and composition of materials accepted at the site
- > the source of the material accepted (industrial or municipal) so that an appropriate landfill levy can be calculated if it is disposed to landfill
- > the quantity and composition of recovered materials and residual waste taken from the site and their destination
- > incidents involving the deposit of unacceptable waste types and resultant actions
- > customer complaints
- > equipment and infrastructure maintenance.

It is important that consistent data monitoring techniques are utilised at all facilities so that comparable data is obtained, particularly for waste acceptance data. For ease of access, this data should preferably be maintained on computer, with secure off-site back-up of data. All records should be periodically collated and reviewed to identify any anomalies. Regular reports should be made available to facility operators and appropriate stakeholders.

Category 3 facilities should monitor and record traffic movements so that growth projections can be considered in reviews of the traffic management plan.

Facilities should be periodically audited (preferably annually) to ensure the measures in place to address potential impacts from the site are effective. A checklist that may assist with periodic audits is provided in Appendix A and this should be customised to individual site needs as required.

## 4.12 Other management aspects

### Supervision

Resource recovery centres should be supervised at all times when open. Supervision of facility users is required to ensure that:

- > unacceptable material is detected prior to disposal
- > resource recovery is maximised
- > materials are correctly placed, especially batteries, oils and other potentially hazardous waste
- > a safe operating environment is maintained.

The general public must not be allowed to enter a container or push-pit area under any circumstances. Children are not permitted out of the vehicle they are travelling in.

Category 2 and 3 facilities should ensure there is at least one staff member dedicated solely to the unloading area to supervise facility users.

Staff should be supervised to ensure correct procedures and safe work instructions are followed.

### Staff training

Staff should be inducted into the site operating procedures and receive training that enables them to do their job safely and properly. Training would be expected to include:

- > identification of material types (particularly hazardous wastes)
- > information on the health risks posed by site hazards
- > safe operational procedures
- > methods for supervising facility users
- > safe manual handling techniques
- > emergency response procedures (including spill and fire management)
- > first aid
- > methods for countering workplace bullying, violence and management of customer complaints.

The site operations manual should be readily available to all staff as a reference should they be in doubt of any procedures. The operations manual and staff training programs should be updated regularly to reflect any changes.

### First aid

WorkSafe Victoria's draft *Compliance Code: First Aid in the Workplace March 2008* provides guidance on first aid requirements in Victorian workplaces. Employers are required to provide first aid equipment including:

- > at least one adequate first aid kit for the site and kits in the cabins of each machine/plant used on site
- > appropriate first aid signage
- > trained first aid officer(s) holding appropriate accreditation
- > a well-maintained register of first aid staff.

At least one trained first aid officer should be available on-site during each shift.

### Personal protective equipment

If a risk is evident and cannot be eliminated or controlled, staff should be provided with appropriate protective clothing and equipment and must be inducted and trained in its use and maintenance. Operators should ensure that staff wear appropriate personal protective equipment and suitable footwear.

Personal protective equipment should not affect communication or introduce other risks. Facilities for cleaning and storing of protective equipment should be provided.

### Workplace standards

WorkSafe Victoria's *Compliance Code: Workplace Amenities and Work Environment 2008* requires employers to provide certain minimum amenities for their staff. These include:

- > a supply of drinking water
- > toilet facilities
- > washing facilities (including showers where relevant)
- > dining areas
- > change rooms
- > personal storage facilities
- > UV protection
- > effective means of emergency communication
- > a comfortable temperature range (outdoor workers should be protected from extremes of weather by the erection of a shelter, tent or windbreak or provision of suitable clothing).

Additional amenities may be required depending on the facility's size and number of employees. Consumables (such as soap and toilet paper) must be replenished and a regular cleaning schedule established.

### **Site security**

Where a safe is kept on-site, procedures should be implemented to adequately guard against theft. Cash should not be left on-site overnight. Consideration should be given to reducing the need for acceptance of cash by encouraging alternative payment options (e.g. electronic transfer, credit card).

Consideration should also be given to the security of recovered materials, particularly those that may experience high commodity prices such as copper and other metals. Management responses may include storage in a secure area (where feasible) and regular clearance of stockpiles.

Additional security measures, such as guard dogs, security patrols, electronic alarms and closed circuit television may be appropriate.

### **Insurance**

Adequate insurance should be held by facility operators to cover fire, theft and malicious damage. Adequate public liability insurance must also be held to cover injuries and damage sustained by facility users.

## 5. Rehabilitation

Rehabilitation of a resource recovery centre should involve removal of all waste and other materials deposited at the site and all infrastructure and equipment not required for the site's future use.

The future use of the site should be determined in consultation with the local community, planning authorities and other relevant stakeholders. An assessment of soil quality may be appropriate prior to establishing the scope of any rehabilitation activities. Rehabilitation may include landscaping or paving areas of bare earth, ensuring site drainage will not result in pooling of water on site, and so on.

If the site is to be sold, site owners should obtain an independent audit to confirm that the site has been adequately rehabilitated and that there will be no ongoing impacts from the site as a result of its use as a resource recovery centre.

The most likely ongoing impact as a result of a site's use as a resource recovery centre is illegal dumping of waste. Regular post-closure monitoring should be undertaken and if dumping is found to be an on-going issue, appropriate response strategies should be developed and implemented. These may include:

- > informing the community of alternative disposal facilities
- > community education detailing the potential impacts of illegal dumping
- > introduction of enforcement action (e.g. fines)
- > creating physical barriers to illegal dumping 'hot-spots' (e.g. by preventing access to the site).

## 6. Further information

The following documents are referred to in the Guide or provide further information relevant to resource recovery centres.<sup>1</sup>

### Legislation

*Australian Heritage Council Act 2003* (Commonwealth)  
*Dangerous Goods Act 1985*  
*Environment Protection Act 1970*  
*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)  
*Equipment (Public Safety) Act 1994*  
*Heritage Act 1995*  
*Natural Heritage Trust of Australia Act 1997* (Commonwealth)  
*Occupational Health and Safety Act 1991* (Commonwealth)  
*Occupational Health and Safety Act 2004*  
*Planning and Environment Act 1987*  
*Road Transport (Dangerous Goods) Act 1995*  
*Road Transport Reform (Dangerous Goods) Act 1995* (Commonwealth)

### Regulations and policies

Dangerous Goods (Explosives) Regulations 2000  
Dangerous Goods (Storage and Handling) Regulations 2000  
Environment Protection (Environment and Resource Efficiency Plans) Regulations 2007  
Environment Protection (Prescribed Wastes) Regulations 1998  
Environment Protection (Scheduled Premises and Exemptions) Regulations 2007  
Environment Protection (Vehicle Emissions) Regulations 2003  
Environment Protection and Biodiversity Conservation Regulations 2000 (Commonwealth)  
Equipment (Public Safety) Regulations 2007  
Occupational Health and Safety Regulations 2007  
Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995 (Commonwealth)  
Road Transport (Dangerous Goods) (Licence Fees) Regulations 1998

Road Transport Reform (Dangerous Goods) Regulations 1997 (Commonwealth)  
State Environment Protection Policy (Air Quality Management)  
State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N1  
State Environment Protection Policy (Groundwaters of Victoria)  
State Environment Protection Policy (Prevention and Management of Contaminated Land)  
State Environment Protection Policy (Waters of Victoria)

### Australian Standards

AS1319 Safety Signs for the Occupational Environment  
AS1680.1 Interior and Workplace Lighting  
AS1742 Manual of Uniform Traffic Control Devices  
AS2293.3 Emergency Escape Lighting and Exit Signs for Buildings – Emergency Escape Luminaries and Exit Signs  
AS3760 In Service Safety Inspection and Testing of Electrical Equipment  
AS4024.1 Safety of Machinery  
AS4360 Risk Management  
AS4419 Soils for Landscaping and Garden Use  
AS4454 Composts, Soil Conditioners and Mulches  
AS4801 Occupational Health and Safety Management Systems – Specification with Guidance for Use  
AS5761 In Service Safety Inspection and Testing – Second-hand Electrical Equipment Prior to Sale  
AS5762 In Service Safety Inspection and Testing – Repaired Electrical Equipment  
AS/ISO9001 Quality Management Systems – Requirements  
AS/ISO14001 Environmental Management Systems – Requirements with Guidance for Use  
AS/ISO14021 Environmental Labels and Declarations – Self-declared Environmental Claims

<sup>1</sup> New regulations will be released in 2009

## Guide to Best Practice

at Resource Recovery Centres

### Guidelines and codes of practice

EPA Publication 347 (December 1992) *Bundling Guidelines*

EPA Publication 508 (June 1996) *Environmental Guidelines for Composting and Other Organic Recycling Facilities*

EPA Publication 739 (June 2002) *Guidelines for the Preparation of Environment Improvement Plans*

WorkSafe Victoria (September 2008) *Compliance Code: Managing Asbestos in Workplaces*

WorkSafe Victoria (March 2008) (draft) *Compliance Code: Communicating Occupational Health and Safety across Languages*

WorkSafe Victoria (March 2008) (draft) *Compliance Code: First Aid in the Workplace*

WorkSafe Victoria (September 2008) *Compliance Code: Workplace Amenities and Work Environment*

### Sustainability Victoria publications

*ResourceSmart Guide to Organics Recovery 2009*

*Towards Zero Waste Strategy 2005*

*Resale Centre Management Plan – Large Resale Centres 2007*

*Resale Centre Management Plan – Small to Medium Resale Centres 2007*

*Signs for Transfer Stations and Landfills,*  
<http://www.sustainability.vic.gov.au/www/html/1946-signs-for-transfer-stations-and-landfills.asp>

### Other

EPA Publication 275 (May 1991) *Construction Techniques for Sediment Pollution Control*

EPA Publication 364.1 (October 2002) *The Transport and Disposal of Waste Asbestos*

EPA Publication 1100 (April 2007) *Classification for Large Containers Contaminated with Prescribed Industrial Waste*

EPA Publication 1102 (April 2007) *Classification for Used Oil Filters*

Planning Schemes

Regional Waste Management Plans

*Metropolitan Waste and Resource Recovery Strategic Plan* (March 2009)

WorkSafe Victoria (June 2003) *Non-hazardous waste and recyclable materials*

WorkSafe Victoria (July 2003) *Industrial waste safe handling*

WorkSafe Victoria (January 2005) *Transport of waste and recyclables: prevention of falls*

WorkSafe Victoria (April 2005) *Waste industry guide for working near overhead electrical cables*

WorkSafe Victoria (January 2007) *Recycling construction and demolition material*

WorkSafe Victoria (June 2007) *Health and safety guide to plant*

WorkSafe Victoria (June 2007) *Health and safety guide to workplace amenities and first aid*

WorkSafe Victoria (June 2007) *Waste industry using hooklifts and constructing and modifying waste bins and containers*

WorkSafe Victoria (July 2007) *Consultation on health and safety: a handbook for workplaces*

WorkSafe Victoria (July 2007) *Machinery and equipment safety: an introduction*

WorkSafe Victoria (October 2007) *Planning for safer plant operations: a toolkit for safe maintenance, repair, installation, servicing and cleaning of machinery and equipment*

# Appendix A

## Assessment checklist for resource recovery centres

This checklist has been provided for guidance purposes. It is recommended that operators tailor the checklist to meet their specific requirements. Auditors or inspectors from various authorities may use the checklist for assessing site performance. The checklist does not cover occupational health and safety issues as sufficient guidance is available in the various WorkSafe Victoria guidance documents.

In addition to the general information below, the checklist has separate sections on:

- > planning and siting
- > design and construction
- > operation and management.

The following symbols are used in the checklist:

✓ = expected      ◆ = recommended

### General Information

Facility name	
Facility address	
Site owner ( <i>contact name, organisation, contact details</i> )	
Site operator ( <i>contact name, organisation, contact details</i> )	
Council	
Date checklist completed	
Personnel completing checklist ( <i>name, position, organisation, signature, contact details</i> )	

# Planning and siting assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

Ref	Requirement	Met?	Details
1.1	What category size is the facility?		
2.1	Has the need for the facility been demonstrated and documented?	Yes / No	
2.2	Who will the facility customers be and what materials will be accepted at the facility?		
2.2	What materials will be recovered at the facility?		
	> glass bottles and jars	Yes / No	
	> plastic containers	Yes / No	
	> aluminium cans	Yes / No	
	> scrap steel	Yes / No	
	> other metals (ferrous and non-ferrous)	Yes / No	
	> newspapers, cardboard, magazines and office paper	Yes / No	
	> green organics	Yes / No	
	> timber (uncontaminated)	Yes / No	
	> lead acid batteries	Yes / No	
	> waste oil	Yes / No	
	> gas bottles	Yes / No	
	> computers, televisions and electronic goods (e-waste)	Yes / No	
	> bricks, concrete and tiles	Yes / No	
> clean soil (uncontaminated)	Yes / No		

# Planning and siting assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

Ref	Requirement	Met?	Details
2.2	Material pathways: > How much of each material type is expected to be deposited at the facility? (estimates should be projected over the anticipated life of the facility)		
	> What markets exist or can be developed for recovered materials?		
	> Where will waste from the facility be taken for disposal and what is the travel distance (km)?		
	> How much of each segregated material type is expected to be taken from the facility? (estimates should be projected over the anticipated life of the facility)		
2.2	Does the facility provide infrastructure for the collection of those recyclables listed in the guide?	Yes / No	
2.3	What type of residual waste infrastructure is to be used?		
2.4	Does the local planning scheme allow the site to be used as a resource recovery centre?	Yes / No	
2.4	What area is required for the facility? (ha)		
2.4	What is the minimum threshold distance to sensitive land uses set out in the local planning scheme?		
2.4	Is the site listed on the Victorian Heritage Register?	Yes / No	
2.4	Does the site contain Indigenous heritage?	Yes / No	

# Planning and siting assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

Ref	Requirement	Met?	Details
2.4	Will previous site uses restrict the use of the site as a resource recovery centre?	Yes / No	
2.4	Is the facility located at an acceptable distance from expected facility users?	Yes / No	
2.4	Is the facility located at an economically viable distance from residual waste disposal sites and resource processing plants?	Yes / No	Material:
			Distance (km):                  Travel time:
			Material:
			Distance (km):                  Travel time:
			Material:
			Distance (km):                  Travel time:
			Material:
			Distance (km):                  Travel time:
			Material:
			Distance (km):                  Travel time:
			Material:
			Distance (km):                  Travel time:
			Material:
			Distance (km):                  Travel time:
			Material:
			Distance (km):                  Travel time:
2.4	Is the site gently sloping or undulating?	Yes / No	
2.4	Have local climatic conditions been considered? (e.g. wind direction and strength)	Yes / No	
2.4	Does the site have a high water table?	Yes / No	

# Planning and siting assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

Ref	Requirement	Met?	Details
2.4	Is the site in a region of groundwater recharge of discharge?	Yes / No	
2.4	Does the site contain areas of ecological significance?	Yes / No	
2.4	Is a flora and fauna study of the site required? If so, has it been completed?	Yes / No	
2.4	Could existing vegetation be used to screen the site?	Yes / No	
2.4	Will the facility significantly affect existing road traffic?	Yes / No	
2.4	Has a traffic impact assessment been completed? (only required for category 2 and 3 facilities)	Yes / No	
2.4	Does the site have access to power, sewer, reticulated water and communications?	Yes / No	
2.5	Has a community consultation plan been developed?	Yes / No	
2.6	Has the site selection process outlined in the <i>Guide to Best Practice at Resource Recovery Centres</i> been followed?	Yes / No	
2.6	Has the proposed facility been discussed with council?	Yes / No	

# Design and construction assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

The *Guide to Best Practice at Resource Recovery Centres* is referred to in the checklist as 'the guide'.

Ref	Requirement	Required for category			Met?	Details	Comments
		1	2	3			
3.1	Has a risk assessment of the draft design been completed?	✓	✓	✓	Yes / No		
3.2	Is the site layout consistent with the guide?	◆	✓	✓	Yes / No		
3.3	Has the use of sustainable building materials been considered?	✓	✓	✓	Yes / No		
3.3	Has the facility been designed to minimise water and energy use?	✓	✓	✓	Yes / No		
3.3	Has the facility been designed to minimise greenhouse gas emissions?	✓	✓	✓	Yes / No		
3.3	Does the facility design minimise impacts on areas of ecological significance?	✓	✓	✓	Yes / No		
3.4	Does the facility design maximise resource recovery while minimising contamination?	✓	✓	✓	Yes / No		
3.4	Have separate areas for green organics been provided?	◆	✓	✓	Yes / No		

# Design and construction assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

The *Guide to Best Practice at Resource Recovery Centres* is referred to in the checklist as 'the guide'.

Ref	Requirement	Required for category			Met?	Details	Comments
		1	2	3			
3.4	Are green organics stockpiles designed in accordance with the guide?	◆	✓	✓	Yes / No		
3.4	Is construction and demolition waste recovered?	◆	✓	✓	Yes / No		
3.4	Are construction and demolition stockpiles designed in accordance with the guide?	◆	✓	✓	Yes / No		
3.4	Is the waste oil facility designed in accordance with the guide?	◆	✓	✓	Yes / No		
3.4	Is the resale shop designed in accordance with the guide?	◆	✓	✓	Yes / No		
3.4	Has legal advice on the resale of items been sought?	◆	✓	✓	Yes / No		
3.5	Is the facility designed to minimise litter in accordance with the guide?	✓	✓	✓	Yes / No		
3.5	Is the facility designed to minimise odour in accordance with the guide?	✓	✓	✓	Yes / No		

# Design and construction assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

The *Guide to Best Practice at Resource Recovery Centres* is referred to in the checklist as 'the guide'.

Ref	Requirement	Required for category			Met?	Details	Comments
		1	2	3			
3.5	Is the facility designed to minimise dust in accordance with the guide?	✓	✓	✓	Yes / No		
3.5	Is the facility designed to minimise vermin in accordance with the guide?	✓	✓	✓	Yes / No		
3.5	Is the facility designed to prevent contamination of stormwater in accordance with the guide?	✓	✓	✓	Yes / No		
3.5	Is leachate managed in accordance with the guide?	◆	✓	✓	Yes / No		
3.5	Is the facility designed to minimise noise impacts in accordance with the guide?	✓	✓	✓	Yes / No		
3.6	Do site structures comply with relevant building codes, building and planning regulations and the guide?	✓	✓	✓	Yes / No		
3.6	Does the site gatehouse meet the requirements of the guide?	◆	✓	✓	Yes / No		
3.6	Does plant and equipment design meet the requirements of the guide?	✓	✓	✓	Yes / No		

# Design and construction assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

The *Guide to Best Practice at Resource Recovery Centres* is referred to in the checklist as 'the guide'.

Ref	Requirement	Required for category			Met?	Details	Comments
		1	2	3			
3.6	Have adequate safety barriers and fall prevention devices been incorporated into the site design?	✓	✓	✓	Yes / No		
3.6	Do the site utilities comply with the guide?	✓	✓	✓	Yes / No		
3.6	Has site security been provided in accordance with the guide?	✓	✓	✓	Yes / No		
3.7	Are roads and traffic management devices designed in accordance with relevant Australian Standards?	✓	✓	✓	Yes / No		
3.7	Is the site access designed in accordance with the guide?	✓	✓	✓	Yes / No		
3.7	Is traffic flow and control in accordance with the guide?	✓	✓	✓	Yes / No		
3.8	Is signage designed in accordance with the relevant Australian Standards?	✓	✓	✓	Yes / No		
3.8	Does the signage meet the requirements of the guide?	✓	✓	✓	Yes / No		

# Operation and management assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

The *Guide to Best Practice at Resource Recovery Centres* is referred to in the checklist as 'the guide'.

Ref	Requirement	Required for category			Met?	Details	Comments
		1	2	3			
3.9	Have adequate measures been identified and implemented to minimise environmental impacts of the facility construction?	✓	✓	✓	Yes / No		
4.1	Has a formal risk control process been established and implemented?	✓	✓	✓	Yes / No		
4.1	Have OHS hazards been identified and risks assessed?	✓	✓	✓	Yes / No		
4.1	Have operational and management procedures been documented and implemented?	✓	✓	✓	Yes / No		
4.1	Has an OHS Plan been prepared for the site? (can be incorporated into a site operations manual)	✓	✓	✓	Yes / No		
4.2	Are operational and management procedures available to site staff with a copy on site?	◆	✓	✓	Yes / No		
4.2	Has a site operations manual been completed?	◆	✓	✓	Yes / No		
4.3	Do purchasing decisions consider the environmental footprint of products?	✓	✓	✓	Yes / No		

# Operation and management assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

The *Guide to Best Practice at Resource Recovery Centres* is referred to in the checklist as 'the guide'.

Ref	Requirement	Required for category			Met?	Details	Comments
		1	2	3			
4.3	Are water and energy used efficiently on site?	✓	✓	✓	Yes / No		
4.3	Are greenhouse gas emissions minimised?	✓	✓	✓	Yes / No		
4.3	Is the carbon footprint of the site measured?	◆	◆	✓	Yes / No		
4.4	Are the objectives of resource recovery being promoted throughout the local community?	✓	✓	✓	Yes / No		
4.4	Is site cleanliness maintained?	✓	✓	✓	Yes / No		
4.4	Are the material types recovered regularly reviewed?	✓	✓	✓	Yes / No		
4.4	Are facility users encouraged to separate recoverable materials?	✓	✓	✓	Yes / No		
4.4	If on-site processing occurs, does it comply with the guide?	✓	✓	✓	Yes / No		

# Operation and management assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

The *Guide to Best Practice at Resource Recovery Centres* is referred to in the checklist as 'the guide'.

Ref	Requirement	Required for category			Met?	Details	Comments
		1	2	3			
4.4	Are green organics managed in accordance with the guide?	✓	✓	✓	Yes / No		
4.4	Are construction and demolition stockpiles regularly monitored and their size recorded?	✓	✓	✓	Yes / No		
4.4	Is the waste oil facility operated in accordance with the guide?	◆	✓	✓	Yes / No		
4.4	Is the resale shop operated in accordance with the guide?	◆	◆	✓	Yes / No		
4.4	Is legal advice on the resale of items regularly updated?	✓	✓	✓	Yes / No		
4.5	Does the facility have documented procedures to manage potential environmental impacts?	✓	✓	✓	Yes / No		

# Operation and management assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

The *Guide to Best Practice at Resource Recovery Centres* is referred to in the checklist as 'the guide'.

Ref	Requirement	Required for category			Met?	Details	Comments
		1	2	3			
4.5	Are the following managed in accordance with the guide: > litter?	✓	✓	✓	Yes / No		
	> odour?	✓	✓	✓	Yes / No		
	> dust?	✓	✓	✓	Yes / No		
	> stormwater?	✓	✓	✓	Yes / No		
	> vermin?	✓	✓	✓	Yes / No		
	> noise?	✓	✓	✓	Yes / No		
	> aesthetic appearance of facility?	✓	✓	✓	Yes / No		
4.6	Are all materials inspected as they enter the facility?	◆	✓	✓	Yes / No		
4.6	Does the facility have documented hazardous waste management procedures?	✓	✓	✓	Yes / No		
4.6	Are facility operators trained in the identification and management of hazardous waste?	✓	✓	✓	Yes / No		
4.6	Does the facility have an asbestos disposal bin on-site?	◆	◆	✓	Yes / No		
4.6	Is asbestos managed in accordance with the guide?	◆	✓	✓	Yes / No		

# Operation and management assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

The *Guide to Best Practice at Resource Recovery Centres* is referred to in the checklist as 'the guide'.

Ref	Requirement	Required for category			Met?	Details	Comments
		1	2	3			
4.6	Are gas bottles managed in accordance with the guide?	✓	✓	✓	Yes / No		
4.6	Are batteries managed in accordance with the guide?	✓	✓	✓	Yes / No		
4.6	If liquid waste is accepted, is it managed in accordance with the guide?	◆	✓	✓	Yes / No		
4.7	Are after hours emergency contacts documented?	✓	✓	✓	Yes / No		
4.7	Are emergency response procedures practised at least twice a year?	✓	✓	✓	Yes / No		
4.7	Are fire control operations in accordance with the guide?	✓	✓	✓	Yes / No		
4.8	Are community consultation and education conducted in accordance with the guide?	✓	✓	✓	Yes / No		
4.8	Does the facility have a documented complaints management procedure?	✓	✓	✓	Yes / No		

# Operation and management assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

The *Guide to Best Practice at Resource Recovery Centres* is referred to in the checklist as 'the guide'.

Ref	Requirement	Required for category			Met?	Details	Comments
		1	2	3			
4.9	Are plant, equipment and machinery operated in accordance with the guide, Australian Standards and manufacturer's guidelines?	✓	✓	✓	Yes / No		
4.9	Is supplementary machinery available in the event of breakdown?	✓	✓	✓	Yes / No		
4.9	Has infrastructure been kept in good working order by means of a regular maintenance program?	✓	✓	✓	Yes / No		
4.10	Are traffic management procedures in place?	◆	✓	✓	Yes / No		
4.10	Are staff issued with high visibility clothing?	✓	✓	✓	Yes / No		
4.11	Have regular workplace inspections been carried out?	✓	✓	✓	Yes / No		
4.11	Has the facility undergone regular monitoring in accordance with the guide?	✓	✓	✓	Yes / No		
4.11	Have monitoring results been recorded in accordance with the guide?	✓	✓	✓	Yes / No		

# Operation and management assessment checklist

The following symbols are used in the checklist: ✓ = expected ◆ = recommended

The *Guide to Best Practice at Resource Recovery Centres* is referred to in the checklist as 'the guide'.

Ref	Requirement	Required for category			Met?	Details	Comments
		1	2	3			
4.11	Have traffic movements been monitored and recorded?	◆	✓	✓	Yes / No		
4.11	Has an annual report of monitoring results been produced?	◆	✓	✓	Yes / No		
4.11	Has the facility undergone periodic audits?	✓	✓	✓	Yes / No		
4.12	Do the following meet the requirements of the guide:						
	> supervision?	✓	✓	✓	Yes / No		
	> staff training?	✓	✓	✓	Yes / No		
	> first aid?	✓	✓	✓	Yes / No		
	> personal protective equipment?	✓	✓	✓	Yes / No		
	> workplace standards?	✓	✓	✓	Yes / No		
	> additional site security?	✓	✓	✓	Yes / No		
	> insurance?	✓	✓	✓	Yes / No		

## Closure and Rehabilitation

All requirements listed are expected to be carried out.

Ref	Requirement	Met?	Details	Comments
5	Has closure been discussed with council and RWMG?	Yes/No		
5	Is proposed use of site in line with planning requirements?	Yes/No		
5	Are alternative facilities available to community?	Yes/No		
5	Is closure in line with contracts for transport of materials off-site? If not, have alternative contractual arrangements been implemented?	Yes/No		
5	Has a site audit been carried out by qualified auditor to assess potential contamination?	Yes/No		
5	Are users aware of closure date and alternative facilities for use?	Yes/No		
5	Has signage been installed to direct users to alternative facilities?	Yes/No		
5	Have systems been put in place to deter illegal dumping?	Yes/No		
5	Has all waste and recovered material been removed from the site?	Yes/No		
5	Have infrastructure, utilities and services been de-commissioned and/or removed in line with future use?	Yes/No		
5	If applicable, has demolished material been recycled where practicable?	Yes/No		
5	If applicable, has site rehabilitation been carried out in accordance with audit requirements?	Yes/No		

## Closure and Rehabilitation

All requirements listed are expected to be carried out.

Ref	Requirement	Met?	Details	Comments
5	If applicable, has site landscaping been completed to make site safe and protect surrounding environment?	Yes/No		
5	Has an appropriate post-closure monitoring program been put in place?	Yes/No		

**Guide to Best Practice**  
at Resource Recovery Centres

For further information and enquiries,  
please contact:

Sustainability Victoria  
Urban Workshop  
Level 28, 50 Lonsdale Street  
Melbourne  
Victoria 3000  
Ph: +61 (03) 8626 8700  
Fax: +61 (03) 9663 1007  
Email: [info@sustainability.vic.gov.au](mailto:info@sustainability.vic.gov.au)  
[www.sustainability.vic.gov.au](http://www.sustainability.vic.gov.au)