Guide to Better Practice at Resource Recovery Centres

Revised 2019

Sustainability Victoria

Guide to Better Practice
at Resource Recovery Centres

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01

About this guide

This guide sets out a better practice approach to developing, managing and operating resource recovery centres (RRCs) for owners, operators and other stakeholders.

This section looks at:

- RRCs and the waste and resource recovery sector
- Better practice at RRCs
- Classifying facilities by size
- How to use this guide
- Complying with legislation and regulations

1.1 RRCs and the waste and resource recovery sector

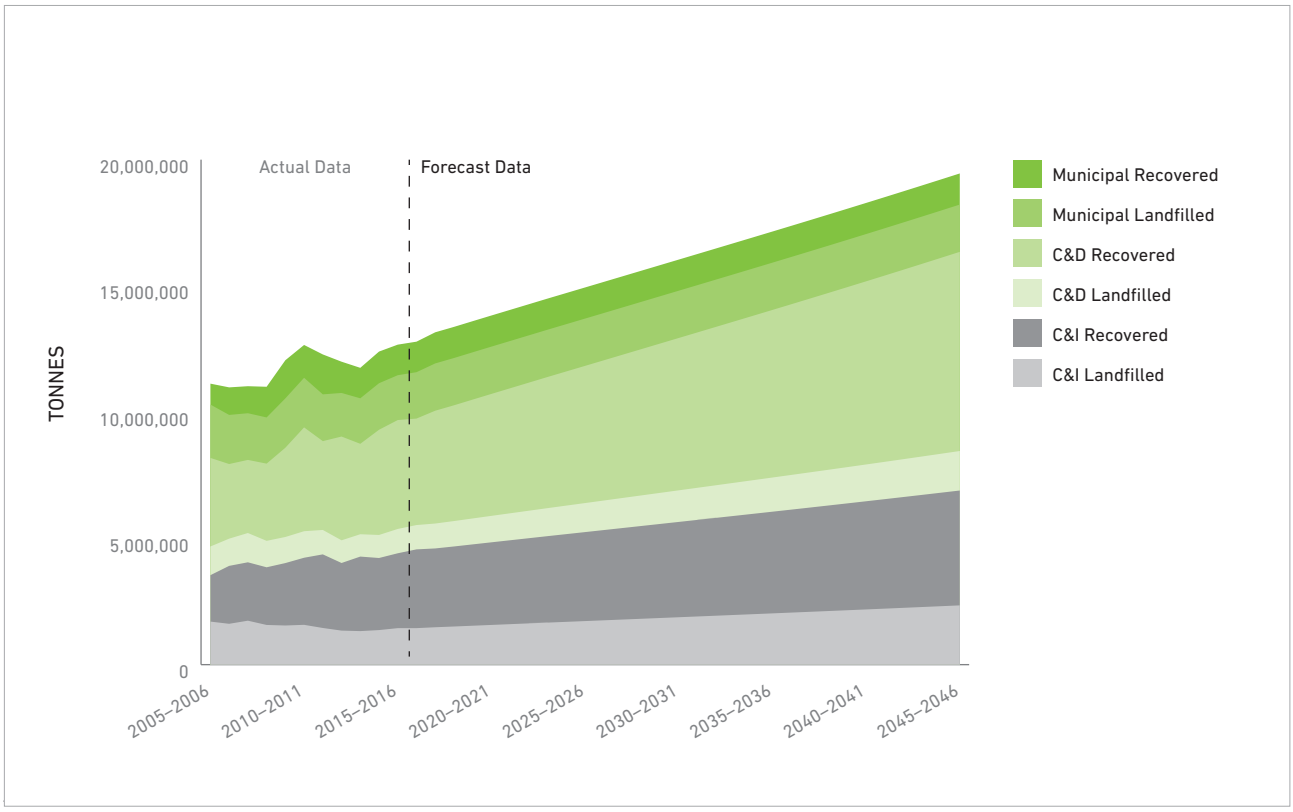
Waste is made up of many different materials, much of which can be recovered and reused. Some materials, if not managed properly, can affect the community, environment and public health.

Victoria's waste and resource recovery system managed more than 12.8 million tonnes of materials in 2016–17. With a growing population, improvements in waste management practices need to keep pace with the 21 million tonnes of waste expected to be generated each year by 2045 (see Figure 1).

RRCs, including transfer stations, process a large volume of the millions of tonnes of waste and materials generated each year by Victorians. They perform an essential service to local communities by providing a designated location to collect, sort and consolidate waste and recyclable materials.

Where viable, RRCs divert these materials away from landfill, which is essential to a circular economy. A circular economy is where waste is designed out, products and materials are kept circulating at their greatest value for as long as possible, and the natural environment is restored and protected. At Sustainability Victoria (SV), our vision is for a sustainable and thriving Victoria built on a circular economy.

Figure 1
Projected waste and materials recovered and landfilled (tonnes), business as usual scenario (2005–06 to 2044–45)[1]



1 Sustainability Victoria, *Statewide Waste and Resource Recovery Infrastructure Plan*, Melbourne, 2015.

1.2 Better practice at RRCs

RRCs need to be designed, constructed, operated and managed so they:

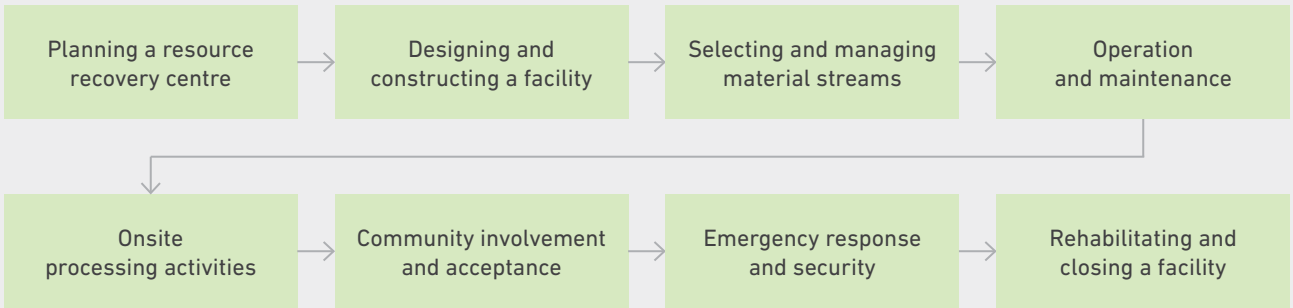
- maximise the value of recovered recyclable materials
- comply with local, state and federal regulations, legislation, guidelines and infrastructure plans
- meet the social and environmental expectations of the community
- are safe working environments without risks to health
- are economically sustainable.

A better practice approach aims to continually improve a facility as expectations, technology and standards change over time. Better practice can be applied to all activities at RRCs, as shown in Figure 2.

WHAT IS BETTER PRACTICE?

In this guide, we use 'better practice' in place of 'best practice'. Better practice focuses on continual improvement, where best practice implies that no further improvements or innovation are possible, once best practice is achieved. Better practice also takes into account the different needs and expectations of each facility. This includes having access to different financial, natural and other resources.

Figure 2
RRC activities



1.2.1 Benefits of better practice at RRCs

Better practice at RRCs benefits owners, operators and other stakeholders in many ways, including:

- improved environmental performance
- more resources diverted from landfill
- less risk of community complaints
- reduced environmental risk
- improved occupational health and safety (OHS)
- improved operational efficiencies
- a more sustainable long-term business model
- assistance when applying for funding or grants
- improving a facility's overall cost structure
- helping to mitigate against future changes in site design and operations if required by changes to licensing requirements.

Facilities that do not work towards better practice standards may face increased risk of environmental, social, health, safety, financial and insurance problems. They also increase the likelihood of receiving fines for non-compliance or negligence.

1.3 Classifying facilities by size

RRCs are classified into three categories according to the throughput of material managed at the site, as shown in Table 1. These facility classifications are useful for benchmarking and comparing facilities against others of a similar size.

Where relevant, the guide gives additional information for larger-sized facilities (Categories 2 and 3) that may be able to achieve greater economies of scale and operational efficiencies compared to smaller facilities. Smaller facilities should still consider all the guidance provided where practical.

We recognise that each facility is unique and has different needs and circumstances, so it is unrealistic to specify better practice standards by facility size — each facility should operate at the best level that they can practicably achieve.

Table 1
Facility classifications

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

1.4 How to use this guide

This guide will help you assess your facility either during site *development* (or upgrade) or while *operating and managing* a site.

You will assess your performance against five better practice performance areas (Table 2). You can read more about these performance areas and how they relate to RRCs in Section 2.

- If you are **DEVELOPING** a site:

  Read Sections 2 and 3, then complete the assessment questions in Section 4.

- If you are **OPERATING AND MANAGING** a site:

  Read Sections 2 and 5, then complete the assessment questions in Section 6.

BETTER PRACTICE ASSESSMENT WORKBOOK

You can also download a better practice workbook on the SV website at **www.sustainability.vic.gov.au** to complete your assessment. The workbook has the assessment questions from Sections 4 and 6.

Table 2
The five better practice performance areas

Performance area	Description
Risk management	Identifying hazards and controlling risks related to health and safety, the environment, emergencies, hazardous waste and dangerous goods
Meeting stakeholder needs	Meeting the needs of customers, the community, government, suppliers and other stakeholders
Financial sustainability	Achieving an acceptable balance between income (e.g. from gate rates) and costs (e.g. disposal and electricity costs)
Smart materials management	Designing and managing a facility to maximise operational efficiencies
Futureproofing	Ensuring that the facility has enough processing capacity and can meet future needs and challenges from changes in technology, legislation, population and other factors over time

1.5 Complying with legislation and regulations

RRCs must comply with relevant legislation and regulations, as well as any relevant compliance codes, guidelines and standards. Users are responsible for being aware of and meeting the legislative and regulatory requirements of the Environmental Protection Authority (EPA) and WorkSafe and keeping up to date with changes in legislation and policy at local, state and federal levels.

This guide was developed with input from a project advisory group consisting of industry and local and state government representatives. Relevant authorities including the EPA Victoria and WorkSafe Victoria were also consulted.

It gives practical and high-level guidance on achieving better practice in developing, operating and managing RRCs. All current and future legislation, regulation and standards relevant to RRCs supersedes the guidance in this document.

1.5.1 Legislative framework for RRCs

All resource recovery facilities should comply and be familiar with the EPA's *Waste Management Policy – Combustible Recyclable and Waste Material* (CRWM). This policy came into effect on 28 August 2018.

Under the policy, all combustible recyclable and waste materials must be managed and stored to protect human health and the environment from the risk of fire. Operators must take reasonable steps to prevent risks associated with fire at their premises, including managing stockpiles appropriately. To meet this requirement, operators must conduct a risk assessment and implement necessary controls.

The EPA provides practical guidance on how to comply with the policy in its guideline – *Management and storage of combustible recyclable and waste materials* (Publication 1667.2, October 2018). SV also developed a fact sheet in partnership with the EPA, which is available on the SV website at **www.sustainability.vic.gov.au**.

For more information, contact the EPA on 1300 372 842 or visit www.epa.vic.gov.au.

Under the *Occupational Health and Safety Act 2004* (OHS Act), employers and other persons (such as self-employed persons) have legal duties to control risks to health and safety within their workplaces, or arising from the conduct of their undertaking, so far as is reasonably practicable.

The Occupational Health and Safety Regulations 2017 (OHS Regulations) impose additional legal duties on employers and other persons to control the health and safety risks associated with many hazards, including (but not limited to):

- hazardous manual handling
- noise
- falls
- the use of plant, including equipment
- high-risk work (as defined by OHS Regulations)
- receiving and managing hazardous substances and asbestos-containing materials.

RRC operators may also have duties to control risks associated with the manufacture, storage, transport, transfer, sale and use of handling of dangerous goods under the *Dangerous Goods Act 1985* (DG Act) and associated regulations made under that Act, including the *Dangerous Goods (Storage and Handling) Regulations 2012* (DG (S&H) Regulations).

For more information

Refer to **Section 7.2 Legislation, Regulations and Standards** for a list of all legislation, regulations, compliance codes, guidelines and standards relevant to RRCs.

02

Better practice performance areas

This section looks at the five better practice performance areas including:

- Risk management
- Meeting stakeholder needs
- Smart materials management
- Financial sustainability
- Futureproofing

RRCs can work towards better practice by addressing these five better practice performance areas.

2.1 Risk management

Risk management is about identifying hazards, assessing the likelihood and impact of an incident occurring and implementing control measures to eliminate or reduce risks.

As a minimum, good risk management will consider how to:

- eliminate risks where reasonably practicable, or reduce risks so far as is reasonably practicable, to prevent incidents such as workplace injuries
- comply with legal duties required under environmental and OHS laws, including the EPA's waste management policies, and other requirements such as building codes and Australian Standards
- improve business outcomes by identifying and planning for events that may otherwise disrupt normal activities or impose additional costs.

The basic steps for risk management are:

1. Identify hazards
2. Assess risks
3. Implement risk controls
4. Review risk controls and revise if necessary

At RRCs, risk management processes should cover hazards and risks to protect human health and the environment. Facilities need to consider:

- the likelihood of the hazard or risk happening
- the degree of harm that could be caused
- what the people involved know about the hazard or risk
- what the people involved know about how to eliminate or reduce the hazard or risk
- the availability of ways to eliminate or reduce the hazard or risk
- the cost of eliminating or reducing the hazard or risk.

Figure 3
Performance areas

2.2 Meeting stakeholder needs

You will need to understand the needs of your stakeholders so you can meet and understand their requirements and create a positive working relationship with everyone who is affected by your facility.

Consulting stakeholders gives them the chance to have their say and you the chance to tell them what you do (or are proposing to do) and why it's important. This can potentially address concerns before they become issues or delay a project.

Meeting stakeholder needs can result in good outcomes for site operators, including:

- less complaints about the facility from customers, neighbours and other stakeholders
- better community support
- more visits from customers
- strengthened business relationships.

Table 3 lists some of the ways you can set up your facility to meet stakeholder needs.

Table 3
Meeting stakeholder needs

Factor	Consider
Legal duties	Make sure your facility complies with relevant legislation and regulations
Design	Set up the RRC so it can be adapted in future to expand and accept new recycling streams and initiatives (e.g. product stewardship items) Minimise impacts such as noise, littler, dust pollution and increased traffic movements
Siting	Meet requirements and customer expectations for facility siting and location, including distance from neighbouring properties, buffer zone restrictions, identified site of significance (within locations identified as hubs for waste and recycling)
Cater to local needs	Design the facility to cater for the volumes and types of waste and recyclables generated by the local community and businesses Understand the capacity and accepted materials of other facilities in the region Meet customer expectations for opening hours, levels of customer service, disposal fees and site cleanliness and aesthetics
Community support	Support government or community programs and initiatives (e.g. hosting educational facility tours for the public)
Other	Cooperate with other facilities in the region via regional waste and resource recovery groups Be prepared to help and have capacity to manage incoming waste from natural disaster events such as fire, wind or flooding

2.2.1 Types of stakeholders

Each RRC has unique requirements and may need to consult different stakeholder groups. Work out who your stakeholders are and how your development may affect them.

RRC stakeholders can include:

- users or customers of the facility, such as the local community, businesses and councils
- the operator of the facility and facility staff
- contractors that collect materials from site for reprocessing and recovery
- occupants of nearby properties (homes, farms or places of business) that may be affected by the facility's operations due to increased local traffic, higher noise levels, litter or dust caused by the site
- businesses such as scrap metal dealers that buy recovered or recycled products from site
- local, state and federal government responsible for:
  - facility licensing and development approvals
  - organisations delivering recycling and recovery programs (e.g. the National Television and Computer Recycling Scheme, DrumMuster, Paintback, Household Chemical Collection)
  - distributing grants and funding
- other waste management facilities (landfill, RRCs, materials recovery facilities) in the region.

The following sources and methods can help you identify stakeholders and their needs:

- strategic priorities outlined in the *Statewide Waste and Resource Recovery Infrastructure Plan* and regional waste and resource recovery implementation plans
- waste generation projections from regional waste and resource recovery implementation plans
- growth (or decline) in local communities, businesses and industries
- historical waste and recycling data and audits to understand the types and volumes of waste generated
- meetings with local council and the local community, businesses and industries
- surveys or focus groups to determine customer and/or community expectations for the facility
- consult with relevant government organisations such as SV, EPA Victoria, WorkSafe Victoria, Local Government Victoria, the Municipal Association of Victoria and your nearest waste and resource recovery group (see Section 7.1.5).

2.3 Smart materials management

Smart materials management involves designing and managing a facility so it:

- optimises traffic flow at the site
- maximises recovery of recyclables from mixed waste loads
- ensures materials suitable for reuse, recycling or resource recovery received at the site, have end markets, as well as efficient transport systems to their destinations.

Smart materials management has many positive outcomes for site operators, such as:

- lower operational costs
- more waste diverted from landfill
- less traffic congestion during peak visitation times
- increased revenue from the sale of recovered products
- more efficient use of energy and water through the equipment and processes implemented
- public health and environment protection.

Smart materials management relies on the way you design and operate your site, and how you engage with stakeholders, as listed in Table 4.

For more information

- Conduct site visits to high performing facilities
- Attend conferences and tradeshows focused on better practice sites, operations and equipment
- Attend regular meetings with suppliers and stakeholders
- Conduct online research

Table 4
Better practice smart materials management

Factors	Consider
Design	› Design site to encourage recycling first, with residual bins located at the end of the site › Separate customers from plant, equipment and machinery › Designate areas to safely unload without disturbing traffic flows › Be able to oversee customer activity
Operate	› Appropriate gate fees that encourage separation of recycling › Appropriate bins, containers or stillages for each material stream accepted onsite › Energy and water efficient equipment › Clear and appropriate signage in place › Regular collection schedule for materials received › Sustainable markets and efficient transportation arrangements for materials sent for recycling or resource recovery
Engage	› Include community education initiatives and programs in the facility's budget or contract › Publish a webpage or listing for the facility so customers can look up relevant information before their visit, such as accepted streams, costs for disposal and material streams accepted for free

2.4 Financial sustainability

RRC site operators need an acceptable balance between revenue (e.g. gate rates, sale of recyclables) and costs associated with operating the facility (e.g. labour, disposal, utilities). The sustainability of a facility's operating costs and revenues is essential for long-term operation.

For RRCs, financial sustainability involves:

- setting appropriate gate fees
- maximising revenue from sale of recovered or recycled products
- reducing costs of operating the site.

Many facilities face challenges to long-term financial sustainability due to rising costs of inputs, such as increasing labour and energy costs, and uncertainty in revenue received for recovered recyclables due to the price volatility of international commodity markets (e.g. a fall in the price of scrap metal).

Smaller and/or regional facilities face additional challenges for financial sustainability due to:

- lower population levels which reduce the amount of waste and recyclables received at the site so they cannot achieve the scales of operation achieved in metropolitan areas
- higher costs associated with transporting recovered recyclables long distances to end markets in metropolitan areas.

Facilities need to have sustainable operating costs, profits and benefits, while also keeping track of developments in government policy and programs.

To maintain sustainable operating costs, facilities should:

- minimise operational costs and maximise operational efficiencies
- structure gate fees to reflect costs of operation and provide an appropriate return on investment
- limit the materials accepted at regional and remote sites to those with a viable market for recovery
- consider consolidating site operations and/or facilities to achieve cost savings
- work with local and other relevant stakeholders to develop sustainable end markets for recovered recyclables (where practical), to reduce exposure to price volatility of international commodity markets
- manage opening hours effectively, particularly for regional or remote sites where the site may only be open for a select number of hours on set days or open seasonally for high tourism areas.

You should also keep track of developments in government policy and programs so you can:

- capitalise on opportunities to collaborate with regional counterparts (e.g. via waste and resource recovery groups) that could potentially deliver improved waste transport efficiencies, increased purchasing power and economies of scale
- plan for and respond more effectively to changes brought about by government policy and programs (e.g. product stewardship schemes)
- keep up to date on funding opportunities that align with the improvements you want to make at your site
- capitalise on opportunities to receive government funding for resource recovery initiatives.

You should also find ways to plan and respond to changes in costs and revenues brought about by external factors, including changes in the price for recovered recyclables and increases in landfill disposal costs and operational costs such as electricity and labour.

Table 5 summarises ways to achieve better practice financial sustainability.

For more information

- Monitor scrap metals prices
- Monitor landfill levies published on the EPA Victoria website
- Consult other buyers of recovered and recycled products

Table 5
Better practice financial sustainability

Factors	Consider
Sustainability of operating costs, profits and benefits	› Price for sale of recovered materials › Recycling costs for non-rebate materials (note, some non-specified e-waste may cost councils additional money to recycle) › Landfill disposal costs › Developing end markets for recovered goods › Operating costs › Operating revenues › Minimising contamination rates of material streams
Awareness and participation in government policy, strategies and programs	› The *Statewide Waste and Resource Recovery Infrastructure Plan* and associated initiatives which may provide opportunities to collaborate with regional counterparts and provide programs and grants for waste and resource recovery activities or developments › Regional waste and resource recovery implementation plans, which provide future directions and potential opportunities to collaborate with regional counterparts

2.5 Futureproofing

Factors such as legislation, technology and community expectations can change during the lifespan of an RRC, creating both challenges and opportunities for facility owners, operators and other stakeholders. Futureproofing involves identifying what is likely to change over time (Table 6) and planning for when those changes are likely to occur.

You will also need to consider how your facility fits into the wider network of waste and resource recovery facilities as changes occurring at other facilities will most likely have a flow-on effect at your facility.

Familiarise yourself with your region's waste and resource recovery priorities by talking to the relevant waste and resource recovery group and understanding their regional waste and resource recovery implementation plan, particularly when looking to expand services or upgrade infrastructure.

For more information

Consult the *Statewide Waste and Resource Recovery Infrastructure Plan*

Table 6
Factors that may influence the lifespan of an RRC

Factor	Consider
Changes in population and/or future waste quantities	› A growth or decline in population will change the amount of waste generated by the community, placing more or less demand on the facility's services. › Estimate future amounts of waste generated by a community using data from Victoria in Future (VIF). VIF is the official state government projection of population and households. The projections cover the period 2011 to 2051 for Victoria and the major regions. For local government areas and smaller areas, they cover the period to 2031. › Projected waste volumes may also be available in regional waste and resource recovery implementation plans. › Population growth may also lead to sensitive land uses such as housing encroaching on an existing facility. The facility will need to work out how to manage any impacts from this expansion (e.g. additional environmental controls to reduce noise and dust).
Cost changes	› A higher cost to dispose of waste to landfill may make it more viable to recover recyclable materials from mixed waste. › Demand for materials may change over time.
Waste and resource recovery network changes	› A local landfill closure could lead to greater volumes of waste ending up at your facility and alter your costs for disposing of waste to landfill. › Consider the capacity of any other existing and/or planned resource recovery facilities in the region, which will affect the volume of material available to your facility. › If you are close to a boundary with a neighbouring council, you may be affected by changes in their network too.
Technology or industry changes	› Better technology will increase the viability of recovering certain materials and reducing contamination of end products. › Gain insights on upcoming or potential future changes in the waste and resource recovery industry, such as new technologies and legislation, by attending conferences and meetings with the waste and resource recovery industry and equipment suppliers, and monitoring government websites.
Product demand changes	› You may experience changes in the types of waste streams generated by the community. › Demand for a recycled product can fluctuate, reducing or increasing viability of a resource recovery activity.
Legislative changes	› Changes to legislation and/or policy may be signalled where certain materials may be restricted from entering landfill, creating more demand for recovery capacity (e.g. e-waste).

Futureproofing your operations will enable you to:

- take advantage of future opportunities (e.g. upgrade plant and equipment to increase processing capacity so the facility can process projected future growth in waste volumes)
- minimise any future threats to facility operation (e.g. improve facility operations to increase landfill diversion of incoming mixed waste and thereby reduce waste disposal costs)
- manage changes and cost impacts of compliance changes (planning, environmental) or policy changes (product stewardship)
- manage changes to volumes and sources of waste generated by local businesses and industry, caused by expansions or closures, and/or increases and decreases to local populations
- ensure the facility design allows for modifications that may be required over time (e.g. changes to managing different material streams).

For more information

- Victoria's future population projections (VIF data) at **www.planning.vic.gov.au**
- attend industry meetings and trade shows
- regular meetings with suppliers
- waste and resource recovery groups and regional waste and resource recovery implementation plans
- the *Statewide Waste and Resource Recovery Infrastructure Plan*
- the EPA Victoria website

03

Developing your site

This section looks at better practice during each phase of site development including:

- Selecting a site
- Planning approvals
- Initial concept for site layout and infrastructure
- Detailed design
- Construction

You must also consider the legislation that applies to the planning, design and build of new facilities. For example, under the OHS Act, a designer of a building or structure to be used as a workplace has a duty to ensure it is designed to be safe and without risks to the health of people working there.

3.1 Selecting a site

3.1.1 Land area required

Your site needs to be big enough to operate efficiently and minimise any impact on the surrounding community. Table 7 lists factors to consider when deciding how much land is needed.

Table 7
Land area required

Factor	Consider
Volumes	Volumes of each material type accepted, and projections of future volumes based on population growth.
Onsite functions	Enough space to meet regulatory storage requirements for different materials (proposed or current), such as e-waste. All proposed (or current) functions carried out onsite. For example, is the facility used: › solely for waste transfer operations › as a location to house collection and service vehicles › for stockpiling and processing recyclables such as garden organics, concrete and e-waste › for other resource recovery activities such as colocating with recyclers. Refer to relevant legislation or the EPA's waste management policies for specific material safe storage requirements.
Vehicles	Size and type of vehicles expected to deliver and remove materials from site
Regulations	Suitability of land to meet applicable Australian Standards for accepted materials
Plant and equipment	Plant and equipment to be used onsite

BENEFITS OF BETTER PRACTICE DURING SITE DEVELOPMENT

- Lowered OHS, environmental and other risks
- Increased source separation and lower contamination rates
- Improved traffic flows, with less congestion and separate entrances and exits for the different types of vehicles expected
- More efficient and effective storage and handling of materials
- Improved site amenity and cleanliness
- Increased customer satisfaction and acceptance from the community
- Increased preparedness for emergencies and better access for emergency vehicles
- Increased capacity to manage future needs, including accepting additional material streams required by regulations and legislation
- A site that is easier to maintain

3.1.2 Vehicle and traffic allowance

RRCs need:

- good road access that minimises the impact on residential or other sensitive areas (e.g. schools)
- enough space for onsite roadways, queuing and parking
- proximity to major highways to support more cost-effective collections.

The amount of space needed for vehicles and traffic depends largely on the types of vehicles expected at the facility. Will you have smaller domestic vehicles or commercial vehicles as well?

If the site allows commercial and domestic vehicles, the road design needs to include sufficiently wide roads and appropriate gradients/curves to ensure safe and efficient manoeuvring of large and long vehicles.

Larger sites need to complete a traffic impact assessment during site development to model traffic flows at the site, particularly for large vehicles.

The road network leading to and from the facility is just as important as the roads needed to handle the largest type of vehicle expected at the facility. This network needs to accommodate larger vehicles transporting compacted or baulked-up material off-site – larger vehicles can achieve the transport efficiencies needed to make an operation cost-effective.

You may need to investigate gazetted road networks (for A- and B-double type vehicles) or work out whether local council rules control vehicle access or egress. A register of public roads can be obtained from VicRoads.

3.1.3 Allowing space for other site activities

For many facilities, receiving, sorting, aggregating and transporting waste and recyclable materials may be only one element of a site's operation. Other activities such as mulching, composting, reuse shops and community education centres may also be located at the site or form part of a facility's operation.

All anticipated activities need to be allocated within suitable areas, and all infrastructure and roads need to be designed to optimise the use of a site.

3.1.4 Buffer distances

Keep an appropriate buffer distance between the site and designated residential areas or other sensitive receptors. All planning schemes include a minimum threshold distance between RRCs and residential or other sensitive land uses.

You might be able to reduce buffer distances if you can show that effective controls are in place to prevent any environmental nuisance. Where relevant, refer to the EPA Victoria's guideline: Recommended separation distances for industrial residual air emissions.

3.1.5 Travel distances for customers

Locate the RRC within an acceptable distance from the community it is designed to serve. This is the distance community members are willing to travel to use the facility. This is particularly relevant in regional areas where limited alternative disposal options may be available for the community.

3.1.6 Future land use planning

When selecting your site, consider any potential future land use planning conflicts that could affect onsite expansion or development activities. For example, encroachment of incompatible land uses (e.g. residential) and re-zoning activities (e.g. buffer zones).

Your facility may also change over time. You might start collecting new materials or experience more throughput. Population growth could lead to increased waste generation by the community, placing greater demand on the facility.

Ensure that the relevant authorities such as local councils have approved all required planning application criteria and documents before completing any post-planning activities (lease agreements, construction contracts etc.).

Providing for and supporting waste and resource recovery hubs is an important way to promote efficient waste and resource recovery and should be supported in appropriate locations.

Hubs are a facility or group of facilities that recover or manage material streams or waste. Collectively, hubs form a network of infrastructure where the activities and their location inform decisions made by investors, operators, land use planners and other decision-makers. Hubs may evolve as the facilities within them evolve, due to several factors, such as:

- market shifts
- commodity prices
- technology improvements
- local government strategic plans.

For more information

- Consult the *Statewide Waste and Resource Recovery Infrastructure Plan* for more about hubs, available on the SV website at www.sustainability.vic.gov.au

3.1.7 Allowing for seasonal (and other) fluctuations

When estimating the total anticipated tonnages arriving at an RRC, consider the impact of seasonal fluctuations.

Materials may not flow into a site on a consistent daily basis. Facilities may experience fluctuations in volumes and types, as local, national and global conditions and events affect waste generation and disposal activities in the area (e.g. holidays, scrap metal prices).

Seasonal holiday locations, for example, may generate 30 to 40 per cent of their total annual waste volume over the holiday period, leading to significant strain on site infrastructure if not appropriately catered for.

3.1.8 Allowing for future expansion

Planning for potential future expansion is key when choosing a site for a facility. This could be allowing for additional resource recovery activities such as materials processing to be implemented in the future or an increase in the amounts of waste received and stored onsite (e.g. due to increased population or economic activity).

Having enough land available for expansion can also:

- increase operating efficiency
- allow for increased throughput at the site if needed
- potentially mitigate future costs arising from relocating a facility.

Table 8 explains how to estimate the amount of waste that could go through a facility. Other factors to consider include:

- waste types accepted by the facility (current and future)
- other nearby facilities that accept waste types
- disposal point distance and regularity of collection/removal.

Table 8
Estimating future waste volumes

Step	Action
1	Estimate current total waste generated by the community using data from waste audits, council reports or through the Victorian Local Government Annual Survey (available from the SV website)
2	Collect current population data for your community using Victoria in Future (VIF) data
3	Using the above datasets, calculate the waste generation rate for your community (kilograms per capita)
4	Work out the projected future population for your community using VIF data
5	Multiply the current waste generation rate by the estimated total population in the future period. This will estimate future waste generation for your community

Note: Regional waste volume projections data can also be sourced from regional waste and resource recovery implementation plans and SV's Waste Projection Model.

3.1.9 Site history

Investigate previous site uses and planning controls to identify any restrictions on site functions and activities including sites listed on the Victorian Heritage Register or the Victorian Aboriginal Heritage Register.

Siting new facilities at an established waste management site, such as a rehabilitated landfill, may be better accepted by the community than using a new site. Refer to Section 3.2 Planning approvals for more information on site selection and prior use considerations.

3.1.10 Ecology and aesthetics

Areas of ecological and historical significance should be protected and left undisturbed. You can use existing vegetation to visually screen the site, provide a windbreak, limit litter dispersion and improve site amenity (see Figure 4).

Design your facility to blend in with the surrounding environment. Plant vegetation to screen unpleasant views and to prevent litter leaving the site.

Figure 4
Photo of an RRC built on the site of an existing landfill, reducing encroachment into native vegetation

3.1.11 Natural conditions

Natural site conditions influence the design, management practices and control measures adopted at a facility. Table 9 outlines the naturals conditions that can affect RRC design.

3.1.12 Distance to processing plants

After receiving, separating and treating material streams, recyclable and residual materials need to be taken to their respective destinations. Assess these locations and consider transport and operational factors, including:

- the cost/revenue for each waste and recycling material stream
- storage times for different streams
- transport costs to get each material stream to its destination
- ability to use long-haul vehicles for transport
- cycle times for long-haul vehicles taking the materials to market
- how certain the disposal or recycling option is over the medium to longer term (e.g. date of closure of landfill or contract for receipt of recyclables or waste)
- transferring multiple streams in the same vehicle to maximise transport efficiencies
- sustainability of the service (e.g. environmental outcomes).

Often smaller or regional facilities will have insufficient economies of scale to establish dedicated trucking fleets. Using local contractors and understanding backloading opportunities may increase efficiencies at a facility.

Regardless of who provides the transport, the target of all operators is to maximise payloads to meet respective axle-loading limits for each truck type. Where necessary and appropriate for the material stream, compaction may be required to achieve transport efficiencies.

Table 9
Natural conditions affecting the design of RRCs

Natural conditions	Consider
Topography	For most facility designs, a sloped site is useful 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 climate conditions (e.g. wind direction) can affect management practices of litter, odour, stormwater, site amenity and storage requirements.
Hydrological and hydrogeological features	Avoid sites with high water tables or in groundwater recharge or discharge areas where possible. Avoid sites with a large catchment area to minimise the infrastructure required to manage surface water flows.
Geological conditions	Sites with poor subsurface soil stability (e.g. existing landfills) may need more investment in foundations and floor slabs, depending on the facility's expected loading. Assess the risk of pre-existing soil pollution.
Ecology	If land containing areas of remnant or sensitive vegetation is near the site, conduct a flora and fauna study to determine whether any unique, endangered or threatened species or vegetation communities are present. Avoid such sites if possible.

3.2 Planning approvals

Planning approval relates to the use and development of a site. You must understand the planning approvals that apply to your proposed facility.

Confirm all planning and other statutory requirements as early as possible. It is not recommended to enter purchase or lease agreements without being well informed and confident that the proposed use will be permitted and that relevant approvals will be granted.

Do not assume that developing an RRC is permissible at an existing or former landfill site, or at a site that is currently used for other related waste management activities, such as construction and demolition processing.

The planning permit process and requirements vary based on the proposed site location, onsite activities and expected throughput. You must fully scope and understand planning approval requirements for all potential developments, even for former landfill sites.

Cumulative impacts from multiple activities on a site or even totally new impacts arising from the proposed development, may result in the development being considered inappropriate.

3.2.1 Obtaining planning approvals

Consider obtaining expert advice at the initial planning stage to determine:

- the relevant approval authority
- whether a planning permit is needed for the proposed development
- what information is needed to apply for a planning permit
- whether there are potential limitations on development or operations at the preferred site
- the licences required for operation.

3.2.2 Design documentation for planning approval

Information that may be needed for development approval includes:

- background and context of the project
- general description of the proposal
- site plan, elevation plans or architectural drawings
- relevant details about the proposed use (e.g. materials to be processed, hours of operation, loading and unloading requirements, emergency management plans, landscaping plans, fire plans, etc.)
- context of project within development plans, including zoning controls and other relevant provisions in the planning scheme
- documentation of environmental controls.

3.2.3 Building permit

You will most likely need a building permit for any construction works or new buildings.

3.2.4 Statutory framework behind the approvals process

The approvals process for any development is subject to relevant local and state (and potentially federal) legislation, regulations and planning policies and strategies. These may include:

- the relevant local council's planning scheme
- the *Environment Protection Act 1970*
- the *Planning and Environment Act 1987*
- other relevant council strategies
- state and federal legislation
- the *Statewide Waste and Resource Recovery Infrastructure Plan*
- regional waste and resource recovery implementation plans.

3.3 Initial concept for site layout and infrastructure

During the planning stages, you should develop an initial concept for site layout and infrastructure. The following sections provide guidance on achieving better practice for site layout and infrastructure.

RRCs typically follow a similar design process. Sometimes operational factors identified when developing the conceptual layout require changes to site layout and infrastructure selection. This may result in modifying the previously agreed site configuration.

This can happen throughout the entire development process as you identify new issues and modify site operations.

3.3.1 Site features and layout

Site layout can greatly affect resource recovery at a facility. It is harder to maximise recovery of recyclables if a site layout is confusing, or if customers need to travel around various parts of the site more than once to access different drop-off points.

A site layout should be available for customers and should clearly indicate designated collection and storage areas for all materials accepted at the site, as well as vehicle parking areas, staff facilities and operational areas for onsite processing activities.

The design of each facility depends on the constraints of the site. Nevertheless, safety, efficiency and maximising resource recovery are key considerations for all site layouts, as listed in Table 10 and Table 11.

Table 10
Designing for safety and efficiency

Design feature	Consider
Traffic movement	Separate truck, car and pedestrian traffic movements and use one-way traffic flow throughout the site.
Safe access	Implement appropriate safety measures for safe access to removing waste and containers.
Site design	› Use natural site features to take advantage of elevation for site supervision and to minimise the works required. › Provide separate areas for processing activities that are not accessible to customers.
Signage	› Provide signage that promotes how to pack or load trailers. › Install directional signage to material specific drop-off locations.
Flexibility	Allow for flexibility in site supervision as staffing levels change through the week to accommodate different levels of facility use.

3.3.2 Infrastructure selection

Select the most appropriate type of infrastructure to safely segregate material types and manage any residual waste. Consider health and safety, throughput, transport economics, capital cost, projected operating budget, resource recovery opportunities and regulatory compliance.

The types of infrastructure suitable for a site will also depend on the scale of its operation.

For smaller sites

Simpler infrastructure set-ups are generally appropriate. This typically includes a fenced-in area with a small gatehouse, simple site roads, a saw tooth drop-off area with containers for depositing waste and recyclables, hardstand area for some bulk recyclables (e.g. green waste and construction and demolition waste), and basic environmental controls.

For larger sites

As the scale/size of a facility increases, additional and more complex infrastructure may be needed to handle the larger waste volumes. This can include a weighbridge, additional storage, undercover areas, more containers and bins for expanded types of waste and recyclables, staff facilities (e.g. lunchroom) and infrastructure for onsite processing of waste and recyclables.

While the infrastructure identified above are the main types 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.

Facilities should also consider the level of staffing and plant and equipment needed to support selected infrastructure. In some instances, it may be appropriate to invest more in site capital expenditure to minimise ongoing labour and operational costs.

For accepting hazardous waste (including e-waste)

No matter the size of the site, hazardous waste must be collected and stored in a way that complies with all relevant regulations. All infrastructure should be selected in a way that ensures the site will be appropriate to meet compliance for all waste streams collected. For example, e-waste must be collected and stored in accordance with various regulations.

Table 11
Designing to maximise resource recovery

Design feature	Consider
Ease of access	Ensure drop-off points for recyclables and reusable items are: › clearly marked › easily accessible › not affected by queuing for waste disposal › located before the mixed waste drop-off point (or for reuse centres, potentially before the site entrance) › use Australian Standard or SV recommended signage (i.e. detox programs) for each waste stream, where available.
Space	Allow enough space for: › any manual sorting required by operators › stockpiled materials › clear pathways for all vehicle movements around the site › meet relevant Australian Standards for safe collection and storage of each waste stream (i.e. e-waste, hazardous waste).
Expansion	New legislation bans existing waste streams from landfill (i.e. e-waste landfill ban from July 2019). Consider possible areas for expansion of future activities onsite. The size of available expansion areas should be consistent with predicted requirements for future growth and proposed future onsite activities.

3.3.3 Managing infrastructure risks

All infrastructure can present risks to the health and safety of facility operators and site visitors (e.g. public or contractors) unless adequately managed.

Appropriate safety measures must be put in place to address hazards identified at the site. This can include constructing or installing equipment such as safety barriers and kerbs; establishing operational measures such as public drop-off area for materials on a concrete floor for later removal to push pits by facility staff; and appropriate signage to support safe public drop-off and storage of materials.

3.3.4 Plant and equipment selection

As part of the conceptual development work, you must develop a clear understanding of the type of plant and equipment to be used at the site. The needs of the facility must be matched to the size and capabilities of the plant and equipment.

At smaller sites, the flexibility of a backhoe or similar may be desirable. This type of unit can deal with storage piles of recyclables, as well as providing the capacity to tamp down and compact loads in bins or other receptacles.

One option with this (and all excavator style units) is to replace the digging bucket with a grab, so recycling activities can be more effectively carried out (see Figure 5). The grab size needs to be carefully selected to suit the operating weight of the unit.

When selecting and using plant at their workplaces, employers have a range of legal duties they must comply with. Under the OHS Act, employers have a duty to provide and maintain plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health. Under the OHS Regulations, employers have a duty to, so far as reasonably practicable, identify all hazards associated with plant and eliminate or reduce any risks associated with plant, by using the hierarchy of control set out in Part 3.5 (Plant) of the Regulations.

Figure 5
Photo of a front-end loader with a grab bucket and backhoe for compaction activities

Further duties may apply when using specific risk controls (e.g. guarding, operator controls and emergency stop devices) or types of plant (e.g. powered mobile plant or plant used to lift or suspend loads).

Before selecting plant to be used at the RRC, consider:

- if the plant is suitable for the intended use, including the work environment it will be used in and any conditions necessary for the safe use of the plant
- the hazards and risks associated with installation, commissioning, operation, inspection, maintenance, repair, transport, storage and dismantling of the plant
- the risk controls that must be implemented
- the frequency and type of inspections and maintenance recommended in the manufacturer's specifications
- any special skills required to operate, inspect and maintain the plant
- whether any alterations or modifications may need to be made to the plant.

WorkSafe's plant compliance code has more information about controlling risks associated with plant (including equipment).

Equipment must comply with *Australian Standard AS4024.1 Safety of Machinery*. Equipment must also be operated and maintained in accordance with the manufacturer's specifications.

3.3.5 Meeting infrastructure needs as a facility grows

As sites get larger, mobile plant and equipment requirements will vary due to changes in accepted waste and recycling streams, as well as increased operating volumes demand.

Often transportation methods will dictate mobile plant requirements and overall site infrastructure. Some of these options are detailed in Table 12.

3.3.6 Supporting infrastructure

Supporting infrastructure depends on the size and location of a facility, as well as the resources available to a facility's owners. If feasible, facilities should have access to:

- power
- sewer
- water
- fire management infrastructure
- phone lines
- mobile phone coverage
- internet connectivity.

3.3.7 Developing a conceptual layout

Use the above considerations to develop a conceptual site plan of the facility. The conceptual design should include the layout of major features including:

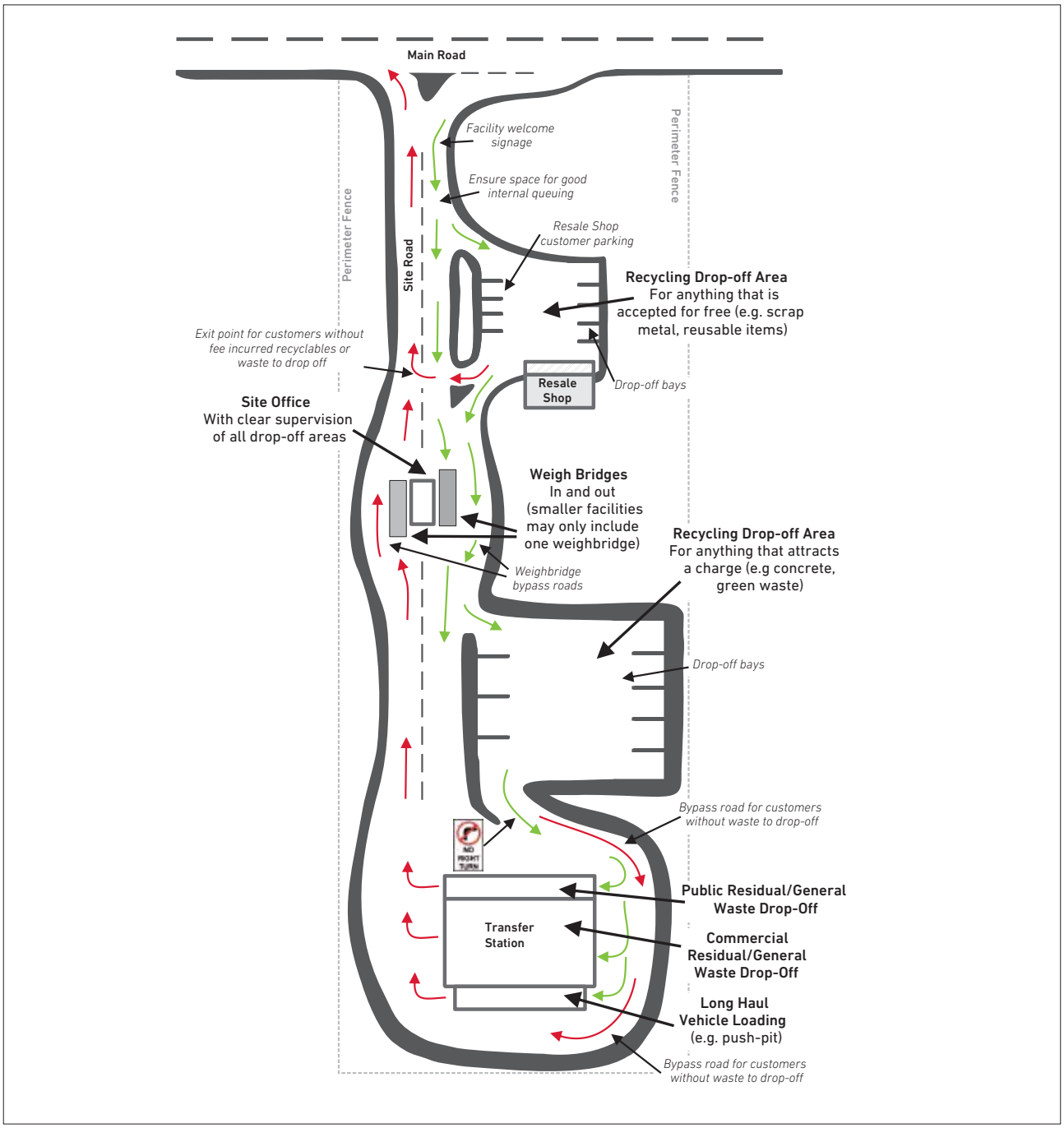
- access points
- roadways
- buildings
- parking areas
- utilities
- employee facilities
- surface water drainage features
- fences
- buffer areas
- future expansion areas
- adjacent land uses
- landscaping.

Table 12
Meeting mobile plant and equipment needs as a facility grows

Plant and equipment	Consider
Use a loader and excavator (with grab) to topload high-volume walking-floor trailers	Trailers can be loaded using a height differential. Material can be fed directly into the trailer at floor level or the loader can lift and place materials. Requirements for line of sight, lifting capacity, bucket size, reach and turning circles are all affected by whichever style of loading is chosen.
Walking floors or compactor units	Transfer stations with walking floors or compactor units are an alternative form of material handling that affects supplementary mobile plant and equipment selection at a site. Such units may be complemented by a small backhoe style unit that can clean floors and remove potentially recyclable materials from the waste stream.

Figure 6 to Figure 8 show examples of conceptual and actual layouts for different size RRCs.

Figure 6
Example of a better practice conceptual layout for a medium to large sized RRC



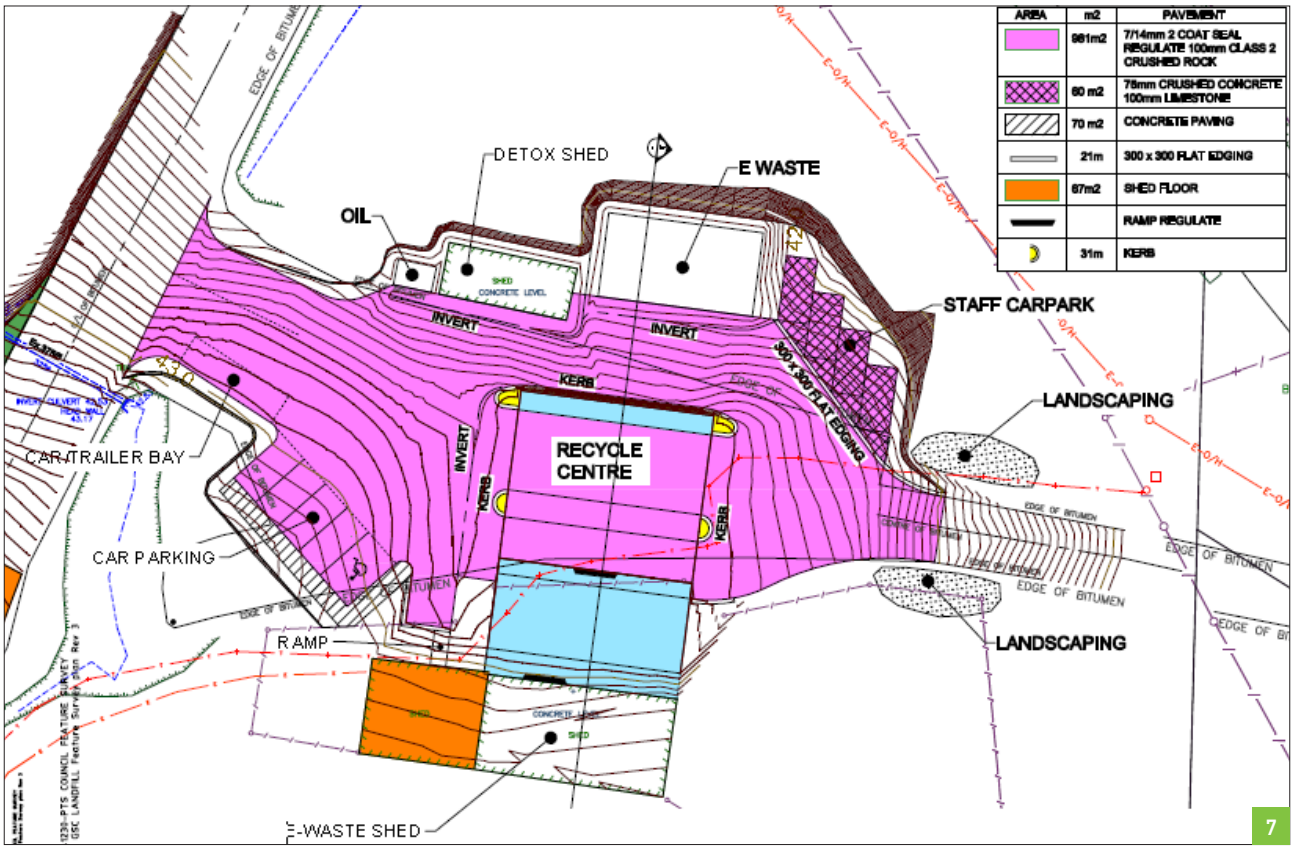


Figure 7
Example of better practice conceptual layout for a medium to large sized RRC

Figure 8
Example of a better practice layout for a small RRC

3.4 Detailed design

Once you have chosen a site, or shortlisted a few potential sites, and you know what types of infrastructure and activities will take place onsite, you need to work out which planning and development processes apply to your facility. Different planning requirements/overlays apply in different areas. The approvals process and planning permit requirements will vary based on the proposed site location, onsite activities and the expected throughput.

Much of the detailed design work is carried out as part of the planning and building approvals. For example, confirming site layout and selecting infrastructure and plant and equipment such as compaction equipment, bins and dust suppression infrastructure, and working out if EPA approval is needed.

Your planning approval may need to include a general description of the proposal including hours of operation and likely materials and volumes to be processed, a site plan and architectural drawings including site access and car parking.

To adequately address all five better practice performance areas, you will need to address additional criteria, as outlined in this section.

Note: Do not make any purchase or lease agreements until the desired use of the facility has been approved for use and appropriate approval gained.

3.4.1 Using design to manage risks

RRCs should be designed in a way that controls health and safety risks to workers, facility users, site neighbours and the environment. This is particularly important for unsupervised sites.

OHS, environmental and other risks should be considered throughout the design process by consulting with contractors, manufacturers, employees and health and safety representatives (if any) and other relevant parties.

It is important to complete a risk assessment on the design process, as well as the design of the resource recovery itself. This risk assessment may look at potential hazards and financial risks, as well as potential interruptions to the design process timeline.

Figure 9
Photo of a hydraulic waste lifting mechanism

Figure 10
Photo of guard rails placed to minimise the risk of customers falling into a bin

Figure 11
Photo of guard rails placed to minimise the risk of customers falling into a bin

3.4.2 Design and OHS risk management

Under the OHS Act, designers of buildings or structures used as workplaces have a duty to ensure, so far as is reasonably practicable, that the building or structure is designed to be safe and without risks to the health of the people working there. Facility design should also minimise risks to the health or safety of facility users and any other persons. Common risks to consider during the design stage of an RRC can include:

- hazardous manual handling
- falls from heights
- exposure to hazardous substances or materials
- injuries caused by plant or machinery
- vehicle accidents (for example reversing over platform edges).

Employers have a duty under the OHS Act to provide, so far as is reasonably practicable, adequate facilities for the welfare of employees at any workplace under their management and control. During the design stage, be sure to plan for employee amenities such as clean drinking water, toilets and areas for eating and drinking.

Employers should also ensure throughout the design stage that the facility will allow them to comply with their duties under the OHS Regulations to control risks associated with specific hazards. For example, including built-in fall protection measures, installing engineering controls to separate pedestrians from powered mobile plant and designing a workplace layout that eliminates or reduces the risk of a musculoskeletal injury associated with hazardous manual handling.

Figure 10 to Figure 11 show examples of safety measures at RRCs.

For more information

- See WorkSafe Victoria's **Compliance code: Workplace amenities and work environment**, which sets out design considerations such as size and placement for certain amenities and equipment.
- Refer to **WorkSafe Australia's Model Code of Practice: Hazardous manual tasks** for more on managing the risks associated with hazardous manual tasks.

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11

Table 13 lists the main factors to consider when designing better practice OHS risk management.

Table 13
Designing better practice OHS risk management

OHS factor	Consider
Optimise facility design	› Use clear signage to show location of drop-off points so customers can move in and around the site quickly and efficiently. › Maximise one-way traffic flow about the site. › Have separate access points and roads for small and large vehicles where possible. › Accommodate vehicle accident procedures (e.g. be prepared for breakdowns). › Include segregated areas in site design to allow for potentially dangerous plant (e.g. crushers and grinders) to be operated away from customer access areas. › Allow enough space for vehicle turning and manoeuvring. › Separate drop-off locations for different size vehicles (e.g. domestic vehicle drop-off and larger commercial vehicle drop-off). › Keep larger storage piles of materials in a separate area, not accessible to small-vehicle customers. › Use line markings/rails to help customers when reversing into drop-off locations. › If customers need to reverse into position to drop-off items, design turning paths to make reversing easier and allow customers to reverse looking over their left shoulder.
Assess risk	› Conduct regular site risk assessments and take appropriate measures to eliminate risks of injury while onsite or to reduce these risks so far as is reasonably practicable (e.g. falling into containers or pushpits). › Document assessment outcomes in the site's risk control plan.
Minimise risk of falls and reversing over platform edges	› Ensure risk of employees falling from two metres or more are eliminated or reduced as per the prevention of falls hierarchy of control under Part 3.4 of the OHS Regulations. › Avoid having facility operators or public users operate at heights of more than two metres where possible. › Provide protection for people operating at all heights. › Avoid trip hazards. › Identify any potential areas where falls can occur and put controls in place, for example: – Use waste-to-bin lifting mechanisms as an alternative to guard rails. – Place guard rails along platform edges*. – Minimise the height of platforms where possible by selecting appropriately sized skip bins or bins with adjustable sides. – Use barriers to prevent cars and trailers reversing too close to the platform edge. – Eliminate or minimise gaps between platform edges and skips by either covering the gap or placing the skips as close as possible to platform edges.
Minimise hazardous manual handling	› Identify when employees will manually handle hazardous materials and use design to eliminate or reduce risks (for example altering the workplace layout or environment). › Use site features to facilitate easy unloading of materials from all types of vehicles and containers wherever possible – this often conflicts with safety and an acceptable balance must be achieved. › Design storage areas with enough space to accommodate selected containers, plant and other equipment. › Use modified skip bins with a lowerable side for easy unloading of trailers. › Install permanent guard rails with a lower drop-off point height along platform edges*. › Provide waste or bin lifting devices where customers need to self-haul material into larger containers. › Ensure all infrastructure, including bins and containers can be moved by machines. › Have enough space to collect and store materials to avoid double handling.

* Note: Using guard rails may increase the risk of manual handling injuries since customers need to lift loads over the barriers. Guard rails also make it more difficult to unload materials from trailers or car boots. For this reason, the height of guard rails and skip bins needs to be carefully considered (see Figures 10 and 11 for examples).

3.4.3 Design and environmental risk management

Design facilities to minimise environmental risks such as fire, stormwater and litter. Table 14 lists the main factors to consider for better practice environmental risk management.

Table 14
Better practice environmental risk design

Factors	Consider
Stormwater	Build and design infrastructure to manage stormwater including: › sufficient drainage around the site and diverting off-site stormwater around the site › stormwater pre-treatment systems for onsite stormwater collected (where feasible) › structures that minimise water absorption (e.g. hard stand areas) › appropriate infrastructure to manage peak rainfall events › keeping potentially contaminated stormwater separate from non-contaminated stormwater › bund and roof hazardous waste (e.g. waste oil) collection areas to prevent stormwater infiltration and contain potential spills › using bins with lids, or (where possible) constructing roofs over areas where waste is unloaded, stored, loaded or processed, to prevent rainwater from carrying litter or being contaminated. Try to manage all run-off from storage and processing areas as leachate. Some facilities may generate enough leachate that stormwater needs to be discharged via a sewer connection. Pre-treatment and testing may be required by the sewerage authorities. If no sewer connection exists, other leachate management options include transporting leachate off-site, onsite evaporation ponds or alternate treatment. Following effective treatment, water may be reused onsite in some cases.
Vermin	Design structures to minimise bird infestation and nesting and to deter vermin (e.g. through covers or mobile screens).
Ecology	Select a site that ideally requires minimal clearance of natural vegetation.
Regulations	Design structures according to relevant Australian regulations to minimise pollution risk, including ground, water and air pollution. For example, when designing and building an e-waste shed, you must meet the following requirements: › key elements of the *AS/NZS 5377: 2013 Collection, storage, transport and treatment of end-of-life electrical and electronic equipment* › storing e-waste to avoid breakage › protecting e-waste from the elements/weather › storing e-waste on an impermeable and easily bunded surface › providing clear signage in e-waste collection and storage areas › all relevant building codes › all OHS requirements including Section 28 of the OHS Act › all relevant EPA requirements › relevant planning and/or building permits › infrastructure solutions in the *Victorian E-waste Infrastructure Network Assessment Report*.

Factors	Consider
Dust and mud	Some sites (particularly regional sites) may have issues with dust and mud. Where feasible, use sealed or paved roads and operating areas, and include suitable landscaping to minimise areas of exposed earth.
Litter (usually from customers dropping off materials or windblown litter from storage piles)	Where possible, locate enclosed entrances and exits away from the prevailing wind. Install: › covers or lids for exposed bins › walls on three sides of waste unloading, loading and storage areas › litter screens in and around the site to reduce windblown litter and plant trees and shrubbery to act as windbreaks › litter traps to protect the stormwater drainage system › signage warning of penalties for uncovered loads.
Odour (mainly an issue at facilities receiving organic material)	Locate potential odour sources away from and downwind of sensitive receptors or land uses. Provide roofs and paved unloading and storage areas to stop ingress of water and to facilitate cleaning. Where practical, do not store putrescible waste for more than 24 hours (weekends and holidays may need longer storage times). If necessary, retrofit odour control devices (e.g. deodorant sprays). Ventilate enclosed facilities. Maintain aerobic conditions in leachate ponds (e.g. mechanical aeration).
Noise	Ensure that employees are not exposed to noise that exceeds the noise exposure standard in Regulation 5 and Part 3.2 of the OHS Regulations. Eliminate noise exposure as far as is reasonably practicable. If not practicable, reduce the exposure of the employee to noise so far as reasonably practicable by substitution, engineering controls, administrative controls and personal protective equipment controls. Select the quietest plant and equipment. Locate noisier operations such as mulching to minimise impact on surrounding areas. Enclose noisy activities and access roads with screens or noise barriers (e.g. earth embankments).

3.4.4 Traffic management

Table 15 lists the main factors to consider when designing better practice traffic flows and management procedures.

3.4.5 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 served by the facility.

Site structures also need:

- manoeuvring room/turning areas and clearances to cater for all expected activities (e.g. tipping)
- easy management of dust and litter generated
- adequate protection of operations and structures during all activities to prevent injury and damage to the structure
- hardened floor slabs and walls in high-use areas (e.g. collecting material using a front-end loader and push walls) to prolong the life of the structure (e.g. using a hardening additive or incorporating a steel faceplate or similar).

Fire safety infrastructure is also generally required for all RRCs. Start your discussions with the appropriate fire authority early in the design process to identify their needs and incorporate provisions and infrastructure into facility design.

Table 15
Better practice traffic flows and management design

Factor	Consider
Traffic management plans and standards	All facilities should have a traffic management plan. Ensure all roads, signage and traffic management equipment comply with relevant Australian Standards.
Site access	Ensure, so far as is reasonably practicable, that the workplace and the means of entering and leaving it are safe and without risks to health. Control the facility entrance so you can check the types of material entering the facility. Entrances should also provide: › safe and orderly entry and all-weather access › sufficient queuing area for customer vehicles dropping off waste materials so customers dropping off recyclables are not held up › access for emergency vehicles at all times, possibly through a separate entrance › if feasible, separate access from the public road (e.g. turn-off or slip lane).

Factor	Consider
Traffic flow and control	Maintain effective onsite traffic circulation to minimise vehicle accidents and increase operational efficiency. Incorporate in facility design: › clear vision across the site to supervise customers › one-way traffic flow throughout the site with minimal intersections and roundabouts › managing traffic peaks during popular events such as 'Detox your Home' events › separating cars, trucks and pedestrians › effective traffic control devices (e.g. directional lines, traffic lights) › line marking roads to guide traffic flow › prominent and clear traffic information signs › barriers at the edge of all unloading areas to prevent vehicles rolling into the skips or pits › roads wide enough to accommodate two of the largest vehicles expected at the facility › emergency vehicle access to all areas and buildings.
Interaction between cars and trucks	Minimise interaction between cars and trucks by: › providing separate access for cars and trucks where possible › channelling trucks through the weighbridge by delineation of lanes › limiting access hours for compactor and transfer trucks to when car use is low.
Design access for vehicles	Design buildings that are accessed by vehicles to allow enough: › height clearance for transport vehicles using the facility now and in the future › areas for vehicles to turn › illumination.
Unloading areas	Design unloading areas on stable, level ground to eliminate the risk of overturning or runaway vehicles when users are dropping off materials.
Vehicle reversing	Minimise vehicle reversing. Where this is unavoidable (for example, when vehicles need to reverse into drop-off areas): › design turning paths to make reversing easier and provide enough space for reversing trailers › ensure drivers have a clear line of sight between the rear of their vehicle and the drop-off area.
Consider the elements	Consider local wind conditions where tipping vehicles are used. Install a windsock and warning signage to aid drivers and operators.
Commercial and industrial customers	Provide adequate infrastructure and space to maximise, to the extent feasible, recovery of recyclable materials from commercial operators expected to use the site. Consider the vehicle types and configurations likely to use the facility.

3.4.6 Developing and reviewing draft designs

Your draft design should be developed and subjected to a risk assessment and revised as needed. The draft design should be passed on to all or as many stakeholders as feasible (including employees and contractors), with their feedback collected and incorporated into the design.

3.4.7 Site security

You will need adequate site security measures to prevent:

- intruders and animals from entering the facility
- theft and vandalism
- illegal dumping of unacceptable waste.

All facilities should have a perimeter fence, lockable gates and be attended when open (some smaller regional sites may be an exception to this). A wire mesh fence at least two metres high should be built around the site boundary (see Figure 12).

3.4.8 Signage

Signage should comply with relevant Australian Standards, provide consistent information and be clearly and prominently displayed. Use schematics and/or other languages where feasible so they are accessible to people of all language and literacy abilities. Signage should:

- be consistent across RRCs
- encourage customers to separate their waste and recycling materials into the appropriate drop-off locations
- direct customers with simple and effective language and support staff when directing customers
- have an educational component.

3.4.9 Gatehouse

Facilities should have a gatehouse to allow for:

- traffic management
- inspecting incoming waste
- recording waste types and quantities
- collecting gate charges and directing 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 at RRCs, including for dispute resolution.

Figure 12
Photo of entrance gate and perimeter fence showing security feature

Figure 13 shows a weighbridge at a resource recovery facility.

3.4.10 Weighbridge

A weighbridge ensures accurate recording of waste quantities. Larger facilities should aim to have two weighbridges (one for incoming vehicles and one for outgoing vehicle). For smaller sites, only one weighbridge may be feasible.

The weighbridge system should incorporate a suitable software system that enables data capture and processing capabilities to support site operation.

For vehicles taking materials from site, it is generally desirable to weigh vehicles (either at the facility or destination) to check they are carrying the maximum payload possible without being overweight. This weight needs to be distributed in a way that does not exceed maximum weight loads of individual axle groups. Facilities can achieve this by:

- ensuring vehicles drive over a site weighbridge before departing the facility (via a loop road if only a single weighbridge is feasible at a site)
- incorporating weighing mechanisms into the truck suspension system or bin lifting equipment.

Installing a weighbridge is not always feasible, especially for smaller sites. Transporters may need to rely on weighing loads at their destinations or using more inaccurate methods (e.g. tare weights, load estimation, counting the number of buckets in a load), should other options be unviable.

3.4.11 Allowing for future gatehouse and weighbridge

If installing a weighbridge and gatehouse is not currently feasible (e.g. due to cost), the site design should incorporate provisions to build them in the future (e.g. concrete slab and power supply).

Figure 13
Photo of a weighbridge

3.4.12 Designing for resource recovery

All facilities, plant and equipment should be designed to maximise recovery of resources and minimise contamination of materials (see Table 16).

Select the most appropriate type of infrastructure for safe segregation of material types and managing any residual waste. Consider health and safety, throughput, transport economics, capital requirement, projecting operating budget, resource recovery opportunities and regulatory compliance.

Figure 14
Photo showing examples of signage and safe segregation of different material streams

Table 16
Designing RRCs to maximise resource recovery

Design feature	Consider
Covered areas	Many materials including e-waste, batteries and mattresses need to be stored out of the weather in appropriate containers/receptacles. Refer to material stream containers in Section 7.3 in Resources.
Signage design	Make provisions for users to drop-off materials in dedicated areas using visually distinct containers (e.g. using different colours) and standard signage.
Direction signage	Install signage on major approach roads to direct users to the facility and signs on approach roads warning of penalties for uncovered loads.
Illuminating signage	If the site is open outside daylight hours, signs around the site and the entrance must be illuminated. Signs in lowlight areas must always be illuminated.
Site entrance signage	Install site entrance signage showing: › open hours › waste types accepted and not accepted › 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 › that hazardous chemicals may be present onsite (where applicable).
Internal signage	Install internal signage displaying: › safety protection of workers and the public › fire control equipment and emergency exits › evacuation assembly areas for site users and staff › location of hazards › where materials should be placed (see Figure 14) › directions to unloading areas › traffic controls (e.g. directional lines, speed limits).

3.4.13 Selecting material stream containers

Containers come in a range of types, including skips, bins, drums, cages, bags and other stillages, such as those for transporting fluorescent light tubes (see Figure 15 and Figure 16).

When selecting container infrastructure, consider:

- what is the container used for — general waste, recycling, hazardous waste?
- how often will the bin be emptied or moved – weekly, fortnightly, monthly?
- what infrastructure is available to manoeuvre the containers – forklift, hook-lift truck?
- does the infrastructure meet relevant Australian Standards for the collected material?

For more information

See Section 7.3 in Resources for more on container types and sizes

3.4.14 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 can also provide a community service and may be operated by a community group or non-profit organisation. Resale shops may not be feasible at all sites.

Table 17 lists the main factors to consider for better practice resale shop design and Figure 17 shows an example of resale shop signage.

3.4.15 Utilities

Facility design needs to include:

- adequate firefighting facilities
- enough lighting to allow work to be performed safely on dull days in accordance with *Australian Standard AS1680: Interior lighting - Safe movement*
- adequate water supply to meet requirements for fire control, drinking, washing, cleaning and dust suppression
- a suitable method of communicating from the site in case of emergency.

Table 17
Better practice resale shop design

Factors	Consider
Resale shop facilities	Operate the shop from a roofed and enclosed building that can be locked for security purposes and is equipped with adequate fire detection/firefighting devices such as smoke detectors and fire extinguishers.
Facility design	Protect the surrounding environment from the impact of shop-related activity. Make the shop readily accessible and provide separate access for pedestrians and vehicles.
Area required	Allocate enough floor area to display items with clearly marked aisles for customers to browse the items safely.
Managing a resale shop	Prepare a management plan to document how the resale shop will operate successfully.

3.4.16 Amenities

Adequate facilities for the welfare of employees must be provided by employers, in accordance with the OHS Act. This should 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.

For more information

See WorkSafe Victoria's **Compliance code: Workplace amenities and work environment**

Figure 15
Photo of different containers used to contain different types of recyclable materials

Figure 16
Photo of a cage containing tyres

Figure 17
Photo of sign at a resale shop showing opening hours and a buyer beware disclaimer

3.5 Construction

Any construction at the site needs to be well managed to minimise construction and demolition waste as well as any impact on the local area.

3.5.1 Managing environmental and nuisance impacts during construction

Potential environmental and nuisance impacts during the construction phase need to be well managed.

If your facility is close to neighbours or poses environmental risks, you should prepare an environment improvement plan in accordance with the EPA Victoria's *Guidelines for the preparation of environment improvement plans*.

Reference should also be made to the EPA Victoria's *Construction techniques for sediment pollution control*.

3.5.2 Minimising waste during construction

New or existing RRCs that are planning substantial construction work should prepare a waste minimisation plan for construction and demolition, before starting any construction activities.

If you are planning to receive construction and demolition waste, you need to provide a hardstand area with adequate drainage to divert and manage run-off. You may need measures to control dust, such as sprinkler systems, as well as potential noise buffers when crushing.

For more information

See **www.sustainability.vic.gov.au** for minimising construction and demolition waste

Figure 18
Photo of a small RRC using a shipping container as a drop-off platform

3.5.3 Sustainable construction

In many cases, you can reduce construction costs by using recycled materials. This applies to both small rural sites, as well as larger regional facilities.

Resource efficiency in design and construction can be accomplished by using materials that are:

- natural, plentiful or renewable
- locally available, saving energy and resources in transportation
- salvaged, refurbished or remanufactured
- reusable or recyclable or contain recycled content
- durable.

Figure 18 shows the use of recycled shipping containers in a resource recovery centre.

3.5.4 Contracting the construction of a facility

Contracting for the construction of facilities can be done in several ways:

- design and construct (D&C)
- undertake detailed design and then tender construction works
- tender out as a design, construct and operate (DCO).

D&C arrangements involve design and construction services being packaged under a single contract. The benefit of this model is that the contractor bears the risk for accurately estimating build costs during the detailed design phase. However, it is harder to estimate construction costs prior to undertaking detailed design work which can lead to higher build costs. Conversely, completing detailed design work prior to tendering constructive works can provide lower pricing for the build stage.

DCO involves the contractor designing, building and operating the facility. The advantage of this model is that the contractor is more likely to consider operating costs and efficiencies during the design phase. However, it can be challenging to find a single contractor with capabilities across design, construction and operation.

3.5.5 Financial risk assessment

A financial risk assessment can identify the potential financial risk from the proposed development, as well as the financial viability of the RRC itself. The level of financial risk depends on the potential construction and operating arrangements. For example, for facilities owned by local government, is the council responsible for the full cost of construction and operation or will the facility be built, owned and operated by a contractor at a set cost to council?

A financial risk assessment is an important process that can help you to work out appropriate waste management charges and gate fees for the proposed facility. Information from the initial feasibility and needs assessment process can be used when completing the financial risk assessment.

3.5.6 Project management

Depending on the scale, project management for construction activities can be provided by in-house personnel or through an external project manager or consultancy. Table 18 summarises some of the advantages and disadvantages of each method.

Table 18
Advantages and disadvantages of using in-house or external resources for project management

	Advantages	Disadvantages
Specialist project management contractor	› Objective person to listen and report issues who is set apart from the council. › Specialist facilitation skills as well as experience preparing consultation materials (e.g. letters). › Dedicated resource committed to managing the consultation process. › Brings specialist knowledge in better practice design and practices if using a project manager that has expertise in waste management.	› Higher cost. › Potentially longer timeframe required if the contractor needs to obtain a large amount of background knowledge before consultation activities, and where time is needed to develop rapport with the community.
In-house staffing resource	› Lower cost (if done efficiently). › Council may have staff experienced in consulting with their local community. › Council may have a good relationship with the community, which would be further increased through a well-run consultation process.	› Potentially less experience in dealing with community consultation and facilitation compared to specialist contractors. › If there is significant public opposition from the community on the issue, the consultation processes can affect the staff member's social relationships.

04

Assessing better practice during site development

This section looks at using the better practice performance areas to assess site development including:

- Risk management during site development
- Meeting stakeholder needs during site development
- Smart materials management during site development
- Financial sustainability during site development
- Futureproofing during site development

Any areas where your facility can achieve better practice during assessment can be flagged for future improvement. You may need to shortlist your improvements based on costs and benefits, so you can prioritise your activities.

4.1 Risk management during site development

Better practice risk management applies to all stages of a facility's life, including planning, design and construction. Risk management should continually be reviewed and where necessary revised to minimise or eliminate risks.

OHS, environmental and other risks should be considered throughout the design process by consulting with contractors, manufacturers, employees and health and safety representatives (if any) and other relevant parties.

For more information

See **Section 2.1 Risk Management**

BETTER PRACTICE ASSESSMENT WORKBOOK

Answer the questions below to see if you are meeting better practice during site development and where you can improve.

Download the workbook for a full template on the SV website at www.sustainability.vic.gov.au.

Area	Assessment question	Section
Legislation and regulations		
Regulations and legislation	Have you researched, considered and complied with the most up-to-date OHS, dangerous goods and environment protection legislation and associated regulations during site development?	3.4.1, 3.4.2, 3.4.3, 7.2
	Have you discussed the proposed facility with the EPA Victoria?	3.2
	Have you discussed the proposed facility with council?	3.2
	Can the site be used for an RRC under the local planning scheme?	3.2
	What is the minimum threshold distance to sensitive land uses in the local planning scheme?	3.1.4, 3.2
Site risks		
Planning for site risks	Was a landfill previously located at the site? If yes, do you know where the previously landfilled waste was located?	3.1.9
	Did you consider natural features and climate conditions of the site when developing the site?	3.1.11
OHS		
Personnel safety	Do you have enough safety barriers and fall prevention devices in the site design?	3.3.1, 3.4.2
Traffic management	Have you completed a traffic impact assessment? (only required for Category 2 and 3 facilities)	3.1.2, 3.4.4, 7.2.3
	Are roads and traffic management devices designed in accordance with relevant Australian Standards?	

Area	Assessment question	Section
Plant and equipment safety	Have you selected plant and equipment to eliminate or reduce the risk of injury resulting from hazardous manual handling?	3.4.2
	Does all plant and equipment comply with the Australian Standard AS4024.1 Safety of machinery?	3.3.4
	Do all site structures comply with relevant building codes, building regulations and planning regulations?	3.4.5
Signage	Have you selected and designed appropriate safety signage for the development?	3.4.8
	Does safety signage comply with relevant Australian Standards?	7.2.3
	Does signage give consistent information that is clearly and prominently displayed?	5.6.8
Emergency response		
Emergency vehicle access	Has the site been designed to maximise accessibility for emergency vehicles, including fire trucks, ambulances and other emergency equipment?	3.4.4
Environmental		
Ecology	Was a flora and fauna study conducted if previously undisturbed land or land containing areas of remnant vegetation is near the site?	3.1.10, 3.1.11
	Was the risk of pre-existing soil pollution assessed before the site was developed?	
Litter	Have litter control measures been designed into the site?	3.1.10, 3.4.3, 3.4.5
Storm water and leachate	Is the facility designed to prevent storm water run-off from the site becoming contaminated with waste or leachate?	3.4.3, 3.1.11
Odour	Is the facility designed to minimise odour problems?	
Vermin	Is the facility designed and operated to minimise vermin problems?	
Dust and mud	Is the facility designed to minimise dust problems?	
Noise	Is the facility designed to minimise noise problems?	3.4.3, 3.5.1
Construction activities	Have you developed an environment improvement plan in accordance with the EPA Victoria's *Guidelines for the Preparation of Environment Improvement Plans*?	3.5
Hazardous materials and dangerous goods		
Legislation and regulations	Does the facility comply with all applicable legislation and regulations relating to the storage and handling of dangerous goods and hazardous waste, including but not limited to the *OHS Act 2004, OHS Regulations 2017, Dangerous Goods Act 1985 and the Dangerous Goods (Storage & Handling) Regulations 2012*?	3.4.5, 7.2
Bunding	If required and implemented, has bunding been designed in accordance with the EPA Victoria's bunding guidelines?	3.4.3

4.2 Meeting stakeholder needs during site development

Meeting stakeholder needs is a vital part of site development. Getting stakeholders onside will make your job easier now and in the future.

BETTER PRACTICE ASSESSMENT

Answer the questions below to see if you are meeting better practice during site development and where you can improve.

Download the workbook for a full template.

Area	Assessment question	Section
Regional groups		
Efficient procurement and service delivery	Have you explored opportunities to cooperate with other facilities in the region (e.g. consolidating services or transport efficiency opportunities) during site development?	2.2, 3.1.6
Community		
Location	Does the facility meet council requirements and community expectations for siting and location?	3.2, 3.1.4, 3.1.5
Facility capacity	Is the facility designed to cater for volumes and types of waste and recyclables generated by the community, taking into account the capacity of any other facilities in the region?	3.1.1, 3.1.6, 3.1.8
Customers		
Service levels	Does the design meet customer expectations for opening hours, levels of customer service, fees for deposit of waste and recyclables and site cleanliness and aesthetics?	3.1.1, 3.1.2, 3.1.5, 3.3.1, 5.2.8, 5.5.3, 5.5.4
Government		
Compliance	Does the facility design comply with all relevant legislation, regulations and standards?	7.2
Staff		
Facilities	Are adequate facilities for staff included in the site design, that are appropriate and practically achievable for the site?	3.4.16, 5.2.7
OHS	Have employees been consulted on matters relating to OHS, as required under s35 of the OHS Act? For example, on hazard identification, risk controls, plant and equipment purchase.	3.4.2

4.3 Smart materials management during site development

Smart materials management relies on the way you design and operate your site, and how you engage with stakeholders. Getting this right at the design stage can save you money in the long run and improve your site's operation.

BETTER PRACTICE ASSESSMENT

Answer the questions below to see if you are meeting better practice during site development and where you can improve.

Download the workbook for a full template.

Area	Assessment question	Section
Traffic	Does the site need a traffic impact assessment? If so, has one been completed by a traffic engineer?	3.1.2, 3.4.4
	Does the site have good road access for heavy vehicles that minimises the impact on residential or other sensitive areas (e.g. schools, hospitals)?	3.1.2, 3.1.4
	Does the site provide adequate space for onsite roadways, queuing and parking as necessary at the facility?	3.1.2, 3.3.1
	Does the facility allow for separation of truck, car and pedestrian movements?	3.3.1, 3.4.4
Environment and materials efficiency	Does the facility encourage recovery of materials by placing recycling drop-off areas before any waste disposal area?	3.4.12
	Will the site use energy and water efficient infrastructure and equipment?	3.5, 5.4.2, 3.3.4
	Does the facility provide a separate area for processing operations that is not accessible to facility users?	3.3.1, 3.3.3
	Does the facility have a gatehouse to allow for traffic management, inspecting incoming waste, recording waste types and quantities, collecting gate charges and directing users to appropriate unloading areas?	3.3.1, 3.4.9, 3.4.12
Record keeping	If the facility cannot afford a weighbridge, have you allowed for future construction of a weighbridge?	3.4.11

4.4 Financial sustainability during site development

Your facility needs to operate at a profit now and in the future.

BETTER PRACTICE ASSESSMENT

Answer the questions below to see if you are meeting better practice during site development and where you can improve.

Download the workbook for a full template.

Area	Assessment question	Section
Need for activity	Have you analysed the need for the facility and determined that the location is suitable for an RRC?	3.1.12
	For existing facilities, does your expansion and/or redesign consolidate site operations and/or facilities to achieve cost savings?	2.4
Demand for end products	Have you worked with stakeholders to develop local end markets for recovered recyclables (where practical), to reduce exposure to price volatility of international commodity markets?	2.2, 2.4, 5.7.3

4.5 Futureproofing during site development

Futureproofing will help you run a sustainable business over time.

BETTER PRACTICE ASSESSMENT

Answer the questions below to see if you are meeting better practice during site development and where you can improve.

Download the workbook for a full template.

Area	Assessment question	Section
Land use compatibility	Do land use planning authorities have plans to expand residential areas? If so, will residential areas move closer to the facility and place pressure on operations?	3.1.8, 3.1.4
Capacity	Is the population set to increase in the region over the next 5–10 years? If so, is the facility set up to manage expected additional volumes of waste from more residents?	3.1.8, 3.4.11
	Are any landfills in the region earmarked for closure? If so, is the RRC likely to receive more waste (previously disposed of at the landfill)?	
Future economic viability	Is the cost of disposal likely to increase? If so, will the facility change the design or operations to increase landfill diversion of mixed waste to reduce future costs?	3.3.5, 5.6.15, 5.7.1

05

Running your site

This section looks at better practice during operation and management including:

- Managing onsite risks
- Managing site amenity and environment
- Community relations
- Procurement
- Selecting and receiving material streams
- Managing received material streams
- Managing end markets and destinations for material streams
- Rehabilitation and future use of sites post-closure

5.1 Managing onsite risks

Onsite risks at RRCs should be eliminated, or if this is not reasonably practicable, reduced to protect the safety of workers, facility users, site neighbours and the environment. Facilities should have an organisational risk management process in place that considers risks to OHS, the environment and other contingencies such as equipment failure and appropriate insurance policies. This risk control process should be documented in plain English, communicated by management and regularly reviewed.

5.1.1 OHS risk management

Employers have a duty under the OHS Act to provide and maintain so far as is reasonably practicable, a working environment that is safe and without risk to health. Employers owe a duty of care to their employees at the facility (including independent contractors and their employees) and to persons visiting the site. Employers must ensure that they control risks over which they have management or control, so far as is reasonably practicable.

Table 19 lists requirements to manage onsite risks.

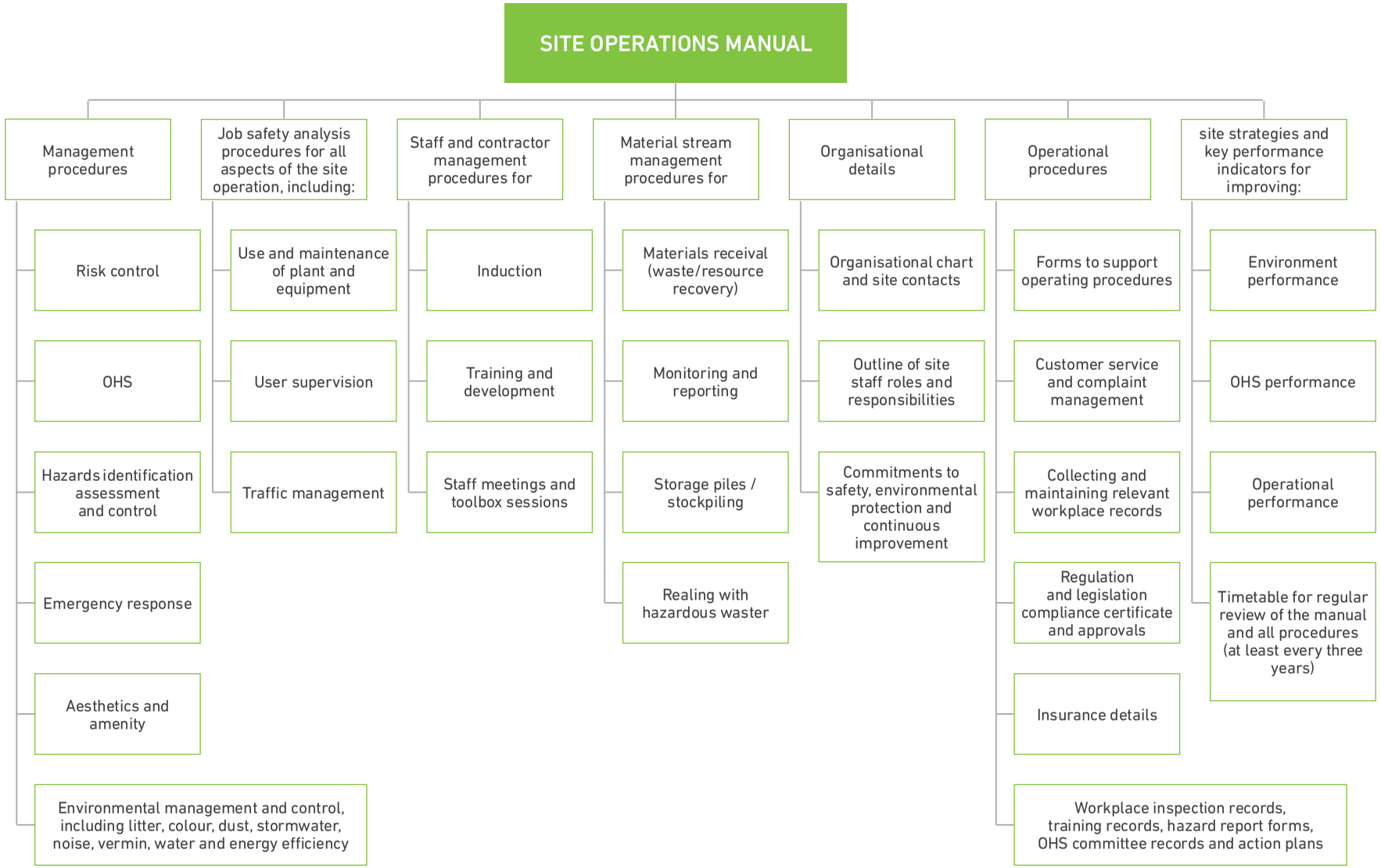
BENEFITS OF BETTER PRACTICE DURING SITE OPERATION AND MANAGEMENT

- Operating a workplace that is safe and without risks to the health of employees or other persons (such as visitors) and complies with OHS legislation and regulations
- Reduced environmental and other risks
- Being prepared for emergency situations
- Operating in a financially sustainable manner
- Improved resource recovery of accepted materials streams
- Improved site amenity and community acceptance.

Table 19
OHS risk management

Requirement	Details
Site operations manual	Develop a site operation manual so the facility is run efficiently and effectively, is safe for staff and users and does not impact on the local environment or cause a nuisance for neighbours.
Risk management system	Ensure the facility complies with duties under the OHS Act and Regulations. Implement a risk management system to: › identify hazards › assess risks › implement appropriate risk controls › review and revise risk controls.
Safe Work Method Statement (SWMS) and safe operating procedures	Conduct and document SWMS and safe operating procedures in the facility's site operations manual for all activities and tasks at a site.
Regular OHS inspections	Conduct regular workplace inspections. Site management should work with the site supervisor, OHS representative or committee member to document any hazards or risks identified. Prepare an inspection checklist and an inspection calendar (see *Common OHS factors at RRCs* for a list of potential OHS issues). Put appropriate risk controls in place for any issues identified and advise staff of any revised requirements. Complete daily pre-start checklists for all plant and equipment. Keep completed inspection checklists in a place that can be accessed by all staff (e.g. site office).
Personal protective equipment (PPE)	› Provide appropriate PPE and equipment to supplement other higher order risk controls. › Induct and train staff in PPE use and maintenance. › Ensure staff always wear appropriate PPE and suitable footwear. › Check that PPE does not affect communication or introduce other risks. › Provide facilities for cleaning and storing protective equipment.

Figure 19
Example of content for an RRC site operations manual



Common OHS factors at RRCs

Common OHS factors to consider at RRCs include:

- baler operations
- compactor operations
- disease
- dust
- excavator operations
- exposure to hazardous substances or dangerous goods
- falls from heights
- fire
- forklift operations
- handling of approved hazardous materials (oils, batteries, etc.)
- hot works
- illegal disposal of hazardous wastes in deposited waste streams
- litter
- loader operations
- managing irate customers
- materials handling (delivery of site consumables)
- noise
- odour
- plant and pedestrian interactions
- refuelling onsite
- robbery
- slips and trips
- smoking onsite
- vermin

Table 20
Resources for managing onsite risks

Source	Detail
SV	Fact sheet on combustible recyclable and waste materials and different aspects of improving resource recovery facilities
EPA Victoria	Management and storage of *combustible recyclable and waste materials* – guideline Assessing and controlling risk: A guide for business Guidelines and resources for developing voluntary environment improvement plans (EIPs)
Australian Standards	AS/NZS 5377:2013 – Collection, storage, transport and treatment of end-of-life electrical and electronic equipment

5.1.2 Site operations manual

The site operations manual documents the approved standard procedures and other information needed for staff to perform their functions correctly and reasonably efficiently.

You should develop a site operations manual, so your facility is run efficiently and effectively, is safe for staff and users and does not impact on the local environment or cause a nuisance for neighbours. The site operations manual should be readily available to all staff.

Figure 19 shows the structure and type of content commonly included in a site operations manual at an RRC.

5.1.3 Emergency response management and requirements

RRCs should have an emergency management plan with procedures to manage potential incidents for equipment and activities carried out onsite.

Emergency procedures should be rehearsed at least twice a year to maintain readiness and look for improvements. Where appropriate, carry out trials with local emergency services.

Table 21 identifies requirements for better practice emergency response management and Table 22 lists the infrastructure needed for appropriate emergency management.

Table 21
Better practice emergency response management

Requirements	Details
Emergency management plan	Develop an emergency management plan
Emergency response procedures	Develop emergency response procedures and infrastructure for incidents such as: › accidents › injuries › fires › spills › explosions › bomb threats › workplace violence Procedures should document after-hours contacts (name, address and phone number) and relevant authorities to contact

Table 22
Better practice emergency management infrastructure

Infrastructure	Details
Temporary storage of unacceptable waste	In an emergency, facility operators may agree to temporarily store unacceptable waste. You must have procedures in place to get written approval from EPA Victoria and any other relevant authority, and to follow correct environmental and safety measures.
Firefighting equipment and management	Site operators should be equipped with adequate firefighting facilities and take immediate action if a fire occurs. This includes incorporating firefighting equipment in storage areas for: › combustible recyclable and waste materials › residual waste › paper and cardboard › tyres › garden organics › e-waste. Operators with formal training in fire safety and management may undertake suitable measures to contain a fire. For example, for a small fire, suitably trained staff may smother it with a suitable fire extinguisher or dirt or use water on it. These activities need to be monitored (and check the main storage pile) to make sure the fire is fully extinguished. In the absence of suitably trained staff and for larger fires, call emergency firefighters to the site immediately. In all instances, you should ensure the safety and wellbeing of staff, contractors, other patrons and any neighbours affected by the fire.

5.1.4 Environmental risk management

Applying better practice to managing environmental risks can help prevent identified risks from affecting the surrounding environment and facility neighbours, as listed in Table 23.

Table 23
Better practice environmental risk management

Factor	Consider
Appropriate infrastructure	Some environmental risks (e.g. stormwater and leachate) may need infrastructure and engineered tools to control and minimise impacts from these risks. Controls may include: › stormwater drains and leachate ponds › windblown litter trapping devices and controls, i.e. a well-built fence can help minimise the spread of windblown litter from an RRC (see Figure 20) › litter screens › impermeable and bunded flooring (e-waste).
Appropriate environmental risk management practices	Practices such as good housekeeping (keeping a site neat and tidy) and monitoring risks can help mitigate, minimise and control environmental risks such as dust, mud, litter, vermin, odour and noise pollution.
Regular monitoring of environmental risks	Regularly monitoring environmental risks will help ensure RRC operators are aware of site risks and that any controls implemented are effective. This includes monitoring: › noise levels › dust › site litter and litter entrapment devices › stormwater drains › leachate ponds. Where applicable, conduct regular monitoring of green organics storage piles and the oil, battery and chemical storage areas. To identify the risk of fire to a storage pile, look for smoke around piles of waste and check to see if the waste mass 'feels' warm. If you suspect a fire risk, take all relevant precautions to mitigate the risk of fire as per the facility's fire management procedures as listed in its emergency management plan.
Voluntary environment improvement plan (EIP) for the site	An EIP is a public commitment by a company to improve its environmental performance. An EIP outlines areas for improvement, typically beyond those required by EPA licences, through a series of agreed actions and timelines. An EIP is usually but not always developed in consultation with the local community in the area surrounding the company's premises. It can establish improved accountability and transparency between businesses and communities.

5.1.5 Preparing for infrequent events

RRC operators need to prepare for infrequent, unforeseen and unanticipated events. This includes managing OHS risks related to:

- overcrowding on days of high customer visits and events, such as free green waste drop-off days
- managing drop-offs and storage piles during days of high winds, rain or fire danger
- accepting unusual sized vehicles (e.g. farm machinery)
- unseasonable weather conditions
- unusual material loads such as animal/human carcasses.

For the site to operate safely and smoothly during these events, sites should have all relevant management protocols in place and ready to act on when needed.

5.1.6 Insurance

Facility operators must hold adequate insurance to cover fire, theft, malicious damage and other risks. Some waste streams may affect the type of insurance required. Facility operators must also have adequate public liability insurance to cover injuries and damage sustained by facility users.

Consult the council and the business's risk manager and insurance providers on the potential risk and insurance implications from any proposed development and/or operation.

5.1.7 Staff training

Employers have a duty under the OHS Act to provide with necessary training to enable them to perform their work safely and without risks to health.

Training should include:

- identifying load assessments including material types (particularly hazardous wastes) and volumes
- information on the health risks posed by site hazards and other identified risks at a facility
- safe operational procedures
- methods for supervising facility users
- safe manual handling techniques
- emergency response procedures (including spill and fire management)
- first-aid training and procedures
- methods for managing workplace bullying, violence and customer complaints
- de-gassing compliance requirements for managing air conditioners and refrigerators received.

The site operations manual should be readily available to all staff (see 5.1.2: Site operations manual). The Safe Work Method Statement (SWMS) should complement the site operations manual and be straightforward with clear and readily understood key messages. In some instances, the SWMS can be pictorial in nature and demonstrate several key steps associated with an activity (see 7.3.2 for an example of a SWMS).

The site operations manual and staff training programs should be updated regularly to reflect any changes.

Figure 20
Photo of rubbish on a perimeter fence

5.1.8 First aid

WorkSafe Victoria's C*ompliance code: First aid in the workplace* provides guidance on the first-aid measures that employers need to have in place, including:

- at least one adequate first-aid kit for the site and kits in the cabins of each machine/plant used onsite
- appropriate first-aid signage
- trained first-aid officer(s) holding appropriate accreditation and experience
- a well-maintained register of first-aid staff
- a suitable number of trained first-aid officers available onsite during each shift.

5.1.9 Site security

If you have a safe onsite, you will need procedures to guard against theft. Never leave cash onsite overnight and look for ways to reduce cash payments by encouraging alternative payment options such as credit card or PayPal.

Some remote areas may not have the coverage required to enable electronic transactions. In this instance, cash payments may be the only viable option.

You will also need to consider the security of recovered materials, particularly those that attract high commodity prices such as copper and other metals. You might consider storing them in a secure area (where feasible) and regularly clearing storage piles. Additional security measures such as security patrols, electronic alarms and closed-circuit television may be appropriate.

All facilities should have a perimeter fence, lockable gates and be attended when open (some smaller regional sites may be an exception to this). A wire mesh fence at least two metres high should be built around the site boundary.

5.1.10 Monitoring operations

All facilities should monitor and record the:

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

Facilities need to use consistent data monitoring techniques to obtain comparable data, particularly for waste acceptance data. For ease of access, data should be maintained on a computer, with secure and regular off-site backup 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. If possible, facilities should monitor and record traffic movements so growth projections can be considered when reviewing 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.

5.2 Managing site amenity and environment

5.2.1 Fire

- Good layout and management of storage of materials will reduce the risk of fires starting and spreading. When designing your site layout, you should:
- be aware of the EPA's *Waste Management Policy (Combustible Recyclable and Waste Materials)*
- understand the fire hazards associated with your activities and take reasonably practicable steps to reduce the fire risk associated with those hazards
- limit the overall volume of piles
- think about how to arrange different combustible and non-combustible materials
- leave appropriate gaps between piles and buildings to limit fire spread
- ensure neighbouring properties and surrounding properties are managed effectively to reduce risk of fire
- maintain access throughout the site, including access for firefighting authorities.

As a rule, you should use risk assessments to assess the threat of fire, identify potential hazards, check and implement controls and identify areas for continuous improvement. These should be completed at least every six months or after a significant event. Firefighting equipment and infrastructure should be site specific and tailored to your identified risks.

5.2.2 Dust and mud

Dust can be generated from many sources at an RRC such as:

- material storage piles (e.g. dirt, concrete, mulches) especially in windy conditions
- site roadways
- customer tipping activities
- movement of materials (e.g. into long-haul vehicles or bins).

Each potential source needs to be considered when designing and operating a facility.

Dust from customer tipping activities and moving materials can be a significant issue when working in enclosed buildings and need to be carefully considered. You may need to make design trade-offs such as additional airflow through the building.

Any dust generated at the site must not affect the amenity of the surrounding area. Dust can be managed by:

- using dust suppressants (e.g. water spray)
- installing wind breaks to prevent airborne material
- regular suction sweeping of surfaces (this can be a time-consuming and expensive process so better to design out the need for this requirement, where possible)
- stopping some operations on windy days (e.g. mulching and concrete crushing).

When looking to wet down materials for dust suppression, remember that moisture adds weight. Try to minimise water use, especially when wetting waste, to avoid paying more for its disposal.

Different types of systems can be used for different applications. For example, you can use misting system inside buildings, but try to use a water droplet size that allows dust to drop out but the moisture to evaporate before it hits the ground. If not managed carefully, mud can form on the floor of the facility or on windows of the operating plant and equipment and cause flow-on issues. For external storage piles, operators can use a broader spray from a water truck or sprinklers to control dust.

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

5.2.3 Stormwater

Stormwater and other run-off from storage piles and processed materials (e.g. green organics) should not be allowed to directly enter the stormwater system or surface waters. You can use bunds to contain stormwater in storage and processing areas.

If you are storing run-off with large amounts of organic material onsite, you'll need to prevent odour problems, for example, by aerating the stored water. Storage areas need to be maintained to ensure that the base of storage piles does not become waterlogged and odorous.

Inspect stormwater diversion drains and litter entrapment devices prior to and after major rainfall events and maintain them regularly to ensure they are functioning correctly.

5.2.4 Spills

All facilities need procedures for dealing with spills. Make appropriate equipment and materials available to deal with spills such as spill kits with dry mulch, sand or other absorbents. Bunding protects the environment by proving a secondary containment system for spilled liquids.

Train your site operators in spill management techniques and have them implement control measures as soon as spills are detected.

Refer to the EPA's *Liquid storage and handling guidelines* which have guidance on bunding.

5.2.5 Vermin

Poor quality housekeeping, litter and uncovered bins and storage areas are major factors in attracting vermin. Odour controls also outlined in this section, such as regular cleaning and removal of putrescible waste will help minimise vermin.

If vermin problems persist, consider implementing a pest control program. For example, baiting, spraying, traps and keeping grassy areas mowed to prevent habitat from forming.

5.2.6 Odour

Odour can affect employers, customers and surrounding residents and businesses at a site. Table 24 outlines factors to consider when managing odour at RRCs.

Table 24
Better practice odour management at RRCs

Factors	Consider
Odour at RRC boundaries	Keep odour-generating activities and storage piles away from the boundaries of the site where this may cause offence.
Putrescible waste	Where practical, clear putrescible waste (e.g. residual waste or organics containing food waste) within 24 hours of receival to prevent odour generation. Clean skips and pits that receive putrescible waste on a regular basis using disinfectant as needed to control/prevent issues from arising.
Wastewater	Treat wastewater from cleaning activities as leachate. If the site contains a leachate pond, adopt control measures and practices to avoid odour generation. Note: washing the site with water may add to the weight of litter and other disposal materials. Wastewater treatment can also be an expensive activity.
Sweep	Sweep up litter and other materials where practical rather than washing the site down with water as an alternative and potentially cheaper cleaning method.
Garden organics	Put appropriate controls 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.

5.2.7 Workplace standards

Employers have a duty under the OHS Act to provide, so far as is reasonably practicable, adequate facilities for the welfare of employees. This includes:

- a supply of drinking water
- toilet and 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 erecting a shelter, donga or windbreak or by providing suitable clothing.

Larger sites can accommodate the above requirements in a cost-effective manner. Smaller facilities will need to work out how to comply without excessive capital expense by ensuring most requirements are provided within a single, simple structure.

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.

For more information about providing amenities, see WorkSafe Victoria's *Compliance code: Workplace amenities and work environment*.

5.2.8 Tidiness and aesthetics

For many residents, visiting the nearest RRC is their main interface with council, so it is important that their visit is a positive experience. An RRC can be a source of considerable civic pride or hub of community creativity, for example through artists-in-residence programs exploring art using recycled materials.

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 aesthetic appearance of a facility should be maintained by vegetation screening and regular cleaning and maintenance. Consider establishing gardens or other visual enhancements where feasible, particularly developing and maintaining vegetation and gardens at the road entrance (see Figure 21).

Figure 21
Photo of a low-cost garden at the entrance of an RRC

5.3 Community relations

5.3.1 Social licence to operate

SV and the Commonwealth Scientific and Industrial Research Organisation (CSIRO) published a report examining the important relationship between the community and the waste and resource recovery sector. It found that facilities often need a social licence to operate (SLO) or acceptance/trust from the local community and other stakeholders for the facility's existence and operations.

A SLO can be gained and built by focusing on the key areas in Table 25 when engaging your local community to build your SLO when engaging your local community.

For more information

See CSIRO's **Engaging Communities on Waste** on SV's website for guidance

Table 25
Factors to consider when engaging your local community to build your SLO

Driver	Description
Procedural fairness	The opportunity to be heard and have a voice without feeling intimidated or feeling a power imbalance in any interactions This could include the facility operator being prepared to change practices in response to community sentiment or the community being able to participate in decisions relating to the site
Relationship quality	Quality of contact and communication (open, honest and transparent) Responding to concerns and issues in a timely manner, being accessible and easy to contact Being committed to responding genuinely to community concerns and issues
Trust	Acting responsibly in the community's best interests Improving the capability of local operators, local government and state government bodies to act in the local community's best interests
Impacts	Reducing community concerns about negative impacts by addressing them (e.g. dust, odour, noise, increased traffic, litter, scavenging birds and visual impacts)
Benefits	Addressing local and societal benefits (e.g. convenient disposal of large household items and managing waste generated by society, reducing public health risks, and supporting the Victorian economy) Facilities can use PR material to discuss/promote these benefits
Citizenship fairness	Wider societal considerations and the 'greater good' (e.g. Statewide Infrastructure Planning and planning approvals)
Governance	Confidence in regulations and compliance for governing activities of waste and resource recovery facilities (the EPA and council's role)

5.3.2 Facility promotion

You can promote the objectives of recycling and the role of your facility in resource recovery in the local community through:

- a facility webpage, Facebook page or an internet listing showing disposal costs and items that are accepted and not accepted
- media promotion and/or advertising
- onsite signage
- financial incentives for customers to segregate recyclable material from waste
- public education on why proper separation of waste is desirable.
- complaint management
- as part of the local community, facility managers should engage with the community and consider their views. Include a contact number on signs and note and assess any suggestions for improving the facility.
- the site operations manual should cover procedures for handling complaints, including:
- recording details of the complaint including date and time
- identifying the cause of the complaint
- investigating and working out if the complaint is reasonable
- acting to prevent further complaints where necessary
- providing feedback to the complainant detailing actions taken
- annual reporting of complaints received.

5.3.3 Education

The efficient operation of the facility depends on community support and appropriate use. You can help users understand your operation through guidance, supervision, signs, posters and/or pamphlets as appropriate.

Where appropriate, operators may choose to set up a dedicated education area, run community open days and tours, or other community engagement activities such as an artist-in-residence program.

For more information

See **Metropolitan Waste and Resource Recovery Group's Community and Stakeholder Engagement Guide** available from **www.mwrrg.vic.gov.au/engagement/community-and-stakeholder-engagement-guide**

5.4 Procurement

5.4.1 Investigate opportunities for efficient purchasing

Operators that are open to working cooperatively to secure services, plant, equipment and materials can explore opportunities to leverage buying power and/or reduce and share costs.

Procurement processes should:

- encourage a competitive response from the market by using an open market tender process and providing enough information and response times to attract competitive bids
- assess bid submissions considering the ongoing costs of the purchasing decision (e.g. purchasing decisions on plant and equipment should consider energy and water efficiency and associated energy costs).

Smaller sites may consider buying second-hand equipment where practical. Alternatively, sites may choose a mix of purchase and hire, depending on the demand for each item for site activities.

An employer's duty under the OHS Act to ensure plant is safe, so far as is reasonably practicable, still applies when purchasing used equipment. Used plant is more likely to have outdated or missing safety features, which must be considered and addressed before using the plant.

Collaborative procurement may be carried out by two or more councils who work together to procure waste and resource recovery services and/or infrastructure by consolidating waste materials or products to maximise environmental, social and economic outcomes.

Waste and resource recovery groups can support collaborative procurement activities.

For more information

See **Section 7 Resources** for more on waste and resource recovery groups

5.4.2 Sustainable procurement

When purchasing materials and products for use at the facility, including consumables for staff amenities and office equipment, consider the environmental footprint of competing products.

Where practical, give preference to materials with recycled content, low energy use in manufacturing and/or production and that do not deplete non-renewable resources.

In 2016–17, the Victorian Government spent $16 billion on goods and services to support service delivery and operations. This is in addition to $9.1 billion spent on public construction and infrastructure. Supporting markets by increasing demand for recycled content and products ensures that we get the most value from our recovered resources.

5.4.3 Social procurement

This enables buyers and suppliers to deliver social, economic and environmental outcomes that benefit the Victorian community, the economy and the environment. It enables organisations to use their buying power to generate social value above and beyond the value of the goods, services or construction being procured.

The Buying for Government website has information and opportunities on doing business with government and the Victorian Government's social procurement framework **buyingfor.vic.gov.au**.

5.5 Selecting and receiving material streams

RRCs should be managed and operated to maximise the value and amount of recyclable materials recovered.

5.5.1 Selecting material streams

Deciding which materials to segregate for recycling is based on an analysis of:

- regulative and legislative requirements
- local, state, national and international markets
- environmental benefits
- the financial sustainability of accepted material streams, considering:
  - transport costs for processing
  - disposal costs for waste materials
  - rebates or savings for product stewardship schemes diverting material from landfill
  - infrastructure available at the facility
  - the capabilities of staff operating a facility.

5.5.2 Reviewing material streams accepted

The material types recovered at an RRC should be regularly reviewed and added to where feasible.

Figure 22
Photo of gatehouse sign detailing example gate fees for accepted materials

Figure 23
Photo of gatehouse sign detailing example gate fees for accepted materials

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5.5.3 Gate fees

Facilities should consider charging different fees for different streams to reflect the cost incurred or revenue received for the material. Gate fees for receiving waste and recyclables should be structured to reflect:

- costs of operating the facility
- costs for disposing of waste materials
- commodity value for separated recyclables
- desired level of financial return on the capital invested in the facility.

Figure 22 and Figure 23 shows examples of gatehouse signs with gate fees.

5.5.4 Hours of operation

Structure your operating hours to cater for customers using the facility, balanced with the cost of operating the facility during these times. Where feasible, the facility should be open during weekdays and the weekend. Work out the best opening times by consulting the community that will use the facility.

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If commercial collection vehicles use the facility, the hours of operation need to account for the schedules that these vehicles operate under (e.g. early morning shifts result in a peak period mid-morning during the week). If it is not practical to accommodate the hours of all commercial collection vehicles, it may be possible to negotiate with commercial operators to change their routes/collection times to suit the site's operating hours.

If only small vehicles use the facility, the hours of operation need to accommodate expected peak periods of use.

The normal operating hours for a site may need to extend beyond the hours it is open to the public to give staff time to safely perform cleaning duties, general maintenance and other required tasks. However, operating hours may be limited by the need to minimise impacts such as noise and traffic on neighbouring properties.

5.5.5 Supervising and inspecting incoming materials

RRCs should always be supervised when open. Site operators should supervise facility users and inspect materials entering the facility to ensure:

- customers know where to unload materials
- unacceptable and potentially hazardous material is detected prior to disposal
- resource recovery is maximised and waste material is not hidden beneath recyclable material
- materials are correctly placed, especially batteries, oils and other potentially hazardous waste
- a safe operating environment is maintained.

The public must not enter a container, pushpit or machine operating area under any circumstances. Children should not be permitted out of the vehicle they are travelling in at any time while at a facility.

For larger sites, at least one staff member should be dedicated solely to the unloading area to supervise facility users.

Employers have a duty under the OHS Act to provide necessary supervision to enable employees to perform their work in a way that is safe and without risks to health. This should include supervising staff to ensure correct procedures and safe work instructions are followed.

5.5.6 Traffic management

Better practice traffic management has several benefits for site operators, including:

- lower risk of traffic incidents
- more efficient unloading of material streams
- easier supervision of customers, staff, contractors and other personnel onsite.

Traffic management procedures should be developed in consultation with employees and should address vehicles entering and leaving the site, and vehicles used at the workplace. Table 26 lists the main factors to consider for better practice traffic management.

Table 26
Better practice traffic management

Factors	Consider
Staff and visitor inductions	Induct all employees and contractors to the site traffic management procedures. Make employees, contractors and customers aware of onsite safety procedures (e.g. follow traffic signage, never stand in the body of moving trucks, utes or other vehicles).
Supervise vehicle movement	Supervise vehicle movement around the site to make sure unloading is conducted efficiently and safely.
Vehicle safety signs and lights	Fit all transfer vehicles with appropriate visible safety signs, roof-mounted flashing lights and audible warning devices used during unloading.
High-visibility clothing	Employees and contractors need to wear high-visibility and reflective clothing when working in areas where vehicle movement occurs.
Vehicle fall protection systems	Establish fall protection systems for staff or contractors who need to climb on their vehicle, for example to place or remove tarpaulins.
Signage	Use signage to help visitor traffic navigate the site safely and efficiently.

5.6 Managing received material streams

5.6.1 Lowering contamination rates of recyclable streams

In many cases, lowering the contamination rate of a material stream can significantly increase its value. This can be achieved through several measures, including:

- establishing a gate fee charging system that rewards customers for bringing separated materials to site
- ensuring appropriate containers/bins are available and easily accessible for customers for each material stream
- implementing well-designed and well-located site maps and signage showing drop-off location, the materials for each drop-off location and how to safely load and unload materials
- community education programs
- guiding and/or supervising customers when receiving materials and when materials are being dropped off.

Facilities may choose to measure their carbon footprint and work towards becoming carbon neutral.

5.6.2 Compacting materials streams

When transporting materials off-site, it is sometimes difficult to maximise payloads due to the low density of some waste and recyclable materials. Where appropriate and safe, compacting materials is a relatively cost-effective way to increase the value and viability of a material stream and can extend the economically viable transport distance for some materials. Compaction techniques include:

- compaction by backhoe on a front-end loader for skip bins and larger containers (Figure 24)
- dedicated compaction equipment (e.g. for cardboard compaction).

5.6.3 Greenhouse emissions

Facilities should minimise greenhouse gas emissions, through measures such as:

- de-gassing white goods such as refrigerators and air conditioners using a suitably qualified contractor (e.g. refrigeration mechanic)
- using energy-efficient equipment and fuel-efficient vehicles
- collecting and processing organic waste.

Figure 24
Photo of a front-end loader with backhoe used for compaction

5.6.4 Onsite processing to add value to a material stream

Where viable, selected materials may be processed onsite to increase their value (e.g. concrete crushing, wood chipping).

Processing should be conducted away from site users and managed so it does not affect the amenity of the surrounding area, disrupt normal operations or create an OHS risk to operators or facility users.

Before conducting any onsite processing activities, operators need controls in place for OHS, noise, odour, wastewater and leachate.

Refer to the EPA's *Management and Storage of Combustible Recyclable and Waste Materials.*

5.6.5 Reselling reusable items in a resale shop

Reselling reusable waste items in a resale shop (or shed) is an effective way to:

- divert items from landfill
- engage with the local community
- provide a potential income stream for a facility or the managing community organisation
- encourage the circular economy.

Table 27 lists the main factors to consider when choosing to run a resale shop at an RRC.

Figure 25 to Figure 28 show examples of resale shops at RRCs.

The Western Australian Local Government Association has a better practice guideline for reuse shops on the WasteNet website, **wastenet.net.au/better-practice-reuse-shop-guidelines.aspx**.

Table 27
Better practice resale shops

Factors	Consider
Inspection and testing program	Establish an inspection and testing program for all second-hand goods to be sold. Follow the applicable Australian Standards (e.g. AS5761: In-service safety inspection and testing - Second-hand equipment prior to sale and AS5762: In-service safety inspection and testing - Repaired electrical equipment).
Legal advice	Seek legal advice concerning the obligations of the facility operator from the sale of goods, especially electrical items and items for which safety standards apply. Update legal advice periodically to ensure operators are aware of new regulations and guidelines relating to the resale of items.
Registration	If required, register as a second-hand dealer under the *Second-hand Dealers and Pawnbrokers Act 1989*, administered by Consumer Affairs Victoria.
Management plan	Review the facility's management plan at least annually and update where necessary. Continually train staff to provide current information on items that should and should not be resold.
Storage	Store items securely on the site so the site is maintained in a clean, accessible and safe condition. Items should not obstruct access to any site infrastructure, including fire hydrants located near the facility, or material drop-off areas.
Financial sustainability	Investigate the financial sustainability of a resale shop prior to setting one up. Ensure the cost for disposal of any unsold items is covered in material acceptance fees.

5.6.6 Operating equipment

Only trained and licensed (where relevant) personnel should operate equipment. Maintain training records and document risk assessments and safe operating procedures for all plant and equipment. Make employees aware of any known hazards of vehicles, plant or equipment that they operate as part of their work.

5.6.7 Signage

Maintain signage at the centre so all site directions, traffic control measures and safety instructions are clear and accessible to facility users.

For more information

See **Section 7 Resources** for more on signage

5.6.8 Signage of material stream drop-off locations

Good signage displaying items accepted, drop-off locations and traffic movements at RRCs helps maximise the source separation of recyclable materials, while keeping customers and operators safe. Poor signage can make separating materials confusing for users, increase contamination of recycling streams and reduce operability.

Clear, visible and consistent signage should be implemented throughout the facility, showing:

- appropriate materials to be collected in each container, skip bin, stillage or drop-off area
- hazardous and heavy material handling and storage procedures.

Procedures for the safe storage, handling and emergency response of potentially hazardous waste likely (or even unlikely) to be received at the facility (e.g. asbestos, batteries or oils), should be developed at each facility.


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Figure 25
Photo of resale shop at an RRC

Figure 26
Photo of a resale area positioned to the side of the main RRC facility shed

Figure 27
Photo of a book exchange in a resale shop

Figure 28
Photo of a resale shop frontage at a designated resale shed

5.6.9 Plant and equipment maintenance

Facility operators should provide appropriate equipment and machinery to enable workers to carry out their responsibilities effectively and safely. Table 28 lists the key requirements for better practice plant and equipment maintenance.

Employers have a duty under the OHS Act to provide plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health. This includes ensuring plant is regularly inspected and maintained in a safe operating condition. In addition, under regulation 106 of the OHS Regulations, employers must keep a record of any inspection and maintenance carried out on certain types of plant.

Specific duties also apply to control risks associated with plant.

For more information

See **Section 3.3.4 Plant and equipment selection** and WorkSafe Victoria's *Compliance code: Plant*

Table 28
Better practice plant and equipment maintenance at RRCs

Requirement	Consider
Equipment compliance	All equipment must comply with relevant standards and legislation All reprocessing and recovery equipment must meet high-quality separating requirements for export and local uses.
Pre-start inspections and checklists	Users must complete daily pre-start inspections/checklists prior to use and keep records of inspections. Train employees on the procedure for reporting any defects in a vehicle, plant item, machine, equipment or work system, and implement a 'tag out' procedure for faulty equipment. Install backup equipment or contingency arrangements so the facility can keep operating.
Certification and maintenance	Plant, equipment, vehicles and tools should be properly certified, maintained and inspected on a regular basis. Assign responsibility for plant and equipment maintenance tasks to employees or contractors with the required competencies, licences or certificates. Develop a maintenance program in accordance with manufacturers' guidelines, together with a maintenance register that links to the defective plant/equipment reports and 'tag out' procedure. Keep maintenance records and faulty equipment reports and, where feasible, a maintenance history file for each item of plant and equipment.

5.6.10 Electronic waste (e-waste)

Electronic waste or e-waste includes any electrical or electronic equipment with a power cord or battery that is no longer working or wanted.

E-waste is growing three times faster than general municipal waste in Australia. It contains both valuable and hazardous materials that can be recovered when they reach the end of their working life.

The Victorian Government has banned e-waste from Victoria's landfills from 1 July 2019. The ban seeks to improve outcomes for e-waste recovery and recycling and to reduce the risk of negative impacts on public health and the environment, as e-waste and processed e-waste materials must be handled and stored with care to avoid leakage and the release of hazardous substances into air, water or soil.

New regulatory measures, in the form of waste management policies, have been developed to ban e-waste from landfill and specify how e-waste must be managed. These requirements will also help support legitimate and sustainable e-waste recycling opportunities in Victoria.

From 1 July 2019, RRCs collecting e-waste must meet the requirements outlined in the EPA's *Waste Management Policy (E-waste)* for the safe collection and storage of e-waste.

Under Regulation 5 of the *Environment Protection (Scheduled Premises) Regulations 2017*, facilities should specify procedures for the safe storage and handling of 'specified electronic waste' likely to be received. Specified electronic e-waste includes waste rechargeable batteries, cathode-ray tube monitors and televisions, flat panel monitors and televisions, information technology and telecommunications equipment, lighting and photovoltaic panels.

The landfill ban of e-waste is reflected in the *Variation to Waste Management Policy (Siting, Design and Management of Landfills)*.

You should also be aware of *AS/NZS 5377: 2013* **Collection, storage, transport and treatment of end-of-life electrical and electronic equipment.**

Table 29 outlines the process for accepting, managing and removing e-waste at RRCs.

Figure 29
Photo of better practice e-waste collection facility

Figure 30
Photo of common household e-waste items

Figure 31
Photo of e-waste signage

Table 29
Accepting, managing and removing e-waste at RRCs

Task	Process	Consider
Accepting e-waste	Access	Keep collection areas at facilities designated for public access easily accessible, clean and free of hazards
	Inspect incoming loads	Check that only acceptable materials from domestic sources are deposited and in the right place
	Identify specified e-waste materials	Train gate staff to identify risk loads and recognise specified e-waste materials (e.g. televisions, rechargeable batteries, photovoltaic panels) and to know how and where each category of e-waste should be collected Train staff to know what questions to ask (e.g. is the specified e-waste damaged or has it been damaged when transporting to the site?)
	Load and unload materials	Any loading or unloading of e-waste materials should occur only in the presence of trained staff or contractors Avoid breaking e-waste when unloading and storing materials
Managing e-waste	Safety signage	Display prominent signs to communicate relevant information, including safety warnings, instructions to the public, site access times for the public, and details of equipment that is or is not accepted at the facility
	Personal protection equipment	Personnel handling e-waste must be appropriately trained, equipped and clothed
	Staff training	Train employees in emergency procedures and ensure suitably trained personnel are available to respond in an emergency
	Safety Data Sheets (SDS)	Keep SDS onsite for any hazardous substances or dangerous goods commonly received, stored or used onsite
	Potentially reactive materials	Avoid storing potentially reactive materials together or close to each other (e.g. lithium-ion batteries)
	Storing e-waste	Store e-waste in a way that will avoid breakage Protect e-waste from the elements/weather Store e-waste on an impermeable and easily bunded surface
	Dumped specified e-waste	Have documented procedures in place for dealing with specified e-waste, and ensure the EPA Victoria is satisfied with these procedures Separate dumped specified e-waste from the waste stream if safe to do so and store it appropriately Contact a licensed transporter to take the specified e-waste to an appropriately licensed facility as soon as practical
Removing e-waste waste	Remove e-waste fast	Make every effort to remove e-waste materials from the facility for appropriate recycling as soon as practical
	List of licensed contractors	Maintain an up-to-date list of contractors licensed to remove and transport e-waste in the facility's site operations manual

5.6.11 Prescribed industrial waste banned from landfill

Certain types of prescribed industrial waste (PIW) such as used oil filters, large containers contaminated with PIW and grease interceptor trap waste are considered by the EPA as having available opportunities for recycling and are prohibited from disposal to landfill.

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.

Refer to the EPA's *Large Containers (≥200L) contaminated with PIW — classification for reuse* and *Oil filters – classification for reuse* (Publication IWRG423).

5.6.12 Hazardous waste and dangerous goods

In the context of an RRC, hazardous waste is waste and dangerous goods that pose substantial or potential threats to public health or the environment. It can include medical waste, asbestos, gas bottles, batteries, motor oil, cooking oil and fluorescent lights. It also includes any PIW banned from landfill. Site operators should reject any load that they suspect contains hazardous waste or asbestos.

Specific duties apply to controlling risks associated with waste or substances classified as dangerous goods under Section 3(1) of the *Dangerous Goods (DG) Act* and the *Australian Code for the Transport of Dangerous Goods by Road and Rail* (Seventh edition or subsequent edition). Further duties are detailed within the DG Act and associated regulations.

In particular, duties under the *DG (Safety and Health) Regulations* apply to storing and handling dangerous goods. Manufacturers, suppliers and occupiers should read the Code in conjunction with the DG Act and DG (S&H) Regulations. See WorkSafe Victoria's *Compliance code: Hazardous substances* and *Code of Practice: The storage and handling of dangerous goods*. If you receive unexpected PIW that you suspect poses an urgent hazard, you should be ready with an emergency response.

5.6.13 Asbestos

Asbestos poses health risks during removal, transport and disposal. Specific legal duties apply under the OHS Regulations to control the risk of exposure to airborne asbestos fibres when managing, removing, transporting and disposing of asbestos-containing materials. More information is available in WorkSafe Victoria's *Compliance code: Managing asbestos in workplaces* and *Compliance code: Removing asbestos in workplaces*.

The EPA Victoria controls the transport and disposal of waste asbestos, whether of domestic, industrial, commercial or trade origin. Asbestos should go straight to landfill and should not be accepted by RRCs. If you must accept asbestos, it should be removed from the site as soon as practical by an appropriately licensed removalist and disposed of at an EPA Victoria licensed disposal site.

The EPA lists Victorian landfills licensed to receive asbestos to help you find the closest disposal option. The Asbestos in Victoria website (**asbestos.vic.gov.au**) has guidance from WorkSafe Victoria, the EPA and the Department of Health and Human Services and provides information relating to the legal duties, how to comply with those duties, and resources for safely managing and removing asbestos in homes and workplaces.

Establishing asbestos receival facilities is carried out in consultation with the EPA Victoria and must conform to requirements under the OHS Regulations.

Table 30 outlines the process for accepting, managing and removing hazardous waste at an RRC.

For more information

See **WorkSafe** and **EPA** for further guidance and regulations on managing Asbestos

Table 30
Accepting, managing and removing hazardous waste at RRCs

Task	Process	Consider
Compliance with legislation (including regulations)	Ensure the facility and processes comply with requirements under OHS and dangerous goods legislation and regulations for classified hazardous substances and dangerous goods	What types of substances accepted at the facility will be classified as dangerous goods under the DG Act Specific duties that apply to controlling risks associated with accepted hazardous substances or dangerous goods The risk of exposure for employees working at the facility Additional training, equipment, signage and infrastructure that may be required to comply with relevant legislation
Accepting hazardous waste	Inspect incoming loads	Check that only acceptable materials from domestic sources are deposited and in the appropriate place
	Identify hazardous and unacceptable materials	Train gate staff to identify high-risk loads and recognise unacceptable materials (e.g. asbestos, chemical liquids) and to know what to do should they find them. Have a clear process for rejecting loads suspected of containing hazardous materials or asbestos Train staff to know what questions to ask (e.g. asking about the age of renovation debris can indicate whether asbestos is likely to be present)
	Load and unload materials	Any loading or unloading of hazardous materials should occur only in the presence of trained staff or contractors

Task	Process	Consider
Managing hazardous waste	Safety signage	Always display prominent signs on the appropriate handling of hazardous waste
	Control the risk of exposure	Personnel handling hazardous waste must need to be appropriately trained, equipped and clothed
	Staff training	Train employees in emergency procedures and ensure suitably trained personnel are available to respond in an emergency
	Safety Data Sheets (SDS)	Keep SDS onsite for any hazardous substances or dangerous goods commonly received, stored or used onsite
	Potentially reactive materials	Never store potentially reactive materials together or close to each other
	Liquid waste	If liquid waste is accepted, store it in a distinct and secure area with adequate ventilation, safety signs (e.g. no smoking), roofing and bunding Do not mix different liquid wastes under any circumstances as mixing some liquids (such as oil and chlorine) may create an explosion hazard
	Dumped hazardous waste	Have documented procedures in place for dealing with waste identified as hazardous after disposal, and ensure the EPA Victoria is satisfied with these procedures Separate dumped hazardous waste from the waste stream if safe to do so and store it appropriately (e.g. in a pushpit) Contact a licensed transporter to take the waste to an appropriately licensed facility as soon as practical
Removing hazardous waste	Removing waste	Make every effort to remove hazardous materials from the facility for appropriate treatment, recovery or disposal as soon as practical and agreed to by the EPA. You may need to complete a Transport Certificate
	List of licensed contractors	Maintain an up-to-date list of contractors licensed to remove and transport hazardous waste in the facility's site operations manual

5.6.14 Signage of material stream drop-off locations

Good signage displaying items accepted, drop-off locations and traffic movements at RRCs helps maximise the source separation of recyclable materials, while keeping customers and operators safe. Poor signage can make separating materials confusing for users, increase contamination of recycling streams and reduce operability.

Clear, visible and consistent signage should be implemented throughout the facility showing:

- appropriate materials to be collected in each container, skip bin, stillage or drop-off area
- hazardous and heavy material handling and storage procedures.

Any facility likely to receive potentially hazardous waste such as asbestos, batteries or oils should develop an emergency management plan in accordance with the relevant legal requirements for substances classified as hazardous substances or dangerous goods under OHS and dangerous goods legislation and regulations.

5.6.15 Emerging waste stream management

Over time, new kinds or increased volumes of waste and recyclable materials may be accepted by the facility. The Safe Work Method Statement and end markets need to be developed to manage emerging waste streams. For example, solar panels or photovoltaic (PV) system components (Figure 32) have a typical life span of 5 to 35 years and have hazardous components with potential risks to the environment and human health if not managed safely at end-of-life. New ways of managing this waste are emerging through the e-waste campaign and PV System Product Stewardship Project.

Figure 32
Photo of solar panels on a roof

Table 31
Resources for managing received materials streams

Source	Detail
SV	› Signage library for transfer stations › Fact sheet on signage at RRCs › Fact sheets on better practice management of numerous materials
WorkSafe Victoria	› Code of practice for the storage and handling of dangerous goods › Compliance code: Hazardous substances › Compliance code: Managing asbestos in workplaces
Hazardous waste collection programs	Contact your local councils, SV and the EPA Victoria
Australian Standards	› ISO ISO14021: Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling) › AS1319: Safety signs for the occupational environment › AS4123.7: Mobile waste containers – Part 7: Colours, markings and designation requirements
EPA Victoria	› Code of practice: The storage and handling of dangerous goods › Large Containers (≥200L) contaminated with PIW – classification for reuse › Oil filters – classification for reuse

5.7 Managing end markets and destinations for material streams

5.7.1 Responding to market prices

Facility management should proactively monitor and respond to changes in costs and revenues brought about by external factors, including:

- changes in the price received for recovered recyclables
- changes to landfill disposal costs
- increases in operational costs such as electricity and labour
- regulatory changes that result in materials being banned from landfill, such as e-waste.

5.7.2 Regional collaboration

Regional collaboration can lead to opportunities for improved cost efficiencies for waste transport, greater purchasing power and economies of scale. Facility managers are encouraged to work with regional waste and resource recovery groups to identify and facilitate these opportunities.

Waste and resource recovery groups are listed in Section 7: Resources.

5.7.3 Developing onsite uses and local markets for end products

Developing onsite uses and local end markets for recovered materials can reduce the cost of transporting to end users and limit exposure to price volatility brought about by international commodity markets.

Products suitable for onsite use or local markets include:

- onsite processed materials such as mulch, wood chips, crushed concrete, rubble and masonry produce
- hard waste such as bicycles, furniture and building waste (e.g. wood lengths, corrugated iron) can be refurbished or reused by local businesses or community organisations such as Men's Sheds.

Facility managers are encouraged to seek out opportunities, where feasible, for onsite use of end products and developing local end markets. This can benefit RRCs and their surrounding community in several ways:

- shorter transport distances for materials processing
- reduced transport costs
- contributing to the local economy and employment
- reduced exposure to volatility in international markets.

5.7.4 Developing the circular economy

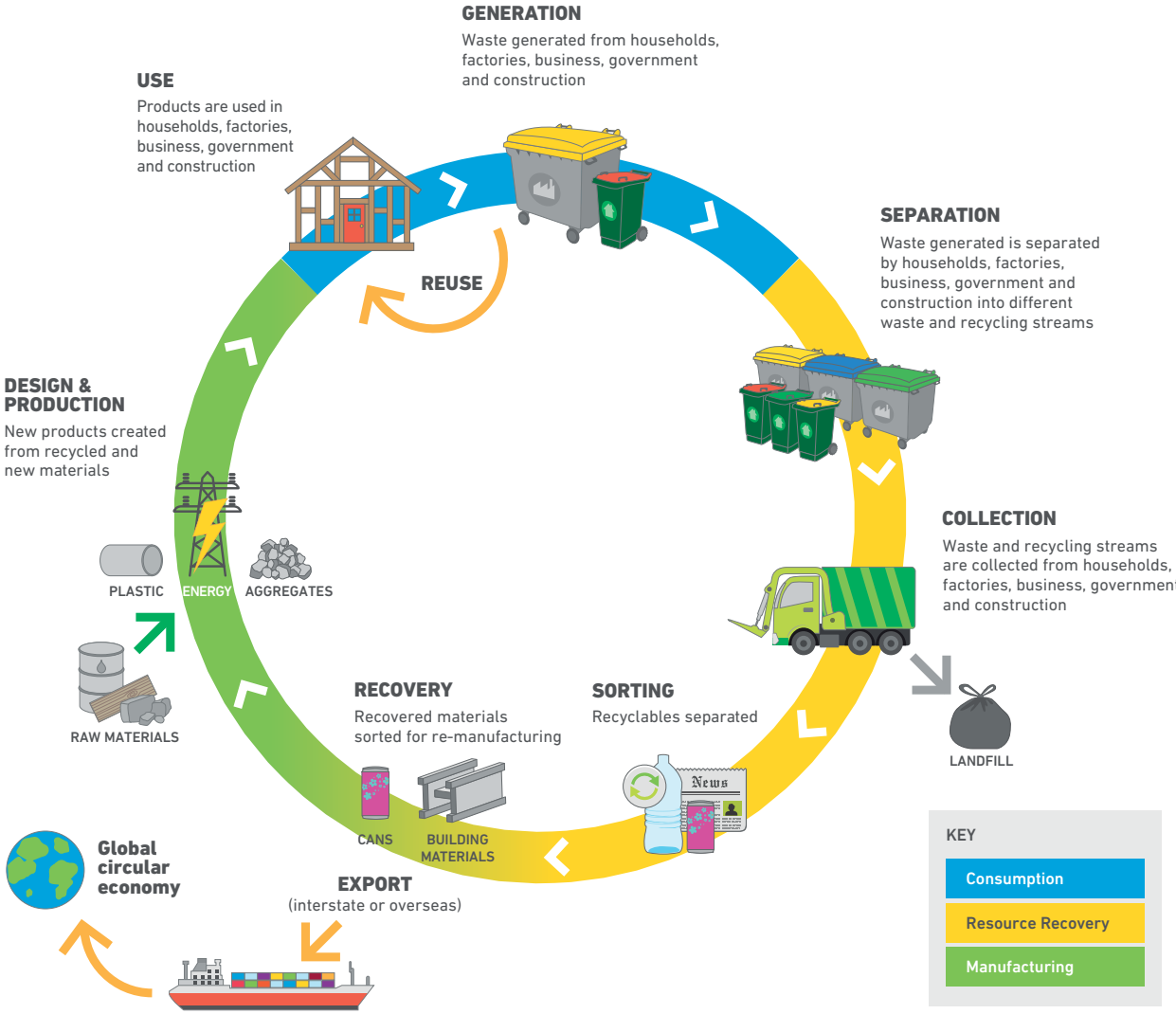
Victoria's waste and resource recovery system managed more than 12.8 million tonnes of materials in 2016–17. Some materials have value and can be recovered, extending their life for additional use in the community.

A circular economy is where waste is designed out, products and materials are kept circulating at their greatest value for as long as possible, and the natural environment is restored and protected (see Figure 33).

At SV, our vision is for a circular economy in Victoria that will create a future of wellbeing, vitality and prosperity to ensure we are the most sustainable state in Australia. A circular economy is complex and requires commitment and innovation from industry, government and the community.

A failure to respond to innovative and progressive thinking will ultimately increase amounts of materials destined for recycling and reprocessing, the associated safety concerns and amounts of potentially useful materials being lost to landfill.

Figure 33
Flow of resources in Victoria's waste and resource recovery system



5.8 Rehabilitation and future use of sites post-closure

Rehabilitating an RRC involves removing all waste and other materials deposited at the site, as well as all infrastructure and equipment not needed 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. You will need to assess the soil quality prior to any rehabilitation activities. Rehabilitation may include landscaping or paving and ensuring site drainage will not result in pooling of water onsite.

If selling the site, site owners should obtain an independent audit to confirm that the site is adequately rehabilitated with no ongoing impact from its use as an RRC.

The most likely ongoing impact post-closure of an RRC is illegal dumping of waste. Post-closure sites need to be regularly monitored. If illegal dumping is an ongoing issue, you will need to develop and implement appropriate response strategies, such as:

- informing the community of alternative disposal options or facilities
- community education detailing the potential impact of illegal dumping, such as health impacts
- introducing enforcement action, such as fines
- creating physical barriers to illegal dumping by preventing access to the site.

06

Assessing better practice during site operation and management

This section looks at looks at using the better practice performance areas to assess site operation and management including:

- Risk management during site operation and management
- Meeting stakeholder needs during site operation and management
- Smart materials management during site operation and management
- Financial sustainability during site operation and management
- Futureproofing during site operation and management

Any areas where your facility can achieve better practice during assessment can be flagged for future improvement. You may need to shortlist your improvements based on costs and benefits, so you can prioritise your activities.

6.1 Risk management during site operation and management

Better practice risk management continues throughout the operation and management of your facility. Risk management should continually be reviewed and where necessary revised to minimise or eliminate risks. Risk management processes must comply with the relevant legislation and regulations, as well as any relevant compliance codes, guidelines and standards.

BETTER PRACTICE ASSESSMENT

Answer the questions below to see if you are meeting better practice and where you can improve.

Download the workbook for a full assessment template on the SV website at www.sustainability.vic.gov.au.

Area	Assessment question	Section
Regulation and legislation		
Regulations and legislation	Does the site comply with the relevant duties under OHS and dangerous goods legislation and regulations (e.g. duties associated with hazardous manual handling, noise, the prevention of falls, plant, hazardous substances, asbestos)?	2.1, 5.1.1, 7.2
	Have you developed an emergency management plan in accordance with WorkSafe Victoria's *Compliance code: Workplace amenities and work environment*?	5.1.3
	Are adequate first-aid measures in place?	5.1.7
	Does the site provide adequate facilities for staff welfare, such as clean drinking water, toilets and areas for eating and drinking?	5.2.7
	Do plant and equipment comply with all relevant OHS legislation, regulations and standards, in particular, Part 3.5 (Plant) of the OHS Regulations?	5.1.1, 5.6.6
	Does the site comply with the EPA Victoria's procedures for containing and managing certain types of prescribed industrial waste, while waiting to be transported off-site by a licensed contractor?	5.5.5, 5.1.7, 5.6.11
	Does the site comply with all relevant legislation, regulations and standards on storing and handling of dangerous goods, hazardous waste and asbestos? In particular, the *Dangerous Goods (Storage and Handling) Regulations 2012*, and Part 4.1 and Part 4.4 of the *OHS Regulations*?	5.6.12, 5.6.13

Area	Assessment question	Section
Insurance		
Insurance	Do facility operators hold adequate insurance to cover fire, theft and malicious damage?	5.1.6
	Is adequate public liability insurance held to cover injuries and damage sustained by facility users?	5.1.6
OHS		
Roles and procedures	Are procedures implemented at the site to adequately guard against theft?	5.1.9
	Are measures in place to monitor and record site activity (e.g. infrastructure and equipment maintenance, customer complaints)?	5.1.7, 5.1.9, 5.1.10, 5.3.3,
	Is the RRC supervised at all times when open?	5.1.10, 5.5.5
	Is the necessary supervision provided to ensure that safety procedures are followed. For example, is there supervision to ensure that no employee, contractor or customer stands in the body of trucks, utes or other vehicles while moving?	5.5.6, 5.1.10
	Are workplace hazard inspections conducted regularly at the site?	5.1.1, 5.6.9
	Are suitable measures in place to carry out better practice plant and equipment maintenance?	
	Is the facility periodically audited to ensure the measures in place to address potential impacts from the site are effective?	
	Have you developed a hazard identification and risk control system?	
	Have safe work procedures (e.g. Safe Work Method Statement) or site operating procedures been conducted and documented for all activities and tasks at a site?	5.1.1, 7.3.2
	Do you have a site operations manual with all the required information?	5.1.2
	Is the site operations manual readily available to all staff as a reference should they be in doubt of any procedures?	5.1.2, 5.1.7
Training and inductions	Have staff been inducted in site operating procedures, emergency procedures and received necessary training that enables them to do their job safely and properly?	5.1.7, 5.6.6
	Are all employees and contractors inducted to the site OHS and traffic management procedures?	5.5.6, 5.1.7
	Are all personnel that are operating equipment licensed (where required) and suitably trained?	5.1.7, 5.6.6

Area	Assessment question	Section
Plant and equipment	Have staff and contractors been provided with appropriate personal protective equipment and suitable footwear where required?	5.1.1
	Are all vehicles equipped with safety signs and lights?	5.5.6
	Are fall arrest systems or passive fall prevention devices in place for staff or contractors who need to perform work at heights (e.g. climbing on vehicles to place or remove tarpaulins)?	5.1.1
	Is signage at the centre maintained to ensure that all site directions, traffic control measures and safety instructions are clear and legible to facility users?	5.5.6, 5.6.7, 5.6.8
	Have facility operators provided staff with appropriate equipment and plant to enable them to carry out their responsibilities effectively and safely?	5.6.9
Emergency response		
Roles and procedures	Have emergency response procedures and infrastructure been developed for accidents, injuries, fires, spills, explosions, bomb threats and workplace bullying?	5.1.3
	Are procedures in place so that temporary storage of waste in the event of an emergency is carried out with written approval from the EPA Victoria and any other relevant authorities, and correct environmental and safety measures are followed?	5.1.3, 5.6.11, 5.6.12
Environmental		
Environmental risk management	Does the site have adequate provisions for managing windblown litter?	5.1.4
	If the facility is exposed to the wind, have you established a protocol for operating on days with significant wind?	
	Are environmental risks monitored?	
	Are procedures and appropriate equipment in place for managing spills?	5.2.4
	Are enough procedures in place to manage dust and mud at the site?	5.2.2
	Are enough procedures in place to manage odour at the site?	5.2.6
Plant and equipment	Are lids or covers placed over bins when not in use, and are vehicles depositing and collecting waste and recyclables covered where possible?	3.4.3, 5.6.1
	Are infrastructure and engineered controls in place to help control and minimise impacts from environmental risks (e.g. stormwater and leachate)?	5.1.4, 5.2
	› Are staff provided with adequate training to respond to a fire? › Does your facility have an adequate fire protection system?	5.1.3, 5.1.7
Hazardous materials and dangerous goods		
Documents and procedures	Are procedures for the safe storage and handling of potentially hazardous waste and dangerous goods specified in the site's operations manual?	5.1.1, 0, 7.2
	Are documented procedures in place for inspecting incoming materials to identify recyclable loads and potentially hazardous material, as well as direction to the appropriate drop-off location?	5.6

6.2 Meeting stakeholder needs during site operation and management

Each RRC has unique requirements and may need to consult different stakeholder groups. Work out who your stakeholders are and how your facility affects them.

BETTER PRACTICE ASSESSMENT

Answer the questions below to see if you are meeting better practice and where you can improve.

Download the workbook for a full assessment template.

Area	Assessment question	Section
Legislation and regulations		
Compliance	Does the site comply with all relevant legislation, regulations and WorkSafe Victoria's *Compliance code: Workplace amenities and work environment*?	5.2.7
Onsite management		
Roles and procedures	Are procedures in place to keep the site clean and tidy?	5.1.4, 5.2.8
	Is the facility maintained by vegetation screening and regular cleaning and maintenance?	5.2.8
	Are procedures in place and documented in the site operations manual to manage customer complaints?	5.1.2, 5.3.3
Service levels		
Operating hours	Are facility operating hours structured to cater for customers using the facility where practical?	5.5.4
	Where commercial collection vehicles use the facility, do site operation hours account for the schedules that these vehicles operate under?	5.5.4
Community acceptance		
Aesthetics	Is the facility well maintained with visual enhancements such as screening and gardens?	5.2.8
	Do you have a regular cleaning schedule to minimise litter, dust and other contaminants?	5.2.8
Communications and education	Are the objectives of recycling and the facility's role in resource recovery promoted in the local community?	5.3
	Does the facility have a dedicated education area, community open days and tours, or other community engagement activities?	5.3

6.3 Smart materials management during site operation and management

The way you operate your site has a big impact on smart materials management. Any areas where a facility can achieve better practice can be flagged for future improvement. For example, a facility that does not allow for separation of truck, car and pedestrian traffic movements, might consider a site redesign to optimise traffic flows and increase the safety and efficiency of site operations.

BETTER PRACTICE ASSESSMENT

Answer the questions below to see if you are meeting better practice and where you can improve.

Download the workbook for a full assessment template.

Area	Assessment question	Section
Resource recovery		
Viability of resource recovery	Have the following factors been considered, and where necessary, complied with, when deciding which materials to segregate for recycling: › legislative and regulatory requirements › local, state, national and international markets › environmental benefits › financial sustainability of accepted material stream, considering: – transport costs for processing – any disposal savings (e.g. diversion from landfill or product stewardship costs/rebates) – infrastructure available at a facility – capabilities of personnel operating a facility.	2.4, 5.1, 5.6
Waste stream contamination	Have measures been put in place to lower the contamination rate of material streams (e.g. by ensuring enough bins/containers and using a gate fee system that rewards customers for recycling)?	5.6.1
End markets	Are reusable waste items recovered for resale?	5.6.5
	Are materials processed onsite to increase their value where viable?	5.6.4
Transport		
Transport efficiencies	Have you taken measures to maximise payloads (e.g. by compacting waste where viable)?	5.6.2
Procurement		
Procurement	Is the environmental footprint of products considered when purchasing materials and products, including consumables for staff amenities and office equipment?	5.4, 5.6.3
Sustainability		
Greenhouse gas emissions	Have you taken measures to minimise greenhouse gas emissions (e.g. by de-gassing electrical equipment)?	5.6.3

6.4 Financial sustainability during site operation and management

Facilities need to have sustainable operating costs, profits and benefits, while also keeping track of developments in government policy and programs.

BETTER PRACTICE ASSESSMENT

Answer the questions below to see if you are meeting better practice and where you can improve.

Download the workbook for a full assessment template.

Area	Assessment question	Section
Demand for end products	Has the site developed on-site uses and local end markets for recovered materials where practical?	5.7.3
Demand for end products	Does facility management proactively monitor and respond to changes in costs and revenues brought about by external factors (e.g. price received for recovered materials)?	2.4, 5.7.1
Need for activity	Have you investigated regional collaboration opportunities for improved cost efficiencies in transport, purchasing power and economies of scale?	5.4.1, 5.7.2
	Have you investigated opportunities for collaborative procurement for waste and resource recovery services and/or infrastructure by consolidating waste materials or products?	5.7.2

6.5 Futureproofing during site operation and management

Futureproofing will help you maintain a sustainable business over time.

BETTER PRACTICE ASSESSMENT

Answer the questions below to see if you are meeting better practice and where you can improve.

Download the workbook for a full assessment template.

Area	Assessment question	Section
Roles and procedures	Have you developed standard operating procedures for managing emerging waste streams?	5.6.15
End markets	Have you developed on-site uses and/or end markets for managing emerging waste streams?	5.6.15, 5.7.3
Post-closure	Have you determined how the site will be used (post-closure) in consultation with the local community, planning authorities and other stakeholders?	5.8

07

Resources

This section includes better practice resources including:

- Resources and contacts
- Legislation, regulations and standards
- Other information and templates
- Abbreviations
- Glossary

7.1 Resources and contacts

7.1.1 Summary of RRC content and publications

Table 32 lists organisations providing information and resources related to helping you achieve better practice at RRCs.

Table 32
Organisations relevant to better practice at RRCs

Organisation	Related information/documents	Website
CSIRO	Best Practice Environmental Management Guidelines for Urban Stormwater (1999) Engaging Communities on Waste	csiro.au
Department of the Environment and Energy (Commonwealth)	National Waste Stream Profiles (2013) National Waste Reports (2010)	environment.gov.au
Department of Environment, Land, Water and Planning (Victoria)	Planning Schemes Online: approved planning schemes in Victoria including ordinance and maps that describe land use and overlays	delwp.vic.gov.au
	Victoria in Future: official state government projection of population and households	planning.vic.gov.au/land-use-and-population-research/victoria-in-future-2016
	Know Your Council website: the performance of local councils across Victoria	knowyourcouncil.vic.gov.au
Environment Protection Authority (EPA) Victoria	Environmental regulations	epa.vic.gov.au
Sustainability Victoria (SV)	Numerous documents to support the waste and resource recovery sector	sustainability.vic.gov.au
Waste and resource recovery groups	Regional waste and resource recovery implementation plans	Various (see Table 37)
Western Australian Local Government Association	Better Practice Guidelines: Reuse Shops	wastenet.net.au
WorkSafe Victoria	Workplace safety and OHS compliance codes and guides	worksafe.vic.gov.au
VicRoads	Register of public roads	vicroads.vic.gov.au

7.1.2 EPA Victoria

EPA Victoria publishes several environmental regulations related to developing, managing and operating an RRC (Table 33). Regulations can be downloaded from the EPA website at **www.epa.vic.gov.au**.

Table 33
EPA Victoria regulations related to RRCs

Publication name	Publication number	Last updated
Asbestos transport and disposal	IWRG611.2	June 2017
Liquid storage and handling guidelines	1698	June 2018
Assessing and controlling risk: A guide for business (See also CSIRO's Best Practice Environmental Management Guidelines for Urban Stormwater 1999)	1695.1	Mar 2019
Designing, constructing and operating composting facilities	1588.1	Jan 2017
Guidelines for the preparation of environment improvement plans	739	June 2002
Large Containers (≥200L) contaminated with PIW — classification for reuse	IWRG422	June 2009
Management and storage of combustible recyclable and waste materials	1667.2	Oct 2018
Oil filters — classification for reuse	IWRG423	June 2009
Recommended separation distances for industrial residual air emissions	1518	March 2013

7.1.3 Sustainability Victoria

SV publishes several documents to help RRCs develop, manage and operate their facility. They can be found at **www.sustainability.vic.gov.au**.

Table 34 lists RRC-specific content.
Other useful content is listed in Table 35.

Table 34
SV content related to RRCs

Content type	Content
Guides	Guide to Better Practice at Resource Recovery Centres (this guide)
	Guide to better practice at resource recovery centres – Supplementary workbook
	Resource Recovery Technology Guide
	Transfer Station Signage
Case studies	Anglesea Resale Shop and Transfer Station
	Moonee Valley Transfer Station
	Mt Scobie (Kyabram) Transfer Station
	Orbost Transfer Station
	Wycheproof Transfer Station
Fact sheets	Batteries
	Concrete and rubble
	Combustible Recyclable Waste Material (New)
	E-waste (New)
	Fluorescent lights
	Food and garden organics (FOGO)
	Garden organics and timber
	Gas bottles
	Motor oil and cooking oil
	Resale shops
	Signage
	Tyres (New)
	Whitegoods

Table 35
Other SV content useful for better practice at RRCs

Content type	Content
Online content	Sustainability Victoria resources for Government
	Sustainability Victoria Waste Data Portal
	Victorian E-waste Collection Network Site List
	Victorian Local Government Annual Waste Services Report
Publications (available online)	Guide to Best Practice for Organics Recovery (2009)
	Statewide Waste and Resource Recovery Infrastructure Plan (2015)
	Resource Recovery Technology Guide (2018)
	Regional Waste and Resource Recovery Implementation Plans

7.1.4 WorkSafe Victoria

WorkSafe Victoria publishes OHS compliance codes and guides for RRCs, as listed in Table 36. Codes and guides are available on the WorkSafe website at www.worksafe.vic.gov.au.

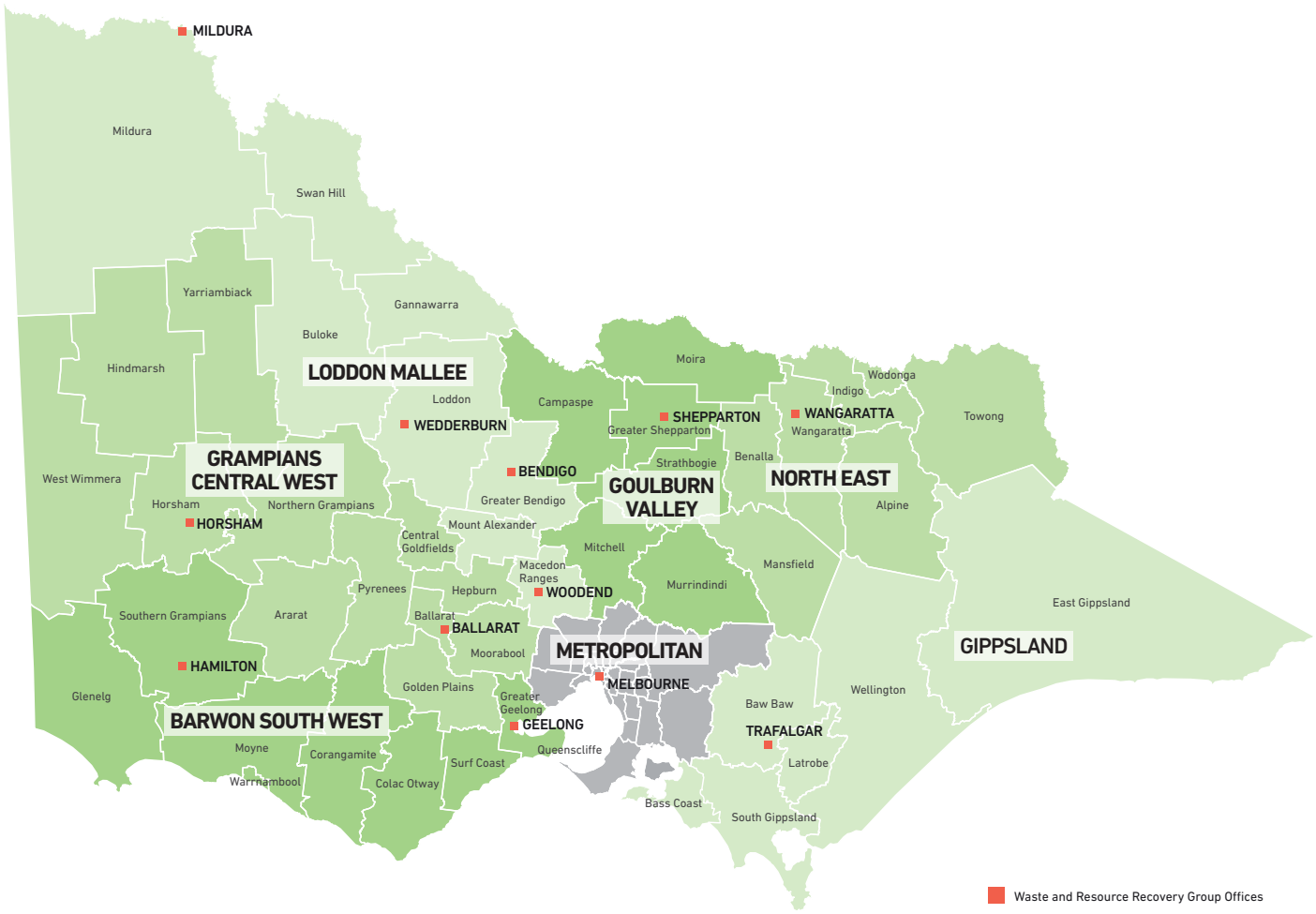
Table 36
WorkSafe Victoria RRC compliance codes and guides

Publication name	Last updated
Compliance code: Communicating occupational health and safety across languages	Sept 2008
Compliance code: First aid in the workplace	Sept 2008
Compliance code: Hazardous substances	Jul 2018
Compliance code: Managing asbestos in workplaces	Oct 2018
Compliance code: Plant	Mar 2018
Compliance code: Removing asbestos in workplaces	Oct 2018
Compliance code: Workplace amenities and work environment	Sept 2008
Consultation: A guide for Victorian workplaces	June 2017
Controlling OHS hazards and risks: A handbook for workplaces	June 2017
Code of practice: The storage and handling of dangerous goods	Sept 2013
Hazardous manual tasks: Code of Practice	Oct 2018
Machinery and equipment safety – an introduction	June 2017
Non-hazardous waste and recyclable materials	July 2003
Recycling construction and demolition material: how asbestos regulations apply to workplaces when recycling construction and demolition materials	Jan 2007
Safe handling of industrial waste: A practical guide for workplaces	May 2013
Safe Work Method Statements (SWMS)	Nov 2018
Using hook lifts – bin design and maintenance	May 2008
Your health and safety guide to plant	June 2017

7.1.5 Waste and Resource Recovery Groups

Victoria is divided into seven regions to effectively manage our waste and resource recovery needs (Figure 34). Each region has its own waste and resource recovery group (WRRG). WRRGs are Victorian state government statutory authorities established under the *Environment Protection Act 1970*. WRRGs have several legislative objectives related to improving waste and resource recovery infrastructure and services for their region, including identifying local waste infrastructure needs and how to meet them over the next 10 years. WRRGs collaborate with councils, SV, the EPA Victoria, industry, business and the community to meet their legislative objectives and help deliver the *Statewide Waste and Resource Recovery Infrastructure Plan* for their region.

Figure 34
Map of Victoria's waste and resource recovery group areas



7.1.6 Regional waste and resource recovery implementation plans

Each WRRG has developed a regional waste and resource recovery implementation plan to identify local waste infrastructure needs and how to meet them over the next 10 years. Regional plans provide an understanding of each region's current waste infrastructure, environmental and financial performance, projected waste volumes, urban growth and industry demands and are included in the *Statewide Waste and Resource Recovery Infrastructure Plan*. They aim to integrate planning at the state level with the needs of local and regional communities.

More information including links to regional plans is available at **www.sustainability.vic.gov.au**.

Table 37
Local government areas by waste and resource recovery regions

WRRG	Local government area
Barwon South West	Colac Otway Shire Council
	Greater Geelong City Council
	Borough of Queenscliffe
	Surf Coast Shire Council
	Corangamite Shire Council
	Glenelg Shire Council
	Moyne Shire Council
	Southern Grampians Shire Council
	Warrnambool City Council
Gippsland	Bass Coast Shire Council
	Baw Baw Shire Council
	East Gippsland Shire Council
	Latrobe City Council
	South Gippsland Shire Council
	Wellington Shire Council
Goulburn Valley	Campaspe Shire Council
	Greater Shepparton City Council
	Mitchell Shire Council
	Moira Shire Council
	Murrindindi Shire Council
	Strathbogie Shire Council
Grampians Central West	Hindmarsh Shire Council
	West Wimmera Shire Council
	Ararat Rural City Council
	Horsham Rural City Council
	Northern Grampians Shire Council
	Yarriambiack Shire Council
	Ballarat City Council
	Central Goldfields Shire Council
	Golden Plains Shire Council
	Hepburn Shire Council
	Moorabool Shire Council
	Pyrenees Shire Council
Loddon Mallee	Greater Bendigo City Council
	Macedon Ranges Shire Council
	Mount Alexander Shire Council
	Buloke Shire Council
	Gannawarra Shire Council
	Loddon Shire Council
	Swan Hill Rural City Council
	Mildura Rural City Council
	Alpine Shire Council

WRRG	Local government area
Metropolitan	Banyule City Council
	Bayside City Council
	Boroondara City Council
	Brimbank City Council
	Cardinia Shire Council
	Casey City Council
	Darebin City Council
	Frankston City Council
	Glen Eira City Council
	Greater Dandenong City Council
	Hobsons Bay City Council
	Hume City Council
	Kingston City Council
	Knox City Council
	Manningham City Council
	Maribyrnong City Council
	Maroondah City Council
	Melbourne City Council
	Melton Shire Council
	Monash City Council
	Moonee Valley City Council
	Moreland City Council
	Mornington Peninsula Shire Council
	Nillumbik Shire Council
	Port Phillip City Council
	Stonnington City Council
	Whitehorse City Council
	Whittlesea City Council
	Wyndham City Council
	Yarra City Council
	Yarra Ranges Shire Council

WRRG	Local government area
North East	Benalla Rural City Council
	Indigo Shire Council
	Mansfield Shire Council
	Towong Shire Council
	Wangaratta Rural City Council
	City of Wodonga
	Falls Creek Alpine Resort Management Board
	Mount Buller and Mount Stirling Alpine Resort Management Board
	Mount Hotham Alpine Resort Management Board

7.2 Legislation, regulations and standards

7.2.1 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 2017

Natural Heritage Trust of Australia Act 1997 (Commonwealth)

Occupational Health and Safety Act 2004

Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 (Commonwealth)

Planning and Environment Act 1987

Dangerous Goods (Road Transport) Act 2009

Second-hand Dealers and Pawnbrokers Act 1989

7.2.2 Regulations and policies

Dangerous Goods (Road Transport) Regulations 2010

Dangerous Goods (Explosives) Regulations 2011

Dangerous Goods (Storage and Handling) Regulations 2012

Dangerous Goods (Transport by Road or Rail) Regulations 2018

Environment Protection (Environment and Resource Efficiency Plans) Regulations 2007

Environment Protection (Industrial Waste Resource) Regulations 2009

Environment Protection (Scheduled Premises and Exemptions) Regulations 2007

Environment Protection (Vehicle Emissions) Regulations 2013

Environment Protection and Biodiversity Conservation Regulations 2000 (Commonwealth)

Equipment (Public Safety) Regulations 2017

Occupational Health and Safety Regulations 2017

Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995 (Commonwealth)

Road Transport (Dangerous Goods) (Licence Fees) Regulations 1998

7.2.3 Australian Standards

Table 38 lists the relevant Australian Standards.

Table 38
Relevant Australian Standards

No.	Title
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 – Part 3: Emergency escape luminaries and exit signs
AS3760	In-service safety inspection and testing of electrical equipment
AS4024.1	Safety of machinery
AS4123.7	Mobile waste containers – Part 7: Colours, markings and designation requirements
AS4360	Risk management
AS4419	Soils for landscaping and garden use
AS4454	Composts, soil conditioners and mulches
AS4801	Occupational health and safety management
AS5761	In-service safety inspection and testing – Second-hand electrical equipment prior to sale
AS5377	Collection, storage, transport and treatment of end-of-life electrical and electronic equipment
AS5762	In-service safety inspection and testing – Repaired electrical equipment
ISO9001	Quality management systems – Requirements
ISO14001	Environmental management systems – Requirements with guidance for use
ISO14021	Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling)

7.3 Other information and templates

The templates and information in this section are examples only and should be adapted to meet the needs of your facility.

7.3.1 Stakeholder engagement

Letting people know about changes in your organisation should be a planned task, whether it be local residents or others that might be affected by your decisions. Table 39 provides a high-level outline to help you plan your stakeholder engagement.
Proactive stakeholder management will help you:

- communicate your organisational goals
- make better decisions
- form better relationships
- reduce anxiety and fear
- increase understanding of your decisions
- improve risk management.

Table 39
Example of a stakeholder engagement plan

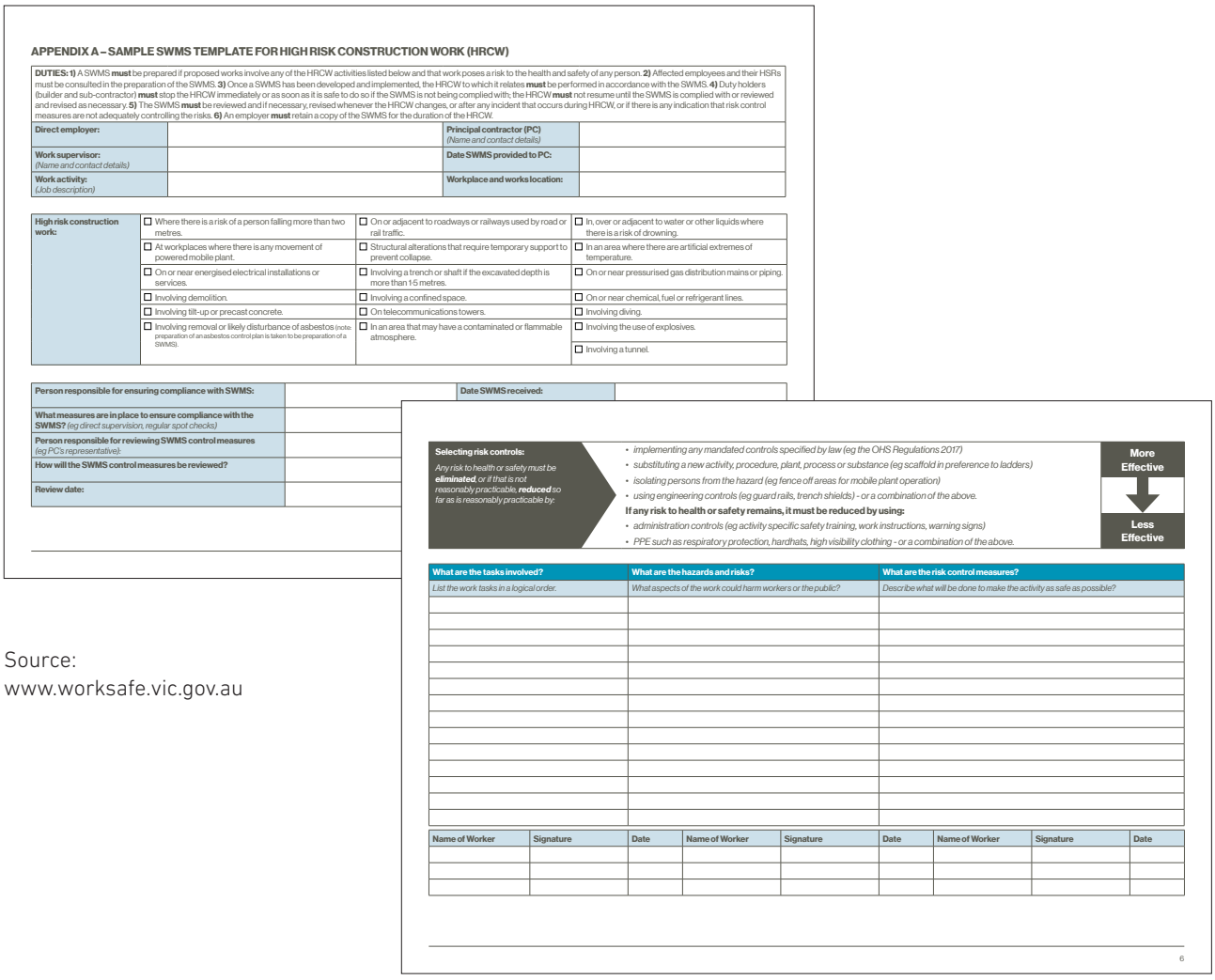
Step	Task	Description	Examples
1	**Define purpose and outcomes**	• What is the purpose of your engagement? • How does aligns with your organisational goals?	Is there a specific problem you are facing, such as introducing a new policy or reporting procedure?
2	**Select stakeholders**	• Who do you need to consult? • Identify who you want to reach.	Local residents, waste contractors, others
3	**Set objectives**	Make your objectives SMART (specific, measurable, achievable, realistic and timely). This is important for the evaluation process.	The engagement program will get feedback from at least 10 per cent of workers in the next two months to identify improvements to the Working from Heights Safety Policy
4	**Determine the level of engagement**	• For each stakeholder group, decide whether to Inform, Consult, Involve, Collaborate or Empower. • This helps you understand where you and your stakeholders are going to operate.	The level of participation and involvement will be different for the five engagement levels (Inform, Consult, Involve, Collaborate or Empower)
5	**Determine your tools to inform and gather feedback from participants**	This is divided into two parts: • Part A: Choose tools to give information to participants. • Part B: Choose tools to gather feedback from participants.	• Public meetings • Newsletters • Form a community consultative committee • Establish a community reference group • Editorial or ads in newspapers or special interest publications • Community events • Stakeholder reference group • Social media • Written submissions • Customer helpline • Surveys • Forums • Workshops

7.3.2 Safe Work Method Statements (SWMS)

The OHS Regulations require employers and self-employed persons to prepare a SWMS before starting 'high risk construction work' (HRCW), if that work poses a risk to the health or safety of any person including other persons on site or the public. A SWMS can be used to list hazards identified at an RRC and to shortlist priority hazards for action, with a due date and responsibility allocated to a specific person(s).

WorkSafe Victoria's *Information on Safe Work Method Statements* explains how to prepare and use a SWMS for HRCW and who needs to prepare one. It includes the SWMS template shown in Figure 35.

Figure 35
Safe Work Method Statement template



APPENDIX A – SAMPLE SWMS TEMPLATE FOR HIGH RISK CONSTRUCTION WORK (HRCW)

DUTIES: 1) A SWMS **must** be prepared if proposed works involve any of the HRCW activities listed below and that work poses a risk to the health and safety of any person. **2)** Affected employees and their HSRs must be consulted in the preparation of the SWMS. **3)** Once a SWMS has been developed and implemented, the HRCW to which it relates **must** be performed in accordance with the SWMS. **4)** Duty holders (builder and sub-contractor) **must** stop the HRCW immediately or as soon as it is safe to do so if the SWMS is not being complied with; the HRCW **must** not resume until the SWMS is complied with or reviewed and revised as necessary. **5)** The SWMS **must** be reviewed and if necessary, revised whenever the HRCW changes, or after any incident that occurs during HRCW, or if there is any indication that risk control measures are not adequately controlling the risks. **6)** An employer **must** retain a copy of the SWMS for the duration of the HRCW.

Direct employer:		**Principal contractor (PC)** *(Name and contact details)*	
Work supervisor: *(Name and contact details)*		**Date SWMS provided to PC:**	
Work activity: *(Job description)*		**Workplace and works location:**	

High risk construction work:	☐ Where there is a risk of a person falling more than two metres.	☐ On or adjacent to roadways or railways used by road or rail traffic.	☐ In, over or adjacent to water or other liquids where there is a risk of drowning.
	☐ At workplaces where there is any movement of powered mobile plant.	☐ Structural alterations that require temporary support to prevent collapse.	☐ In an area where there are artificial extremes of temperature.
	☐ On or near energised electrical installations or services.	☐ Involving a trench or shaft if the excavated depth is more than 1·5 metres.	☐ On or near pressurised gas distribution mains or piping.
	☐ Involving demolition.	☐ Involving a confined space.	☐ On or near chemical, fuel or refrigerant lines.
	☐ Involving tilt-up or precast concrete.	☐ On telecommunications towers.	☐ Involving diving.
	☐ Involving removal or likely disturbance of asbestos (note: preparation of an asbestos control plan is taken to be preparation of a SWMS).	☐ In an area that may have a contaminated or flammable atmosphere.	☐ Involving the use of explosives.
			☐ Involving a tunnel.

Person responsible for ensuring compliance with SWMS:		**Date SWMS received:**	
What measures are in place to ensure compliance with the SWMS? *(eg direct supervision, regular spot checks)*			
Person responsible for reviewing SWMS control measures *(eg PC's representative):*			
How will the SWMS control measures be reviewed?			
Review date:			

Selecting risk controls:

Any risk to health or safety must be ***eliminated****, or if that is not reasonably practicable,* ***reduced*** *so far as is reasonably practicable by:*

- *implementing any mandated controls specified by law (eg the OHS Regulations 2017)*
- *substituting a new activity, procedure, plant, process or substance (eg scaffold in preference to ladders)*
- *isolating persons from the hazard (eg fence off areas for mobile plant operation)*
- *using engineering controls (eg guard rails, trench shields) - or a combination of the above.*

If any risk to health or safety remains, it must be reduced by using:

- *administration controls (eg activity specific safety training, work instructions, warning signs)*
- *PPE such as respiratory protection, hardhats, high visibility clothing - or a combination of the above.*

More Effective ↓ **Less Effective**

What are the tasks involved?	**What are the hazards and risks?**	**What are the risk control measures?**
List the work tasks in a logical order.	*What aspects of the work could harm workers or the public?*	*Describe what will be done to make the activity as safe as possible?*

Name of Worker	**Signature**	**Date**	**Name of Worker**	**Signature**	**Date**	**Name of Worker**	**Signature**	**Date**

6

Source:
www.worksafe.vic.gov.au

7.3.3 Hazard assessment template

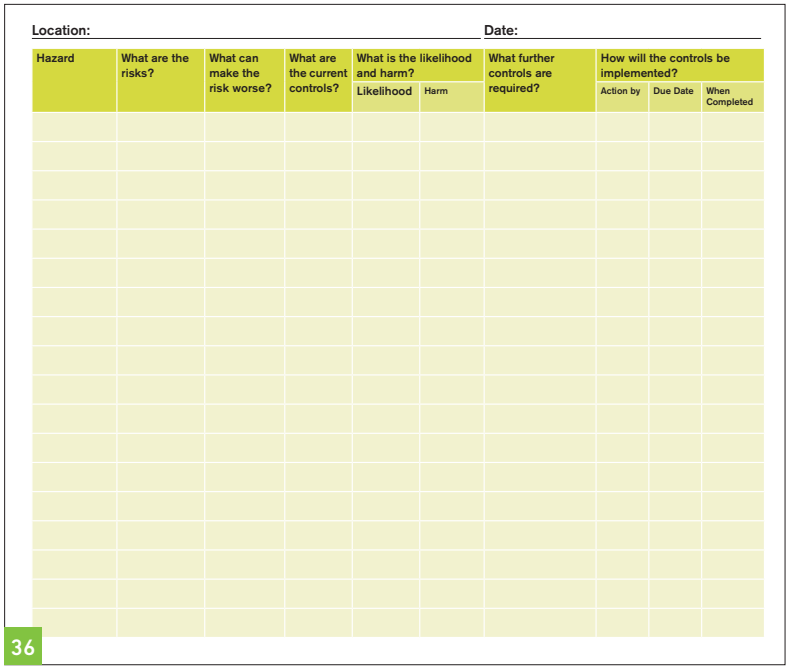
Good health and safety is about eliminating and controlling hazards and risks. This is best achieved by thoroughly considering potential sources of harm and what can be done to prevent harm from occurring.

WorkSafe Victoria's *Controlling OHS hazards and risks: A handbook for workplaces* includes a methodology for controlling hazards and risks and a hazard assessment template (Figure 36).

7.3.4 Waste audit template

Figure 37 shows an example of a waste audit template. The waste audit template is for reporting incoming and outcoming streams at an RRC.

How much reporting is needed, and the material streams listed will vary depending on the RRC and the template should be adapted accordingly. Larger RRCs may need a more elaborate reporting mechanism, such as a stand-alone data management system. Smaller facilities may only need the level of detail in this template.



Location: Date:

Hazard	What are the risks?	What can make the risk worse?	What are the current controls?	What is the likelihood and harm?		What further controls are required?	How will the controls be implemented?		
				Likelihood	Harm		Action by	Due Date	When Completed

36

Figure 36
Example hazard assessment template

Figure 37
Example waste audit template

37

Material stream	Incoming		Outgoing		Material stream diversion rate (%)	Description of processing activity or destination (e.g. landfill, recycling/ resource recovery, onsite processing)
	Total tonnes per period (e.g. year/ month)	Gate fees fee/rebate ($)	Total tonnes per period (e.g. year/ month)	Gate fees fee/rebate ($)		
Waste						
Commingled recycling						
Cardboard						
Green organics (garden)						
Totals						

7.3.5 Material streams accepted at RRCs

Table 40 lists the common, opportunity, hazardous and dangerous and potential future streams accepted at RRCs. This list may change over time, and facilities should aim to accept the most appropriate streams possible given their available resources, community needs and regulatory requirements.

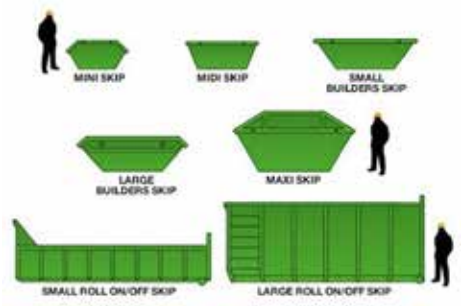
Table 40
Material streams accepted at RRCs

Stream types	Materials
Common	› General waste › Commingled recycling, including: – plastic containers – aluminium cans – glass bottles and jars – tin cans – mixed paper and cardboard, including newspapers, magazines and office paper – Scrap metal, including: – aluminium – steel – other metals (ferrous and non-ferrous) › White goods, including fridges, freezers › Cardboard › Green organics
Opportunity	› Plastics, including hard, soft/flexible and polystyrene › Food organics (transfer only) › Leather and textiles › Tyres and other rubber materials › Masonry materials, including bricks, concrete and tiles › Glass (non-bottles) › Timber, including uncontaminated (e.g. with chemicals or lead-based paint) › E-waste, including mobile phones, computers, televisions and other electronic goods (this will now be a more common waste stream since the e-waste to landfill ban came into effect in July 2019. › Clean soil (not deemed contaminated under EPA regulations) › Furniture › Agricultural chemical containers › Agricultural plastics (silage wrap)
Hazardous and dangerous	› Gas bottles › Waste engine oil › Cooking oil › Lead acid batteries › Fluorescent light globes › Paint › Batteries
Potential future	› Solar photovoltaic panels › Home battery energy systems › Additional e-waste items › LED lights

7.3.6 Commonly used containers types

Table 41 shows containers commonly used at RRCs.

Table 41
Commonly used containers at RRCs

Container	Advantages	Disadvantages	Image
Skip bins	› Can hold large volumes of material. › Resistant to damage when loading, manoeuvring and compacting (e.g. with backhoe).	Needs machinery or vehicles to manoeuvre (e.g. forklift or hook-lift truck).	 
Wheelie bins	› Easily moved when on flat hard surface. › Easier to collect and store. › Can be collected by most commonly used compactor trucks. › Come in a variety of colours and sizes.	› Limited volume. › Easier to damage than steel skip bins. › Bin lifters may be required for emptying into larger bins.	
Other containers and stillages	› Other commonly used containers include cages, drums, pallets, boxes, bags and stillages. › The advantages and disadvantages vary between container type and should be discussed with manufacturers and consultants when deciding.		See Figure 38 to Figure 40

7.3.7 General comparison of container types

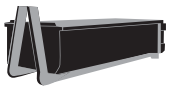
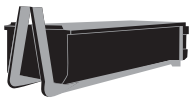
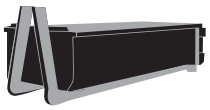
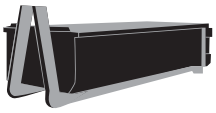
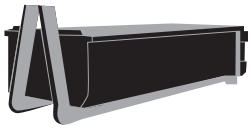
Table 42 shows a size/volume comparison of container types used at RRCs.

Figure 38
Photo of a cage used for storing tyres

Figure 39
Photo of a cage with bag used for soft plastic

Figure 40
Photo of a drum used for batteries

Table 42
Size/volume general comparison of container types used at RRCs

	Skip bin size		Approximate number of 240L wheelie bins			Approximate number of 6 x 4 box trailer loads
	2m³	=		x 8	=	 x 2
	3m³	=		x 13	=	 x 3
	4m³	=		x 17	=	 x 4
	6m³	=		x 25	=	 x 5
	9m³	=		x 38	=	 x 9
	12m³	=		x 50	=	 x 12
	15m³	=		x 63	=	 x 15
	20m³	=		x 83	=	 x 20
	25m³	=		x 104	=	 x 25
	30m³	=		x 125	=	 x 30

7.3.8 Using a feasibility study

Any areas where your facility can achieve better practice can be flagged for future improvement. You may need to shortlist your improvements based on costs and benefits, so you can prioritise your activities.

You might choose to prioritise activities based on which ones:

- deliver the greatest social, environmental and financial benefit to the region
- create employment opportunities for locals
- contribute to changing the behaviour of residents when it comes to waste and recycling
- can be completed with current levels of resourcing (e.g. staff time, skill sets, financing, etc.).

A feasibility study is one method to assess and prioritise your activities by objectively and rationally uncovering the benefits, impacts and costs of a proposed initiative. A feasibility study should (at a minimum) identify and consider the factors listed in Table 43.

Feasibility study outcomes

Once you have assessed these factors, you can work out:

- the overall cost of the initiative
- the overall benefits of the initiative
- changes that need to be made to the site's design or operations to implement the initiative, such as changes in site layout
- what is required to make those changes (e.g. obtaining a new licence from the EPA Victoria)
- whether you have the resources to implement the initiative (e.g. budget).

With this information, you can create a shortlist of activities that will deliver the greatest overall benefit and can be completed with current levels of resourcing.

Note: You must ensure your facility complies with any relevant legislation. Any areas of non-compliance identified during the assessment must be remediated as soon as possible.

Table 43
What to consider in a feasibility study

Factors	Details
How will the proposed activity affect these areas?	› Volumes and/or types of waste accepted at the facility › Storage locations and sizes of bins, stillages or other containers › Transport and logistics › End markets for recovered products › Site layout › Upgrades and/or purchase of plant, equipment and technology › Managing and operating the site, including data collection, customer education, cashflow and staff training › Hiring and/or training staff
Financial feasibility	› Total investment cost › Financing › Projected cash flow and profitability › Net present value › Payback period
Changes to risk levels across these areas	› OHS › Environmental › Legal › Financial
Site planning requirements	› Facility development and/or expansion › Changes to existing facility licences conditions and/or obtaining a new licence
Design or construction requirements	› Detailed design of facility › Construction of facility and/or plant/equipment assembly › Commissioning of plant and equipment
Resourcing needed to set up the initiative	› Budget › Staff time and skill sets › External expertise › Timelines for implementation

08

Appendices

- Abbreviations
- Glossary

8.1 Abbreviations

CRWM	Combustible recyclable and waste material
CSIRO	Commonwealth Scientific and Industrial Research Organisation
D&C	Design and construct
DCO	Design, construct and operate
DG	Dangerous goods
EIP	Environment improvement plan
EPA	Environment Protection Authority Victoria
MFB	Metropolitan Fire Brigade
SDS	Safety Data Sheets
OHS	Occupational health and safety
PIW	Prescribed industrial waste
PPE	Personal protective equipment
PV	Photovoltaic
RRC	Resource recovery centre
RWRRIP	Regional waste and resource recovery implementation plan
SOP	Safe operating procedures
SWMS	Safe Work Method Statement
SWRRIP	Statewide Waste and Resource Recovery Infrastructure Plan
SV	Sustainability Victoria
VIF	Victoria in Future
WRRG	Waste and resource recovery group

8.2 Glossary

Amenity	The quality of a local environment in relation to health and aesthetics.
Amenities	Items provided for the health, safety, welfare and personal hygiene needs of employees (e.g. toilets, shelter, seating, eating rooms, drinking water and wash facilities).
Better practice	Better practice is continual improvement of a resource recovery centre as expectations, technology and standards change over time. Better practice considers that each facility has different needs and expectations. This includes having access to different financial, natural and other resources.
Buffer distance	The distance between a centre and residential or other sensitive land use.
Circular economy	A circular economy is where waste is designed out, products and materials are kept circulating at their greatest value for as long as possible, and the natural environment is restored and protected.
Composting	The process whereby organic materials are microbiologically transformed under controlled aerobic conditions to create a pasteurised and stabilised organic product for application to land.
Construction and demolition waste	Waste produced by demolition and building activities, including road and rail construction and maintenance and excavation of land associated with construction activities.
Commercial and industrial waste	Waste produced by institutions and businesses, including waste from schools, restaurants, retail and wholesale businesses, offices and industries including manufacturing.
Container	A bin, skip bin, stillage or other receptacle used for aggregating waste and recyclables materials at a resource recovery centre.
Contamination	Materials and items within a recycling stream that are not consistent with the nominated recycling stream, readily recyclable or are a hazard to processing a particular recycling stream (e.g. food waste in commingled recycling stream).
Combustible recyclable and waste material (CRWM)	Any paper, cardboard, wood, plastic rubber, textile, organic material, refuse-derived fuel, specified electronic waste, metals or other combustible material which is considered waste.
E-waste	Any item with a plug, battery or cord that is no longer working or wanted. It covers a whole range of items from work, home and even the garden shed.
Green or garden organics	Recyclable material generated from gardens (e.g. grass clippings, tree cuttings, plants).
Groundwater	Any water contained in or occurring in a geological structure or formation or landfill.
Hard waste	Old furniture, whitegoods or other household waste that is too large to fit in the conventional kerbside waste collection service and may also be reusable.

Landfill	A facility used for disposal of waste to land.
Leachate	Liquid released by waste or recycling storage piles, or contaminated water that has percolated through or drained from waste or recycling, and containing dissolved or suspended material from the waste.
Litter	Any waste material that is not in its designated location (e.g. fallen from a bin or blown from a designated storage pile or transport vehicle).
Prescribed industrial waste	Also known as hazardous wastes. As defined in the *Environment Protection (Industrial Waste Resource) Regulations 2009*, these wastes require careful management and regulation because of their potential impact on human health or the environment. Hazardous wastes are materials discarded from industrial processes and activities.
Processing	Activities that recover resource value from waste (e.g. mulching or concrete crushing) or prevent harmful emissions from residual materials.
Putrescible waste	Waste containing a significant proportion of material (typically food organics) able to be decomposed by bacterial action.
Regional waste and resource recovery implementation plans	Developed by each of the waste and resource recovery groups, the objective of these plans is to set out how the waste and resource recovery infrastructure needs of a region will be met over 10 years.
Resource recovery centre (RRC)	Resource recovery centres (including transfer stations) perform an essential service to local communities by providing a designated location to aggregate, sort and consolidate waste and recyclable materials, and where viable, divert these materials away from landfill, through either recycling or resource recovery.
Statewide Waste and Resource Recovery Infrastructure Plan (SWRRIP)	Provides a statewide roadmap to ensure Victoria has the infrastructure to effectively manage the mix and volumes of waste for the next 30 years.
Stockpile	Storage of materials for long periods of time because of market failure, increasing risk to the environment and human health.
Storage pile	Temporary storage of materials prior to transfer for processing.
Sustainable procurement	Recommending the use of recycled and recovered material in infrastructure design and build and the purchase of products that are made from or contain recycled or recovered material.
Waste and recycling streams	Recyclable or waste materials or items that that are accepted and aggregated at a resource recovery centres before being transported to recycling, remanufacturing or reuse operations or landfill.
Waste or residual waste	Residual waste unsuited to reuse or recycling.

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