

Environmental Guidelines



Resource Recovery and Waste Transfer Depots

Environment Protection Authority

GUIDELINES FOR
RESOURCE RECOVERY
AND
WASTE TRANSFER DEPOTS

ENVIRONMENT PROTECTION AUTHORITY

Guidelines for Resource Recovery and Waste Transfer Depots

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1 OVERVIEW

These guidelines have been formulated to assist those establishing depots in South Australia for resource recovery (resource recovery depots) and/or for the treatment of waste (waste transfer depots) before its transfer for disposal. The guidelines include details of issues to consider and address when preparing development proposals and management plans which will be referred to the Environment Protection Authority (the Authority) for comment under sections 5, 37, 46B, 46C, 46D or 49 of the *Development Act 1993*.

Topics in sections 2 and 3 of this document should be considered and addressed at the development stage, and the information included in a development application. Topics raised in sections 3 and 4 need to be addressed, in detail, at the licensing stage – probably in the form of a management plan that may be attached to the licence.

Appropriate development authorisation is required to establish a resource recovery depot or a waste transfer depot before an environmental authorisation, for example an Authority licence, can be issued. Waste and recycling depots are ‘activities of environmental significance’ listed in Schedule 1, Part A of the *Environment Protection Act 1993* (the Act), and therefore must be licensed or otherwise authorised under Part 6 of the Act. An authorisation cannot be issued until development approval has been granted. Composting is a separate licensable activity under the Act, and is not dealt with in these guidelines (refer to the Authority’s draft document, *Environmental Guidelines for Composting Works and Organic Waste Treatment Depots in SA*).

These guidelines are intended for new and redeveloped facilities, where applicable. It is not intended that they be applied retrospectively to current resource recovery depots and waste transfer depots. Facilities not having the benefit of appropriate separation distances may be subjected to stricter controls in recognition of the proximity of sensitive land uses.

These guidelines indicate the minimum standard required for waste transfer depots and resource recovery depots. If alternative technology or procedures are to be employed, they should meet at least the same level of environmental compliance. Any alternative methods should be discussed with the Authority and/or the Environment Protection Agency (EPA) and will be considered on a case-by-case basis.

2 SITING OF THE DEPOT

The location of the depot can strongly influence the operating costs, the convenience to customers and possible operational problems. The following issues should be considered when looking for an appropriate site for a resource recovery depot and waste transfer depot.

Topics raised in this section need to be considered and addressed in any development application.

Statutory requirements

Development proposals for resource recovery depots and waste transfer depots require approval under the Development Act. During the assessment process the Authority considers the proposal and directs the planning authority on environmental issues. The Authority has regard to the objects of the Environment Protection Act when assessing proposals to establish resource recovery depots and waste transfer depots. The EPA, as well as other relevant agencies¹, should be consulted during the preparation of any major proposal.

There are other documents available to assist with the development process, such as the Department of Industry and Trade's *Planning roadmap*.

Public consultation

The importance of public consultation and inclusion in the development process cannot be emphasised enough. Inform and include the local community early in the planning and decision-making process, so that concerns can be resolved as soon as possible. The community should be informed, on a regular basis, of issues that can have an impact on their environment. (See Technical Bulletin 19: Community consultation for waste management and recycling facilities.) Consultation with the community should be ongoing, not just restricted to the development phase.

Depot zoning

The proponent should confirm with the local planning authority the zoning for the proposed depot and ascertain any planning restrictions that might apply. Consideration should be given to the potential for conflict between the depot and the surrounding land use. It is recommended that the depot not be adjacent to a residential zone or other sensitive or non-compatible land use, and that a suitable 'separation distance' separates such uses from the depot.

Separation distances

A separation distance of at least 300 m to the nearest sensitive land use is recommended. However, this may vary depending on the type of technology and set-up established. The separation distance may need to be greater for essentials such as fire breaks if the depot is adjacent to national parks or scrubland. Where possible, surrounding industries and development should be compatible with the use of the site as a resource recovery depot and waste transfer depot.

¹ Other relevant agencies may include Planning SA and/or the local council, Transport SA, Workplace Services and/or WorkCover Corporation. Please note that this is not an exhaustive list.

Previous land use

Consider the history of the site, addressing issues such as the following:

- Has it previously been a waste depot?
- How successful have previous uses of the site been with the community?
- Were there any problems with activities conducted on the land?
- Are there ongoing environmental monitoring issues?

This will allow for some of the problems and community issues to be eliminated or addressed by appropriate management and operational practices. It may also be necessary to determine whether there is any land contamination from a previous land use, and the potential impacts of this contamination on human health and the environment. A search pursuant to section 7 of the *Land and Business (Sale and Conveyancing) Act 1994* (SA) can help determine previous land use and if there is a record of any known contamination of the site.

Infrastructure

It is anticipated that the depot will require various utility services, such as electricity and/or gas, water (for domestic use and fire fighting), telephone, stormwater drainage and sewers or other wastewater treatment options. These matters will be addressed through state and local government planning approval processes, though contact with the relevant bodies is encouraged at this stage.

Access and transport considerations

Easy access to the depot by road and possibly other modes of transport, such as rail, will facilitate ease of operation. Convenient access for customers, with close proximity to the waste collection areas, encourages use of the services offered by the depot. The depot should also be situated so that it is economical to transport the waste from the depot to further processing facilities, and any residual waste to landfill.

There should be easy access for waste transport vehicles to enter from major roads, and access and transport routes should avoid local residential road networks. There will probably be an increase in the amount of traffic in the vicinity of the depot. An assessment should be made of the need to upgrade existing roads, and of the economical and technical viability of doing this.

Climate

Seasonal patterns for rainfall, wind direction and wind strength in the region should be taken into consideration. The wind direction and strength will affect litter, dust and odour, while rainfall will affect stormwater management.

Hydrology

The distance between the areas dedicated for waste storage, separation and recycling, and the nearest surface water (whether permanent or intermittent) or the '100 year floodplain' should be a minimum of 100 m. Avoid swampy areas, sites with a shallow watertable, and regions of groundwater recharge or discharge. Minimise ponding of water at the depot. It may be necessary to construct drains diverting stormwater around the depot, depending on stormwater catchment and rainfall.

Significant and natural areas

Consider the native fauna and flora of the area, and minimise disruption to their habitat. Sites supporting rare, endangered or regionally significant species should be avoided. Significant areas, including historical and Aboriginal sites, should also be avoided.

Airport

Depots in the vicinity of aerodromes need to demonstrate compliance with bird control measures in accordance with the requirements of the Civil Aviation Safety Authority (CASA). The Authority may require a copy of any CASA recommendations or requirements for the depot.

Type and size of depot to be established

Consideration should be given to the capacity of the depot, users of the depot, and the processes to be undertaken at the depot when assessing the site. The proposal for the depot should also consider including an adequate area for potential expansion over the next 20 years, with at least enough area to accommodate the projected increase in waste and new technologies. Note that any expansion will usually require further approvals from the planning authorities and the Authority.

3 DESIGN AND CONSTRUCTION OF THE DEPOT

An overview of the following topics needs to be addressed in any development application. Greater details for these topics will be required during the Authority licensing process, probably in a management plan.

If constructed on an old waste depot, for example a landfill, issues of leachate, landfill gas, stormwater management, groundwater monitoring and site stability need to be considered. This is of particular importance when planning structures and permanent/semi-permanent surfaces. Ongoing monitoring of groundwater and landfill gas may be needed on a previous landfill site. Stormwater needs to be managed so as not to infiltrate the landfill and hence generate leachate. As the landfill ages, landfill gas can be produced and the surface can subside.

Types of waste

Different types of waste (subject to conditions of development authorisation and the Authority licence) could be received at the depot, and could include recyclables, organic waste, tyres, construction and demolition waste, waste oil and used lead acid batteries. Recyclables should, where possible, be kept separate to minimise the amount of waste processing required. For example, customers can undertake some of this basic sorting of waste and recyclables by depositing them in appropriately marked areas or bins.

Organic waste and tyres have specific storage requirements. Information is available from the EPA for the storage, processing and disposal of these wastes.

Asbestos is specifically listed in the Act, under Schedule 1 list B, and requires specific development approval and Authority authorisation for its acceptance. Non-friable asbestos may be accepted at the transfer stations, however specific handling and storage procedures for this waste type will be required. Contact the EPA for further details.

Plant flooring and roofing

Bitumen, concrete or other similar impervious material assessed fit for this purpose should be used for flooring. Appropriate bunding is required for waste storage areas and processing areas to intercept any liquid spills, and appropriate strategies are required for managing spills at the depot.

Waste storage and processing areas should be covered or roofed to prevent water infiltrating the waste and producing leachate. Unloading areas and waste skips should be stored on paved areas. It is recommended that a resource recovery depot be housed in a roofed enclosure with three walls, be bunded and have a solid, impermeable floor. Doors should be installed to secure the resource recovery depot.

Stormwater management

The depot should not allow polluted water to be discharged into the stormwater system. The disposal of solid waste, leachate or liquid waste into surface water or groundwater is not permitted.

Stormwater from rooftops should be either collected for on-site use or discharged (preferably through underground pipes) directly to a council stormwater system or offsite if there is no local stormwater system.

All stormwater runoff from car parking, driveways and hard paved areas should be diverted into a stormwater treatment system capable of removing litter, sediments and oil products. Storage and processing areas should be bunded, and any liquid collected in these areas is to

be treated as leachate. The *Stormwater Pollution Prevention Code of Practice for Industrial, Retail and Commercial Premises (Draft)* contains more details.

Leachate management

Leachate is a liquid which has percolated through and/or drained from waste material and which contains soluble or suspended components of the waste, including products of decomposition. It should be directed to a leachate pond for treatment and appropriately treated, or collected and disposed of offsite. It is not to enter the stormwater system. If a leachate pond is to be installed, it should be appropriately located and designed, with a clay or synthetic liner, or other impervious material assessed fit for this purpose. It should be properly maintained throughout the life of the depot.

Plant equipment

The type and amount of equipment required to adequately undertake the handling and processing of waste will vary between depots. There should be adequate back-up equipment and appropriate operational procedures available in case of a breakdown of the machinery.

Weighbridge

A weighbridge should be installed at facilities that receive 10,000 tonnes or more of waste and/or recyclables per year. This will allow customers to be charged on an equitable basis, and help the operator maintain appropriate records. All inbound waste and recycling collection vehicles, and outgoing materials to landfill or recycling facilities, should be weighed. Large facilities could require more than one weighbridge to deal with the volume of waste and number of vehicles traversing the depot at any one time.

The length and capacity of the weighbridge should be adequate for the longest and heaviest vehicle that could use the depot. It should be sited far enough within the depot to allow for queuing on site and a straight approach to the weighbridge.

The use of computerised scale controls and data-recording software is becoming increasingly common. Computerised weighing systems record the tare weight of vehicles and all necessary billing information. This can assist with record keeping and accounting functions.

On-site roads and vehicle staging

The roads should be appropriately constructed and maintained to allow for all weather access. Roads should be kept clean at all times. Depot roads should be designed to accommodate vehicle sizes, speeds and turning characteristics, and the carriageway should be designed for heavy traffic. Roads and receiving areas should be sealed with bitumen or concrete, or similar materials with low permeability such as cement treated rubble. Unloading areas should be on level ground and provision should be made for the safe reversing of both light and heavy vehicles. Safety barriers should be installed at unloading areas. A straight approach to the weighbridge is recommended.

The depot layout should ensure that there is adequate queuing space. Checking against observed traffic data for existing facilities should be conducted as part of the design process. If the public is to use the depot, the associated car traffic should, where practicable, be kept separate from the collection and transfer truck traffic. Minimise intersections and cross-traffic, and where possible use one-way traffic flow.

Visual impacts

The depot should be sited so that transfer operations and vehicle traffic are not readily visible to residents or adjacent land users. Vegetative screening can improve the visual appearance of the depot and can provide a buffer to noise and dust. Buildings and grounds should be designed so that the amenity of surrounding land users is not adversely affected.

Landscaping areas

Landscaping barriers can provide noise and visual buffers, and may be required at some depots. The entrance and perimeter should be landscaped, with appropriate species of plants determined by a relevant specialist.

Noise

The depot should be designed to ensure that it meets the Authority's requirements, which will be based on the land use planning in and around the facility and the relative amenity of that locality. Noise problems generally arise from processing equipment, traffic (both within and going to and from the depot) and other operations. Avoid siting the depot near residential or other sensitive or non-compatible areas, and where possible centralise noisy activities to minimise the nuisance and increase the separation distance.

Odour

Odour modelling may be required to confirm there are no unacceptable impacts on adjacent land uses. The depot should be designed and operated so that odorous emissions and dust do not cause a nuisance or an offence, and airborne impurities do not pose a risk to human health.

Dust

To minimise dust, it is recommended that work areas and roads be paved, and that dust suppressants are used on other areas wherever necessary.

Vectors

Vectors are animals, insects or other organisms that carry pathogens from one host to another. They need to be controlled for public health and aesthetic reasons. The design should allow for appropriate control mechanisms to deal with the prevention and eradication of vectors. Regular removal of waste is required to prevent the establishment of habitat or food supply to these vectors. Lids, screens or covers can be used to prevent access to the waste.

Litter control

Litter should be minimised by ensuring full containment at the depot. A litter collection program should be established to control wind-blown litter at the depot. Simple things like covering bins and transport vehicles, checking the direction of the wind before mulching or crushing, and enclosing drop-off areas can minimise litter. Consider the direction of the main prevailing wind when designing the depot, and attempt to minimise the amount of wind-blown litter. Litter should be collected at least once a day, more frequently if it becomes unsightly or a nuisance.

Fencing and security

As a minimum, a chain-link fence 1.8 m high with lockable access gates is strongly recommended, with a 45° return for litter control. To assist with security, minimise the

number of gates and entry points. Gate keys should not be given to customers. Only those people responsible for the depot, such as the depot manager and/or depot supervisor, should have a key to the depot. Emergency services must have access to the depot. This may be by way of a key.

There should be adequate security to prevent illegal dumping and vandalism. South Australia Police or similar security professionals can provide security advice.

Plans of the waste depot showing the depot layout and locations of all hazards and safety equipment should be prepared and updated on a regular basis. HAZCHEM signs need to be appropriately placed within the depot and on the fence.

Signage

Adequate signage is recommended to direct traffic to the depot. Within the depot, signs should indicate traffic flow and direct traffic to different disposal areas. Hazardous areas need to be clearly marked, possibly even fenced to prevent unauthorised access.

Signs stating the following should be visible from beyond the boundary of the depot:

- name of the depot
- owner and operator name(s)
- environmental authorisation number
- emergency contact names and telephone numbers
- materials accepted and prohibited at the depot
- charges for receipt of waste and recyclables
- hours of operation.

Notices stating that the lighting of fires at the depot is prohibited should be clearly posted at the depot. Signs stating the penalties for illegal dumping, uncovered loads or for the infringement of any other regulations could also be displayed.

Facilities

Office facilities should have adequate space for files, employee records, and operation and maintenance information. The office may be in the same building as the operational area, or in a different building.

Employee facilities, including lunchroom, lockers and showers, should be considered for both depot and vehicle personnel.

Water is generally needed for fire protection, dust control, drinking, toilets and irrigation for landscaping. Fire protection needs usually determine the maximum water flow required. Sewer or other wastewater disposal services may be required for toilet facilities and washdown water.

4 OPERATION AND MANAGEMENT OF THE DEPOT

Topics raised in this section should be addressed in detail for licensing purposes, probably in the form of a management plan.

Best practice operations and depot should be the aim. Implementation of an environment management system as outlined in AS/NZS 14001 *Environment Management Systems* is recommended.

A management plan should include, but not be limited to, the following issues.

Record keeping

Regular reporting is required for collating information on waste and recycling rates in Australia, therefore information should be reported in line with the Australian Waste Database. Information to be collected and reported at least annually should include:

- the source, quantities and types of wastes which have been either recycled or treated off-site, disposed to landfills or used in a waste-to-energy process
- the source, quantities and types of listed wastes
- the types of waste management processes implemented
- management and monitoring requirements which will apply to the collection, transport, removal, recycling, treatment and disposal of waste and related facilities.

A register of complaints should be kept and include information on:

- the details of the complaint
- time and date of complaint
- who received the complaint
- any other relevant information, e.g. wind direction and strength, weather conditions
- the action taken in response to the complaint
- when the action was taken
- any changes made to prevent further such occurrences.

All complaints should be reported to the EPA within 24 hours of their lodgement.

Maintenance of the depot and equipment

The depot should be kept neat and tidy. Skips and pits used to receive putrescible waste should be cleaned daily. All depot equipment needs to be kept in good operating condition and serviced regularly. This helps to keep a safe working environment for workers and the customers, minimises the risk of emergency situations and contributes to preparedness for any emergency situation.

Supervision

A responsible person should supervise the depot at all times while it is open. The size of the depot, the variety of services provided and the types of wastes received will determine the number of staff required.

Waste types entering the depot need to be controlled. Depot operators should facilitate appropriate unloading and placing of waste materials. This practice will also minimise receiving unwanted wastes (or those wastes which the depot is prohibited from accepting).

Risk management plan and assurance

A risk assessment should identify hazards and risks. These include environmental, occupational health and safety, and any other risks at the depot, both to employees and the general public. A risk management plan should be prepared identifying these risks and how they are to be minimised. This can be included in the overall management plan for the depot.

Emergency response plan

There is a need to have an emergency response plan. This should be prepared with reference to emergency services. A copy of the plan should be lodged with the local emergency service provider. This can be included in the overall management plan for the depot.

Education

When they start their employment, and regularly thereafter, employees and contractors should be made aware of the requirements and obligations at the depot for:

- safe and correct procedures for operating equipment and other activities at the depot
- Environment Protection Act, including the conditions of licence for the depot
- wastes accepted and not accepted by the depot
- procedures for non-conforming wastes
- occupational health, safety and welfare
- handling of dangerous goods
- planning conditions
- emergency response procedures
- maintenance of best practice.

The public should be made aware of the depot's existence, what wastes they can and cannot deposit at the depot, and their responsibility for appropriately disposing of their wastes. Allow people to become aware of what the depot is attempting to achieve, what happens at the depot, and how the waste is handled and treated. The public needs to be informed of the importance of proper separation of wastes and recyclables.

Public relations

Good public relations are important throughout the life of the depot. Public involvement should not stop with development approval for the depot; it should be a continuing process. Informing neighbouring industries and communities on what is happening helps build and maintain good relations.

Hours of operation

Mainly commercial and industrial vehicles will use transfer stations during the week. The depot needs to be open in time for the first domestic waste collection vehicle (if accepting waste from domestic collection) and long enough for the day's collection and other industry vehicles to deposit waste. On weekends, more households will use the depot. This needs to be anticipated and temporary booths might need to be installed to cater for trailers from households.

Quality control

There should be a quality control system at the depot. A quality control plan/quality assurance criteria should be established and include things such as random waste checks of vehicles entering the depot. Logbooks recording depot conditions, work stoppages, temperature, wind direction, safety and operational issues, as well as maintenance and repair of equipment, can provide a good ongoing quality control check.

Public safety

Areas where the public is not allowed should be clearly marked and well signposted. Some activities, such as unloading potentially hazardous substances and the processing of materials, should be supervised.

Occupational health, safety and welfare

All employees, contractors and the general public are covered by the *Occupational Health, Safety and Welfare Act 1986 (SA)* and its Regulations. Employees and contractors need to be informed of their obligations under the Occupational Health, Safety and Welfare Act and advised about safe working practices. This should be done during induction. Procedures should be reviewed regularly to maintain best and safe practices.

GLOSSARY

Term	Definition
aerobic	in the presence of oxygen
aquifer	rock or sediment in a geological formation, group of formations or part of a formation capable of being permeated permanently or intermittently and can thereby transmit water
biodegradable	capable of being decomposed by the action of biological processes
by-product	incident or secondary product made in the manufacture of another product
closed loop recycling	recycling process in which the reclaimed output is used as an input to the same product system
commercial waste	component of the waste stream originating from wholesale, retail or service establishments
composting	process whereby organic materials are pasteurised and microbiologically transformed under aerobic and thermophilic conditions for a period not less than six weeks
construction and demolition waste	materials in the waste stream which arise from construction, refurbishment or demolition activities
contamination	the condition of land or water in which any chemical substance or waste has been added at above background level and represents, or potentially represents, an adverse health or environmental impact
decomposition	breakdown of organic waste materials by micro-organisms
disposal	final stage in the management of the waste stream, such as the introduction of waste into the environment for the purpose of burial or destruction
domestic waste	waste stream derived from households
emissions (gaseous)	waste gases released into the atmosphere as the product of combustion or decomposition processes
environment	land, air, water, organisms and ecosystems, including: <ul style="list-style-type: none"> ▪ human made or modified structures or areas ▪ the amenity value of an area
green waste	vegetative portion of the waste stream from domestic and commercial premises and municipal operations
groundwater	water occurring naturally at ground level or water in an underground aquifer
hours of operation	total time the depot is in operation, including but not restricted to the time the depot is open for the receipt of waste
industrial waste	component of the waste stream arising from industrial processes and manufacturing operations
landfill	an area of a waste depot used for the controlled deposit of solid wastes onto or into land
landfill gas	gases arising from the breakdown of biodegradable wastes disposed of at a waste depot, with methane and carbon dioxide being major constituents
leachate	liquid which has percolated through and/or drained from waste material and which contains soluble or suspended components of the waste, including products of decomposition

Term	Definition
liquid waste	includes: <ul style="list-style-type: none"> ▪ any liquid waste irrespective of whether or not it is packaged or otherwise contained and irrespective of whether or not the packaging or container is to be disposed of together with the liquid that it contains ▪ any waste that is liquid (as determined in TB8) at 20°C
listed waste	any waste listed in Schedule 1 Part B of the Environment Protection Act
open loop recycling	recycling process in which the reclaimed output is used as an input to another product system
organic waste	component of the waste stream that is readily biodegradable; includes, for example, green, putrescible and grease trap wastes but does not include, for example, plastic or mineral oil products
pollute	<ul style="list-style-type: none"> ▪ discharge, emit, deposit or disturb pollutants <p style="text-align: center;">or</p> <ul style="list-style-type: none"> ▪ cause or fail to prevent the discharge, emission, depositing, disturbance or escape of pollutants
public consultation	discussion with and consideration of the issues raised by the community
recycling	set of processes (including biological) for converting recovered materials that would otherwise be disposed of as wastes, into useful materials and/or products (see also closed loop recycling and open loop recycling)
resource recovery	process that extracts material or energy from the waste stream
resource recovery depot	depot at which waste is sorted and pre-processed for resource recovery
risk assessment	process for assessing the potential for environmental harm to be caused
risk	the probability that environmental harm will occur
sensitive land use	land use which warrants protection from amenity-reducing off-site effects from activities; can include residential areas and zones (whether occupied or not), community and educational facilities, hotels, hospitals, and offices
separation distance	distance prescribed in the draft <i>Guidelines for separation distances</i> for the activity(ies) listed or as determined by the EPA after consultation with the industry; distance to be measured from the activity boundary
solid waste stream	aggregate of all solid waste components, and also the process through which they move from point of generation to ultimate disposal
stormwater	rain or melted precipitation that runs off land or structures on land and may contain pollutants
surface water	all waters of the State other than underground water
transfer station	a waste depot where materials can be taken for treatment or sorting before disposal
underground water	water occurring naturally, or stored, below ground level
vector	carrier capable of transmitting a pathogen from one organism to another including, but not limited to, flies and other insects, rodents and birds
waste	includes any liquid, solid or gas (or a combination thereof) that is left over, surplus or an unwanted by-product from any business or domestic activity, whether of value or not

Term	Definition
waste containing friable asbestos	waste consisting of non-bonded asbestos fabric or waste material that contains more than 1% asbestos by weight and is in the form of powder or can be crumbed, pulverised or reduced to powder by hand pressure when dry
waste containing non-friable asbestos	waste material that contains more than 1% asbestos by weight and in which the asbestos fibres are bonded by cement, vinyl, resin or other similar materials
waste depot	as defined in clause 3(3) of Part A of Schedule 1 of the Environment Protection Act
waste to energy	recovery of energy from waste, using either combustion of unprocessed waste, pyrolysis and gasification or biological processing; energy recovered is often converted into electricity for ease of distribution

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South Australian legislation

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Development Act 1993

Occupational Health, Safety and Welfare Act 1986

Land and Business (Sale and Conveyancing) Act 1994