

MATERIALS HANDLING

November 2007

Materials handling can have minimal environmental impact if located in an appropriate area and sited, designed and operated properly. If proper care is not taken in addressing environmental issues, however, it has the potential to cause environmental harm.

For the purposes of this guide, materials handling is defined as the conduct of facilities where sand and gravel are stored and despatched, or where materials (including grain or fertilisers) are bagged for sale (apart from on-farm bagging of grain for sale). Development proposals that involve bulk shipping, coal handling and storage, or chemical storage and warehousing must be referred to the Environment Protection Authority (EPA) under Schedule 8 Item 11 Schedule 22 of the *Development Regulations* 1993.

The purpose of this guide is to help council planners assess proposals for materials handling facilities from an environmental viewpoint. It focuses on environmental issues and does not deal with the process of assessing proposals against the provisions of the Development Plan.

Key environmental issues

- Noise
- Air quality
- Water quality

Information requirements

The following environmental information is required to undertake an adequate assessment:

- separation distances from residential or other sensitive receivers
- air quality protection measures
- noise mitigation measures
- water demand and use
- water and soil protection measures including
 - wastewater containment and disposal
 - chemical storage and work areas
 - stormwater pollution prevention
 - solid waste storage and disposal.

Applications lacking any of this information should not be accepted.

Before you read further: information about noise in this document may be out of date. This document is being revised. Please refer to the Environment Protection (Noise) Policy 2007, available at www.legislation.sa.gov.au.

Noise

Noise nuisance from materials handlers includes noise generated from the movement of trucks, front-end loaders and forklifts, particularly early in the morning or late at night, and reversing alarms on mobile plant.

Schedule 2 of the *Environment Protection (Industrial Noise) Policy*, 1994 specifies the maximum level of noise exposure for people living near industrial and other non-domestic premises. These levels are intended for existing situations. However, people who live in these areas are typically more sensitive when a new noise source is introduced into an area and a 5dB(A) reduction should be made to the maximum permissible noise levels contained in Schedule 2 when assessing the suitability of new development proposals. The following table of maximum permissible noise levels already incorporates a 5dB(A) reduction for development assessment purposes.

Description of area in which the noise source is situated ¹	Maximum noise levels ² – dB(A)	
	7am-10pm	10pm-7am
Rural or predominantly rural	42	35
Urban residential	47	40
Urban residential with some commerce, or with a school, hospital or the like	50	40
Urban residential with some manufacturing industry or with some place of public entertainment or place of public assembly or licensed premises	53	45
Predominantly commercial	60	55
Predominantly industrial	65	65

1. While this description focuses on the source of the noise, it is reasonable to suggest that it should also extend to the area where the nearest sensitive receivers are. Typically, the sensitive receivers will be found to exist in more sensitive zones than the source itself, for example, an industry zone may have a nearby residential zone that containing the closest houses.
2. Measured at any place, other than the premises from which the noise emanates, where a person lives or works.

The above noise levels may be exceeded where an acoustic engineer can show that the noise from the development will not cause an adverse impact because of the existing influence of ambient noise, or the limited duration or frequency of the activity.

The onus of proof that the noise reduction measures prevent adverse noise impacts rests with the developer.

Air quality

To minimise dust emissions material must be stored within bunkers or silos at all times. Bunker walls must be constructed to at least 0.5 metres above the stored material. Fine particles may also require covers, tarpaulins or a water spray system to prevent wind blown nuisance dust.

When dried, coarse material may release fine particulates that may become a dust nuisance. Dust accumulation can also become a nuisance if allowed to enter the stormwater system.

Experience has shown that unless the main entrances, roadways and unloading areas are hard surfaced with materials such as concrete or bitumen, there is likely to be a problem with dust from spillage and damage to the unsealed surface. Dust will also be picked up on vehicle wheels and transported off site (dragout). In winter this can become a problem with mud being transported off site.

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To avoid on-site dust generation from mobile plant and dragout, the site should be kept clear of spilt material. Watering, using water carts or in situ sprays, will suppress dust, but may increase the likelihood of dragout. A wheel wash at the site exit can minimise the transfer of mud to prevent it becoming a road hazard.

Temporary stockpiles of fine materials not stored in bays should be limited to a maximum of 3 metres in height, and be covered with tarpaulins when not in use (including overnight). Temporary, mobile or fixed sprinkler systems may also be required to stabilise this material to minimise the potential for wind-driven dust impact off site.

When grains, fertilisers or mushroom compost are stored, offensive odours must be managed to avoid amenity loss for neighbours. If grains are fumigated, odours will need to be dispersed.

Even with good design and good management there may be some dust emissions. There must be sufficient separation between materials handling facilities and sensitive receptors (i.e. houses on neighbouring properties) taking into account the type of material stored, the size and location of the facility and the sensitivity of the surrounding environment.

Water quality

Pollutants generated by materials handling should be prevented from entering water bodies (including groundwater) through direct discharge, seepage or through contamination of stormwater. This may include suspended solids, grease, lubricants, solvents, nutrients and oils.

Wastewater management

Hazardous materials (fuels, oils, pesticides and other chemicals) must be stored in a bunded and preferably rainproof area to minimise the risk of surface/groundwater contamination. The EPA *Guideline for Bunding and Spill Management* provides information on designing and managing bunded areas. Any disposal of liquids that accumulate in such areas to sewer will require the approval of SA Water's Trade Waste Group.

Stormwater management

Roof stormwater should be collected for reuse and must be managed separately from potentially contaminated runoff (i.e. from carparks, hard paved areas or the ground).

The facility should incorporate a stormwater management system for all areas where contaminated runoff may be generated (including carparks). Structural controls such as bunded storage areas, first flush diverters, gross pollutant traps, oil/water separators, hydrocarbon absorbers, infiltration basins (e.g. grassed or vegetated swales, garden strips or stone-filled trenches), sediment traps or soluble pollutant removers are all acceptable methods. Stormwater treatment specialists should be consulted to determine which management systems will be most effective.

Water conservation

Materials handling facilities should incorporate systems that enable the containment and reuse of water (including treated stormwater and wastewater) to replace potable (mains) supplies for

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operations such as landscape irrigation, toilet flushing and process water (e.g. machine cooling and cleaning).

Behavioural work practices, such as stormwater drain labelling, signage displaying standard operating procedures and training employees are also encouraged in addition to the in-built structural controls outlined above.

- o Storage for fertiliser, compost or other odorous materials
- o Siting of facility and proximity of nearby dwellings
- o Compatibility of land uses in the vicinity of the site
- o Need for sealing the operational areas of the site
- o Likelihood that the materials stored will create dust issues
- o Dust management measures
- o Dragout management strategies
- o Stormwater management system
- o Appropriate storage of materials in bunded areas
- o Impact of working out of normal office hours on nearby residents

Environmental assessment

Checklist of environmental issues

- o Storage for fertiliser, compost or other odorous materials
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Draft standard conditions

To use and adapt as may be applicable to a specific proposal

1. All entrances, internal roadways and loading/unloading areas must be hard surfaced using a low permeability material (e.g. concrete or bitumen).
2. All hard surfaced areas must be swept regularly to minimise potential for dust generation and off-site impact.
3. All bulk material must be contained in storage bays to minimise dust emissions. The height of material within storage bays must be kept 0.5 metres below the level of the top of the walls at all times.
4. All storage bays containing fine or dusty materials must be either:

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- fitted with a sturdy hard cover
 - covered with tarpaulins when not in use, or
 - fitted with sprinkler systems.
5. Sprinkler systems must be maintained in an operable condition at all times.
 6. All storage bays located on, or in proximity to site boundaries, must be sealed to prevent material escaping into neighbouring properties.
 7. Any spilt material must be swept up immediately.
 8. All stormwater runoff from car parking, driveways, and other areas that are hard paved and used in conjunction with the bulk handling facilities, must be directed into:
 - grassed swales, vegetated or garden strips
 - small infiltration basins over permeable soils
 - surface or underground stone filled trenches (i.e. similar to a septic tank absorption field) and/or
 - sediment traps

which are sized to effectively contain and filter out sediment in a three (3) month average recurrence interval runoff event prior to any discharge off site. In the event of a larger runoff, allowance can be made to discharge stormwater overflow direct to the council stormwater system by means of a high flow bypass.

9. Stormwater from all roofed areas must be collected for on-site use and any excess overflow discharged directly to the council stormwater system, provided it is via underground pipes and the stormwater is not contaminated.
10. Any material (fuel, oils, lubricants, paints, solvents, coolants, degreasing agents, including environmentally harmful goods and liquids stored on site) likely to degrade water must be stored within a bunded compound or area or an appropriately designed chemical storage container, suitable for preventing the escape of material into surface or underground water resources.
11. Noise generated from the development must not exceed ... between the hours of ... and ... measured and adjusted at the nearest sensitive receiver in accordance with the *Environment Protection (Industrial Noise) Policy, 1994*.

The following note provides important information for the applicant and should be attached to the approval notice.

The applicant is reminded of their general environmental duty, as required by Section 25 of the Environment Protection Act, to take all reasonable and practical measures to ensure that the activities on the whole site, including during construction, do not pollute the environment in a way which causes or may cause environmental harm.

References

Information sheets, guidance documents, codes of practice, technical bulletins etc. that are referenced in this user note can be found at: www.epa.sa.gov.au

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These include the following EPA Guideline:
Bunding and Spill Management, January 2004
Guidelines for Separation Distances, August 2000.

The *Environment Protection (Industrial Noise) Policy*, 1994 and the *Environment Protection (Water Quality) Policy*, May 2003 can be accessed through: www.legislation.sa.gov.au

FURTHER INFORMATION

Legislation

Legislation may be viewed on the internet at: www.legislation.sa.gov.au

Copies of legislation are available for purchase from:

Service SA Government Legislation Outlet	Telephone:	13 23 24
101 Grenfell Street	Facsimile:	(08) 8204 1909
Adelaide SA 5000	Internet:	shop.service.sa.gov.au

For general information please contact:

Environment Protection Authority	Telephone:	(08) 8204 2004
GPO Box 2607	Facsimile:	(08) 8124 4670
Adelaide SA 5001	Freecall (country):	1800 623 445
	Internet:	www.epa.sa.gov.au
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