

## CATTLE FEEDLOTS

November 2007

Cattle feedlots 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, they have the potential to cause environmental harm.

For the purposes of this guide, a cattle feedlot is defined as an area where cattle are held in a confined area and fed mechanically or by hand, and where the average number of cattle per day over 12 months does not exceed 200 (in a Water Protection Area as declared under Part 8 of the *Environment Protection Act 1993*) or 500 elsewhere in the state. When a proposal exceeds this scale it must be referred to the Environment Protection Authority under Schedule 8 Item 11 Schedule 22 (5)(1) of the *Development Regulations 1993*.

The purpose of this guide is to help council planners assess proposals for feedlots 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

- Air quality
- Water quality and waste management
- Mortalities
- Noise

### 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

Before you read further: information about noise in this document may be out of date.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](http://www.legislation.sa.gov.au).

*Guide for Applicants - Cattle Feedlots* provides more detail on information requirements and can be found at [www.planning.sa.gov.au](http://www.planning.sa.gov.au)

**Applications lacking any of this information should not be accepted.**

### Design features

- The feedlot must be designed and constructed so that all clean rainfall runoff is directed away from the effluent management system.
- All pens must have a compacted floor surface (similar to council-made roads) with a consistent uniform slope of between 2% and 6%.
- The effluent storage lagoon must have sufficient capacity to hold the runoff from May to October inclusive, with an average recurrence interval of 20 years, and be lined with a clay or synthetic liner with a permeability of  $1 \times 10^{-9}$  m/s or less.
- The base of an effluent lagoon should be at least 2 metres above the seasonal high groundwater level.
- The lagoon should have spillways to cope with overflow during extreme rainfall.
- Water troughs should be located on the lower side of pens.
- Wastewater and solids should be used in such a manner that all nutrients are effectively taken up by crops or other vegetation.
- To minimise odour and fire risk, stockpiled solids should be maintained at a height of less than 2 metres.
- Separation distances must be at least 200 metres from major roads, 50 metres from a public road with less than 50 vehicles per day, excluding feedlot traffic, 20 metres from property boundary and a minimum of 100 metres from watercourses. A feedlot proposal normally needs to have a separation distance of approximately 500 metres from houses and 1500 metres from towns but it should meet the standards for separation distances as outlined in the *Guidelines for the Establishment and Operation of Cattle Feedlots in South Australia, 2006* for all classes of receptors. For more information on design features refer to Appendix 2 and 3 of these guidelines.

### Environmental assessment

#### Air quality

Odours from a cattle feedlot can be minimised by good design, construction and management. To reduce odour potential the feedlot pen surface should be kept as dry as possible. A compacted pen surface that has a consistent uniform slope of between 2% and 6% and a similar surface to council-made roads will help to do this.

Methods to be used to minimise the spread of odour, dust and other airborne particles need to be looked at. Water carts can be used to minimise dust from the cattle feedlot and vehicle movement.

### Water quality and waste management

The feedlot must be designed so that all rainfall runoff from the feedlot drains efficiently to an effluent management system, consisting of a sedimentation lagoon and a storage lagoon. It can assist drainage of pens if feed troughs are on the high side and water troughs are at the low side of the pens. All solid waste (manure) must be collected and stockpiled in such a manner that any runoff from the stockpile is directed to the effluent management system. Land disposal of effluent and manure waste must ensure that all nutrients are effectively taken up by crops, or other vegetation.

### Mortalities

The disposal of dead animals on site should be in accordance with best practice methods (refer to *Guidelines for the Establishment and Operation of Cattle Feedlots in South Australia*, 2006) to reduce the risk of contamination. On-site burial of mortalities is not recommended and on-site composting, or removal off site, is preferred. Composting needs to be undertaken where external rainfall runoff is directed away from the area so that there is no contamination of water resources. Composting should occur on compacted clay or a similar base with a permeability of  $1 \times 10^{-9}$  m/s or less. Composting areas for mortalities should be fenced to discourage foraging by feral animals. If on-site burial of dead animals is proposed, it should be in accordance with best practice methods (refer to the *Guidelines for the Establishment and Operation of Cattle Feedlots in South Australia*, 2006) to reduce the risk of contamination.

Applicants should consider drawing up an emergency management plan to deal with disposal of mortalities over and above normal mortality rates (e.g. in the event of a major disease outbreak or natural disaster).

### Noise

While much of the work associated with this activity is not noisy, there may be some noise from vehicles and stock, which can be a nuisance. However, considering the separation distances required between a feedlot and the nearest house on a neighbouring property for odour control purposes, it is unlikely that noise will be a significant issue.

### Checklist of environmental issues

- Adequate separation distances
- Effective controlled drainage area
- Odour potential minimised by a compacted pen surface with a uniform slope
- Adequate effluent management system
- Solid waste and compost management system
- Appropriate disposal of carcasses to reduce contamination
- Emergency procedure for mortalities (e.g. in case of major disease outbreak) in large feedlots

## Draft standard conditions

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

1. The feedlot must be designed and constructed so that all clean rainfall runoff from external areas is directed away from the feedlot and associated effluent management system.
2. All feedlot pen floors must be compacted to a standard which ensures that effluent does not infiltrate and contaminate groundwater or soil, and graded to a consistent uniform slope of between 2% and 6%.
3. All effluent from pens must be directed to an effluent storage lagoon.
4. The effluent storage lagoon must have sufficient capacity to hold the runoff from May to October inclusive, with an average recurrence interval of 20 years, and be lined with a clay or synthetic liner with a permeability of  $1 \times 10^{-9}$  m/s or less. The lagoon must be maintained at all times to prevent cracking or deterioration of any clay or synthetic liner.
5. All effluent and manure must be collected, treated, and disposed of in a manner and at a rate that ensures that the nutrients and salt levels in the soil of the disposal area do not pose a threat to soil quality, vegetation, surface and groundwater quality, and that odour does not become a nuisance off site.
6. The composting or manure stockpile area must have a compacted clay or similar base with a permeability of  $1 \times 10^{-9}$  m/s or less.
7. All mortalities must be disposed of immediately upon discovery. Acceptable disposal methods are:
  - a. removal to a disposal area /rendering works
  - b. composting carried out where external rainfall runoff is directed away from the area so there is no contamination of soil, surface water, or groundwater
  - c. burial.

**Note:**

Composting of animals on site is the preferred method of disposal. Burial must be undertaken in line with the *Guidelines for the Establishment and Operation of Cattle Feedlots in South Australia, 2006*.

8. An emergency management plan must be developed for mortalities over and above normal rates.

**The following note provides important information 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 referenced in this guide can be found at: <[www.epa.sa.gov.au](http://www.epa.sa.gov.au)>. This includes the EPA Guideline: *Wastewater and Evaporation Lagoon Construction*, March 2004.

*Guidelines for the Establishment and Operation of Cattle Feedlots in South Australia*, 2nd edition, February 2006. Available from: [www.epa.sa.gov.au/pdfs/cattle.pdf](http://www.epa.sa.gov.au/pdfs/cattle.pdf)

The *Environment Protection (Water Quality) Policy*, May 2003 can be accessed through: [www.legislation.sa.gov.au](http://www.legislation.sa.gov.au)

The *National Guidelines for Beef Cattle Feedlots in Australia*, 2nd edition, Standing Committee on Agriculture and resource management SCARM Report 47, 1997 can be purchased through: [www.publish.csiro.au/pid/114.htm](http://www.publish.csiro.au/pid/114.htm)

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## FURTHER INFORMATION

### *Legislation*

Legislation may be viewed on the internet at: [www.legislation.sa.gov.au](http://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:	<a href="http://shop.service.sa.gov.au">shop.service.sa.gov.au</a>

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