

# National Beef Cattle Feedlot Environmental Code of Practice



**National Beef Cattle Feedlot  
Environmental  
Code of Practice  
2<sup>nd</sup> Edition**

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### Foreword

The beef cattle feedlot industry is an important, value-adding component of Australian agriculture, representing a value of production of approximately \$2.7 billion whilst employing some 2,000 people directly and almost 7,000 more indirectly.

The Australian cattle feedlot sector evolved due to its ability to consistently meet market requirements in terms of quality and quantity irrespective of Australia's variable seasons. Consumers in both domestic and export markets also actively demand grain fed beef.

The Australian cattle feedlot industry recognises that it has a social and ethical obligation to customers, communities and government to continually deliver improvements to environmental, animal welfare and food safety practices if it wishes to maintain the confidence of these key stakeholders. From an environmental perspective, the *National Beef Cattle Feedlot Environmental Code of Practice – 2<sup>nd</sup> Edition (Code of Practice)* provides a key mechanism to help deliver such improvements.

The *Code of Practice* is designed to be a companion document to the *National Guidelines for Beef Cattle Feedlots in Australia (Guidelines)*. The *Code of Practice* is intended to provide nationally consistent requirements under state regulation for lot feeders and administrators regarding the environmentally relevant aspects of the establishment and operation of beef cattle feedlots. In contrast, the *Guidelines* provide 'guidance' on how the *Code of Practice* requirements regarding the establishment and operation of beef cattle feedlots may be achieved.

The industry's quality assurance system, the National Feedlot Accreditation Scheme (NFAS) requires all accredited feedlots to adhere to the *Code of Practice* along with all other relevant environmental, animal welfare and food safety legislation. Under this government and industry managed program, every accredited feedlot is independently audited each year to ensure compliance.

The first edition of the *Code of Practice* was released in 2000. This second edition has been approved by state and federal governments, the Feedlot Industry Accreditation Committee and the Australian Lot Feeders' Association (ALFA).

I commend the *Code of Practice* to those stakeholders with an active interest in the cattle feedlot industry.



Jim Cudmore  
ALFA President

### Acknowledgments

The production of this document was undertaken on behalf of the Feedlot Industry Accreditation Committee, and was overseen by a steering committee consisting of representatives of the following organisations:

- Meat & Livestock Australia
- Feedlot Industry Accreditation Committee
- Australian Lot Feeders' Association
- AUS-MEAT Limited

The steering committee is indebted to the representatives of state agencies that coordinated the reviews undertaken, and the responses made by the various agencies and departments responsible for administering activities in beef cattle feedlots in their respective states. These representatives included people from the following departments:

- Department of Primary Industries and Resources, South Australia
- New South Wales Department of Primary Industries
- Department of Agriculture, Fisheries and Forestry, Queensland
- Department of Primary Industries, Victoria
- Department of Agriculture and Food, Western Australia

Lastly, the steering committee would like to express its gratitude to the many others, in various state agencies, the feedlot industry and associated organisations, who have given their time and expertise to review and comment on this document.

## Contents

Foreword	iii
Acknowledgements	iv
Preface	vi
Document scope	vii
Environmental outcomes	vii
Legislative context	vii
Exclusions	vii
Document structure	viii
Audit requirements	viii
Principles of cleaner production	ix
Training	ix
Development consent, approval, permitting and licensing	x
Definitions	xi
Description of feedlot activities	1
The Code of Practice	1
1. Site selection and design	2
1.1 Surface water	2
1.2 Groundwater	5
1.3 Community	7
1.4 Ecology	9
1.5 Resources	10
2. Construction phase	11
2.1 Surface water	11
2.2 Groundwater	12
2.3 Community	13
2.4 Ecology	14
2.5 Management system	16
3. Operational management	17
3.1 Surface water	17
3.2 Groundwater	20
3.3 Community	22
3.4 Ecology	24
3.5 Management system	25
Glossary of terms	28

### Preface

The Australian beef cattle lot feeding industry considers that the protection of the environment is essential for ecologically and economically sustainable agricultural production. To this end, the industry has been pro-active in seeking to develop and adopt appropriate guidelines and codes of practice for environmental management. This approach has been pivotal in the production of two previous national guidelines and an environmental code of practice.

Previous editions of the *National Guidelines for Beef Cattle Feedlots in Australia* (the National Guidelines) were released in 1992 and 1997. These documents were produced under the auspices of the Standing Committee of Agriculture and Resource Management.

In 1998, the Australian Lot Feeders' Association (ALFA) initiated the development of a code of practice for cattle lot feeding in Australia. The *National Beef Cattle Feedlot Environmental Code of Practice* (the Code of Practice) was subsequently published by Meat & Livestock Australia (MLA) in 2000.

Since that time, scientific knowledge, technology and community expectations have changed. In 2006, the Feedlot Industry Accreditation Committee (FLIAC) initiated a review and update of the National Guidelines. It quickly became apparent that this could not be undertaken in isolation, and the Code of Practice was also included in the review and update process. Both documents have been extensively revised into new editions – *the National Guidelines for Beef Cattle Feedlots in Australia – 3<sup>rd</sup> Edition* (the *National Guidelines* or the *Guidelines*) and the *National Beef Cattle Feedlot Environmental Code of Practice – 2<sup>nd</sup> Edition* (the *Code of Practice* or the *Code*). The development of the new editions of these documents was a joint project of Meat & Livestock Australia and the Australian Lot Feeders' Association.

Apparent inconsistencies and differences between the various state and national publications have also been a concern to the lot feeding industry. These differences often simply reflect differences in what was accepted as best practice at the time of drafting the various documents. Accordingly, any inconsistencies between this *Code of Practice* and existing state codes, guidelines and reference manuals are not to be considered as a criticism of these other publications. It is also intended that this *Code of Practice* be used as a basis for any state guidelines developed in the future, thereby creating regulatory consistency between the states.

A secondary aim of publishing the new *Code of Practice* was to reach a consensus between regulatory authorities in the various states so that similar conditions apply to feedlot developments throughout Australia. This aim for consensus was made while mindful of the different physical environments and the different legislative and regulatory frameworks that may apply in each state.

### Document scope

#### Environmental outcomes

This *Code of Practice* is designed to address the environmentally relevant aspects of the site, design, construction and operation of a beef cattle feedlot. These are defined in terms of a series of outcomes that the *Code of Practice* is designed to achieve. That is, feedlots should be sited, designed, constructed and operated so they:

- prevent or minimise adverse impacts on surface waters external to the feedlot controlled drainage area and external to manure and effluent utilisation areas
- prevent or minimise adverse impacts on groundwater
- prevent or minimise adverse impacts on the amenity of the surrounding community
- prevent or minimise adverse impacts on native flora and fauna and ecological communities<sup>1</sup>
- ensure access to sufficient natural resources to sustain the operations of the feedlot and sustainably utilise nutrients contained in feedlot wastes.

#### Legislative context

It should be emphasised that this *Code of Practice* does not override or replace federal, state or local government legislation, regulation, plans or policies. Indeed, an aim of this *Code of Practice* is to ensure that those planning to construct a beef cattle feedlot, or operate one, comply with all relevant regulatory requirements.

#### Exclusions

The *Code* does not directly address animal welfare or operational aspects of lot feeding that do not have a significant environmental consequence. These important aspects of beef cattle lot feeding are addressed in detail in other guidelines, codes of practice, reference manuals and similar documents. In respect to animal welfare, the following should be specifically consulted<sup>2</sup>:

- *Australian Model Code of Practice for the Welfare of Animals – Cattle 2<sup>nd</sup> Edition (PISC, 2004)*.
- *Australian Standards and Guidelines for the Welfare of Animals – Land Transport of Livestock (PIMC, 2008)*.

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<sup>1</sup> See definitions of native flora and fauna and ecological communities on page 29.

<sup>2</sup> These welfare codes are currently being reviewed and will soon be replaced by standards.



### Document structure

This document has the following structure:

- brief explanatory description of a beef cattle feedlot
- performance measures and actions associated with:
  - site selection and feedlot design
  - feedlot construction
  - feedlot operations
- list of definitions fundamental to understanding and interpreting this document
- glossary of certain terms used in the document.

The *Code of Practice* has a companion document in the form of *National Guidelines*. This second document provides guidance on means of achieving the requirements specified in the *Code* along with more detailed information on specific topics, particularly where specific guidance in meeting the *Code's* performance measures might be useful.

The companion *Guidelines* do not demonstrate the only means by which compliance with the *Code* might be achieved; there will be other ways of achieving the required outcomes. This is particularly the case as knowledge, management and technology progressively improve over time; allowing feedlots to avoid, or better manage, environmental impacts in the future.

### Audit requirements

To demonstrate compliance with this *Code*, all feedlots must have in place a documented management system; this will incorporate operational procedures that address the environmental performance measures provided. This management system needs to allow the effective management of environmentally-relevant activities on the site, and satisfactorily addresses any significant risks these might pose to the environment. It is required that the management system be formally documented and include the provision of training and any site-specific induction practices necessary to meet the required environmental outcomes. External third-party annual auditing of the management system is mandatory for compliance with this *Code*.

The National Feedlot Accreditation Scheme (NFAS) is an industry-developed quality assurance system that is audited by an external third-party auditor, in the form of AUS-MEAT. The Scheme was initiated by ALFA and is managed by the Feedlot Industry Accreditation Committee (FLIAC). Accreditation under the NFAS satisfies the requirements above, and it is one program supported by all states.

### Principles of cleaner production

Cleaner production involves an ongoing effort to improve the efficiency of use of materials and resources – including water and energy – and a reduction of pollution and waste associated with the production process to achieve the best environmental outcome.

The feedlot industry recognises that the adoption and application of the principles of cleaner production during the feedlot design, construction and operation phases will assist the industry to progressively improve environmental performance and achieve the best environmental outcome.

Pursuing the principles of cleaner production will:

- optimise the use of production inputs
- minimise waste, and the costs associated with dealing with waste
- improve the quality of feedlot products
- improve the health and safety of employees
- reduce the need for environmental regulation
- improve the enterprise's and industry's image
- improve productivity.

### Training

Under both state and federal environmental protection legislation, there is a duty of care obligation placed upon anyone involved in any potentially environmentally-damaging activities to either eliminate or reduce their environmental impacts. Consequently, it is also an obligation under these acts that all feedlot staff are made aware of these requirements.

Feedlot management has the responsibility to ensure that all staff undertaking activities that might impact the environment are aware of both their legislative obligations and their responsibilities under this *Code of Practice*. It is also important that feedlot staff have the appropriate training and competencies to allow them to undertake their daily activities in an environmentally responsible manner.

### **Development consent, approval, permitting and licensing**

Lot feeding is viewed in all Australian states as an activity of some environmental significance. To mitigate the risk of environmental harm, a feedlot needs to be appropriately sited, designed, constructed and managed. Accordingly, feedlot developments are normally required to undertake some form of impact assessment prior to a development being approved and/or operational licences being granted. The companion guideline document provides some generic background material on the approvals process followed in most states. However, since the legislation and regulations governing licensing and development vary from state to state, proponents and licensees must familiarise themselves with the current legislation and regulation, and not rely solely on the information in the guidelines.

#### **Performance measures**

The performance measures provided in this document are intended to be fundamental requirements. However, the actions listed are only some of the means of demonstrating performance, and the enterprise may demonstrate – through alternative means including facilities, procedures or practices – that the outcomes and performance measures for the element are otherwise capable of being met.

It is emphasised that the performance measures relating to siting, design and construction cannot be applied retrospectively to pre-existing feedlot developments or pre-existing development approvals.

The performance measures relating to feedlot operation can be applied to both new and pre-existing feedlot developments and development approvals.

## Definitions

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### *Beef cattle feedlot*

A beef cattle feedlot is a confined yard area with watering and feeding facilities where cattle are completely hand- or mechanically-fed for the purpose of beef production.

This definition includes covered and uncovered yards.

This definition does not include the feeding or penning of cattle in the following situations:

- for weaning, dipping or similar husbandry practices
- for milk production
- at a depot operated exclusively for the assembly of cattle for live export
- for drought or emergency feeding purposes
- at a slaughtering facility
- in recognised saleyards.

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### *Feedlot complex*

The feedlot complex includes:

- pens
- handling yards
- drains and ponds
- stock lanes and feed alleys
- manure stockpile and composting pads
- feed mill and feed storage facilities
- stock and vehicle washdown facilities.

The feedlot complex does not include manure and effluent utilisation areas.

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### *Standard Cattle Unit (SCU)*

A Standard Cattle Unit is equivalent to an animal with a liveweight of 600kg. (See next page for method to be used to determine SCU.)

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### *Stocking density*

Stocking density is a measure of the intensity with which a feedlot is stocked.

In this document, stocking density is expressed in terms of an area (m<sup>2</sup>) per Standard Cattle Unit. (See next page for method to be used to determine stocking density.)

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### Method to be used for determining Standard Cattle Units

At any point in time, the total number of SCU in a feedlot can be calculated by multiplying the number of cattle in the feedlot by a scaling factor that allows for adjustments for differences in the size of cattle, as given by:

$$\text{SCU} = N \times f$$

where: SCU = number of SCU,  
 N = total number of stock on hand (head)  
 f = scaling factor

The scaling factor is determined on the basis of the *average* liveweight of all the stock on hand at that point in time. The applicable value for the scaling factor is derived from the following table.

SCU scaling factor

Average liveweight (kg)	SCU scaling factor
350 and below	0.68
400	0.74
450	0.81
500	0.87
550	0.93
600 and above	1.00

Values for the scaling factor that are applicable to intermediate liveweights can be obtained by interpolation.

Where the management system cannot reasonably determine the average liveweight of stock on hand, a default SCU scaling factor of 1.00 shall be applied.

### Method to be used for determining stocking density

Stocking density is calculated using the total pen area within a feedlot where both feeding and watering facilities are available, and where stock might be held on an ongoing basis. This area does not include areas such as stock lanes, handling yards, induction and loading facilities where it is not possible to both feed and water stock, and where stock can be held only on a short-term basis.

Where a feedlot is operating below capacity, the calculation should be performed using only the pen area that is in operation at that time. This would include pens that may be temporarily empty for maintenance or operational reasons.

Note that the higher the numerical value of a stocking density, the lower the actual stocking intensity (i.e. a beast has more area available to it).

#### *Minimum stocking density*

A stocking density of 25 m<sup>2</sup> should be considered a maximum area per SCU allocation. In certain circumstances, feedlots may operate at greater areas per SCU. However, it is the responsibility of the proponent to justify the greater area and to obtain approval from the appropriate authority.

### Description of feedlot activities

Lot feeding in some form has existed, albeit at much smaller scales, since the domestication of cattle thousands of years ago. Historically it was undertaken over periods when feed was in short supply. In recent times, lot feeding has responded to increased demand in domestic and export markets for an assured, continuous supply of high-quality beef throughout the year, and has become an integral part of the Australian beef industry.

There are approximately 700 accredited feedlots throughout Australia with most located in areas that are in close proximity to cattle and grain supplies. Most of the industry is located in Queensland and New South Wales, with expanding numbers in Victoria, South Australia and Western Australia.

A feedlot normally consists of a set of pens in which cattle are confined, fed, watered and cared for over the fattening or finishing period, before their being turned off for slaughter. Depending on market requirements, the feeding period typically ranges up to 120 days for the domestic market and from 100 to 400 days for the export market.



*A beef cattle feedlot*

Feedlot cattle are fed rations that consist in the main of grain and dry or ensiled forages. The rations are carefully formulated to meet the complete nutritional requirements for the welfare and growth of the cattle.

Feedlot wastes, such as composted manure and holding pond effluent, are used to fertilise crops grown both on and off the site. This waste re-use ensures the valuable plant nutrients in these products are recycled and the constituent organic matter is used to bolster soil organic carbon levels.

# The Code of Practice

## 1. Site selection and design

The siting and design phase of a feedlot development establishes the scope for best practice environmental management. This section of the code cannot be applied to existing feedlot developments unless there are subsequent actions that significantly modify or change the nature of that development or its impacts (e.g. increase in capacity).

### 1.1 Surface water

#### Outcome

Feedlots are sited and designed to prevent or minimise adverse impacts on surface waters external to the feedlot controlled drainage area and external to manure and effluent utilisation areas.

	<i>Performance measures</i>	<i>Actions</i>
1.1.1	The feedlot complex is not located in a flood-prone area unless adequate safeguards are incorporated.	<p>Either</p> <ul style="list-style-type: none"> <li>The feedlot complex is sited above the height of a 100-year average recurrence interval (<math>Q_{100}</math>) flood.</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>Where permitted, the feedlot complex is protected from such floods by appropriately-designed levees or similar structures.</li> </ul>
1.1.2	The feedlot complex is enclosed within a controlled drainage area, which is designed to an acceptable hydrological standard that prevents unauthorised discharges of runoff from the feedlot complex.	<ul style="list-style-type: none"> <li>Site selection considers the natural attributes and general suitability of the site for draining and capturing runoff from the feedlot complex (e.g. consider terrain factors such as slope, slope lengths, soil depth, soil type and existing landform).</li> <li>Runoff external to the controlled drainage area is diverted away from the controlled drainage area, which may be achieved by: either                             <ul style="list-style-type: none"> <li>the provision of diversion banks upslope of the feedlot complex which safely direct upslope runoff (or 'run-on') around the controlled drainage area</li> </ul> </li> </ul>

		<p>or</p> <ul style="list-style-type: none"> <li>– through the utilisation of natural topographical features that preclude upslope runoff (or ‘run-on’) from entering the controlled drainage area.</li> <li>• The design of the controlled drainage area incorporates:             <ul style="list-style-type: none"> <li>– catch drains or similar structures that capture contaminated runoff from within the feedlot complex and safely divert it to a sedimentation system</li> <li>– a sedimentation system that is designed to provide flow velocities less than 0.005 m/s, and which discharges to a holding pond or ponds</li> <li>– a holding pond or ponds large enough to store runoff from the controlled drainage area without spilling or overtopping at an unacceptable frequency</li> <li>– appropriately-designed weirs, by-washes and channels are used to discharge excess runoff during overtopping or spill events in the sedimentation system and holding pond.</li> </ul> </li> </ul>
1.1.3	<p>The feedlot waste utilisation areas are designed to enable the sustainable use of effluent and any solid waste that is utilised on-site.</p>	<ul style="list-style-type: none"> <li>• Feedlot waste utilisation areas are sited so that they do not pose an unacceptable risk to surface water quality as a result of flood events.</li> <li>• Feedlot waste utilisation areas are of sufficient size and have soil characteristics such that, under appropriate management, the organic matter, nutrients and salts in the applied feedlot effluent and solid wastes can be utilised sustainably.</li> <li>• Where effluent utilisation areas require a tailwater system, it should be appropriately designed and sized. Tailwater systems are required where there is a risk of effluent escaping the utilisation area and contaminating surface waters.</li> </ul>



1.1.4	The storage and use of hazardous and dangerous materials do not pose an unacceptable risk in respect to the pollution of surface water.	<ul style="list-style-type: none"><li>• Any facilities to store hazardous materials are designed to meet relevant guidelines and Australian Standards for the storage of hazardous and dangerous goods and spill management.</li></ul>
or <i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i>		

## 1.2 Groundwater

### Outcome

Feedlots are sited and designed to prevent or minimise adverse impacts on groundwater.

	<i>Performance measures</i>	<i>Actions</i>
1.2.1	The feedlot complex and its associated waste utilisation areas are not sited above groundwater resources that are deemed vulnerable unless suitable measures can be put in place to protect those resources.	<ul style="list-style-type: none"> <li>• The siting and design of the feedlot complex and any waste utilisation areas satisfactorily mitigate any significant risks identified in a hydrogeological assessment of the site.</li> </ul>
1.2.2	Leachate or percolate from the feedlot complex and associated infrastructure does not contaminate groundwater.	<ul style="list-style-type: none"> <li>• Any area in which there is a serious risk that soil leachate movement might contaminate groundwater is underlain by a liner able to satisfactorily mitigate that risk. Such areas include, but may not be limited to, the following:                             <ul style="list-style-type: none"> <li>– feedlot pen surfaces</li> <li>– cattle loading and handling facilities</li> <li>– manure stockpile and composting areas</li> <li>– drains</li> <li>– sedimentation systems</li> <li>– holding ponds</li> <li>– silage pits</li> <li>– carcass disposal pits.</li> </ul> </li> </ul> <p>Lining materials may include suitable soil materials (including any suitable <i>in situ</i> soils) or synthetic liners capable of meeting the standards set out in applicable guidelines, codes and reference manuals.</p>

		<ul style="list-style-type: none"> <li>• Where soil lining materials are used in areas subject to traffic (including pen surfaces and parts of the drainage system subject to mechanical cleaning) or in drains exposed to flow velocities that would otherwise cause scouring, then:             <ul style="list-style-type: none"> <li>– sufficient depth of these materials is laid to prevent failure of the lining under normal conditions</li> </ul> </li> <li>and             <ul style="list-style-type: none"> <li>– the lining material should be either capable of remaining effective when subject to the physical effects of livestock, machinery and water flow, or overlain by a suitable depth of a durable material (e.g. gravel) that is able to adequately protect the lining material under these conditions.</li> </ul> </li> <li>• Where synthetic lining materials that might be easily damaged or disrupted are used, these materials are protected by a durable material able to satisfactorily protect the lining material under normal conditions.</li> </ul>
1.2.3	The proposed development prevents or minimises the risk of new salinity outbreaks and does not exacerbate any existing outbreaks.	<ul style="list-style-type: none"> <li>• The feedlot is not sited in salinity hazard areas unless suitable measures are put in place to minimise the resultant risk of rising watertables and/or increasing groundwater salinity.</li> <li>• Waste management and utilisation are designed to minimise any future risk of salinity outbreaks.</li> </ul>
1.2.4	The storage and use of hazardous and dangerous materials does not pose an unacceptable risk to the pollution of groundwater.	<ul style="list-style-type: none"> <li>• Any facilities to store hazardous materials are designed to meet relevant guidelines and Australian Standards for the storage of hazardous and dangerous goods and spill management.</li> </ul>
<p>or <i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i></p>		

## 1.3 Community

### Outcome

Feedlots are sited and designed to prevent or minimise adverse impacts on the amenity of the surrounding community.

	<i>Performance measures</i>	<i>Actions</i>
1.3.1	The feedlot is sited in areas away from incompatible land uses.	<ul style="list-style-type: none"> <li>• The feedlot site is in an area which under any local or regional planning scheme or environmental plan is:                             <ul style="list-style-type: none"> <li>– designated for a rural, agricultural, or an analogous land use</li> </ul>                             and                             <ul style="list-style-type: none"> <li>– where feedlot developments are allowable or allowable subject to extra approvals or assessments.</li> </ul> </li> </ul>
1.3.2	The feedlot development does not detract significantly from visual amenity.	<ul style="list-style-type: none"> <li>• As much as possible, the siting of the feedlot development takes advantage of any natural screening provided by topography and vegetation.</li> <li>• The feedlot is not located immediately adjacent to major highways, on high ridgelines or in other visually exposed sites, without there being a visual barrier in place to shield the site.</li> </ul>
1.3.3	The feedlot is sited and designed so that odour, dust, and noise generated by the development do not unreasonably impact community amenity.	<ul style="list-style-type: none"> <li>• The site of the feedlot complex and the design of the facility either:                             <ul style="list-style-type: none"> <li>– complies with the design and management criteria and separation distance requirements provided in applicable guidelines, codes and reference manuals</li> </ul>                             or                             <ul style="list-style-type: none"> <li>– the proponent demonstrates by other means, acceptable to the relevant authorities, that the proposed feedlot development can otherwise comply with air quality, noise, and other amenity criteria applicable in that state or territory.</li> </ul> </li> </ul>

1.3.4	The feedlot development does not compromise a site having significant archaeological or heritage values.	<ul style="list-style-type: none"> <li>• The proposed development complies with all relevant archaeological and heritage legislation and regulations.</li> </ul>
1.3.5	The siting and design of the feedlot considers road safety and traffic issues.	<ul style="list-style-type: none"> <li>• Site access is designed to comply with relevant road design and road safety guidelines, rules and standards.</li> <li>• Access to the site is planned so that the resultant traffic noise levels conform to relevant state and territory guidelines, regulations and policies and minimises potential impact on amenity of nearby neighbours.</li> </ul>
1.3.6	The storage and use of hazardous materials do not pose an unacceptable safety risk.	<ul style="list-style-type: none"> <li>• Hazardous and dangerous goods are stored and used in accordance with relevant guidelines and Australian Standards for the storage of hazardous and dangerous goods and spill management.</li> </ul>
<p>or <i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i></p>		

## 1.4 Ecology

### Outcome

Feedlots are sited and designed to prevent or minimise adverse impacts on native flora and fauna and ecological communities.

	<i>Performance measures</i>	<i>Actions</i>
1.4.1	The feedlot is sited and designed so that it does not have a significant impact on threatened or endangered species.	<ul style="list-style-type: none"> <li>• Any proposed clearing of areas of remnant native vegetation complies with relevant state and territory legislation, regulations, policies and guidelines.</li> <li>• The feedlot development does not unduly impact on essential habitat for threatened or endangered species listed as such in relevant state and territory legislation and regulations.</li> </ul>
1.4.2	The feedlot is sited and designed so that the impact of pests and weeds on the local ecosystem is minimised.	<ul style="list-style-type: none"> <li>• Provision is made in the design of the facility for the disposal of any animal carcasses by means that do not unduly attract pests and feral or native animals.</li> <li>• The design of the feedlot allows any required control of pests, weeds and feral animals to be effectively undertaken.</li> <li>• The design of the feedlot minimises the potential for native animals to use the feedlot as a major source of food or shelter.</li> </ul>
1.4.3	The storage and use of hazardous materials does not pose an unacceptable pollution risk.	<ul style="list-style-type: none"> <li>• Hazardous and dangerous goods are stored and used in accordance with relevant guidelines and Australian Standards for the storage of hazardous and dangerous goods and spill management.</li> </ul>
or	<i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i>	

## 1.5 Resources

### Outcome

Feedlots are sited and designed to ensure access to sufficient natural resources to sustain the operations of the feedlot and sustainably utilise nutrients contained in feedlot wastes.

	<i>Performance measures</i>	<i>Actions</i>
1.5.1	The feedlot is sited on land that has sufficient suitable soil resources available to allow the sustainable utilisation of that portion of feedlot wastes intended for use on-site.	<ul style="list-style-type: none"> <li>• Feedlot waste utilisation areas are of sufficient size and have soil characteristics such that, under appropriate management, the organic matter, nutrients and salts in the applied feedlot effluent and solid wastes can be sustainably utilised.</li> <li>• An alternate disposal method (e.g. sale) is available for that portion of manure not intended for use on-site.</li> <li>• Climatic and seasonal conditions at the feedlot site are considered in any proposed scheduling of use on-site.</li> </ul>
1.5.2	The feedlot has a water supply able to sustain the operations of the feedlot under normal conditions.	<ul style="list-style-type: none"> <li>• It can be demonstrated that:                             <ul style="list-style-type: none"> <li>– there is a legal right to sufficient water for the intended uses</li> <li>– the physical ability exists to provide a suitably reliable supply</li> <li>– contingency measures provide an emergency supply of water that meet the feedlot’s requirements if the regular supply is interrupted or lost (nominally able to provide a stockwater supply having at least a 48-hour duration under summer conditions).</li> </ul> </li> <li>• Where effluent irrigation is to be used as a method of effluent disposal, sufficient irrigation water is available for dilution and supplementation of effluent applications to allow crops to be grown to fully utilise feedlot wastes.</li> </ul>
1.5.3	The storage and use of hazardous materials do not pose an unacceptable risk of site contamination.	<ul style="list-style-type: none"> <li>• Hazardous and dangerous goods are stored and used in accordance with relevant guidelines and Australian Standards for the storage of hazardous and dangerous goods and spill management.</li> </ul>
or	<i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i>	

## 2. Construction phase

Construction activities in a feedlot, whilst normally of limited duration, can pose specific environmental hazards. These should be addressed by the management system. In some jurisdictions, it may be necessary to have a formal site-based management plan addressing significant environmental risks arising during the construction phase of a new feedlot development.

### 2.1 Surface water

#### Outcome

The feedlot construction phase is managed to prevent or minimise adverse impacts on surface waters external to the site.

	<i>Performance measures</i>	<i>Actions</i>
2.1.1	The quality of surface waters is not adversely affected by construction phase activities.	<ul style="list-style-type: none"> <li>• The area of land disturbed during construction is limited to that necessary for undertaking the required activities in an efficient, timely and safe manner.</li> <li>• Upslope runoff ('run-on') is suitably diverted away from the construction site.</li> <li>• The movement or erosion of soil from the construction site is limited by: <ul style="list-style-type: none"> <li>– the installation of appropriate sediment capture and erosion control structures downslope of the site and around stockpiled materials</li> <li>– covering any exposed sodic subsoils with topsoil or similar material as soon as practical after earthworks in any affected parts of the site are completed.</li> </ul> </li> <li>• Building wastes are disposed of in an appropriate manner (e.g. appropriately licensed municipal waste facility), reused or recycled.</li> <li>• Topsoil removed during construction is stockpiled, with: <ul style="list-style-type: none"> <li>– this material being used during and at the completion of construction activities to dress and stabilise exposed surfaces on earthworks not covered by the feedlot pens or associated infrastructure</li> <li>– any balance being retained for future site rehabilitation or stabilisation.</li> </ul> </li> <li>• Plant and equipment is well maintained and regularly checked for leaks (e.g. fuels, oils, hydraulic fluids).</li> </ul>



2.1.2	The storage and use of hazardous materials do not pose an unacceptable risk in respect to the pollution of surface water.	<ul style="list-style-type: none"> <li>• Hazardous and dangerous goods are stored and used in accordance with relevant guidelines and Australian Standards for the storage of hazardous and dangerous goods and spill management.</li> </ul>
or	<i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i>	

## 2.2 Groundwater

### Outcome

The feedlot construction phase is managed to prevent or minimise adverse impacts on groundwater.

	<i>Performance measures</i>	<i>Actions</i>
2.2.1	The storage and use of hazardous and dangerous materials does not pose an unacceptable risk in respect to the pollution of groundwater.	<ul style="list-style-type: none"> <li>• Hazardous and dangerous goods are stored and used in accordance with relevant guidelines and Australian Standards for the storage of hazardous and dangerous goods and spill management.</li> </ul>
or	<i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i>	

## 2.3 Community

### Outcome

The feedlot construction phase is managed to prevent or minimise adverse impacts on the amenity of the surrounding community.

	<i>Performance measures</i>	<i>Actions</i>
2.3.1	Construction activities are undertaken so that dust, noise and traffic that are generated by those activities do not have an unreasonable impact on community amenity.	<ul style="list-style-type: none"> <li>• During earthworks, the moisture content of worked materials and traversed surfaces is monitored and dust suppression (e.g. watering) undertaken whenever material, surface dryness and or weather conditions are conducive to excessive dust emissions.</li> <li>• The loads on vehicles moving soil, gravel or other dusty construction materials onto or off the site are covered during transit.</li> <li>• Stockpiled soil, gravel and other dusty construction materials are appropriately maintained to minimise dust emissions.</li> <li>• All mechanical equipment used on site is operated in accordance with the manufacturer's specifications, with any noise suppression equipment retained in place and maintained.</li> <li>• Any blasting associated with construction or on-site quarrying of construction materials is undertaken in accordance with licence or approval conditions.</li> <li>• Site access is designed and constructed to comply with relevant road design and road safety guidelines.</li> <li>• Traffic movements to and from the site are managed to minimise the risk of: <ul style="list-style-type: none"> <li>– unreasonable noise impacts</li> <li>– excessive dust emissions</li> <li>– dangerous road conditions.</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>• Disturbed soil surfaces are stabilised and revegetated as soon as practicable after construction.</li> <li>• A complaints register is kept, documenting details of the nature of any complaint received, the response made and any mitigation measures implemented.</li> </ul>
2.3.2	Construction activities do not compromise sites or items having significant archaeological or heritage values.	<ul style="list-style-type: none"> <li>• The construction of the feedlot complies with all relevant archaeological and heritage legislation and regulation (including notification of any appropriate person or agency if an item of potential archaeological or heritage significance is found).</li> </ul>
2.3.3	The storage and use of hazardous materials does not pose an unacceptable safety risk.	<ul style="list-style-type: none"> <li>• Hazardous and dangerous goods are stored and used in accordance with relevant guidelines and Australian Standards for the storage of hazardous and dangerous goods and spill management.</li> </ul>
or	<i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i>	

## 2.4 Ecology

### Outcome

The feedlot construction phase is managed to prevent or minimise adverse impacts on native flora and fauna and ecological communities.

	<i>Performance measures</i>	<i>Actions</i>
2.4.1	Construction activities do not have a significant impact on remnant vegetation and ecological communities.	<ul style="list-style-type: none"> <li>• The area of land cleared or disturbed during construction is limited to that: <ul style="list-style-type: none"> <li>– allowed under legislation and regulation or any licence, approval or consent conditions.</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>• The movement of soil and of soil borne-pathogens, weeds, weed seeds and other pests from the construction site is limited by:             <ul style="list-style-type: none"> <li>– the installation of appropriate sediment capture and erosion control structures downslope of the site and around stockpiled materials</li> <li>– the regular inspection of stockpiles, drains, sedimentation systems and runoff dispersion areas</li> <li>– covering any exposed sodic subsoils with topsoil or similar material as soon as practical after earthworks in any affected parts of the site are completed.</li> </ul> </li> <li>• Construction activities do not impact on essential habitat for threatened or endangered species listed as such in relevant state and territory legislation and regulations.</li> <li>• Traffic movements to and from the site are managed to minimise the risk of:             <ul style="list-style-type: none"> <li>– unreasonable noise impacts</li> <li>– excessive dust emissions</li> <li>– dangerous road conditions.</li> </ul> </li> </ul>
2.4.2	A feedlot is constructed so that it does not provide unacceptable shelter and sustenance for pests and feral animals.	<ul style="list-style-type: none"> <li>• Construction activities do not preclude any required control of pests, weeds and feral animals being effectively undertaken.</li> <li>• Construction activities minimise the potential for native animals to use the site as a major source of food or shelter.</li> </ul>
2.4.3	The storage and use of hazardous materials does not pose an unacceptable pollution risk.	<ul style="list-style-type: none"> <li>• Hazardous and dangerous goods are stored and used in accordance with relevant guidelines and Australian Standards for the storage of hazardous and dangerous goods and spill management.</li> </ul>
or	<i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i>	

**2.5 Management system**

**Outcome**

The feedlot construction phase is managed in accordance with a management system designed to address any significant risks to the environment.

	<i>Performance measures</i>	<i>Actions</i>
2.5.1	A site-based environmental management plan is developed and implemented to address all relevant environmental requirements and to allow the feedlot builder, contractors, sub-contractors and employees to fulfill any duty of care and due diligence requirements in respect to environmental matters.	<ul style="list-style-type: none"> <li>• The environmental management plan considers and, where necessary, documents the following:                             <ul style="list-style-type: none"> <li>– details of the construction, including the responsibilities, procedures, work instructions and records relevant to this code of practice</li> <li>– all environmental hazards associated with the construction of the feedlot</li> <li>– the risk assessment process and the resultant management, mitigation and monitoring measures are formally documented in an environmental management plan for the construction of the feedlot.</li> </ul> </li> <li>• All site workers receive training in the requirements of the management plan and this code of practice and suitable records of training activities are maintained.</li> <li>• The environmental management plan results in compliance with this code of practice.</li> </ul>
or	<i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i>	

### 3. Operational management

This section of the code has been based on best practice management in beef cattle feedlots and is applicable to all feedlot developments, both new developments and existing operations.

#### 3.1 Surface water

##### Outcome

Feedlots are operated to prevent or minimise adverse impacts on surface waters external to the feedlot controlled drainage area and external to the manure and effluent utilisation area.

	<i>Performance measures</i>	<i>Actions</i>
3.1.1	The quality of surface waters external to the controlled drainage area and external to utilisation areas is not adversely affected by the on-site utilisation of feedlot wastes.	<ul style="list-style-type: none"> <li>• The land application of feedlot wastes is made at rates consistent with the ability of soils and crops grown in the on-site utilisation areas to sustainably utilise the applied nutrients, salts and organic matter, under the climatic conditions prevailing at the site.</li> <li>• Soil condition is monitored periodically and soil tests are used where there is potential for deterioration of soil condition.</li> <li>• Feedlot wastes are not applied to on-site utilisation areas where the applied materials will cause pollution of surface water (e.g. on land directly abutting a watercourse or when a significant storm event is imminent).</li> <li>• The rate of effluent application is controlled to ensure that runoff does not occur.</li> </ul>

<p>3.1.2</p>	<p>The structures containing and controlling runoff from within the controlled drainage area and effluent utilisation area are maintained to ensure their integrity and ongoing compliance with specified design criteria.</p>	<ul style="list-style-type: none"> <li>• The following elements of the controlled drainage area are cleaned and maintained so that they perform in accordance with their design capacities or capabilities:             <ul style="list-style-type: none"> <li>– drains (in the controlled drainage area and any tailwater management system)</li> <li>– sedimentation system</li> <li>– holding pond</li> <li>– terminal ponds and tailwater drains</li> <li>– spill ways, weirs and other flow control structures.</li> </ul> </li> <li>• Embankments and drains that are part of the controlled drainage area are cleaned and maintained so they only overtop in storm events having a 20-year average recurrence interval or less often.</li> <li>• Embankments and other earthen structures that are part of the controlled drainage area are:             <ul style="list-style-type: none"> <li>– routinely monitored for cracking, slumping, erosion or other signs of structural problems that might lead to failure</li> <li>– protected from erosion by a suitable natural or synthetic groundcover (i.e. trees or shrubs should not be allowed to establish on these structures).</li> </ul> </li> <li>• The runoff captured in any terminal or tailwater ponds associated with waste utilisation areas is decanted as soon as practicable following a significant inflow.</li> <li>• Any vegetative buffers or other structures designed to help protect surface water are maintained in their intended condition (any substantial changes to the nature and condition of a buffer will necessitate a revision of effluent management practices).</li> <li>• The operator notifies the relevant regulatory authorities of any overtopping events or similar threats to surface water quality. This notification is not required for tailwater dams, which by design only catch the first flush of runoff from the utilisation area.</li> </ul>
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3.1.3	The storage and use of hazardous materials do not pose an unacceptable risk in respect to the pollution of surface water.	<ul style="list-style-type: none"><li>• Hazardous and dangerous goods are stored and used in accordance with relevant guidelines and Australian Standards for the storage of hazardous and dangerous goods and spill management.</li></ul>
<p>or <i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i></p>		



## 3.2 Groundwater

### Outcome

Feedlots are operated to prevent or minimise adverse impacts on groundwater.

	<i>Performance measures</i>	<i>Actions</i>
3.2.1	The quality of groundwater in the vicinity of the feedlot is not adversely affected by the operation of the feedlot and the on-site utilisation of feedlot wastes.	<ul style="list-style-type: none"> <li>• The land application of feedlot wastes is:                             <ul style="list-style-type: none"> <li>– made at rates consistent with the ability of soils and crops grown in the utilisation area to sustainably utilise the applied nutrients and salts</li> <li>– does not contaminate groundwater.</li> </ul> </li> <li>• Soil condition is monitored periodically and soil tests are used where there is potential for deterioration of soil condition.</li> <li>• Groundwater monitoring is undertaken on an as-required basis prescribed by a licence or regulatory authority.</li> <li>• All liners (clay, synthetic or other) underlying pens, composting pads, burial pits, drains, the sedimentation system and the holding pond are maintained so that they perform in accordance with design permeability criteria.</li> <li>• It is acknowledged that some natural leaching of salts will occur in all situations. However, the application rates for feedlot wastes should not necessitate the routine and specific leaching of salts from the soil profile in order to obtain acceptable crop performance.</li> </ul>
3.2.2	The feedlot is operated to prevent or minimise the risk of new salinity outbreaks and any existing outbreaks are not exacerbated.	<ul style="list-style-type: none"> <li>• Feedlot operations, including any on-site utilisation of feedlot wastes, do not directly cause any new salinity outbreaks or increase the severity of existing outbreaks.</li> </ul>

3.2.3	The storage and use of hazardous and dangerous materials does not pose an unacceptable risk in respect to the pollution of groundwater.	<ul style="list-style-type: none"> <li>• Hazardous and dangerous goods are stored and used in accordance with relevant guidelines and Australian Standards for the storage of hazardous and dangerous goods and spill management.</li> </ul>
or	<i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i>	

### 3.3 Community

#### Outcome

Feedlots are operated to prevent or minimise adverse impacts on the amenity of the surrounding community.

	<i>Performance measures</i>	<i>Actions</i>
3.3.1	The feedlot is operated so that odour, dust, noise and traffic generated by the development do not unreasonably impact community amenity.	<ul style="list-style-type: none"> <li>• Pen cleaning and surface maintenance is undertaken on a planned basis to ensure that pen surfaces can drain freely, dry quickly following rainfall, but do not become overly dry and cause excessive dust emissions.</li> <li>• Spilt and spoilt feed and feedstuffs are regularly removed from around silos, bunks, bins, troughs, feedmills, etc., so that they do not become a significant source of odour emissions or provide sustenance for pests and vermin.</li> <li>• Stocking densities are managed so that they do not cause undue dust emissions in dry weather (Note: This does not otherwise allow stocking densities at variance with those allowable under the feedlot’s licence, development consent or permit conditions).</li> <li>• Dust control measures should be implemented when dust emissions are excessive to minimise the possibility of dust escaping the site.</li> <li>• Any feedmill dust-suppression equipment is maintained and operational at all times.</li> <li>• The loads on vehicles moving dusty materials (e.g. feedstuffs) onto or off the site are covered during transit.</li> <li>• All mechanical equipment used on site is operated in accordance with the manufacturer’s specifications, with any noise suppression equipment retained in place and maintained.</li> <li>• Vehicle movements and machinery operations within the facility are managed so that noise emissions from the facility do not contravene relevant nuisance criteria at nearby receptors.</li> </ul>

		<ul style="list-style-type: none"> <li>• Traffic movements to and from the site are co-ordinated to minimise the risk of:             <ul style="list-style-type: none"> <li>– unreasonable noise impacts</li> <li>– excessive dust emissions</li> <li>– dangerous road conditions.</li> </ul> </li> <li>• All visual screens (e.g. vegetative buffers) are kept in good order (including the replanting of gaps in vegetative buffers due to trees failing to establish, the death or loss of established trees or other factors which would cause the buffer not to perform its intended function).</li> <li>• Dead stock are placed in burial pits or on composting pads, and covered with soil or composting material as soon as practicable after placement.</li> <li>• The timing of manure and effluent applications takes into consideration the potential for dust and spray drift, as well as any associated odour nuisance.</li> <li>• A suitable buffer is applied where manure and effluent applications take place within close proximity to roads, houses or other areas likely to be used by the public at that time (the appropriateness of the applied buffer distances is determined having consideration for the qualities of the materials being applied, weather conditions and other environmental factors, as well as the anticipated level of public usage or exposure at those times).</li> <li>• A complaints register is kept, including details of the nature of any complaint received, the response made and any mitigation measures implemented.</li> </ul>
3.3.2	The storage and use of hazardous and dangerous materials does not pose an unacceptable safety risk.	<ul style="list-style-type: none"> <li>• Hazardous and dangerous goods are stored and used in accordance with relevant guidelines and Australian Standards for the storage of hazardous and dangerous goods and spill management.</li> </ul>
or		<i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i>

### 3.4 Ecology

#### Outcome

Feedlots are operated to prevent or minimise adverse impacts on native flora and fauna and ecological communities.

	<i>Performance measures</i>	<i>Actions</i>
3.4.1	The feedlot is operated so that it does not have a significant impact on remnant vegetation or ecological communities.	<ul style="list-style-type: none"> <li>• Feedlots should be operated so they do not impact on essential habitat for threatened or endangered species listed as such in relevant state and territory legislation and regulations.</li> <li>• Feedlot wastes are managed such that their storage and use does not unduly threaten native ecosystems (e.g. remnant vegetation or aquatic ecosystems in nearby surface water).</li> <li>• Feedlot operations minimise the potential for native animals to use the site as a major source of food or shelter.</li> <li>• Noxious and exotic weed species are controlled within the feedlot complex and associated surrounding lands, including land on the property to which feedlot byproducts are applied.</li> <li>• Spilt and spoilt feed and feedstuffs are regularly removed from around silos, bunks, bins, troughs, feedmills, etc., so that it does not become a significant source of food for pests or native animals or allow the germination and spread of weeds.</li> <li>• Traffic movements to and from the site are managed to minimise the risk of:                         <ul style="list-style-type: none"> <li>– unreasonable noise impacts</li> <li>– excessive dust emissions</li> <li>– dangerous road conditions.</li> </ul> </li> </ul>
3.4.2	The storage and use of hazardous materials does not pose an unacceptable pollution risk.	<ul style="list-style-type: none"> <li>• Hazardous and dangerous goods are stored and used in accordance with relevant guidelines and Australian Standards for the storage of hazardous and dangerous goods and spill management.</li> </ul>
or	<i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i>	

## 3.5 Management system

### Outcome

Feedlots are operated in accordance with a management system designed to address any significant risks to the environment.

	<i>Performance measures</i>	<i>Actions</i>
3.5.1	A management system is developed, implemented and maintained.	<ul style="list-style-type: none"> <li>• An auditable, risk-based management system is in place prior to stocking of the feedlot and remains in place for the duration of lot feeding activities on the site.</li> <li>• All documentation within the management system is to be controlled to enable effective auditing.</li> <li>• The feedlot management system is reviewed as follows: <ul style="list-style-type: none"> <li>– at least annually</li> <li>– whenever there are significant changes to the operation of the feedlot</li> <li>– if any non-conformities with the plan are identified.</li> </ul> </li> <li>• Amendments to the management system are recorded within an amendment register.</li> <li>• Staff members receive training in the requirements of the management systems and this code of practice, and suitable records of training activities are maintained.</li> <li>• The management system results in compliance with this code of practice.</li> <li>• The management system is audited annually by an external third party.</li> </ul>

<p>3.5.2</p>	<p>The management system addresses all relevant environmental requirements and allows the feedlot operator and employees to fulfill any duty of care and due diligence requirements in respect to environmental matters.</p>	<ul style="list-style-type: none"> <li>• The management system documents the following:             <ul style="list-style-type: none"> <li>– details of the enterprise, including the responsibilities, procedures, work instructions and records relevant to this code of practice</li> <li>– the environmental hazards associated with the presence and operation of the feedlot</li> <li>– the risk assessment process applied in determining the significance of identified hazards and the resultant management, mitigation and monitoring measures implemented to address the identified risks</li> <li>– how compliance with the performance measures listed in this code and pertaining to the operational management of a beef cattle feedlot are being met.</li> </ul> </li> <li>• The management system verifies the successful implementation and risk mitigation measures by monitoring and recording on an appropriate basis:             <ul style="list-style-type: none"> <li>– water quality in watercourses or other surface water bodies external to the feedlot and which there is reason to believe might become contaminated by runoff from the feedlot and or waste utilisation areas</li> <li>– groundwater quality and standing water level in any nearby bores and any piezometers installed for the purpose</li> <li>– salinity, sodicity and nutrient levels in the surface and subsoil in waste utilisation areas</li> <li>– the amount (mass or volume) and quality of effluent and solid wastes applied to waste utilisation areas each year</li> </ul> </li> </ul>
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		<ul style="list-style-type: none"> <li>– crop yields and estimates of annual nutrient removal from the waste utilisation areas</li> <li>– details of all relevant cleaning and maintenance operations, inspections and any overtopping or spill events</li> <li>– visually monitoring the feedlot, its immediate environs and waste utilisation areas for any noxious or exotic weeds</li> <li>– stock numbers, liveweights at entry and exit, and stocking densities</li> <li>– visually monitoring the condition of the pen surface, feed bunks, drains, sedimentation system and holding pond</li> <li>– spilt and spoilt feed in and around feed bunks, and feed storage and processing facilities</li> <li>– the condition of compost and manure stockpiles</li> <li>– any obvious noise, dust and odour emissions from the feedlot and associated waste utilisation areas</li> <li>– any complaints made regarding the operation of the feedlot</li> <li>– daily rainfall received at the feedlot and any other relevant meteorological data.</li> </ul>
or	<p><i>An enterprise can demonstrate that through alternative means, the outcome and performance measures are capable of being met.</i></p>	



### Glossary of terms

<i>Buffer distance</i>	The distance between a feedlot complex or waste utilisation area and a watercourse or wetland when considering waste material such as manure or effluent.
<i>Cleaner production</i>	Ongoing effort to improve the efficiency of use of materials and resources – including water and energy – and a reduction of pollution and waste associated with the production process to achieve the best environmental outcome.
<i>Community amenity</i>	The maintenance of the environmental attributes that contribute to physical or material comfort of community members.
<i>Contamination</i>	Assumed to be a synonym for <i>pollution</i> in the context of this document.
<i>Controlled documentation</i>	Documentation that is maintained and updated. Controlled documents are formally approved and their distribution is traceable to enable changes to be executed.
<i>Controlled drainage area</i>	<p>A controlled drainage area is a self-contained catchment surrounding those parts of the feedlot complex from which uncontrolled stormwater runoff would constitute an environmental hazard. It is typically established using a series of:</p> <ul style="list-style-type: none"><li>• catch drains to capture runoff from the feedlot pens and all other surfaces within the feedlot complex, and ultimately convey that runoff to a collection or disposal system</li><li>• diversion banks or drains placed immediately upslope of the feedlot complex<sup>1</sup>, which are designed to divert ‘clean’ or uncontaminated upslope runoff around the feedlot complex.</li></ul>
<i>Covered feedlot</i>	A feedlot in which cattle are kept in partially or fully roofed pens, or inside buildings.
<i>Ecological community</i>	Naturally occurring group of interacting species inhabiting a common environment.
<i>Ecologically sustainable development</i>	Development that meets the needs of the present generation while preserving the environment so as not to jeopardise its health or its productive capability for future generations <sup>2</sup> .
<i>Effluent</i>	The runoff from the feedlot controlled drainage area stored in the holding pond.
<i>Environment</i>	The external or internal conditions (physical, chemical, biological, aesthetic or cultural) that influence the life and wellbeing of an individual plant or animal and its interrelationship with other organisms.

<sup>1</sup> Where feedlots are built close to the crest of a hill or ridge, and there will be no runoff from upslope, it is possible to have a controlled drainage area without any diversion banks or drains.

<sup>2</sup> As defined by The Brundtland or World Commission on Environment and Development (1987).

<i>Environmental value</i>	The value or quality that confers the suitability for a particular use or purpose on an environmental component (e.g. water, air, soil).
<i>Evaporative pond</i>	A type of holding pond where the primary disposal mechanism of the effluent is by evaporation.
<i>Fugitive emissions</i>	Physical, chemical or biological emissions or discharges that do not arise from a point source, such as a pipe, vent, or stack. They are often associated with leaks, or are emissions due to the normal movement of wind or water through a site.
<i>Greenhouse gases</i>	Certain gases, such as methane and carbon dioxide, which are implicated in the greenhouse effect.
<i>Groundwater</i>	Water beneath the surface of the land.
<i>Hazard</i>	A potential source of harm, injury or damage.
<i>Heritage value</i>	The value of a site or activity to society's culture. The significance may relate to aesthetic, historic, scientific or social values, for both current and future generations of Australians.
<i>Holding pond</i>	A pond designed to capture and store the normal runoff before the captured effluent is either applied to cropland or evaporated.
<i>Leachate</i>	A liquid containing soluble material removed from a solid mixture through which the liquid has passed.
<i>Manure</i>	The solid waste produced by cattle. In feedlots, this is the material that collects on the surface of the pen and consists principally of cattle dung and urine.
<i>Native fauna and flora</i>	Plants and animals that are indigenous to an area. This definition does not include those native plants and animals that are not naturally present in that area.
<i>Percolate</i>	Liquid that passes through porous soil layers.
<i>Permeability</i>	Permeability is the ability of a material to allow a fluid to flow through it. An impermeable material will not permit any fluid to pass through it <sup>3</sup> .
<i>Pollution</i>	The release of a pollutant into the environment such that the resultant effects become harmful to human health, other living organisms, or to the general environment. A pollutant may be chemical, physical, biological, or energy (in the form of noise, heat or light). A resource is polluted if its environmental value is adversely altered.
<i>Proponent</i>	The person proposing to carry out the development.

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<sup>3</sup> Few materials are totally impermeable and as a result the term is frequently applied to materials that have very low permeabilities rather than being totally impermeable.

<i>Risk</i>	Exposure to hazard (chance of injury, loss, etc.).
<i>Runoff</i>	Runoff consists of all surface water flow, both over the ground surface as overland flow and in streams as channel flow. It may originate from excess precipitation that cannot infiltrate the soil, or as the outflow of groundwater along lines where the water table intersects the earth's surface.
<i>Salinity</i>	The level of soluble salts present in water or soil.
<i>Sedimentation system</i>	Systems to remove the readily settleable fraction of the solids entrained in effluent. A sedimentation system may be a pond, basin or terrace that discharges effluent to a holding pond.
<i>Separation distance</i>	The separation distance is the distance between a likely source of an emission and a receptor likely to be sensitive to that emission. A separation distance (also variously referred to as buffer, setback or offset distance) is measured from the nearest physical part of the emission source to the nearest point of the potential receptor.
<i>Surface water</i>	Water on the surface of the land.
<i>Sustainable</i>	Able to be maintained in perpetuity.
<i>Sustainable utilisation</i>	Use of a resource so that it may yield the greatest continuous benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations.
<i>Tailwater</i>	Runoff from an irrigation area which arises when irrigation water is applied in excess of the infiltration capacity of the soil.
<i>Terminal pond</i>	A pond located at the end of an effluent irrigation area. It is intended to capture the initial and possibly heavily polluted runoff from a storm event. It is also intended to capture and hold tailwater generated by effluent irrigation systems.
<i>Waste utilisation area</i>	An area of land to which manure or effluent is applied.
<i>Watercourse</i>	A watercourse is a permanent, intermittent or ephemeral stream shown on an official 1:100,000 topographic map. Alternative definitions may apply in state and federal legislation.
<i>Water quality</i>	For the purposes of this document, water quality is defined in terms of the ANZECC 2000 <i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i> . The ANZECC guidelines provide a framework for assessing water quality, based on whether the physical, chemical and biological characteristics of a waterway support its suitability for a particular use.

### *Wetland*

A wetland is an area of low-lying land, where the water table is at or near the surface most of the time, resulting in either open water or waterlogged conditions, and the area is shown as such on an official 1:100,000 topographic map<sup>4</sup>. Other definitions may apply in state and federal legislation.

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<sup>4</sup> Some 1:100,000 topographic mapping is now quite old and there may have been subsequent permitted drainage or modification of a previously mapped wetland. Therefore the definition requires that the area must appear on a map and still be capable of holding open water or being waterlogged.

