AUSVETPLAN is a series of technical response plans that describe the proposed Australian approach to an emergency animal disease outbreak. The documents provide guidance based on sound analysis, linking policy, strategies, implementation, coordination and emergency-management plans.

Primary Industries Ministerial Council
Preface

This enterprise manual for beef cattle feedlots constitutes part of the Australian Veterinary Emergency Plan or AUSVETPLAN (Edition 3.0). AUSVETPLAN is a coordinated national response plan for the management of emergency animal diseases (EADs). EADs include both incursions of certain exotic diseases and outbreaks of significant emerging or endemic diseases.

Enterprise manuals are prepared for enterprises in an animal industry that have a greater risk of harm from an EAD than other areas of the industry. In these enterprises, rapid spread of disease among the relevant livestock is more likely. This affects the response to an outbreak of an EAD (an ‘EAD response’) and its associated costs. Beef cattle feedlots are one such enterprise because of the high throughput of animals that are often sourced from widely dispersed locations, and the very high concentration of cattle.

This manual is aimed at both government officers and feedlot industry personnel who may be involved in EAD preparedness. For government officers, the manual provides an overview of the feedlot industry and the operations of a typical feedlot. It provides operational guidelines on managing an EAD in a feedlot and describes features of feedlots relevant to disease control or eradication. For owners or managers of feedlots, the manual provides information on the management of EADs and the procedures that would be used during an EAD response, and guidelines on planning and preparedness.

Publication of this version of the manual follows widespread consultation between the feedlot industry and government.

Detailed instructions for the field implementation of AUSVETPLAN are contained in the disease strategies, operational procedures manuals, management manuals and wild animal manual. Industry-specific information is given in the relevant enterprise manuals. The full list of AUSVETPLAN manuals that may need to be accessed in an emergency is shown below.
AUSVETPLAN manuals

Disease strategies
  Individual strategies for each of 35 diseases
  Bee diseases and pests
  Response policy briefs (for diseases not covered by individual manuals)

Operational procedures manuals
  Decontamination
  Destruction of animals
  Disposal
  Public relations
  Valuation and compensation
  Livestock welfare and management

Wild animal manual
  Wild animal response strategy

Enterprise manuals
  Artificial breeding centres
  Dairy processing
  Feedlots
  Meat processing
  Poultry industry
  Saleyards and transport
  Zoos

Management manuals
  Control centres management
    (Parts 1 and 2)
  Animal Emergency Management
  Information System
  Laboratory preparedness

Summary document

---

1 The complete series of AUSVETPLAN documents is available on the internet at www.animalhealthaustralia.com.au/programs/eadp/ausvetplan/ausvetplan_home.cfm
Contents

Preface .....................................................................................................................................3

1 Introduction ......................................................................................................................7
  1.1 Australia’s animal health services ..............................................................................7
  1.2 Management of emergency animal diseases ..............................................................7
    1.2.1 The EAD Response Agreement ...........................................................................8
    1.2.2 AUSVETPLAN ..................................................................................................8
    1.2.3 Controlling a major disease outbreak ..................................................................9
    1.2.4 Livestock movement restrictions .......................................................................10
    1.2.5 Zoning ..............................................................................................................12
    1.2.6 Training in EAD preparedness ...........................................................................12

2 The Australian feedlot industry .......................................................................................13
  2.1 Industry management ..................................................................................................13
    2.1.1 The National Feedlot Accreditation Scheme ......................................................13
    2.1.2 The National Livestock Identification System ...................................................15
    2.1.3 Training ..............................................................................................................15
  2.2 Feedlot management ..................................................................................................15
    2.2.1 Feedlot sites .......................................................................................................16
    2.2.2 Structure and management of feedlots ...............................................................17
    2.2.3 Cattle management ............................................................................................18
    2.2.4 Stockfeed management ......................................................................................19
    2.2.5 Water management ............................................................................................20
    2.2.6 Waste management ...........................................................................................20
    2.2.7 Manure management ........................................................................................21
    2.2.8 Effluent management .........................................................................................21
    2.2.9 Carcase management ........................................................................................22
    2.2.10 Health management ........................................................................................22
    2.2.11 Incident reporting ............................................................................................23
    2.2.12 Contingency planning .......................................................................................23
    2.2.13 Biosecurity management strategies ...................................................................24

3 Emergency animal disease contingency planning for feedlots .....................................25
  3.1 Impacts on feedlots immediately following a diagnosis ..............................................26
  3.2 Impacts on a feedlot with no suspicion of disease in a restricted or control area .........27
    3.2.1 Cattle movements .............................................................................................27
    3.2.2 Disease tracing ..................................................................................................27
    3.2.3 Disease surveillance ..........................................................................................27
    3.2.4 Additional disease management measures .......................................................28
3.3 Impacts on a feedlot with actual disease or strong links to an infected property

3.3.1 Managing continuing feedlot operations

3.3.2 Valuation and compensation of feedlot cattle

3.3.3 Destruction of feedlot cattle

3.3.4 Disposal of carcasses

3.3.5 Decontamination of facilities and equipment

Appendix 1 Valuation and compensation

Appendix 2 Diseases of major concern to feedlots

Appendix 3 Preparing a Feedlot Emergency Animal Disease Response Plan

Glossary

Abbreviations
1 Introduction

1.1 Australia’s animal health services

In Australia, each state and territory has operational responsibility for the control and eradication of animal diseases within its borders. Animal health authorities located within the relevant department of primary industries administer legislation relating to responses to emergency animal diseases (EADs), including movement controls, treatment, decontamination, slaughter and compensation. Inspectors have wide powers, including the ability to enter premises, examine records, order livestock musters, request animals or products to be submitted for testing, and isolate and destroy diseased or suspected diseased livestock.

1.2 Management of emergency animal diseases

As part of their preparedness arrangements, state and territory animal health authorities develop operational plans for managing EADs that are consistent with AUSVETPLAN and the jurisdiction’s legislative framework. These plans are made in conjunction with the state emergency management organisation and support agencies, and contain valuable detail on the procedures described in this manual.

In the event of an outbreak of an EAD, animal health officials employed by the relevant state or territory manage all aspects of its control and eradication according to a nationally agreed plan. They work with the owners and managers of ‘at risk’ or ‘infected’ premises to resolve the outbreak and return the enterprise to normal operations.

The chief veterinary officer of the state or territory in which an outbreak of an EAD occurs is responsible for implementing the disease control measures. They work with the Consultative Committee on Emergency Animal Diseases (CCEAD), a committee that provides the link between the Australian Government, the state and territory governments, and the relevant livestock industry(ies) for technical and veterinary decision making during animal health emergencies. The CCEAD advises a high-level National Management Group (NMG) on response policy. This committee determines whether an agreement to share the costs of a response between Australia’s governments and the relevant livestock industry(ies) should be invoked. It subsequently manages national policy and resourcing of the response. Both the CCEAD and the NMG base their decisions on current information provided by the affected state or territory and on guidance provided by AUSVETPLAN.

The feedlot industry has representation on both committees, which is coordinated through the Australian Lot Feeders’ Association. Feedlot representatives receive training in EAD management and their roles via the National Emergency Animal Disease Training Program.
1.2.1 The EAD Response Agreement

The *Government and Livestock Industry Cost Sharing Deed in Respect of Emergency Animal Disease Responses* (EAD Response Agreement) provides a framework for the Australian Government, the state and territory governments, and the major livestock industries to work cooperatively to manage EAD outbreaks. It describes the funding of EAD responses and the sharing of costs between government and the affected livestock industries. Liability for costs is assigned according to the benefits from control of the disease, assessed by the likely impact of the specific EAD on human health, socioeconomics, the environment and livestock production. An EAD response is initially funded by the affected state or territory, and costs are refunded by the Australian Government on behalf of all funding parties according to an agreed formula for the particular disease, as described in the EAD Response Agreement. The NMG makes decisions about activation and use of cost-sharing arrangements during an EAD response.

The EAD Response Agreement includes other important provisions for a coordinated national response to an EAD. In particular, it refers to the use of existing plans, such as AUSVETPLAN; sets standards for the training of personnel, accounting and auditing; and provides the impetus for the development and maintenance of government and industry biosecurity measures.

Animal Health Australia’s website has further information on the EAD Response Agreement.²

1.2.2 AUSVETPLAN

Animal Health Australia manages the development of the AUSVETPLAN manuals and publishes the most up-to-date agreed version of the manuals on its website. New or revised manuals are developed in conjunction with industry and the states and territories.

Animal Health Australia chairs the Technical Review Group, a group of technical experts representing the Australian Government, each state and territory primary industries department, and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). The Technical Review Group reviews drafts of AUSVETPLAN manuals and makes appropriate amendments. Depending on the significance of the changes proposed, manuals may be finally approved by the Animal Health Committee or the Primary Industries Ministerial Council.

AUSVETPLAN enterprise manuals do not stand alone and must be read in association with other AUSVETPLAN documents.³ Everyone involved in the EAD preparedness of cattle feedlots should therefore understand the nature and structure of AUSVETPLAN. They should also be aware of the standard operating procedures prepared by each government jurisdiction for each activity, agency plans for involving other state and territory emergency management organisations (e.g., police, local government), diagnostic resources, and the training materials that support AUSVETPLAN.

The series of AUSVETPLAN manuals, which cover all the elements of EAD preparedness and management, comprise:

- **Summary document** — describes the components of AUSVETPLAN and outlines their functional relationships.
- **Disease strategies** — authoritative references to the Australian control and eradication policies for 35 significant diseases. They provide information about the nature of the disease, the principles of its control and eradication, policies and strategies, and recommendations for control. Sufficient information is included to allow authorities to make informed decisions about controlling an outbreak of each EAD.
- **Response policy briefs** — provide brief information on EADs that are subject to cost sharing, but are not covered by full disease strategies because they have a low likelihood of entry to Australia and any consequences are likely to be less severe.
- **Operational procedures manuals** — describe in detail the recommended procedures for different aspects of the EAD response, such as the destruction of animals, animal disposal, decontamination of infected sites and managing communications.
- **Management manuals** — provide detailed information on specific components of the response. For example, the two Control Centres Management Manuals provide details of the management structure, roles and responsibilities at national, state or territory, and local levels. Other management manuals are the Laboratory Preparedness and Animal Emergency Management Information System manuals.
- **Enterprise manuals** — cover specific risk enterprises, such as abattoirs, artificial breeding centres and feedlots, that pose special economic or disease eradication problems, or are important in the epidemiology or impact of the disease. Their purpose is to provide information and guidance to:
  - government personnel involved in EAD preparedness who may be unfamiliar with the operations of the industry
  - industry personnel and veterinarians who need information on strategies to improve preparedness, and guidance on the operational procedures that may be applied to exclude, contain or eradicate an EAD.
- **Wild animal response strategy** — sets out the management strategies and overall control procedures for wild animals during an animal health emergency.

### 1.2.3 Controlling a major disease outbreak

Controlling an outbreak of an EAD is a complex operation requiring rapid mobilisation and coordination of a diverse team of people and other resources. In addition to animal health issues, an EAD response may need to address financial, social, economic, human, trade and recovery issues; the response may therefore require input from all tiers of government and from a range of portfolios.
The fundamental aim of national EAD control policy is to eradicate an EAD if feasible. The principal option for many EADs is eradication by stamping out (destruction of all infected and exposed animals), where this is applicable to the EAD in question and cost-effective. Stamping out may involve:

- quarantine of premises and/or movement controls
- destruction and disposal of infected and exposed susceptible animals
- decontamination of infected premises
- surveillance of susceptible animals
- restriction of the activities of certain enterprises.

Other measures that may be used include:

- vaccination
- vector or wild animal control
- treatment of affected animals.

In some circumstances, a modified stamping-out approach may be used if it is possible to slaughter animals at accredited establishments to produce a saleable product.

Field activities are controlled from a local disease control centre (LDCC) established in the vicinity of the outbreak. The LDCC is responsible for all activities within a specified area, including investigation of reports of disease outbreaks, collection of specimens, quarantine of properties, valuation of livestock and property, slaughtering and disposal of livestock, and decontamination of properties. Information on the structure, roles and responsibilities of LDCCs and state and territory disease control headquarters (SDCHQs) is contained in the Control Centres Management Manual, Part 1.

These field activities have significant implications for feedlots. The feedlot industry has people trained and assessed as competent to undertake prescribed AUSVETPLAN roles in LDCCs and SDCHQs. They provide a point of contact for local producers, as well as a source of advice to the LDCC managers.

### 1.2.4 Livestock movement restrictions

Controlling the movement of susceptible livestock is an essential component of livestock disease control. However, such controls have significant potential to affect feedlot operations.

For the most serious EADs, a national standstill on the movement of all livestock may be immediately applied for a period of 3–7 days. This means that no stock may be moved, and stock undergoing transport when the standstill is declared are required to stop moving as soon as possible. Guidelines for stock caught in transit at the time of the declaration will be provided by the response authorities; the stock may need to return to their farm of origin or may be permitted to complete their journey.
A national standstill on livestock movement also gives time for emergency responders to assess the situation. A standstill is likely to be followed by the declaration of restricted areas (RAs) and control areas (CAs). These declared areas are geographic areas of land where the movement of livestock (and other materials) may be restricted for extended periods.

An RA is a relatively small area around an infected premises that is subject to the most intense surveillance and movement controls. An initial RA is generally based on a minimum 3-kilometre radius around an infected premises and contains all known infected and suspect properties. Movement of susceptible livestock out of the area is usually prohibited, and movement into it may only be allowed under an official permit. Guidelines for establishing an RA are provided in Section 4 of the Disease Strategy for each EAD.

A CA forms a buffer between an RA and areas known to be free from disease. A CA may initially be declared over the whole state or territory. It will usually be reduced in size as knowledge about the extent of the outbreak is gained, but will generally maintain a minimum radius of 10 kilometres, including the RA. Multiple RAs may exist within one CA. Animals and specified products are allowed to be moved out of a CA into the free area only under an official permit.

Detailed movement restrictions will be applied during a response. It is common for the police to assist with implementing movement restrictions.

Figure 1.1 illustrates how controls over the movement of cattle may affect access to declared areas, depending on the disease; similar principles may apply to people and equipment.
The designation of declared areas can change during an EAD response as knowledge of the nature and distribution of a disease grows. These changes create uncertainties that make forward planning for livestock movements even more difficult.

1.2.5 Zoning

Once the nature and distribution of a disease are understood, infected and disease-free zones may be established for longer-term control of the disease agent and to assist in protecting Australia’s export trade. These will generally be based on the RAs and CAs.

Experience has shown that use of colour coding to designate different zones helps producers to understand the different movement requirements. Thus RAs may be designated as ‘red’ and ‘amber’ zones (depending on the concentration of diseased premises) and CAs as ‘green’ zones. The area outside the CA may be referred to as a ‘white’ zone. Other variations may be used, depending on the circumstances.

1.2.6 Training in EAD preparedness

The EAD Training Program, which is managed by Animal Health Australia, provides training for livestock producers, veterinarians, other government personnel and representatives of the Australian livestock industries in preparation for roles in an EAD response. It is a requirement of the EAD Response Agreement that, where possible, jurisdictions use competency-assessed, trained staff to combat an EAD.4

---

4 www.animalhealthaustralia.com.au/training/ead_training.cfm
2 The Australian feedlot industry

The Australian feedlot industry has a value of production of approximately $2.7 billion and, in 2009, employed about 2000 people directly and almost 7000 indirectly. The industry has a capacity of about 1.2 million head of cattle on feed; 700 000 head were on feed in 2009. There are approximately 700 feedlots distributed throughout Australia. The majority are in areas with close proximity to cattle and grain supplies: southeast Queensland (accounting for 43% of the total pen capacity), the northern tablelands and the Riverina area of New South Wales (39% of pen capacity), and expanding numbers in Victoria, South Australia and Western Australia. Approximately 32 feedlots have a capacity of more than 10 000 head.

Approximately 40% of Australia’s total beef supply and 80% of beef sold in major domestic supermarkets is sourced from feedlots. The majority of production growth in the beef industry over the past 10 years has been in the feedlot sector. More than 60% of Australia’s feedlot beef is exported into premium international markets, including Japan, Korea and the United States.

2.1 Industry management

The Australian Lot Feeders’ Association (ALFA)\(^5\) is the national peak body representing the feedlot industry. It provides leadership, formulates policies, sets strategic directions and agrees to overall levels of funding for industry projects (eg research, development and extension). As industry leader, ALFA works on a large range of feedlot management areas in response to the needs of the industry and its members.

2.1.1 The National Feedlot Accreditation Scheme

The National Feedlot Accreditation Scheme (NFAS)\(^6\) is a national quality assurance (QA) scheme that enables feedlots to gain accreditation for their products. It was initiated by ALFA and is managed by the Feedlot Industry Accreditation Committee, a joint committee of the feedlot industry and government. The objective of the NFAS is to develop a quality system for beef feedlots that has positive impacts on product quality and acceptability and is the responsibility of the lot feeders themselves.

---


For a feedlot to be accredited, it must:

- have documented procedures in place that are specific to the feedlot and meet the industry standards
- maintain records to show that these procedures have been adhered to for all cattle fed at the feedlot
- undergo a third-party audit of these procedures, records and facilities.

Each accredited feedlot has a quality system manual and employs trained QA officers. Accredited feedlots are audited annually by a third party to ensure they continue to meet the agreed standards.

The NFAS has around 600 accredited feedlots; a minority of feedlots are not accredited. All accredited feedlots meet biosecurity standards, have an emergency animal disease (EAD) action plan and understand the NFAS requirements for EAD management (see Section 2.2). Accredited feedlots will have a superior understanding of EAD response management and the impact on feedlot operations, and will be better placed to handle the complexities of an EAD response.

Accredited feedlots are required to conform to the standards and codes of practice for the feedlot industry, including:

- *Model Code of Practice for the Welfare of Animals: Cattle* (PISC 2004)\(^7\)
- *Safe Use of Veterinary Medicines on Farms* (AVA 2008)\(^8\)
- *National Beef Cattle Feedlot Environmental Code of Practice* (MLA 2000)\(^9\)
- *National Guidelines for Beef Cattle Feedlots in Australia* (ARMCANZ 1997)\(^10\)
- the *Beef Cattle Feedlots Manual*.

---


2.1.2 The National Livestock Identification System

Most feedlots have sophisticated and accurate cattle inventory control systems. The National Livestock Identification System (NLIS) is a key element of these systems and is used by most feedlots because of its implications for food safety and disease management. The detailed records provided by the NLIS would be of considerable assistance in tracing cattle during an EAD response.

2.1.3 Training

Feedlots accredited under the NFAS must provide suitable staff training and maintain appropriate records of training.

ALFA works with Meat & Livestock Australia, Animal Health Australia, and training deliverers such as the New England Institute of Technical and Further Education (TAFE). ALFA also works with standards such as those developed by the Rural Skills Council to ensure that feedlot employees are trained in the necessary skills for planning, implementing and managing an effective, property-based, workplace health and safety program.

ALFA has also endorsed the TAFE Feedlot Training Program designed for workers in the feedlot industry. Topics covered include:

- for pen riders: occupational health and safety, cattle physiology, nutritional requirements and plans, cattle behaviour, minimal stress handling, and QA compliance requirements
- for those engaged in feedlot maintenance: structural works and welding, effluent management, environmental management, occupational health and safety, and QA compliance requirements.

Training — features relevant to the control of EADs

Feedlot employees are well trained for their tasks and very capable of assisting in the management of a serious disease event.

2.2 Feedlot management\(^{11}\)

Feedlots are major businesses with substantial fixed investment in the premises and large operating expenditure for cattle, feed and staff. They are subject to considerable variations in the price of their inputs and the value of their product in international markets, and they use expert knowledge and management skills to balance these factors while ensuring that the day-to-day operation runs smoothly.

Feedlots vary considerably in size and can be conveniently categorised into:

\(^{11}\) Much of the information in this section has been sourced from the websites of the state and territory departments of primary industries, and these should be consulted if more detail is required.
• operations involving large numbers of cattle that integrate cattle purchasing, feeding, slaughtering and marketing
• ‘custom feeders’, which provide a feeding service to meet the cattle owner’s requirements
• opportunity feedlots, which operate only when feed and cattle prices are suitable.

Although this manual is directed at all feedlots, the larger enterprises are associated with greater concern for EAD preparedness because of the number of cattle involved, their operational complexity and the challenges of planning to manage a potentially prolonged disease event that will inevitably affect profitability of the enterprise.

Management — features relevant to the control of EADs

Feedlots are sophisticated and complex businesses managed by individuals with extensive industry and business experience. These managers can greatly assist with the management of a disease event on their feedlot.

2.2.1 Feedlot sites

Feedlots are usually located close to supplies of grain. Access to other feedstuffs, store cattle,12 labour, major highways, abattoirs and saleyards are other important considerations. Careful siting helps the economic sustainability of the feedlot and the management of the environment.

Location and construction of a feedlot are subject to a range of planning controls that are designed to ensure that community standards are met with respect to its impact on the environment. Approval regimes vary between the states and territories, but approval is generally required from the relevant environmental protection agency as well as from local government.

Climatic conditions have a significant impact on the environmental performance of a feedlot. Most environmental problems are associated with wet conditions that result in excessive odour and runoff, and these factors need to be addressed in choosing sites.

Site — features relevant to the control of EADs

Government has imposed strict controls on the location of feedlots, and feedlot managers therefore have extensive experience in dealing with government authorities.

12 Store cattle are cattle not for immediate slaughter, including heifers, cows and bulls consigned for sale or purchased for breeding purposes, and cattle purchased from designated prime cattle sales for further grazing or feeding.
Feedlots are generally reasonably isolated from other intensive livestock enterprises. They may have capacity to absorb local or other grazing cattle to enable implementation of a localised buffer zone.

### 2.2.2 Structure and management of feedlots

A typical commercial feedlot (see Figure 2.1) comprises an administration complex, feed preparation area, cattle pens and yards, and waste disposal areas. Generally, there is a single entry point with tight security, and records are maintained of all vehicles, people, and cattle entering and leaving. Relevant forms used include the National Vendor Declaration, Stock Received and Inspection Form, Visitor Risk Assessment and Vehicle Cleaning. All visitors are required to sign a register.

Entry of vehicles to the feedlot is tightly controlled, and all vehicles are required to undergo a security check before entry. Many feedlots have a dedicated wash area with a concrete apron for washing of machinery and vehicles.

The cattle yards comprise pens containing 50–250 cattle, according to the feedlot’s practices. Space allocated per head is generally 10–25 m². Pen sizes can be matched to transport arrangements, and a range of sizes may be used in custom feedlots where different sized consignments are received.

An all-weather road provides access for feed distribution. Water troughs are usually situated in the centre of a fence line on the lower side of the pen, providing access to two troughs per pen.

Dual-purpose cattle lanes/drains are common at the low end of the pens. They provide all-weather access for moving cattle and for cleaning and maintenance. Pen-to-pen drainage is avoided by ensuring that the pen cross-slope is less than the slope towards the below-pen drain.
2.2.3 Cattle management

Feeder cattle are supplied directly from properties or purchased from saleyards, depending on prices and availability. Breed type, age and quality must meet the requirements of the destination market. Cattle may be sourced from distant locations and may travel long distances, including from interstate.

All feeder cattle are unloaded at a receiving area and then moved into an induction area that may be physically separated from the feed pens. Here their individual and group particulars are recorded, special identification is applied, and pen groups are organised. A staged process to move them from a forage-based diet to a grain-based diet is begun. Once cattle are accustomed to the feeding regime and allocated to a particular pen, minimal relocations occur during the feeding period. Hospital pens and dispatch areas are separated from the fattening pens. However, not all feedlots have separate unloading and loading facilities for receiving and dispatching cattle.

Cattle are purchased at approximately the same rate as they are ‘turned-off’. On a large feedlot, there are daily arrivals and dispatches of cattle for immediate slaughter. The numbers vary as a percentage of pen capacity, depending on the feeding period.
Cattle management — features relevant to the control of EADs

Feedlot cattle may be sourced from multiple sources (markets or properties) and hence are high risk for introduction and spread of EADs. During an EAD response, an early assessment of source is important to assess the risk.

Feedlot recording systems will support rapid and accurate trace-back and trace-forward of cattle from the feedlot.

The cattle are monitored daily, are under tight control and are readily accessible. Pens are usually adjacent, with common water troughs, so a contagious disease could spread rapidly.

The high concentration of susceptible livestock in the feedlot and in individual pens provides ideal conditions for the spread of contagious diseases.

Cattle on NFAS feedlots are fully described on specific delivery and consignment docket, and high-quality records of individual cattle from induction to dispatch are maintained. This allows rapid location of any suspect animals and rapid calculation and substantiation of their value.

Feedlots can arrange to move cattle quickly and efficiently to a meatworks if necessary.

The separation of cattle into pens offers opportunities to use an internal quarantine procedure to isolate suspect cattle.

Forward planning is needed to meet logistical and welfare issues associated with retention of cattle, which might be required in a stock standstill, or to meet destruction requirements for infected and dangerous contact premises.

### 2.2.4 Stockfeed management

Cattle are fed under various feeding regimes ranging from 70 to 300 days, depending on the market destination; the domestic market requires short-fed (70 day) cattle and export markets require longer feeding periods.

Feed costs account for 55–60% of the cost of production of feedlot beef and grains (predominantly barley, sorghum and wheat) make up about 75% of this cost. Rations combine grain with hay, silage, molasses and a mineral/vitamin supplement. Feedlots use large quantities of feed commodities, with cattle consuming 3% bodyweight equivalent per day on a dry-matter basis. A rule of thumb is that 100 tonnes of feed are required per 1000 cattle per week.

Feedlots often grow a portion of the annual grain and forage requirements on site; however, most bulk grain supplies will be purchased regionally. Many loads may arrive daily on a large feedlot. Feed deliveries can generally be made to the feed storage and processing area without any contact with the feeding pens.

Commercial feedlots usually prepare rations formulated on site by nutritionists. A process of tempering, reconstitution or steam flaking may be used to enhance digestibility. The latter two processes will destroy most infective agents that are present. Grains are further processed by rolling or, less frequently, hammer milling.

Special feed distribution vehicles are used internally to distribute the formulated rations from the feed preparation area to the troughs in the feeding pens. Most
large feedlots use open troughs. Self-feeder bins are generally used in smaller and opportunity feedlots as these require filling only once or twice per week.

To enable cattle to adapt to a high-energy and high-protein diet, a stepped feeding procedure of starter, grower and finisher rations is used.

<table>
<thead>
<tr>
<th>Feed — features relevant to the control of EADs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple daily deliveries of feed are made to many feedlots, and these must continue to provide for the welfare of the cattle.</td>
</tr>
<tr>
<td>Vehicles delivering feed can be kept separate from the cattle pens, and only minimal decontamination on exit may be needed.</td>
</tr>
<tr>
<td>It may be possible to process EAD-contaminated grain into feedlot rations on site in a way that destroys the EAD agent.</td>
</tr>
<tr>
<td>Feed is an ongoing high cost of production and maintenance of cattle on site. Payment for ongoing feeding will need to be addressed in any feedlot EAD response program.</td>
</tr>
</tbody>
</table>

2.2.5 Water management

Access to an adequate supply of good-quality water is essential for the survival, welfare and performance of feedlot cattle.

Water troughs generally provide drinking space for about 10% of a pen at any one time. Generally, 300 mm of trough length is allowed for every 10 head. Troughs may be specific to a pen or shared between adjoining pens.

<table>
<thead>
<tr>
<th>Water — features relevant to the control of EADs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water security is important to feedlots. Sufficient capacity is required to supply cattle; to clean vehicles, yards etc; and for decontamination.</td>
</tr>
<tr>
<td>On-site water quality is likely to be good, which facilitates the use of the water for cleaning and mixing with disinfectants for decontamination.</td>
</tr>
</tbody>
</table>

2.2.6 Waste management

The disposal of solid waste and effluent is a major consideration in the siting, structure and management of a feedlot. Total manure production (solid and liquid) is approximately 6% of bodyweight per day. Manure is a valuable resource and is generally used on site and surrounding farmland as a source of organic nutrients. It may also be processed by composting and sold as a fertiliser. Liquid effluent may be used on site for irrigation.

<table>
<thead>
<tr>
<th>Waste — features relevant to the control of EADs</th>
</tr>
</thead>
<tbody>
<tr>
<td>The methods used for waste management may be significant in the control of an EAD outbreak.</td>
</tr>
</tbody>
</table>
2.2.7 Manure management

Manure management is an integral component of feedlot management. A regular pen cleaning program is used to ensure efficient use of equipment and labour. Usually, manure is scraped towards the centre or lower end of a pen and formed into a temporary mound. Although some managers like to spread the removed manure immediately onto land-use areas, this is not always possible. Manure that has been removed from yards and cannot be used immediately is usually stockpiled or moved off site. Mounding and stockpiling hasten the decomposition of manure and reduce the quantity to be disposed of by up to 50%. However, they also reduce the nutrient content of the manure and therefore its value as a fertiliser.

In a typical opportunity feedlot, with small numbers of cattle and low stocking densities, manure accumulation is low and the frequency of yard cleaning is lower than in larger, more intensive operations.

Typically, a 450 kg feedlot steer produces about 800 kg of fresh manure per month, of which 90% is water. Stocking density and animal live weight have a significant impact on the moisture added to the pad and to the rate of manure accumulation. After taking decomposition and typical moisture content of the pad into account, about 1–2 tonnes of manure per head need to be removed from the yards each year. This is a cost to the feedlot and efficient removal is important.

Manure — features relevant to the control of EADs

Manure has potential to harbour disease agents and movement of manure off site presents a risk. However, movement is generally under tight control, and the manure is treated so that survival and transmission of EAD agents are unlikely. Nevertheless, contamination of manure and effluent is relevant to the control of foot-and-mouth disease, rinderpest and some other EADs, and requires attention, depending on the circumstances of the outbreak.

Regularly cleaned pens significantly improve animal health and welfare.

Many feedlots will have on-site equipment and expertise for pen cleaning. This can be used to minimise the number of extra personnel and pieces of equipment that are brought on site.

Many feedlots will have a capability to compost manure and other waste material from pens. This can be used where composting is a suitable method for control of the EAD in question.

Many feedlots can spread composted manure onto land on the same property, minimising the cost of disposal.

2.2.8 Effluent management

Rain run-off is described as ‘effluent’. Because it has been in contact with manure, the effluent is high in nutrients and has the potential to pollute surface water and groundwater. It is collected, held in a sedimentation system and then stored in holding ponds until it can be used. Drains, sedimentation systems and holding ponds may be compacted or lined with an impermeable material like clay to prevent soil infiltration.

Effluent is generally diluted with ‘clean’ water and used for irrigating crops or pasture; alternatively, it may be dispersed by evaporation.
**Effluent — features relevant to the control of EADs**

Effluent may contain infective disease agents. It may be possible to contain it for the duration of any quarantine period, or to treat and decontaminate it within the existing systems.

Existing effluent containment systems may be used to contain run-off from cleaning and decontamination activities.

---

**2.2.9 Carcase management**

The mortality rate in feedlots is generally low and constant (less than 1%). Carcases are removed from the pens following the daily yard inspection. They are generally lifted using a loader or carry-all rather than being dragged away, which could result in the discharge of blood and other body fluids.

Carcase disposal may be by burial into prepared pits, burning or composting. A single postmortem site is used, generally located some distance from the feedlot to reduce visual pollution. The area may be secured by fencing to reduce entry of wildlife or feral animals.

Feedlots will generally have a contingency plan for the disposal of large numbers of cattle and possibly the entire feedlot population. This will be based on knowledge of the soil type and profile, and the characteristics of the water table in the immediate vicinity of the feedlot.

---

**Carcases — features relevant to the control of EADs**

Feedlots are experienced in regularly dealing with the carcases of small numbers of cattle. Many will have a contingency plan to manage the disposal of large numbers.

However, at many sites there will be logistical, physical and environmental limitations to disposal of large numbers of cattle carcases.

An existing plan may already be available for mass disposal on site.

Even if approval has been obtained for mass disposal on site, the relevant environment protection agency should be involved and provide a representative for the disposal team.

---

**2.2.10 Health management**

Cattle entering a feedlot are inspected on arrival to assess and record their health status. A health-management program is then used to detect illness and injuries and maintain the health of the cattle.

Illness and deaths will inevitably occur, and early detection and removal of the animal to a hospital pen for treatment or to a disposal area are routine procedures. Daily health monitoring is carried out by ‘pen riders’ — employees who are trained in the early detection of livestock diseases and understand their...
responsibilities under the NFAS standards and the feedlot’s EAD Action Plan.\textsuperscript{13} Treatments and postmortem examinations are commonly performed by feedlot staff under the general direction of a veterinarian. Animals showing signs of illness will either be held in a hospital pen until healthy or returned to their original pen after treatment if the illness is minor.

As a result of these practices, any disease is likely to be detected early and dealt with promptly. In addition, the high level of supervision by feedlot managers means that health and welfare issues in feedlots are managed promptly.

Feedlots accredited under the NFAS must ensure that systems are in place to prevent contamination of stockfeed where equipment used for handling the feed is also used in other activities, such as handling manure and dead stock.

2.2.11 Incident reporting

The NFAS contains requirements for ‘incident reporting’. Unusual numbers of deaths or illness in feedlot cattle within a 24-hour period must be reported to a veterinarian for immediate assessment. Feedlots with up to 5000 cattle on feed must report more than 3 deaths or 20 ‘pulls’ (cattle removed from pens due to illness or injury) in a 24-hour period. Feedlots holding more than 5000 cattle must report deaths at numbers greater than 0.04\% of the cattle on feed or ‘pulls’ greater than 0.4\%.

2.2.12 Contingency planning

All feedlots accredited under the NFAS are required to establish contingency plans to manage any unusual or emergency situation, including an outbreak of an EAD. Feedlots are required to document an EAD Action Plan describing the immediate actions and responsibilities of feedlot personnel should an outbreak be suspected. The plan covers the period between the time a disease is first suspected and subsequent confirmation or clearance of the disease. It is complemented by a feedlot-specific Feedlot EAD Response Plan (see Section 3 and Appendix 3).

The EAD Action Plan provides details of:

- the consulting veterinarian
- actions to be taken to isolate suspect livestock and secure the feedlot perimeter
- restrictions placed on the movement of personnel and machinery to and from suspect cattle holding areas
- actions to restrict or halt livestock movements
- actions to compile a history of all livestock, personnel and vehicle movements for the previous seven days.

To assist in implementation, a sample procedure, sample record forms and an example of an EAD Action Plan are available as part of the NFAS documentation.

Cattle health — features relevant to the control of EADs

Routine inspection of cattle on entry and daily disease monitoring and follow-up provide confidence that signs of disease would be detected.

Contingency planning is well developed, ensuring an alert and trained workforce capable of early reporting and prompt site control in the event of an emergency.

People expert in monitoring cattle health in feedlots will be present on site and can be included in health monitoring activities during an EAD response.

Pen rider horses will need to be managed to ensure that they do not mechanically move the EAD out of the feedlot.

Special permits may be needed to allow movement of more pen rider horses onto the feedlot to avoid overwork of existing horses.

2.2.13 Biosecurity management strategies

Accredited feedlots document, in a biosecurity plan, their biosecurity management procedures, including practices that minimise the likelihood of disease entering and spreading in, or escaping from, the feedlot. Employees are trained to understand the mechanisms of disease introduction and spread, including via cattle, feedstuffs, people, vehicles, machinery and equipment, feral animals and wildlife, and manure and effluent.

Use of a single route by all incoming and outgoing vehicles, machinery and equipment is designed to minimise the entry and spread of disease. All movements are controlled and access areas are minimised. Visitors (including contractors) entering the feedlot are assessed for their biosecurity risk before being granted access to the feedlot; this assessment includes their potential to have been exposed to a livestock disease and to introduce it into the feedlot.

Further detail on these biosecurity requirements is provided on AusMeat’s website14 and on a biosecurity DVD prepared by ALFA to assist in the uptake of biosecurity procedures (Feedlot Biosecurity — Understanding and Implementing the NFAS Guidelines).

---

3 Emergency animal disease contingency planning for feedlots

Knowledge of the procedures used to control emergency animal diseases (EADs) will assist feedlot managers to prepare a specific plan (a Feedlot EAD Response Plan) to complement their EAD Action Plan in the event that the presence of an EAD is suspected or confirmed. The Feedlot EAD Response Plan also complements the work of the state or territory disease control authorities managing a response and assists with a collaborative approach to control. Appendix 3 provides guidance on the development and content of such a plan.

The information in this section must be read in conjunction with the following AUSVETPLAN manuals:

- Summary document
- Operational procedures manuals
  - Valuation and compensation
  - Destruction of animals
  - Disposal
  - Decontamination
  - Public relations
  - Livestock welfare and management
- Disease strategies (for major EADs).

Feedlot managers should be familiar with the structure and content of these manuals, and able to access them via the Animal Health Australia website.¹⁵

Definitive advice on responding to outbreaks in all possible situations — for different diseases, intensities and locations — cannot be provided. Instead, this manual describes the potential impact and response actions that may affect a feedlot for three realistic scenarios based on the detection of foot-and-mouth disease (FMD) in Australia. The impact of this disease on the livestock industries and, in particular, on feedlots is the most devastating of all diseases, and the response therefore requires careful and diligent planning.

Information on the special considerations that apply for significant EADs is provided in Appendix 2.

A hierarchy of increasing EAD response actions and impacts on feedlots will apply as follows:

1. all feedlots immediately following a diagnosis
2. a feedlot with no suspicion of disease located in a control area (CA) or a restricted area (RA)
3. a feedlot with actual disease or strong links to an infected property.

Control of a highly contagious disease such as FMD requires prompt action if its spread is to be contained. The major action for such EADs is to implement restrictions over the movement of cattle (and other susceptible species) to contain the outbreak and increase the likelihood of successful control. Individual property quarantine on certain categories of premises (such as infected and suspect premises) and movement controls based on declared areas will be imposed.

### 3.1 Impacts on feedlots immediately following a diagnosis

Restrictions placed on the movement of cattle by a national livestock standstill will affect the operations of all feedlots. Cattle that have departed a feedlot will generally be allowed to continue to their destination and incoming cattle will generally be permitted to arrive at the feedlot. However, there are no certainties where a serious contagious disease is involved and cattle may have to be unloaded mid-journey. An official permit may be required for movements to continue.

Managers should be able to obtain information from the local disease control centre (LDCC) about the source of the outbreak and rapidly determine whether incoming cattle present any risk. If incoming cattle are of suspect status, they can be diverted to another property or segregated from other cattle on arrival.

During the national standstill, all contacts with animals on infected premises (IPs), dangerous contact premises (DCPs), and suspect premises (SPs) or trace premises will be followed up by the state or territory authorities. The extent of trace-back of cattle movements will depend on the period between infection and the onset of clinical signs. Trace-forward of movements off IPs will apply up to the time quarantine is imposed. Tracing will also apply to all animal products, vehicles (livestock transport vehicles, feed trucks, visitors’ cars), materials such as hay and grains, and people (including veterinarians, contractors, feed representatives and visitors). This emphasises the importance of detailed documentation.

An extension to movement restrictions beyond the initial standstill will apply in some situations. If the feedlot is located within a CA or RA, movement controls will continue to apply as described in Section 3.2. Feedlots that obtain stock originating from many different areas are particularly vulnerable to being implicated by a trace from an IP, DCP or SP.

Feedlots should ensure that their records can rapidly identify the source of stock (property identification code of last property of residence) and the current location of stock on the property. This will allow segregation from other stock, if necessary, and ensure that accurate information can be provided to animal health inspection staff if they have a tracing enquiry.
With suitable contingency planning, feedlot managers can take actions to reduce the risk of disease spread to their cattle. For example, livestock that could be host to the disease agent could be removed from adjacent properties to create a buffer zone around the feedlot and reduce the risk to the feedlot. This may involve bringing cattle into the feedlot perimeter or removing them to another property.

3.2 Impacts on a feedlot with no suspicion of disease in a restricted or control area

In addition to the impacts described in Section 3.1, feedlots located in RAs and CAs will be affected by the more intensive disease control actions applied to at-risk properties to further restrict the spread of the disease.

Feedlot managers should arrange discussions with the LDCC as soon as possible to maximise all parties’ understanding of priorities and constraints, and to ensure that proposed feedlot operations are in accordance with response procedures.

3.2.1 Cattle movements

Depending on the disease, a feedlot may be able to continue to operate if an abattoir is included in the declared area. However, it may not be practical to process the number of cattle that are ready to market. Realistically, if the presence of an EAD results in any loss of access to export markets, the opportunities to market finished cattle will be limited.

Even where cattle are permitted access to a feedlot, business decisions on the marketability of finished cattle will be required. The ability to source disease-free cattle of the appropriate specification within a declared area is likely to be severely constrained. Although cattle may be able to be sourced from outside a declared area, permits for them to move to the feedlot may be difficult to obtain.

Where cattle are allowed entry to a feedlot, they should be isolated in pens as far as possible from other cattle pens to reduce the risk of disease transmission.

3.2.2 Disease tracing

Tracing the movements of exposed and potentially exposed animals, and identifying all infected and potentially infected herds will be a high priority in the response to an EAD such as FMD. This activity will continue until the extent of the outbreak is determined. Feedlots that purchase cattle from many sources have a high risk of being caught up in this process and having their disease status classified as suspect or trace until the situation is clarified. This would mean that movements off the feedlot would almost certainly cease, and movements onto the feedlot would be under strict conditions or not permitted.

3.2.3 Disease surveillance

Feedlots in declared areas will be affected by the activities of surveillance teams seeking to define the extent of the disease, detect new outbreaks and establish disease-free zones. Within an RA, surveillance will be by inspection of livestock on properties. Surveillance within a CA may involve abattoir surveillance, serological surveys and investigation of reports of suspected disease.
Factors such as potential spread by wind or wild animals could result in increased surveillance. The intervals between property inspections and between surveys will depend on the incubation period of the disease and the risk of exposure. The causative organism for some diseases, such as lumpy skin disease, Rift Valley fever and screw-worm fly, can survive in the environment, resulting in prolonged eradication and an extended period of surveillance.

### 3.2.4 Additional disease management measures

#### Use of vaccines

Many feedlots will be familiar with vaccination against anthrax. In the event of an incursion of other EADs such as bluetongue, lumpy skin disease or Rift Valley fever, vaccination may also be feasible for incoming store cattle. In certain circumstances, the risk of infection entering the feedlot may be reduced by vaccinating all animals in the feedlot. However, vaccines for the above diseases are unlikely to be available immediately following detection of an outbreak, and any vaccination carried out would need to be in accordance with the agreed response plan.

The use of vaccine for FMD is a part of the AUSVETPLAN Disease Strategy for that disease. How and when the vaccine would be used would be determined on a case-by-case basis by the Consultative Committee on Emergency Animal Diseases (CCEAD) and would depend on a combination of complex factors, including the nature and extent of the outbreak, the assessed risk to cattle in the feedlot, the availability of vaccines, the potential to salvage vaccinated animals and other cost-benefit factors.

#### Treatments

Treatment to reduce the potential for the spread of infection may be used for some EADs if approved by the CCEAD. For example, treatment of cattle with Ivermectin would destroy any *Culicoides* midges (the vector for bluetongue virus) feeding on the cattle and thus aid the control of bluetongue.

Ivermectin could also have a preventive effect against screw-worm fly for 16–20 days. Treatment could be used at the time of any husbandry procedure that results in wounds predisposing cattle to fly attack. However, the withholding periods for Ivermectin (and other medicines) may constrain their use. For example, cattle treated with Ivermectin must be withheld from slaughter for 42 days. Feedlot managers would need to consider how such a treatment and withholding regime could be applied in their circumstances and whether the potential disadvantages to the timing of marketing were warranted. An alternative strategy of enhanced daily disease monitoring to provide early warning of infestations and subsequent individual treatment could be discussed with the disease control authorities.

#### Enhancing biosecurity

Feedlots located within a declared area can take a number of steps to enhance their existing biosecurity programs, reducing the potential for entry of a disease agent. This would need to be done in conjunction with the LDCC. The following sections describe some specific areas for additional attention.
**Personnel**

The entry of people should be further restricted to those with a clear need to enter. Footbaths and washing facilities will be necessary for some diseases.

Feedlot staff and their families living on site or nearby will need to undertake special cleaning and disinfection precautions to ensure that they do not move any disease agent from the feedlot.

**Vehicles**

Entry of vehicles onto the feedlot during the time of declaration should be restricted to essential vehicles. A systematic decontamination procedure for vehicles that must enter the perimeter may need to be introduced. Before vehicles are allowed entry onto the feedlot, their previous locations should be checked to ensure that they have not entered any other at-risk property.

If the disease can be spread by contaminated materials, the movement of vehicles within the feedlot would need to be minimised and routes rigidly controlled to avoid potential spread. If the routes for cattle lanes and transport of feed intersect, then these areas may need to be cleaned following use by cattle.

**Stock management**

Avoiding mixing stock from different pens can reduce the likelihood of disease spread. For example, cattle released from hospital pens should be grouped in pens separate from other cattle, and any cattle identified as high risk for any reason should be kept separate or slaughtered, as appropriate.

Precautions can also be taken to prevent contact of feedlot stock with stock outside the feedlot.

**Equipment and materials**

Depending on the disease, the entry of equipment and materials to feedlots within a declared area may need to cease. If such entry is necessary, a systematic decontamination procedure should be introduced.

Feed and feed ingredients may need to be sourced from outside a declared area if the disease is contagious. To minimise disease spread, vehicles carrying feed should be dedicated to the task and to the particular feedlot.

**Feedlot site**

When a feedlot is within a declared area, a general clean up may need to be undertaken to reduce the potential for disease spread. This includes cleaning away any accumulations of rubbish, managing areas that might house vermin, fine tuning procedures for manure removal and effluent control, checking perimeter fencing, and strengthening other biosecurity measures. A pest control program should be undertaken, noting that most rodenticides (based on anticoagulants) take up to two weeks to provide control.
3.3 Impacts on a feedlot with actual disease or strong links to an infected property

There are many uncertainties associated with managing a feedlot that has infected animals or has had contact with an infection such as FMD. However, there is also a large body of information about the policies that apply and the actions that the disease control authorities will take.

The primary objectives of the strategy for FMD are to:

- prevent contact between infected and susceptible animals
- contain the infection to the infected premises
- prevent the production of large volumes of virus by infected animals
- minimise the amount of virus in the environment.

These objectives can best be achieved through quarantine and movement controls, stamping out, and the early establishment of zoning in compliance with internationally agreed standards, so that export markets can be reclaimed as soon as possible. Vaccination may be used under certain circumstances where it is considered that it will assist eradication or where the disease is widespread. Zoning may help to reduce the time for international markets to accept exports from free areas.

Elimination of the disease agent on IPs or DCPs is usually achieved by the destruction and disposal of all animals. Exceptions include an incursion of screw-worm fly and insect-borne viral diseases such as bluetongue, where appropriate treatment of infestations can be instituted.

For other diseases, including those spread primarily by close contact (such as rinderpest), it may be possible to use internal quarantine barriers to manage the spread of disease. To achieve effective isolation of noninfected areas from infected or suspect areas, internal quarantine areas should:

- have no direct contact with other animals, equipment and vehicles
- not be exposed to effluent or run-off from other parts of the premises
- have animals handled and fed last
- be handled by dedicated staff, or have staff undertake a decontamination procedure before handling other stock
- allow sick stock to be separated by 50–200 metres from other livestock.

Feedlot managers should note that the activities described in the following sections will be under the control of the state or territory disease control authorities, and will be managed by a site supervisor. A specific team of technicians (an infected premises operations team; IPOT) will carry out most actions. Feedlot managers will need to work closely with the site supervisor.

The feedlot manager should nominate a livestock controller to oversee the handling and moving of all livestock in accordance with the plans developed by the IPOT. An equipment and vehicles controller to oversee the management of feed and feed ingredients should also be nominated.
In all cases, the first step will be to place an IP or DCP under a formal quarantine notice, as defined in the relevant state or territory legislation. The terms of such quarantine will vary depending on the circumstances, but generally will formally restrict all cattle movements and require the owner or manager to take specific steps to manage the disease.

Given the nature of feedlots and the large number of cattle that may be involved, the above activities will require significant organisation and resources, and are likely to take a considerable time to complete.

Close attention should be given to the public relations aspects of all processes to reduce negative impressions of the EAD response.

The description of the processes of valuation, destruction, disposal and decontamination in Sections 3.3.2–3.3.5 is provided to raise awareness of what will occur. Detailed information is provided in the relevant AUSVETPLAN operational procedures manuals.

### 3.3.1 Managing continuing feedlot operations

Management of a feedlot that has been declared an IP or DCP will require the feedlot manager to collaborate with the site supervisor and obtain approval for actions affecting the response. Although the site supervisor is responsible for all disease control actions on the premises, the feedlot manager and senior staff will need to assist in applying appropriate disease control measures, as well as continuing to care for the cattle.

**Vehicle movements**

While cattle remain on the feedlot, vehicles — including feed trucks, cattle trucks, personal vehicles, excavators and front-end loaders — will need to enter and leave the premises. If the disease can be spread by fomites, vehicle movements must be minimised and tightly controlled; this may involve restricting the entry of passenger vehicles. It may be possible to develop a procedure to prevent incoming grain carriers from crossing paths with other vehicles, personnel or equipment. This would minimise the need for decontamination.

Vehicle movements within the feedlot should also be tightly managed to minimise the potential for disease spread. Decontamination of trucks used to distribute feed may pose a significant problem.

A stringent procedure for disinfecting vehicles leaving the enterprise may be required, supervised by the IPOT.

**People movements**

Visitors to the feedlot should be restricted to those associated with the disease control program. It may be preferable for employees to remain on site as much as possible during the clean-up period to reduce the opportunities for transferring disease elsewhere.
Disinfection to safely remove any contamination from personnel and their clothing may be necessary in order to prevent the spread of many diseases; this would be under the control of the IPOT. Records of the destinations of all persons requiring decontamination would be maintained.

3.3.2 Valuation and compensation of feedlot cattle

Payment of compensation for cattle that die or are necessarily destroyed as part of the control of an EAD (as well as for any other property that is destroyed) is an integral part of managing diseases such as FMD. The EAD Response Agreement contains guidelines on compensation to be paid (see Appendix 1). The relevant jurisdiction’s legislation provides the power for the destruction of livestock and property and determines the process by which compensation is paid.

The valuation and compensation procedures described in the Valuation and Compensation Manual ensure that:

- payment of compensation for animals and property is rapid and equitable
- valuation procedures do not unnecessarily delay destruction and other eradication measures
- issues that may impinge on valuation procedures are clearly identified
- authorised valuers are aware of their roles and responsibilities.

Implementation requires the appointment of valuers for livestock and property. They are contracted to the relevant state or territory authority and operate under the direction of the IPOT manager located in the LDCC. Valuers will have appropriate experience in valuing cattle or items, and will be trained in the procedures detailed in the manual.

The definition of ‘owner’ is relevant as the authorised valuer has to gain agreement to all valuations. Normally, this will not be a problem as the definition includes any legal representative of the owner. A formal definition of ‘owner’ is given in relevant state and territory legislation. Contract growers are not considered to be owners of the stock they are growing and do not receive compensation for cattle destroyed.

Some items are not eligible for reimbursement, including animals that die from causes other than the EAD, or that would not have been compulsorily slaughtered had they survived; consequential losses of any kind; and property, not intended for decontamination, that is inadvertently damaged during a control procedure.

Payment of compensation is a two-stage process. In the first stage, the value of animals is determined as if they were disease free and as if they were sold on the property where they are destroyed or have died (ie ‘at the farm gate’). In determining a value for an animal, consideration is given to its age, sex, breed, body condition, live weight and other factors relevant to its class. The determination should reflect the value of comparable animals at the most recent local livestock market(s) before the valuation date. Where transport and selling costs would likely have been incurred in realising this value, those costs should be deducted from the value. Based on these determinations, an agreed value is reached and initial compensation is paid accordingly.
This process may not be appropriate for determining an accurate price for feedlot cattle. A specific procedure that recognises the availability of accurate records of purchase price and the quantity and value of feed applied up to the date of valuation is under consideration as an alternative.

The second stage of the process occurs during the restocking of the property after it has been released from all restrictions. If the cost of replacement stock of equal class to those destroyed is greater than the initial compensation paid, top-up compensation is available to make up the shortfall. If the replacement cost is equal or less, top-up compensation is not made available. A time limit may apply to the availability of top-up compensation following the release of the property from restrictions.

As with all financial transactions during an EAD response, valuation and compensation will be subject to audit and scrutiny.

### 3.3.3 Destruction of feedlot cattle

In an outbreak of a rapidly spreading disease such as FMD, it will be necessary to destroy a large number of cattle quickly to reduce the potential for further spread of the virus. Speed is essential in most outbreaks, because live animals will continue to produce and possibly spread the disease agent. It is essential that animals are destroyed humanely.

Guidance on acceptable techniques for humane destruction of cattle is provided in the *Destruction of Animals Manual*. The aim is to achieve euthanasia in a single treatment by a rapid loss of consciousness, leading to death with no return to consciousness and with an acceptable (minimal) level of stress to the animal before its death.

During an emergency, resources must be obtained to enable activities such as destruction and disposal to be scaled up, and to ensure that they are completed quickly and achieve the objective of minimising further disease spread. Although the logistics of destroying large numbers of animals may at first seem insurmountable, considerable experience has been gained during the management of major outbreaks, such as the 2001 outbreak of FMD in the United Kingdom. Managers may find it valuable to conduct an exercise where they calculate the rate of destruction that can be achieved using their existing resources and thus obtain an estimate of what further resources would be needed to achieve the objective. They should also recognise that the disease control managers are responsible for managing the destruction of livestock, including the supply of resources and any additional facilities and equipment required.

A range of destruction methods is outlined in the *Destruction of Animals Manual*, including use of firearms with free bullets, use of captive bolt firearms, and lethal injection. More than one destruction technique may be used on any one premises. Safety, practicality, availability, efficiency, layout of the premises and equipment available on site are all taken into account by the IPOT when choosing the methods. Trained personnel authorised by the government authority will undertake the task. They will be briefed on humanitarian and safety aspects of destruction before beginning work.
Destruction of feedlot cattle would also have to be done in a manner that supports
the disposal method(s) chosen for that site. Options include moving the cattle to
temporary yards erected next to the disposal site — for example, a trench
constructed as specified in the **Disposal Manual** or an area where mass
composting can occur. If heavy equipment is required during the process,
destruction will have to be in a place that allows easy access for such equipment.

Each feedlot will have characteristics that define the best way in which cattle
should be destroyed. In addition to considering this issue as part of preparedness,
a written plan outlining options for destruction of the cattle will be required when
an infection with an EAD is confirmed. Feedlot managers can assist this process by
considering in advance issues such as the destruction methods suitable for the site,
the destruction site, the order of destruction, the estimated timeframe, and the
personnel, facilities and equipment needed. This plan should include an
assessment of the occupational health and safety (OH&S) risks associated with the
procedure.

### 3.3.4 Disposal of carcases

Disposal is a significant part of any stamping-out response. Various options for on-
site disposal are available, and the first reference document will be the **Disposal
Manual**.

Disposal of large numbers of dead cattle will present major logistical problems.
Primary methods for disposal include burial, burning and composting, but others
may be used singly or in combination, depending on the local situation. Each
method has positive and negative features. A combination of methods may prove
most efficient, taking into consideration the available facilities, the disposal site,
animal welfare and personnel safety. Disposal through an abattoir or by rendering
may be considered as options, but this is unlikely to play a major role for most
feedlots. The procedures used will be determined by the IPOT after consideration
of all relevant factors and consultation with the feedlot manager.

Each method of disposing of cattle results in pollution of some kind. Burial may
result in contamination of groundwater by the resulting liquid waste; burning
produces airborne pollutants and is visually undesirable for the public; and
composting may result in surface soil contamination and potential run-off into
water courses. Consultation with the relevant environment protection agency
should be a part of planning.

In all cases, provision will need to be made to clean and decontaminate vehicles
and equipment leaving the disposal site.

**Burial**

Large numbers of all classes of cattle can be disposed of by burial if large areas of
suitable land are available. Advantages of burial include the speed with which it
can be initiated, the ability to fill and cover one part of a site while another is under
construction, public acceptance and low risk of odours. Disadvantages include the
need to have a suitable area of land available, the potential risk to groundwater,
the possible need to treat leachate and gas, the need for ongoing site monitoring,
the need for tight biosecurity for transporting animals to the site, the impact on
future use or rehabilitation of the site, the large amounts of equipment that may be
required and concerns over OH&S issues.
Burial can be conducted either off site or on site, if the property is large enough and has suitable soil and watertable characteristics. The feasibility of on-site burial should be discussed with local biosecurity and environmental protection officers. The feedlot EAD Response Plan should include information on whether burial on site is possible. If it is not, other burial options should be documented.

Existing landfill sites should be considered as they may be approved to receive animal carcases and will have the necessary infrastructure to manage long-term containment issues. The risks associated with transport of carcases in sealed vehicles to these sites can be managed.

Burial on site will be managed by the IPOT and the feedlot manager, who will need to consider a number of environmental, OH&S and land use matters before pit construction. Appropriate authorities (such as the state or territory environmental protection agency, workers’ compensation authority and the local council) must be consulted.

The selection of the pit design will be a responsibility of the expert team that will consult with engineers and environmental protection agencies on construction of the pit and the need for any lining. The dimensions of the pit will depend on the equipment used, the site, and the number of cattle to be buried. Excavators are the most efficient equipment for the construction of long, deep, vertically sided pits. (Guidelines for pit dimensions and structure are provided in the Disposal Manual.) They also facilitate separation of topsoil from subsoil and can be used to fill the pit with carcases and cover them with soil.

**Burning**

Construction of pyres for cremation will depend on the local conditions, available fuel supplies and the type of carcases to be destroyed. Carcases are placed on top of sufficient combustible material so that the arrangement of fuel and carcases allows adequate air flow and achieves efficient combustion. Guidelines for pyre construction and quantity of fuel recommended are provided in the Disposal Manual.

The advantages of building pyres and burning cattle include the speed with which the process can be initiated, the low technology involved, the short-term monitoring required and the ability to use this method where a high watertable or unstable or rocky soil types preclude burial. However, there are many disadvantages, not least of which is very poor public perception, as seen during the FMD outbreak in the United Kingdom in 2001. Other disadvantages include the time and resources required to build a pyre, the time taken to burn carcases thoroughly, the risk of a fire spreading, the large volume of fuel needed, rehabilitation of the site (including disposal of ash), public health considerations (including the effect on asthma sufferers) and the effect on air quality (including smell).
Pit burning, a variation of the pyre method, involves burning material in a pit aided by fan-forced air. The advantages include the efficient combustion achieved by the higher temperatures, better fuel economy and reduced likelihood of a fire spreading. Disadvantages include the large volumes of fuel required, the need for specialist operators, noisy operation and the limited volume of material that can be handled.

The logistics and efficiencies of all possible off-site and on-site locations for burning need to be fully examined and compared for each location.

Other novel local approaches to carcase disposal include industrial or power station furnaces or commercial incinerators.

Composting

Aerobic or ‘dry’ composting is a proven technique for disposing of animal waste and carcases. Most feedlot managers will be familiar with this natural process, whereby beneficial microorganisms decompose and transform organic materials into a useful and biologically stable product that is safe for the environment. The organic matter reduces odour, attracts few insects and absorbs leachate from the decaying carcases. If carefully implemented and monitored, aerobic composting generates sufficient heat to destroy most disease agents.

Aerobic composting above ground requires the construction of windrows to allow oxygen to flow through the pile. The process requires large quantities of carbonaceous material such as sawdust, manure, straw and peanut hulls. Regular turning is required. The literature indicates that a ratio of about 3:1 (by volume) of carbonaceous material to cattle is required to compost animal waste.

Composting can be undertaken in an open area that allows access for the necessary machinery and equipment. It requires large areas of land, suitable transport to move cattle to the site, adjacent holding yards if the cattle are to be slaughtered on site, heavy machinery to construct and manage the compost, control of run-on and run-off from rainfall, consideration of the watertable and soil type, and management of potential pests such as birds, insects, foxes and feral pigs. A major problem in a large feedlot would be obtaining the required amount of carbonaceous material.

Useful information on managing the composting of large numbers of animals can be found on the New South Wales Department of Primary Industry website.16

Although composting can be used to effectively dispose of cattle of all sizes and associated waste, it may be difficult to implement in an EAD response where there are large numbers of carcases. This is because of the amount of carbonaceous material required, the time taken to complete the process and difficulties in ensuring a uniform process.

Salvage via an abattoir and rendering

Slaughtering cattle at an abattoir for food processing (human or pet food) or rendering are financially attractive options for disposal (depending on the disease involved and the policies adopted in the response). However, the logistical difficulties involved, the slaughtering capacity of the abattoir and the likely low value of the stock at the time of the outbreak mean that the opportunities for using this option are likely to be limited. It will be more attractive where the feedlot is close to a suitable facility and the potential for financial savings is high. In the case of rendering, only facilities using a high-temperature batch rendering process with biologically secure separation of raw product and end product are likely to be approved.

There may be a role for rendering in outbreaks of EADs such as screw-worm fly where the number of animals requiring disposal is likely to be small. In an outbreak of a contagious EAD such as FMD, the large number of cattle to be processed is likely to mean that disposal by burial, burning or composting will be more effective in rapidly reducing disease spread. However, there may be opportunities to combine several methods to increase the overall efficiency of the disposal process. Combining disposal options should be considered, both during and before an emergency.

3.3.5 Decontamination of facilities and equipment

Decontamination refers to a combination of physical and chemical processes that kill or remove EAD agents or reduce them to noninfective levels. It would be carried out under the management of a specialised group from the IPOT.

Effective decontamination requires the cooperation of the feedlot manager and all personnel involved in the cleaning and disinfection procedures. If carried out effectively, it will reduce the period between slaughter and restocking on contaminated properties.

Eliminating agents from premises, clothing, vehicles, tools, carcases or the environment requires a good understanding of the general properties of each disease agent, and the subtle ways each may persist in the environment and infect other animals.

Steel, cement, plastic and some wood structures — for example, feed and water troughs, posts, rails, wire and cable — can be readily decontaminated, but some wooden structures may be incapable of being properly disinfected.

Preparatory cleaning of surfaces by brushing with a detergent solution is effective in removing organic material and is an essential step before effective chemical decontamination.

Where decontamination of pens is necessary, manure should first be removed down to and possibly including the manure-soil interface, even though this is not normally done in daily operations. The top layer of remaining soil may be disinfected. For disease agents with poor persistence, it may be appropriate just to remove the manure from the pen and spell it for an appropriate period. Resting of pens may be necessary for some contagious diseases, with the period depending on the disease. Depending on the particular emergency response, sentinel animals may be placed in pens for a defined period after decontamination is completed.
Disinfection of floors, especially those used by feed delivery vehicles, is important because of the potential for dissemination of infectious agents from these areas. Disinfection of walls, structures and surrounds may be required for persistent agents.

Disinfection of offices and other buildings may be necessary because the transit of people may result in areas at high risk of contamination. It may be prudent to transfer the relevant feedlot records to temporary premises so that tracing and other investigations can continue without disruption to other administrative activities.

It is likely that the IPOT will establish a preliminary clean-down area where items are cleaned with water and possibly detergents. Items are then presented to the entry/exit point clean and ready for final disinfection before leaving the premises. At both sites, fresh water, an ability to contain run-off and a hard base will be needed. Existing structures may be used or special areas may be created. The entry/exit point may be on the property boundary or at a defined line that differentiates the clean area from the dirty area. The IPOT and the feedlot manager should jointly select these sites.

A relatively small number of disinfectants are effective against broad groups of viruses and bacteria. Ultimately, the choice of disinfectant depends on the disease agent, availability of the disinfectant, how the disinfectant is to be applied and how an adequate wet contact time is to be maintained. This will be determined by the IPOT in discussion with the feedlot manager.

For additional information, consult the Decontamination Manual.
Appendix 1 Valuation and compensation

Policy of the Emergency Animal Disease Response Agreement

The Government and Livestock Industry Cost Sharing Deed in Respect of Emergency Animal Disease Responses (2002) establishes a mechanism to facilitate rapid responses to certain emergency animal diseases (EADs), and their control and eradication or containment. The agreement provides a cost-sharing framework, and stipulates that:

- An EAD Response Plan developed by the affected jurisdiction must conform to the AUSVETPLAN disease strategies and management manuals, including the Valuation and Compensation Manual.
- Cost sharing will apply in respect of compensation determined in accordance with the following principles:
  - Compensation is paid to the owner of any livestock or property that dies or is destroyed for the purpose of eradication or prevention of the spread of an EAD.
  - In the case of livestock, a second payment may become due on the date the property becomes eligible to be restocked, provided the total value of livestock is greater on that date than the initial amount of compensation paid for the livestock.
  - In determining the amount of compensation to be paid, no allowance shall be made for loss of profit, loss occasioned by breach of contract, loss of production or any other consequential loss whatsoever.
Appendix 2 Diseases of major concern to feedlots

Many emergency animal diseases (EADs) could affect an Australian beef cattle feedlot, but only a small number are of such concern that details are given here. A full list of the EADs that may affect cattle is provided at the end of this appendix. More details on each are available in the relevant disease strategy or response policy brief.

The EADs described below are widely considered to be those that are likely to have a major impact on feedlots. In several cases, it is the international or domestic (or both) perception of the presence of the disease in Australia that would have the greatest impact on feedlots because of the adverse effect on trade.

Many other EADs are listed in AUSVETPLAN, and the specific disease strategy or response policy brief must be consulted where there is a heightened risk of an incursion and especially in the event of an outbreak of any EAD. Managers should also familiarise themselves with the key operational plans developed by their state or territory primary industries department.

Anthrax

Anthrax is caused by a bacterium, *Bacillus anthracis*, and is a serious zoonosis requiring great care when people handle potentially affected animals and carcases. In Australia, a major outbreak of anthrax is included as an EAD because of the potential for national socioeconomic consequences through international trade losses.

Anthrax is uncommon in Australia and clinical cases of the disease are seen only sporadically. The basis of the Australian response has been developed from experience over the past 50 years in managing sporadic and unusual outbreaks of anthrax. In cattle, infected animals are often found dead before any signs of illness are observed. Blood-stained discharges at external orifices are characteristic of the disease, but not all anthrax cases show these signs. A reliable sign is the failure of blood to clot.

Concern over the potential impact of an outbreak of anthrax led the feedlot industry to develop specific information on anthrax.17

---

Anthrax — relevant features

Sudden deaths in feedlot cattle resulting from infection with *Bacillus anthracis* would only occur if newly arrived cattle were infected on the source property.

Experience has shown that trade to some markets will be disrupted during a major outbreak.

Anthrax spores have the potential to contaminate soil for many years, especially if they are below the surface of the soil.

Bluetongue

Bluetongue is a viral disease, primarily of sheep, transmitted by specific species of biting midges (*Culicoides* spp.). Cattle seldom show clinical disease (although new strains seen in Europe do cause disease in cattle) but play a significant role as the main source of the infection for the midges.

Some types of bluetongue virus are present in northern and eastern Australia. However, clinical bluetongue disease is not generally seen in the Australian ruminant population. The nature and distribution of bluetongue virus in Australia will probably continue to evolve as climate change leads to changes in both strains of the virus and the distribution of the midges. Australia has a national program that monitors the distribution of the virus and the midges that transmit it.\(^{18}\)

The incidence and geographical distribution of bluetongue depend on seasonal conditions, the presence of the midges and the availability of susceptible animals. The midges prefer warm, moist conditions, and are in their greatest numbers and most active after rainfall.

In a bluetongue outbreak, the strategy imposes movement controls on affected and susceptible animals in the area of the outbreak while an initial epidemiological investigation is conducted. Treatments and husbandry procedures are used to help control vectors, reduce transmission and protect susceptible animals. Tracing and surveillance determine the extent of virus and vector distribution, and zoning is used to define infected and disease-free areas.

Some animals may need to be destroyed for welfare reasons. It is not possible to eradicate the bluetongue vectors.

Bluetongue — relevant features
Few cattle feedlots are located in areas where the bluetongue viruses currently circulate. Clinical disease or production loss in cattle is most unlikely.
Treatments used to control the midges could require cattle to be treated with an insecticide such as Ivermectin. This could have implications for marketing, given the long withholding periods for such chemicals.
Other costs could arise from the control measures. There is also potential for a reduction in exports of live animals and ruminant products, at least until the outbreak is well defined and detailed information can be provided to trading partners.
Quarantine and movement controls will reduce market access options, and the costs of exports might increase due to the costs of testing.

Bovine spongiform encephalopathy
Bovine spongiform encephalopathy (BSE) is a fatal neurological disease of adult cattle, characterised by a long incubation period (minimum of 18 months, but more likely to be 2.5–8 years) followed by progressive degeneration. Typical signs are abnormal posture, development of violent behaviour, heightened sensory perception, weight loss (despite a good appetite) and death.
BSE has the potential to cause major national socioeconomic consequences through very serious international trade losses, and national market disruption resulting from consumer resistance to eating meat.

BSE — relevant features
Because BSE is very slow to develop, detection of clinical disease in feedlot cattle is unlikely even if the agent were present.
The detection of BSE in Australia would affect access to international markets for meat and meat products, and reduce domestic consumption of beef.

Foot-and-mouth disease
Foot-and-mouth disease (FMD) is an acute, highly contagious viral disease of cloven-hoofed animals. It is characterised by fever and the formation of fluid-filled blisters and erosions in the mouth and nostrils, on the teats, and on the skin between and above the hoofs. Very large amounts of virus are present in all tissues, secretions and excretions before and during the development of clinical signs. Cattle are primarily infected via inhalation, but also by ingestion and artificial or natural breeding.
Reduced appetite is an early sign, and severe lameness and excessive salivation are common as the disease progresses. However, a wide range of clinical syndromes may occur, ranging from inapparent disease with minimal lesions (especially in Bos indicus breeds) to severe clinical disease. FMD may cause serious production losses, but deaths are unlikely except among young animals.
Transmission occurs most readily when animals are in close proximity. Thus, FMD would spread explosively in a feedlot and would almost certainly be detected.
within a relatively short time. Spread of infection between properties and areas is usually due to the movement of infected animals or contaminated vehicles, equipment, people and their clothing, and products. The virus could be widely distributed before clinical disease is seen.

Some recovered cattle remain long-term carriers. The virus may remain infective in the environment for several weeks, and possibly longer in the presence of organic matter such as soil, manure and dried animal secretions, or on chemically inert materials such as straw, hair and leather.

FMD is the greatest threat to Australia’s livestock industries and export markets because it has the potential for rapid and extensive spread, and because an outbreak would jeopardise the export of all cloven-hoofed animals and their products. Cattle feedlots are high-risk enterprises and present special problems in control because of the concentration of animals. This risk is compounded in feedlots that receive cattle from many sources.

Control policy is to eradicate FMD in the shortest possible time, while limiting the economic impact. Strategies to achieve this will have a devastating effect on feedlots.

The use of vaccines to help control an outbreak of FMD is a complex issue. The vaccine is made to order overseas so that it covers the strain of the virus causing the disease. Its use in Australia would be tightly controlled. Vaccination is a resource-intensive and expensive option that could extend the disruption to markets, defer the declaration of freedom from the disease and exacerbate the devastating effects on producers. However, there is an increasing global expectation that vaccine would be used in ‘vaccinate to live’ programs.

The use of the vaccine in feedlots would reduce the uncontrolled spread of FMD, and assist in managing the destruction, disposal and decontamination of large numbers of cattle. However, it also carries significant financial implications for managers because of the ongoing care of stock that will remain under very tight restrictions for some time and may ultimately be destroyed. Vaccinated animals may need to be slaughtered before freedom from FMD is declared because, although the vaccine may protect the animal from clinical disease, it may not prevent infection or shedding of the virus. As a result, vaccinated animals must be positively identified.
FMD — relevant features

FMD would have a severe impact on feedlots because of the closure of markets and the impact of disease control strategies on operations.

Movement controls would prevent many feedlots from turning off cattle. Feedlots may need to retain all animals on feed until restrictions are lifted.

Infected and suspect feedlots would be subject to stamping out, which involves quarantine, slaughter of all infected and exposed susceptible animals, and the disposal of carcases and contaminated animal products. Decontamination to eliminate the virus on infected premises would follow.

Vaccination may be used to minimise the spread of FMD but is associated with several disadvantages.

Rinderpest

Rinderpest (cattle plague) is a highly contagious viral disease that is characterised by high fever, nasal and ocular discharges, laboured breathing, severe and often bloody diarrhoea, and usually death. It is spread mainly via aerosols between animals in direct contact.

The importation of an infected animal is the most likely route for the introduction of rinderpest into Australia. However, as the importation of ruminants from endemic countries is not permitted, the risk of introduction is very low. The virus survives poorly outside the host, and importation via contaminated clothing, equipment or smuggled meat products is unlikely. There is a global rinderpest eradication program. The Australian policy for eradication of an incursion of rinderpest is stamping out.

Rapid spread from animal to animal and herd to herd can occur, with animals of all ages becoming sick and dying. Rinderpest principally affects cattle, but sheep, goats, camels and pigs can all be subclinically infected and may act as inapparent carriers. The strain of the virus, dosage and route of exposure may influence the course of the disease; a period of 8–15 days may pass before clinical signs are seen in in-contact animals.

Infection spreads between herds and to new areas primarily by the movement of infected animals. Most cattle in infected herds become infected within 3–4 weeks of introduction of the virus into the herd.

Recovered animals carry the virus for no longer than 7 weeks and develop solid immunity and a high antibody titre. There is no carrier state.

Constraints on cattle movements would apply if a zoning strategy were implemented for international trade purposes. Movement of animals from a free or control area and movement to an abattoir may be permitted.
Rinderpest — relevant features
Rinderpest would be readily detected in a feedlot because of its characteristic clinical signs and rapid spread.
Cattle movements may be constrained.

Screw-worm fly
The screw-worm fly (SWF) is a ‘blowfly’. The larval stages are obligate parasites of warm-blooded animals, feeding on living tissues in open wounds and causing debility and some deaths. Infestations are usually associated with traumatic injury or husbandry procedures such as dehorning. Warm, moist conditions and temperatures of 16–30 °C are preferred. The damage to animal tissues causes serious livestock production losses in countries where the flies occur.

The signs of infestation include ragged, foul-smelling lesions containing larvae. Infestation results in constant licking of the lesion by the animal, restlessness, fever, lethargy and loss of appetite, with associated debilitation and decreased growth rate. Infestation may be insidious and readily missed, even with close examination. Outbreaks are not necessarily spectacular, although with suitable environmental and host circumstances they can be dramatic and devastating.

SWF has the potential to cause national socioeconomic consequences through national market disruptions and production losses. It has significant public health and environmental consequences.

The larvae are highly susceptible to a broad range of insecticidal chemicals, and use of these chemicals for treatment and prophylaxis would be part of any program to control an incursion and minimise its economic impact. Withholding periods would need to be observed. Currently, registered chemicals that provide residual protection are limited to Ivermectin, Closantel and Zeta-cypermethrin.

If SWF myiasis is identified, animal movement controls, intensive tracing and surveillance, control and prophylaxis, and a sterile insect technique program would be components of control. The initial aim would be to define the geographical distribution of the adult SWF while limiting the dispersal by myiasis cases. In a restricted area, cattle movements would require inspection, treatment and permit. Movements within or out of a control area would be permitted by inspection and permit without treatment.

Screw-worm fly — relevant features
Early SWF strike can be difficult to detect. Even if animals undergo daily monitoring, myiasis may not be detected until advanced lesions are present.
The effects on feedlots could include disruption to markets, production losses and the effects of disease control actions such as movement controls and tracing, surveillance and preventative chemical treatments.
The withholding periods associated with chemical treatments have implications for feedlot management.
Emergency animal diseases that affect cattle

Anthrax
Bluetongue
Bovine brucellosis
Bovine spongiform encephalopathy
Bovine tuberculosis
Contagious bovine pleuropneumonia
East coast fever
Foot-and-mouth disease
Haemorrhagic septicaemia
Heartwater
Jembrana disease
Lumpy skin disease
Rabies
Rift Valley fever
Rinderpest
Screw-worm fly
Surra
Swine vesicular disease
Vesicular exanthema
Vesicular stomatitis
Appendix 3 Preparing a Feedlot Emergency Animal Disease Response Plan

Emergency animal disease (EAD) preparedness entails preparing for all conceivable eventualities that will follow an EAD incursion or outbreak, by developing plans in advance to manage them or mitigate their effects.

A Feedlot EAD Response Plan takes preparedness a step further than the EAD Action Plan required under the National Feedlot Accreditation Scheme (NFAS). The response plan provides a feedlot with an additional mechanism to prepare to manage the feedlot once the presence of an EAD in Australia has been confirmed. In the process of developing such a plan, managers and staff develop and document practical actions that are specific to their feedlot, and will achieve a state of optimum readiness. During development of the plan, consultation with state or territory departmental officers trained in EAD responses is recommended.

The process of developing the plan needs to consider existing feedlot biosecurity and each of the disease control actions and processes that may apply, as described in this manual. In each case, the feedlot should examine the impact of an EAD response on the feedlot operations, including structural and environmental features, daily operations and cattle management.

Developing the plan is a two-stage process. The first is to examine the feedlot’s existing biosecurity protocols to identify areas where measures that protect livestock operations from the introduction and spread of pests and diseases can be enhanced when an EAD is detected in Australia. This includes examining the security of the perimeter fencing, routes of entry and exit, control of people and vehicles, decontamination procedures, health monitoring and management.

The second step is to examine the three scenarios outlined in this manual:

• where an EAD outbreak has been detected in Australia
• where the feedlot remains disease free but is located in a declared area
• where the feedlot is confirmed as a dangerous contact premises (DCPs) or infected premises (IPs), and stock need to be removed.

In each case, additional EAD preparedness will ease the difficult decisions that will need to be made.

The following outlines some of the considerations that may be relevant, depending on the feedlot’s circumstances and the nature of the EAD. Feedlot managers must consider their own set of circumstances and not rely exclusively on this information. They should also discuss the issues with their local animal health authorities.
Enhancing feedlot biosecurity in the face of an outbreak of an EAD

This section describes actions that every feedlot should undertake immediately there is a declaration of an EAD incursion into Australia.

Perimeter control. Consider the need for additional signage to deter people — including government and utility employees and contractors, campers and bushwalkers — from entering the property. It may be possible to increase the stock-free buffer area by asking neighbours to voluntarily remove cattle or by developing a contractual arrangement with them to purchase adjoining stock once an emergency is declared.

Stock purchases. Scrutinise carefully the source of all cattle and refuse entry to those that may be under suspicion for any reason. Increase the intensity of inspection on arrival and have a procedure for immediate in-depth assessment of any animal that is suspect. Hold all arrivals in an area separate from the fattening pens for as long as practicable. Consider reducing the number of cattle in the feedlot while the emergency continues. If possible, provide greater separation between groups of cattle.

Stock monitoring. Review the clinical appearance of the EAD, and ensure that all staff involved in daily monitoring and handling of stock are aware of the clinical appearance and the importance of immediate notification of any suspect animal. Manage pen riders so that the isolation of pens of cattle that have had no direct contact with each other is maintained. This may require cleaning and disinfection of the horses’ hooves between such pens.

Manure and effluent management. Review on-site controls restricting movement or access to manure and effluent. Ensure that only specified machinery has contact with manure and effluent, and that this machinery is not used elsewhere on the feedlot unless thoroughly cleaned and disinfected.

Dead stock management. Review procedures, especially postmortem examination and decontamination of the personnel involved. Where composting is routinely used for disposing of dead stock, consider burial as an alternative for the duration of the emergency response, depending on the disease in question and the recommended disposal procedures for that disease.

Stockfeed. Ensure that incoming hay and grain are sourced from disease-free properties. Also ensure that commodity vehicles have no contact with feedlot equipment or personnel, are cleaned and decontaminated on arrival, and that drivers who must leave their vehicle while on the feedlot undertake appropriate decontamination.

Vehicle movements. Scrutinise more closely vehicular traffic that may be coming and going, and allow only those movements that are critical to the continuing functioning of the feedlot. Ensure that vehicles and farm machinery are decontaminated before entry and, if necessary, repeat the procedure as they leave. Restrict the movement of vehicles and machinery within the feedlot, and wash and clean vehicles that must move between areas.
People movements. Re-examine the need for people to enter and leave the property, including contractors, agents, suppliers, neighbours and family members, and develop a list of the absolute maximum number and type of person that will be allowed entry. Consider the potential for essential visitors to park their vehicles outside the gates and to enter only after undergoing appropriate decontamination. Tightly control the areas people can go to (especially the fattening pens), and limit the need for employees to move between areas of the feedlot unless essential to the performance of their role.

Animal welfare. Estimate when concern over animal welfare may begin as a result of overcrowding if the feedlot is unable to turn off cattle for some time. Ensure the local disease control centre (LDCC) and industry liaison officers are informed of this estimate as early as possible.

Business continuity. Outline any options that may be available to the feedlot for alternative markets, releasing cattle back to pasture or any other possibilities that can be assessed at the time if it appears that movement from the feedlot to normal markets will be stopped for a significant time.

Planning to manage a feedlot with no suspicion of disease located in a restricted area or control area

In addition to the biosecurity enhancements described in the previous section, feedlots located within a restricted area or control area will need to consider the following issues.

Cattle movements. Plan on the basis of a worst-case scenario, where cattle can move neither on nor off the feedlot for a protracted period. Determine how the cattle on feed will be maintained in a healthy state until a decision is made about their ultimate destination or disposal. Under current welfare guidelines, the person in charge of the cattle has responsibility for their care and welfare. Welfare requirements may mean that the normal daily regime in the feedlot needs to be changed. There may also be significant budgetary pressures, as the costs of continued feeding of the cattle on the feedlot are not shareable under national cost-sharing arrangements. Discuss any program with the LDCC and industry liaison officer so that the LDCC can assist wherever possible — for example, by assisting with permits for special cattle movements.

Disease tracing. Examine the impact of a trace from an IP or DCP to the feedlot. Determine whether additional management arrangements are necessary in the period until the status of the feedlot is determined and whether there are low-risk sources of cattle that could potentially be accessed during the emergency.

Disease surveillance. Consider how to manage government disease surveillance teams on the feedlot to facilitate their free movement with minimal risk of bringing disease onto the feedlot. Consider how they will move between pens of cattle with negligible risk of carrying disease agents on their clothing or equipment.

Using vaccines and treatments. If a vaccine or treatment is approved for use, all cattle in the feedlot would need to pass through a race where this can be carried out. Although vaccination teams can be formed by the disease control authorities, feedlot managers should consider how they can best use their staff to increase the efficiency of this process. It may be prudent to have at least one member of staff who is fully familiar with the process of vaccinating against the major EADs.
Chemical treatments. If concerns over the withholding periods for chemical treatments are such that the alternative of enhanced monitoring is used, an outline of the changes will be required to convince the animal health authorities that such a process will be effective.

Feedlot preparation. Plan for a general clean-up of the feedlot by identifying all areas where there may be accumulations of rubbish. Plan to carry out an enhanced pest control program.

Planning to manage a feedlot declared as an infected premises or dangerous contact premises

Depending on the disease, a feedlot declared as an IP or DCP will generally be condemned to having all cattle on the feedlot destroyed. Actions such as vaccination or internal quarantine to isolate diseased from healthy cattle may offer a reprieve, but all cattle may eventually be subjected to procedures (including destruction) that are necessary to assist eradication of the disease.

All further eradication procedures will be under the formal control of the infected premises operations team (IPOT). The feedlot manager will be a key adviser to the site supervisor. The normal roles of staff will be affected by the number of disease control personnel on the feedlot and the activities they undertake.

The actions described here are intended to provide a picture of the activities the IPOT will undertake and control. Managers need to be aware of these so that they can provide practical and effective advice to the site supervisor.

Planning for such a devastating outcome can conveniently be divided into two areas:

- actions that build upon, or are related to, the tighter biosecurity and other actions described above
- actions that are related to the processes of valuation, destruction, disposal and decontamination.

Managing staff

Feedlot managers need to plan for the effect on staff of a devastating event. This includes actions to reassure staff, retain skilled personnel, maintain biosecurity for the purposes of the EAD response, and plan for a return to normal operations. Feedlot management should ensure a close working relationship with the IPOT to ensure that the majority of staff are retained for the duration of all response operations. Using staff knowledge of the site and its operations, facilities and equipment will maximise the efficiency and effectiveness of the actions. Managers should plan to fully brief and reassure staff, and ensure ongoing counselling where required.

Managing biosecurity

People movements. The IPOT will further restrict entry and exit to the feedlot and place a formal security team at the feedlot entrance. Since many additional people will need to enter the property to conduct the eradication procedures, consider the implications for continuing management of employees and cattle. All people entering and leaving will be under strict control.
Vehicle movements. Consider arranging for vehicles to park outside if there is no need for them to enter. Areas for parking should be identified. Vehicles and machinery that must enter will be logged, and their cleaning and decontamination will be under the control of the IPOT.

Stockfeed. Feed will need to be imported until sufficient hay and grain are held to feed all cattle until they are destroyed. Vehicles must have no contact with feedlot equipment or personnel, and must be cleaned and decontaminated before leaving.

Actions that will assist the eradication of an emergency animal disease

Although each of the following procedures are under the direct control of the IPOT, managers can undertake some planning that will improve understanding of what would occur and raise awareness among staff.

Valuation. Although there is no formal process to use feedlot records in determining the value of feedlot cattle, it is inevitable that these records will prove valuable to the valuer. Consider how to manage records so that the required information is available without affecting confidential information. Plan the order in which cattle may be valued so that the process can proceed in an efficient manner. Since compensation is paid to the owner of the cattle, ownership details will be required where cattle are present on contract.

Destruction. Consider the alternatives of destroying animals in yards and transporting carcasses to a disposal site, or moving live animals to a site where they can be contained in temporary yards adjacent to the area where disposal will occur. Do not destroy any animal without the permission of the site supervisor.

Disposal. Work with the IPOT to select the disposal methods of choice for the feedlot. If available, an area of land on the property may be used to either compost or bury large numbers of animals, and possibly the entire feedlot population. This may require obtaining interim approvals from environmental authorities to use that area for such a purpose.

Decontamination. The main ingredient in planning for decontamination is to ensure that the feedlot has sufficient water available to decontaminate the entire feedlot.

Sentinel animals. Depending on the disease, sentinel animals may be placed back in the feedlot after a defined period has elapsed after completion of decontamination. If this occurs, arrangements for the feeding, monitoring and management of these animals will be required.
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal byproducts</td>
<td>Products of animal origin that are not for consumption but are destined for industrial use (eg hides and skins, fur, wool, hair, feathers, hooves, bones, fertiliser).</td>
</tr>
<tr>
<td>Animal Health Committee</td>
<td>A committee comprising the CVOs of Australia and New Zealand, Australian state and territory CVOs, and representatives of Animal Health Australia and CSIRO. The committee provides advice to PIMC on animal health matters, focusing on technical issues and regulatory policy (formerly called the Veterinary Committee). See also Primary Industries Ministerial Council (PIMC)</td>
</tr>
<tr>
<td>Animal products</td>
<td>Meat, meat products and other products of animal origin (eg eggs, milk) for human consumption or for use in animal feedstuff.</td>
</tr>
<tr>
<td>AusMeat</td>
<td>The industry organisation responsible for the trading language, standards and quality assurance programs for meat production, from producer to retail outlets.</td>
</tr>
<tr>
<td>Australian Chief Veterinary Officer</td>
<td>The nominated senior veterinarian in the Australian Government Department of Agriculture, Fisheries and Forestry who manages international animal health commitments and the Australian Government’s response to an animal disease outbreak. See also Chief veterinary officer</td>
</tr>
<tr>
<td>AUSVETPLAN</td>
<td><em>Australian Veterinary Emergency Plan.</em> A series of technical response plans that describe the proposed Australian approach to an emergency animal disease incident. The documents provide guidance based on sound analysis, linking policy, strategies, implementation, coordination and emergency-management plans.</td>
</tr>
<tr>
<td>Chief veterinary officer (CVO)</td>
<td>The senior veterinarian of the animal health authority in each jurisdiction (national, state or territory) who has responsibility for animal disease control in that jurisdiction. See also Australian Chief Veterinary Officer</td>
</tr>
<tr>
<td>Compensation</td>
<td>The sum of money paid by government to an owner for stock that are destroyed and property that is compulsorily destroyed because of an emergency animal disease. See also Cost-sharing arrangements, Emergency Animal Disease Response Agreement</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Consultative Committee on Emergency Animal Diseases (CCEAD)</td>
<td>A committee of state and territory CVOs, representatives of CSIRO Livestock Industries and the relevant industries, and chaired by the Australian CVO. CCEAD convenes and consults when there is an animal disease emergency due to the introduction of an emergency animal disease of livestock, or other serious epizootic of Australian origin.</td>
</tr>
<tr>
<td>Control area</td>
<td>A declared area in which the conditions applying are of lesser intensity than those in a restricted area (the limits of a control area and the conditions applying to it can be varied during an outbreak according to need).</td>
</tr>
<tr>
<td>Cost-sharing arrangements</td>
<td>Arrangements agreed between governments (national and states/territories) and livestock industries for sharing the costs of emergency animal disease responses. See also Compensation, Emergency Animal Disease Response Agreement</td>
</tr>
<tr>
<td>Dangerous contact animal</td>
<td>A susceptible animal that has been designated as being exposed to other infected animals or potentially infectious products following tracing and epidemiological investigation.</td>
</tr>
<tr>
<td>Dangerous contact premises</td>
<td>Premises that contain dangerous contact animals or other serious contacts.</td>
</tr>
<tr>
<td>Declared area</td>
<td>A defined tract of land that is subjected to disease control restrictions under emergency animal disease legislation. Types of declared areas include restricted area, control area, infected premises, dangerous contact premises and suspect premises.</td>
</tr>
<tr>
<td>Decontamination</td>
<td>Includes all stages of cleaning and disinfection.</td>
</tr>
<tr>
<td>Depopulation</td>
<td>The removal of a host population from a particular area to control or prevent the spread of disease.</td>
</tr>
<tr>
<td>Destroy (animals)</td>
<td>To kill animals humanely.</td>
</tr>
<tr>
<td>Disease agent</td>
<td>A general term for a transmissible organism or other factor that causes an infectious disease.</td>
</tr>
<tr>
<td>Disease Watch Hotline</td>
<td>24-hour freecall service for reporting suspected incidences of exotic diseases — 1800 675 888</td>
</tr>
<tr>
<td>Disinfectant</td>
<td>A chemical used to destroy disease agents outside a living animal.</td>
</tr>
<tr>
<td>Disinfection</td>
<td>The application, after thorough cleansing, of procedures intended to destroy the infectious or parasitic agents of animal diseases, including zoonoses; applies to premises, vehicles and different objects that may have been directly or indirectly contaminated.</td>
</tr>
</tbody>
</table>
Disposal
Sanitary removal of animal carcases, animal products, materials and wastes by burial, burning or some other process so as to prevent the spread of disease.

Emergency animal disease
A disease that is (a) exotic to Australia or (b) a variant of an endemic disease or (c) a serious infectious disease of unknown or uncertain cause or (d) a severe outbreak of a known endemic disease, and that is considered to be of national significance with serious social or trade implications.
See also Endemic animal disease, Exotic animal disease

Emergency Animal Disease Action Plan
A plan for a feedlot, required under the National Feedlot Accreditation Scheme, to cover the period between the time an EAD is first suspected by the feedlot, and the time of confirmation or clearance of the disease.

Emergency Animal Disease Response
The coordinated national response to an incursion or outbreak of an EAD.

Emergency Animal Disease Response Agreement
Agreement between the Australian and state/territory governments and livestock industries on the management of emergency animal disease responses. Provisions include funding mechanisms, the use of appropriately trained personnel and existing standards such as AUSVETPLAN.
See also Compensation, Cost-sharing arrangements

Endemic animal disease
A disease affecting animals (which may include humans) that is known to occur in Australia.
See also Emergency animal disease, Exotic animal disease

Enterprise
See Risk enterprise

Epidemiological investigation
An investigation to identify and qualify the risk factors associated with the disease.
See also Veterinary investigation

Exotic animal disease
A disease affecting animals (which may include humans) that does not normally occur in Australia.
See also Emergency animal disease, Endemic animal disease

Exotic fauna/feral animals
See Wild animals

Feedlot Emergency Animal Disease Response Plan
A plan to manage a feedlot in situations where the presence of an EAD is confirmed.

Fomites
Inanimate objects (eg boots, clothing, equipment, instruments, vehicles, crates, packaging) that can carry an infectious disease agent and may spread the disease through mechanical transmission.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-contact animals</td>
<td>Animals that have had close contact with infected animals, such as non-infected animals in the same group as infected animals.</td>
</tr>
<tr>
<td>Incubation period</td>
<td>The period that elapses between the introduction of the pathogen into the animal and the first clinical signs of the disease.</td>
</tr>
<tr>
<td>Index case</td>
<td>The first or original case of the disease to be diagnosed in a disease outbreak on the index property.</td>
</tr>
<tr>
<td>Index property</td>
<td>The property on which the first or original case (index case) in a disease outbreak is found to have occurred.</td>
</tr>
<tr>
<td>Induction</td>
<td>The process undertaken when animals are introduced to a feedlot to accustom them to the ration, including any veterinary treatments, and a period of isolation before introduction to the main feedlot.</td>
</tr>
<tr>
<td>Infected premises</td>
<td>A defined area (which may be all or part of a property) in which an emergency disease exists, is believed to exist, or in which the infective agent of that emergency disease exists or is believed to exist. An infected premises is subject to quarantine served by notice and to eradication or control procedures.</td>
</tr>
<tr>
<td>Local disease control centre (LDCC)</td>
<td>An emergency operations centre responsible for the command and control of field operations in a defined area.</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Routine collection of data for assessing the health status of a population.</td>
</tr>
<tr>
<td>Movement control</td>
<td>Restrictions placed on the movement of animals, people and other things to prevent the spread of disease.</td>
</tr>
<tr>
<td>Myiasis</td>
<td>Parasitism of animal tissues by blowfly larvae.</td>
</tr>
<tr>
<td>National management group (NMG)</td>
<td>A group established to direct and coordinate an animal disease emergency. NMGs may include the chief executive officers of the Australian Government and state or territory governments where the emergency occurs, industry representatives, the Australian CVO (and chief medical officer, if applicable) and the chairman of Animal Health Australia.</td>
</tr>
<tr>
<td>Native wildlife</td>
<td>See Wild animals</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Operational procedures</td>
<td>Detailed instructions for carrying out specific disease control activities, such as disposal, destruction, decontamination and valuation.</td>
</tr>
<tr>
<td>Owner</td>
<td>Person responsible for a premises (includes an agent of the owner, such as a manager or other controlling officer).</td>
</tr>
<tr>
<td>Premises</td>
<td>A tract of land including its buildings, or a separate farm or facility that is maintained by a single set of services and personnel.</td>
</tr>
<tr>
<td>Prevalence</td>
<td>The proportion (or percentage) of animals in a particular population affected by a particular disease (or infection or positive antibody titre) at a given point in time.</td>
</tr>
<tr>
<td>Primary Industries Ministerial Council (PIMC)</td>
<td>The council of Australian national, state and territory and New Zealand ministers of agriculture that sets Australian and New Zealand agricultural policy (formerly the Agriculture and Resource Management Council of Australia and New Zealand). See also Primary Industries Standing Committee</td>
</tr>
<tr>
<td>Primary Industries Standing Committee</td>
<td>The standing committee that supports PIMC. Members are all department heads/CEOs of Australian national/state/territory and New Zealand government agencies responsible for agriculture, food, fibre, forestry, fisheries and aquaculture industries and production, and rural adjustment policy issues. See also Animal Health Committee, Primary Industries Ministerial Council (PIMC)</td>
</tr>
<tr>
<td>Quarantine</td>
<td>Legal restrictions imposed on a place or a tract of land by the serving of a notice limiting access or egress of specified animals, persons or things.</td>
</tr>
<tr>
<td>Rendering</td>
<td>Processing by heat to inactivate infective agents. Rendered material may be used in various products according to particular disease circumstances.</td>
</tr>
<tr>
<td>Restricted area</td>
<td>A relatively small declared area (compared to a control area) around an infected premises that is subject to intense surveillance and movement controls.</td>
</tr>
</tbody>
</table>
Risk enterprise  A defined livestock or related enterprise, which is potentially a major source of infection for many other premises. Includes intensive piggeries, feedlots, abattoirs, knackeries, saleyards, calf scales, milk factories, tanneries, skin sheds, game meat establishments, cold stores, AI centres, veterinary laboratories and hospitals, road and rail freight depots, showgrounds, field days, weighbridges, garbage depots.

Sensitivity  The proportion of truly positive units that are correctly identified as positive by a test.  
*See also* Specificity

Sentinel animal  Animal of known health status that is monitored to detect the presence of a specific disease agent.

Serotype  A subgroup of microorganisms identified by the antigens carried (as determined by a serology test).

Specificity  The proportion of truly negative units that are correctly identified as a negative by a test.  
*See also* Sensitivity

Stamping out  The strategy of eliminating infection from premises through the destruction of animals in accordance with the particular AUSVETPLAN manual, and in a manner that permits appropriate disposal of carcases and decontamination of the site.

State or territory disease control headquarters  The emergency operations centre that directs the disease control operations to be undertaken in that state or territory.

Steam flaking  A process of treating grain with steam at a temperature of about 99 °C for a period of around 25 minutes. The process raises the moisture content of the grain from a nominal 10% to about 20%.

Surveillance  A systematic program of investigation designed to establish the presence, extent of, or absence of a disease, or of infection or contamination with the causative organism. It includes the examination of animals for clinical signs, antibodies or the causative organism.

Susceptible animals  Animals that can be infected with a particular disease.

Suspect animal  An animal that may have been exposed to an emergency disease such that its quarantine and intensive surveillance, but not pre-emptive slaughter, is warranted.  
*or*  
An animal not known to have been exposed to a disease agent but showing clinical signs requiring differential diagnosis.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspect premises</td>
<td>Temporary classification of premises containing suspect animals. After rapid resolution of the status of the suspect animal(s) contained on it, a suspect premises is reclassified either as an infected premises (and appropriate disease-control measures taken) or as free from disease.</td>
</tr>
<tr>
<td>Trace premises</td>
<td>Temporary classification of premises that contain susceptible animal(s) that tracing indicates may have been exposed to an infected animal(s), or contaminated animal products, wastes or things, and that require investigation.</td>
</tr>
<tr>
<td>Tracing</td>
<td>The process of locating animals, persons or other items that may be implicated in the spread of disease, so that appropriate action can be taken.</td>
</tr>
<tr>
<td>Vaccination</td>
<td>Inoculation of healthy individuals with weakened or attenuated strains of disease-causing agents to provide protection from disease.</td>
</tr>
<tr>
<td>Vaccine</td>
<td>Modified strains of disease-causing agents that, when inoculated, stimulate an immune response and provide protection from disease.</td>
</tr>
<tr>
<td>Vector</td>
<td>A living organism (frequently an arthropod) that transmits an infectious agent from one host to another. A biological vector is one in which the infectious agent must develop or multiply before becoming infective to a recipient host. A mechanical vector is one that transmits an infectious agent from one host to another but is not essential to the life cycle of the agent.</td>
</tr>
</tbody>
</table>
| Veterinary investigation | An investigation of the diagnosis, pathology and epidemiology of the disease.  
*See also* Epidemiological investigation |
| Zoning               | The process of defining, implementing and maintaining a disease-free and/or infected areas in accordance with OIE guidelines, based on geopolitical and/or physical boundaries and surveillance, in order to facilitate disease control and/or trade. |
| Zoonosis             | A disease of animals that can be transmitted to humans. |
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALFA</td>
<td>Australian Lot Feeders’ Association</td>
</tr>
<tr>
<td>AUSVETPLAN</td>
<td>Australian Veterinary Emergency Plan</td>
</tr>
<tr>
<td>BSE</td>
<td>bovine spongiform encephalopathy</td>
</tr>
<tr>
<td>CA</td>
<td>control area</td>
</tr>
<tr>
<td>CCEAD</td>
<td>Consultative Committee on Emergency Animal Diseases</td>
</tr>
<tr>
<td>DCP</td>
<td>dangerous contact premises</td>
</tr>
<tr>
<td>EAD</td>
<td>emergency animal disease</td>
</tr>
<tr>
<td>FMD</td>
<td>foot-and-mouth disease</td>
</tr>
<tr>
<td>IP</td>
<td>infected premises</td>
</tr>
<tr>
<td>IPOT</td>
<td>infected premises operations team</td>
</tr>
<tr>
<td>LDCC</td>
<td>local disease control centre</td>
</tr>
<tr>
<td>NFAS</td>
<td>National Feedlot Accreditation Scheme</td>
</tr>
<tr>
<td>NLIS</td>
<td>National Livestock Identification System</td>
</tr>
<tr>
<td>RA</td>
<td>restricted area</td>
</tr>
<tr>
<td>SP</td>
<td>suspect premises</td>
</tr>
<tr>
<td>SWF</td>
<td>screw-worm fly</td>
</tr>
</tbody>
</table>