MEAT & LIVESTOCK AUSTRALIA

EMERGENCY RESPONSE PLAN **MANUAL**

Indonesia Biosecurity Support Project

AUSVET

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Abbreviations and acronyms

Abbreviation	Definition
taELISA	enzyme-linked immunosorbent assay
ESCAS	Export Supply Chain Assurance System
FMD	foot and mouth disease
GAPUSPINDO	The Indonesian Beef Cattle Businessman's Association
GoI	Government of Indonesia
LSD	lumpy skin disease
NSP	non-structural protein
POV	Veterinary Authority Official
PPE	personal protective equipment
RT-PCR	reverse transcription polymerase chain reaction
SKKH	Animal Health Certificate
SV	Veterinary Letter
TAD	transboundary animal disease

Summary

Foot and mouth disease (FMD) and lumpy skin disease (LSD) appeared in Indonesia in 2022, causing widespread outbreaks amongst susceptible animals – particularly cattle. Meat & Livestock Australia (MLA) engaged the services of Ausvet to develop a suite of resources to assist the Indonesian beef industry to prevent and control current and future disease outbreaks.

These technical services include this *Emergency Response Plan Manual*, which provides stakeholders with the information to implement a functional response in the face of an outbreak occurring in a neighbouring area or within the facility. The biosecurity measures that are recommended in the *Biosecurity Manual* are relevant in an emergency response and should be assessed and strengthened if the risk of an outbreak increases.

The approach to an emergency response outlined in this manual can be applied to any transboundary animal disease but is focused on FMD and LSD. The manual follows the basic principle that emergency preparedness is a cycle consisting of prevention, detection, response and recovery. Prevention is covered in the *Biosecurity* and *Animal Health and Welfare* manuals. The content of this manual is therefore divided into (1) Emergency preparedness, (2) Detection, (3) Response, (4) Recovery and (5) Other information.

The manual is designed to be used alongside the *Biosecurity* and *Animal Health and Welfare* manuals. It can be used as an annual training tool for facilities to monitor their ability to respond to an outbreak and identify other areas of training and preparedness that might be needed.

Introduction

This manual has been designed to be used when a facility, such as a feedlot, abattoir or breeding farm, is experiencing a transboundary animal disease (TAD) outbreak. A TAD is a highly transmissible and contagious disease and has the potential for rapid spread and significant economic impact.

There are differences in the way TADs spread between animals. For example, foot and mouth disease (FMD) can be transmitted through indirect contact with contaminated clothing and equipment or the air, and is very easily transmitted from animal to animal through direct contact. In contrast, lumpy skin disease (LSD) is more likely to be transmitted from animal to animal via biting insects. This information is of value in emergency response planning and preparedness as it can dictate the best ways to control an outbreak.

Emergency disease preparedness and the corresponding response activities should be viewed as an ongoing, cyclic process (Figure 1). The 'prevent' and 'detect' components of the cycle occur concurrently as 'business as usual' or 'peacetime' activities. The biosecurity measures implemented as general practices (outlined in the *Biosecurity Manual*) are key examples of this. Further, planning for high-threat-level scenarios (the 'prepare' component) can improve a facility's ability to respond if the threat eventuates, ensuring appropriate actions are implemented promptly. Examples of preparation activities include ensuring good working relationships with local village leaders and animal health authorities, guaranteeing staff are adequately trained in their roles and responsibilities in an outbreak, and building and maintaining relationships with industry stakeholders.

Response activities should be implemented rapidly to reduce the animal health, welfare and financial impact of an outbreak, allowing a facility to promptly shift into the recovery phase. Each step within this cycle requires planning and training. In addition, 'recovery' does not just happen but requires decision-making and support to ensure a rapid return to normal business.

Figure 1 Emergency preparedness cycle

How to use this manual

This manual outlines the best practice emergency response principles that can be applied to any TAD threat but will use FMD and LSD as examples and present two scenarios. The scenarios are (1) an outbreak of a TAD occurring in a neighbouring village and (2) an outbreak of a TAD occurring within the facility. Implementing good biosecurity measures can prevent scenario one from evolving into scenario two. However, an outbreak in a facility can occur in the **absence** of an outbreak occurring locally.

The primary objectives of the manual are to provide instruction on:

1. Preparing for an emergency disease outbreak

2. Detecting and confirming a disease incursion, and establishing the scope of the outbreak
3. Responding in a way that minimises the impact of the outbreak on animals and businesses
4. Ensuring recovery and return to 'business as usual' as soon as possible

Recommendations can be tailored to suit individual facilities, and each facility should regularly review its manual. Consideration should be given to running an outbreak exercise to ensure everyone understands their role. The document should be updated annually as resources (workforce and financial) and available infrastructure change.

1 Emergency preparedness

1.1 Legal framework

National and provincial governments will impose legally enforceable restrictions (such as quarantine and movement restrictions) and reporting requirements on livestock owners in the event of a TAD outbreak. Disease outbreaks at a national level are highly dynamic situations, and it is not unusual for restrictions and recommendations to change frequently as the situation evolves. From a legal perspective, it is the responsibility of the manager of a facility to be aware of what these are and be alert to any changes. In Indonesia legally enforceable restrictions may be directed by the Ministry of Agriculture or the National Agency for Disaster Countermeasure and implemented through provincial agencies.

1.2 Response structure

The basic structure of a response team is outlined in Figure 2. These roles can be designated to specific positions within the facility organisation chart.

There is an incident manager who is responsible for overseeing the planning, operations, communications and logistics managers.

This will likely be a full-time role during an outbreak, and except in very small facilities should not be the feedlot manager, but rather a senior staff member who can be accountable solely for the implementation of the emergency response and who does not have significant additional responsibilities during an outbreak.

The planning and operations managers are the primary managers responsible for implementing control activities. The communications manager is responsible for internal communications (and any external communications that may be necessary) and the logistics manager is also responsible for finance and administration duties.

The structure of a response team will vary depending on the facility or facilities affected. In small organisations, individuals commonly have multiple roles and responsibilities in a response. In most cases the outbreak response would be managed and led by individuals from that facility, or a parent company, depending on the ownership structure.

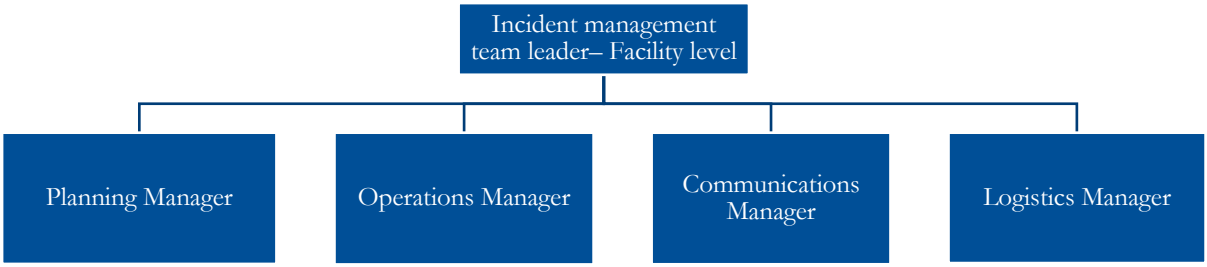

Figure 2 Basic response structure for an outbreak response

It is crucial that roles and responsibilities are designated, and communication between everyone involved is clear and concise to ensure the response is coordinated and cohesive. The individuals in the different roles should meet at least once daily during an outbreak response to discuss completed and planned

activities. It may look like too many people are involved, but each person will be extremely busy and each is critical.

Planning manager

A planning manager needs to regularly liaise with the other managers to ensure a coordinated response. Responsibilities of the planning manager include:

- response planning requiring consideration of how the outbreak will be managed within the facility including the decision criteria for retaining animals or sending for emergency slaughter
- resource planning requiring the assessment of current infrastructure available to manage the outbreak. This will also involve liaising with the logistics manager if infrastructure needs to be brought into the facility to assist. Carcass disposal planning and staff management also falls under resource planning.
- initial situation assessment to determine the scale of the outbreak, which animals are salvageable, and which will require humane euthanasia
- initial tracing activities to find out where the disease came from to prevent further introductions
- local movement restrictions may require changes to fodder and housing management to accommodate growing animals.
- The same restrictions will require additional permits to be obtained to move animals to slaughter to ensure food security during the outbreak.

Planning managers should have a good understanding of the relevant legal frameworks that may be applied to an outbreak response. This will ensure a facility can act and respond to an outbreak without facing negative legal repercussions.

Information systems and mapping tools can be utilised by the planning manager to ensure accurate records are generated and kept.

Operations manager

The operations manager oversees implementing the outbreak response. Responsibilities of the operations manager include:

- farm-level investigations (with the planning manager) to determine where the outbreak originated from, and whether there were any crucial biosecurity breaches that led to the incursion.
- in collaboration with the planning manager, determining the most appropriate method of carcass disposal, if required. They will ensure that carcasses are disposed of properly and these sites are appropriately managed.
- development and implementation of the decontamination protocols for the different areas of the facility
- implementation of access and movement restrictions on site
- ensuring appropriate medical management of diseased animals, and that samples are packed and transported appropriately if laboratory submission is required.

Communications manager

Responsibilities of the communications manager include:

- overseeing the internal communications so that those involved in the response are up to date with progress of the outbreak and response
- overseeing external communications so that local communities and relevant stakeholders receive the appropriate information.

It may be easy to underestimate the importance of this role in the rush of an outbreak, but good communications to staff and other stakeholders is vital in all stages of an emergency response.

Logistics manager

The logistics manager role requires close collaboration with the other managers. Responsibilities of the logistics manager include:

- ensuring other managers have the resources (financial and human) and administration support required to carry out their tasks easily
- liaising with external suppliers to ensure supply-chains experience limited disruption
- keeping the incident lead informed of the cost and impact of the response.

1.3 Decision-making and chain of command

The lead decision-maker will need to be aware of any current legal requirements to report disease outbreaks to the authorities.

In most cases the lead decision-maker will be the incident manager. However, it can be an external individual representing the 'parent company' of the facility. In this case, the incident manager will report to the lead decision-maker who must be an individual who has a good understanding of the facility affected and the outbreak occurring.

Each facility should have an organisational chart that identifies each position (but does not need to identify individuals). Roles and responsibilities during an outbreak should be attached to each position and if individual personnel act across various roles in their day-to-day tasks in a facility they should be aware of their outbreak responsibilities. No one person should be tasked with an unrealistic workload or level of responsibility during an outbreak (see Appendix A for an example emergency response plan which outlines some of the tasks required during an outbreak). Positions can also be designated under the different managers (planning, operations, communications and logistics).

1.4 Communications plan

Communication strategies during an outbreak are important to ensure staff are aware of the extent and progress of the outbreak and control activities.

Most staff will be worried about the outbreak and associated consequences for the health of the livestock, the viability of the business and the impact on their job security.

Good communication during the response also ensures suppliers and neighbouring communities are adequately informed of the level of risk the outbreak may be posing. Internal and external communications will contain different information but should follow the general structure of:

- **What do we currently know about the outbreak?**
- **Who needs what information?**
  Suppliers and neighbouring communities will not need to have the same level of detail as facility staff who are involved in managing the outbreak.
- **What information does each group need?**
  It is important to not create panic with the information provided and ensure that those receiving it can use the information to make informed decisions to reduce their risk.
- **Who has the information?**
  Which individuals will the communication manager/s need to be meeting with regularly to ensure they have the most current information available to disseminate?
- **How will the information be disseminated?**
  These methods will differ between the internal and external plans. External communications may be disseminated with radio, social media, posters or newsletters for larger facilities and maybe a few local meetings with neighbouring communities for smaller facilities. Internally, this may involve daily face-to-face briefings with staff, secure messaging services or bulletin boards.
- **When will information be provided?**
  Staff will benefit from a daily briefing (and bulletin for staff who can't be present at the briefing); a weekly community update with community leaders and concerned neighbours will be helpful to reduce concerns and ensure the support.

1.5 Response training and simulation exercises

Facilities should undertake regular training and simulation exercises covering outbreak responses and general biosecurity practices. These activities should be conducted at least annually, and more frequently if staff turnover is high.

Staff should be trained in multiple outbreak response roles, and exercises and biosecurity training should involve suppliers. This will ensure the general biosecurity awareness is high and will help suppliers contribute to good biosecurity practices throughout the supply chain. Simulation exercises can be classroom/desktop based with instructional videos and cover the two main scenarios presented. Each facility should explore disease outbreak scenarios for agents other than FMD and LSD (e.g. anthrax or haemorrhagic septicaemia) and consider how to get samples to a laboratory.

Biosecurity training activities should involve practical components to ensure participants are confident with standard practices, such as donning and doffing personal protective equipment (PPE). Other training activities could focus on decontamination procedures (cleaning and disinfection) of personnel, equipment and vehicles. The *Animal Health and Welfare Manual* provides information to support training on animal health and welfare during an FMD or LSD outbreak.

2 Detection

An outbreak may be defined at the facility level or at an area level, such as a neighbouring village. An outbreak may be declared if one animal in the facility or one animal in the neighbouring village is found to meet the case definition. Case definitions may be determined by the government in line with their control program. Below are examples of case definitions that could be used for FMD and LSD. If the government publishes their own, these should be followed to ensure facilities are legally compliant.

Example FMD case definition

One or more animals showing multiple clinical signs consistent with FMD (drooling/excessive salivation, lameness/reluctance to move, blisters in the mouth/on the teats/on the feet, depression/lethargy and fever) confirmed by laboratory testing and in an area where FMD is reasonably expected to be circulating.

Example LSD case definition

One or more animals showing multiple clinical signs consistent with LSD (depression/lethargy, nasal discharge, lumps on the head/neck extending along the body, lumps progressing to scabs/full thickness lesions) confirmed by laboratory testing and in an area where LSD is reasonably expected to be circulating.

2.1 Surveillance and diagnostic testing

Staff should be trained to identify unusual disease symptoms and initiate an emergency response before laboratory confirmation. Given the intensity of facilities, most animals will be viewed daily, which should be sufficient for detecting unusual disease symptoms in a timely manner.

Facility managers are responsible for remaining up to date with the national task forces responsible for FMD and LSD control and the relevant circulars which outline the current movement restrictions, and official diagnosis and reporting obligations.

Outbreak cases from a facility should initially be confirmed with diagnostic tests by an approved laboratory (Appendix B**Error! Reference source not found.**). Outbreaks in a neighbouring village will be more difficult to confirm. Each facility should have nominated staff members who have good relationships with neighbouring village leaders, and the local Veterinary Authority Official (*Pejabat Otorias Veterinar* (POV)), and communicate with them regularly to identify when local outbreaks are occurring.

As part of emergency preparedness, the facility should aim to identify a laboratory or agency that will accept samples for FMD and LSD testing and develop a basic collection, packaging and delivery protocol based on advice received by their laboratory or local agency (for example the local dinas veterinarian) (see Appendix C for an example). In the event of a suspected clinical case, laboratories should be contacted again before sending samples to confirm the correct samples are collected, stored, packaged and delivered appropriately. Most samples will require cold-chain storage from after collection until being received at the laboratory. If portable fridges are not available and transport is unlikely to take longer than 12 hours, samples can be packaged in an cooler box (*boks pendingin*) with reusable ice bricks as an alternative.

2.2 Determining the spread of the infection

During outbreaks in neighbouring villages, representatives from the facility should communicate with local village leaders and POVs to determine the spread and intensity of the outbreak. This information will guide the restrictions placed on people and vehicles entering the facility. For example, in the case of an FMD outbreak involving pigs, a facility may decide to enforce decontamination procedures on people and vehicles entering the site and restrict their access to animals within the facility.

When an FMD outbreak is detected in an intense facility, there is probably limited value in attempting to prevent its spread through the facility. Usually, by the time animals are showing clinical signs, the disease has already spread through the facility.

If facility pens are separated by long distances and biosecurity between different areas is very high, there may be value in mapping the affected and unaffected pens. An affected pen would be one with at least one animal showing clinical signs. This map can then be used to plan where increased biosecurity measures should be implemented. In the case of LSD, mapping affected and unaffected pens is probably of limited value given the role of biting insects, which are difficult to control in an outdoor environment.

Surveillance of the unaffected pens should be carried out daily to detect new cases and alter management practices as needed. Surveillance should start from the pens furthest away from the affected animals to reduce disease spread between pens. Tracing activities can be undertaken to attempt to determine the source or point of entry of the outbreak (for example, from neighbouring animals, or trucks travelling from known infected areas). Tracing will also determine whether the outbreak may have spread beyond the facility to neighbouring villages or other facilities.

The data collected in these activities should be stored in a safe location and be easily accessed. Storing the data electronically is ideal. However, hard copies (paper-based) are acceptable.

3 Response

3.1 Internal communications

During the control phase, staff involved in the response should receive regular updates. The information provided should be relevant to their role in the response and may include:

- pens affected (including any changes from the previous day)
- a general reminder of the importance of tending to the healthy animals first, decontaminating between groups and general biosecurity principles
- number of animals receiving supportive care (for those involved in day-to-day care)
- any changes to the supportive care regimen (for those involved in day-to-day care)
- reminder of criteria for euthanasia
- any incoming deliveries and requirements for this to happen safely (e.g. decontamination procedures on entry and exit)
- any additional challenges from previous day.

3.2 Quarantine and biosecurity

The goal of controlling an outbreak is to prevent the spread as quickly as possible to minimise the financial losses. The primary transmission pathways of TADs may differ, therefore so will control methods. If the disease causing the outbreak is an insect vector-borne disease (such as LSD) the vector management plan will need to be reviewed and remedial action implemented. Removing or reducing breeding areas should be prioritised as this will create more of an impact on the future adult populations. This may require the use of targeted chemicals to kill larvae and adults, as well as the application of repellent products to the animals to prevent biting and disease transmission. Non-chemical methods of insect control should also be implemented during this time. As discussed earlier, it will be difficult to control the spread of FMD and LSD within a facility once clinical signs appear.

3.2.1 Legal requirements

Note: The information below is current at the time of publication. The most up-to-date information should be consulted during any updates to the facility's emergency response plan.

Foot and mouth disease

Animals should not be accepted during outbreak events and animal movements between facilities must comply with the most current government Circular Letter concerning '*Pengendalian Lalu Lintas Hewan Rentan Penyakit Mulut Dan Kuku Dan Produk Hewan Rentan Penyakit Mulut Dan Kuku Berbasis Kewilayahan*'.

Any susceptible animals to be moved during an outbreak event must meet the criteria outlined in the Circular Letters issued by the FMD Task Unit. Current requirements set out in Circular Letter 6-2022 include:

- Animals must have received at least one (1) dose of an FMD vaccine, or come from a consignment that has a negative result from a pooled FMD-NSP ELISA or RT-PCR. The pooled

samples must include one (1) unvaccinated animal from each group, and they must have been sampled within the week of movement.

- Animals must be healthy and accompanied by an Animal Health Certificate (SKKH) and/or a veterinary letter (SV) issued prior to departure and contains the health history.
- Strict biosecurity practices are adhered to, in relation to transport, equipment, goods, personnel and animals, before departure, during transit, and on arrival at the destination.

Lumpy Skin Disease

At the time of publication of this manual, any animal showing signs of LSD should not be issued with an SKKH or SV, and neither the animal nor any of their products are permitted to be moved. Temporary health certifications are not allowed for animals in a known LSD outbreak area. Animal movements in areas without reported LSD outbreaks must be accompanied by an SKKH and an SV.

3.2.2 Scenario 1: outbreak in neighbouring area

The goal of quarantine and biosecurity measures will be to prevent the entry of the disease into the facility to minimise the potential financial loss that may be incurred. The general biosecurity measures implemented as standard practice (outlined in the *Biosecurity Manual*) should be reviewed and strengthened if needed.

Incoming animals should be physically separated from the existing animals and interacted with first or last depending on their origin. Australian cattle that have never been exposed to many diseases found in Indonesia should therefore be tended to first, or by personnel that do not interact with the other animals. Animals that have come from other destinations in Indonesia with unknown biosecurity status should be tended to last, or by personnel that do not interact with the other animals.

Biosecurity measures applying to visitors, staff and vehicles should be strengthened. This may include all visitors and personnel undergoing decontamination procedures on entry (e.g. showering on entry and being provided with clean laundered clothes and clean boots) and vehicles being decontaminated before entry (removal of all organic material, washed and disinfected). If manure or compost stockpiles are collected from the facility, alternative collection points should be organised to prevent unnecessary entry of visitors.

3.2.3 Scenario 2: outbreak within the facility

The goal of quarantine and biosecurity measures will be to minimise the financial loss incurred by controlling the outbreak as quickly as possible and preventing the spread and escape of the outbreak. The biosecurity measures implemented during this time should reflect these goals and focus on protecting the high value animals, such as those close to finishing or pregnant breeding animals. However, it will be difficult to control the spread of FMD and LSD within a facility once clinical signs appear.

High quality care (see the *Animal Health and Welfare Manual*) will be vital to minimise loss of livestock and overall financial impacts. Neither FMD or LSD have high mortality, and with care and time most animals will recover.

Depending on the disease causing the outbreak, facilities may decide to eradicate it from their facility by slaughtering affected animals, or they may decide to manage affected cattle by treating and providing supportive care.

It is the facility manager's responsibility to ensure that the approach taken is compliant with current GoI regulations; this includes any restrictions applied to animals that may need to be transported to an abattoir.

It is preferable that, when slaughter is required, it takes place on site. Transport to an external facility will increase the risk of spreading the disease beyond the facility and may be in violation of GoI outbreak regulations.

Unaffected cattle that are high value should be segregated and protected by strict biosecurity measures. Personnel responsible for these animals should not interact with any other animals in the facility and should be required to follow strict hygiene measures (ideally showering when arriving on site and wearing cleanly laundered clothes and boots that have not left the facility, and face masks). Affected animals should be managed by a dedicated group of staff with dedicated equipment for the duration of the outbreak, or tended to last, with personnel, equipment and vehicles thoroughly decontaminated after use.

Within the facility, movements of animals, personnel and vehicles should be restricted if practical to do so and if reduced spread within the facility is achievable. If personnel, vehicles, or equipment have been in contact with affected animals they should be decontaminated before going near unaffected animals.

3.3 Containment of infection

The objective of movement restrictions is to prevent and limit the movements of infected and susceptible animals to reduce further disease spread and potential financial impacts while an outbreak is being investigated. Movement restrictions should focus on preventing susceptible (unvaccinated) animals from interacting with infectious animals or contaminated fomites (Table 1). In an insect vector-borne disease outbreak, ongoing insect control must be maintained and improved. Insect vectors should be kept to a minimum to prevent ongoing outbreaks. Improving insect control after the onset of an outbreak may not affect the magnitude of the current outbreak but can reduce the overall duration.

3.3.1 Scenario 1: Outbreak in neighbouring village

There will be limited ability to control outbreaks in neighbouring areas, but facilities can implement measures that reduce the probability of disease entering the facility. Measures could include:

- monitoring and securing perimeter fencing
- implementing restrictions on visitors and staff based on risk assessments (see Appendix C in the *Biosecurity Manual*)
- carefully assessing visitors or staff who reside in the outbreak area before entry is permitted, and prohibiting access to animals where possible
- restricting vehicles to areas of the facility that are not housing animals unless they can be decontaminated in advance
- examining and decontaminating incoming vehicles before entry
- sourcing bedding and feed from outside outbreak areas where possible.

If animals must enter the facility during this period, they must be vaccinated before entry and transportation must comply with any current GoI directives.

If animals need to be transferred between facilities (e.g. breeders) they should have received an FMD and LSD vaccination in the last 4-6 months, and transportation should comply with current directives.

3.3.2 Scenario 2: Outbreak within the facility

Measures should focus on limiting the spread of the outbreak within the facility, minimising financial impact and preventing disease spread beyond the facility. It will be difficult to control the spread of FMD and LSD within a facility once clinical signs appear.

Movement restrictions could aim to protect animals who are of highest value if practical to do so or to protect animals that are already isolated naturally by the layout of the facility and unlikely to be already exposed. Animals that are less likely to be infected should be dealt with first.

Vehicles should be decontaminated before exiting the facility to ensure they do not take the disease into the community. Decontamination procedures should also be applied when moving between different parts of the facility if practical to do so and if it is likely that some isolated groups of animals are not already exposed. Perimeter fencing should be regularly checked and maintained to prevent village and wild animals from entering.

Table 1 Summary of facility-imposed movement restrictions recommended during each scenario

Restriction and mitigation activity	Scenario 1: Outbreak occurring in neighbouring area	Scenario 2: Outbreak occurring on site
Vehicle access restricted	Yes	Yes
Vehicle decontamination on entry	Yes	No
Vehicle decontamination on exit	No	Yes
Animal movements restricted	Yes	Yes, if practical to do so
Incoming animal movements stopped	Yes	Yes
Outgoing animal movements stopped	No, but safest route to next destination should be taken (direct, minimal stopping and no collecting other animals)*	Yes, unless required to go to an abattoir (most direct route, no stopping, no collecting other animals)*
Staff and visitor access restricted	Yes	Yes
Access within site restricted	Yes, if individual is from an outbreak-affected area	Yes, if practical to do so
Decontamination on entry	Yes	No
Decontamination on exit	No	Yes
Within facility animal movement restricted	No	Yes, if practical to do so

* Animal movements must comply with relevant GoI directives.
Note: recommendations may be amended based on the vaccination coverage and routine biosecurity measures implemented in each facility.

3.3.3 Management of animals to be slaughtered during an outbreak

Management of infected animals will depend on the goal of the outbreak response at the facility level (eradication vs treating and retaining) and the current GoI response goals. 0 provides a flowchart for deciding when emergency euthanasia should be performed based on health and welfare grounds. Providing the GoI directives allows this decision to remain up to a facility manager, financial factors should also be considered.

At the time of publication, Circular Letter 6-2022 states that non-clinical FMD-susceptible animals from farms that implement strict biosecurity and routine FMD virus detections can seek approval from the POV or other authorised veterinarian to send animals directly to slaughter.

The three basic slaughtering categories that animals will fall under during an outbreak are outlined in Table 2.

Table 2 Slaughtering categories for livestock during an outbreak

	On-farm emergency slaughter	Casualty slaughter	Euthanasia/emergency killing
Meat is safe for human consumption	✓	✓	✗
Can be 'safely transported'* to an abattoir	✗	✓	✗

* 'Safely transported' refers to ESCAS requirements as well as complying with any relevant GoI disease control directives

For animals that cannot be slaughtered for human consumption or pet meat, an appropriate onsite disposal method is required. This can be burial, burning or composting. Section 3.5 and the *Biosecurity Manual* have more information on identifying the most appropriate disposal method.

If clinically affected animals are permitted to be sent to slaughter:

- The transporter should take the most direct route, while avoiding populations of livestock.
- The driver must not stop in villages to collect other livestock.
- The animal must be slaughtered as soon as possible after arriving at the slaughtering point.

If non-clinical animals start to show clinical signs at the slaughtering facility, they should be slaughtered as soon as possible to prevent the outbreak spreading amongst animals being held for slaughter and prevent the progression of the disease, which could result in animals not being suitable for halal slaughter (e.g. down cattle). This is only relevant in facilities where animals are held for several days prior to slaughter.

Abattoirs that accept disease-affected cattle should restrict access. Anyone and any vehicle leaving the facility should undertake decontamination procedures upon exit. Pens containing affected cattle should be thoroughly cleaned and disinfected prior to the arrival of new animals. Consignments of animals should not be mixed if animals are to be held for longer than 2–3 days.

3.4 Vaccination

Vaccination can be a useful control tool in an outbreak response. However, depending on the disease it may have limited immediate value in an intense facility setting, such as a feedlot, as the animals may have already been exposed before they are vaccinated.

If an outbreak is occurring in the neighbouring areas, the vaccination status of animals within the facility should be confirmed. Animals that have not received the required number of vaccinations (e.g. booster vaccinations) should be identified. If the outbreak has occurred within the facility, at-risk animals should be identified promptly.

In an FMD outbreak, at-risk animals are those who have not received their booster vaccination or those who received their booster vaccination more than four months ago and are not showing clinical signs. Recovered animals should not be vaccinated unless there is evidence of other serotypes circulating.

Cattle showing clinical signs of FMD or LSD should NOT be vaccinated.

Only healthy animals that have been and can be effectively isolated from clinical animals (and biting insects in the case of LSD) should be vaccinated. Animals showing clinical signs that are not vaccinated should be managed according to the facility's control strategies and the GoI response plan.

Individuals in charge of vaccinating animals should be trained to vaccinate in a biosecure manner. The *Animal Health and Welfare Manual* outlines the appropriate vaccination procedures to prevent iatrogenic infection of cattle. New needles and syringes should be used per animal. If only multi-use needles are available, they should be disinfected between animals.

3.5 Destruction and disposal

If animals are slaughtered on site the most appropriate euthanasia method should be chosen, considering user safety, animal welfare and reducing environmental contamination from bodily fluids. Some general considerations for deciding the most appropriate euthanasia method are:

- breed/size/sex
- number of animals (individuals vs large number)
- temperament (tame/well-handled vs skittish)
- type of facilities available – race and crush, ability to move them afterwards, other work health and safety considerations
- firearm safety – proximity of people and infrastructure
- efficiency and acceptability of the method
- practicality of the method (experienced operator availability and access to equipment)
- training requirements
- overall stress to the animal
- future use of the carcass including potential risk to consumers and scavenging animals.

Animals slaughtered on site, but not entering the food chain, should be disposed of as soon as possible by burial, burning or composting. Table 3 lists considerations for each method with more information available in Appendix B in the *Biosecurity Manual*. Animals should be disposed of in a way that prevents scavenger access and does not pose an ongoing disease or contamination threat to humans, animals or the environment while the carcasses are decomposing.

Table 3 Factors to consider when selecting most suitable disposal site and method for carcasses

Method	Considerations
Burying	Number and size of cattle Available land area Soil type and permeability – leachate management Proximity to surrounding premises and villages Site accessibility for vehicles and personnel Adequate staff and resources for digging Staff and resource costs Surrounding water – water table, surface water, water catchments – risk of contamination Scavenging risks and potential for further disease agent spread and public health risks associated with decomposing carcasses
Burning/incinerating	Number and size of cattle Site accessibility for vehicles and personnel Pollution impacting the environment and surrounding villages Visibility issues impacting road safety Access to and cost of adequate fire fuel Adequate staff and resources for monitoring and maintaining fuel at burning pyres Adequate land area Incomplete burning (inadequate temperature or time) or poorly monitored burning leading to inadequate disease agent destruction Access to incinerators and trained staff to operate Requirement for permits Weather/climate impacts (e.g. monsoonal rains or hot, dry weather)
Composting	Number and size of cattle Appropriate selection of composting site Soil permeability and water table – risk of contamination Adequate personnel to maintain and monitor composting piles Proximity to premises – pollution and public health risks Ability to monitor temperatures

3.6 Cleaning and disinfection

Decontamination, as referred to throughout this manual, is the combination of physical processes (removal of organic material) and chemical processes (use of an appropriate disinfection) to remove and kill pathogenic organisms. Items need to be thoroughly cleaned to remove any organic material before a disinfectant can be applied.

Disinfectants come with a correct concentration and contact time. See Table 4 and Table 5 for a list of recommended disinfectants and contact times for FMD and LSD.

Decontamination processes should be applied to any location, person, equipment or vehicle that has potentially encountered infectious animals or materials. Records should be kept of animal locations and

movements, such as the map of pens. These should be updated daily, to identify when pens or equipment require decontamination.

During a facility outbreak, or when the risk of an outbreak is increased, equipment and vehicles should be decontaminated after use. This may involve decontaminating multiple times a day, or at a minimum once daily. Records should be kept of when equipment was decontaminated, including what disinfectant was used. To reduce the risk of contamination, equipment should be stored safely between uses.

Table 4 Recommended disinfectants for FMD decontamination

Recommended disinfectant	Application method	Rate	CAUTION
Citric acid – anhydrous powder	Non-porous surfaces (e.g. metals) apply solution for 15 minutes	30 g per litre water	Product is corrosive – wear protective clothing and avoid contact with eyes and skin
	Porous surfaces (e.g. wood) apply for 30 minutes		
Sodium hydroxide	Clothes and footwear and small equipment – soak for at least 10 minutes	ALWAYS DILUTE IN WATER – 50 mL per litre water	Wear protective/water resistant clothing, gloves and safety glasses
	Other surfaces – apply 1–1.5 L solution per m^2 and soak for at least 10 minutes. Do NOT use a high-pressure hose/spray		
Sodium carbonate – washing soda crystals	Apply solution for 30 minutes	100 g product per litre water	Mildly caustic for eyes and skin
Sodium carbonate – anhydrous powder	Apply solution for 20 minutes	40 g product per litre water	
Sodium hypochlorite (bleach)	Clothes/footwear and small equipment – soak for 15–30 mins	250 mL product per 1 litre water	Corrosive to metals and toxic for skin and eyes – wear protective clothing, masks and gloves
	Surfaces: apply 1–1.5 L/m^2 and soak for 15 minutes on non-porous surfaces and 30 minutes on porous surfaces. Do NOT use high-pressure sprays		
Virkon Powder	Clothes/small items and equipment: soak for at least 10 minutes	20 g product per litre water	Mildly corrosive to many metals
	Surfaces: 1–1.5 L/m^2 and soak for at least 10 minutes – do NOT use high-pressure sprays		
Acetic acid (vinegar)	Apply to surfaces for 10 minutes	50 mL glacial acetic acid per 1 litre water, mixed thoroughly *Household vinegar is the required 4% mixture*	Not effective against other pathogens

Table 5 Recommended disinfectants for LSD decontamination

Recommended disinfectant	Application method	Rate	CAUTION
Sodium hypochlorite (bleach)	Clothes/footwear and small equipment – soak for 15–30 mins	250 mL product per 1 litre water	Corrosive to metals and toxic for skin and eyes – wear protective clothing, masks and gloves
	Surfaces: apply 1–1.5 L/m^2 and soak for 15 minutes on non-porous surfaces and 30 minutes on porous surfaces. Do NOT use high-pressure sprays		
Virkon Powder	Clothes/small items and equipment: soak for at least 10 minutes Surfaces: 1–1.5 L/m^2 and soak for at least 10 minutes – do NOT use high-pressure sprays	20 g product per litre water	Mildly corrosive to many metals
Sodium hydroxide	Clothes and footwear and small equipment – soak for at least 10 minutes	ALWAYS DILUTE IN WATER – 50 mL per litre water	Wear protective/water resistant clothing, gloves and safety glasses
	Other surfaces – apply 1–1.5 L solution per m^2 and soak for at least 10 minutes. Do NOT use a high-pressure hose/spray		
Glutaraldehyde	10–30 minutes	20 g product per litre water	
Iodophors (e.g. iodine)	10–30 minutes	Dilute according to the manufacturer's instructions	Can cause photosensitivity in animals
Phenolic disinfectants (e.g. Dettol)	10 minutes	Dilute according to the manufacturer's instructions	

4 Recovery

Once an outbreak has stopped (no new cases have been detected for 14 days), and before receiving new cattle, the facility should ensure that the remaining cattle are sufficiently protected through biosecurity measures and fully decontaminate any areas that will receive new cattle.

Vaccination of animals immediately following exposure is unlikely to be effective so the vaccination status of all animals should be confirmed four months after the conclusion of the outbreak and boosters administered to any animals that are not up to date with their vaccination, in line with manufacturers' recommendations. Any animal that is to be kept long term should be vaccinated for FMD every 4–6 months if there is an ongoing threat of FMD outbreaks.

A review of the outbreak response should involve an assessment of the current biosecurity measures and, where weaknesses are identified, efforts should be made to remediate these. This may involve an auditing process, which can be conducted by facility personnel. Available records, cleaning, hospital and general decontamination procedures should be reviewed. Staff should also be observed in their day-to-day practices to identify any poor hygiene habits that may contribute to an outbreak incursion and spread.

Facilities should develop a specific plan for their circumstances for outbreak recovery which considers:

- if market access issues are likely and how market access will be recovered
- if infrastructure or high-value animals will need to be replaced and where these will be sourced
- how staff will be compensated for additional workloads taken on during a response
- how the resolution of the outbreak will be communicated to internal and external stakeholders.

5 Other information

5.1 Financing

Facilities should develop a financial plan for supporting emergency preparedness. The financial plan should address the following:

- What funds are available to support emergency preparedness?
- What funds are available to support an emergency response?
- Who will pay for vaccinations and other equipment?
- Will there be any scenarios where compensation may be required (e.g spread of infection from a facility to surrounding villages) and, if so, who will be funding it and what values will be allocated to different livestock?

5.2 Animal welfare

It is important to consider animal welfare throughout the course of an emergency response. Please refer to the *Animal Health and Welfare Manual* for specific details.

6 Contacts and resources

- National Biosecurity Manual for Beef Cattle Feedlots (Australia) https://www.farmbiosecurity.com.au/wp-content/uploads/2019/03/National-Biosecurity-Manual-for-Beef-Cattle-Feedlots1.pdf
- Building an Emergency Response Plan for Livestock Producers https://extension.psu.edu/building-an-emergency-response-plan-for-livestock-producers

7 References

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FAO, 2011. Good emergency management practice: the essentials a guide to preparing for animal health emergencies, FAO animal production and health. FAO, Rome.

McDermott, P., McKevitt, A., Hanlon, A., 2022. On Farm Emergency Slaughter and Emergency Killing of Acutely Injured Cattle: Analysis of Guidelines From Five Jurisdictions. Front. Vet. Sci 8.

MINTRAC, 2019. Emergency animal disease response plan for domestic abattoirs and knackeries: Training manual. National Meat Industry Training Advisory Council, Caringbah, NSW.

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Appendix A Emergency animal disease response plan

Emergency response plan

This document details the actions and responsibilities that are to be undertaken if an emergency disease outbreak is suspected on-farm.

Enterprise information

	Details
Premises Address	
Main business activity	Feedlot/slaughtering/breeding/quarantining
Species	Cattle/buffalo/pigs/goats/sheep
Number of staff	
Number of livestock held	Total: (per pen:)
Average number of new animals received	_____weekly/fortnightly/monthly
Main source of stock	Australian imports/locally sourced/both
Is the site able to be secured?	Yes/no
Number of visitors daily (average)	
Frequency of feed delivery	Daily/___x a week/weekly/fortnightly
Frequency of bedding delivery	Daily/___x a week/weekly/fortnightly
Frequency of manure collection	Daily/___x a week/weekly/fortnightly

Important contact details

	Name	Contact Number
Property name		
Manager – facility		
Manager – overseeing company		
Person responsible for the Emergency Response Plan		
Consultant veterinarian		
District animal health official		

Site map and diagrams

Include:

- entry/exit points
- perimeter fence
- pens
- disposal pits
- effluent ponds
- major roads
- neighbouring villages.

Action plan

Develop an action plan by allocating responsibilities to relevant roles/personnel.

Action	Responsibility	Completed
Contact the relevant people (facility owner, GAPUSPINDO representative, local animal health authorities)		Yes / No / NA
Take photos/videos of affected animals		Yes / No / NA
Alert staff		Yes / No / NA
Follow all instructions as directed by the relevant authority		Yes / No / NA
Do not dispatch any livestock from the farm until authorised by the relevant authority		Yes / No / NA
Avoid unnecessary contact with animals		Yes / No / NA
Ensure suspect livestock are isolated within the facility		Yes / No / NA
Ensure animals penned with the suspect livestock are segregated from other livestock		Yes / No / NA
Ensure movement of all other livestock within the facility, and surrounds, is restricted		Yes / No / NA
Ensure all livestock have feed and water		Yes / No / NA
Delay or halt the shipment of livestock onto the facility		Yes / No / NA
Delay or halt the delivery of all non-essential commodities		Yes / No / NA
Secure the farm perimeter, limiting access to the farm and ensuring all vehicles and visitors only enter the facility under controlled conditions		Yes / No / NA
Remove unnecessary personnel and machinery from livestock feeding and holding areas		Yes / No / NA
Ensure that any personnel, equipment or machinery do not leave the facility until authorised by the relevant authority		Yes / No / NA

Compile a list of all livestock (number of head, identification and location), personnel and machinery movements over the past seven days. Prepare a site plan that details current allocations of livestock		Yes / No / NA
Ensure all staff are made aware of the actions being taken and their individual responsibilities towards the action plan		Yes / No / NA
Ensure that customers are advised if they are immediately affected by the delay in the supply of livestock		Yes / No / NA
If an emergency disease is identified, the farm will follow the requirements of the Emergency Response Plan, and directions from the relevant authority		Yes / No / NA

Appendix B Government laboratories approved to test FMD samples

Laboratory name	Location	Contact number	Address
Pusat Veteriner Farma	East Java	+62318291125	70, Jl. Ahmad Yani No.68, RW.06, Ketintang, Kec. Gayungan, Kota SBY, Jawa Timur 60231, Indonesia
Balai Besar Veteriner Maros	South Sulawesi	+62411371105	Jl. DR. Ratulangi, Allepolea, Kec. Lau, Kabupaten Maros, Sulawesi Selatan 90514, Indonesia
Balai Besar Veteriner Wates	DI. Yogyakarta	+62274773168	TP 18 Jalan Yogyakarta - Wates No.Km. 27, Gn. Gempal, Giri Peni, Kec. Wates, Kabupaten Kulon Progo, Daerah Istimewa Yogyakarta 55602, Indonesia
Balai Besar Veteriner Denpasar	Bali	+62361720415	Jl. Raya Sesetan No.266, Sesetan, Denpasar Selatan, Kota Denpasar, Bali 80223, Indonesia
Balai Veteriner Lampung	Lampung	+62721701851	Jl. Untung Suropati No.2, Labuhan Ratu, Kec. Kedaton, Kota Bandar Lampung, Lampung 35142, Indonesia
Balai Veteriner Bukittinggi	West Sumatera	+6275228300	PFCJ+FGF, Jl. Raya Bukittinggi - Payakumbuh, Tabek Panjang, Kec. Baso, Kabupaten Agam, Sumatera Barat 26192, Indonesia
Balai Veteriner Medan	North Sumatera	+62618452253	Jl. Gatot Subroto No.255-A, Lalang, Kec. Medan Sunggal, Kota Medan, Sumatera Utara 20123, Indonesia
Balai Veteriner Subang	West Java	+622607423134	Jl. Terusan Garuda , Blok Werasari, Dangdeur, Kec. Subang, Kabupaten Subang, Jawa Barat 41212, Indonesia
Balai Veteriner Banjarbaru	South Kalimantan	+625114772249	Jl. Ambulung No.24, Loktabat Sel., Kec. Landasan Ulin, Kota Banjar Baru, Kalimantan Selatan 70712, Indonesia
Loka Veteriner Jayapura	Papua	Not available	7QMR+JCP, Unnamed Road, West Koya, Muara Tami, Jayapura City, Papua 99351, Indonesia

Appendix C Example of sample collection, storage and packaging checklist

A stocktake of equipment and supplies required for an outbreak response should be conducted at each training/simulation activity to ensure an adequate number of 'in-date' supplies are available. An example of an inventory list could include:

- sampling equipment (swabs, blood tubes, needles, syringes, needle holders)
- disinfectants (virkon, citric acid, bleach or vinegar)
- PPE (face masks, gloves, disposable coveralls, boots and boot covers, tape, protective eyewear)
- cleaning and biosecurity equipment (hoses, spray bottles, scrubbing brushes, garbage bags, paper towels, buckets, footbaths, boot brushes)

FMD	Suggested container	Storage
Blood – clotted	Plain vacutainer (red top) tube	Fridge
Blood – EDTA	EDTA vacutainer (purple top) or similar	Fridge
Epithelium (skin from blister)	Place in a container containing viral transport medium	Fridge
Vesicular fluid (fluid from blisters)	5 mL plain STERILE container	Fridge
Swab (saliva, nose or tonsils)	Place swab in a 5 mL plain STERILE container	Fridge
LSD		
Blood – clotted	Plain vacutainer (red top) tube	Fridge
Blood – EDTA	EDTA vacutainer (purple top) or similar	Fridge
Skin biopsy – fresh	5 mL plain STERILE container	Fridge
Skin biopsy – formalin	5 mL plain STERILE container with formalin	Room temperature

Equipment checklist	Check box
Instruments	
Rat tooth forceps	
Fine needle nosed forceps or needle drivers	
Small pair of curved surgical scissors	
Scalpel handle and blades	
Punch biopsy	

Needles and syringes	
½–¾ inch hypodermic needles (21-23G)	
1 ½ inch needles (18G)	
2-3, 5 and 10 mL syringes	
Sharps container	
Sample containers and associated equipment	
Vacutainers	
5 mL and 10 mL plain (red top) tubes (2 per animal to be sampled)	
5 mL and 10 mL EDTA (purple top) tubes (2 per animal to be sampled)	
Vacutainer holders	
Small (5 mL) plain screw-top vials	
Sterile saline (0.9% NaCl)	
Small (5–10 mL) screw-top containers filled with FMD viral transport media	
Small (5–10 mL) screw-top containers filled with formalin	
Ziploc bags – multiple sizes	
Gloves	

Packaging checklist

Item	Check box
Esky/cooler/ice box	
Frozen ice bricks – preferably two	
Newspaper or bubble wrap	
Ziploc bags – multiple sizes (place all the sample containers in them – keep formalin sample containers separate)	
Packaging tape	
Sample request form (place in separate Ziploc bag)	

Packing an esky/cooler/ice box:

1. Place an ice brick at the bottom, cover with scrunched-up newspaper or a layer of bubble wrap.
2. Make sure any formalin containers are taped up and in a separate Ziploc bag.
3. Make sure containers with viral transport medium are taped up and in a separate Ziploc bag.
4. Place all specimen containers (in Ziploc bags) in the esky. Blood, formalin and virus transport medium containers should be standing upright.
5. Pack the esky with scrunched-up newspaper. The aim is to have enough newspaper in between containers so that they will not move around during transport.
6. Place a second ice brick on top.
7. Close lid and tape up.

Appendix D Euthanasia assessment flowchart