

AUSTRALIAN VETERINARY EMERGENCY PLAN

AUSVETPLAN

Response strategy

Sheep and goat pox

Version 5.0

AUSVETPLAN is 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.

National Biosecurity Committee

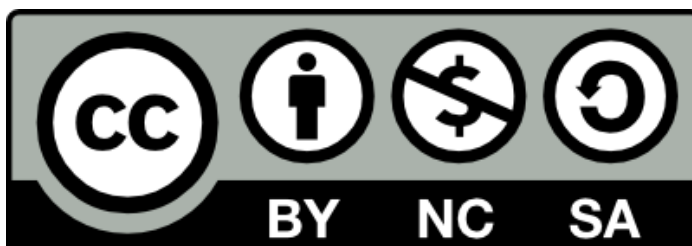
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DISEASE WATCH HOTLINE: 1800 675 888

The Disease Watch Hotline is a toll-free telephone number that connects callers to the relevant state or territory officer to report concerns about any potential emergency disease situation. Anyone suspecting an emergency disease outbreak should use this number to get immediate advice and assistance.

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1 Introduction

1.1 This manual

1.1.1 Purpose

As part of AUSVETPLAN (the Australian Veterinary Emergency Plan), this response strategy contains the nationally agreed approach for the response to an incident – or suspected incident – of sheep and goat pox in Australia. It has been developed to guide decision making to ensure that a fast, efficient and effective response can be implemented consistently across Australia with minimal delay.

1.1.2 Scope

This response strategy covers SGP caused by sheep pox virus and goat pox virus.

This response strategy provides information about:

- the disease (Section 2)
- the implications for Australia, including potential pathways of introduction, social, environmental, human health and economic effects, and the critical factors for a response to the disease (Section 3)
- the agreed policy and guidelines for agencies and organisations involved in a response to an outbreak (Section 4)
- declared areas and premises classifications (Section 5)
- biosecurity controls, including quarantine and movement controls (Section 6)
- response surveillance and establishing proof of freedom (Section 7).

The key features of SGP are described in the **Sheep and goat pox Fact Sheet** (Appendix 1).

1.1.3 Development

The strategies in this document for the diagnosis and management of an outbreak of SGP are based on risk assessment. They are informed by the recommendations in the World Organisation for Animal Health (OIE) *Terrestrial animal health code* (14.9) and the OIE *Manual of diagnostic tests and vaccines for terrestrial animals* (3.7.12). The strategies and policy guidelines are for emergency situations and are not applicable to policies for imported animals or animal products.

This manual has been produced in accordance with the procedures described in the **AUSVETPLAN Overview**, and in consultation with Australian national, state and territory governments; the relevant livestock industries; nongovernment agencies; and public health authorities, where relevant.

In this manual, text placed in square brackets [xxx] indicates that that aspect of the manual remains unresolved or is under development; such text is not part of the official manual. The issues will be worked on by experts and relevant text included at a future date.

1.2 Other documentation

This response strategy should be read and implemented in conjunction with:

- other AUSVETPLAN documents, including the operational, enterprise and management manuals; and any relevant guidance and resource documents. The complete series of manuals is available on the Animal Health Australia website¹
- relevant nationally agreed standard operating procedures (NASOPs).² These procedures complement AUSVETPLAN and describe in detail specific actions undertaken during a response to an incident. NASOPs have been developed for use by jurisdictions during responses to emergency animal disease (EAD) incidents and emergencies
- relevant jurisdictional or industry policies, response plans, standard operating procedures and work instructions
- relevant Commonwealth and jurisdictional legislation and legal agreements (such as the Emergency Animal Disease Response Agreement – EADRA³), where applicable.

1.3 Training resources

EAD preparedness and response arrangements in Australia

The EAD Foundation Online course⁴ provides livestock producers, veterinarians, veterinary students, government personnel and emergency workers with foundation knowledge for further training in EAD preparedness and response in Australia.

¹ www.animalhealthaustralia.com.au/our-publications/ausvetplan-manuals-and-documents

² www.animalhealthaustralia.com.au/what-we-do/emergency-animal-disease/nationally-agreed-standard-operating-procedures

³ <https://animalhealthaustralia.com.au/what-we-do/emergency-animal-disease/ead-response-agreement>

⁴ www.animalhealthaustralia.com.au/emergency-animal-disease-training-program

2 Nature of the disease

Sheep pox and goat pox (SGP) are highly contagious diseases of sheep and goats characterised by papules and pustules (rarely vesicles) on exposed body surfaces, and by fever, lacrimation, salivation and nasal discharge. Typical pox lesions appear on the skin and on the respiratory and gastrointestinal mucosa. There is high mortality in susceptible populations.

Currently, Australia is free from SGP. However, it is likely that any SGP virus that enters Australia would be infective for both sheep and goats. An uncontrolled outbreak of SGP in Australia would cause serious stock losses in the sheep and goat industries, and an epidemic would have the potential to cause continuing economic loss.

2.1 Aetiology

The sheep pox, goat pox and lumpy skin disease viruses belong to the genus *Capripoxvirus* of the family *Poxviridae*. Genome sequencing has shown that the *Capripoxvirus* genus can be delineated into three distinct host 'clusters' — lumpy skin disease virus (LSDV), sheep pox virus (SPV) and goat pox virus (GPV) — despite the three sharing 97% nucleotide identity (Tulman et al 2002, Hosamani et al 2004). The geographic distribution of lumpy skin disease (LSD) differs from that of SGP.

The members of the genus *Capripoxvirus* are morphologically and serologically indistinguishable from each other. However, as all strains of *Capripoxvirus* of ovine, caprine or bovine origin examined so far share a major neutralising site, animals that have recovered from infection with one strain are resistant to infection with any other strain (Capstick 1961).

Field observations, such as Sheikh-Ali et al (2004) and Abu-Elzein et al (2003), support the long-held view that SPV and GPV are generally host specific, but numerous strains differ in host predilection and virulence. Instances of infection with the same strain in mixed sheep and goat flocks simultaneously have been recorded, although the strain will usually be more virulent in one of the two species (Abu-Elzein et al 2003).

No seroconversion has been demonstrated from infected sheep or goats to in-contact cattle, or from infected cattle to in-contact sheep or goats, although a Kenyan LSD outbreak may have been derived from natural infections of cattle with the endemic SPV (Davies 1991c). It appears that genes necessary for infection of bovine hosts are effectively absent from SPV and GPV genomes (Tulman et al 2002).

2.2 Susceptible species

Merino and European breeds of sheep are more susceptible to sheep pox than other breeds. Goat breeds also vary in susceptibility to goat pox, with breeds exotic to the source area more severely affected (OIE 2004).

The potential role of cattle in the epidemiology of these diseases under Australian conditions would be determined during an outbreak by field observations. Experience overseas is that cattle are unlikely to be significant in the course of an SGP outbreak.

2.2.1 Zoonotic potential

Humans are generally regarded as being nonsusceptible to SGP. In isolated incidents, mild lesions of small red papules followed by vesicles on the hands and arms have been reported in humans working with capripoxviruses in Sweden (von Bakos and Brag 1957) and India (Sawhney et al 1972). No generalised infection occurred.

2.3 World distribution

For the latest information on the distribution of SGP, refer to the World Organisation for Animal Health (OIE) World Animal Health Information Database.⁵

2.3.1 Distribution outside Australia

SGP occurs in Africa, mainly north of the equator; the Middle East; Central and Southeast Asia, including southern Russia and western China; and the Indian subcontinent as far east as Myanmar (Burma). The geographical distribution of sheep pox has been relatively stable.

2.3.2 Occurrence in Australia

SGP has never been recorded in Australia.

2.4 Epidemiology

2.4.1 Incubation period

The incubation period for SGP is usually 12 days but may vary from 4 to 14 days.

OIE incubation period

For the purposes of the OIE *Terrestrial Animal Health Code*, the incubation period for SGP is 21 days.

2.4.2 Persistence of agent and modes of transmission

General properties

Capripoxviruses are large, lipid-containing viruses that are susceptible to a range of disinfectants, including detergents. They are susceptible to lipid solvents and acids. Therefore, acids combined with detergents are the disinfectants of choice, particularly for areas where organic matter is prevalent. Hypochlorites and aldehydes are useful for disinfecting clean surfaces, and citric acid, alcohols and

⁵ www.oie.int/animal-health-in-the-world/the-world-animal-health-information-system/the-oie-data-system

iodophors are suitable for personal disinfection. The viruses are inactivated after heating for 1 hour at 55°C.

Environment (including windborne spread)

Capripoxviruses are very stable in the environment and can remain viable for long periods, on or off the animal host. They are susceptible to sunlight, but may persist for up to 6 months in a cool, dark environment, such as in shaded animal pens (Davies 1981).

Live animals

The SGP viruses may remain viable for at least 3 months after recovery in the exudate from skin lesions that has accumulated in wool and hair (Davies 1981). No carrier state has been demonstrated in recovered animals.

Most transmission is by direct contact via the respiratory system through short- distance aerosol transmission from nasal secretions and saliva when sheep and goats are congregated. Affected sheep and goats shed the virus at every stage of the disease. Virus is present in secretions and excretions of infected animals, including milk, and in scabs from skin lesions, but these are not considered to be important sources of transmission during an outbreak (Kitching and Taylor 1985).

Movement of infected animals is the main means by which SGP is spread to new premises or new areas.

Host/species susceptibility should be determined as soon as SGP is detected in Australia.

Animal products

Meat, meat products and casings, including use as animal feed

There is no evidence of virus persisting in the meat of infected animals (Davies 1991a, Williams 2003).

Milk and dairy products, including use as animal feed

The virus may be isolated from the milk during the early stages of the fever (Davies 1991a, Williams 2003).

Animal byproducts

Hides, skin, wool and other fibres

The SGP viruses are persistent and remain viable for at least 3 months in dry scabs on the fleece, skins and hair from infected animals.

Semen and embryos from live susceptible animals

Capripoxvirus is listed by Hare (1985) as one that is known to be excreted in semen and could be transmitted by semen. No information is available on the transmission of the virus in embryos. It should be assumed that the virus would be found in semen and embryos during the viraemic period.

The closely related LSDV of cattle was reported by Weiss (Coetzer 2004) as being shed in the semen of clinically affected bulls for up to 22 days and for at least 12 days in subclinically affected bulls. The extremely resistant nature of the virus to the environment would make venereal transmission very likely (NRC 1993).

Equipment, including personal items

The viruses are readily transported on fomites such as clothing and equipment, and transmission on fomites is known to occur (Kitching and Taylor 1985).

Arthropod vectors

Insects may act as mechanical vectors of SPV and GPV over short distances. The stable fly (*Stomoxys calcitrans*) can transmit the viruses to a susceptible goat 24 hours after it is itself contaminated (Kitching and Mellor 1986). *Musca* species flies have also been implicated in mechanically transmitting the virus after feeding on exudate from lesions (Kitching and Mellor 1986). There is no evidence of the virus persisting longer than 4 days in insects.

2.4.3 Factors influencing transmission

SPV and GPV are not highly infectious, and intimate contact assists transmission. This can occur during night herding or stabling in endemic areas (Davies 1981). The movement of infected animals is the main means of spread over a large area. In endemic areas, spread occurs mainly in summer.

2.5 Diagnostic criteria

SGP should be considered when an acute disease with fever is accompanied by poxlike skin lesions, and when there is a high mortality rate in sheep or goats. However, some strains of low virulence may produce only mild clinical signs (Davies 1976).

2.5.1 Clinical signs

Because sheep and goats in Australia are naive to capripoxviruses, the acute form of SGP would be expected. This prediction is based on field reports of high mortality in unprotected imported breeds of sheep and goats or indigenous breeds that have not had regular exposure to local capripoxvirus strains (OIE 2004).

A sudden onset of fever develops, which peaks at 40–42°C, with discharges from the nose and eyes and excessive salivation. The animal loses its appetite and is reluctant to move. Pox lesions erupt in 1–2 days and extend over all the skin, but are most obvious where wool or hair is shortest, such as on the face, ears, axillae, groin and perineum and under the tail. Lesions may be seen on the mucous membranes of the mouth, nostrils and vulva. Acute respiratory distress occurs if lung lesions are present.

The lesions follow the classical pox cycle, over about 2 weeks, of skin erythema (redness), papule (0.5–1.5 cm diameter), vesicle (rare), pustule with exudation, encrustation and scab formation. Exudate from ruptured pustules can cause the fleece to matt. Healing of skin lesions is slow, taking 5–6 weeks.

Deaths may occur at any stage of the disease, with peak mortality occurring about 2 weeks after the appearance of lesions. Mortality may reach 50% in adults and approach 100% in young animals.

A peracute form of SGP is also seen in initial outbreaks in an area. This form is characterised by fever, generalised haemorrhages, widespread cutaneous ulceration and death.

A nodular form of SGP, called stonepox, can occur. Stonepox resembles LSD (of cattle), with skin lesions 0.5–3 cm in diameter; these are hyperaemic (engorged with blood), thickened and raised above the surrounding skin.

2.5.2 Pathology

Gross lesions

At postmortem examination, in addition to skin lesions, haemorrhagic ulcerations may be found in the linings of the trachea and gastrointestinal tract. Lung lesions consisting of small, pale grey nodules may be found.

Microscopic lesions

Histologically, pox lesions have extensive inflammatory, necrotic and proliferative changes. The presence of Borrel cells or 'cellules claveleuses' (epithelioid cells that infiltrate the lesions), and intracytoplasmic inclusion bodies similar to the inclusions found with all poxviruses, are characteristic of SGP. Electron microscopy reveals virus particles indistinguishable from the orthopoxviruses, and these can be readily differentiated from the virus particles of contagious pustular dermatitis.

2.5.3 Differential diagnosis

The following diseases should be considered in a differential diagnosis of SGP:

- contagious pustular dermatitis (scabby mouth)
- bluetongue
- mycotic dermatitis
- ectoparasites
- photosensitisation.

2.5.4 Laboratory tests

Samples required

Histopathology and virus detection are the essential laboratory tests. Virus detection will be possible within the first week of development of clinical signs, before the development of neutralising antibodies. Fresh tissue samples for electron microscopy, virus isolation and viral antigen detection should be taken, including whole blood in EDTA (to detect viraemia), skin lesion biopsies, and scrapings from skin lesions and lesions in the respiratory and gastrointestinal tracts during postmortem.

Transport of specimens

Specimens should be submitted in accordance with agreed state or territory protocols. Specimens should initially be forwarded to the state or territory laboratory for appropriate analysis, and assessment of whether further analysis will be required by the CSIRO Australian Centre for Disease Preparedness (CSIRO-ACDP), Geelong.

If the state or territory laboratory deems it necessary, duplicate samples of the specimens should be forwarded to CSIRO-ACDP for emergency disease testing, after the necessary clearance has been obtained from the chief veterinary officer (CVO) of the state or territory of the suspect case, and after the CVOs of Victoria and Australia have been informed about the case and the transport of the specimens to Geelong (for the first case). Sample packaging and consignment for delivery to CSIRO-ACDP should be coordinated by the relevant state or territory laboratory.

For further information, see the **AUSVETPLAN management manual *Laboratory preparedness***.

2.5.5 Laboratory diagnosis

CSIRO-ACDP tests

A rapid, tentative diagnosis of SGP can be made by electron microscopy and histopathology of tissue samples (see Section 2.5.2). Confirmation of the diagnosis is obtained by specifically identifying the virus in tissues from early lesions or in tissue culture using virus-specific tests, as well as by detecting viral DNA (deoxyribonucleic acid) in tissue samples by TaqMan® or conventional polymerase chain reaction (PCR). The diagnostic tests currently available at ACDP are shown in Table 2.1; however, ACDP cannot prepare positive controls for virus isolation in cell culture.

Table 2.1 Laboratory tests currently available at CSIRO-ACDP for the diagnosis of SGP

Test	Specimen required	Test detects	Time taken to obtain result
Electron microscopy (negative contrast)	Tissue samples	Virus particles	1–2 hours
Real-time (Taqman®) PCR	Tissue samples	Viral DNA	1 day
Histopathology	Formalin-fixed tissue	Characteristic pox lesions	2 days
Conventional PCR and gene sequencing	Tissue samples	Viral DNA	2 days
Virus isolation in cell culture	Tissue samples	Virus	4–14 days

Source: Information provided by the then CSIRO-AAHL, 2006 (refer to CSIRO-ACDP for most up-to-date information).

Other tests

There is no good serological test for detecting SGP. Indirect immunofluorescence, serum neutralisation and immunodiffusion tests have been used for detecting antibody in sera; however, each of these tests has drawbacks.

Indirect immunofluorescence using immune sheep or goat sera is difficult to interpret and is subject to nonspecific reactions (OIE 2004).

Serum neutralisation is the test of choice for serosurveillance, but has low sensitivity due to the predominantly cell-mediated nature of immunity to capripoxvirus. Thus, a negative result, particularly after vaccination, does not indicate that the animal is not infected or protected (OIE 2004). The test is currently unavailable in Australia.

An enzyme-linked immunosorbent assay (ELISA) based on a specific capripoxvirus antigen (P32) has been developed (OIE 2004). The test is unavailable in Australia and is not currently used elsewhere.

2.6 Resistance and immunity

Susceptible sheep and goats of all ages can be infected with SPV and GPV and develop serious clinical disease. The introduction of SGP into a totally susceptible population (in a country previously free from the disease) would probably result in high mortalities and rapid spread of the disease (OIE 2004).

Different breeds of sheep and goats show varying degrees of natural resistance to infection with SPV and GPV. Merino and European sheep breeds present in Australia are very susceptible to sheep pox.

Maternal immunity provides protection from SGP for up to 3 months (Kitching 1986).

Animals that have recovered from capripoxvirus infection do not remain carriers of the virus and have lifelong immunity.

2.7 Vaccination

Cell-cultured attenuated ('live') and inactivated vaccines have been used to prevent SGP. Inactivated vaccines do not provide long-term protection, due at least in part to their failure to induce a cell-mediated immune response, which is the predominant protective response to poxvirus infection (OIE 2004).

Attenuated vaccines have been shown to induce relatively extended protection, lasting from 12 months to lifetime (OIE 2004). Instances of live vaccine failure when GPV strains have been used in sheep have prompted a recommendation for the use of homologous vaccines (Agrawal and Soman 1997). However, a vaccine made from a sheep and goat pox virus, which affected both sheep and goats in Kenya, effectively immunised sheep, goats and cattle against infection with a capripoxvirus. This vaccine was found to be stable and safe, and did not transmit horizontally or vertically (Kitching et al 1986, Davies 1991b).

Immunised animals may not seroconvert to the vaccine.

Recipient species may react differently to attenuated vaccines. Vaccination of susceptible saanen goats from a disease-free area with a live GPV vaccine resulted in clinical goat pox with 100% morbidity and 41% mortality (Abo-Shehada 1990).

2.8 Treatment of infected animals

There is no treatment for SGP.

3 Implications for Australia

3.1 Potential pathways of introduction

Movement of infected animals is the main means by which SGP is spread to new premises or new areas. There is, however, little possibility of these diseases entering Australia by this way, as imports of live sheep, cattle or goats, or their semen or embryos, are not permitted from countries in which SGP or LSD is endemic.

There is considerable risk of introduction of sheep pox to Australia on fomites (such as in sheep vessels returning from the Middle East), and on clothing, equipment and unprocessed wool products brought in by people from endemic areas.

Transmission by biting insects seems to be mechanical rather than biological, so insects on planes are probably an insignificant risk.

3.2 Social, economic and environmental effects

An uncontrolled outbreak of SGP would cause serious stock losses in the goat and sheep industries. The resulting financial losses would have a serious effect on the local economy in the area of the outbreak. Modelling of outbreaks of sheep pox of different levels of severity have indicated that a severe outbreak in regions such as northern Victoria and northern New South Wales might involve up to 50 infected premises, and that more than 50 000 sheep and goats might have to be slaughtered to achieve eradication (Garner and Lack 1995). This would involve huge disruption to the industries, irrespective of the trade consequences.

If SGP became endemic, continuing economic loss would occur as a result of loss of animals and the cost of preventative vaccination. Permanent loss of some export markets would also be expected, together with associated downturn in the rural economy and possibly increased rural unemployment. In the worst-case scenario, Australia's major wool, goat fibre and skin markets would be lost; however, this loss could be alleviated if zoning were accepted. It would therefore be necessary to act immediately to control and then eradicate SGP, and to quickly establish Australia's freedom from the disease so that the export trade in animal products could be re-established.

Movement restrictions within the restricted area and control area (see Section 6) would cause loss of market opportunities and associated financial losses to nonaffected properties in the area, as well as short-term losses to support industries, such as stock transport. Some industries not directly affected by SGP, such as the cattle industry, may also be subject to movement restrictions.

The use of a stamping-out policy may not lead to the loss of significantly more stock on infected premises than would be expected if the disease were not controlled. Prevention of restocking until after the prescribed period has elapsed would impose serious problems on the cash flow of the infected premises and dangerous contact premises involved.

If the outbreak occurred late in the vector season, eradication would be helped if the cold weather killed the vectors, and the infected animals were destroyed and disposed of quickly.

3.3 Critical factors for an Australian response

Features of the disease:

- Sheep pox and goat pox (SGP) are highly contagious diseases, often with high mortality, so the disease should become apparent soon after introduction to a closely settled area.
- Acute cases (the most common type in naive populations) should be readily diagnosed clinically as sheep pox and goat pox.
- A rapid confirmatory diagnosis can be made.
- Recovered animals are solidly immune.
- There is no carrier state.
- The virus is stable in the environment, especially in cool, shaded areas; fomites are important in spread of the disease.
- Under Australian conditions, mechanical transmission of the virus by biting flies may be important.

Features of susceptible populations:

- Australian sheep and goat populations are naive to the viruses and would not be expected to produce mild or inapparent forms of the disease.
- Movement of infected animals is the main means of spread over a large area.
- The disease may establish in a feral goat population that is not easily identified.
- Market fluctuations due to public health perceptions or product withdrawals would reduce the value of the industry.
- Smallholder goat populations are not easily identified.

Options for control or eradication

Managing the risk of SGP would be based on the identified critical factors and would involve:

- registration of all commercial and small sheep and goat holdings — this is essential to determine the location of small goat holdings
- application of mandatory biosecurity programs
- the early determination of the extent of infection through the rapid identification of infected and potentially infected premises using quickly instituted serosurveillance and animal tracing, based on an epidemiological assessment
- the swift declaration and effective policing of control areas and the rapid imposition of quarantine and movement controls on infected and potentially infected premises, to prevent the movement of sheep, goats and fomites carrying virus or potentially carrying virus
- minimising the exposure of susceptible animals by preventing direct and indirect contact of at-risk sheep and goats with infected sheep and goats, and potentially contaminated fomites;
- elimination of infection from infected premises and/or infected populations by the rapid destruction of sheep and goats, the sanitary disposal of carcasses and fomites, and decontamination
- identification of vectors of concern as quickly as possible and application of appropriate treatments
- the implementation of zoning and/or compartmentalisation
- the possible use of vaccination with movement controls
- the gaining of smallholder support; and
- feral goat population management.

The policy options for the control and eradication of SGP are:

- recognition of endemic status (especially if the disease is found in the feral goat population), using vaccination, and zoning/compartmentalisation
- modified stamping out if the disease is widespread when diagnosed or spreads beyond available resources, using ring vaccination; and
- stamping out.

The policy to be implemented is described in Section 4.

4 Policy and rationale

4.1 Introduction

4.1.1 Summary of policy

Sheep pox and goat pox (SGP) are OIE-listed diseases that have the potential for rapid spread. SGP has implications for sheep and goat production and trade.

The response policy is to eradicate SGP in the shortest possible period using *stamping out*, supported by a combination of strategies, including:

- *sanitary disposal* of destroyed animals and contaminated animal products, to remove the source of infection
- *quarantine and movement controls* over animals, products and other potentially contaminated items to minimise spread of infection
- *decontamination* of fomites (facilities, equipment and other items) to minimise the spread of the virus from infected animals and premises
- *tracing and surveillance* to determine the source and extent of infection and to provide proof of freedom from the disease
- *zoning* and/or compartmentalisation to define infected and disease-free premises and areas; and
- *an awareness campaign* to facilitate cooperation from the industry and the community.

Ring vaccination may be utilised as part of a *modified stamping-out* policy (for example, if feral goats are involved in the outbreak).

4.1.2 Case definition

For the purposes of this manual, a case of SGP is defined as laboratory-confirmed infection with SPV and GPV in a susceptible animal with or without clinical signs.

Notes:

- Positive serology in the absence of detection of SPV and GPV, with no clinical or epidemiological evidence supporting infection, does not constitute a definition of a case.
- AUSVETPLAN case definitions guide when a response to an emergency animal disease (EAD) incident should be undertaken. AUSVETPLAN case definitions do not determine when international reporting of an EAD incident is required.
- At the time of an outbreak, revised or subsequent case definitions may be developed with the agreement of the Consultative Committee on Emergency Animal Diseases – CCEAD.

4.1.3 Cost-sharing arrangement

In Australia, SGP is included as a Category 2 emergency animal disease in the Government and Livestock Industry Cost Sharing Deed in Respect of Emergency Animal Disease Responses (EAD Response Agreement – EADRA).⁶ When cost sharing of the eligible response costs of an incident is agreed, Category 2 diseases are those for which costs will be shared 80% by government and 20% by industry.

4.1.4 Criteria for proof of freedom

If a stamping-out policy were practiced, Australia would be considered free from SGP 6 months after the destruction of the last affected animal. To demonstrate to Australia's trading partners that the disease has been successfully contained and eradicated, Australia must embark on a disease surveillance program during those 6 months.

As it is possible that the diseases may appear as subclinical or inapparent infections, appropriate laboratory testing will be necessary to survey for the presence of disease, as described in Section 7. Physical examinations of flocks and herds will help provide proof of freedom.

4.1.5 Governance

Governance arrangements for the response to EADs are outlined in the **AUSVETPLAN Overview**.

Information on the responsibilities of a state coordination centre and local control centre is available in the **AUSVETPLAN management manual *Control centres management (Parts 1 and 2)***.

4.2 Public health implications

There are no public health implications.

4.3 Control and eradication policy

The requirement for a quick return to international trade highlights the need for rapid eradication by stamping out, the need to combine this policy with quarantine of infected and suspect premises, and the need to quickly determine the source of infection and the extent of spread so that proper and adequate control measures can be applied.

Any animal disease eradication or control program must include close liaison and information exchange with industry, the media and the public.

⁶ Information about the EAD Response Agreement can be found at www.animalhealthaustralia.com.au/what-we-do/emergency-animal-disease/ead-response-agreement.

4.3.1 Epidemiological assessment

Epidemiological investigation or assessment draws on multiple sources of information to build understanding of the disease and how it is behaving in an outbreak. This helps inform response decision making.

The key objectives for an epidemiological assessment will be to identify:

- the spatial distribution of infected and free animal populations
- potential vectors involved, including as potential amplifying hosts
- the source of infection
- the prevalence of infection
- pathways of spread and the likely size of the outbreak
- risk factors for the presence of infection and susceptibility to disease (including weather and insect populations).

Epidemiological assessment, and tracing and surveillance activities (see Section 4.3.3) in an EAD response are interrelated activities. Early findings from tracing and surveillance will be inputs into the initial epidemiological assessment (eg considering spatial distribution of infection). The outcomes of the initial epidemiological assessment will then guide decisions on subsequent tracing and surveillance priorities.

The outcomes of the epidemiological assessment will also be used initially to determine the feasibility of eradication versus long-term control and to guide the selection of other appropriate response measures (including the application of movement controls) and assess the progress of disease control measures.

Ongoing epidemiological assessment is important for any EAD response to aid evaluation of the continued effectiveness and value of response measures, and assessment of the progress of disease control measures. Ongoing epidemiological assessment will consider the outcomes of tracing and surveillance activities, and will contribute evidence to support any later claims of disease freedom.

4.3.2 Quarantine and movement controls

As the main form of transmission is by direct contact with infected animals or contaminated products and things, quarantine and movement controls will prevent the rapid spread of disease. The IPs, DCPs and suspect premises (SPs) will immediately be declared.

A restricted area (RA), which will contain all IPs and DCPs and as many SPs as possible, will be determined following tracing and surveillance activities. All movement of susceptible animals within the RA will be prohibited for an initial period of at least 21 days so that the animals within the area can be observed by direct physical examination and appropriate diagnostic tests. Animals on DCPs and SPs will be examined daily for the first 2 weeks and then at weekly intervals. Other properties in the RA will be examined weekly.

In the absence of any signs of disease during this 21-day period of observation, animals from the DCPs and IPs may be sent for slaughter, under permit, at approved abattoirs. They will not be held in the lairage any longer than the minimum time required for meat hygiene purposes. Movement controls within the CA may be less restrictive, but live animal movements out of the CA will be prohibited for the 21-day observation period.

A control area (CA) will be formed around the RA, with its boundary at least 5 km from the RA boundary. To be realistic, this area should be as large as possible to allow animals to be marketed and

processed within the area. It would be preferable to try to include a meat- and skin-processing establishment within the area.

All movement of susceptible animals within the RA will be prohibited for an initial period of at least 21 days so that the animals within the area can be observed by direct physical examination and appropriate diagnostic tests. Animals on DCPs and SPs will be examined daily for the first 2 weeks and then at weekly intervals. Other properties in the RA will be examined weekly.

In the absence of any signs of disease during this 21-day period of observation, animals from the DCPs and IPs may be sent for slaughter, under permit, at approved abattoirs. They will not be held in the lairage any longer than the minimum time required for meat hygiene purposes. Movement controls within the CA may be less restrictive, but live animal movements out of the CA will be prohibited for the 21- day observation period.

See Section 5 and 6 for further details on declared areas and on quarantine and movement controls

4.3.3 Tracing and surveillance

Tracing

Tracing of suspect animals, products, people and things must take in the period from at least 21 days before the first clinical signs were observed on the initial IP to the time the premises was placed under quarantine. Tracing must be thorough and detailed, because the SGP viruses may persist on inanimate materials and survive outside the host for some time.

Surveillance

Surveillance will include an epidemiological study of the possible vectors that may play a role in transmission of the virus and the ecological factors likely to influence the distribution and survival of the vectors. This information will help in determining the size of the RA by taking into consideration the possible spread of virus by insect vectors.

Susceptible animals on DCPs and SPs will be physically examined on a daily basis for the first 14 days and weekly thereafter, as will all susceptible animals in the RA (or a statistical sample if large numbers of susceptible animals are involved).

Sentinel animals may be introduced to the IPs and DCPs after stamping out and decontamination have been completed. These animals will be examined weekly and appropriately tested over a period of at least 6 weeks. Repopulation may occur after this time if all findings are negative. The repopulated animals will also be subjected to surveillance for at least a further 3 months.

See Section 7 for further details on surveillance.

4.3.4 Zoning and compartmentalisation for international trade

Where it is not possible to establish and maintain disease freedom for the entire country, establishing and maintaining disease-free subpopulations, through zoning and/or compartmentalisation,⁷ may be considered.

In the case of a limited disease outbreak, a containment zone⁸ may be established around the areas where the outbreak is occurring, with the purpose of maintaining the disease-free status of the rest of the country outside the containment zone.

All zoning applications would need to be prepared by the Australian Government in conjunction with the relevant jurisdiction(s) and agreed to by the CCEAD. Zoning is usually negotiated after a disease outbreak has begun.

Compartmentalisation applications typically need to be negotiated before an outbreak occurs, and will require input from the relevant industries.

Recognition of both zones and compartments must be negotiated between the Australian Government and individual overseas trading partners. Zoning and compartmentalisation would require considerable resources that could otherwise be used to control an outbreak. Careful consideration will need to be given to prioritising these activities, because the resulting competition for resources could delay the quick eradication of the disease and recognition of disease freedom.

Agreements between trading partners take time to develop, consider and finalise, because of the need to provide detailed information on activities such as biosecurity, surveillance, traceability and diagnostics to support the approach that is developed. An importing country will need assurance that its animal health status is not compromised if it imports from an established disease-free zone in Australia. Trading partners may not accept a zoning or compartmentalisation proposal, regardless of the information provided. Eradication of disease may be achieved before zoning or compartmentalisation applications are finalised.

The OIE guidelines for zoning and compartmentalisation are in Chapters 4.4 and 15.1 of the OIE *Terrestrial animal health code*.

4.3.5 Vaccination

If a disease outbreak outstrips the resources available to control it through stamping out, a ring vaccination program will provide a buffer zone of immune animals around the disease area until the outbreak can be brought under control. It is unlikely that Australia will use vaccination except as a last resort — for example, where domestic animals are in contact with infected feral goats, and quick eradication in feral goats is not feasible.

See Section 2.7 for further details on vaccination, including the vaccines available and methods of vaccination.

⁷ With zoning, disease-free subpopulations are defined primarily on a geographical basis. With compartmentalisation, disease-free subpopulations are defined primarily by management practices (such as the biosecurity plan and surveillance practices of enterprises or groups of enterprises).

⁸ The OIE defines a 'containment zone' as an infected zone within a previously free country or zone, which includes all suspected or confirmed cases that are epidemiologically linked and where movement control, biosecurity and sanitary measures are applied to prevent the spread of, and to eradicate, the infection or infestation. The Australian Government Department of Agriculture and Water Resources commissioned a report on what would be required for the establishment of containment zones in Australia. This report is available at www.ausvet.com.au/tools-resources.

4.3.6 Treatment of infected animals

Infected or susceptible animals will not be treated.

4.3.7 Treatment of animal products and byproducts

Animals that have been cleared after the period of observation may be sent to slaughter and the meat released for human consumption.

Skins and fibre are high-risk products because the virus may remain viable on them for some months. Skins and fibre from IPs and DCPs will be destroyed on the premises. All wool, skins, and goat fibre that have left those premises within the 21-day period before the diagnosis will be traced and suitably treated or destroyed; other wool, skins, and goat fibre may be moved under permit for processing elsewhere. Bales of wool, for example, may be allowed to go to a processing plant if shearing occurred before the introduction of disease and there was no contact with susceptible animals. Skins where decontamination is not possible or impractical will require disposal.

Milk from susceptible species will be destroyed on the premises or moved under permit for processing elsewhere. Milk that has left the premises within the 21-day period before the diagnosis of disease will be traced and, if found, suitably treated by heat or chemicals or destroyed.

Crops and grains may be moved off IPs and DCPs, subject to decontamination procedures if it is considered likely that the material is contaminated. The material will not be used as bedding or fodder for susceptible animals.

Accumulated faeces, fibre and skin pieces around and under sheds where infected and suspect animals have congregated will be decontaminated and disposed of on the premises. To inactivate SGP virus in skins, the complete tanning or processing process is required (EFSA 2014).

Semen and embryos will not be collected from animals that are subject to restrictions. An informed judgment on stored product will be made when all relevant information is available.

All persons leaving the quarantine area must undergo appropriate decontamination, including a change of clothing and footwear.

4.3.8 Destruction of animals

Stamping out

The policy for controlling SGP in Australia is to use stamping out. This will involve the destruction of susceptible animals on infected premises (IPs) and dangerous contact animals on dangerous contact premises (DCPs). Until further information is available, sheep and goats will be considered to be the susceptible species.

If a DCP contains relatively few susceptible animals in addition to the dangerous contacts, all animals will be destroyed. If, on the other hand, there is a large number of stock on the premises, only the dangerous contact animals will be destroyed, and the other animals will be quarantined and observed for 21 days for signs of disease. Such a strategy will depend to a large extent on the degree of separation able to be achieved between the groups of animals and the possibility of mechanical transfer by insect vectors or by other means.

Although experience overseas is that cattle are unlikely to be significant in the course of an SGP outbreak, any cattle in nose-to-nose contact with infected sheep or goats may need to be included in the stamping-out program.

4.3.9 Disposal of animals, and animal products and byproducts

Animal product and byproduct disposal will follow the same principles as those for carcase disposal (see the **AUSVETPLAN operational manual *Disposal***). Disposal methods (such as burning or burial) will prevent further spread of the disease through contact with susceptible animals.

If there may be a delay between destruction and disposal, the carcasses will be sprayed with phenol, covered with straw (kept wet with phenol), and guarded continuously to prevent interference from vermin or predators. Insects that are potential vectors will be controlled.

Disposal of large volumes of wool is most likely to require burial as it is difficult to burn wool.

The disposal method chosen must be suited to the location and product at that particular time (see the **AUSVETPLAN operational manual *Decontamination*** and the **AUSVETPLAN operational manual *Disposal*** for more information).

4.3.10 Decontamination

A detailed and thorough decontamination program is required because of the persistence of the virus outside the host. Fomites play an important role in transmission of SGP, and all fomites will be decontaminated or destroyed. Decontamination will include pens and yards where infected or suspect animals have been held, with special attention paid to shearing and fleece-handling areas and to dairies. All potentially contaminated fleeces and woolpacks must be burned or buried.

Decontamination of wool (by chemical means or by isolating and storing wool for a set length of time) is unlikely to be practical in an SGP outbreak. Therefore, the policy is to dispose of wool on IPs and DCPs (as per Section 4.3.10).

Vehicles and people leaving the premises will be decontaminated.

Further information is available in the **AUSVETPLAN operational manual *Decontamination***, the **AUSVETPLAN operational manual *Disposal*** and in Geering et al (1995).

4.3.11 Wild animal management

If the disease occurs in an area where there are feral goat populations, a goat culling or control program, combined with surveillance, will be established to determine whether the infection has entered the population. Control measures must be such that wild animal populations are not induced to disperse out of the RA. A range of options may be available, such as baiting, trapping and decoy feeding.

If SGP escapes into the feral goat population, a buffer zone around the goat population would be necessary to contain the disease. This buffer zone may be formed by depopulating the area of goats and sheep, or by ring vaccination. See the **AUSVETPLAN operational manual *Wild Animal Response Strategy*** for more information on goat control.

Disposal of contaminated materials (including feedstuffs) and carcasses will be prompt to minimise exposure of susceptible feral species, wild predators and vermin to SGP virus.

4.3.12 Vector management

The epidemiological investigation team, which will include an entomologist, will identify vectors that could play a role in the transmission of SGP and develop a targeted approach to vector control to block the transmission cycle.

It is possible that several vectors may be present that may be able to mechanically transmit the virus, and this may require a range of approaches to control. These might include the aerial and ground application of insecticides as ultra-low- volume (ULV) fogs, and treatment of animals (within, say, 5 km of IPs) with either a systemic insecticide such as ivermectin, or a topical insecticide that will repel insects or reduce the population of target insects. Insect-proof housing for animals might also be considered.

Surveillance for vectors both in the free and infected areas will be ongoing to ensure that the disease is not being spread by this method.

4.3.13 Public awareness and media

A media campaign will emphasise the importance of inspecting sheep and goats for pox lesions, and of reporting suspicious lesions and unusual deaths promptly. The risks associated with raw wool and skins will be stressed.

Entry of the disease into highly susceptible sheep and goat populations is likely to result in high morbidities and mortalities. Many animals will need to be slaughtered if infection occurs in a number of herds or flocks, even if the disease is mild or subclinical. Industry will be made aware of the control measures, and regular liaison with industry will be undertaken. The media can play a role in conveying information to the public to help maintain confidence in the product and explain the need for the control measures.

4.4 Other control and eradication options

Modified stamping out, using ring vaccination, would be the policy implemented if the disease were widespread when diagnosed or had spread beyond the resources available for stamping out.

It is unlikely that an outbreak of SGP would not be eradicated. However, if SGP were not able to be contained through the above policies, recognition of endemic status may be necessary (especially if the disease were found in the feral goat population).

If SGP became established in Australia, the diseases in domestic animals would be controlled by vaccination, with an appropriate vaccine, of all susceptible animals in areas where the disease occurred. Vaccination of the entire susceptible population against SGP should result in the field virus dying out, allowing widespread vaccination to be discontinued after only a couple of years and replaced by ring vaccination.

Zoning/compartmentalisation would be used to prevent movement of susceptible animals and materials from the infected areas.

4.5 Funding and compensation

Details of the cost-sharing arrangements can be found in the Government and Livestock Industry Cost Sharing Deed in Respect of Emergency Animal Disease Responses.⁹ Details of the approach to the valuation of, and compensation for, livestock and property in disease responses can be found in the **AUSVETPLAN operational manual *Valuation and compensation***.

⁹ www.animalhealthaustralia.com.au/what-we-do/emergency-animal-disease/ead-response-agreement

5 Declared areas and premises

When an emergency animal disease (EAD) is first suspected, the premises involved would undergo a clinical and/or epidemiological investigation. If the case definition, as defined in the relevant AUSVETPLAN response strategy, is met (ie the index case¹⁰), the relevant chief veterinary officer (CVO) or their delegate will determine the premises classification and may declare the premises an infected premises (IP).

After the identification of the first IP, a restricted area (RA) and a control area (CA) may be declared.¹¹ A transmission area (TA) may also be defined, if appropriate. All premises within these areas will be classified. At the beginning of an EAD incident, the initial premises classifications would be IP, at-risk premises (ARP), premises of relevance (POR), unknown status premises (UP) and zero susceptible species premises (ZP).

Any premises within the RA or CA will have only one classification at any one time. After an epidemiological investigation, clinical assessment, risk assessment or completion of control measures, a premises may be reclassified.

Once the first IP has been identified, intelligence gathering through veterinary epidemiological investigations would quickly lead to the identification of suspect premises (SPs) and trace premises (TPs). These would be high priorities for follow-up investigation by the relevant state or territory authorities. In a worst-case scenario, an SP could become an IP; therefore, SPs need to be investigated as a matter of very high priority. Similarly, investigation and risk assessment of a TP might identify it as an IP, dangerous contact premises (DCP) or dangerous contact processing facility (DCPF). An SP or TP might also be assessed as negative and qualified as SP-AN or TP-AN, and eventually reclassified as an ARP, POR or ZP.

All premises classifications are subject to change as a result of a modification in the case definition(s) or investigation(s) as the incident response proceeds.

Classifications should be applied with information needs of managers in mind. They should assist managers to monitor and report progress. Premises classifications to be used should be agreed early in a response, so that control centre personnel can apply the correct and consistent classifications and definitions from the outset of the investigation and response.

5.1 Declared areas

Maintaining movement restrictions on areas for long periods has important implications for resource management, animal welfare, business continuity, and socioeconomic impacts on producers and regional communities.

During the course of an EAD response, it may become necessary for a CA or RA to be expanded, as additional geographical areas or new foci of infection are identified. Later in the response, as control is achieved, mechanisms for gradually reducing the size of the CA and RA can be introduced.

An EAD may involve multiple foci of infection, with several jurisdictions potentially involved. Since disease might be controlled at different rates in different areas, there may be the opportunity to progressively lift restrictions on an area basis. This would involve reclassifying previously declared

¹⁰ The first case to come to the attention of investigators

¹¹ This is invariably the case with highly contagious diseases (eg foot-and-mouth disease, equine/avian/swine influenza, classical swine fever) but may not apply to less contagious diseases (eg Hendra virus, anthrax, Australian bat lyssavirus).

areas (RAs and CAs), with a staged approach to lifting of movement restrictions. This is a key step in the recovery process and will have positive benefits on the community.

5.1.1 Restricted area (RA)

An RA is a relatively small legally declared area around IPs and DCPs that is subject disease controls, including intense surveillance and movement controls.

An RA will be a relatively small declared area¹² (compared with a CA) drawn with at least 5 km radius around all IPs and DCPs, and including as many SPs, TPs and DCPFs as practicable. Based on risk assessment, the RA is subject to intense surveillance and movement controls. The purpose of the RA is to minimise the spread of the EAD. The RA does not need to be circular but can have an irregular perimeter, provided that the boundary is initially an appropriate distance from the nearest IP, DCP, DCPF, SP or TP. Multiple RAs may exist within one CA.

The boundaries will be modified as new information becomes available, including from an official surveillance program. The actual distance in any one direction will be determined by factors such as terrain, the pattern of livestock movements, livestock concentrations, the weather (including prevailing winds), the distribution and movements of relevant wild (including feral) animals, and known characteristics of the disease agent. In practice, major geographic features and landmarks, such as rivers, mountains, highways and roads, are frequently used to demarcate the boundaries of the RA. Although it would be convenient to declare the RA on the basis of local government areas, this may not be practical, as such areas can be larger than the particular circumstances require.

5.1.2 Control area (CA)

A CA is a legally declared area where the disease controls, including surveillance and movement controls, applied are of lesser intensity than those in an RA (the limits of a CA and the conditions applying to it can be varied during an incident according to need).

A CA is a disease-free buffer between the RA and the outside area (OA). Specific movement controls and surveillance strategies will be applied within the CA to maintain its disease-free status and prevent spread of the disease into the OA.

An additional purpose of the CA is to control movement of susceptible livestock for as long as is necessary to complete tracing and epidemiological studies, to identify risk factors and forward and backward risk(s).

The CA will be a larger declared area around the RA(s) – initially, possibly as large as the state or territory in which the incident occurs – where restrictions will reduce the risk of disease spreading from the RA(s). The CA will have a minimum radius of 5 km, encompassing the RA(s). It may be defined according to geography, climate and the distribution of relevant wild (including feral) animals. The boundary will be adjusted as confidence about the extent and distribution of the incident increases.

In general, surveillance and movement controls will be less intense in the CA than in the RA, and disease-susceptible animals and their products may be permitted to move under permit within and out of the area.

¹² As defined under relevant jurisdictional legislation

5.2 Other areas

It is possible that other types of areas (eg vaccination area or surveillance area), which are not legally declared, may be used for disease control purposes in some jurisdictions.

5.3 Premises classifications

Detailed guidelines for classifying premises statuses are provided in the **AUSVETPLAN guidance document *Declared areas and application of premises classifications in an EAD response***, and the definitions are in the Glossary.

5.3.1 Premises status classifications

For sheep and goat pox (SGP), the premises classifications to be used are:

- infected premises (IP)
- suspect premises (SP)
- trace premises (TP)
- dangerous contact premises (DCP)
- dangerous contact processing facility (DCPF)
- approved processing facility (APF)
- approved disposal site (ADS)
- at-risk premises (ARP)
- premises of relevance (POR)
- resolved premises (RP)
- unknown status premises (UP)
- zero susceptible species premises (ZP).

5.3.2 Qualifiers

Please also refer to the **AUSVETPLAN guidance document *Declared areas and premises classifications*** for more detail on qualifiers.

For sheep and goat pox (SGP), the qualifiers to be used are:

- assessed negative (AN)
- sentinels on site (SN)
- vaccinated (VN).

5.4 Reclassifying premises and previously declared areas

Maintaining movement restrictions on areas for long periods has important implications for resource management, animal welfare, business continuity, and socioeconomic impacts on producers and regional communities. Therefore, attention should be given to reclassifying premises and previously declared areas as quickly as possible.

Detailed guidelines for reclassifying previously declared areas are provided in the **AUSVETPLAN guidance document *Declared areas and application of premises classifications in an EAD response***.

5.4.1 Reclassifying premises

Guidelines for assessing SPs and TPs as negative and reclassifying their status are outlined in Section 7.1.2.

IPs and DCPs require action to address the risk that infection and/or contamination with sheep pox virus and goat pox virus is present. To assess an IP, DCP or DCPF that houses susceptible as negative – and allow its reclassification, release from biosecurity controls and restocking – consideration must be given to the effectiveness of pathogen elimination through decontamination (through natural, physical and/or chemical means) and where appropriate, placement of sentinel animals.

The actual time before placement of sentinel animals should consider a range of factors, including:

- factors affecting pathogen viability and infectivity (eg substrate protein or lipid content, ambient temperature, water content, and virulence and quantum)
- confidence in the decontamination process through natural, physical and/or chemical means.

Guidance on the use of sentinel animals, where appropriate, before release from biosecurity controls and restocking is provided in Section 7.1.2.

5.4.2 Reclassifying previously declared areas

The lifting of restrictions in declared areas is managed by jurisdictions according to their local legislation, regulations and processes.

The key principles for reclassifying a previously declared area during a response should include the following, noting that not all will be relevant for some diseases:

- The area should be epidemiologically distinct from other declared areas.
- All TPs and SPs have been investigated and reclassified, and all IPs, DCPs and DCPFs in the area have been reclassified as RPs (or APFs).
- All tracing and surveillance associated with EAD control has been completed satisfactorily, with no evidence or suspicion of infection in the area.
- A minimum period of 42 days¹³ has elapsed since predetermined disease control activities and risk assessment were completed on the last IP or DCP in the area or a risk assessment supports reclassification.

¹³ The minimum period uses, or is based on, the disease-specific incubation periods defined by the OIE – two incubation periods is a common guideline.

- An approved surveillance program (including the use of sentinel animals, if appropriate) has confirmed no evidence of infection in the RA (see below).
- For vector-borne diseases, vector monitoring and absence of transmission studies indicate that vectors are not active.

Lifting of restrictions is a process managed by the relevant CVO under jurisdictional legislation and consistent with the most current agreed Emergency Animal Disease Response Plan (EADRP). When the appropriate conditions are satisfied, an affected jurisdiction can, in consultation with the Consultative Committee on Emergency Animal Diseases (CCEAD), reduce the size of either or both the CA and RA or lift all restrictions as surveillance/monitoring indicates change in risk. The previous part of the RA would then become part of the CA. Jurisdictions should be able to present documented evidence that the appropriate conditions have been met.

When an RA is lifted and becomes part of the CA, it will have a lower risk status, and the movement restrictions that apply will be consistent with those applying within the CA. Over time, all of the RAs will be reduced and lifted.

If more than one jurisdiction is affected, each will use its own appropriate legal jurisdictional mechanisms to lift the declaration of the RA or CA, coordinating with each other and consulting with the CCEAD to ensure wide communication and coordination.

After a further period of surveillance and monitoring, and provided that the additional surveillance and monitoring find no evidence of infection, a jurisdiction, in consultation with the CCEAD, could lift the CA. This would result in the lifting of all the remaining regulatory controls associated with the response, and a return to business as usual.

6 Movement controls

6.1 Principles

The principles for the recommended quarantine practices and movement controls are as follows:

- Containment and eradication of sheep and goat pox (SGP) is the highest priority. Therefore, 'normal business movements' are not allowed.
- Live animals pose the greatest risk of disease spread; therefore, their movements from all premises within the restricted area (RA) and control area (CA) must be strictly controlled.
- The outside area (OA) should remain as 'clean' as possible. Therefore, movement of animals from the RA to the OA is prohibited, and movement of products is generally prohibited. Movement of animals and products from the CA to the OA will also be restricted.
- Trace premises (TP) and suspect premises (SP) are temporary classifications, and every effort should be made to resolve the status of these premises as soon as possible.
- The numbers of susceptible animals within the RA should be minimised. Therefore, movements of animals into the RA will be limited and usually for slaughter only.
- Movement restrictions are more stringent within the RA than within the CA, and will be more stringent in the early stages of the response.
- Movement controls may be varied during a response from those listed here. However, this will involve a variation to the agreed Emergency Animal Disease Response Plan, with endorsement by the Consultative Committee on Emergency Animal Diseases (CCEAD) and the National Management Group (NMG).
- Recommended movement controls apply to any movement off a premises, whether on foot or by vehicle, that involves either public or private land.
- All movement control matrixes and narratives are for guidance.
- Application for a movement permit does not automatically mean that one will be granted.
- In emergency or exceptional circumstances, any proposed movement may be considered by the jurisdictional chief veterinary officer (CVO) on a risk-assessed case-by-case basis.
- Interstate movements will need to meet the import requirements of the receiving jurisdiction.

6.2 Guidelines for issuing permits

In an emergency animal disease (EAD) event, quarantine and movement controls must strike a balance between quick and effective disease control and business continuity. Therefore, it is not appropriate to simply prohibit all movement of animals and products. On the other hand, diligence needs to be applied to minimise the risk of further spread of the disease.

Recommended biosecurity and movement controls in each AUSVETPLAN response strategy provide guidance on which movements can be allowed and under what conditions. This is based on an analysis of the disease risks that are presented by a specific movement, of a specific commodity, at a specific time during the EAD response phase. Each disease strategy will indicate whether a proposed movement is:

- allowed (under normal jurisdictional, including interstate, requirements)
- prohibited – except under the conditions of a general, special or emergency permit
- prohibited.

Permits may not be available until the relevant CVO provides approval for movements, and this may not be available in the early stages of a response. When assessing risk for the purposes of issuing a permit, the elements to consider may include:

- sources of risk
 - risk material such as live or dead susceptible animals, semen, embryos, meat, meat products, waster products, offal, paunch screenings, manure, render material, fertiliser, biological specimens, casings, used wrappers and cartons, effluent, fomites (vehicle, people, nonsusceptible animals, crops, grains, hay silage and mixed feeds)
 - presence of disease agent on both the originating and destination premises, and uncertainty
 - location of source and destination premises
 - fate at destination premises (eg for slaughter vs for growing out)
 - current vector activity, if relevant
 - organisation and management issues (ie confidence in animal tracing and surveillance, biosecurity)
 - proposed use of the animals or products
 - proposed transport route
 - vaccination status of the animals, if relevant
 - treatment of animals and vehicles to prevent concurrent movement of vectors, if relevant
 - security of transport
 - security and monitoring at the destination
 - environment and natural events
 - community and human behaviour
 - risk of sabotage
 - technology
 - regulations and standards
 - available resources for compliance and enforcement
- areas of impact
 - livestock health (health of affected species, including animal welfare)
 - human health (including work health and safety)
 - trade and economic impacts (including commercial and legal impacts)
 - environmental impacts
 - organisational capacity
 - political impacts
 - reputation and image
- proposed risk treatment measures
 - vaccination
 - destruction of animals
 - processing of product
 - disinfection or other treatment of animals, vehicles and fomites
 - vector control, if relevant
 - security
 - communication.

6.3 Types of permits

Permits are either general or special. Emergency permits are a form of special permit. Permits are legal documents that describe the animal(s), commodities or things to be moved, the origin and destination, and the conditions to be met for the movement. Either type of permit may include conditions. Once permit conditions have been agreed from an operational perspective, all permit conditions must be met for every permit. Both general and special permits may be in addition to documents required for routine movements between or within jurisdictions (eg health certificates, waybills, consignment notes, National Vendor Declarations – NVDs).

General permit

General permits (GPs) are used for lower-risk movements, and create a record of each movement to which they apply. They are granted without the need for direct interaction between the person moving the animal(s), commodity or thing and a government veterinarian or gazetted inspector of stock. The permit may be completed via a webpage or in an approved place (such as a government office or commercial premises). A printed version of the permit must accompany the movement. The permit may impose preconditions and/or restrictions on movements. GPs may not be available until the relevant CVO gives approval for general movements, and this may not be available in the early stages of a response.

Special permit

Special permits (SpPs) are issued by the relevant government veterinarian or gazetted inspector of stock. They are used for higher-risk movements, and therefore require formal application and individual risk assessment. SpPs describe the requirements for movement of an animal (or group of animals), commodity or thing, for which a specific assessment has been conducted by the relevant government veterinarian or gazetted inspector of stock. A printed version of the permit must accompany the movement. The permit may impose preconditions and/or restrictions on movements.

Emergency permit

An emergency permit is an SpP that specifies strict legal requirements for an otherwise high-risk movement of an animal, to enable emergency veterinary treatment to be delivered, to enable animals to be moved for animal welfare reasons, or to enable any other emergency movement under exceptional circumstances. These permits are issued on a case-by-case basis under the authorisation of the relevant CVO.

Other movement requests

Movements not reflected within any of the movement control matrixes or narratives may be considered by the relevant jurisdictional CVO on a risk-assessed case-by-case basis.

6.4 Recommended movement controls

Declared premises

Table 6.1 shows the movement controls that will apply to IPs, DCPs and SPs in the event of an SGP incident.

Table 6.1 Movement controls for declared premises

Quarantine/movement controls	Infected and dangerous contact premises	Suspect premises
<i>Movement out of:</i>		
- susceptible animals	Prohibited, except after observation period of 21 days; may be allowed to go to slaughter under permit	As for IPs and DCPs
- nonsusceptible animals	Allowed under permit, subject to decontamination	Allowed under permit
- wool, fibre, skins, etc.	Prohibited	Allowed under permit for processing, subject to decontamination
- milk products from susceptible species	Allowed under permit for processing using appropriate milk tankers	As for IPs and DCPs
- semen and embryos	Allowed under permit	As for IPs and DCPs
- crops and grains	Allowed under permit, subject to decontamination	Allowed
<i>Movement in and out of:</i>		
- people	Allowed under permit, subject to decontamination	No restriction, but must undergo decontamination if they have had contact with suspect animals
- vehicles and equipment	Allowed under permit, subject to decontamination	No restriction, but must undergo decontamination if they have had contact with suspect animals

Quarantine/movement controls	Infected and dangerous contact premises	Suspect premises
<i>Movement in of:</i>		
- susceptible animals	Prohibited, except for the movement of sentinel animals under permit	Allowed after observation period of 21 days

Declared areas

Table 6.2 shows the movement controls that will apply to RAs and CAs (if declared) in the event of an SGP incident.

Table 6.2 Movement controls for declared areas

Quarantine/ movement controls	Restricted area (if declared)	Control area (if declared)
<i>Movement out of:</i>		
– susceptible animals	Prohibited, except after observation period of 21 days; may be allowed to go to slaughter under permit	As for RA
– vehicles and equipment	Allowed under permit, subject to decontamination	Allowed
– wool, fibre, skins, etc.	Allowed under permit, subject to decontamination	Allowed under permit
– milk products from susceptible species	Allowed under permit, subject to decontamination	Allowed under permit
– semen and embryos	Allowed under permit	As for RA
– nonsusceptible animals, people	Allowed under permit, subject to decontamination	Allowed
<i>Movement within of:</i>		
– susceptible animals	Prohibited until end of 21-day observation period	Permit required until end of 21-day observation period
– wool, fibre, skins, etc.	Allowed under permit	As for RA
– milk products from susceptible species	Allowed under permit	As for RA
<i>Movement through of:</i>		
– susceptible animals	Allowed under permit	As for RA
<i>Movement in of:</i>		
– susceptible animals	Allowed under permit	As for RA
<i>Movement of susceptible animals along stock routes, rights of way</i>	Prohibited	As for RA
<i>Risk enterprises:</i>		
– skin dealers and shearers	Prohibited	As for RA
<i>Sales, shows, etc.</i>	Prohibited if susceptible animals are involved	As for RA

7 Surveillance and proof of freedom

Sheep pox and goat pox (SGP) must be notified at the first clinical signs of the diseases. Farmers, veterinarians and meat workers must be alert and report suspicion of disease.

According to the OIE Terrestrial Code, a country's claim for freedom from SGP cannot be made until it has been shown that the disease has not been present for at least the past 6 months after the slaughter of the last affected animal (for countries in which a stamping-out policy is practised with or without vaccination). All at-risk properties (see specific consideration 1) must therefore be kept under close surveillance for 6 months.

Detection of disease is to be from physical examination of flocks, as well as through appropriate laboratory testing.

On infected premises (IPs), and on dangerous contact premises (DCPs) that have been destocked, sentinel animals may be introduced after decontamination is completed. These animals should undergo weekly physical inspection with appropriate testing for 6 weeks, when restocking may occur (see note 3). The flock should be inspected at 1-month intervals for 3 months. If no suspicion of disease is detected by then (about 6 months after the completion of cleaning and disinfection), the property may be released from quarantine.

On other properties in the restricted area (RA), physical inspection surveillance visits (see note 2) should be made as soon as possible after the first IP is declared in the RA and then 1, 2, 3 and 6 weeks later.

A final inspection may be needed 6 months after the last case.

7.1 Surveillance

Table 7.1 Summary of surveillance program for SGP

	IPs and DCPs	Restricted area (other than IPs and DCPs)
Day 0	Decontamination completed	
Week 1	Introduce sentinel animals	Clinical exam
Week 2	Clinical exam	Clinical exam
Week 3	Clinical exam	Clinical exam
Week 4	Clinical exam	
Week 5	Clinical exam	
Week 6	Clinical exam	Clinical exam + release from quarantine
Week 7	Clinical exam + restock	
Week 8	Flock inspection	
Month 3	Flock inspection	

Month 4	Flock inspection	
Month 5	Flock inspection	
Month 6	Flock inspection + release from quarantine	

7.1.1 Specific considerations

1. Premises considered to be at risk are all premises within the RA with susceptible animals, IPs, DCPs and other properties considered to have had significant contact with an IP.
2. At physical inspection surveillance visits, every mob of susceptible animals must be inspected and numbers accounted for. In extensive grazing areas, where the degree of contact between groups of animals in a flock may be low, care must be taken to ensure that all groups of animals are present and healthy.
3. Animals dying within 12 months after repopulation of IPs must be autopsied and appropriate samples taken for virus testing.

Appendix 1

SHEEP AND GOAT POX FACT SHEET

Disease and cause

Sheep pox and goat pox are highly contagious skin diseases of sheep and goats, characterised by papules and pustules (and rarely vesicles) on exposed body surfaces, often with high mortality. The diseases are caused by viruses of the *Capripoxvirus* genus of the family *Poxviridae*.

Species affected

As the names imply, these diseases affect sheep and goats. The viruses are usually host specific for either sheep or goats, but some strains affect both species. Merino and European breeds of sheep are most susceptible. Humans are considered nonsusceptible.

Distribution

Sheep pox and goat pox occur in Africa (mainly north of the equator), the Middle East, Central and Southeast Asia, and the Indian subcontinent as far east as Myanmar (Burma). Neither of these diseases has ever been recorded in Australia.

Key signs

Both diseases are characterised by sudden onset of fever with nasal and eye discharges and excessive salivation. The diseases may be mild in indigenous breeds of sheep and goats from endemic areas, but are often fatal in newly introduced animals. In 1–2 days, classical pox lesions develop over all of the skin, but are most obvious where wool or hair is short. Lesions may occur on the mucous membranes of the mouth, nostrils and vulva. Acute respiratory distress occurs if lesions develop in the lungs. Fluid from the lesions causes matting of the fleece. Lesions also develop in the gastrointestinal tract, trachea and lungs. Deaths may result at any stage, but peak mortality usually occurs about 2 weeks after the development of lesions. Mortality may reach 50% in adults and approach 100% in young animals.

Spread

Both diseases are highly infectious. The incubation period is usually 12 days, but ranges from 2 to 14 days. Virus is present in all secretions and excretions of infected animals at every stage of the diseases, including milk and scabs from skin lesions. Transmission is mainly via the respiratory system but may be through abraded skin. Movement of infected animals is the main way disease is spread to a new premises or area. Insects can act as mechanical vectors of the virus over short distances. Recovered animals do not remain carriers of the virus and have lifelong immunity.

Persistence of the virus

The virus is very resistant to inactivation both on and off the host. It can persist for up to 3 months in wool and hair from infected animals, for up to 6 months in the environment, and for many years in dried scabs at ambient temperatures. There is no evidence that the virus persists in meat from infected animals.

Glossary

Standard AUSVETPLAN terms

Animal byproducts	Products of animal origin that are not for consumption but are destined for industrial use (eg hides and skins, fur, wool, hair, feathers, hoofs, bones, fertiliser).
Animal Health Committee	A committee whose members are the chief veterinary officers of the Commonwealth, states and territories, along with representatives from the CSIRO Australian Centre for Disease Preparedness (CSIRO-ACDP) and the Australian Government Department of Agriculture, Water and the Environment. There are also observers from Animal Health Australia, Wildlife Health Australia, and the New Zealand Ministry for Primary Industries. The committee provides advice to the National Biosecurity Committee on animal health matters, focusing on technical issues and regulatory policy. <i>See also</i> National Biosecurity Committee
Animal products	Meat, meat products and other products of animal origin (eg eggs, milk) for human consumption or for use in animal feedstuff.
Approved disposal site	A premises that has zero susceptible livestock and has been approved as a disposal site for animal carcasses, or potentially contaminated animal products, wastes or things.
Approved processing facility	An abattoir, knackery, milk processing plant or other such facility that maintains increased biosecurity standards. Such a facility could have animals or animal products introduced from lower-risk premises under a permit for processing to an approved standard.
At-risk premises	A premises in a restricted area that contains a live susceptible animal(s) but is not considered at the time of classification to be an infected premises, dangerous contact premises, dangerous contact processing facility, suspect premises or trace premises.
Australian Chief Veterinary Officer	The nominated senior veterinarian in the Australian Government Department of Agriculture, Water and the Environment who manages international animal health commitments and the Australian Government's response to an animal disease outbreak. <i>See also</i> Chief veterinary officer
AUSVETPLAN	<i>Australian Veterinary Emergency Plan</i> . Nationally agreed resources that guide decision making in the response to emergency animal diseases (EADs). It outlines Australia's preferred approach to responding to EADs of national significance, and supports efficient, effective and coherent responses to these diseases.
Carcase	The body of an animal slaughtered for food.
Carcass	The body of an animal that died in the field.
Chief veterinary officer (CVO)	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. <i>See also</i> Australian Chief Veterinary Officer

Compartmentalisation	The process of defining, implementing and maintaining one or more disease-free establishments under a common biosecurity management system in accordance with OIE guidelines, based on applied biosecurity measures and surveillance, to facilitate disease control and/or trade.
Compensation	The sum of money paid by government to an owner for livestock or property that are destroyed for the purpose of eradication or prevention of the spread of an emergency animal disease, and livestock that have died of the emergency animal disease. <i>See also</i> Cost-sharing arrangements, Emergency Animal Disease Response Agreement
Consultative Committee on Emergency Animal Diseases (CCEAD)	The key technical coordinating body for animal health emergencies. Members are state and territory chief veterinary officers, representatives of CSIRO-ACDP and the relevant industries, and the Australian Chief Veterinary Officer as chair.
Control area (CA)	A legally declared area where the disease controls, including surveillance and movement controls, applied 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 incident according to need).
Cost-sharing arrangements	Arrangements agreed between governments (national and state/territory) and livestock industries for sharing the costs of emergency animal disease responses. <i>See also</i> Compensation, Emergency Animal Disease Response Agreement
Dangerous contact animal	A susceptible animal that has been designated as being exposed to other infected animals or potentially infectious products following tracing and epidemiological investigation.
Dangerous contact premises (DCP)	A premises, apart from an abattoir, knackery or milk processing plant (or other such facility) that, after investigation and based on a risk assessment, is considered to contain a susceptible animal(s) not showing clinical signs, but considered highly likely to contain an infected animal(s) and/or contaminated animal products, wastes or things that present an unacceptable risk to the response if the risk is not addressed, and that therefore requires action to address the risk.
Dangerous contact processing facility (DCPF)	An abattoir, knackery, milk processing plant or other such facility that, based on a risk assessment, appears highly likely to have received infected animals, or contaminated animal products, wastes or things, and that requires action to address the risk.
Declared area	A defined tract of land that is subjected to disease control restrictions under emergency animal disease legislation. There are two types of declared areas: restricted area and control area.
Decontamination	Includes all stages of cleaning and disinfection.
Depopulation	The removal of a host population from a particular area to control or prevent the spread of disease.
Destroy (animals)	To kill animals humanely.

Disease agent	A general term for a transmissible organism or other factor that causes an infectious disease.
Disease Watch Hotline	24-hour freecall service for reporting suspected incidences of exotic diseases – 1800 675 888.
Disinfectant	A chemical used to destroy disease agents outside a living animal.
Disinfection	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.
Disinsectation	The destruction of insect pests, usually with a chemical agent.
Disposal	Sanitary removal of animal carcasses, 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. <i>See also</i> Endemic animal disease, Exotic animal disease
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 participatory decision making, risk management, cost sharing, the use of appropriately trained personnel and existing standards such as AUSVETPLAN. <i>See also</i> Compensation, Cost-sharing arrangements
Endemic animal disease	A disease affecting animals (which may include humans) that is known to occur in Australia. <i>See also</i> Emergency animal disease, Exotic animal disease
Enterprise	<i>See</i> Risk enterprise
Enzyme-linked immunosorbent assay (ELISA)	A serological test designed to detect and measure the presence of antibody or antigen in a sample. The test uses an enzyme reaction with a substrate to produce a colour change when antigen-antibody binding occurs.
Epidemiological investigation	An investigation to identify and qualify the risk factors associated with the disease. <i>See also</i> Veterinary investigation
Epidemiology	The study of disease in populations and of factors that determine its occurrence.
Exotic animal disease	A disease affecting animals (which may include humans) that does not normally occur in Australia. <i>See also</i> Emergency animal disease, Endemic animal disease
Exotic fauna/feral animals	<i>See</i> Wild animals
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.
General permit	A legal document that describes the requirements for movement of an animal (or group of animals), commodity or thing, for which permission may be granted without the need for direct interaction between the person moving the animal(s), commodity or thing and a government veterinarian or inspector. The permit may be completed via a webpage or in an approved place (such as a government office or commercial premises). A printed version of the permit must accompany the movement. The permit may impose preconditions and/or restrictions on movements. <i>See also</i> Special permit
In-contact animals	Animals that have had close contact with infected animals, such as noninfected animals in the same group as infected animals.
Incubation period	The period that elapses between the introduction of a pathogen into an animal and the first clinical signs of the disease.
Index case	The first case of the disease to be diagnosed in a disease outbreak. <i>See also</i> Index property
Index property	The property on which the index case is found. <i>See also</i> Index case
Infected premises (IP)	A defined area (which may be all or part of a property) on which animals meeting the case definition are or were present, or the causative agent of the emergency animal disease is present, or there is a reasonable suspicion that either is present, and that the relevant chief veterinary officer or their delegate has declared to be an infected premises.
Local control centre	An emergency operations centre responsible for the command and control of field operations in a defined area.
Monitoring	Routine collection of data for assessing the health status of a population or the level of contamination of a site for remediation purposes. <i>See also</i> Surveillance
Movement control	Restrictions placed on the movement of animals, people and other things to prevent the spread of disease.
National Biosecurity Committee	A committee that was formally established under the Intergovernmental Agreement on Biosecurity (IGAB). The IGAB was signed on 13 January 2012, and signatories include all states and territories except Tasmania. The committee provides advice to the Agriculture Senior Officials Committee and the Agriculture Ministers' Forum on national biosecurity issues, and on the IGAB.
National Management Group (NMG)	A group established to approve (or not approve) the invoking of cost sharing under the Emergency Animal Disease Response Agreement. NMG members are the Secretary of the Australian Government Department of Agriculture, Water and the Environment as chair, the chief executive officers of the state and territory government parties, and the president (or analogous officer) of each of the relevant industry parties.
Native wildlife	<i>See</i> Wild animals

OIE Terrestrial Code	OIE <i>Terrestrial animal health code</i> . Describes standards for safe international trade in animals and animal products. Revised annually and published on the internet at: www.oie.int/international-standard-setting/terrestrial-code/access-online .
OIE Terrestrial Manual	OIE <i>Manual of diagnostic tests and vaccines for terrestrial animals</i> . Describes standards for laboratory diagnostic tests, and the production and control of biological products (principally vaccines). The current edition is published on the internet at: www.oie.int/en/standard-setting/terrestrial-manual/access-online .
Operational procedures	Detailed instructions for carrying out specific disease control activities, such as disposal, destruction, decontamination and valuation.
Outside area (OA)	The area of Australia outside the declared (control and restricted) areas.
Owner	Person responsible for a premises (includes an agent of the owner, such as a manager or other controlling officer).
Polymerase chain reaction (PCR)	A method of amplifying and analysing DNA sequences that can be used to detect the presence of viral DNA.
Premises	A tract of land including its buildings, or a separate farm or facility that is maintained by a single set of services and personnel.
Premises of relevance (POR)	A premises in a control area that contains a live susceptible animal(s) but is not considered at the time of classification to be an infected premises, suspect premises, trace premises, dangerous contact premises or dangerous contact processing facility.
Prevalence	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.
Proof of freedom	Reaching a point following an outbreak and post-outbreak surveillance when freedom from the disease can be claimed with a reasonable level of statistical confidence.
Qualifiers	
- assessed negative	Assessed negative (AN) is a qualifier that may be applied to ARPs, PORs, SPs, TPs, DCPs or DCPFs. The qualifier may be applied following surveillance, epidemiological investigation, and/or laboratory assessment/diagnostic testing and indicates that the premises is assessed as negative at the time of classification.
- sentinels on site	Sentinels on site (SN) is a qualifier that may be applied to IPs and DCPs to indicate that sentinel animals are present on the premises as part of response activities (ie before it can be assessed as an RP).
- vaccinated	The vaccinated (VN) qualifier can be applied in a number of different ways. At its most basic level, it can be used to identify premises that contain susceptible animals that have been vaccinated against the EAD in question. However, depending on the

	legislation, objectives and processes within a jurisdiction, the VN qualifier may be used to track a range of criteria and parameters.
Quarantine	Legally enforceable requirement that prevents or minimises spread of pests and disease agents by controlling the movement of animals, persons or things.
Resolved premises (RP)	An infected premises, dangerous contact premises or dangerous contact processing facility that has completed the required control measures, and is subject to the procedures and restrictions appropriate to the area in which it is located.
Restricted area (RA)	A relatively small legally declared area around infected premises and dangerous contact premises that is subject to disease controls, including intense surveillance and movement controls.
Risk enterprise	A defined livestock or related enterprise that 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, artificial insemination centres, veterinary laboratories and hospitals, road and rail freight depots, showgrounds, field days, weighbridges and garbage depots.
Sensitivity	The proportion of truly positive units that are correctly identified as positive by a test. <i>See also</i> Specificity
Sentinel animal	Animal of known health status that is monitored to detect the presence of a specific disease agent.
Seroconversion	The appearance in the blood serum of antibodies (as determined by a serology test) following vaccination or natural exposure to a disease agent.
Serosurveillance	Surveillance of an animal population by testing serum samples for the presence of antibodies to disease agents.
Serotype	A subgroup of microorganisms identified by the antigens carried (as determined by a serology test).
Serum neutralisation test	A serological test to detect and measure the presence of antibody in a sample. Antibody in serum is serially diluted to detect the highest dilution that neutralises a standard amount of antigen. The neutralising antibody titre is given as the reciprocal of this dilution.
Slaughter	The humane killing of an animal for meat for human consumption.
Special permit	A legal document that describes the requirements for movement of an animal (or group of animals), commodity or thing, for which the person moving the animal(s), commodity or thing must obtain prior written permission from the relevant government veterinarian or inspector. A printed version of the permit must accompany the movement. The permit may impose preconditions and/or restrictions on movements. <i>See also</i> General permit
Specificity	The proportion of truly negative units that are correctly identified as negative by a test. <i>See also</i> 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 carcasses and decontamination of the site.
State coordination centre	The emergency operations centre that directs the disease control operations to be undertaken in a state or territory.
Surveillance	A systematic program of investigation designed to establish the presence, extent 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.
Suspect premises (SP)	Temporary classification of a premises that contains a susceptible animal(s) not known to have been exposed to the disease agent but showing clinical signs similar to the case definition, and that therefore requires investigation(s).
Swill	Also known as 'prohibited pig feed', means material of mammalian origin, or any substance that has come in contact with this material, but does not include: (i) Milk, milk products or milk by-products either of Australian provenance or legally imported for stockfeed use into Australia. (ii) Material containing flesh, bones, blood, offal or mammal carcasses which is treated by an approved process. ¹ (iii) A carcass or part of a domestic pig, born and raised on the property on which the pig or pigs that are administered the part are held, that is administered for therapeutic purposes in accordance with the written instructions of a veterinary practitioner. (iv) Material used under an individual and defined-period permit issued by a jurisdiction for the purposes of research or baiting. ¹ In terms of (ii), approved processes are: 1. rendering in accordance with the 'Australian Standard for the Hygienic Rendering of Animal Products' 2. under jurisdictional permit, cooking processes subject to compliance verification that ensure that a core temperature of at least 100 °C for a minimum of 30 minutes, or equivalent, has been reached. 3. treatment of cooking oil, which has been used for cooking in Australia, in accordance with the 'National Standard for Recycling of Used Cooking Fats and Oils intended for Animal Feeds'

	<p>4. under jurisdictional permit, any other nationally agreed process approved by AHC for which an acceptable risk assessment has been undertaken and that is subject to compliance verification.</p> <p>The national definition is a minimum standard. Some jurisdictions have additional conditions for swill feeding that pig producers in those jurisdictions must comply with, over and above the requirements of the national definition.</p>
Swill feeding	<p>Also known as 'feeding prohibited pig feed', it includes:</p> <ul style="list-style-type: none"> • feeding, or allowing or directing another person to feed, prohibited pig feed to a pig • allowing a pig to have access to prohibited pig feed • the collection and storage or possession of prohibited pig feed on a premises where one or more pigs are kept • supplying to another person prohibited pig feed that the supplier knows is for feeding to any pig. <p>This definition was endorsed by the Agriculture Ministers' Council through AGMIN OOS 04/2014.</p>
Trace premises (TP)	<p>Temporary classification of a premises that contains susceptible animal(s) that tracing indicates may have been exposed to the disease agent, or contains contaminated animal products, wastes or things, and that requires investigation(s).</p>
Tracing	<p>The process of locating animals, people or other items that may be implicated in the spread of disease, so that appropriate action can be taken.</p>
Unknown status premises (UP)	<p>A premises within a declared area where the current presence of susceptible animals and/or risk products, wastes or things is unknown.</p>
Vaccination	<p>Inoculation of individuals with a vaccine to provide active immunity.</p>
Vaccine	<p>A substance used to stimulate immunity against one or several disease-causing agents to provide protection or to reduce the effects of the disease. A vaccine is prepared from the causative agent of a disease, its products or a synthetic substitute, which is treated to act as an antigen without inducing the disease.</p>
- adjuvanted	<p>A vaccine in which one or several disease-causing agents are combined with an adjuvant (a substance that increases the immune response).</p>
- attenuated	<p>A vaccine prepared from infective or 'live' microbes that are less pathogenic but retain their ability to induce protective immunity.</p>
- gene deleted	<p>An attenuated or inactivated vaccine in which genes for non-essential surface glycoproteins have been removed by genetic engineering. This provides a useful immunological marker for the vaccine virus compared with the wild virus.</p>

- inactivated	A vaccine prepared from a virus that has been inactivated ('killed') by chemical or physical treatment.
- recombinant	A vaccine produced from virus that has been genetically engineered to contain only selected genes, including those causing the immunogenic effect.
Vector	A living organism (frequently an arthropod) that transmits an infectious agent from one host to another. A <i>biological</i> vector is one in which the infectious agent must develop or multiply before becoming infective to a recipient host. A <i>mechanical</i> vector is one that transmits an infectious agent from one host to another but is not essential to the life cycle of the agent.
Veterinary investigation	An investigation of the diagnosis, pathology and epidemiology of the disease. <i>See also</i> Epidemiological investigation
Viraemia	The presence of viruses in the blood.
Wild animals	
- native wildlife	Animals that are indigenous to Australia and may be susceptible to emergency animal diseases (eg bats, dingoes, marsupials).
- feral animals	Animals of domestic species that are not confined or under control (eg cats, horses, pigs).
- exotic fauna	Nondomestic animal species that are not indigenous to Australia (eg foxes).
Wool	Sheep wool.
Zero susceptible species premises (ZP)	A premises that does not contain any susceptible animals or risk products, wastes or things.
Zoning	The process of defining, implementing and maintaining a disease-free or infected area in accordance with OIE guidelines, based on geopolitical and/or physical boundaries and surveillance, to facilitate disease control and/or trade.
Zoonosis	A disease of animals that can be transmitted to humans.

Abbreviations

Standard AUSVETPLAN abbreviations

Abbreviation	Full title
ACDP	Australian Centre for Disease Preparedness
AN	assessed negative
ARP	at-risk premises
AUSVETPLAN	Australian Veterinary Emergency Plan
CA	control area
CCEAD	Consultative Committee on Emergency Animal Diseases
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CVO	chief veterinary officer
DCP	dangerous contact premises
DCPF	dangerous contact processing facility
EAD	emergency animal disease
EADRA	Emergency Animal Disease Response Agreement
EADRP	Emergency Animal Disease Response Plan
EDTA	ethylenediaminetetraacetic acid (anticoagulant for whole blood)
ELISA	enzyme-linked immunosorbent assay
GP	general permit
IETS	International Embryo Technology Society
IP	infected premises
LCC	local control centre
NMG	National Management Group
OA	outside area
OIE	World Organisation for Animal Health
PCR	polymerase chain reaction
POR	premises of relevance
RA	restricted area
RP	resolved premises
SCC	state coordination centre
SP	suspect premises

Abbreviation	Full title
SpP	special permit
TP	trace premises
UP	unknown status premises
ZP	zero susceptible stock premises

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