AUSTRALIAN VETERINARY EMERGENCY PLAN

AUSVETPLAN

Enterprise Manual

Wool industry

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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Text under development

In this manual, text placed in square brackets [xxx] and greyed out 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 further worked on by experts and relevant text included at a future date.

Contact information

If you have any requests or inquiries concerning reproduction and rights, or suggestions or recommendations, you should address these to:

AUSVETPLAN — Animal Health Australia
Head of Program AUSVETPLAN
PO Box 151
Lyneham ACT 2602
Tel: 02 6232 5522
email: ausvetplan@animalhealthaustralia.com.au

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EMERGENCY ANIMAL DISEASE HOTLINE: 1800 675 888

The Emergency Animal Disease 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

Enterprise manuals address the risks associated with so-called risk enterprises. These are defined as livestock or related enterprises that are a potential source of major infection for many other premises, and can increase the potential size of an outbreak and affect its nature.

Greasy wool can carry disease-causing agents and can therefore facilitate the movement and spread of an emergency animal disease (EAD). This risk may also impact the ability to export wool to certain markets until appropriate risk mitigation measures can be implemented (eg eradication, treatment, processing, certification).

1.1.2 Scope

This enterprise manual covers wool enterprises from the point of on-farm shearing, through to the point of export or domestic processing. The manual is aimed at both government officers and wool industry personnel who may be involved in EAD preparedness and response. For government personnel, including those not familiar with the industry, the manual brings together, from many sources, operational guidelines, plans of action and other resources for dealing with EADs. For industry personnel, including owners or managers, the manual provides guidelines on their responsibilities during an EAD outbreak, as required by the relevant government authorities, and strategies that may be adopted to improve preparedness for, or to handle, a suspected EAD. Managers should include elements of this manual in the operational manuals of their enterprises.

1.1.3 Development

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.

1.2 Other documentation

This enterprise manual should be read and implemented in conjunction with:

- other AUSVETPLAN documents, including response strategies, operational and management manuals; and any relevant guidance and resource documents. The complete series of manuals is available on the Animal Health Australia website[1]
- relevant jurisdictional or industry policies, response plans, standard operating procedures and work instructions

[1] https://animalhealthaustralia.com.au/ausvetplan

- relevant Commonwealth and jurisdictional legislation and legal agreements (such as the Emergency Animal Disease Response Agreement — EADRA[2]) where applicable.

1.3 Training resources

1.3.1 EAD preparedness and response arrangements in Australia

The EAD Foundation Online course[3] provides livestock producers, veterinarians, veterinary students, government personnel and emergency workers with foundation knowledge for further training in EAD preparedness and response in Australia.

1.3.2 Industry-specific training

Livestock and wool-selling agents' EAD training[3]

The livestock and wool-selling agents' EAD training course introduces learners to EADs that could potentially affect the Australian livestock industry, the national response arrangements, and some basic principles of biosecurity.

[2] https://animalhealthaustralia.com.au/eadra
[3] https://animalhealthaustralia.com.au/online-training-courses

2 The Australian industry

2.1 Current wool production

Wool is produced under a range of environmental conditions in Australia, from semi-arid pastoral country to high-rainfall areas. Wool-growing operations are often integrated with other livestock operations within an enterprise. These may include a mix of other livestock enterprises, such as shedding sheep breeds (such as Wiltshire Horns, Van Rooys and Damaras), cattle and goats as well as cropping and horticulture.

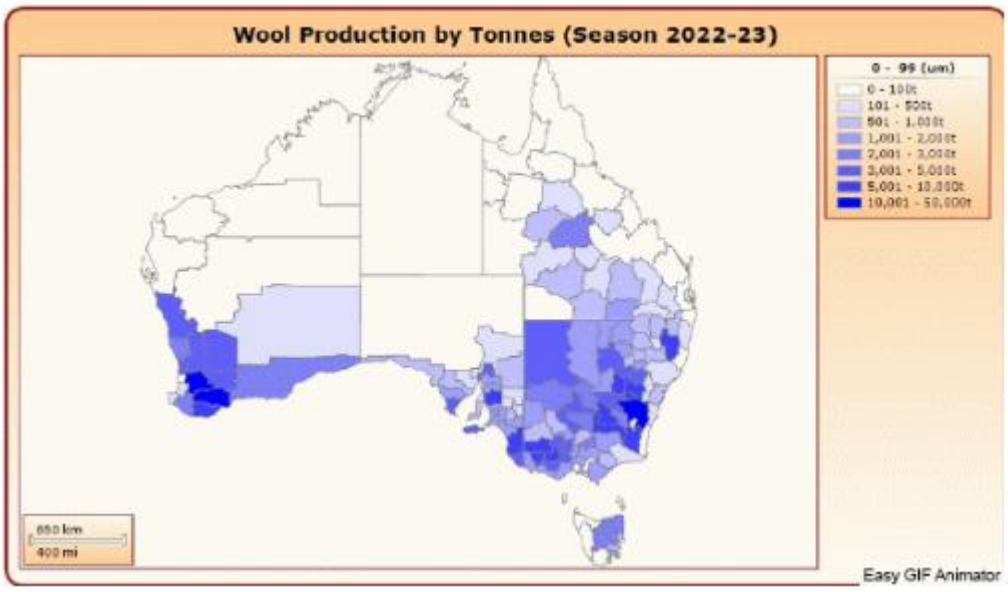
Australia is the largest producer of apparel (fine) wool, supplying approximately 80% of the world's apparel wool. Australia is also the largest exporter of wool; annual production (2021–22) was 324 million kilograms, with approximately 95% being exported in a greasy (unprocessed) form. Further information on exports by country and certification requirements can be found in Section 3.1.1.

Based on compulsory wool levy payments in 2021–22, there are 66,610 wool-growing enterprises in Australia (AWI 2022a), distributed among the jurisdictions as per Table 2.1. Of these, approximately 46,493 paid in excess of $100 in levies in the preceding 3 years, indicating an enterprise size exceeding (approximately) 50 wool-producing sheep. The remaining 20,117 levy payers can be considered hobby farmers, or farmers for whom wool comprises a small portion of a mixed enterprise.

Table 2.1 Australian wool production by state (2021–22)

State	Greasy wool (million kg)	Share of total (%)
New South Wales and Australian Capital Territory	113.3	35.0
Victoria	73.9	22.8
Western Australia	61.2	18.9
South Australia	56.1	17.3
Tasmania	10.3	3.2
Queensland	8.9	2.6
Total	*324**	*100.0**

Source: AWI (2022b)
*Totals may not add due to rounding.



Source: AWTA (nd)

Figure 2.1 Wool production by weight

Figure 2.1, from the Australian Wool Testing Authority (AWTA), shows the volume of wool coming from each wool statistical area (WSA) (AWTA nd). The WSA is usually (but not always) recorded for each 'lot' of wool after it has been sampled for quality testing. Detailed WSA heat maps by state, and up to date WSA data can be obtained from AWTA[4] and may be useful to authorities in disease outbreak planning and management, because they show how much wool was tested from a particular WSA within a defined timeframe. AWTA also retains information on the sample (test) location of wool, which would also be of use in determining wool production and distribution as part of EAD response planning. This data broadly aligns with, though may differ slightly from, WSA data. (The Australian Wool Production Forecasting Committee takes this information into account when estimating wool production.)

More than 95% of Australia's wool production is exported as greasy wool (see Figure 2.2).

The main destination markets for Australian greasy wool exports in 2022–23 are provided in Table 2.2.

Table 2.2 Destination markets for Australian greasy wool exports in 2022–23

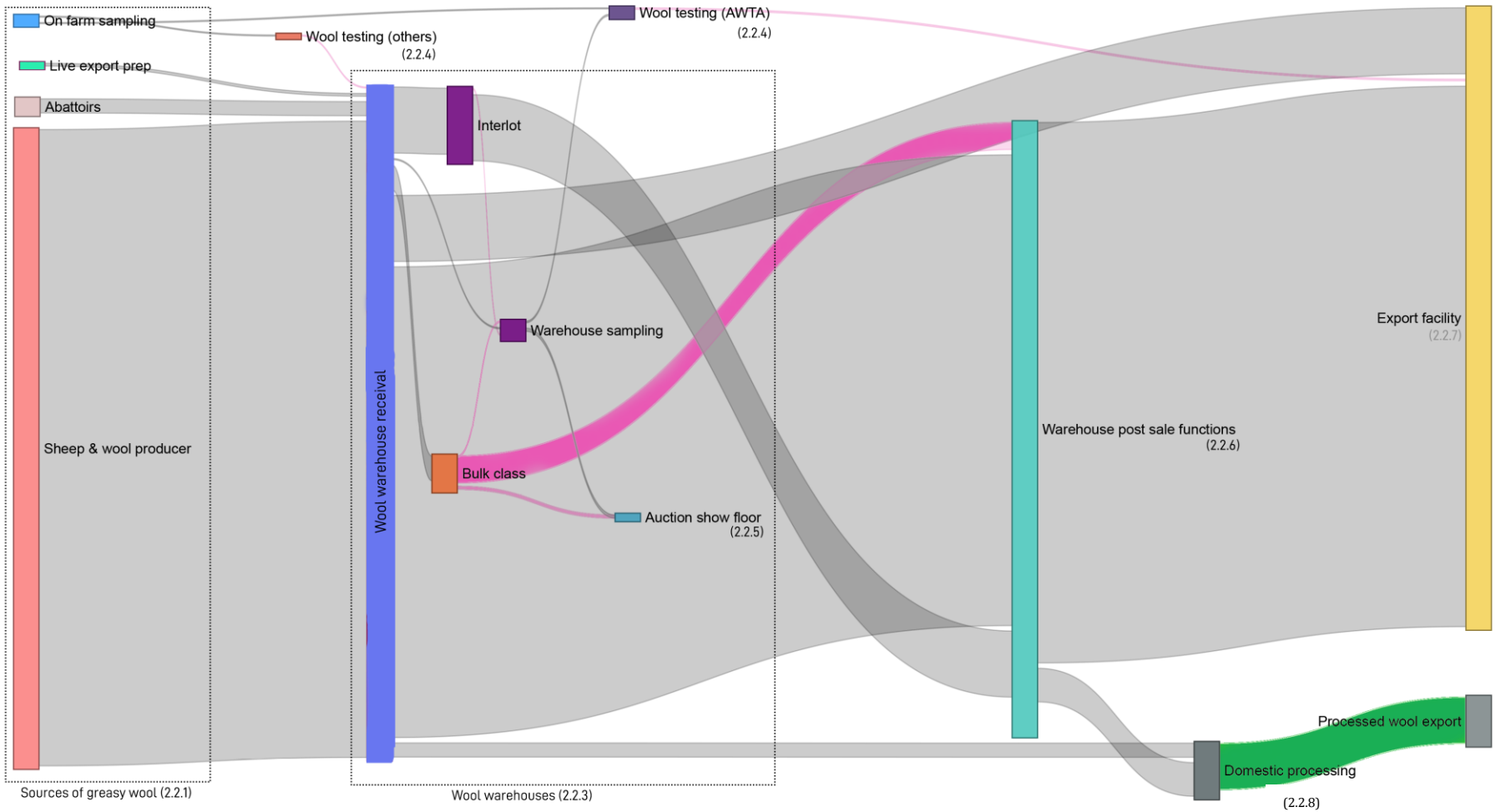
Destination	Percentage of exports
China	81.2%
India	5.2%
Italy	4.1%
The Czech Republic	4.0%
South Korea	1.6%
Other countries	3.9%

[4] www.awtawooltesting.com.au/index.php/en/statistics/volume-and-trends

2.2 Industry operations

This section outlines the various industry operations taking place, from the point of on-farm harvest (shearing) to early stage processing or export. The supply chain is represented graphically in Figure 2.2 with reference to the sections in this manual that relate to each supply chain entity.

Appendix 2 provides a summary of key documents used throughout the supply chain.



AWTA = Australian Wool Testing Authority

Figure 2.2 Australian wool industry operations

Each of the coloured columns (or dotted borders) above is referenced to the relevant section of this manual.

Grey ‘ribbons’ provide an indication of the proportion of wool that moves from entity to entity — or in the case of ‘Wool Warehouse (2.2.3)’, the proportion of wool that passes through various warehouse operations.

Magenta ribbons represent a break in traceability, such that wool from multiple sources is aggregated and can no longer be attributed to a single source.

Green ribbons indicate that wool has undergone scouring, which will mitigate many, but not all, biosecurity risks (see Section 2.2.8).

2.2.1 Sources of greasy wool

The vast majority of wool in Australia originates at the property on which the animals reside. Some wool may also originate from live export depots or abattoirs, and may be removed at the latter from hides and skins after slaughter. Wool originating from live export depots and abattoirs will typically be shorter and deemed of lesser quality than that harvested on farm; thus, in these cases wool handling and classing may not be as specific as on farm.

2.2.1.1 Key operations

i. Shearing

Shearing involves the removal and preparation of all wool from the animal. This typically occurs once or twice a year at around the same time(s) annually, with other husbandry practices, such as crutching and wigging, taking place in preparation for shearing. With modern genetics, some producers are shearing as often as once every 6 months. Each sheep will typically produce between 2 and 8 kg of greasy wool in a single shearing. Wool that leaves the farm results from the following operations:

a. **Sheep handling** — sheep are typically mustered to a central shearing shed where shearing takes place. Animals are brought to the shearing shed and shorn in specific mobs (typically grouped according to sex and age). Farmers will have records available relating to the number of animals in each mob, and the sequence in which they are presented for shearing.
b. **Shearing** — most sheep are shorn by contractors using mechanical hand pieces, though small numbers (typically stud animals) may be shorn using hand shears. Shearers are paid according to the number and class of sheep they shear; this is recorded in a shearing tally book.
c. **Wool handling** — after the wool has been removed from a sheep, the fleece is separated into different quality components according to physical attributes and contaminants. Each 'type' of wool removed from the main fleece is placed into a designated bin or container until packaging into butts or bales.
d. **Wool classing** — the 'wool classer' is responsible for oversight of the quality of the shearing and wool-handling activities. Wool classers will determine the preparation (sorting) that the wool undergoes, and place the main fleeces into appropriate bins, according to physical characteristics, before packaging. The wool from each bin is continually packaged throughout the shearing process, bales originating from the same bin being grouped into a 'line' of wool of similar attributes (fibre diameter, length, strength, yield, colour). The classer provides subjective information on the physical attributes of the wool in a document called the 'classer's specification' (speci)[5]. The speci contains information on the number of bales in each line and the classes of stock that make up that line. Wool is categorised according to the Australian Wool Exchange (AWEX) bale description[6] as referenced in the AWEX Code of Practice.
e. **Wool may also be harvested on farm under the following circumstances:**

[5] www.awex.com.au/media/2146/awex-nwd-v93-march-2022-landscape.pdf
[6] www.awex.com.au/media/1873/awx-262-cop-2018_section_10_bale-description-chart.pdf

i. **Routine husbandry procedures** — routine husbandry procedures include crutching (removal of wool from the breech area), wigging (removal of wool from the face and head) and the removal of belly wool. This is typically performed by shearing contractors who service many enterprises. These procedures may happen outside of the shearing shed using specialist equipment, such as mobile crutching trailers. Wool harvested through these processes is packaged in the same manner as occurs at shearing; however, this wool may be held on farm for a period of time, potentially until dispatched with the next consignment of wool from shearing.

ii. **Midside and pin-bone sampling** — a small sample of wool (c. 50 g) may be removed from each animal for testing to determine genetic merit. Samples are generally taken by farm staff or contract labour and can either be taken while animals are standing in a race or from the fleece during shearing. Midside samples are individually bagged and can be traced back to individual animals (as they carry a label referencing ear tag credentials). Individual samples are generally aggregated into an outer butt, bag or box for ease of handling.

ii. Packaging

a. **Baling / pressing** — Most wool is packaged into nylon packs using hydraulic wool presses. Packs are manufactured according to standards defined and maintained by AWEX. Each wool pack has 4 overlapping flaps that are closed over the top of the wool when pressing is completed. The flaps are held in place by a total of nine bale fasteners. No wool protrudes from a newly pressed wool bale, either in the shearing shed or during transport. The average bale weighs approximately 180 kg, and typically varies between 120 and 204 kg (some exceptions apply). Wool packaged into bales has a series of brands applied to the top panel and the face of the bale. This branding contains information on: farm name / BRAND, classer stencil number, AWEX bale description[6], and bale number. The information in the bale brands links to the speci. Once packaged into bales, wool typically remains in that packaging until the point of processing. The on-farm weight of each bale is typically recorded in a 'bale book'. As of 1 July 2023 all new wool packs imported into Australia have been equipped with an RFID antenna and a QR code containing a unique identification code for each pack/bale.

b. **Butts and bags** — These are generally smaller than a bale in weight and may be the same nylon material as the bales, or another material. Butts are typically used when there is insufficient wool to fill a conventional bale, and are compressed by hand or foot tramping. Butts are generally used as interim storage until repackaging into bales at a later date. This repackaging may occur on farm or at a wool broker's warehouse. Butts and bags that are dispatched from farm for repackaging at a broker's warehouse may contain several types of wool in a single unit and generally have limited records available. Farmers may keep records of the weight of each of classes of wool dispatched in butts or bags.

iii. Storage

Limitations on storage space may require wool to be dispatched from the farm while shearing is still underway. Most wool is dispatched within several weeks of shearing, but producers may elect to retain wool on farm in response to market conditions. Wool that

is stored on farm for extended periods may be moved out of the shearing shed to a secondary shed or warehouse.

iv. Dispatch

Wool bales are always stacked on trucks or trailers with the top of each bale facing the centre of the truck, or the front of the truck. The top of the bale never faces the outside of the truck. Transport may be on open trucks and trailers, but this is progressively changing to trucks and trailers with covered tops and sides. Small loads of wool (eg 4–5 bales) may be transported on a tray-top utility from a farm to a private treaty wool merchant's warehouse in a nearby town. Wool is never transported as loose fibre (as happens with cotton, for example). A consignment note ('cart note') accompanies each truck load of wool from professional cartage services. It is dated and includes details of each bale: the brand, wool description and bale number.

Contracted transport services may collect wool from multiple properties on one trip and should have records outlining the number of bales collected from each property and the destination transport depot or warehouse(s).

Most (but not all) wool leaving a farm should be accompanied by a National Wool Declaration (NWD).[5] The NWD is a nonmandatory document that contains information on physical and nonphysical attributes of the wool. The NWD also links specific bales to the property identification code (PIC) from which the wool was delivered. Wool (with the exception of midside and pin-bone samples) leaves the farm on trucks which may be operated by farmers or contractors. Wool leaving farms is typically sent to a broker warehouse for sampling and testing, lotting and/or rehandling in preparation for sale, but may pass via an intermediate transport depot during this time.

Butts and bags sold directly to a private treaty merchant are often accompanied by little or no documentation.

Midside and pin-bone samples are sent to testing houses (see Section 2.2.4), typically by courier or post; however, they may move via the wool grower's livestock agent or wool agent. Samples that are sent via a cartage contractor will be accompanied by a cart note. Samples that are delivered by the wool grower or by a friend are unlikely to have any detailed accompanying documentation.

2.2.1.2 Key personnel

a. **Farm manager and on-farm staff** — Typically work on a single property, but may work on multiple properties in the same region. Farm managers and staff may be involved in on-farm enterprises other than sheep and wool production. Farm managers and staff may assume other roles (discussed below) during shearing. They may reside off farm, including on their own properties. Farm managers and/or shed staff will typically retain a copy of all documentation listed in Appendix 2, column 'sources of greasy wool'.

b. **Shearers and wool handlers (rousies) —** May be employed directly by the farm manager, or as part of a contracting team. Shearers and wool handlers will move between properties on a predetermined schedule. Shearing and wool-handling equipment is typically cleaned when moving between properties, but not to a degree that is likely to effectively mitigate the risk of spreading an EAD.

c. **Classer** — May be employed directly by the farm manager, or as part of a contracting team. Classers typically move between properties on a predetermined schedule. All classers are trained and registered by AWEX and apply their unique stencil number (registration number) to all wool bales and documentation that they oversee or produce.

d. **Presser —** May be employed directly by the farm manager, or as part of a contracting team. Pressers are responsible for packaging lines of prepared wool into bales, recording individual bale weights and applying identifying marks to the top and at least one face of the bale using a permanent marker or stencil.

e. **Truck driver —** The transport of wool to broker warehouses may be undertaken using either farm-owned transport (and farm staff) or contracted transport services.

2.2.2 Transport depots

Some wool may move through an intermediate transport depot before consolidation and onward transport to a wool warehouse. Such transport depots will be used to aggregate smaller consignments of wool for transport to a wool warehouse.

2.2.2.1 Key operations

Intermediate transport depots will retain details of consignments in and out, including:

- receival details: transport details, consignor, number of bales received
- stock control details: location of received goods within depot
- dispatch details: transport details, consignee, number of bales dispatched.

2.2.3 Wool warehouses

Warehouses receive wool from various sources, including, farms, live export depots and abattoirs, other warehouses, wool testing facilities and auction show floors. Most large wool warehouses have a unique electronic data interchange (EDI) identifier, but this may not apply to small private buyers. EDI codes are assigned by AWEX and can be used to track wool after sampling has taken place. The EDI network is administered by AWTA (see Figure 2.3).

Wool warehouses can be classed into 2 operating models, although a single warehouse may undertake both functions.

2.2.3.1 Auction broker warehouse

The auction broker warehouse will receive and facilitate sampling of wool on behalf of a seller (typically a farmer) for offsite quality testing (see Section 2.2.4). Lotting and rehandling may also occur at warehouses on behalf of a seller before sampling (for testing) and subsequently presenting for sale. Wool is typically held until a sales process is completed, unless the broker is instructed otherwise by the seller or the seller's agent. Sales take place by open cry auction, contract or tender process. Wool to be offered for auction is usually sampled and sold within 4–6 weeks of shearing. However, the bales may remain in the broker's warehouse for longer periods (months) if the wool is not sold when first offered for sale or the wool grower decides to wait until a later date to offer the wool for sale. Upon completion of the sales process,

ownership of the wool transfers to the buyer, with whom the warehouse will liaise for dispatch instructions. Once the wool is sold, the buyer or exporter usually takes delivery of the wool by the end of the following week and sends it to a wool-dumping/packing facility, a local scouring facility or another warehouse. Approximately 85% of wool received is offered for direct sale and 15% is rehandled before offering for sale.

2.2.3.2 Private treaty merchant / wool buyer warehouse

Private treaty merchant / wool buyer warehouses undertake similar functions to those of an auction broker warehouse; the key point of difference being that these facilities will typically take ownership of wool upon entry to the warehouse. As with an auction broker warehouse, change of ownership will occur upon completion of a sale process; the exception to this being in the case of a warehouse that may be operated by a domestic wool processor. Privately purchased wool is usually onsold as soon as possible. Approximately 30–40% of wool received is offered for direct sale and 60–70% is rehandled before offering for sale.

2.2.3.3 Key operations

i. Receival

Upon receival at the warehouse a receipt is issued to the delivering driver or grower. Records are kept of the farm brand / vendor and number of bales, bags or butts received.

Each lot of wool bales is assigned a unique inhouse 'weight note number' marked on each bale (sometimes called a folio number). The weight note number is used by the warehouse as a unique identifier for that lot of wool while it is at the warehouse.

Bags and butts are generally assigned a rehandle number on receipt. It is used to track wool to its allocated bin within the rehandling facility.

Internal systems will cross-reference weight note number with the identification marks applied on farm (eg farm brand, bale description, bale number and classer registration).

The warehouse will receive instructions from brokers as to how wool is to be handled in the warehouse (ie interlot, rehandle or offer for a certain sale). Information from the specification form is manually entered into the system to generate a 'bale markers list', which is used to apply folio numbers to bales.

Each warehouse will have a system for recording the specific location of each lot of wool within the warehouse.

ii. Rehandling and interlotting activities

Warehouses may undertake rehandling activities (known as 'bulk classing') or interlotting to aggregate small quantities of wool into lots that are large enough for sampling and presentation for sale, or to add value through additional preparation or blending to meet market specifications. These are described below.

Bulk classing

Bulk classing is the process of combining wool from various points of origin into categories (bins), according to physical characteristics. Bulk-class wool may arrive at the warehouse in butts, bags or bales, which contain a variety of identifications and documentation as described previously. While warehouse records may be able to determine the sources of wool contained within a given 'bin', it will not be possible to trace a portion of wool within a bin to its source. When enough wool has been accumulated within a bin it is pressed into bales with bale brands. Documentation is prepared in the same manner as it would be on farm; the point of difference being that the wool is branded and offered for sale in the name of the warehouse or bulk-classing facility.

In an EAD response, an assessment must be undertaken of bulk-classing facilities to determine the degree of segregation and internal traceability their systems provide, and therefore what movement controls and forward tracing activities are necessary.

Interlotting

Interlotting is the process of amalgamating small numbers of bales from various farms to obtain a lot that is of similar wool type and more appropriate for sampling and sale. Interlotted bales remain intact and, although combined through the testing and sales process, they can be traced back to individual farms or bulk-classing processes using documentation held by the warehouse for facilitation of payment in relation to the weight of wool in the lot from each contributing farm. Bulk-classed wool may also be subject to interlotting.

iii. Wool sampling[7]

Wool is subject to a number of sampling processes for offsite quality testing (see Section 2.2.4) and the drawing of display samples for the auction show floor (see Section 2.2.5). At the time of sampling, an AWTA sample/test number is assigned, which is entered into the warehouse operator's system and follows the wool through to the testing house in the form of physical tags that accompany the samples.

AWTA maintains information on sample and test volume by state.[8]

Grab and display samples

Grab samples are taken by a hydraulically powered mechanical claw which penetrates the sides of individual wool bales. Each bale in a lot is sampled, and the grab samples are amalgamated into a single 'display' sample for that lot. Display samples can vary from around 3 kg to more than 5 kg, depending on the number of bales in the lot for sale.

Some wool (especially finer merino fleece wool and combing types) may have 'tuft' samples taken from the display sample. A tuft is a bundle of wool containing between 1 and 20 staples. The tufts are wound onto a reel for transport, which may contain multiple lots. Each lot is accompanied to the testing house by a test identification label. Tufts can be taken from the display sample at the auction show floor (see Section 2.2.5).

A warehouse-generated 'weight note' is included with each display sample upon placement in a polyethylene bag that is sealed with an elastic band. These weight notes

[7] Wool sampling is conducted in accordance with International Wool Textile Organisation standards.
[8] www.awtawooltesting.com.au/index.php/en/statistics/awta-analytics

will reference the folio number and the sale for which the sample is to be displayed. The individually bagged display samples are packed into wool packs and sealed for transport by road or air for display on the show floor. The weight note for each sample contains information including the date of sampling, the farm brand, the wool description, and individual bale numbers and weights (see Appendix 2).

The display sample is made available to wool buyers for inspection before sale. High-quality superfine and ultrafine bales of wool may be transported to and displayed on the auction floor as entire opened bales, with grab samples returned to the bales after tufting has taken place.

Display samples are retained by the broker or private treaty merchant until the wool they came from is sold. The display samples are then bulk classed together with other display samples and offered for sale over the next few weeks. Tuft samples are retained by AWTA until the wool is tested.

Core samples

Core samples are taken by a coring machine, which penetrates the length of individual bales in a sale lot with a set of core tubes ⅞ inch (about 22 mm) in diameter. The core samples from each bale in the lot are transported via closed vacuum tubes and amalgamated in a polyethylene bag. These composite samples for a lot typically weigh at least 900 g. Upon completion of sampling, a second bag is applied to prevent moisture fluctuation of the sample, a weight note is placed within the bag and it is sealed for dispatch to the testing house.

Core samples are scoured during the testing process. Any residual untested core sample material is retained until the wool is expected to be sold, in case a client requests a retest before the wool is sold.

All wool is sampled under supervision of AWTA and within the accepted standards and regulations as described by the International Wool Textile Organisation (IWTO).

iv. Dispatch

Wool

After payment is received, funds are cleared, and a delivery order is received via the EDI network. This order specifies what bale marks should be applied for the exporter/buyer and where the wool is to go. Loads or consignments are built based on wool destination — each load is assigned a load number or cart note (which is effectively a consignment note).

Wool may be moved without necessarily using the EDI network to update all parties about its location (eg internal overflow practices may require movement of wool to a different site to address storage capacity constraints); however, the EDI network is always updated when a change of custody of the wool is due to take place or if a wool delivery order is received. EDI codes can be obtained by contacting AWEX or AWTA. Wool warehouses will always know where wool is physically located.

When wool is paid for, funds are cleared and a wool delivery order (WDO) is successfully received from the nominated dump/pack house.

The WDO is processed into delivery loads at the broker for despatch at a time as programmed by the dump/pack house to receive the specified wool or a domestic processor or other party.

A pick list is generated for wool warehouse staff to retrieve the requested lots to be pulled from their store locations and marshalled on a shipping grid for countermarking. A marker's list is then produced for the countermarker to physically mark the wool exporter's nominated countermark.

A load sheet is produced to reflect the wool to be carried to the dump. The sheet is signed by the transport operator and is recorded as a load number for future reference.

Delivery orders may direct wool to other warehouse locations, which may include a domestic processor.

Samples

Individually bagged display samples are normally folded over at the top ('goose-necked') and sealed with an elastic band before being packed into wool packs and sealed for transport by road or air for display on the show floor. Each consignment of display samples leaving the warehouse will be accompanied by a consignment note.

Prepared core and tuft samples are packed in a custom-made durable and sealable bag or reel respectively for transport in bags or custom-made containers to an AWTA laboratory. Each of the bags contains a 'sample summary', which records the identification number of the individual samples. Each consignment of samples is accompanied by a consignment note.

A weight note is included in each sample, containing the date of sampling, the farm brand, the wool description, and individual bale numbers and weights. A consignment note accompanies each consignment of wool samples that travels via cartage contractor.

The farm identifiers, weight note / folio number, and sale and lot number are recorded in the database of the broker, private treaty merchant or other selling agent. This information is also recorded in AWTA's database when each lot is sampled and tested. AWTA also records the test certificate number. This number and the test results are electronically transferred to the selling agent for inclusion in their database.

2.2.3.4 Key personnel

The primary contact will be the warehouse manager; specific functions and responsibilities will vary according to individual warehouses operations (categorised below).

a. **Warehouse manager** — Oversees operations of the warehouse. Larger warehouses may have a person specifically in charge of wool operations.

b. **Sampling officers** — Employees of AWTA. May work across multiple sites (eg several smaller **warehouses** within a region).

c. **Store personnel** — Move wool around warehouse, rehandle and press, prepare sampling lines, apply marks on receival or dispatch.

d. Administration staff — Responsible for documentation management, use of internal warehouse, client and financial management programs.

2.2.4 Wool testing

Wool core and tuft samples are delivered to one of 2 Australian wool testing laboratories. Both of these laboratories are run by AWTA, with sites in Melbourne and Fremantle. These laboratories undertake objective measurement of the wool to facilitate wool marketing.

Wool samples may also be sent to testing facilities other than AWTA. These testing facilities typically perform objective measurement on midside or pin-bone wool samples to assist with on-farm genetic and wool preparation decision making. These services are also offered by AWTA.

2.2.4.1 Key operations

All testing is performed in accordance with IWTO standards and regulations.

AWTA takes ownership of core samples and tuft samples from the point of sampling. AWTA and other test houses take ownership of midside and pin-bone samples from the time of receipt.

After testing has been performed, or at the end of a sample retention period, samples are aggregated and can no longer be traced back to the point of sampling.

Aggregated samples will often then be sent to a private treaty merchant / wool buyer and onsold for export or local processing (see Sections 2.2.3, 2.2.6 or 2.2.8).

2.2.4.2 Key personnel

a. **Sampling manager** — Oversees sampling operations.

b. **Laboratory manager** — Oversees testing laboratory operations.

c. **Data processing manager** — Oversees data processing and report preparation.

d. **Store personnel** — Carries out general operational tasks such as sampling and movement of wool.

e. **Testing staff** — conducts sample testing.

f. **Administration staff** — Manage data, documentation, reporting, financial management and related tasks.

2.2.5 Auction show floor

Auction is the most common form of exchange of ownership used by wool growers.

Before sale, the broker allocates individual bales to sale lots based on similarity in attributes of commercial importance to wool buyers. These attributes include the origin of the wool (eg from the body of the sheep or from the belly), its 'style', estimated yield, fibre diameter, strength and fibre length. Sale lots average around 6 bales in size.

The broker uses data prepared and recorded on the classer's specification (see Appendix 2) when creating the sale lots. The classer's specification also includes the date of shearing.

Once wool is allocated to a sale lot, the sale lot is sampled for testing in a wool test house (see Section 2.2.4). The test results and basic descriptive data — such as farm brand, wool

type/description, number of bales and net weight — are collated in the wool broker's database. This information is included in a sale catalogue, which is made available to buyers in both electronic and printed forms.

Some sale lots of low commercial value may be sold without testing. In these cases, one or more bales from each sale lot are also made available for inspection by buyers.

Wool exporters and processors take delivery of the wool they have bought once it has been paid for. The normal 'prompt' date for payment is the Friday of the week following the auction.

Auction sales are held in Brooklyn (Melbourne), Yennora (Sydney) and Spearwood (Fremantle). Auctions are held in one or more of these locations 45 weeks of the year.[9]

2.2.5.1 Key operations (for large brokers)

i. Sample management receival

Samples are received in bales of 30–40 samples and are usually packaged in sale order by the broker sampling warehouse.

Barcoded bale tags are attached to the sample packs; these can include what is packed and therefore may include samples received and relocated.

All samples are accompanied with a weight note, which includes:

a. brand, WSA and wool-grower number (assigned by wool broker)

b. description

c. bale numbers

d. weights — tare and totals

e. unique folio/reference number

f. preparation code

g. date sampled

h. lotted sale and lot number

i. stowage location

j. grabs per bale

k. cores per bale

l. sample weight

m. AWTA pre-sale sample number (PSSN)

n. AWTA length and strength number and bar code — if additional measurement has been requested (usually Merino combing descriptions)

[9] Further information about auction selling centres and sales can be obtained from the Australian Wool Exchange (www.awex.com.au; phone 02 9248 6100).

o. AWTA sample/test number and bar code.

Samples are assigned to a sample box lot number as set out in the catalogue section order. The show floor must be 'set' by a predetermined time as specified in the AWEX wool-selling arrangements for each sale.

Samples that are assigned for a hold (for-seller advice) or future sale are held in a storage location and recorded on an IT system by folio.

Samples and the associated test results are then available for inspection by the wool buyers and exporters to assess the value of the wool.

At 10am on the day after the sale, samples are available to be cleared from the show floor in preparation for setting the show floor for the next sale.

Note that 2 show floors are used for each broker so as to alternate for each sale; that is, Show floor 1 would be for every even-numbered sale, while Show floor 2 would be for every odd-numbered sale.

ii. Post-sale sample management

Samples from lots that are sold are graded into specific types/bins based on their description and objective specifications.

Samples from lots that are passed in or withdrawn are collected and placed into a storage area for further offering instructions.

Samples that fall outside specific types/bins are consigned to rehandling where a larger range of wool types is processed (these volumes are small).

Samples are then collected into their designated type/bin and presented to a pressing area for aggregating into bales of that bin/type/description. It is at this time that individual samples lose identity and therefore traceability.

A wool/shed/bale book is kept to record the description and bale number of the sample product; this is maintained on an IT system.

The wool/shed/bale book is presented to the sale administration for lotting. All bale descriptions remain unique to a given bin; that is, there is always only one bin for any given AWEX[6] description (eg AAAM).

Once wool is lotted, a bale marker's list is prepared to mark bales with a unique folio/reference number.

From this point, lots are sampled and follow same path as 'grower lots'.

All samples are sold under one brand. Many thousands of bales are sold every calendar year over the 3 main selling centres' show floors.

2.2.5.2 Key personnel

A show floor manager, present in larger sites, will have a small team maintaining sample show floor operations and administration.

2.2.6 Other wool warehouse post-sale functions (delivery/shipping) (non-broker warehouse)

Once sold, 5–10% of wool may be moved to another warehouse before export or delivery to a domestic processor. Following a sales process, a WDO is prepared by the buyer and sent via EDI transmission to the EDI network for collection by the wool buyer's preferred transport company and transport to the nominated warehouse. Wool bales will typically be stored in these warehouses until they can be aggregated with other wool for export (see Section 2.2.7) or onforwarded to a domestic processing facility (see Section 2.2.8) or possibly a dump/pack facility within a main defined delivery area of each export city.

2.2.6.1 Key operations

a. **Receival** — Refer to Section 2.2.3.3.i.

b. **Storage** — Wool is held at an alternative warehouse and may follow the same path as wool at the first receival warehouse until a subsequent delivery order is received. Payment terms are usually determined at the point of sale unless the alternative warehouse is an auction broker.

c. **Dispatch** — A WDO can follow the same path as described in the EDI network transmission or can be dispatched via a manual process to the next warehouse/handling/processor provider.

2.2.6.2 Key personnel

a. **Warehouse manager** — Oversees operations of the warehouse.

b. **Finance and administration staff** — Have responsibility for management of documentation, and use internal warehouse, client and financial management programs. Finance and administration staff clear the funds.

c. **Labour** — Is comprised of fork truck operators to pick and assemble required lots for loading onto transport vehicles for delivery to dump/pack houses. Countermarkers apply physical marks.

2.2.7 Post-sale dump/pack — export facility or packing house

In the case of export, all Australian greasy wool is packed into containers for shipment. Wool bales may be compressed ('dumped') under hydraulic pressure before being packed into containers. Bales may be dumped in units of 2 bales (double dumped) or in units of 3 bales (triple dumped / tri pak).

Dumping occurs at specialised facilities that are located close to the port of departure. These facilities are known in the wool industry as 'wool dumps'. The dumping service includes packing bales into containers and transferring them to the port terminal for shipment.

In the case of bales that are packed into containers without being dumped, the packing may occur at a dumping facility or at another facility that provides these services.

The dumps are located within the main defined delivery area of each city port and all wool is sold as being delivered to the main defined delivery area.

2.2.7.1 Key operations

a. **Receival** — Wool will be received at a dump facility on the basis of a delivery order generated by the exporter. Consignments arriving at the facility will also be accompanied by industry standard consignment notes.

b. **Storage** — Once received, a given lot of wool will be moved to a unique storage location that represents the order until all bales in a consignment (single or multiple containers) are present. Once all bales are present they may be subject to dumping before containerisation depending on the exporter's delivery order. Storage time at the dump is usually less than 2 weeks.

c. **Dispatch** — Once a container is completely loaded as per the exporter's instructions seals will be applied at the dump / pack house.

d. **Packing lists** — Packing lists generally contain details of the consignment description.

2.2.7.2 Key personnel

a. **Warehouse manager** — responsible for overseeing receival of consignments, stock management and containerisation operations.

b. **Administration staff** — responsible for management of stock and processing records.

c. **Labour —** responsible for operational tasks.

2.2.8 Domestic processing (scouring and carbonising)

The first stage in wool processing is scouring. Scouring is the washing of wool in a solution of detergent held at 60–70 °C to remove impurities such as soil, faeces, and wool grease. During the scouring process wool passes through a series of bowls. Scouring is recognised by the World Organisation for Animal Health (WOAH) as an effective treatment to mitigate to risk of EADs such as foot-and-mouth disease (FMD) and peste des petits ruminants (PPR) (WOAH 2015, 2021). However, although impurities removed from the first bowl will be exposed to complete saturation in a detergent solution at a minimum temperature of 62 °C for at least 2 minutes, this may not mitigate all EAD risks.

Following scouring, wool may also be subject to carbonisation, a process in which scoured wool is subject to acidification, heating and mechanical crushing to remove vegetable matter, such as burrs. Domestic processing may be conducted in different ways using different parameters of temperature, pH and time, depending on the individual processing plant, type of wool and the subsequent purpose of the wool.

A domestic processor may undertake some or all of the functions of a broker warehouse (see Section 2.2.3.1).

Domestic processors may undertake processing on a commission basis, meaning that they never take financial ownership of such wools.

2.2.8.1 Key operations

a. **Receival** — Wool is received at a domestic processing facility in a similar manner to how it is received by a broker warehouse, though wool may be received directly from farm, from a broker's warehouse, or a post-sale warehouse. Wool received from a broker or post-sale warehouse will be accompanied by a delivery order and consignment note, which includes any required counter/head markings.

b. **Batching** — Processors will assemble wools of differing origins (and physical attributes) to deliver an end product that meets buyer specifications. The physical blending of greasy wool at this stage makes traceability of individual greasy wool consignments impossible.

c. **Opening** — Batches of wool are emptied into a hopper for blending and opening. Opening is a mechanical process to loosen clumps of wool and remove excessive soil, broken fibres, and other contaminants before scouring. Attention must be paid to the management of material that is removed via the opening process, as it is not subject to the heat treatments associated with the scouring process.

d. **Scouring** — As wool progresses through the scouring process, impurities are removed and the risks of many diseases, such as FMD and PPR are mitigated, provided there is no post-scouring contamination. This process involves a serial process of washing and rinsing the wool in water up to temperatures of 65 °C and the addition of detergents, bleaches (eg hydrogen peroxide), organic acids (acetic or formic acid) and/or other treatments (Wood, 2009).

e. **Carbonising** — A process applied to some wools, which is often used to remove high levels of vegetable matter from wool following scouring. This process involves the application of an acidic solution (6–7% sulphuric acid).

f. **Drying** — Following scouring or carbonising, wool is heated in an oven and undergoes a mechanical crushing and shaking process, and pH neutralisation via application of an alkali solution containing sodium carbonate**.**

g. **Post-scouring** — Wool that has been scoured is repacked into bales, which may utilise reused wool packs, new wool packs or high-density packaging. Batches are usually marked with a batch number and bale number.

h. **Waste disposal** — Materials removed during opening and through the scouring process are often dispatched to domestic composting facilities. Material removed during opening (and possibly from the first scour bowl) may require further treatment to mitigate the risk of disease transmission. Such assessments should be undertaken on a case-by-case basis by liaising with the plant manager.

2.2.8.2 Key personnel

a. **Warehouse manager** — Responsible for overseeing receival of consignments, stock management and batching operations.

b. **Plant manager** — Responsible for overseeing general running of the facility, including heat treatment parameters and waste disposal.

c. **Administration staff** — Manage documentation.

d. **Labour —** Responsible for operational tasks.

2.2.9 Supply chain change of ownership

Wool will undergo one or more changes of ownership as it moves through the supply chain. The pathway that wool follows through the supply chain (see Figure 2.2) determines when transfer of ownership takes place and to whom. Knowledge of supply chain change of ownership will assist with the application of biosecurity orders placed upon products and premises. The physical location of wool is not a reliable indicator of ownership for the reasons outlined below.

Auction is the most common form of exchange of ownership used by wool growers. Wool sold at auction remains the property of the wool grower until sold via auction, a process which is facilitated by wool brokers.

Some wool growers choose to sell their wool directly to a private buyer (also known as a private treaty merchant), direct to a buyer for export or direct to a domestic wool processor. These changes of ownership often occur without any physical movement of the wool and may result in some wool skipping some of the supply chain steps outlined in Figure 2.2.

Wool purchased through auction, or by other means, may be reoffered for auction or subsequently sold to a third party, resulting in ownership then passing to a third party.

2.3 Animal health and welfare

Wool-producing sheep require regular shearing and crutching in order to maintain sheep health and welfare. Regular shearing and crutching helps to prevent fly strike, reduces the impact of grass seeds and enhances sheep mobility and thermal regulation.

While a slight delay in shearing or crutching may have little to no impact on sheep health and welfare, an extended delay is likely to have a negative impact. EAD response arrangements that involve the postponement of shearing and crutching in the short term must accommodate provision for shearing and crutching to recommence as quickly as practical.

2.4 Industry organisations

WoolProducers Australia is the wool industry signatory under the Emergency Animal Disease Response Agreement.[10] WoolProducers can assist with necessary industry contacts in the event of an EAD. A list of key wool industry organisations and their generic contact details can be found at Appendix 1.

[10] https://animalhealthaustralia.com.au/eadra

2.5 Traceability, industry regulations, standards and programs

Supply chain members of the Australian wool industry exchange electronic information via the EDI network managed by AWTA, as represented in Figure 2.3.

A current listing of EDI network identification codes can be obtained by contacting AWEX (Appendix 1). The first 3 digits of the codes represent the company and the next 1 or 2 represent the centre code.[11]

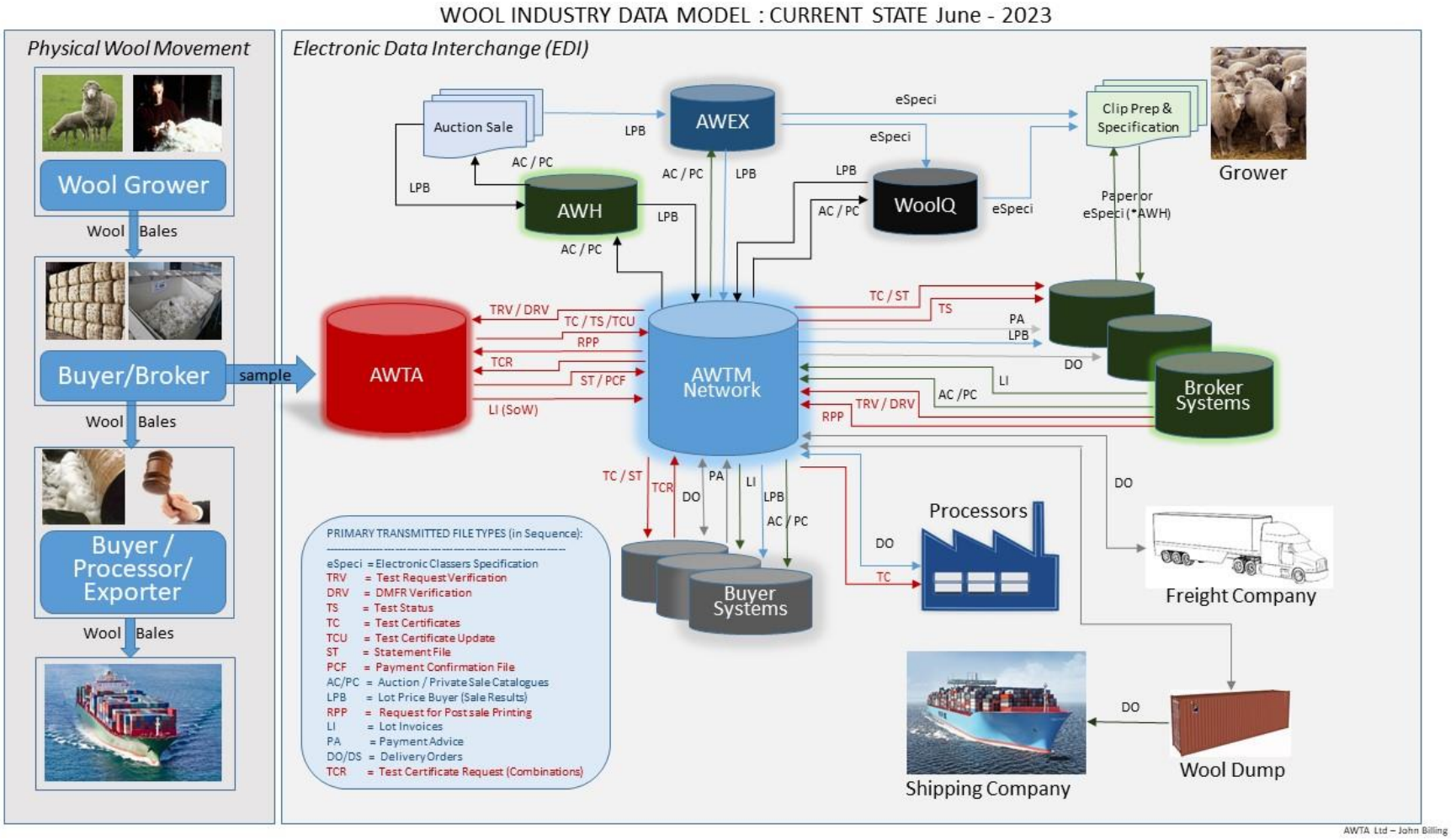
Every premises that handles live sheep in Australia needs a PIC; however, PIC data are not necessarily always carried forward to follow wool through the supply chain. For wool, the primary physical identifiers are the farm brand, description and bale number on the wool and the wool classification. The third identifier is the PIC, when available but only via physical classer specification or captured data formats.

The network facilitates the exchange of data and is not a data repository, with no single entity having access to the full set of data at any point in time. It is updated when there is transmission of instructions to move wool between facilities, not when wool is physically moved.

Understanding the exchange of information between various entities via the EDI will assist in tracing and export certification activities in the event of an EAD incursion that impacts wool.

There is currently no formal government-legislated traceability for wool; however, wool can usually be traced utilising industry networks as described above.

[11] www.awex.com.au/media/1486/centre-codes-release-150903.pdf



Source: Australian Wool Testing Authority (2023)

Figure 2.3 Wool industry electronic information data model

2.5.1 Relevant licensing, permits and export requirements

Wool is not listed as a prescribed good under the *Export Control Act 2020*, so there are no standard export conditions applied to wool. Export requirements are dependent on individual importing country requirements, as summarised in Table 3.1.

2.5.2 Biosecurity legislation

Legislation at the Commonwealth, state and territory levels has been enacted for controlling EADs. The Commonwealth *Biosecurity Act 2015* is primarily concerned with preventing the introduction of disease into Australia. Each state and territory also has legislation relating to the management of EADs. The legislation establishes controls over movement of animals and animal products, treatment of animals, decontamination, slaughter and compensation.

Powers are conferred on authorised officers appointed under legislation, including the authorisation to enter premises, impose quarantine, restrict movement of wool and order the destruction or treatment of wool that is suspected of being infected or contaminated.

3 Emergency animal diseases and the industry

3.1 Significant issues in the event of an EAD incident

In the event of an EAD incursion, the following issues are relevant for the wool industry:

- Wool itself, and any material in which it is packed for transport and storage, presents a low likelihood for the transmission of EAD pathogens. The diseases of greatest concern to the wool industry are foot-and-mouth disease (FMD), sheep pox, peste de petit ruminants (PPR), Rift Valley fever, and anthrax (see Section 3.2).
- Wool is not perishable and can be stored; however, it is bulky and requires large amounts of warehouse space. It would become difficult and/or expensive to store wool if exports were to be completely suspended for a prolonged period (over 6 months).

3.1.1 Loss of market access

The major impacts of an EAD on the industry would flow from loss of international market access.

The wool industry is highly export oriented. More than 95% of wool is exported, and more than 95% of exported wool is unprocessed. There is very little scouring capacity in Australia. Eighty-five per cent of wool exports are to China.

Most of Australia's customer countries minimise the biosecurity risk associated with importing greasy wool by requiring certified endorsement from the government of the exporting country attesting to the disease-free status of the sheep from which the wool was shorn and/or of the country/regions where the wool was grown.

This endorsement is reported on an export certificate supplied by the Australian Government Department of Agriculture, Fisheries and Forestry. Such certificates are commonly known to Australian wool exporters (see Appendix 1) as health certificates. They are requested by Australian wool exporters for each export consignment and become part of the documentation supplied by exporters to their international customers.

An EAD outbreak in Australia may remove the ability for the Australian government to continue issuing health certificates, due to changing disease-free status of the sheep from which the wool was shorn and/or of the country/regions where the wool was grown. Importing countries may also respond to an EAD outbreak in Australia by deciding to reject any consignments that have not yet cleared their customs and quarantine processes, even if a valid health certificate was issued at the time of export.

If a correctly completed health certificate cannot be presented for consignments of greasy wool, or the claims made on it are no longer accurate (eg if Australia's disease status has changed), it is unlikely that customs and biosecurity officers in the customer country would allow entry of the wool. The options then available to the wool exporter are:

- to return the wool to Australia; this is generally only possible if official container seals that guarantee the product's integrity have not been compromised
- to redirect the wool to an alternative customer country that is prepared to accept the consignment; depends upon the alternative country's status in relation to the EAD in question
- scouring of wool, noting there is limited scouring capacity in countries outside China

- to have the wool destroyed under official control.

The time that would elapse before exports could resume under renegotiated health certification requirements may be 6–12 months, or even more, depending to some extent (but not entirely) on actions taken by Australian authorities in disease containment and eradication.

Australia's principal customer countries do not require a government export certificate for scoured and carbonised wool.

The importing requirements of Australia's principal customer countries and regions are summarised in Table 3.1. The data in Table 3.1 are up to date as of 30 September 2023. Updates to these requirements can be monitored on the Micor (Manual of Importing Country Requirements) website of the Australian Government Department of Agriculture Fisheries and Forestry.[19]

Table 3.1 Current importing country requirements for wool of Australian origin

Country	Anthrax	Aujeszky's disease	Bluetongue (Clinical)	Classical scrapie	FMD	Heartwater	Maedi-visna	Nairobi sheep disease	Ovine brucellosis	PPR	Rift Valley Fever	Rinderpest	Screw Worm fly	Sheep and goat pox	Swine vesicular disease	Vesicular stomatitis
China	AF	–	AF	–	F	–	–	–	–	–	–	F	–	–	–	–
Egypt[a]	AF	–	–	–	F	–	–	–	–	–	–	F	–	–	–	–
European Union (Czechoslovakia, Germany, Bulgaria, Spain, Portugal)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
India	AF	–	–	–	F	–	–	–	–	–	–	F	–	–	–	–
Italy	AF	–	AF	–	F	–	–	–	–	AF	AF	F	–	AF	AF	AF
Japan	AF	–	–	–	F	–	–	–	–	–	–	F	–	–	–	–
Korea[b]	–	F	V	F	F	–	F	–	–	F	F	F	–	F	–	F
Malaysia	AF	–	–	–	F	–	–	–	–	–	–	F	–	–	–	–
Mauritius	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF
New Zealand	AF	–	–	–	F	–	–	–	–	–	–	F	–	F	–	–
United Kingdom	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Uruguay	AF	–	AF	–	F	–	–	–	PF6	–	–	F	–	–	–	–
USA	AF	–		–	F	–	–	–	–	–	–		–	–	–	–

AF = area freedom; F = country freedom; FMD = foot-and-mouth disease; PF6 = not property quarantine restrictions for 6 weeks; PPR = peste des petits ruminants; V = Australia does not vaccinate for bluetongue

a Property not under quarantine for anthrax and does not vaccinate for anthrax / wool from sheep not showing signs of epizootic disease.

b Prohibition of vaccination for diseases of concern.

Note: Table is not an exhaustive list of export certification requirements and is based on the Manual of Importing Country Requirements (Micor), https://micor.agriculture.gov.au, accessed July 2023. Table relates only to diseases listed in EADRA. Micor should be reviewed at the time of an EAD outbreak for most country import restrictions.

3.1.2 Commercial implications

Like any industry, wool relies on a steady cash flow through the supply chain to keep participant businesses viable. An EAD outbreak would cause virtually all cash flow to cease because of the loss of markets. Post-outbreak, there may be flow-on impacts associated with loss of the fibre market share as customers substitute other fibres for wool.

Specifically, the commercial implications of an EAD outbreak affecting the wool industry include:

- loss of income for people and companies that take ownership of wool along the wool pipeline, including wool growers, intermediaries (such as private treaty wool merchants), wool exporters and wool processors
- loss of income for people and companies that provide services to the Australian wool industry, such as:
  - suppliers of miscellaneous farm services; transport companies; wool brokers and other selling agents; wool warehousing businesses; wool testing companies; wool processing, dumping and packing facilities; shipping companies; and the Australian Wool Exchange
  - shearers (and others who work in shearing teams), as it is unlikely that shearing of infected, or suspect infected sheep, will be permitted
  - industry associations that provide services to the Australian wool industry, and whose income is from levies based on the number of bales traded or handled
- increased costs to store wool while exports remain suspended. These costs are likely to be borne by wool growers, brokers, and exporters
- loss of income for Australian Wool Innovation (AWI), which is highly dependent on levies deducted from the wool growers' proceeds when wool is sold
- loss of income for wool processors in customer countries and others in the global wool pipeline. These companies may be partially insulated because of access to stocks of Australian wool that were exported before the EAD outbreak and to wool from other countries. However, the fine wool apparel industry could suffer, as Australia's Merino wool industry provides around 80% of the global supply for this sector
- long-term price impacts because of fibre substitution.

3.1.3 Nature of the incurred losses

Losses would arise from:

- financing of recurring costs, associated with business operations in the absence of all, or part, of the business's cash flow, for industry participants. This includes wool growers who must continue to care for sheep (including annual shearing) despite the absence of income
- potential depreciation of the value of stocks held along the pipeline
- loss of profit due to additional costs (eg warehousing and treatment of wool, tracing activities), and financing of these costs
- job losses as businesses respond to the reduced ability to maintain their normal business operations. Departures of staff create the risk of long-term loss of skilled personnel from the industry
- closure of companies (in Australia and overseas) that are unable or unwilling to continue trading in very difficult conditions.

3.1.4 Possible longer term implications

Long-term implications will vary with the type of EAD, and its location.

The main risk for wool is fibre substitution. Australia is the largest apparel wool producer in the world. Its absence from the textile fibre market for a prolonged period may lead to spinners, fabric and garment makers using fibres other than wool in their products. This market share could be difficult to regain, especially because the financial losses incurred by AWI and commercial firms along the value chain will restrict marketing efforts.

The end result may be lower prices for wool and loss to Australia of export income over the longer term.

3.2 Risk of disease spread from the enterprise

The scope of this manual is from the point of harvest onwards; that is, when the greasy wool has been removed from the sheep and is held in loose form or contained within a butt, bale, bag or box. This manual does not consider the risk of disease spread from live animals. Wool can only pose a risk of spread of infection if the infectious agent can remain viable in wool. Infectious agents associated with wool must come into contact with susceptible species or spread via the movement of greasy wool, contaminants associated with wool (urine, dags, grease and other extraneous contaminants), fomites or the environment. Contamination of greasy wool with skin pieces, urine and faecal matter may increase the risk of transmission of some diseases.

There is potential for disease spread between farms by people involved in harvesting and packaging wool (see Section 3.2.1.3). Post-farm, the likelihood of disease transmission via wool is generally very low because of the physical separation of the wool supply chain entities (generally in industrial estates post-farm) and farmed susceptible species and the unidirectional flow of wool away from wool-producing properties.

Not all diseases to which sheep are susceptible are transmissible via movement of greasy wool (eg scrapie is not); however, outbreaks of such diseases may impact export market access. The risk of disease transmission should be reviewed on a case-by-case basis.

For certain disease agents, such as foot-and-mouth disease and peste des petits ruminants, wool is considered to be safe after it has been held at a prescribed temperature for a prescribed period of time, as described in the World Organisation for Animal Health Terrestrial Code — see Article 8.8.32 in WOAH (2015) and Article 14.7.25 in WOAH (2021). The Australian wool industry has developed a framework for managing and certifying the storage of wool to meet such time and temperature requirements. This framework has been endorsed by the International Wool Textile Organisation as suitable for adoption by any grower country dealing with a relevant EAD incursion. Its provisions are based upon the procedures adopted by South Africa following its outbreaks of FMD in 2019 and 2022.

A small proportion of Australian wool (about 5–10%) is processed domestically. Scouring is recognised by the WOAH Terrestrial Animal Health Code as an effective means of deactivating certain disease agents including FMD and peste des petits ruminants. An important byproduct of wool processing is lanolin. Lanolin is captured and sold separately for manufacture into cosmetics and other end-products. Lanolin is extracted from the effluent from the first steps of scouring and is subjected to high temperatures that are likely to denature any disease-causing agents.

3.2.1 Factors to consider in assessing risk of disease spread

3.2.1.1 Pathogens of concern

Known EAD pathogens of concern with respect to wool, in terms of whether wool may play a role in disease spread, include:

- foot-and-mouth disease (McColl et al 1995)
- sheep and goat pox (Department of Agriculture, Forestry and Fisheries, and CSIRO 2019)
- peste des petits ruminants
- Rift Valley fever
- *Brucella melitensis* (as a contaminant of wool)
- anthrax.

3.2.1.2 Products and packaging

Wool is generally contained within a butt, bale, bag or box; the vast majority is in sealed woven nylon bales of an average weight of 180–190 kg. There is the risk of disease-causing agents being present on the outside of packaging (eg the nylon bale material). The outside of wool bales can be disinfected using a suitable chemical to minimise the risk of movement of disease-causing agents via fomites. The wool industry has developed a prototype device that allows wool bales to be sprayed rapidly and safely with a disinfectant solution. In the event of an EAD response, the wool industry plans to manufacture several such units and to deploy them to major brokers' stores, and other stores, if they are deemed useful.

Used wool packs can be used for other purposes and should be considered as part of a response plan.

3.2.1.3 People

Personnel involved in the harvesting, classing and packing of wool on farm present a disease transmission risk from the handling of infectious sheep and wool. Shearing teams move between farms and may not take sufficient biosecurity precautions in relation to disinfection of clothing, vehicles, or equipment such as shearing handpieces and brooms. All members of a shearing team should be considered a risk, including:

- shearers, who handle the sheep very closely
- wool classers, who handle and inspect every fleece
- roustabouts, who do general cleaning duties in the shed and may handle both sheep and wool
- staff who pen up sheep and move them from the shed after shearing, often farm personnel.

Wool broker staff and private buyers of wool often visit farms and handle sheep and wool. Movement between properties presents a risk of disease transmission.

Personnel from the post-farm wool supply chain (brokers' stores, testing labs, dumps, processing facilities and so on) present a much lower, but not zero disease transmission risk. They are usually based in urban areas and have limited or no contact with livestock. However, this risk must be assessed on a case-by-case basis.

3.2.1.4 Equipment

Equipment used in the wool supply chain and which may potentially become contaminated with a disease-causing agent and facilitate disease transmission includes:

- shearing and wool-handling equipment, including shearing handpieces, brooms and on-farm wool presses, that may move between properties
- sampling machinery, which drives a metal corer or grabber into the bale, typically post-farm at wool warehouses (see Section 2.2.3)
- forklifts or tractors used to transport bales on farms, between farms and warehouses and within and between warehouses, export and processing facilities
- dumping presses in export facilities.

Guidance on equipment and premises decontamination can be found in the **AUSVETPLAN operational manual *Decontamination*.**

3.2.1.5 Vehicles

Vehicles used by shearing teams, brokers and private buyers of wool may pose a disease transmission risk. Trucks transporting wool from the farm may also pose a spread risk; wool will always be in some form of packaging (bale, butt, bag, or box) so any transfer to the vehicle itself will only be from contamination present on the outside of the packaging, or on the vehicle body or tyres.

Vehicles used to transport personnel or wool entirely post-farm are unlikely to pose a significant spread risk, but this should be assessed on a case-by-case basis.

3.2.1.6 Waste

Waste is produced wherever loose wool is handled, such as when wool bales have core or grab samples taken, or wool is bulk classed, or when it is opened for processing. This waste takes the form of locks of wool (short clumps of fibre), dust, core waste and vegetable matter. There is a risk of infectious agent being present in this material and it must be disposed of or treated in a manner that mitigates disease transmission risk. The risk posed by effluent from the scour that is discharged to industrial waste must also be assessed, as not all of this effluent is subject to the full scouring process.

3.3 Work health and safety

Some diseases have zoonotic potential, including endemic diseases such as anthrax and Q-fever. Personal protective equipment (PPE) is important in the handling of greasy wool and the wool industry will be advised by government on required PPE in an outbreak situation. Rift Valley fever (exotic) is a zoonotic disease and wool maybe involved in its spread to humans. There are other exotic diseases of sheep that are zoonotic, but wool is either not or unknown to be involved in infection of humans and would need to be considered on a case-by-case basis.

4 Emergency animal disease preparedness and management

Information on national arrangements for management of emergency animal diseases can be found in the **AUSVETPLAN** ***Control Centres Management Manual, Part 1 — Managing an emergency animal disease response.***

5 Industry preparedness

Appendix 3 lists resource documents produced by industry to support an EAD response.

5.1 Risk of EAD introduction to Australia

Australia regulates the importation of goods that present an unacceptable level of biosecurity risk to Australia. The importation of goods is regulated by means of either import prohibition or the imposition of import conditions (eg certification or treatments) that lower the biosecurity risk associated with importation to a level that is acceptably low (but not zero).

The importation of live sheep and products derived from sheep, including greasy wool, is heavily regulated to protect the Australian sheep and wool industry from disease incursions via this pathway.

The greatest risk of disease introduction that may impact the Australian sheep and wool industries is via:

- importers who act in a manner that is either intentionally or unintentionally noncompliant with import conditions; or
- people or conveyances returning from overseas and that have been exposed to infected animals or fomites (including sheep or other farm animals) and could transfer a disease agent to Australian sheep flocks via footwear or clothing.

Australia has strong systems and processes in place to undertake surveillance and facilitate rapid reporting of emergency animal diseases to facilitate early detection. This includes (but is not limited to) testing sentinel animals, abattoir surveillance, vector monitoring programs and producer and veterinary reporting activities.

Testing for disease agents in wool is not undertaken, making it highly unlikely that an EAD will first be detected in wool.

5.2 National-level industry preparedness and response planning

The Emergency Animal Disease Response Agreement (EADRA) is a contractual arrangement between Australia's governments and industry groups that provides a mechanism for sharing eligible costs for EAD responses and allows all affected parties to have a role in the decision-making process. It establishes basic operating principles and guidelines and defines roles and responsibilities of the parties involved. It also commits parties to take reasonable steps to minimise the risk of EADs through development and implementation of biosecurity plans and being prepared for an EAD response. WoolProducers Australia (WPA) is the EADRA signatory representing the Australian wool industry.

Industry-specific EAD response planning is a critical part of the wool industry's preparedness should there be an outbreak, or suspicion of an outbreak, of an EAD in Australia. Wool industry EAD response planning is complementary to EAD response planning for the sheep industry.

As the wool industry signatory of the EADRA, WPA undertakes and coordinates various response planning and preparedness activities including:

- reviewing and updating the EADRA and AUSVETPLAN
- training personnel to undertake roles as wool industry representatives on the Consultative Committee on Emergency Animal Diseases or the National Management Group, or to fill the Liaison — Livestock Industry (LLI) functions in state coordination centres or local control centres
- exercises and training to increase industry and government awareness of roles and responsibilities in relation to an EAD response that impacts the wool industry.

In an EAD event, the relevant state or territory government animal health officials will manage all aspects of disease control and eradication, in accordance with EADRA, as outlined in Section 4. It is important that all relevant businesses comply fully with what is required of them to minimise the risk of disease spread. The Local Control Centre (LCC) will provide guidance on all operational activities under specific instructions from the chief veterinary officer. All response activities and restrictions will be controlled by the LCC.

Guidance on specific clinical signs, biosecurity and disease response activities will be available from:

- **AUSVETPLAN** disease-specific response strategies or **AUSVETPLAN** response policy briefs
- state or territory animal health authorities (generally via the state coordination centre or the LCC)
- 'National pest and disease outbreaks' website.[12], during a response.

5.3 Enterprise-level industry prevention, preparedness and response planning

Prevention, preparedness and response planning will assist wool growers and others in the wool and transport industries to:

- reduce the likelihood of introducing disease to their enterprise
- reduce the likelihood of spreading the disease within the premises or to other premises if the premises is already infected or contaminated
- work with government biosecurity officers to manage an EAD outbreak, allowing a more organised and rapid response and a faster return to normal commercial production
- minimise the time out of domestic and export markets.

In addition to disease control principles, factors that must be considered when developing appropriate response plans include:

- use and disposal of wool
- wool processing and treatment facilities
- business continuity.

5.3.1 Prevention

Good biosecurity works to mitigate the risk of introducing or allowing the spread of as many diseases as possible and therefore can include a variety of different measures. In the event of an EAD outbreak,

[12] www.outbreak.gov.au

disease-specific biosecurity measures may be implemented under the guidance of the relevant state or territory government.

5.3.2 Response planning — supply chain considerations

It is recommended that all wool-related businesses have an EAD biosecurity plan as part of their EAD plan. Enhancing routine on-farm biosecurity provides a solid basis for protecting wool producing and processing enterprises in the event of an EAD outbreak. The recommended EAD response biosecurity measures will vary depending on the actual EAD, the way it spreads and how long it remains viable in the environment. General guidelines on how to enhance on-farm biosecurity as best management practice are available from WPA and the Farm Biosecurity website.[13] The Farm Biosecurity website also provides guidance on how to prepare businesses to survive an EAD outbreak (Farm Biosecurity 2014). (Although not all elements of this resource are applicable to the wool industry, some are.)

Of fundamental importance is that all wool enterprises observe the following basic tenets relating to biosecurity, quarantine, movement controls and traceability:

- Maintain high levels of premises biosecurity, with a focus on managing inputs and outputs (eg wool movements, vehicle and personnel movement, waste movements) from all elements of the wool industry supply chain.
- Do not receive wool from declared areas without meeting the movement requirements as prescribed in jurisdictional legislation, the relevant **AUSVETPLAN** response strategy or response policy brief and as indicated on the movement permit, when applicable.
- Hold and do not release wool until certain that the movement is deemed safe and legally allowed — that is, the enterprise is not within a declared area and has not received wool from a declared area, the wool has otherwise been classified as safe (via movement permit, where necessary) because it is not a risk commodity or the wool meets movement conditions, which may include treatment and/or time-at-temperature requirements.
- Keep records relating to identifying and tracing wool, and make them readily accessible, comprehensive and complete, with inclusion of the origin, transit points and destinations, and all relevant dates.

The following sections provide further details of the issues and policies that specific wool enterprises should become familiar with as part of their EAD response planning (this does not cover sheep on farm). Further details are disease-specific and can be found in the relevant **AUSVETPLAN** response strategy or **AUSVETPLAN** response policy brief.

The wool industry will implement increased biosecurity measures for its operations when an EAD is declared. Biosecurity measures applicable to the industry in general will include:

- enhanced record keeping for movements of wool, waste, personnel, visitors, equipment and vehicles onto and off the premises (see Section 5.3.3)
- measures to prevent spread of disease. The type of biosecurity measures applied during an EAD response (eg restricting the movement of people, equipment and vehicles onto and off sheep/wool-producing farms and processing premises; vehicle and premises decontamination) will depend on the specific disease, and the disease status and risks associated with the premises
- enhanced surveillance for disease detection.

Many elements of disease control apply to most sectors of the wool supply chain. Following these elements are contextualised for the various supply chain sectors.

[13] www.farmbiosecurity.com.au

5.3.3 Record keeping and tracing

Sound record keeping will help with tracing potentially contaminated wool, vehicles, people and equipment. It may also aid the assessment of the disease status of a premises in relation to any applications for movement permits. Sound record keeping is important in relation to all wool movements along the supply chain until the point of scouring.

Sound record keeping includes keeping the records readily accessible, current, comprehensive and complete. For records of movements onto, off and within the premises, it includes keeping details of the origin, transit points, destinations, relevant dates and permissions (including permits).

Maintaining appropriate wool identification records, and a current and accurate inventory of wool, infrastructure and equipment, will also expedite the process of valuing wool and items to be destroyed, and so help with the preparation of claims for compensation.

Sound record keeping will also assist with restoration of market access, especially when market access is re-established under conditions of zoning or compartmentalisation.

Preparedness activities may include periodically:

- reviewing or auditing records for completeness and accuracy
- exercising/testing traceability using desktop exercises.

5.3.4 Movement controls

Controlling the movement of wool shorn from sheep that are exposed to an EAD is an essential component of disease control. Movement controls will be imposed by the response authority on a risk basis. In the event of a major EAD incursion (such as FMD), it is likely that a complete prohibition could be imposed on all greasy wool movements until a risk profile can be established under which wool movements could resume.

Such regulatory controls have significant potential to adversely affect commercial operations along the wool industry supply chain from the farm, right through to fabric and garment makers, especially if movement controls are maintained for an extended period. Movement controls imposed for wool during an outbreak will depend on the specific disease(s), the location(s) of any disease outbreak(s) and the disease risk associated with both the origin, past and current locations of the wool.

If wool of a significant EAD risk is to be transported to a facility for disposal, treatment or processing, the response authority may impose movement controls. Movement permits will identify the conditions that must be met.

Under certain circumstances wool may be directed to be held in place or stored in a specified area for a prescribed period of time to allow for degradation of viable disease-causing agents.

Preparedness planning should include consideration of movement controls and conditions that may be applied (as provided in relevant **AUSVETPLAN** response strategy) and how the industry supply chain component will meet them.

5.3.5 Disposal

Disposal would occur under the oversight of the response authority. Disposal would only occur where no other practical risk mitigation factors are available.

Guidance on wool disposal options and methods can be found in the **AUSVETPLAN operational manual *Disposal.***

Preparedness planning should include identification of disposal methods of all relevant materials (eg wool, waste) and potential sites where this would occur (eg onsite versus offsite).

5.3.6 Decontamination

Decontamination would occur under the oversight of the response authority. It would include measures to decontaminate wool and the wool-handling facility and equipment. Further information can be found in the **AUSVETPLAN resource document *Operational guidance on the decontamination of wool and wool facilities***. The 5 key processes and activities that may be undertaken to decontaminate wool and wool packaging are:

- **Storage —** The WOAH Terrestrial Animal Health Code states that the storage of wool at 4 °C for 4 months, 18 °C for 4 weeks or 37 °C for 8 days is an effective treatment for the inactivation of diseases, specifically foot-and-mouth disease virus (FMDV) and peste des petits ruminants virus (PPRV); however, a similar treatment may be effective in inactivating other disease-causing agents. In 2023, the IWTO endorsed a framework that set out the key parameters for consideration when using this as a method of decontamination.
- **Scouring —** The WOAH Terrestrial Animal Health Code states that industrial scouring, which consists of the immersion of wool in a water-soluble detergent held at 60–70 °C, is effective against FMDV and PPRV specifically; however, a similar treatment may also be effective in inactivating other disease-causing agents.
- **Fumigation —** The WOAH Terrestrial Animal Health Code states that fumigation with formaldehyde in a hermetically sealed chamber for at least 24 hours is effective against FMDV and PPRV specifically.
- **Chemical treatment —** The WOAH Terrestrial Animal Health Code states that chemical depilation by means of slaked lime or sodium sulfide is effective against FMDV and PPRV specifically; however, a similar treatment may also be effective in inactivating other disease-causing agents.
- **Bale spraying —** The Australian wool industry developed a prototype bale sprayer that applied a citric acid solution to external surfaces of wool bales. This treatment can inactivate some EAD agents that may be present on external packaging (but not those contained within the packaging). Such a treatment may mitigate the risk of disease spread to a level that facilitates transport/movement for further decontamination activities to be undertaken.

The response agency would provide advice on the best options for decontamination of wool and facilities, depending on the EAD agent. Preparedness planning should include the identification of sites where the above decontamination activities may be undertaken (subject to direction from the response agency). Any process to decontaminate wool would need to include measures to avoid re-contamination following treatment.

Decontamination methods for wool facilities should include options suitable for the buildings and all of the equipment that is used for wool handling or that comes in contact with wool.

5.3.7 Training of staff

Training of staff for handling an EAD outbreak will result in a better-organised response and possibly an earlier return to normal enterprise functions.

All staff should be informed about the ways that diseases are transmitted, and about products and things that may be involved.

Good work procedures and staff hygiene will help to contain the spread of contamination throughout a facility (eg farm, transport depots, wool warehouses), including the spread of contaminated wool. Poor personal hygiene and poor practices may increase the risk of disease spread and the possibility of infection with some zoonotic disease agents. Using clean clothing for work and wearing a set of overclothes (eg overalls) and boots to be used at work only will help to minimise the spread of disease.

Staff should not become involved in an EAD response unless directed to do so, and must follow closely the directions of the disease control authorities. Staff will be advised by government officials and trained in what is expected of them in an emergency, what they should do and where they must assemble. Staff movements around the establishment should be restricted to an 'as needs' basis; for example, personnel working in potentially contaminated areas should be separated from personnel in noncontaminated areas.

Management should be competent and well versed in containment, cleaning and disinfection procedures, so that they can supervise decontamination procedures, and staff, vehicle and product control. During periods of heightened disease risk, vehicles should not be used for carrying product into or out of the establishment unless they have been adequately decontaminated or risk-assessed to determine relevant disease transmission risks have been managed.

Management should prepare job cards appropriate to each person's training to enable an organised approach during an EAD incident.

As part of preparedness activities, it would be desirable for at least one senior person at each wool processing establishment to achieve competency as an infected premises site supervisor.

An exercise at the establishment should be undertaken periodically to test the effectiveness of training before an incident.

5.3.8 Vermin control

The role of vermin (eg rodents) in spreading disease should be understood by referring to the relevant **AUSVETPLAN** response strategy. The numbers and types of vermin present at an establishment should be investigated and documented to enable veterinary authorities to make an informed decision about whether additional control measures will be necessary in an EAD response.

As per normal management practice, the establishment should keep vermin at manageable levels to minimise the possible spread of infection during a disease emergency.

Appendix 1 — Key industry organisations

Industry organisation	Industry function	Contact details
WoolProducers Australia	Wool Industry EADRA signatory Woolgrower Peak Industry Council	W: www.woolproducers.com.au E: info@woolproducers.com.au T: (02) 6110 2067
Australian Wool Testing Authority	Deliver wool testing services to Australian wool industry Maintain EDI network	W: www.awta.com.au E: awtainfo@awta.com.au T: (03) 9371 4100
Australian Wool Exchange	Wool Classer Training and Quality Assurance Deliver wool-selling (auction) services to Australian wool industry. Maintain EDI network identification registration numbers	W: wwwe.awex.com.au E: info@awex.com.au T: (02) 9428 6100
Australian Wool Innovation	Wool industry research, development and marketing organisation	W: www.wool.com E: info@wool.com T: 02 8295 3100
Australian Council of Wool Exporters and Processors	National organisation representing wool exporters and processors	W: www.woolindustries.org/acwep E: acwep@woolindustries.org T: 03 9311 0103
National Council of Wool Selling Brokers of Australia	National organisation representing wool brokers	W: www.woolbrokers.org E: info@ncwsba.org T: 0417 564 898

Industry organisation	Industry function	Contact details
AWH Pty Ltd	Major wool-handling service provider (warehouse)	W: www.awh.com.au E: nato@awh.com.au T: 03 5272 9200
Wool Industries Australia	National organisation representing all major wool industry organisations and Australian member of the International Wool Textile Organisation	W: www.woolindustries.au E: wia@woolindustries.org T: 03 9311 0103

EADRA = Emergency Animal Disease Response Agreement; EDI = electronic data interchange

Appendix 2 — Documentation and records

Table A2.1 Industry documents/resources that can facilitate wool traceability

	Sources of greasy wool	Transport depots	Wool warehouses	Wool testing	Auction show floor	Wool warehouse post-sale functions	Export facility	Domestic processing
Stock movement records	✓							
Shearing tally book	✓							
Bale book	✓							
Bale markings (farm)	✓	✓	✓	✓	✓	✓	✓	✓
eBale labels[a]	✓	✓	✓			✓	✓	✓
Classers specification (speci) and NWD	✓	✓	✓	✓	✓	✓	✓	✓
Consignment note / log book (farm/transport)	✓	✓	✓					
Midside test request form	✓			✓				
Grower receipt			✓					
Door sheet			✓					
Markers bale list pre-mark/lot			✓					
Markers bale list[b]			✓	✓	✓	✓	✓	✓
Centre transfer load summary			✓					
Weight note / floor sheet			✓	✓	✓			
Show floor clearance					✓			
Delivery picking sheet						✓		
Delivery marking sheet						✓		
Delivery load summary						✓		

	Sources of greasy wool	Transport depots	Wool warehouses	Wool testing	Auction show floor	Wool warehouse post-sale functions	Export facility	Domestic processing
Export packing pulling sheet							✓	
Export packing list (pre-seal)							✓	
Facility / processor data management systems			✓	✓	✓	✓	✓	✓

a www.awex.com.au/media/2249/fact-sheet-awex-ebale-faqs-230414.pdf
b A physical identifying mark applied at this step.

Table A2.1 outlines industry documents and resources that can facilitate wool traceability and varying use and availability of this data throughout each supply chain entity. Following is an explanation of each of the referenced documents and resources and, where relevant, the traceability-specific details within the record:

- Stock movement records
  - A record of stock movements often recording stock classes, numbers and on-farm locations on specific dates. These records are retained by the farm manager. Typically, they are entries in a notebook, but may be electronic records.
  - Assessing these records may facilitate assessment of cross-contamination risk between on-farm mobs according to movement sequence.

- Shearing tally book
  - A record of number of sheep shorn for each shearer on a given day against which payment is made. This may also include information on the class of stock. Copies of such records are typically held by the farm manager and shearing contractor.
  - Assessing these records will assist with determination of sequence of shearing and shearers present for each mob shorn.

- Bale book
  - A record of the type of wool (bin) in each bale and the respective bale weight. Each bale is assigned a unique sequential number; the AWEX wool description[14] of the wool is also recorded.
  - Copies of the bale book are typically held by the farm manager, presser and wool classer.
  - Cross-referenced to classer's specification, the bale book can be used to determine what bales remain on farm and what have been dispatched to a wool warehouse.

[14] www.awex.com.au/media/1873/awx-262-cop-2018_section_10_bale-description-chart.pdf

- Bale markings (farm)
  - These are physical markings applied to the side and top panels of wool bales using stencils and permanent markers. Bale markings applied will include:
    - farm 'brand' — this can be the farm or business name, initials of the business or producer and/or town or region
    - AWEX wool description
    - classers stencil — each AWEX-accredited classer will apply their unique accreditation number to each bale that they oversee the preparation of
    - bale number — each bale is assigned a unique sequential number with respect to its order of preparation in a given year / shearing season within the enterprise in question.
  - These markings remain on bales from the farm / rehandle process until processing, and are often referenced throughout various other documents and systems.

- eBale labels
  - Unique bale identification number stored on a UHF RFID antennae and QR code attached to or printed on bale end labels. All wool packs imported to Australian from 1 July 2023 are required to be fitted with an eBale label. Unique identification numbers will become more accessible via electronic specifications and industry data management systems over time.
  - eBale labels also contain the same physical markings as 'bale markings (farm)'.

- Classers specification (speci) and NWD
  - In the case of hard copies, these 2 documents are combined into a single record (carbon copy triplicate). A copy is retained by the classer and one given to each of the farm manager and wool agent / broker. They may be electronic and referred to as eSpeci and eNWD:[15]
    - Classer specification — completed by the classer. A record of lines of wool prepared including a description of physical characteristics of each line (eg fibre diameter, length, strength, colour). It contains details of unique bale number and bale branding applied to each bale.
    - National Wool Declaration (NWD) — an optional declaration, usually completed by the farm manager. It provides a linkage of individual bales to the property identification code (PIC). It contains information on husbandry procedures that may affect the physical quality and nonphysical attributes of the wool. This must be signed by the owner or manager of the stock.
  - Copies of classers specifications and NWDs are retained by the wool classer, farm manager and wool broker. Digital copies of eSpeci and eNWD are available via the AWEX WoolClip database.

[15] Completed via AWEX 'WoolClip': WoolClip | Electronic Specifications (awex.com.au)

- Consignment note / log book (farm/transport)
  - Some properties or transport companies may issue farmers with a consignment note when wool leaves the property. Reviewing these documents will allow determinations of bales that have left the property of origin, transport details and their intended destination. Copies are typically held by farm managers and transport companies. Properties transporting their own wool will typically not keep such records.

- Midside test request form
  - This form collates details of each animal sampled (ear tag identifiers) and details of testing requested. Samples taken during shearing may include fleece weight. Each sample bag will contain details of the individual animal to which the sample relates. It can be used to determine what potentially contaminated wool has left the property, other than in wool bales, bags or butts. Records are often held by farm managers, wool brokers or livestock agents.

- Facility and processor data management systems
  - Each facility from the wool warehouse through to export or domestic processing will have data management systems available to track inventory and individual bale identification information throughout their respective facility. Management and administrative staff within the respective facilities will be able to provide access to the relevant systems as required by responding agencies.

- Grower receipt
  - This receipt is issued on receipt of grower wool. It has a provision for location.

- Door sheet (on request)
  - The door sheet is issued on request and identifies brand, description and bale number. It is expected that RFID will replace this requirement, providing data files are sent ahead of wool. It has a provision for location.

- Markers bale list pre-mark/lot (on request)
  - This document is issued on request where the number of bales received does not match number of bales on the classer specification. A pre-mark/lot maybe requested to identify additional or missing bales. It has a provision for location.

- Markers bale list
  - This document is issued to instruct the physical marking of folio numbers onto the head of bales. It has a provision for location.
  - In the example CORONA, the first lot 1615 in Sale M99A: Bales 1 & 2 of AAAM will both be marked 831288/2, where 831288 is the folio number and /2 is the number of bales in the lot.

- Centre transfer load summary
  - This document is an example of physical movement from one AWH store to another. Rehandle reference marks are noted on the document.

- Weight note / floor sheet
  - This is an example of a document that is placed into every grab and core sample. Folio marks and locations are noted on the document. The sample will be delivered to the nominated lot number location on the show floor.
- Show floor clearance
  - This is an example of a document instructing the show floor team what lots from a given sale are to be collected for a nominated bin. In the example Bin 1 — AAAM, 9 samples are to be collected from the nominated sale.
  - Note the location is the lot number of the sample box.
- Delivery picking sheet
  - This document instructs store personnel what bales to collect and deliver to a marshalling area for countermarking for a given load number. Note that the load number and provision for location is critical in this task.
- Delivery marking sheet
  - This document instructs who is to mark bales and, if it is broker store personnel, what to mark on each bale, including a countermark and renumber when required. The load number and location from where wool has been picked is on the document.
- Delivery load summary
  - This is a summary of what bales have been loaded onto transport from which site. It includes the carrier code, destination code, number bales, weight and so on.
- Export packing pulling sheet
  - This document instructs the packing house what bales to pack into a container for a given order.
- Export packing list (pre-seal)
  - This document represents what bales are packed into a container — note that the document is a pre-seal document; the final packing list will include container and seal numbers.

Appendix 3 — Resource documents

- Animal Health Australia, Livestock and wool-selling agents' EAD training, https://animalhealthaustralia.com.au/online-training-courses
- Animal Health Australia (2014). *Preparing your business to survive an emergency animal disease outbreak: A 30-minute plan for grazing enterprises*, www.farmbiosecurity.com.au/wp-content/uploads/2016/02/Preparing-your-business-to-survive-an-emergency-animal-disease-outbreak.pdf
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- Australian Wool Innovation Limited. Wool biosecurity risk assessment tool, www.wool.com/training-extension/biosecurity/biosecurity-risk-assessment
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Glossary

Manual-specific terms

Term	Definition
Bales	A rectangular container (pack) into which shorn wool is compressed. The pack is of nylon construction and pressed to specifications set in the AWEX Code of Practice for the Preparation of Australian Wool Clips (minimum weight 120 kg — maximum weight 204 kg, maximum length 1.25 metres).
Bale book	Book where details of wool bales are recorded (also referred to as wool/shed/bale book).
Butt	A wool pack containing greasy wool weighing less than the minimum bale weight (120 kg) and packed down by hand.
Classer stencil	Template used to brand a bale with the registered classer's number.
Countermarker	The person who only applies an exporter's shipping mark to the bale before shipping.
Crutching	The removal of wool from around the tail and between the rear legs of a sheep, to minimise stain in the wool, and as a control measure for flystrike.
Dags	Wool encrusted by faeces, often removed at crutching.
Dumping	The process of compressing 2 bales (double dump) or 3 bales (tri-pack) of greasy wool into the approximate size of one bale and restraining them with steel bands for shipping/transport.
Greasy wool	Wool as it is shorn from the sheep, before any processing (also referred to as raw wool).
Hobby farm	A small farm which is not relied upon as a steady source of income, having fewer than (say) 50 sheep.
Interlotting	Interlotting is the process of amalgamating small numbers of bales from various farms to obtain a lot that is of similar wool type and more appropriate for sampling and sale.

Term	Definition
Lot	Wool bales grouped for the purposes of sale. A lot is tested and sampled by AWTA and it becomes a certified package of wool that has a commercial value that cannot be separated.
Marker	Person physically applying an identifier on a wool bale post-farm.
Mob	A group of sheep, usually run under the same conditions for the full wool-growing season — for example, a mob of ewes that have been run in the same paddock, drenched and mated/lambed at the same time.
Presser	Member of a shearing team responsible for the pressing of wool into bales and for the branding of bales.
Rousies	Common abbreviation for roustabouts, members of the shearing team who do general cleaning duties in the shed and provide support to the shearers and classer.
Speci	Common abbreviation for wool classer's specification, a document prepared and signed off by the wool classer, describing each of the lines of wool presented to the market following shearing.
Wigging	The removal of wool from around the eyes and face, usually at the same time as crutching, to ensure wool is not affecting the vision of the sheep (ie wool blindness).
Wool classer	A person registered by the Australian Wool Exchange Ltd and employed to class wool (ie matching or grading wool into similar lines for marketing).

Standard AUSVETPLAN terms

Term	Definition
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, hooves, 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, Fisheries and Forestry. There are also observers from Animal Health Australia, Wildlife Health Australia, and the New Zealand Ministry for Primary Industries. The committee provides advice to

Term	Definition
	the National Biosecurity Committee on animal health matters, focusing on technical issues and regulatory policy. *See also* 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 feed.
Approved disposal site (ADS)	A premises that has zero susceptible animals and has been approved as a disposal site for animal carcasses, or potentially contaminated animal products, wastes or things.
Approved processing facility (APF)	An abattoir, knackery, milk or egg 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.
Assessed negative (AN)	A qualifier that may be applied to at-risk premises, premises of relevance and premises previously defined as suspect premises, trace premises, dangerous contact premises or dangerous contact processing facilities that have undergone an epidemiological and/or laboratory assessment and have been cleared of suspicion at the time of classification, and can progress to another status.
At-risk premises (ARP)	A premises in a restricted area that contains one or more live susceptible animals 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 Fisheries and Forestry who manages international animal health commitments and the Australian Government's response to an animal disease outbreak. *See also* Chief veterinary officer
AUSVETPLAN	*Aus*tralian *Vet*erinary Emergency *Plan*. 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.
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. *See also* 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 WOAH guidelines, based on applied biosecurity measures and surveillance, to facilitate disease control and/or trade.

Term	Definition
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. *See also* 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 that acts as a disease-free buffer[16] between the restricted area and the outside area (the limits of a control area and the conditions applying to it can be varied during an incident according to need) where the disease controls and movement controls applied are of lesser intensity than those in a restricted area.
Cost-sharing arrangements	Arrangements agreed between governments (national and states/territories) and livestock industries for sharing the costs of emergency animal disease responses. *See also* Compensation, Emergency Animal Disease Response Agreement
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 or egg processing plant (or other such facility) that, after investigation and based on a risk assessment, is considered to contain one or more susceptible animals not showing clinical signs, but is considered highly likely to contain one or more infected animals and/or contaminated animal products, wastes or things, and that requires action to address the risk
Dangerous contact processing facility (DCPF)	An abattoir, knackery, milk or egg 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.

[16] The use of the term 'disease free' implies that disease is not known to occur within the geographic area described by the CA.

Term	Definition
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.
Disinsection	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. *See also* Endemic animal disease, Exotic animal disease
Emergency Animal Disease Hotline	24-hour freecall service for reporting suspected incidences of exotic diseases — 1800 675 888.
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. *See also* Compensation, Cost-sharing arrangements
Endemic animal disease	A disease affecting animals (which may include humans) that is known to occur in Australia. *See also* Emergency animal disease, Exotic animal disease
Enterprise	*See* Risk enterprise
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. *See also* Veterinary investigation
Epidemiological unit	In the context of infectious disease, an epidemiological unit is a unit which shares the same likelihood of exposure to a pathogen.[17] For the purposes of AUSVETPLAN premises classifications, an epidemiological unit can be defined as a discrete area encompassing all, or part, of a premises, within which control measures can be applied to achieve disease control outcomes.
Epidemiology	The study of disease in populations and of factors that determine its occurrence.

[17] www.woah.org/fileadmin/Home/eng/Health_standards/tahc/2018/en_glossaire.htm#terme_unite_epidemiologique

Term	Definition
Exotic animal disease	A disease affecting animals (which may include humans) that does not normally occur in Australia. *See also* Emergency animal disease, Endemic animal disease
Exotic fauna/feral animals	*See* Wild animals
Feeding prohibited pig feed	Also known as 'swill feeding', it includes: • 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. This definition was endorsed by the Agriculture Ministers' Council through AGMIN OOS 04/2014.
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. *See also* 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 the pathogen into the animal and the first clinical signs of the disease.
Index case	The first case of the disease to be diagnosed in a disease outbreak. *See also* Index property
Index property	The property on which the index case is found. *See also* Index case
Infected area	An area on which wild/feral 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 determined to be an infected area. The area may be subject to wild/feral animal disease controls, including, as necessary, destruction, disposal and decontamination activities, vaccination, intense surveillance and movement controls.

Term	Definition
Infected premises (IP)	A premises on which animals meeting the case definition are 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 (LCC)	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. *See also* Surveillance
Movement control	Restrictions placed on the movement of animals, people and other things to prevent the spread of disease.
National Biosecurity Committee (NBC)	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, Fisheries and Forestry 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	*See* Wild animals
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 restricted and control 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 geographically defined tract of land including its buildings. A premises may be represented geospatially (eg on maps) as a polygon for whole or parts of a property, or as a centroid to identify the entire property. A premises may be part of, or an entire property. Premises with a case number are assigned a premises classification for disease control management and monitoring purposes. As such, a premises is an 'epidemiological unit' for disease control purposes.

Term	Definition
	A premises can also be a separate epidemiological unit internal of a land parcel in some circumstances. On an exceptional basis and subject to a risk assessment, a property may be divided into multiple, discrete biosecure epidemiological units. These units may then be reclassified as separate premises for disease control purposes. An epidemiological unit may define the extent of the premises.
Premises of relevance (POR)	A premises in a control area that contains one or more live susceptible animals 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.
Premises with susceptible species (PSS)	A premises in the outside area that contains one or more live susceptible animals or other units of interest, 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.
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.
Prohibited pig feed	Also referred to as 'swill'. 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 byproducts either of Australian provenance or legally imported for stockfeed use into Australia (ii) material containing flesh, bones, blood, offal or mammal carcases 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 4. under jurisdictional permit, any other nationally agreed process approved by the Animal Health Committee for which an

Term	Definition
	acceptable risk assessment has been undertaken and that is subject to compliance verification. The national definition is a minimum standard. Some jurisdictions have additional conditions for feeding of prohibited pig feed that pig producers in those jurisdictions must comply with, over and above the requirements of the national definition.
Qualifiers	
– assessed negative	Assessed negative (AN) is a qualifier that may be applied to premises previously defined as 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	Legal restrictions imposed on a place or a tract of land by the serving of a notice limiting access or egress of specified animals, persons or things.
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 strict disease controls and intense surveillance. The limits of a restricted area and the conditions applying to it can be varied during an incident according to need.
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, garbage depots.
Sensitivity	The proportion of truly positive units that are correctly identified as positive by a test. *See also* Specificity
Sentinel animal	Animal of known health status that is monitored to detect the presence of a specific disease agent.

Term	Definition
Sentinels on site (SN)	A qualifier that may be applied to infected premises to indicate that sentinel animals are present on the premises as part of response activities.
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. *See also* General permit
Specificity	The proportion of truly negative units that are correctly identified as negative by a test. *See also* Sensitivity
Stamping out	The strategy of eliminating infection from premises through the destruction of animals in accordance with the particular AUSVETPLAN manual, and in a manner that permits appropriate disposal of carcasses and decontamination of the site.
State coordination centre (SCC)	The emergency operations centre that directs the disease control operations to be undertaken in that 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.
Surveillance area	A geographically defined area in which animals are subject to intensive surveillance for the purposes of early detection of, or proof of freedom from EADs, It may or may not be legally declared, and may be used for disease control purposes in some jurisdictions.
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.

Term	Definition
	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	*See* Prohibited pig feed
Swill feeding	*See* Feeding prohibited pig feed
Trace premises (TP)	Interim classification of a premises that tracing indicates may have susceptible animals that have been exposed to the disease agent, or contains potentially contaminated animal products, wastes or things, and that requires investigation.
Tracing	The process of locating animals, persons or other items that may be implicated in the spread of disease, so that appropriate action can be taken.
Transmission area	An area, not usually legally declared, that is used for vectorborne diseases for epidemiological purposes, recognising that vectors are not confined by property boundaries.
Unclassified processing facility (UPF)	An abattoir, knackery, milk or egg processing plant or other such facility where the current presence of susceptible animals and/or risk products, wastes or things is unknown.
Units of interest	Units of interest may require classification commensurate with the needs of a response and may include: • transporters and, transport depots where trucks carrying potentially infected stock and animal products are stored, or through which livestock may transiently move • milk tankers • veterinarians, and other personnel of specific interest that move between properties.
Unknown status premises (UP)	A premises where the current presence of susceptible animals and/or risk products, wastes or things is unknown.
Vaccination	Inoculation of individuals with a vaccine to provide active immunity.
Vaccine	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.
– adjuvanted	A vaccine in which one or several disease-causing agents are combined with an adjuvant (a substance that increases the immune response).

Term	Definition
– attenuated	A vaccine prepared from infective or 'live' microbes that are less pathogenic but retain their ability to induce protective immunity.
– gene deleted	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.
– 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.
Vaccinated (VN)	A qualifier that may be used to identify premises that contain susceptible animals that have been vaccinated against the emergency animal disease in question.
Vaccination area	A geographically defined area in which emergency vaccination is applied for the purpose of EAD control. It may or may not be legally declared, and may be used for disease control purposes in some jurisdictions.
Vector	A living organism (frequently an arthropod) that transmits an infectious agent from one host to another. A *biological* vector is one in which the infectious agent must develop or multiply before becoming infective to a recipient host. A *mechanical* vector is one that transmits an infectious agent from one host to another but is not essential to the life cycle of the agent.
Veterinary investigation	An investigation of the diagnosis, pathology and epidemiology of the disease. *See also* 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).
Wild animal management area	A geographically defined area in which wild animal management or control activities are conducted for the purpose of EAD control. It may or may not be legally declared, and may be used for disease control purposes in some jurisdictions.
WOAH Terrestrial Code	Describes standards for safe international trade in animals and animal products. Revised annually and published on the internet at: www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/.

Term	Definition
WOAH Terrestrial Manual	WOAH Manual of diagnostic tests and vaccines for terrestrial animals. 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.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-manual-online-access/.
Wool	Sheep wool.
Zero susceptible species premises (ZP)	A premises that does not contain any susceptible animals.
Zoning	The process of defining, implementing and maintaining a disease-free or infected area in accordance with WOAH 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

Manual-specific abbreviations/acronyms

Abbreviation	Full title
AWEX	Australian Wool Exchange
AWH	AWH Pty Ltd (formerly Australian Wool Handlers)
AWI	Australian Wool Innovation
AWTA	Australian Wool Testing Authority
AWTM	Australian Wool Testing Melbourne (EDI network)
EDI	electronic data interchange
FMD	foot-and-mouth disease
IWTO	International Wool Textile Organisation
MTS	mechanical tuft sampler
NWD	National Wool Declaration
PIC	property identification code
PPR	peste des petits ruminants
PSSN	AWTA pre-sale sample number
WSA	wool statistical area
WDO	wool delivery order
WPA	WoolProducers Australia

Standard AUSVETPLAN abbreviations/acronyms

Abbreviation	Full title
ACDP	Australian Centre for Disease Preparedness
ADS	approved disposal site
AN	assessed negative
APF	approved processing facility
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 Transfer Society
IP	infected premises
LCC	local control centre
NASOP	nationally agreed standard operating procedure
NMG	National Management Group
OA	outside area
PCR	polymerase chain reaction
POR	premises of relevance
PSS	premises of susceptible species
RA	restricted area
RP	resolved premises
SCC	state coordination centre

Abbreviation	Full title
SP	suspect premises
SpP	special permit
TA	transmission area
TP	trace premises
UP	unknown status premises
UPF	unclassified processing facility
VN	vaccinated
WOAH	World Organisation for Animal Health
ZP	zero susceptible species premises

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