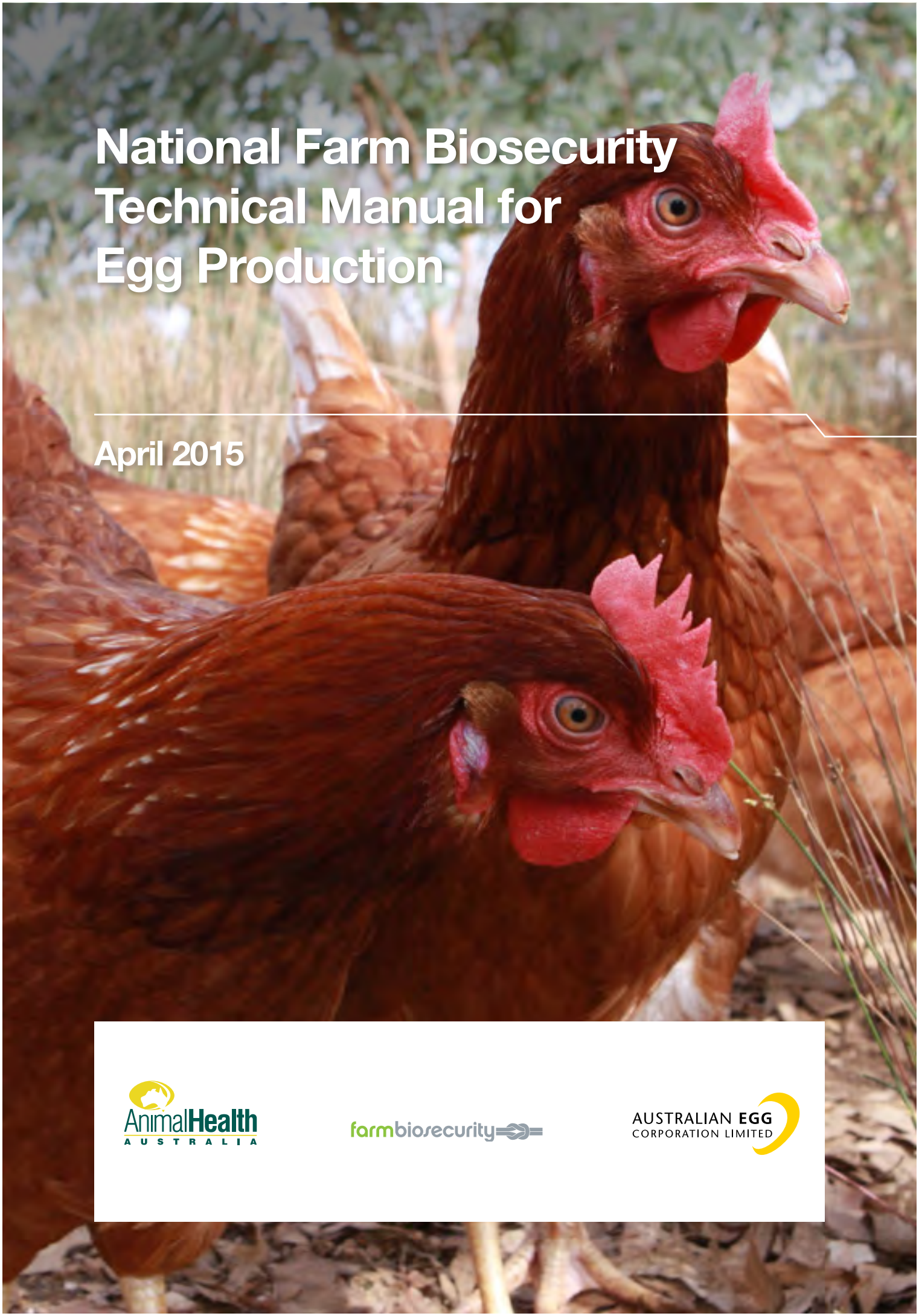
National Farm Biosecurity Technical Manual for Egg Production

April 2015



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farmbiosecurity

AUSTRALIAN EGG CORPORATION LIMITED

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The National Farm Biosecurity Technical Manual for Egg Production has been approved by all signatories to the Emergency Animal Disease Response Agreement as part of the National Disease Risk Mitigation Program referred to in section 14 of said Agreement.

The Manual is maintained and distributed by the AECL. It is available in PDF format from the website www.aecl.org and on the *Farm Biosecurity* website www.farmbiosecurity.com.au/toolkit/

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National Farm Biosecurity Technical Manual for Egg Production

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Background

A *National Farm Biosecurity Manual for Poultry Production* was produced by a Biosecurity Consultative Group, established as a resolution of the 2007 Government–Industry Avian Influenza Forum. Membership of the group included representatives from each of the following organisations and poultry industry sectors:

- Commonwealth Department of Agriculture, Fisheries and Forestry
- Animal Health Australia
- Australian Chicken Meat Federation Inc.
- Australian Chicken Growers' Council
- Australian Egg Corporation Limited
- Australasian Turkey Federation
- Free Range Egg and Poultry Australia
- Australian Duck Meat Association
- Emu Industry Federation of Australia
- Australian Ostrich Association
- Game bird industry
- NSW Department of Primary Industries
- Queensland Department of Primary Industries and Fisheries

The purpose of the Manual was to establish a minimum set of biosecurity standards, applicable to all poultry producers (including ratites).

Manual adapted for the commercial table egg industry

The present document is an adaptation of the generic poultry manual to reflect the requirements as they apply to the commercial table eggs industry. Reference to other sectors has been removed and some industry specific arrangements have been reflected in the present text.

The sector specific manuals (such as this one) must, as a minimum, satisfy the requirements stipulated in the generic manual but may provide more specific guidance or additional requirements that reflect the characteristics of the industry sector.

Other resources are available to egg producers to assist and maintain adequate biosecurity practices for their enterprises including the Biosecurity Code of Practice www.aecl.org/r-and-d/activities/completed-activities, industry quality assurance programs (for example www.aecl.org/quality-assurance/) and training programs www.aecl.org/skills-and-knowledge/). This Manual is designed to provide technical information to support the principles of biosecurity for egg production by providing a minimum standard and example practices that must be adopted on-farm.

Individual producers and companies may wish to develop alternative biosecurity manuals, which should nevertheless incorporate the principles within the Biosecurity Code of Practice, this technical manual and others within QA programs, in addition to any specific company requirements.

All properties with 100 or more poultry may be required to be registered with the relevant state/ territory government authority who will issue them with a property identification code (PIC).

Scope

The Manual applies to commercial table egg production farms (layer farms) from the time of delivery of day old chicks until depopulation of the spent layer hens, including transportation and delivery of point of lay pullets. It also covers the transport and movement of eggs and egg products to other farms, grading and processing establishments.

This Manual stipulates the minimum biosecurity measures for emergency animal diseases (EAD), on egg production farms. For control of endemic diseases on egg production farms other enhancements to these minimum standards may be required and may include measures such as vaccination.

While the Manual specifically deals with commercial layer chicken table egg production the principles of this Manual are applicable to other poultry species used for egg production and should be followed.

Implementation

The adoption of the FSANZ Primary Production and Processing Standards for Eggs & Egg Products (PPPSEEP) in a consistent way by all states and territories presents a good opportunity to promote adoption of the biosecurity standards set out in this Manual. While the biosecurity requirements in this Manual are in some areas broader than what is strictly required from a food safety point of view, it is the industry's expectation that adoption of the measures stipulated in this Manual will meet the PPPSEEP requirements as far as the production phase is concerned.

Egg production biosecurity

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OBJECTIVES

- *To prevent the introduction of infectious disease agents to chickens.*
- *To prevent the spread of disease agents from an infected area to an uninfected area.*
- *To minimise the incidence and spread of microorganisms of public health significance.*

Biosecurity and quarantine are integral parts of any successful poultry production system. Biosecurity refers to those measures taken to prevent or control the introduction and spread of infectious agents to a flock. Such infectious agents, whether they cause clinical or subclinical disease, significantly reduce the productivity, profitability and long term financial viability of a poultry operation.

Biosecurity is about managing risk to meet the objectives stated above. It is essential that a risk assessment be conducted for each enterprise to establish what level of risk exists in each phase of its operations and to identify and implement control measures appropriate to these levels of risk.

This Manual identifies areas of risk common to pullet and egg production farms, and appropriate measures to minimise these risks.

When undertaking the risk assessment underpinning the farm-specific biosecurity measures, it is important to take into account all factors that may impact on the biosecurity of the production area. These factors should include location and layout of property and production area, source of water supply, disease status of the district, proximity to other production areas with avian species, presence and type of wildlife, and interface with the organisations and/or individual clients that are being supplied. These interactions include live poultry movements, servicemen, industry personnel, contractors, deliveries of feed and disposables such as egg fillers, and movement in and out of eggs and egg products. The inclusion of all other livestock on the site should be undertaken with a risk assessment and be considered on a case by case basis after seeking advice from your veterinarian.

This Manual is intended to assess the risk and measures to control the incursion of not only emergency animal diseases such as avian influenza (AI), virulent Newcastle disease (vND), virulent infectious bursal disease and salmonella enteritidis, but also those endemic disease that affect productivity, performance and in some cases organisms of food safety significance.

An additional element in the prevention of introduction and spread of disease is the use of vaccination. The Manual does not cover this aspect but the importance of an appropriate vaccination strategy is acknowledged and vaccination as a possible risk management measure should form part of the overall biosecurity risk assessment and strategy.

The purpose of the Manual is to establish a minimum set of biosecurity guidelines, applicable to all pullet and egg producers from hatcheries to the depopulation of spent layers and the movement of eggs and egg products.

Individual producers and companies may wish to develop enhanced biosecurity manuals, which must nevertheless incorporate these minimum standards in addition to any specific company requirements.

A biosecurity self-audit/auditable checklist for continuous improvement is attached as Appendix 1. This document may also form the basis for either second or third party audits where this is required.

Major routes for disease and pathogen transmission

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POULTRY

- Introduction of new birds
- Transfer of birds from production area to production area
- Dead bird disposal
- Spent layer hen depopulation
- Movement of eggs and egg product between establishments

OTHER ANIMALS

- Wild birds, especially water fowl
- Feral and domestic animals, including other livestock and pets
- Insects
- Rodents – rats/mice
- Domestic and aviary birds

PEOPLE

- Farm personnel and family members living on site
- Contractors, maintenance personnel, neighbours, service personnel and visitors
- Disease can be transmitted by hands, footwear, clothing and bodily discharges for example

EQUIPMENT

- Cages, husbandry equipment, packing materials such as egg flats

VEHICLES

- Dirt/manure/contaminants carried on cars, trucks and tractors

AIR

- Transmission as an aerosol or dust

WATER SUPPLY

- Water supplies may become contaminated by water fowl, other animal species or run off

FEED

- Finished feed may be contaminated by the raw materials used, during transport, or by exposure to rodents and birds at the site of production or on the recipient property

LITTER AND WASTE

- Transport of litter material on and off the farm site as well as storage of used litter on site may be a biosecurity risk
- Transport of egg waste and dead birds and the composting or burial of egg waste and dead birds on the site may be a biosecurity risk

Definition of the concept of production area and property

In this document, **the production area** includes the poultry sheds, the egg collection amenities, egg storage areas, egg grading and processing floors, dry storage areas, on site feed production or storage areas, loading pads and truck movement areas and the ranges used for free-range production.

The property is the land on which the production area is located and typically includes the facility manager's home and may include other farm land used for livestock or cultivation. The boundary of the production area and the boundary of the property may be the same.

Any reference to **sheds** is a reference to roofed buildings capable of and used for holding poultry securely within their perimeter.

Any reference to **range** is a reference to fenced pastures that are, or at times are, accessed by the poultry being farmed.

Reference to **egg storage** areas means generally a cool room where eggs are accumulated, having been obtained from a shed or sheds within the immediate vicinity, or a centrally located facility where eggs from the entire property or possibly other properties are brought to and stored.

Egg grading floors are where eggs are delivered from the property or potentially a number of properties and graded, packed and sorted ready for storage and eventual distribution.

Egg processing is where eggs are received from the property or potentially a number of properties and are cracked and processed into a variety of products for storage and distribution.

While egg grading and egg processing floors may be physically located on an egg production property, often they are separate entities with no physical association with properties on which there are poultry sheds.

Principles of biosecurity

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A. Emergency animal diseases
When considering EADs such as AI and vND there is the need to always have sound biosecurity principles in place at all times and the awareness of the possibility of an EAD incursion continually reinforced with staff and the continued reassessment of operational procedures and how they may affect the risk of an EAD incursion and outbreak. The continued objective of any biosecurity program is to ensure at all times there is a functional exclusion **boundary** that prohibits the incursion of an EAD into the property.

This exclusion boundary may be:

- Physical in being fencing and gates to restrict vehicular movements and the entry of people.
- Policies that restrict the movements of visitors onto the farm within certain time frames, after visiting other avian properties
- Showering onto properties and/or sheds with a change into farm clothing.
- The exclusion of wild birds and particularly water fowl from access to areas in which poultry are located.
- The effective sanitation of surface water.
- The avoidance of horizontal contacts between other poultry, livestock and disposables such as reused egg fillers.
- Zonal and boundary baiting for vermin

B. Endemic diseases

Endemic disease includes such things as infectious bronchitis virus, avian encephalomyelitis, *Mycoplasma gallisepticum*, infectious laryngotracheitis, etc. These disease agents are potentially present on all egg production farms and thus the exclusion of these diseases within an egg production operation is more difficult, and thus control is usually by a combination of vaccination, biosecurity and hygiene. It is important with endemic disease that young stock are reared in isolation in single age sheds clean of any endemic disease. These pullets should then be vaccinated effectively against these endemic diseases before the birds are transferred to the usually multi-age production sites.

Where the decision is made not to vaccinate against certain endemic diseases then it is essential that the biosecurity boundary principle is applied to ensure that this endemic disease pathogen does not enter the property and cause disease in the unvaccinated susceptible host (layer). On multi-age sites it is not feasible to

control most endemic diseases through the normal principles of biosecurity because of the inability to control regional aerosol and fomite spread and thus vaccination of young livestock or pullets becomes a pivotal part of the endemic disease control program. Only on sites where monitoring has confirmed the absence of a recognised poultry endemic disease agent, and in regions where aerosol or other forms of horizontal spread is unlikely, should vaccination possibly not be considered.

For an EAD the risk of an incursion should always be minimised by maintaining the highest level of biosecurity at the functional boundary to the property and this level of biosecurity must be maintained at all times. For endemic disease the level of biosecurity is invariably compromised within the property because of the operational activities, the close proximity of sheds to each other, aerosol spread and the high frequency of horizontal contacts such as staff movements, egg conveyor belts and movement of equipment and vehicles between sheds. In this common egg industry situation, vaccination of pullets in isolation to allow them to develop protective immunity against these endemic avian disease agents, is essential prior to transfer into production sheds.

The control of vectors of endemic disease, such as rodents and insects, should be implemented.

Biosecurity procedures

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1. Documentation and training

Objective: To ensure awareness and training of all production area employees in all relevant biosecurity requirements.

1.1 Each production facility must keep a copy of the Manual readily accessible to staff.

1.2 Staff must be provided with training in the relevant parts of the Manual and such training is to be recorded.

2. Facility operational standards

Objective: To limit and control access to poultry production areas by vehicles and people, and prevent as much as possible access by livestock, wild birds and other animals (including rodents).

2.1 The production area must have a perimeter fence establishing a clearly defined biosecurity zone.

2.2 If livestock graze the property then the production area must have a stock proof fence. Grazing near sheds (i.e. on part of the production area as defined in this Manual) is only permitted where the grazing area is separated by a stock proof barrier from the area used by poultry, effectively preventing transmission of contaminants from grazing livestock to poultry, and the grazing area is not used for access to other parts of the production area. Drainage from livestock pastures or holding areas must not enter poultry enclosures or areas that can be accessed by poultry (e.g. through fences).

In free-range egg operations where either dogs or alpacas are used to protect fowl in the range area from attack by foxes, feral dogs or birds of prey, these guard animals should be tested for freedom from salmonella by faecal microbiological culture prior to introduction and ideally retested annually.

2.3 A sketch or map of the layout of the property, showing the production area, sheds, ranges, access roads and gates must be created and maintained and kept current. This must be readily accessible to all staff and visitors.

2.4 The main entrance to the production area must be capable of being closed off to vehicle traffic (e.g. lockable gate which, where feasible, should be kept locked at all times) and must display appropriate signage

including “Biosecure Area. No Entry Unless Authorised” or similar wording. In addition, signage must direct visitors to contact the producer before proceeding i.e. telephone number and/or enquire at house.

2.5 There must be a parking area for vehicles not entering the production area. There must be a change area away from sheds with clean protective clothing and boots provided. Showering and changing into clean protective farm clothing is preferable, particularly for pullets that are susceptible to endemic poultry diseases until they have completed their vaccination program.

2.6 Entry to sheds must only be made through entrances where a footbath exists containing a suitable disinfectant used in accordance with company or manufacturer’s instructions and changed regularly before the disinfectant deteriorates and loses effectiveness. There must be provision for scraping the soles of boots before dipping to ensure the sanitiser is making contact with the soles of the boots.

Facilities for hand washing/ sanitation must also be placed at the entry of each shed.

In free-range operations similar foot bath procedures should apply for access to the production area to avoid the possible introduction of offsite pathogens.

While footbaths provide a degree of security in regard to the incursion of pathogens into the production area it is preferable to have the policy that requires a change of footwear at the boundary of the shed/range area. Each shed/ production facility should have its own footwear to change into.

2.7 Dead bird storage and disposal methods must conform to applicable hygienic containment and environmental compliance requirements.

2.8 All poultry housing must be designed and maintained so as to prevent the entry of wild birds and limit the access of vermin as far as is practical. The control of wild birds has limitations in free-range operations. The reader is referred to the section – Free-range Operations for recommended procedures that

minimise the biosecurity risk from wild birds in the range area.

2.9 Free-range landscape – trees, shrubs and other range amenities should be selected to minimise the risk of attracting the types of wild birds that are a high biosecurity risk, particularly in free-range operations. The area around sheds must be kept free from debris and vegetation, and should be mown regularly to discourage wild birds, insects and rodents which are potential disease vectors.

Vegetation buffers for environmental compliance should not be compromised. Trees may be used as shelter belts, along fence lines and on free-range premises to provide shade and provide poultry with some protection from unfavourable ambient conditions and flying predators.

2.10 Drainage – The production area should be adequately drained to prevent accumulation and stagnation of water likely to attract water fowl, especially in the areas around sheds and range areas. Standing water may also increase the presence of insects which can act as significant disease vectors. A range management plan should be implemented to manage pot-holes or water pooling after heavy rain falls.

2.11 An appropriate vermin control strategy and plan must be developed and implemented, including rodents, foxes, and wild dogs and cats.

2.12 A baiting program for rodents must be implemented where a risk assessment deems this necessary (live rodents, droppings, nests). See section 4.2 for further information.

2.13 Drinking water for poultry, as well as cooling water (fogging or cooling pads) used in poultry sheds, must meet appropriate water standards. The drinking water standard can be found in Appendix 5. Water that does not meet the standard must be effectively treated to ensure that the standard is met. See also section 4.1.

All surface water (dam, river, channel, rainwater catchment, etc.) must be effectively treated and sanitised before being used as drinking, cleaning or cooling water for poultry. See also section 4.1.

Treated and sanitised water supply must be kept in a closed system from the point of treatment to its time of utilisation for drinking water or cooling.

2.14 Only pullets and/or laying fowl are to be kept in the production area and no other avian species (including aviary birds and pet birds).

2.15 While not a preferable practice, if more than one commercially produced avian species is kept in the production area, the species must be housed and managed separately, with suitable internal biosecurity arrangements for each species as well as the overall property boundary biosecurity for the entire site. Shared equipment must be cleaned and disinfected between uses. The risk of increased endemic disease should be considered as an increased risk assessment in such mixed operations.

As domestic species of waterfowl can be asymptomatic carriers of AI, they should never be housed on sites where other types of commercial poultry species are present.

2.16 Feeding systems must, wherever possible, be closed to ensure that feed in silos and feed delivery systems are protected from access and contamination by wild birds and rodents. Feed spills outside the shed must be cleaned up without delay to prevent the attraction of wild birds and vermin.

2.17 Where bird weighing is practised, it must be carried out using the production area's own weighing frames and scales. Company service personnel can use their own scales provided that they are cleaned and disinfected when moved between production areas.

3. Personnel standards and procedures

Objective: To minimise the risk of introducing or spreading a disease or contaminant through vehicle and/or people movement, including:

- *Staff (including production, service and grading floor personnel)*
- *Contractors, suppliers and other service personnel*
- *Visitors and family members*
- *and to document such movements to facilitate tracing in case of a concern.*

3.1 Production personnel

Objective: To minimise the risk of introduction of disease or contaminants by production personnel.

3.1.1 Production area personnel or any person residing on the property must not have contact or dealings with any other poultry, cage birds, ratites (emus and ostriches) and pigeons while actively engaged with working in the production area (see Appendix 2).

3.1.2 Production area personnel must wear laundered clean clothes each day at the commencement of their work or wear on-farm clothing and footwear after showering on.

3.1.3 Production area personnel, including grading floor staff, should not move between various operational areas including production and/or grading facilities without first considering the biosecurity risks. The concept for endemic disease of "clean sites" and "dirty sites" should be considered.

Personnel movements should always be from clean to dirty sites and not the reverse. In an egg production company facility (unless specific avian disease testing indicates otherwise) the pullets are considered to be at a clean site, followed by a single age production farm and then a multi-age production site. The grading floor is to be considered the highest risk area because of multiple egg source inputs and this is particularly so if the grading floor accepts eggs and egg product from other sites and companies.

3.2 Company service personnel

Objective: To minimise the risk of introduction of disease or contaminants by company service personnel.

3.2.1 Company service personnel may by necessity make multiple production area visits on a single day. Site specific protective clothing and footwear should be worn in the production area.

3.2.2 Visits should always be made from 'clean' areas i.e. home, pullets (younger to older) or sites of known endemic disease free status first. Where necessary, visits may be made from production areas with lower known endemic disease status after a shower and complete change of clothing.

3.3 Repair and maintenance

Objective: To minimise the risk of introduction of disease or contaminants by contractors carrying out maintenance and repair work.

3.3.1 Repair and maintenance contractors who have had contact with poultry or other birds that day must not enter sheds and/or ranges populated or ready to be populated with birds unless (a) it is an emergency and (b) they have showered and changed clothes and boots, wear a hair covering, and as per the facility biosecurity policy.

3.3.2 Routine maintenance should be conducted, where possible, between batches prior to final disinfection where a single age batch system is practiced.

3.3.3 Tools taken into the production area must be cleaned free of dust and organic matter and be decontaminated before entry into sheds.

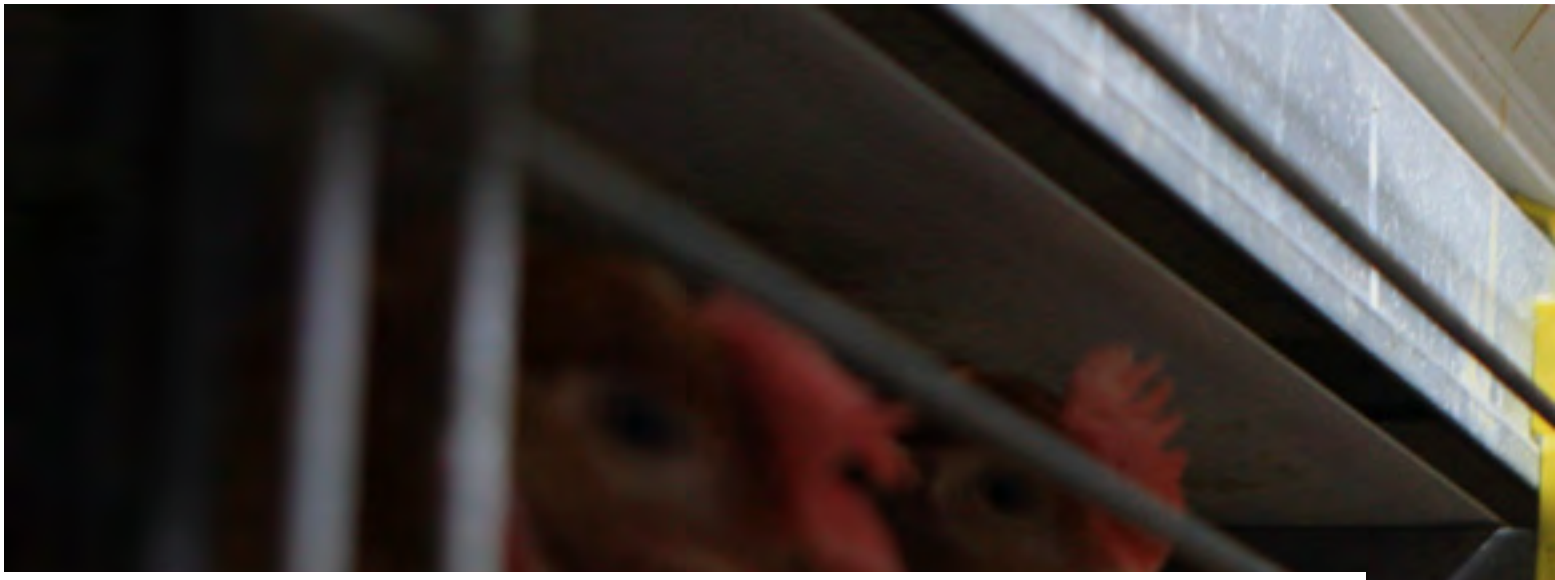
3.4 Contractors, suppliers, other service personnel and visitors

Objective: To minimise the risk of introduction of disease or contaminants by contractors, suppliers, service personnel and visitors.

3.4.1 Conditions of entry to poultry sheds and poultry ranges – all visitors must agree to comply with the entry conditions as stipulated in Appendix 3A (which must be displayed prominently near the Visitors' Log). All visits must be approved by the Manager before visitors may enter sheds and ranges. This requirement also applies to vaccination crews.

3.4.2 Visitors' Log – a record must be kept of all visitors to the poultry sheds and poultry ranges including contractors and company personnel (see Appendix 3B regarding details to be recorded and a possible format). The only exceptions are detailed below in 3.4.3. All visitors must sign in and out (this tracks people and minimises a welfare incursion).

3.4.3 Exceptions – the only people who may enter the sheds, poultry ranges and grading facilities without signing the Visitors' Log are farm personnel covered by the Personnel Quarantine Declaration (Appendix 2). It is required that the all contractors involved in live bird transfers, egg and egg product movement, vaccination crews, dead bird and waste removal and feed deliveries all sign in when attending the farm site. This then allows the ability to have traceability of all staff movement and activities. All contractors must be fully aware



of the appropriate biosecurity measures applicable to the site. Not all the entry conditions detailed in Appendix 3A may apply to all contractors.

3.4.4 Any authorised visitor (including neighbours, friends, other producers or equipment suppliers) likely to have been exposed that day to poultry, other commercial poultry or aviaries, egg handling / poultry processing establishments or pigs must not enter the sheds unless they have had a shower and changed clothes and boots, or must limit their visit to the property's residence while wearing clean clothes. A stand down period of 24 to 48 hours is always the preferred option of visitors prior to showering and/or entering the production area in clean clothing and foot wear.

3.4.5 All visitors should park their vehicles outside the production area unless it is essential that the vehicle be taken on site (e.g. some maintenance contractors). Where vehicular entry is necessary the history of the movements of the vehicle should be interrogated and preferably the vehicle should be washed and disinfected at the entry point. It is important that the potential internal contamination of the vehicle, especially driver foot wells, is always considered.

Non-essential vehicles should be parked in a preferably barrier-secured area at least 30 metres from the production area.

3.5 Requirements for specified movements

Objective: To minimise the risk of introduction of disease or contaminants by specified movements.

3.5.1 Pick-up of pullets and spent hens – pick-up crews (either contracted or in house) should only transfer one single age pullet flock in any one day from any particular production area. Similarly pick-up crews after depopulating spent layer hens should not handle pullets for transfer on the same day. Pick-up crews must not keep birds at their home and be trained in the fundamentals of biosecurity and welfare. Pick-up vehicles, modules and crates should be thoroughly cleaned and disinfected between farms. A thorough inspection of the vehicle and trailer should be undertaken prior to entry on the farm and the movements of the driver and crew validated. Prior communications

should ensure that there is a clear understanding by the contractor of their biosecurity responsibilities and policies of the poultry farm operator.

3.5.2 Day-old chick delivery – trucks, dollies and chick boxes must be cleaned and disinfected each day and between properties. Drivers must wear clean protective clothing and footwear prior to each delivery. Hands must be sanitised. Where the chick delivery truck is necessitated to visit several farms during the one delivery run then measures must be put in place to ensure that risk of infectious agent spread between properties is minimised. This would require visiting designated rearing farms first and mixed rearing and production farms last, ensuring off-loading equipment and chick boxes are confined to the clean and disinfected placement shed. Coupled with this is knowledge of the endemic disease status of each property.

3.5.3 Fresh litter delivery and collection of manure and used litter – trucks carrying new litter should be from reputable companies and not used for carting used litter and manure. Trucks carrying manure and used litter should not be used for back loading grain without a prior thorough cleaning program and the knowledge of all parties involved.

3.5.4 Other deliveries (e.g. gas and feed) – drivers must not enter sheds; must wear protective clothing and boots; and confine their movements to the immediate vicinity of the truck and trailer. External feed suppliers should be certified and have internal biosecurity and hygiene policies which are accessible to the poultry producer.

3.5.5 There must be a system for tracing movements of delivery personnel (e.g. through delivery dockets and feed company records).

3.6 Entry procedures for poultry sheds and ranges

Objective: To prevent the introduction of disease agents and contaminants entering into bird sheds and ranges through people movements.

Any person entering sheds must sanitise their hands and use footbaths (unless separate shed specific boots are being used) before entering each shed.

3.6.1 Soles of boots must be scraped before disinfecting in the footbaths.

3.6.2 A hand sanitiser must be available at all shed entrances and must be used before entering.

3.6.3 Facilities should be available for the cleaning and disinfection of equipment before entry.

3.6.4 The policy of having a change of footwear and coveralls to put over clothing at the shed entrance is the preferred policy for moving between like sheds and minimally impedes the flexibility of staff movements.

3.6.5 Persons who have been in previous sheds that may, through positive endemic disease status, compromise the birds in another shed should only enter after showering and changing into farm based clothing. This is typically the policy requirement for moving from production areas of the farm to rearing and pullet facilities.

4. Operational standards

4.1 Water Supply (see also 2.13)

Objective: To ensure that water used in poultry sheds for drinking, cooling and cleaning, is of a standard suitable for livestock.

The use of a quality water supply free of potential avian pathogens is critical to achieving good biosecurity. Effective treatment of surface water to reduce contamination and eliminate avian disease agents is essential but can be technically difficult and any water treatment process should be monitored regularly. Water with a high level of organic matter, or low or high pH, cannot be effectively sanitised (chlorinated) without having the appropriate pre-treatment. Ultraviolet treatment of water is limited to low flow rate clean water with no turbidity. It may be necessary to seek expert advice to ensure a safe water supply.

4.1.1 For a chlorinated water supply the treatment must achieve a level of 1.0 – 2.0 ppm free available chlorine (FAC) at the continuous point of use. It is to be noted that effectively chlorinated water may, after sitting in storage for extended periods, test negative for FAC but provided the water storage is sealed this is still satisfactory. This is often the scenario for

manually treated multiple water tanks or for the early morning water entering the shed immediately after lights on.

4.1.2 When chlorinating water there must be a minimum of 2 hours contact time with chlorine prior to use. As water quality varies the effective level of FAC required over this 2 hour period can vary. One of the most accurate ways to determine if the chlorine level is effective is to measure the Oxidation Reduction Potential (ORP) of treated waters, which should be approximately 650 mv. This should be done in conjunction with reading the pH of the water, which may require adjustment. This value (650 mv) applies for any oxidative chemical used for sanitising water.

4.1.3 Guidelines regarding the chlorination of surface water are available in Appendix 4.

4.1.4 Chlorine dioxide water sanitisation systems are becoming more commonly utilised within the poultry industry and have advantages over the use of chlorination using sodium hypochlorite.

4.1.5 The effectiveness of water treatment systems, including alternative systems (e.g. ultraviolet), must be validated before use and treatment systems require a program of maintenance and monitoring to ensure effectiveness. Production area records able to demonstrate the effectiveness of water treatment must be kept. Microbiological validation of the efficacy of the treatment system must be carried out at least twice a year.

4.1.6 Drinking water quality must be maintained at a standard suitable for use in livestock (Appendix 5).

4.1.7 Testing must be conducted and recorded daily (see Appendix 6) and a maintenance program needs to be in place.

4.1.8 Producers are advised to see the *National Water Biosecurity Manual Poultry Production* for more detail on water biosecurity (available at www.farmbiosecurity.com.au/toolkit/plans-manuals/)

4.2 Vermin Baiting (see also 2.12)

Objective: To minimise the potential for introduction of infectious agents and pathogens by vermin, in particular rodents, through their presence in the production area.

4.2.1 Bait stations must be placed at regular intervals around the sheds. The number of bait stations should be increased in areas where there are signs of increased rodent activity.

4.2.2 Bait stations must be numbered and a map kept of their location.

4.2.3 Bait stations must be checked weekly and fresh baits laid as required.

4.2.4 A record should be kept of each inspection and any activity noted (see Appendix 7).

4.2.5 Bait stations should be secure and tamperproof.

4.2.6 Bait stations must be designed to minimise the opportunity for other mammals, native wild life and birds to access the bait.

4.2.7 Other procedures like trapping and sonic sound aversion systems may also assist in rodent control.

4.3 Cleaning, Ground and Amenities Maintenance

Objective: To hinder the introduction of disease agents and contaminants into poultry sheds and enclosures and reduce the attraction of rodents and wild birds to production areas.

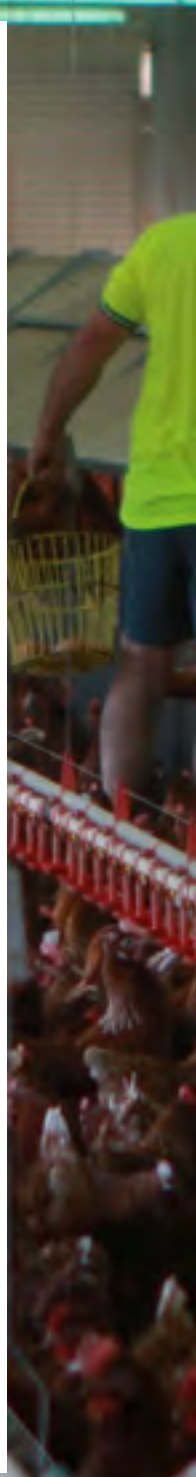
4.3.1 Feed spills must be cleaned up as soon as practicable. Feed attracts birds and rodents to the production area.

4.3.2 Grass on and around the production area must be kept cut – long grass attracts rodents and favours the survival of viruses and bacteria.

4.3.3 Footbaths must be inspected daily (e.g. for excessive organic matter) and the contents replaced as required to achieve an adequate concentration of suitable disinfectant used according to company or manufacturer's recommendations.

4.3.4 The free-range area must be adequately drained to prevent accumulation and stagnation of water. They must also be contoured to limit the ingress of runoff water from other parts of the property.

4.3.5 The use of manure or litter on adjoining land to the free-range areas from other parts of the poultry operation should take into account the spread of potential endemic disease agents like salmonella and the introduction of litter beetles.



4.3.6 The control and eradication of endemic pathogens between batches in regard to free-range areas is determined by the characteristics of the pathogens. Agents like mycoplasma, IBV, and obligate external parasites like the northern fowl mite survive for only a limited time in the environment and away from the host. Most other avian pathogens and intestinal worm eggs require hot dry conditions for destruction by desiccation. Thus under normal conditions it can be expected that some endemic pathogens will persist between batches in free-range systems. This is where efficacious vaccination against a broad spectrum of avian endemic diseases in pullets before transfer is a critical tool in any biosecurity program. This is coupled with a regular worming program.

4.4 Record Keeping

Objective: To assist early detection of animal health issues and the response to any biosecurity breach.

4.4.1 Bird mortality, feed and water consumption and production data must all be recorded daily to assist monitoring for any unusual animal health problems potentially indicating a biosecurity breach.

4.4.2 A record of bird movements must be maintained to facilitate tracing in case of an animal health or food safety concern.

4.4.3 A batch summary sheet which identifies all the treatments and monitoring procedures and outcomes for each batch of pullets should be completed and made available to the production farm prior to the bird transfer. This is so corrective actions can be undertaken like revaccination where serological evidence indicates this is required or where a contingency is required for a health status change such as with salmonella.

5. Grading floor and egg processing specific additional biosecurity requirements

Objective: To enhance the generic egg production biosecurity requirements and reflect specific additional requirements and operational procedures.

Egg grading floors and egg processing operations introduce another category to horizontal contacts that can impact on the biosecurity of egg production.

5.1 Egg grading floors

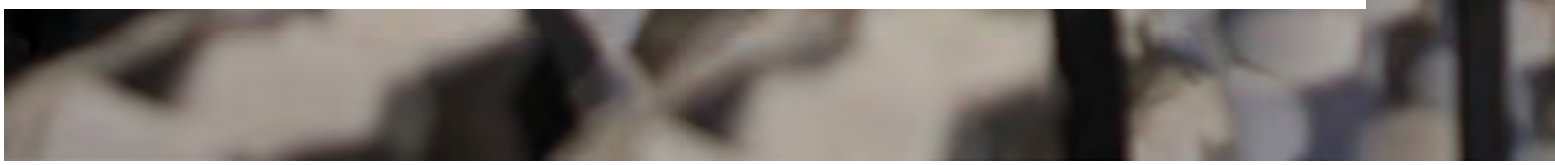
5.1.1 Can be located within egg production sites connecting a number of sheds directly using conveyor belts or by the use of internal vehicles bringing eggs in from other sheds. Subsequently, the disease status of the grading floor is equivalent to that of the "dirtiest" production shed. Portable egg handling equipment should be sanitised before being returned to the shed.

5.1.2 For centralised standalone grading floors where there are inputs from multiple sheds and farms, the high level of horizontal contacts makes the risk of transfer of endemic disease between properties high. There is a need to ensure that through vehicles, personnel and egg handling equipment (such as fillers, trolleys and pallets) there is no cross-contamination and transfer of avian pathogens to previously clean farms. This has been the historical manner in which Egg drop syndrome (EDS) infection has been spread amongst layer farms.

5.1.3 The use of cardboard egg flats is a particularly high risk practice in regard to the transfer of poultry diseases between properties. Where multiple properties are involved in grading floors either sanitised plastic fillers or heat sanitised cardboard flats should be used, or the less preferred option of marked fillers with a property identification.

5.2 Egg processing floors

5.2.1 The risks of egg processing floors spreading avian infectious disease are potentially higher because of the increased number of different properties, and usually of all different production types and wide geographical spread, inputting eggs into egg processing plants.



5.3 EAD traceability

In the advent of an EAD on one of the properties inputting eggs into a grading floor or processing plant then these facilities would become a suspect infected "property" and the ability to trace the eggs would become pivotal to ensure the sustained and minimally interrupted activity of the egg handling facility. The ability to isolate, treat or destroy the suspect eggs would be a potential critical containment component of the EAD response plan.

Free-range production operations

This Manual applies to caged, barn and free-range operations. It is recognised that free-range birds will potentially have increased exposure to some avian pathogens. Diseases such as internal and external parasites, fowl cholera and Miliary Hepatitis (Spotty Liver) are more commonly recognised in laying poultry farmed under extensive conditions. While it is difficult to apply standard hygiene practices to free-range areas the basic biosecurity principles of preventing the introduction of disease by controlling movement of livestock, equipment and personnel still apply.

The use of enhanced vaccination programs and strategic prophylactic medications are a useful tool to limit disease build up on free-range operations.

Increased exposure to wild birds is considered a biosecurity risk and most importantly to waterfowl, particularly wild ducks belonging to the Order Anseriformes (includes the Wood duck, Chestnut Teal, Freckled duck, Black duck and Whistling duck). It is important for the free-range area not to have environmental and amenity factors that attract congregations of large numbers of wild birds or surface water for ducks.

Wild water fowl surveillance in Australia identifies that most ducks have at some stage been exposed to avian influenza (AI) and more importantly at any one time a small percentage of these are shedding virus in their faeces that can contaminate surface water and pastures.

Some AI of the H5 and H7 subtypes which have in the past caused EAD outbreaks in the Australian egg industry. In all cases there was evidence of an association between wild ducks and contamination of drinking and/or cooling water or direct physical contact.

Control programs that reduce and eliminate the presence of wild waterfowl on free-range areas should be a priority consideration for all free-range operators. This will involve the absence, or elimination, of water catchments and other surface water within and in the vicinity of the free-range area, the netting of retention dams, the destruction of wild water fowl where and when legislation permits and the use of aversion programs.

Good fencing is required around free-range farms to prevent entry of animals such as foxes. In many situations, however, fencing alone is insufficient to stop such intrusions; therefore, some free-range enterprises keep specially trained dogs or guard animals such as alpacas with the chickens to reduce predation by foxes and birds of prey.

High risk biosecurity procedures

Objective: To enhance biosecurity protection by strategically assessing movements to protect the property from the increased threat of a disease being introduced from the outside in the face of a suspected outbreak of an emergency disease or a serious endemic disease.

1. Action plan for suspected EAD

It is important for all egg producers and handlers to be aware that there is potential for an EAD to occur at any time and thus producers must be proactive at **ALL** times to ensure biosecurity procedures are in place that will prohibit the entry into the poultry operation of an emergency or serious endemic disease.

For an EAD, the level of biosecurity at all times must be optimal because the infection will occur before clinical signs are observed and thus there will be a period of potential "silent" spread prior to any industry awareness or notification of the EAD. This is an important concept for all horizontal contacts (egg producers, transporters, clean out and vaccination crews, grading floors, carriers) who are potential spreaders of an EAD while not aware of its presence.

The activity level to prevent an EAD should be of high awareness at all times and not just during a suspect EAD or after an outbreak notification.

1.1 Each producer must establish and document clear guidelines regarding the circumstances when an EAD alert should be raised (e.g. an unusual increase in mortality or drop in production), and who must be informed. The action plan must also clearly state that, if an alert is raised, movement of birds, eggs and egg products, disposables, equipment and personnel from (and onto) the suspect property must immediately cease and/or be strictly controlled. For other farms and properties which are close horizontal contacts, movements must have a risk-based assessment.

1.2 The frequency of monitoring of mortality and production variations is to be increased and enhanced across the operation including in contact properties.

1.3 Senior management or the operation's veterinarian must be immediately notified who will assess the situation to consider or rule out an EAD. The directions given regarding biosecurity, livestock and product movements must be strictly followed and all other relevant personnel made aware of them.

1.4 In the event of a suspect EAD being notified the state Chief Veterinary Officer becomes the responsible entity with the legislative authority to implement livestock movement controls and enforced quarantine.

2. Standard Operating Procedures (SOPs)

SOPs will be available for any specific outbreak of an EAD from Animal Health Australia in accordance with AUSVETPLAN (for further information see: www.animalhealthaustralia.com.au/programs/emergency-animal-disease-preparedness/ausvetplan/).

APPENDIX 1 – Production Area Audit Checklist

National Farm Biosecurity Manual – Egg Production

Audit Checklist

Audit Date:				
Auditor's Name	_____		**Auditor's Signature**	_____
Auditee's Name	_____		**Auditee's Signature**	_____

1.0	**DOCUMENTATION and TRAINING**	**PARAGRAPH REF.**	**YES**	**NO**	**N/A**	**CORRECTIVE ACTION**
1.1	Is a copy of the current *National Farm Biosecurity Technical Manual for Egg Production* held on the production area and readily available?	1.1				
1.2	Have staff been given instruction in the relevant parts of the Manual?	1.2				
1.3	Is a record kept of all relevant training received by employees?	1.2				
1.4	Is a bird mortality register being maintained?	4.4.1				
1.5	Is an appropriate bird movement register being maintained?	4.4.2				
NOTES						

2.0	FACILITY STANDARDS	PARAGRAPH REF.	YES	NO	N/A	CORRECTIVE ACTION
2.1	Does the production area have a perimeter fence and can access routes be closed off to prevent vehicle entry?	2.1 2.4				
2.2	Is there a sketch or map clearly defining the production area and the property, including all access roads and gates?	2.3				
2.3	Is there adequate signage to inform visitors of the Biosecure Area and what action they should take?	2.4				
2.4	Is there an off-site parking area for visitors?	2.5				
2.5	Are footbaths or a change of footwear available and used at all entrances allowing personnel access to sheds?	2.6				
2.6	Are the footbaths, where used, inspected daily and replenished as required?	4.3.3				
2.7	Is the area around the sheds neat and tidy? E.g. mown grass.	2.9				
2.8	Are hand sanitisers or washing facilities available and used at all entrances allowing personnel access to sheds?	2.6				
2.9	Are other livestock excluded from the production area or effectively restricted to areas so that their faeces cannot come in contact with poultry either directly or indirectly, e.g. water draining into poultry areas/sheds?	2.2 2.14				
2.10	Are the sheds bird proof?	2.8				

2.11	Are no other pet caged or avian species held on the property?	2.15				
NOTES						

3.0	**PERSONNEL STANDARDS**	**PARAGRAPH REF.**	**YES**	**NO**	**N/A**	**CORRECTIVE ACTION**
3.1	Is there a signed Personnel Quarantine Declaration for each employee?	3.1.1				
3.2	Is there a Visitors' Log and are all production area visitors required to complete their details in the book?	3.4.2				
3.3	Are the conditions of entry to the production area prominently displayed near the Visitors' Log?	3.4.1				
NOTES						

4.0	**WATER TREATMENT**	**PARAGRAPH REF.**	**YES**	**NO**	**N/A**	**CORRECTIVE ACTION**
4.1	Is there a water sanitising system in place for the drinking and cooling water?	2.1.13 4.1				
4.2	If chlorination is used, is the level tested daily and recorded?	4.1.3 4.1.6				
4.3	If another sanitising system is used, is there a system in place to ensure that the water is being sanitised effectively?	4.1.4				
4.4	Is the effectiveness of the sanitising confirmed by independent microbiological testing on at least a twice a year basis if required?	4.1.4				
NOTES						

5.0	VERMIN CONTROL PROGRAM AND RODENT BAITING PROGRAM	PARAGRAPH REF.	YES	NO	N/A	CORRECTIVE ACTION
5.1	Is there an appropriate vermin control strategy documented?	4.2.4				
5.2	Is there a rodent baiting program in place in the production area?	4.2.1				
5.3	Is there a plan showing the location of bait stations?	4.2.2				
5.4	Are the baits regularly checked for activity and replaced; and is there a record of this process?	4.2.4				
NOTES						

6.0	CLEANING AND GROUND MAINTENANCE	PARAGRAPH REF.	YES	NO	N/A	CORRECTIVE ACTION
6.1	Has spilt feed been cleaned up around silos?	2.17 4.3.1				
6.2	Is the feed system closed to prevent contamination of feed by rodents and birds?	2.17				
6.3	Is there adequate drainage of the free-range area?	2.10 4.3.4				
NOTES						

7.0	DEAD BIRD DISPOSAL	PARAGRAPH REF.	YES	NO	N/A	CORRECTIVE ACTION
7.1	Is there an appropriate procedure in place for the disposal of dead birds?	2.7				
7.2	Is the procedure both environmentally sound and biosecure?	2.7				
NOTES						

8.0	FACILITY/COMPANY SPECIFIC REQUIREMENTS	REFERENCE	YES	NO	N/A	CORRECTIVE ACTION
8.1						
8.2						
8.3						
8.4						
8.6						
8.7						
8.8						
NOTES						

APPENDIX 2 – Personnel Quarantine Declaration

(Production Area Employee)

I, ……. hereby agree to abide by **MY EMPLOYER'S BIOSECURITY** rules and standards.

I understand that the following quarantine rules/standards apply at all times:

1. No avian species are to be kept at my place of residence i.e. no poultry or birds of any type (e.g. ostriches, aviary birds or racing pigeons). If any exemptions to this are approved by the employer, I must shower and change clothes before entering the production area.
2. No other domestic livestock are to be kept at my place of residence without approval.
3. No untreated poultry manure from other properties is to be used at my place of residence.
4. No member of my household is to work in any area where contact can be made with poultry or other processing facilities without approval. For example, on other properties or at hatcheries, processing plants, by-product plants, laboratories or with pick-up crews, unless I shower and change clothes before commencing work.
5. I will not visit poultry abattoirs, livestock production areas or poultry shows unless approved by my employer and appropriate quarantine measures are taken.

Signature ……Date…….....

Residential Address…….....

…….....

APPENDIX 3A – Entry Conditions For Visitors To Poultry Shed And/Or Range Areas

Entry to poultry sheds and/or range areas is subject to the following conditions:

	All visitors must **wear protective clothing** provided.
	All visitors must **wear protective boots**.
	All visitors must **disinfect boots in the footbath** provided on entering production area/ shed, or change into a separate pair of shed boots.
	All visitors must **sanitise hands** before entering sheds.
	Visitors who keep poultry, caged birds or pigs are prohibited from entry without approval from management. A 48 hour period since contact with poultry and birds shall apply and entry will only occur after a shower and change into clean clothing and footwear
	Visitors who have been in contact with any avian species or untreated poultry manure are prohibited from entry without approval from management. A 48 hour period since contact with poultry and birds shall apply and entry will only occur after a shower and change into clean clothing and footwear

APPENDIX 3B – Visitor's Log

By signing this visitor's log, you agree to comply with the conditions as detailed in the accompanying list of conditions of entry. All visitors entering poultry sheds or ranges must sign this log.

DATE	NAME	COMPANY AND CONTACT NUMBER	POULTRY CONTACT IN LAST 48 HOURS	REASON FOR VISIT	TIME IN	SIGNATURE	TIME OUT	SIGNATURE

APPENDIX 4 – Surface Water Treatment

Objective: To ensure surface water and other open sources of water are suitable for drinking and cooling and free of any avian disease causing agents.

Reminder – surface, untreated channel or open sources of drinking water should not be supplied to poultry of any type or flock size. The objective of water treatment is to minimise bacteria, viruses, algae and other organisms that birds consume in their drinking water, and that they are exposed to through shed cooling systems.

Surface water provided to birds for drinking and used for cooling must be treated. Wash-down water should also be treated prior to use.

All surface water that comes from sources other than the mains (e.g. from dams, rivers) should be treated on the farm before being used for poultry. Bore water should be tested and if not satisfying the water quality guidelines set out in Appendix 5 must be treated.

CHLORINATION

Chlorination is an effective low cost method to sanitise water. However, chlorination will only be effective if the water is already relatively free of organic matter and of a pH around 7. Water filtration can be used to remove organic loads.

There are a number of different chlorination systems available to poultry farmers. These can be obtained from a range of specialist water treatment companies, pumping companies or swimming pool suppliers. Assistance with the installation, operation and maintenance of these systems is usually offered by the supplier, as are kits for monitoring chlorination levels.

To effectively treat a poultry water supply, the water with chlorine at a concentration of 5 ppm (or higher as required to achieve an ORP of 650 mv) must be held for a minimum of 1 to 2 hours in a holding tank. This may require the use of a two-tank system, where water is being consumed by birds from one tank, while the other tank is refilled and stored with freshly chlorinated water until the required contact time of 1–2 hours has elapsed. Chlorine is more effective if the pH of the water is between 6 and 7 i.e. slightly acidic.

For more detail on the sanitation of water and other alternative chemicals that can be used the reader is referred to the *National Water Biosecurity Manual Poultry Production*.

APPENDIX 5 – Microbiological Water Quality Guidelines

Drinking Water Standards

Microbiological Analysis - Maximum Permissible Levels

Bacterial Standards (Organisms / 100ml)	
Bacteria	**Poultry (max)**
Total colony count	≤1,000
E. Coli (Faecal coliforms)	NIL
Coliforms	≤100

APPENDIX 6 – Water Sanitation Record

WATER SANITATION RECORD				
Date	Time	Test Result (e.g. PPM of free available chlorine)	Corrective Action	Name / Initials

Test method: .....

.....

APPENDIX 7 – Rodent Control Record

RODENT CONTROL RECORD					
Date	**Time**	Bait Station No.	Activity Level	**Corrective Action**	**Name or Initials**

Note: For activity level record “N” for no signs of rodent activity and “Y” where signs of rodent activity where observed (e.g. droppings/ bait eaten).

Notes

Animal Health Australia (AHA) is an innovative partnership involving the Australian Government, state and territory governments, major livestock industries and other stakeholders. AHA works with its members and stakeholders to strengthen Australia's national animal health system and maximise confidence in the safety and quality of Australia's livestock products in domestic and overseas markets.

www.animalhealthaustralia.com.au

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www.aecl.org

Scolexia Pty Ltd is an animal and avian health consultancy that provides high quality and personalised consulting service to the intensive animal farming and processing industry. Scolexia strives to help its clients improve performance and increase profitability through the development and implementation of comprehensive management programs and up-to-date technical advice. Scolexia aims to provide an all-inclusive service to clients and considers all aspects of clients' operations that may be impacting on performance and profitability.

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secure your farm: secure your future

The Farm Biosecurity program is a joint initiative of AHA and Plant Health Australia on behalf of their members. Its goal is to help producers reduce the risks posed by diseases, pests and weeds to crops and livestock. This national awareness campaign provides information about on-farm biosecurity measures which help prevent emergency animal disease outbreaks and exotic plant pest incursions. It encourages producers to identify risks to their livestock, crops and plant products, and to minimise those risks through good practices.

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