

Environmental Principles for the Egg Industry

Participant Training Manual

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FSA Consulting



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Natural Heritage Trust
Helping Communities Helping Australia
An Australian Government Initiative

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Environmental Principles for the Egg Industry: Participant Training Manual

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Table of Contents

| | |
|--|-----------|
| 1. Environmental Principles for the Egg Industry - Workshop Introduction..... | 1 |
| 1.1. Aims of Environmental Principles for the Egg Industry | 1 |
| 1.2. Participant Training Manual | 1 |
| 1.3. Competency Based Assessment | 3 |
| 2. Environmental and Legal Responsibilities | 5 |
| 3. Potential Environmental Threats of Egg Production | 6 |
| 3.1. Community Amenity and Health | 6 |
| 3.2. Surface Water | 6 |
| 3.3. Groundwater | 7 |
| 3.4. Land, Flora and Fauna..... | 7 |
| 4. Facilities Location and Planning | 9 |
| 4.1. Infrastructure | 9 |
| 4.2. Planning Considerations..... | 12 |
| 4.2.1. Land and Future Development..... | 12 |
| 4.2.2. Designated Areas | 12 |
| 4.2.3. Traffic and Parking..... | 12 |
| 4.3. Buffer Distances..... | 13 |
| 4.3.1. Surface Water and Groundwater | 13 |
| 4.3.2. Biosecurity | 13 |
| 4.4. Separation Distances..... | 14 |
| 4.5. Property Size | 14 |
| 5. Facility Design and Construction | 15 |
| 5.1. Landscaping and Vegetation | 15 |
| 5.2. Erosion Management During Construction | 15 |
| 5.3. Shed Design and Orientation..... | 16 |
| 5.4. Ventilation System | 16 |
| 5.5. Feeding Systems | 16 |
| 5.6. Watering Systems..... | 17 |
| 5.7. Monitoring and Control Systems..... | 17 |
| 5.8. Effluent Treatment and Storage System Design..... | 17 |
| 5.9. Manure and Spent Litter Treatment and Storage Systems..... | 18 |
| 6. Facility Management..... | 19 |
| 6.1. Traffic..... | 19 |
| 6.2. Visual Appearance..... | 19 |
| 6.3. Stocking Density | 19 |
| 6.4. Biosecurity | 20 |

| | | |
|--------------------|---|-----------|
| 6.5. | Sheds and Surrounds | 20 |
| 6.6. | Energy and Eco-efficiency | 23 |
| 6.7. | Manure (Egg Production Farms)..... | 23 |
| 6.7.1. | Manure Production..... | 23 |
| 6.7.2. | Bedding Materials and Litter Management | 23 |
| 6.7.3. | Manure Management - Shed | 24 |
| 6.7.4. | Manure / Litter Beetles..... | 24 |
| 6.8. | Cracked/Broken Eggs | 26 |
| 6.9. | Effluent Treatment and Storage Systems Management | 28 |
| 6.10. | Disposing of Packaging and other Wastes | 28 |
| 6.11. | Dead Bird and Cull Management..... | 31 |
| 6.11.1. | Rendering | 31 |
| 6.11.2. | Composting..... | 31 |
| 6.11.3. | Burial..... | 31 |
| 6.11.4. | Burning or Incineration..... | 31 |
| 6.12. | Manure and Spent Litter Clean-out..... | 34 |
| 6.13. | Manure, Spent Litter Storage and Compost Management | 36 |
| 6.14. | Manure and Spent Litter Utilisation..... | 38 |
| 6.15. | Effluent Utilisation | 39 |
| 6.16. | Control of Flies..... | 40 |
| 6.17. | Control of Rats and Mice | 42 |
| 6.18. | Chemical Storage and Use | 44 |
| 6.19. | Contingencies and Management of Emergencies | 44 |
| 6.19.1. | Mass Bird Deaths..... | 44 |
| 6.19.2. | Power and Water Supply Failure | 44 |
| 6.19.3. | Interruptions to Feed Supply | 44 |
| 6.19.4. | Equipment Malfunction..... | 45 |
| 6.19.5. | Interruption to by-product disposal or utilisation..... | 45 |
| 6.20. | Dealing with Neighbours and Regulators..... | 45 |
| 6.20.1. | Community Liaison | 45 |
| 6.20.2. | Handling Complaints..... | 45 |
| 6.20.3. | Complaints Register..... | 46 |
| 6.21. | Environmental Management Systems (EMS) | 48 |
| 6.22. | Environmental Monitoring and Recording..... | 48 |
| 6.22.1. | By-products..... | 48 |
| 6.22.2. | Soil Analysis – By-product Utilisation Areas | 48 |
| 6.22.3. | Groundwater and Surface Water | 48 |
| 6.22.4. | Release of Effluent..... | 48 |
| 6.22.5. | Community Amenity | 49 |
| 7. | Training..... | 51 |
| 8. | References and Bibliography | 53 |
| Appendix A. | State Legal Requirements..... | 61 |
| Appendix B. | Observe Environmental Work Practices..... | 76 |

Appendix C. Compost Management 82

1. Environmental Principles for the Egg Industry - Workshop Introduction

1.1. Aims of Environmental Principles for the Egg Industry

Environmental Principles for the Egg Industry is for operators of egg production farms, rearing farms and grading floors. It has not been specifically designed for breeder farms, hatcheries and egg manufacturing plants, which have different design and management issues. However the principles used in the training are applicable to the entire egg industry. Other workshop training materials will be developed for breeder farms, hatcheries and egg manufacturing plants as part of this training series.

Environmental Principles for the Egg Industry aims to provide information to help members of the Australian egg industry to:

- Assess the potential environmental threats of their enterprise.
- Implement measures to minimise the risk of adverse environmental threats from their enterprise.
- Continually improving the environmental performance of their enterprise.

Environmental Principles for the Egg Industry also aims to provide the skills for members of the Australian egg industry to:

- Follow environmental workplace practices by improving their knowledge of environmental issues.
- Recognise and report on potential environmental threats.
- Contribute to improved environmental work practices.
- Maintain environmental records.
- Demonstrate that they are able to meet the competency - RTC27802A – Observe Environmental Work Practices under the Australian Vocational, Education and Training (VET) system.

1.2. Participant Training Manual

The Participant Training Manual outlines the general principles of environmental management for egg industry facilities and provides information and exercises for assessing actual environmental issues on-farm.

The contents of the Participant Training Manual generally follow the headings included in the Environmental Guidelines for the Egg Industry, namely:

- Environmental legal obligations.
- Potential environmental threats of egg facilities.
 - Community amenity.
 - Groundwater.
 - Surface water.

- Land, flora and fauna.
- Best practice location and planning.
 - Infrastructure – Power, water, traffic and parking.
 - Planning considerations - Land use and future development, designated areas, traffic and parking.
 - Buffer distances - Surface water, groundwater and biosecurity.
 - Separation distances.
 - Property size.
- Best practice design and construction considerations.
 - Landscaping and vegetation.
 - Erosion management during construction.
 - Shed design and orientation.
 - Ventilation systems.
 - Feeding systems.
 - Watering systems.
 - Monitoring and control systems.
 - Effluent treatment and storage systems.
 - Manure and spent litter treatment and storage systems.
- Best practice management.
 - Traffic.
 - Visual appearance.
 - Stocking density.
 - Biosecurity.
 - Sheds and surrounds.
 - Energy and eco-efficiency – lighting and ventilation.
 - Manure production.
 - Bedding materials and litter management.
 - Manure management.
 - Managing manure/litter beetles.
 - Cracked or broken eggs and embryonic matter.
 - Effluent treatment and storage.
 - Dead bird and cull management.
 - Manure and spent litter cleanout.
 - Manure and spent litter storage and compost.
 - Manure and spent litter utilisation.
 - Effluent utilisation.
 - Control of flies.
 - Control of rats and mice.

- Chemical storage and use.
- Contingencies and emergencies.
- Dealing with neighbours and regulators.
- Environmental management systems.
- Environmental monitoring.

1.3. Competency Based Assessment

The Australian Vocational, Education and Training (VET) system is education and training for work. It forms part of the broader educational network in Australia that includes schools, universities, adult education and community education. The VET system is jointly-managed by state, territory and Australian governments, in partnership with industry and training providers.

The Australian Qualifications Framework (AQF) defines all nationally recognised qualifications. It provides a single framework for all qualifications from Senior Secondary Certification to PhD. Within the VET sector the following qualifications can be issued:

- Certificate I.
- Certificate II.
- Certificate III.
- Certificate IV.
- Diploma.
- Advanced Diploma.

The Australian Quality Training Framework (AQTF) is a set of nationally agreed standards that ensure high quality VET services throughout Australia. Training organisations must meet AQTF standards to become registered.

Only registered training organisations (RTOs) can issue AQF qualifications and deliver training and assessment services. All states and territories must recognise RTOs registered by other states and territories and all RTOs must recognise AQF qualifications and statements of attainment issued by other RTOs.

Under the AQF, the achievement of a group of competencies leads to the attainment of a VET qualification. Competencies are assessed in accordance with the endorsed assessment guidelines.

One of the key pathways to achieving formal qualifications is the recognition of prior learning (RPL). RPL involves the assessment of previously unrecognised skills and knowledge achieved outside the formal education and training system. RPL needs to be assessed against the requirements of a qualification.

This training package is designed to provide each participant with the skills to achieve the competency - RTC27802A – Observe Environmental Work Practices.

To achieve this competency, each participant will need to:

- Listen to and understand the material presented.
- Complete exercises as part of the learning.

If the trainer assesses that a participant has achieved the competency, the participant can apply to have the competency formally recognised through a registered training organisation (RTO). This will involve the payment of a fee for the issuing of the competency and administration.

The general requirements of the competency RTC27802A – Observe Environmental Work Practices include:

- Follow environmental workplace practices.
- Contribute to improved environmental work practices.
- Recognise and report on a potential environmental threat.
- Maintain environmental records.

A full copy of the Competency - RTC27802A – Observe Environmental Work Practices is provided in Appendix B.

2. Environmental and Legal Responsibilities

Learning Outcome

You recognise the relevant legislation, codes and national standards that threat on workplace environmental practices.

All egg production facilities must comply with applicable planning and environmental protection legislation for their state.

It is important to identify the legal requirements for the farm and to confirm compliance with these obligations. Arguably the most important legal constraints for any egg production facility are the consents, approvals or licenses to operate.

Information on the most relevant legal and other requirements for each state is provided in Appendix A.

Exercise

Identify the legal and other requirements applicable to your operation with a brief description on why they are relevant.

Write these in the space provided.

Applicable Legal and Other Requirements

3. Potential Environmental Threats of Egg Production

Learning Outcome

You can identify the signs or symptoms of the potential environmental threats of your enterprise.

You have accurately recorded the location and extent of potential environmental threats.

Well designed, sited and managed egg industry facilities should cause few environmental threats. Poorly located, designed and managed operations may cause a range of adverse threats, including effects on:

- Community amenity and health.
- Surface water.
- Groundwater.
- Land, flora and fauna.

3.1. Community Amenity and Health

Community amenity and health can be disrupted through odour generation, noise, traffic, dust, light, flies, feather drift and visual threats directly from egg industry operations or from vehicles servicing these.

The potential for nuisance depends upon a range of factors, including:

- The location of the enterprise in relation to sensitive sites.
- The adequacy of separation and buffer distances provided.
- Design features of the enterprise.
- The on-going management of the enterprise.
- Communication between those operating the enterprise and neighbours. On-going two-way communication provides a basis to manage threats and to reduce the risk of nuisance odour, dust, noise, feathers and light at neighbouring residences.

3.2. Surface Water

The main potential sources of surface water contamination are effluent, waste storage sites and areas where organic by-products are spread.

High nutrient levels in surface waters promote algal growth, including toxic blue-green algae. High nitrate levels in water are also toxic to fish, birds, wildlife, stock and humans. Elevated organic matter levels in water reduce oxygen levels, affecting fish and other aquatic life. Hence, runoff from any nutrient rich sources should either be avoided or contained.

3.3. Groundwater

Nutrients and salts can leach through the soil and contaminate groundwater. Sheds, waste storage and treatment sites, dead bird disposal pits and composting areas need to be adequately sealed to prevent this from occurring. Incorrect by-product management can also promote excess nutrients and salts in the soil profile and increase the risk of leaching. Once groundwater contamination has occurred it can go undetected and when established, remediation is difficult and expensive.

3.4. Land, Flora and Fauna

Most of the by-products from egg facilities (manure, spent litter, composted birds, egg shell waste and treated effluent) can be used as a valuable organic fertiliser and are environmentally safe when applied at sustainable rates.

The application and storage of these by-products needs to be carefully managed to avoid soil degradation. Degradation can occur via elevated nutrient levels and associated changes in pH; elevated salinity and sodicity levels; soil structural decline; increased soil erosion; and chemical and micro-organism contamination.

Exercise

Evaluate the threat that your operation poses to community amenity, groundwater, surface water, land (soil), flora and fauna.

Write these in the space provided.

4. Facilities Location and Planning

Learning Outcome

You have identified the major siting and design features of your operation farm in relation to environmental threats.

The following issues need to be addressed during the planning and construction phase:

1. Infrastructure.
2. Planning considerations.
3. Buffer distances to relevant features.
4. Separation distances to sensitive land uses (including property boundaries).
5. Erosion management during construction.

4.1. Infrastructure

When planning infrastructure the following should be considered:

- Power
 - Supply needs to be reliable and adequate for water supply, feed delivery, operating conveyor belts, running equipment, provide heating, lighting and ventilation.
 - Consider installing a standby generator with auto-switch control to manage power supply failures. This is especially important for sealed mechanically ventilated sheds where only minimal interruptions to ventilation and cooling equipment can cause mass bird deaths. Standby generators need to have sufficient power output and be appropriately connected to run all critical equipment for which manual alternatives are not available.
 - Considering the power requirement in light of possible future expansions of the facilities.
- Water
 - It is necessary to provide an adequate and reliable source of suitable quality water for drinking, cooling, cleaning and other ancillary requirements.
 - It is necessary to comply with state government guidelines and regulations for drawing water from surface watercourses or bores, or for catching water in dams.
- Traffic and Parking
 - Road access needs to be of a suitable standard to accommodate the anticipated types and numbers of vehicles.
 - When locating and designing roads and parking areas, consider the potential threats on nearby sensitive land uses.

- It is important to provide adequate parking space for the anticipated number of vehicles

Exercise

Describe the power supply, water source and supply and traffic management at your facility and then identify any areas that may need upgrading.

List these in the space provided.

4.2. Planning Considerations

Community consultation during the planning stage will often provide the information to address relevant community concerns. The consultation process must be structured to suit the individual situation. Poorly planned and ineffective consultation can lead to a breakdown in the process, which can be time consuming and expensive.

4.2.1. Land and Future Development

It is important to consider both the current and likely future land uses in the vicinity of an egg production facility.

- Locate new developments on land that is appropriately designated under the local planning schemes.
- Consider future land use planning.
- Avoid locations near urban or rural residential development where possible.
- Protect existing operations from incompatible future development by encouraging suitable provisions in planning schemes.
- Provide adequate area of suitable land on-farm for the sustainable utilisation of by-products (nutrients and contaminated water) or other arrangements for the removal of by-products off farm.

4.2.2. Designated Areas

Early consultation with relevant agencies will help to identify whether a site is suitable for development and specific issues that need to be considered when planning a development.

- Consider any declared water catchments or groundwater recharge areas in which intensive livestock industries, including poultry farms and associated facilities are not permitted.
- Consult with the relevant authority/agency (local government, water board, state government agency) to identify any specific concerns in relation to a proposed site.

4.2.3. Traffic and Parking

Careful design of roads and parking areas is important to the functional operation of an egg production facility.

- Consult local government and the transport department regarding road usage at an early stage of the planning process to enable determination of appropriate routes, access and road layout requirements and identify whether formal approval is required.

4.3. Buffer Distances

Providing buffers between an egg production facility and neighbours, other poultry farms or sensitive natural resources can help to prevent environmental impacts.

- Providing buffers assists in minimising potential off-site threats of egg industry operations.
- Buffers are a secondary control and are not a substitute for good design and management.

4.3.1. Surface Water and Groundwater

Good siting, design and management are critical in protecting water resources against the entry of nutrients, organic matter, pathogens and salts from the organic by-products of egg facilities. This can involve:

- Maintaining or rehabilitating vegetative land cover, particularly riparian vegetation, reduces the movement of contaminants and eroded soil into surface waters.
- Providing buffer distances required under any local government or state government local laws, guidelines or requirements.
- Locating any sheds containing birds, grading floors, processing facilities, manure and spent litter stockpiles and effluent ponds above the 1 in 100 year flood line.
- Considering any possible future expansions of the operation when selecting a site to ensure that it will be possible to provide sufficient buffers in the future.

4.3.2. Biosecurity

- Maintaining biosecurity is imperative to any egg production facility.
- The “Code of Practice for Biosecurity in the Egg Industry” is designed to assist in the development of effective biosecurity plans.
- Select a site that is well separated from other poultry facilities and from wild bird habitats.
- The following recommended buffer distances are suggested:
 - i. 1000 metres between an existing farm and any proposed alternative form of intensive poultry farming.
 - ii. 1000 metres between a new farm and any existing alternative form of intensive poultry farming.
 - iii. 5000 metres between any intensive poultry farming and a breeder farm.
- Avoiding locating a poultry farm in close proximity to waterways and wetlands that are used by waterfowl, as these birds may carry avian diseases.
- Consider transport routes for live birds to and from farms, as feather or dander drift from passing transport trucks can present a biosecurity issue.
- Provide adequate buffer distances between sheds on the one farm.

4.4. Separation Distances

Separating egg facilities from sensitive land uses provides important protection against amenity threats. However, separation distances alone do not always prevent amenity threats and are not a substitute for good design and management.

- Provide at least 500 metres between the egg facility and any land use zone that is not compatible with the development (e.g. residential, rural residential).
- Provide at least 300 metres separation distance between the egg facility and any sensitive land use (neighbouring house) that is located on land that is compatible with the development (e.g. on land designated rural, farming or similar). Where a lot is identified as having potential for an 'as of right' dwelling the separation distance should be calculated to the centre line of the vacant lot.
- Provide at least 100 metres separation distance between the egg facility and the property boundary where the adjoining boundary is land that is compatible with the development (e.g. rural, farming or similar);
- Provide at least 100 metres separation distance between the egg facility and a public road that carries more than 50 vehicles per day that are not associated with the development.
- Provide at least 50 metres separation distance between the egg facility and a public road that carries less than 50 vehicles per day not associated with the development.
- State government departments and agencies and individual local governments may specify minimum separation distance requirements between new/expanding developments and neighbouring houses, property boundaries, residential developments and other sensitive land uses

4.5. Property Size

Ideally, a property should be large enough to contain the facility itself and any required by-product utilisation areas. However, third party by-products utilisation is an option.

- Meet state and local government department requirements for minimum property areas.

5. Facility Design and Construction

Learning Outcome

You can identify how the design and construction of your operation can impact on the environment and you can identify measures that will prevent these threats.

5.1. Landscaping and Vegetation

Landscaping is used to improve the visual amenity of an operation and to reduce the risk of nuisance from noise, light and dust. The primary focus is vegetative landscaping, although earthen structures may also be used for screening.

- Adhere to state vegetation management and tree clearing acts.
- Retain existing trees and incorporate them into landscaping where possible.
- Consider developing a landscaping plan for a new or expanding farm.
- Use the natural vegetation and terrain of the site to the best advantage.
- Plant species that require little maintenance and are suited to the location.
- Select species indigenous to the region.
- Using a variety of different-sized trees and shrubs and / or earthen mounds to achieve effective upper and lower canopy screening.
- Maintain vegetation - remove and replace of dead and diseased plants.
- Install vegetative screens or other suitable emission reduction control measure at the exhaust end of tunnel ventilated sheds at a distance that does not affect the performance of the ventilation system. If a vegetative screen is used, the trees should be a suitable species for the area, consist of a low and high canopy and have slender leaves to trap dust. If a vegetative screen is used it should be at least 8 m wide.

5.2. Erosion Management During Construction

Site development typically involves earthworks that leave land bare and susceptible to erosion. This needs to be managed to prevent threats to land and surface water quality through soil erosion.

- Develop a plan during the early stages of the development so that excavations can be used for multiple purposes, such as constructing sediment traps and using soil to build up sheds, roads or earthen banks.
- Revegetate all disturbed areas on completion of construction. Select species that will rapidly establish to produce good ground cover.
- Divert upslope runoff from around the construction site.
- Reduce runoff velocities by constructing contour banks at regular intervals around the site and by increasing the surface roughness.

- Install silt traps and barriers, similar to those used during road construction, to induce particle settlement. Retain these until sufficient ground cover is established.

5.3. Shed Design and Orientation

Good shed design and layout can reduce potential environmental threats and operating costs.

- Provide a parallel distance of at least 15 m between sheds to improve ventilation and lower the temperature and humidity in the sheds. This distance is less critical with tunnel-ventilated sheds.
- Position the long axis of sheds east-west to minimise solar heat absorption during hot weather. With mechanically ventilated sheds, vary the shed orientation to minimise the risk of odour, dust and noise nuisance.
- Preferentially select non-reflective materials to avoid light nuisance.
- Consider the separation and buffer distances needed between the discharge-end of tunnel ventilated sheds and sensitive land uses.
- Provide sufficient roof overhang and sidewall height to prevent rainwater entry to sheds.
- Build and maintain sheds to exclude feral animals and other birds.

5.4. Ventilation System

Good ventilation is required to maintain bird health and welfare and to control shed temperatures. It also is critical in maintaining acceptable moisture content in the manure and litter to help prevent excessive odour generation and the accumulation of water vapour, heat, gases and dust particles within the sheds.

- Provide adequate shed ventilation to control shed temperatures, to minimise gas build up and to allow manure and litter to dry.

5.5. Feeding Systems

Well-designed and maintained feeding systems are needed to optimise bird performance, minimise the risk of environmental impacts and maximise business profitability.

- Design and locate feeders so that all birds have equal access to feed.
- Install systems that can be adjusted to meet the requirements of the birds.
- Select feeders that retain minimal amounts of old feed.
- Install and maintain feeding systems to minimise feed wastage.
- Design and maintain silos and feed-lines to minimise feed spillage and the ingress of water.
- Design feed storages to prevent access by rodents.

5.6. Watering Systems

Well designed and maintained watering systems are essential for animal health and welfare and to prevent wetting of bedding and subsequent environmental impacts.

- Design watering systems to ensure adequate access to watering space.
- Install systems that can be adjusted to meet the requirements of the birds.
- Install waterers that can be easily cleaned.
- Design systems to minimise spills and leakages.

5.7. Monitoring and Control Systems

Monitoring and control systems are important to monitor and maintain optimal conditions within mechanically ventilated sheds.

- Install automated systems to continuously monitor relative humidity and temperature levels in new mechanically ventilated sheds.
- Fit alarm systems (visual or telemetry if noise threats can occur) to alert farm management to malfunctions or extended abnormal shed conditions. Audible alarms are only suitable if they will not create a nuisance for neighbouring sensitive land uses.

5.8. Effluent Treatment and Storage System Design

Liquid effluent is generated by shed washout, equipment cleaning and egg washing. It needs to be properly treated and stored to minimise the environmental threat. The most appropriate design for an effluent treatment system will depend upon:

- Effluent characteristics.
- Volume of effluent.
- Size of the operation.
- Proposed end use of by-products.
- Availability and properties of land for by-product utilisation.
- Sensitivity of neighbouring environment (including nearby neighbours).
- Climatic factors.
- Topography.
- Soil characteristics.
- Groundwater vulnerability.
- Future expansion plans.
- State regulatory requirements.
- Cost.
- Reliability.
- Maintenance requirements.
- Ease of use.

Design and construct effluent treatment ponds to:

- Ensure there will be effective mixing and treatment.
- Provide access for desludging and maintenance. Bank tops 2.5 to 4 metres wide allow vehicular access for maintenance.
- Ensure the structural integrity of internal and external pond banks (batters) (a soil stability assessment will be needed).
- Ensure a maximum design permeability of less than 1×10^{-9} m/s for a depth of 300 mm for ponds up to 2 m deep or 450 mm for deeper ponds (compacted layers must not exceed 150 mm depth) for clay lined ponds. Use suitable soils, adequate soil compaction and correct moisture content during construction to achieve this standard. Ponds constructed using soils containing less than 20% clay will require sealing with clay, PVC (polyvinyl chloride) or HDPE (high density polyethylene) liners.
- Ensure the base ground level (base of works) is always at least 2 m above the water table.
- Provide at least 500 mm freeboard. (Freeboard is not wet weather storage).
- Provide a spillway on the effluent treatment pond or on the final pond in a series of ponds. Run-off from the spillway should be directed to an area that will not cause a negative environmental threat or leave the farm.
- Provide sufficient storage capacity to contain the inflow of effluent, plus incoming rainfall and runoff during extended periods of wet weather i.e. design to ensure they do not overtop more than once in ten years on average.
- Minimise the entry of clean stormwater runoff.
- Minimise the amount of rainfall captured within the pond/s by grading bank tops away from the pond.
- Observe responsibilities under **workplace health and safety legislation** for enclosures and signs around ponds.

5.9. Manure and Spent Litter Treatment and Storage Systems

Manure and spent litter need to be carefully controlled to prevent threats to amenity, water and land. It is important to:

- Design manure and spent litter stockpiles or composting facilities to ensure they can freely drain and not pond water.
- Use bunding to prevent entry and contamination of stormwater runoff.
- Install an impermeable base on stockpiling or composting areas. They should be designed to achieve a design permeability of 1×10^{-9} m/s over a depth of 300 mm
- Install a dam to catch runoff from manure and spent litter compost sites. Design the dam to hold a 1 in 10 year, 24 hour storm event.
- Gain a separate licence or works approval for compost production if this is required in your state. Stable fly breeding in Western Australia is a particular issue and local regulations need to be adhered to.

6. Facility Management

Learning Outcome

You can identify how appropriate management of your facility can improve environmental work practices.

One method for managing environmental threats is to develop and implement Work Instructions for critical operations. Exercises to develop relevant Work Instructions are included in this section.

6.1. Traffic

The main environmental threats posed by traffic movements are dust and noise nuisance. To minimise these threats:

- Apply on-farm speed limits to reduce dust generation and damage to road/lane surfaces. This will also improve workplace safety.
- Inform workers, visitors, drivers and contractors of the potential noise conflicts caused by vehicle use.
- Avoid the use of truck air/exhaust brakes near sensitive land uses.
- Use suitable and sufficient reverse warning devices on trucks and machinery. Any vehicle modifications must be undertaken in the context of a site-specific risk assessment and by a suitably qualified person. All people on-farm (owners, operators, contractors, visitors) will also need to be informed of any modifications. Adherence to state workplace health and safety regulations is also essential.
- Water unsealed on-farm roads during dry and dusty climatic conditions.
- Develop and implement a plan to ensure off-farm vehicle movements have minimal detrimental amenity threats.
- Schedule truck movements (feed delivery etc) for daylight hours wherever practical. Local government and EPA requirements may limit traffic movements to certain hours to avoid noise conflicts.

6.2. Visual Appearance

To enhance the visual appearance of the egg production facility:

- Plant tree buffers around buildings.
- Keep poultry sheds, buildings and surrounds in a clean and tidy condition.

6.3. Stocking Density

To minimise environmental threats and to optimise bird performance, ensure that stocking densities:

- Do not exceed those prescribed in the Welfare of Animals – Domestic Poultry 4th Edition.
- Do not exceed those prescribed in any relevant state regulations.
- Are reduced below the mandatory requirements if the specific conditions on the farm don't adequately protect the environment or optimise bird health and welfare.

6.4. Biosecurity

Biosecurity is critical in preventing the spread of disease. As well as affecting production and profitability, mortalities resulting from disease outbreaks need suitable management to prevent environmental impacts. To provide biosecurity:

- Routinely clean up spilt feed.
- Treat surface water used for poultry drinking to a potable standard.
- Ensure persons entering the operation strictly adhere to the biosecurity protocols of the farm to avoid cross contamination.
- Ensure drivers of trucks strictly follow farm biosecurity protocols when:
 - collecting dead birds.
 - delivering or picking-up chicks and birds.
 - picking up birds.
 - delivering eggs.
 - delivering feed.
- Properly dispose of dead birds.
- Control rodents and feral animals.
- Prevent contact between animals and wild birds with the poultry.
- Enforce biosecurity buffers.

6.5. Sheds and Surrounds

Because manure and feed are concentrated in the sheds and surrounding infrastructure of egg production farms, these need to be carefully designed and managed to protect the environment. It is important to:

- Maintain silos and feed-lines to avoid feed spillage and to prevent any ingress of water.
- Maintain ventilation and evaporative cooling systems to optimise their efficiency.
- Control ammonia levels in sheds.
- Only gradually open naturally ventilated sheds in the mornings to avoid a large and sudden release of odorous gases.
- Maintain watering systems to avoid leaks.
- Fill any water holding depressions that form around the sheds.

- Prevent extraneous water from entering the sheds.

Exercise

Write a Work Instruction to explain how sheds and surrounds are maintained.

Write this Work Instruction in the space provided.

6.6. Energy and Eco-efficiency

Eco-efficiency focuses on reducing resource inputs and avoiding the generation of wastes and pollutants. To improve eco-efficiency and energy efficiency:

- Install triphosphour fluorescent lighting.
- Use automatic control systems.
- Minimise air leaks in sheds to reduce the loads on fans.
- Select energy efficient fans.
- Regularly maintain fans to ensure optimum efficiency, including keeping fan shutters clean.
- Regularly check fan and conveyor belts for wear.
- Inspect pumps for performance losses.

6.7. Manure (Egg Production Farms)

6.7.1. Manure Production

Manure and spent litter from egg production farms varies in composition and quantity. The primary factors affecting this are:

- Types of sheds used.
- Age of birds housed.
- Diet of the birds.
- Feed wastage.
- Stocking density of the birds.
- Amount and type of bedding used (barn and free range).
- The amount of nitrogen lost (via volatilisation) from the manure or litter in the sheds.

6.7.2. Bedding Materials and Litter Management

Maintaining sufficient dry (but not dusty) bedding in barns and free range sheds is critical in optimising bird performance and environmental performance. It is important to:

- Evenly distribute enough clean bedding at the beginning of a cycle of birds to ensure it remains dry and friable.
- Consider adding additional bedding throughout the length of a cycle if required to maintain dry friable litter.
- Maintain litter moisture content between 15% and 30% (wet basis). At this moisture content the litter should be relatively dry and friable.
- Prevent litter from becoming too dusty (below 15 % wet basis).

- Prevent litter to become too wet (above 30% wet basis).
- Top up areas of wet litter within the shed or remove and replace this litter.
- Minimise interruptions in diet due to feed formulation.
- Observe and record details daily of litter moisture content.

6.7.3. Manure Management - Shed

The primary method of controlling manure moisture is to provide sufficient ventilation (and drying on belts in modern environmental sheds) around the manure and by minimising water additions to the manure.

6.7.4. Manure / Litter Beetles

Beetle populations should be controlled using an integrated management approach. This would include using pesticides, pasteurising (partial composting), total shed clean-out or a combination of these. The management strategy adopted will be dependent on a number of factors, including the degree of infestation, shed floor types, chemical resistance of the beetles and how long the manure and litter remains in the shed.

Exercise

Write a Work Instruction to explain how the manure and litter in the shed is managed.

Write this Work Instruction in the space provided.

6.8. Cracked/Broken Eggs

Proper management of cracked and broken eggs is necessary to protect biosecurity, prevent odour nuisance and nutrient releases. It is necessary to:

- Contain waste products by either securing them in a sealed container for disposal to an approved land site or treating them on-farm.
- Dispose of these products daily.
- Minimise the amount of solid waste entering an effluent treatment or holding pond (e.g. through the use of grates or sieves).

Exercise

Write a Work Instruction to explain how cracked/broken eggs are managed.

Write this Work Instruction in the space provided.

6.9. Effluent Treatment and Storage Systems Management

Good effluent treatment and storage is essential in minimising odour releases, protecting biosecurity and protecting water resources. This involves:

- Preventing foreign material toxic chemicals, oxidising agents and other substances from entering effluent ponds.
- Grassing the outer banks of ponds to prevent weed infestation, cracking and erosion.
- Keeping grass cover short to facilitate regular inspections for signs of deterioration.
- Preventing the establishment of trees, shrubs and woody weeds on pond banks.
- Removing some effluent from the ponds to control salt levels.
- Maintaining pond pH between 6.8 and 8.0.
- Monitoring total dissolved solids (TDS) to enable the maintenance of a suitable pond bacterial population.
- Diluting pond effluent with fresh water as needed to keep the salinity at an acceptable level (below 6 dS/m).
- Considering the use of commercially-available additives if a pond is not functioning efficiently.
- Considering the use of permeable or impermeable pond covers if odour is an issue with the operation.
- Managing pond volumes (e.g. through irrigation) to avoid overtopping more than once every 10 years on average or ensure overtopping frequency meets criteria specified by state or local government regulatory authorities.

6.10. Disposing of Packaging and other Wastes

Suitable disposal of packaging and other wastes incorporates:

- Adoption of the waste hierarchy for packaging and other wastes:
 - Avoidance.
 - Re-use.
 - Recycling.
 - Energy recovery.
 - Treatment and containment.
 - Disposal.
- Recycling of wastes such as cardboard and empty chemical containers in accordance with manufacturer's specifications.
- Placement of all unwanted waste products in sealed refuse containers for removal to approved landfill.

- Placement of all sharps in specific sharps containers for collection. In some states it is illegal for sharps to be buried at landfill sites.
- Waste minimisation through good practice design and management.
- Use of cardboard waste as an alternative carbon source in any composting operations that are used.

Exercise

Write a Work Instruction to describe how packaging and other wastes are disposed of.

Write this Work Instruction in the space provided.

6.11. Dead Bird and Cull Management

The following current methods for disposal of dead birds are listed in order from least likely to pose an environmental threat to higher likelihood of posing a threat. Design and management practices that minimise the environmental threat of each method are listed.

6.11.1. Rendering

- Manage dead bird collection to avoid the spread of pathogenic microorganisms.
- Develop a contingency plan for use in the event of a failure to dispatch carcasses.
- Freeze dead birds or treat them to preserve/disinfect the carcasses if they are not collected daily.

6.11.2. Composting

- Maintain an aerobic environment continually.
- Design and manage compost facilities to avoid any biosecurity hazards.
- Locate compost bays on an impermeable pad.
- Bund uncovered compost sites to prevent leachate or contaminated stormwater runoff from escaping.
- Capture any leachate so that it can be either reused back in the compost or applied to land rather than becoming an uncontrolled release.
- Locate carcass compost facilities under cover if the farm is located in a high rainfall area.
- Use appropriate fencing to exclude feral animals from carcass composting facilities.

6.11.3. Burial

- Ensure the bases of trenches are at least 2 m above the water table always.
- Seal or line the base of the pits to minimise nutrient leaching.
- Prevent surface or sub-surface seepage from entering the pit or trench.
- Cover each batch of dead birds with soil or other suitable material.
- Cover full pits with at least 0.5 m of compacted clay soil.

6.11.4. Burning or Incineration

- Burn mortalities in an incinerator operated at sufficient temperature to ensure the entire carcass is destroyed.

- Use an appropriate fuel source.
- Use or dispose of the ash produced in an acceptable manner.

Exercise

Write a Work Instruction to explain how dead birds are managed on your farm.

Write this Work Instruction in the space provided.

6.12. Manure and Spent Litter Clean-out

A regular manure and spent litter clean-out program is imperative for optimal bird performance and health and the prevention of odour and dust nuisance. This should involve:

- Implementing a well managed shed clean-out program.
- Cleaning out sheds during daylight hours.
- Carefully managing shed clean-outs to minimise odour, dust and noise emissions.
- Cleaning up of any manure and spent litter spilt during shed clean out.
- Covering of vehicles that transport manure and spent litter off farm.
- Opening the side shutters or curtains of sheds during manure or spent litter removal.
- Considering wind direction and strength during shed clean out.
- Contacting neighbours in advance if the clean out of manure and spent litter is likely to affect them.
- Considering neighbour movements when cleaning out manure and spent litter.

Exercise

Write a Work Instruction to describe how manure and spent litter are cleaned out from the sheds.

Write this Work Instruction in the space provided.

6.13. Manure, Spent Litter Storage and Compost Management

Suitable treatment of manure and spent litter can convert these by-products into a valuable resource. However, suitable measures are needed to minimise environmental threats. These involve:

- Minimising the amount of manure and spent litter stored or composted on-farm.
- Designing and constructing suitable storage areas for stockpiled manure and spent litter dry until it can be removed or utilised.
- Covering manure and spent litter that has to be stored on-site for up to a week after shed clean-out (i.e. manure that is simply being temporarily stored rather than composted).
- Minimise fly breeding during storage and composting.
- More information on compost management can be found in Appendix C.

Exercise

Write a Work Instruction to describe how manure and spent litter is managed after being cleaned out from the sheds. Include in any contingency measures used for short term storage.

Write this Work Instruction in the space provided.

6.14. Manure and Spent Litter Utilisation

The most common and cost-effective way to utilise the nutrients in manure, spent litter and compost produced from these is by spreading onto land used to grow crops (horticulture and broadacre) or pasture. Correct management of land spreading is imperative if environmental threats are to be minimised. Good management involves:

- Only spreading manure and spent litter on areas that are approved under a development approval/licence.
- Matching nutrient application rates to crop uptake, safe storage and allowable losses.
- Only grazing pastures spread with manure and spent litter when it is well broken down (allow three weeks minimum).
- Not applying manure or spent litter to the foliage of crops that are to be consumed by humans.
- Not spreading manure or spent litter on land that is subject to frequent flooding.
- Not spreading manure and spent litter near watercourses and drainage lines.
- Protecting riparian zones around watercourses with appropriate buffers and vegetative filter strips.
- Not feeding spent manure and litter to livestock. This is illegal in all states due to the high risk of botulism.
- Covering manure and spent litter during transportation.
- Not spreading material that is too dry (less than 15% moisture wet basis).
- Considering the wind speed and direction before spreading.
- Only applying manure and spent litter when the soil is not saturated and heavy rain is not expected.
- Only applying manure and spent litter either immediately pre-planting or when crops are actively growing to ensure maximum nutrient uptake and to minimise nutrient losses by leaching.
- Incorporating manure and spent litter spread on bare soil as soon as possible after application.
- Spreading manure and spent litter thinly to help kill fly larvae/eggs through rapid drying and ultraviolet light.
- Regularly sampling and analysing the soils of utilisation areas and comparing the results with background monitoring sites to determine if application rates need to be adjusted.
- Monitoring long-term trends in soil pH.
- Not spreading by-products on steep slopes with inadequate groundcover. Slopes of greater than 10% should be avoided.
- Not spreading by-products on rocky or highly erodible land.

- Not spreading these by-products on highly impermeable soils.
- Adopting appropriate soil conservation measures, such as contour banks and strip cropping.
- Maintaining adequate groundcover at times of probable high rainfall intensity to reduce erosion potential.
- Monitoring the chemical residues in manure and spent litter and long-term changes in soil concentration trends.
- Allowing several weeks between application of by-products and crop harvest (edible crops).
- Not applying untreated animal manures where direct or indirect contact may occur with the edible part of the crop.
- Composting or ageing the manure and spent litter to reduce the microbe populations.
- Applying only properly composted manure or treated proprietary organic products that contain less than 100 *E. coli* per gram as a side dressing.
- Retaining records of destinations and quantities of manure and spent litter removed from the farm off-farm.
- Informing end users of manure or spent litter of the typical (or actual) composition of the material that they are receiving.
- Providing end users of manure or spent litter with information on nutrient uptakes of crops or pastures that the by-product would typically be applied to.

6.15. Effluent Utilisation

Effluent from egg production facilities is usually irrigated onto land used to grow crops (horticulture and broadacre) or pasture. Correct management is necessary to minimise environmental threats. Good management involves:

- Analysing effluent at least annually before irrigating to find the electrical conductivity, and the concentrations of nitrogen, ammonia, phosphorus, potassium, sodium, heavy metals and other contaminants (chemicals).
- Irrigating at rates that do not cause waterlogging or excessive drainage (runoff).
- Using surface irrigation methods only on areas with an even grade and suitable soil type (loam to medium clay, not sand, duplex or heavy clay).
- Adding clean water to the effluent for irrigation as needed to lower the salt and sodium concentration of the effluent.
- Using additional irrigations of clean water to flush salts through the soil profile after effluent irrigation.
- Monitoring the long-term trends in soil salinity to detect and enable management of soil salinity problems.
- Monitoring soil conditions for signs of structural decline.
- Restricting cultivation practices if effluent is irrigated onto dispersive soils.

6.16. Control of Flies

Flies can create nuisance for neighbours and may compromise biosecurity. Hence, it is important to:

- Monitor fly numbers at least weekly using white spot cards, sticky tapes of fly traps or a visual scoring system.
- Monitor water leaks both in sheds and shed surrounds to control manure and litter moisture.
- Carefully manage manure and litter by cleaning out manure in low fly periods and preventing flies breeding in manure and litter after cleanout.
- Enhance populations of natural bio-control agents.
- Use good sanitation practices, such as cleaning up spilt feed, removing dead birds from sheds daily and storing them in a sealed container; and mowing grass and clearing bushes from around sheds to facilitate airflow and remove fly resting sites.
- Selectively use adulticides to treat flies.
- Consider selectively using larvicides to treat manure and litter.

Exercise

Write a Work Instruction to describe how flies are controlled on farm.

Write this Work Instruction in the space provided.

6.17. Control of Rats and Mice

Rats and mice can create nuisance for neighbours and may be a disease vector. Hence, it is important to:

- Design and maintain sheds to minimise rodents.
- Minimise feed spillage and promptly clean up any spillage.
- Store all potential feed sources and nesting materials in rodent-proof containers.
- Remove all rubbish (e.g. timber piles).
- Keep all grass around complexes short.
- Minimise rodent breeding sites (e.g. holes, burrows).
- Maintain a baiting program of anticoagulant rodenticides, tracking powders (e.g. poisonous dust) or gels and fumigants.
- Keep baits in a dark safe place.

Exercise

Write a Work Instruction to describe how rats and mice are controlled on farm.

Write this Work Instruction in the space provided.

6.18. Chemical Storage and Use

Correct use and storage of chemicals is most important from a workplace health and safety perspective. However, the incorrect use and storage of these may also threaten the environment. Hence, it is important to:

- Keep only small quantities of chemicals on-site.
- Correctly store and use chemicals to avoid spills.
- Build the bases of fuel storage areas from an impermeable material such as concrete and bund these areas to contain spills.
- Store chemicals in accordance with workplace health and safety codes of practice.
- Adhere strictly to any requirements of the dangerous goods safety and management acts or similar.
- Use chemicals strictly in accordance with directions and registered uses.

6.19. Contingencies and Management of Emergencies

Contingency plans should be developed to enable egg industry operations to deal with emergency situations. A contingency plan should be implemented for:

6.19.1. Mass Bird Deaths

In the event of a disease outbreak, the industry and the poultry farm operator must to follow the AusVetPlan under the direction of their state or territory chief veterinary officer.

6.19.2. Power and Water Supply Failure

Standby generators are required for power supply failures.

- Address potential noise threats of standby generators by installing mufflers and considering acoustic screening.
- Regularly run standby generators (at least fortnightly) to ensure they are working effectively
- Provide a back-up supply (tanks) or contingency for at least two days water in case of breakdown or loss of supply.

6.19.3. Interruptions to Feed Supply

A plan to manage any possible interruptions to feed supply is imperative.

- A back-up manual feed delivery protocol to cater for failure to automated feed delivery systems is essential.

6.19.4. Equipment Malfunction

Automatic machinery is generally most susceptible to malfunction.

- Manual back-up systems need to be supplied.

6.19.5. Interruption to by-product disposal or utilisation

A plan for storing or managing by-products in the event of an interruption to normal practice is needed.

- In the short term, manure and spent litter may need to be stored on site and covered to avoid nutrient leaching from rainfall and to minimise both dust and odour emissions.
- By-products may be composted in an area where they will not cause any adverse environmental or bird health threats.
- A back-up plan is required to dispose of any effluent stored in open ponds to avoid overtopping.

6.20. Dealing with Neighbours and Regulators

Building a good relationship with neighbours assists in the breakdown of perceptions about egg production farms through a better understanding of the operation.

6.20.1. Community Liaison

Ongoing liaison with neighbours helps to build relationships and manage community amenity concerns before they become an issue.

- Inform neighbours in advance of any unusual or periodic events or problems that may cause an unavoidable odour, dust or noise problem. Inform neighbours of any proposed practices to mitigate the problem and the expected duration of the potential problem.
- Attempt to resolve disputes by participating and cooperating in any dispute resolution mechanism.

6.20.2. Handling Complaints

Complaint handling may be very sensitive and needs to be taken seriously.

- Because many community amenity threats are closely related to weather conditions, monitor weather conditions daily while complaints are ongoing.
- Record full details of any complaints received along with results of investigations and corrective actions taken in a "Complaints Register".
- Consider correlating complaint data to identify trends in complaints received.
- Encourage neighbours to phone the operator directly with complaints.

- Install and maintain an automatic weather station for operations where separation distances are constrained or where regular complaints begin to arise.
- Gather relevant evidence and identify and implement strategies to remedy the problem. Where possible, involve the complainant in this process through consultation.
- Complainants should be informed of the outcome of any investigations and any actions taken to avoid future associated problems. They should also be asked whether the action taken was effective. If this is not the case, further investigation and / or action may need to be taken.

6.20.3. Complaints Register

Full details of complaints received, results of investigations into complaints and corrective actions should be recorded in a "Complaints Register."

Exercise

Write a Work Instruction to describe how complaints are managed.

Write this Work Instruction in the space provided.

6.21. Environmental Management Systems (EMS)

Operators of egg industry facilities are encouraged to either develop an EMS or complete the environmental components of the Egg Corp Assured Program or other quality assurance programs to enable better environmental management and to demonstrate that the farm is effectively managing potential environmental threats.

6.22. Environmental Monitoring and Recording

6.22.1. By-products

It is important to regularly analyse solid by-products (manure, spent litter, compost) and effluent to understand the levels of beneficial nutrients and potential contaminants.

- Use this information to decide application rates if spreading or irrigating by-products on-farm.
- Use this information to develop fact sheets or analysis sheets that are then provided to end users to give them an idea of the composition of the by-products they are receiving.
- Develop fact sheets on typical nutrient uptakes of crops or pastures on which manure, spent litter, compost or effluent may be used as a fertiliser. Distribute these to end users.
- Record application rates to on-site utilisation areas.
- Record off-site sales (destination and amount).

6.22.2. Soil Analysis – By-product Utilisation Areas

It is important to regularly monitor the soils of by-product utilisation areas as this helps to:

- Determining appropriate rates for future applications.
- Identify any problems arising from the reuse of by-products.

6.22.3. Groundwater and Surface Water

Environmental monitoring of groundwater and / or surface water quality may be required depending on the site.

- Strictly follow the requirements of any development approval/licence (or equivalent) in regards to any ground or surface water monitoring, recording and reporting.

6.22.4. Release of Effluent

To determine environmentally sustainable effluent irrigation rates it is important to know the composition of the effluent.

- Analyse effluent before irrigating it to land.
- Ensure that the quality of any effluent for release meets the requirements of any Development Approval or Licence (or equivalent).

6.22.5. Community Amenity

To avoid community amenity issues:

- Assess background noise levels before commissioning a new enterprise or expanding or modifying an existing enterprise (e.g. adding a mechanical ventilation system).
- Regularly undertake subjective checks to monitor potential sources of noise, odour and dust.
- Record details and proposed solutions to any problems encountered.
- Document changes made to the design and management of the operation and assess the effectiveness of these changes in reducing the problem.
- For larger enterprises, consider utilising equipment for monitoring air quality, noise levels and weather conditions.
- Inform neighbours in advance of any unusual or periodic events or problems that may cause an unavoidable odour, dust or noise problem. Inform neighbours of any proposed practices to mitigate the problem and the expected duration of the potential problem.
- Attempt to resolve disputes by participating and cooperating in any dispute resolution mechanism.
- Record full details of any complaints received along with results of investigations and corrective actions taken in a “Complaints Register”.
- Consider correlating complaint data to identify trends in complaints received.
- Encourage neighbours to phone the operator directly with complaints.
- Gather relevant evidence and identify and implement strategies to remedy the problem. Where possible, involve the complainant in this process through consultation.
- Complainants should be informed of the outcome of any investigations and any actions taken to avoid future associated problems. They should also be asked whether the action taken was effective. If this is not the case, further investigation and / or action may need to be taken.

Exercise

Identify potential monitoring requirements and locations at the facility.

Write these in the space provided.

7. Training

Learning Outcome

You have documented any environmental training undertaken or planned for your farm.

Someone from the enterprise should be appointed to handle environmental issues (usually the owner or manager). Any environmental training performed by the owners, managers and staff should be documented in an environmental training register. This would also include any in-house training.

Exercise

Identify all environmental training (including this workshop) undertaken by designated personal at your facility.

Write these in the example training register provided..

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Appendix A. State Legal Requirements

The following list the main environmental legislation relevant to the egg industry. A more detailed list of legal and other requirements applicable to the egg industry can be found in URS (2005).

Note: These are the requirements current at the time these guidelines were published and they may change at any time. It is the responsibility of all business operators to ensure they are aware of and comply with all current relevant regulatory requirements.

National

Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth Department of Environment and Heritage (DEH) regulates development activities that could affect environmentally sensitive areas (known as Matters of National Environmental Significance) or Commonwealth land under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Proposals for egg production developments on such land are subject to the assessment and development approval of DEH. In addition, the EPBC Act promotes ecologically sustainable development through conservation and ecologically sustainable use of natural resources.

National Pollution Inventory

Egg farms may be required to estimate and report emissions, in particular ammonia, to the NPI.

The NPI, administered by the Australian Government, Department of Environment and Heritage, gathers and publicly reports information about pollutant emissions to the environment. Larger industrial facilities (including egg facilities) are required to identify which reportable NPI substances are used (or exceed the bulk storage capacity for some substances) and determine whether the amounts used and/or handled are above the 'threshold' values. If emissions exceed threshold values, then estimation and reporting to the NPI is required. These NPI substances and their reporting thresholds are listed in the NPI Guide (www.npi.gov.au).

State EPA's coordinate the reporting for each State. Many have developed simplified reporting sheets for farmers. For assistance in this area, contact your state EPA for copies or further details.

New South Wales

Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is administered by the Department of Infrastructure, Planning and Natural Resources (DIPNR). This is the main piece of legislation which deals with planning and approvals in NSW. The part of this Act that is the most relevant to planning is Part 4. The EP&A Act

controls the planning and development regime for NSW, and it therefore prescribes the approval process for the Egg Industry. The purpose of environmental impact assessment is to:

- Assess the impacts of a proposed activity on the environment before making the decision on whether to carry it out; and
- Develop and assess measures to avoid or minimise those impacts if it is decided to carry out the activity.

The associated regulation is the *Environmental Planning and Assessment Regulation 2000 (EP&A Regulation)*. In NSW, livestock intensive industries are defined as designated development under schedule 3 of the *EP&A Regulation* and includes poultry farms for the commercial production of birds (such as domestic fowls, turkeys, ducks, geese, game birds and emus), whether as meat birds, layers or breeders and whether as free range or shedded birds:

1. that accommodate more than 250,000 birds, or
2. that are located:
 - i. within 100 metres of a natural waterbody or wetland; or
 - ii. within a drinking water catchment, or
 - iii. within 500 metres of another poultry farm, or
 - iv. within 500 metres of a residential zone or 150 metres of a dwelling not associated with the development and, in the opinion of the consent authority, having regard to topography and local meteorological conditions, are likely to significantly affect the amenity of the neighbourhood by reason of noise, odour, dust, lights, traffic or waste.

Designated development under schedule 3 of the *EP&A Regulation* requires development consent, with applications for such developments accompanied by an Environmental Impact Statement (EIS). The proponent of the development consults with DIPNR about the form and content of the EIS and the Director General's requirements for the EIS are provided to the proponent.

Protection of the Environment Operations Act 1997

The Protection of the Environment Operations Act 1997 (POEO Act) is administered by the Department of Environment and Conservation (DEC)/Local Council.

This Act uses a range of mechanisms to protect the environment. The Act has a scheme for the making of policy instruments called Protection of the Environment Policies (PEPs). PEPs set environmental standards, goals, guidelines or protocols. The EPA, planning authorities and any other authorities specified in a PEP must take a PEP into account when making decisions that affect the environment.

Activities listed in Schedule 1 of the Act (activities with potentially significant environmental impacts) require a licence. DEC will issue all licences. Licences can control the air, noise, water and waste impacts of an activity. Licences are on-going but subject to review at least once every 3 years and can be varied, suspended or revoked.

Livestock intensive industries including '*poultry farms that are intended to accommodate, for commercial production, more than 250,000 birds*' are included in Schedule I of the Act and therefore require a license.

Additionally, the Act provides for the issuing of 3 types of environment protection notices: clean-up, prevention and prohibition notices and has a three tier regime of offences. Tier 1 offences are the most serious offences and cover certain waste disposals, leaks, spillages and other escapes, and ozone depleting emissions. Tier 2 offences consist of all other offences under the Act and regulations, including water pollution, air pollution, land pollution (eg littering) and noise pollution offences. Tier 3 offences are not separate offences. They are Tier 2 matters that have been designated in the regulations as being capable of being dealt with by way of penalty notice.

There is a broad allocation of responsibilities under this Act between DEC, local councils and other public authorities. DEC is made the regulatory authority for:

- activities listed in Schedule 1 to the Act and the premises where they are carried on;
- activities carried on by a state or public authority; and
- other activities in relation to which a licence regulating water pollution is issued.

In nearly all other cases, the regulatory authority is the relevant local council.

Associated Regulations:

- *Protection of the Environment Operations (General) Regulation 1998.*
- *Protection of the Environment Operations (Waste) Regulation 1999.*
- *Noise Control (General) Regulation 1995.*
- *Clear Air (Control of Burning) Regulation 1995.*

Local Government Planning Instruments

These include Local Environment Plans (LEP) and Development Control Plans (DCP). Councils develop LEPs, which outline the statutory framework for planning in the area, allocating land for specific purposes through zoning and development controls. Many councils will have DCPs which provide supplementary plans to the LEP with more detailed planning design guidelines. Such documents will guide the location of new Egg Industry operations in Local Government areas.

For poultry farm proposals that are not considered designated development, a development application including a Statement of Environmental Effects (SEE) is submitted to the local council.

By-product Utilisation

Commercial poultry farming is usually considered 'intensive agriculture' or 'intensive livestock' and may require council approval before construction can commence. Specific activities that require council approval are defined within Local Environmental Plans (LEPs) and can vary between different local council areas.

When a proposed poultry development requires consent, a Development Application with accompanying documentation must be submitted. Information required to support the Development Application does not have to follow a standard format however, NSW Agriculture provide a checklist of suggested topics to address (Briggs, 2004). Notes pertaining to manure and spent litter have been summarised below.

- If manure and spent litter will be spread on the property, identify the estimated volume generated in each cycle and how much may be kept on farm. Identify on a map where manure and spent litter will be stockpiled and applied.
- Confirm suitability by assessing and identifying:
 - Total volume of manure and spent litter used on site.
 - Proposed rate and frequency of application and area over which it will be spread.
 - How soil nutrients and fertilisers will be monitored.
 - Runoff control measures.
 - Fertiliser history, pasture status and necessary buffer areas of each target paddock.

Queensland

Environmental Protection Act 1994

The *Environmental Protection Act 1994 (EP Act)* is administered by: Environmental Protection Agency (EPA). Queensland's environment is managed and protected through the *EP Act* and the *Integrated Planning Act 1997 (IPA)*. Whilst the two Acts have different roles, they work in cohesion to manage Queensland's environment under the Integrated Development Assessment System (IDAS), providing a single system for development assessments. The EPA guideline "IPA Guideline No.1 IPA/EPA" provides an overview of the regulatory framework for the assessment and conditioning of Environmentally Relevant Activities (ERAs) and contaminated land in IDAS.

All ERAs under the *EP Act* are managed under IDAS. Environmental impacts associated with businesses and industrial activities are managed through the licensing of ERAs. An ERA is defined as an activity that will or may release contaminants with the potential to cause environmental harm. ERAs are classified into three classes:

1. Assessable ERAs,
2. Self-Assessable ERAs and
3. Exempt ERAs (which do not require approvals under IDAS).

Most ERAs are Assessable ERAs and so require development approvals under IDAS.

There are two levels of ERA based on the risk of environmental harm from released contaminants. These are:

- Level 1 ERAs: considered to represent a higher risk to the environment. There is an annual fee for Level 1 ERAs; and
- Level 2 ERAs: considered to represent a lower risk to the environment. There are no ongoing fees for Level 2 ERAs.

The *EP Act* also:

- Details the development, operation and review of environmental protection policies;

- Provides detail about compliance tools such as environmental evaluations, environmental management programs, environmental protection orders and financial assurances;
- Provides detail about environmental authorities, contaminated land and environmental offences; and
- Provides detail on development applications for a Chapter 4 activity.

Registration is required under Chapter 4, Part 2 of the *EP Act* to operate ERAs. This registration certificate is held by the person “carrying out” the activity. This registration certificate is issued by the administering authority under the *EP Act*, separately to any development permit/approval under Integrated Development Approval System (IDAS).

The associated regulation is the *Environmental Protection Regulation 1998 (EP Regulation)*. Schedule 1 of the *EP Regulation* lists all activities that are ERAs. Poultry farming is listed under Schedule 1 as an ERA. Poultry farming is defined as egg and fertile egg production, the rearing of hatchlings, starter pullets, layers and poultry for meat in facilities having a total holding capacity of:

- more than 1000 birds but less than 200 000 birds (Level 2 ERA); or
- 200 000 birds or more (Level 1 ERA).

An ERA must be operated under a development approval or code of environmental compliance. In addition the operator must obtain a registration certificate. Section 39 of the *EP Regulation* lists Poultry Farming as being devolved to Local Government; however the regulatory role still remains with the EPA.

Integrated Planning Act 1997

The *Integrated Planning Act 1997 (IPA)* is administered by the state agencies and local government authorities.

The Integrated Development System (IDAS) under *IPA* provides a single system for development assessment. IDAS incorporates assessment by both state agencies and local government authorities. Key points to note:

- Applications for ERAs are assessed at the same time as land use decisions under *IPA*;
- Establishing an ERA on a site requires development approval under *IPA* for a ‘material change of land use’ and is assessed in accordance with IDAS;
- Proposed development involving a material change of use for ERA is assessable development under Schedule 8 for either; the start of a new ERA on premises; or the re-establishment on premises of an ERA that has been abandoned; or a material change in the intensity or scale of an ERA; or an increase in the threshold of an ERA. If one of the above applies, then an IDAS development application is required to undertake or operate the ERA; and
- IDAS development applications for a material change of use of premises under a planning scheme or “reconfiguring a lot” involving contaminated land must be referred to the Environmental Protection Agency.

An ERA requires a certificate of registration under the *EP Act* and/or a development approval under the *IPA* to define acceptable environmental performance. These are legally binding agreements generally between the EPA and the holder.

Local Government

Planning schemes are prepared by Local Governments to manage growth and change in their local government area. Planning schemes must coordinate and integrate the matters they deal with, and also the state and regional dimensions of those matters expressed through regional plans, state planning policies and state legislation.

A planning scheme:

- Allocates land for different uses having regard to a range of considerations;
- Identifies areas or places that constrain the use of land due to their environmental value, resource value or their adverse effects on development;
- Identifies the kind of development that requires approval (assessable development) or that can be carried out without approval if certain requirements are met (self-assessable development); and
- Specifies the development standards or criteria for assessing the suitability of a development proposal.

By-product Utilisation

In Queensland, poultry farming is overseen by both local government and the Department of Primary Industries & Fisheries. Notes specifically relating to the utilisation of manure and spent litter include:

- Limit the use of insecticides in fly control programs to application of baits and contact types in areas where flies rest.
- Where manure and spent litter is to be utilised on-site, provide 0.1 hectares of utilisation area for each 1,000 meat chickens.
- Where some or all the manure and spent litter is disposed of off-site then proportionately less on-site disposal area will be required.
- Recommended minimum separation distances applying to manure and spent litter disposal areas are identical to those listed for poultry buildings except that these may be reduced when manure and spent litter is immediately incorporated in the soil.
 - 300 meters from settlements of more than 10 houses.
 - 100 meters from well trafficked public roads.
 - 20 meters from other boundaries, dry gullies and channels.
 - 100 meters from watercourses, wells and bores.
 - 150 meters from neighbouring houses.
 - 100 meters from dwellings on the same farm.
 - Buildings are to be above the 100 year flood level.
- Material should be transported in a covered vehicle if moved on a public road.
- Spreading should be discontinued if wind is carrying dust and odour into neighbouring properties.
- Spreading should be avoided in wet, overcast conditions when quick drying is prevented.

- Material not being incorporated in the soil should be applied as a thin layer to assist rapid drying.

South Australia

Environment Protection Act 1993

The *Environment Protection Act 1993* is administered by: Environment Protection Authority (EPA). The objectives of this Act are to promote the principles of ecological sustainable development and to ensure that all reasonable and practicable measures are taken to protect, restore and enhance the quality of the environment having regard to the principles of ecologically sustainable development. This Act provides for:

- A general environmental duty;
- Environmental protection policies;
- Environmental and development authorisations (requirements for works approval and licensing); and
- Offences against the Act and enforcement of the Act.

To carry out works for prescribed activities of environmental significance (as listed in Schedule 1 of the Act), a works approval must be authorised by the EPA. Additionally, to undertake a prescribed activity, a licence must be authorised by the EPA.

Part 6(1)(b) of Schedule 1 lists '*poultry processing works with a rate of production exceeding 200 tonnes per year of poultry or poultry meat products*' as a prescribed activity of environmental significance. Egg production farms are not listed on this Schedule. However, Part 3(4) of Schedule 1 lists '*activities producing listed wastes*' as prescribed activities of environmental significance requiring works approval and licence. Egg production farms may produce Listed Waste as specified in Part B of Schedule 1 of the Act.

Development Act 1993

The Development Act 1993 is administered by Planning SA. The object of this Act is to provide for proper, orderly and efficient planning and development in the state and includes as one of its purposes to provide for the assessment of development proposals.

The associated regulation is the *Development Regulations 1993*

Schedule 8 of the above mentioned regulations requires that activities of Environmental Significance (as listed under Schedule 21) are referred to the EPA. Section 4(6) of Schedule 21 lists '*poultry: the keeping of poultry involving an enclosed shed area exceeding 1000 square metres*' as an activity of environmental significance. Therefore all poultry farms exceeding this size will be referred to the EPA. In the Mount Lofty Ranges Water Protection Area or the River Murray Water Protection Area, all poultry farms as described above are considered "non-complying development" under the relevant Development.

Guidelines for the Establishment and Operation of Poultry farms in South Australia (1998)

The guidelines were prepared with assistance from the Environment Protection Authority SA, Primary Industries and Resources SA and producers and are relevant to layers (birds producing table eggs), broilers (production of chicken for meat) and breeder farms.

The guidelines were prepared to promote orderly development and economic operation of poultry farms while minimising their environmental impact and protecting the welfare of the birds. These guidelines are intended for use by proponents when preparing a Development Application and by councils in framing and developing planning policies.

http://www.pir.sa.gov.au/byteserve/agriculture/annhealth/downloads/poultry_farm_guidln.pdf

By-product Utilisation

The 'Guidelines for the establishment and operation of poultry farms in South Australia' (Environment Protection Authority, 1998) are not a legal or statutory document but has been prepared to promote orderly development and economic operation of poultry farms while minimising their environmental impact and protecting the welfare of the birds. They complement State legislative requirements and enhance the administrative arrangements between Local Government and State Government authorities responsible for administering the establishment and effective operation of the poultry industries.

Information contained within these guidelines, specifically relating to manure spent litter is summarised below:

- For the manure and spent litter to be disposed of on site, buffer distances must be preserved between utilisation areas and sensitive features. They are in addition to the buffer distances for the chicken sheds as described below in Table 1 and are calculated separately.
- If manure and spent litter is incorporated into the soil, while these buffer zones need not be adhered to, care must be taken to ensure that nearby residents are not inconvenienced.
- Manure and spent litter storage on site should be on an impervious base with all clean rainfall runoff excluded from the site.
- When manure and spent litter is to be spread, account should be taken of actual and forecast weather conditions so as to prevent any manure and spent litter being carried by the wind into the buffer zone, or the creation of an odour nuisance to neighbouring properties.
- In addition, nutrient loads in the soil should be taken into account.

TABLE 1 - BUFFER DISTANCES SURROUNDING UTILISATION AREAS

| Amenity | Distance (metres) |
|---|--------------------------|
| Urban residential zone | 500 |
| Rural farm residence not owned by poultry sheds | 100 |
| Public area | 50 |
| Public road- significant use | 50 |
| Public road - minor use | 20 |
| Any watercourse as defined by a blue line on a 1:50,000 current SA Government topographical map | 50 |

Tasmania

Egg Industry Act 2002

The *Egg Industry Act 2002* is administered by: Department of Primary Industries, Water and Environment (DPIWE). This act establishes a framework for the Tasmanian Egg Industry to move towards the adoption of on-farm Quality Assurance programs.

This act applies where there are more than 20 hens kept on the premises. All persons who keep 20 or more hens that produce eggs which are made available for sale in Tasmania are required to be approved egg producers. This is achieved via a person having an egg production program approved by the Secretary of the DPIWE (or his delegate), or adopting a program that has already been approved. Under the Act a person can apply to have their egg production program approved by the Secretary. The application process requires the applicant to address the relevant criteria outlined in the Act. Criterion are:

- food safety
- animal welfare
- biosecurity
- environmental impact; and
- labelling standards.

Land Use Planning and Approvals Act 1993

The *Land Use Planning and Approvals Act 1993* is administered by Local Council.

This Act provides a framework within which councils must undertake their planning responsibilities for all municipal areas.

Under this act, a “Level 1 activity”, defined as any activity which may cause environmental harm, requires a permit from the Local Council authority in accordance with the planning scheme.

Whilst not specified in any Schedule, it is likely egg production farms and egg grading facilities would be treated as Level 1 activities.

Environmental Management and Pollution Control Act 1994

The Environmental Management and Pollution Control Act 1994 is administered by DPIWE.

This Act provides for the control of activities that could lead to environmental harm. It classifies functional activities into three categories, with local government being responsible for assessing those falling into Level 1.

Under this Act, developments that may cause environmental harm but have a relatively low impact are defined as a 'Level 1' activity. Additional controls are required for developments with significant environmental impacts.

Whilst it is likely that hatcheries, pullet rearing and egg production farms and egg grading facilities would, be treated as level 1 activities, egg product manufacturing facilities or any facility that includes the on-site treatment of wastewater could potentially be considered a level 2 activity (as specified in Schedule 2 of the Act) and therefore is subject to more extensive controls (e.g. environmental protection notices).

This Act also includes other potentially relevant provisions relating to pollution prevention and the control of ozone depleting substances.

Associated regulation includes the:

1. *Environmental Management and Pollution Control (Miscellaneous Noise) Regulations 2004*. These regulations contain provisions on agricultural machinery and vehicle noise and are implemented by local government and state police authorities.
2. *Environmental Management and Pollution Control (Waste Management) Regulations 2000*. These regulations contain provisions on the storage, handling, transport and disposal of 'controlled wastes' (as defined under the National Environment Protection (Movement of Controlled Wastes between states and territories) Measure).
3. *Environmental Management and Pollution Control (Transitional) Regulations 1995*. This regulation provides for the continuation of environmental approvals granted under previous (now repealed) legislation.

State Policy on Water Quality Management 1997

The Board of Environmental Management and Pollution Control is required under the State Policy on Water Quality Management 1997 to publish emission limit guidelines for a number of common activities which are likely to give rise to point source discharges of pollutants to surface waters. Emission limit guidelines are primarily intended for the use of local government to assist with planning decisions and with the maintenance of water quality objectives.

Section 32 of this document states that: "Governments and agri-businesses should promote the implementation of best practice environmental management for agricultural activities to minimise the impact of stormwater runoff from agricultural land on water quality". Managers of agricultural enterprises are required to implement relevant codes of practice or guidelines as a means of complying with the Environmental Management and Pollution Control Act 1994. Regulatory authorities

will take into account application of relevant environmental guidelines or codes of conduct when considering enforcement action under the above Act.

Environmental Guidelines for Poultry Producers (Brennan & Howett 1990)

These guidelines published by DPIWE provide useful information on the management within the poultry sector to minimise environmental impacts.

By-product Utilisation

In Tasmania, the egg industry is controlled under the Local Government Act (1962), which is administered by municipal authorities and local health surveyors. Environmental Guidelines for Poultry Producers (Brennan *et al.* 1990) contains information on planning and housekeeping and maintenance.

At the time of publication, land spreading was considered the most acceptable method for the utilisation of manure and spent litter. Where producers are unable to utilise all manure and spent litter to their own land it is advised to sell material to the public and/or neighbouring farms.

Brennan *et al.* (1990) provides the following information with regards to the application of manure and spent litter to land:

- Consider soil type porosity, depth to groundwater, rainfall, topography of proposed area, drainage, manure production and the land base available for proper utilisation.
- When applying to crops, applications should be on a rotational basis.
- Allow two weeks between application to pasture and grazing.
- Spreading should not be carried out adjacent to streams and watercourses.
- Apply so as not to cause runoff, channelling or ponding.
- Apply on the contour to reduce runoff.
- Do not apply to areas that are subject to waterlogging or flooding.
- In areas where run off may occur, construct appropriate diversion drains and catch dams.
- Discontinue spreading if wind is carrying solids onto neighbouring properties.
- Wet product should be utilised promptly to reduce odours.

Victoria

Local council administers planning approval under the:

- 1) *Environment Protection Act 1970.*
- 2) *Planning and Environment Act 1987.*
- 3) *Health Act 1958.*

Poultry farms are assessed by their ability to:

- 1) Operate in accordance with appropriate town planning principles.
- 2) Acceptable community standards.

Environmental Protection Authority has specific powers when:

- 1) There are emissions that impact on the health of the community; and

There are emissions that impact on the condition of the environment.

Environment Protection Act 1970

The *Environment Protection Act 1970* is administered by the Environment Protection Authority (EPA). Key aims of the Act include sustainable use and holistic management of the environment, ensuring consultative processes are adopted so that community input is a key driver of environment protection goals and programs and encouraging a co-operative approach to environment protection. EPA's statutory functions under the *EP Act* include:

- Works approvals;
- Licences;
- Research development and demonstration approvals;
- Pollution abatement notices;
- Waste transport permits and certificates; and
- Appeal rights that exist in certain statutory processes.

State Environmental Protection Policies (SEPP's)

SEPP's are subordinate legislation made under the provisions of the *EP Act* to provide more detailed requirements and guidance for the application of the Act to Victoria.

Under the *EP Act*, the requirements in environmental regulations, including works approvals and licences, must be consistent with SEPP's.

SEPP's include:

- Air Quality Management.
- Waters of Victoria 2003.
- Groundwaters of Victoria 1997.
- Control of Noise from Commerce, Industry and Trade 1989.

Planning and Environment Act 1987

The *Planning and Environment Act 1987* is administered by Local Government. This Act requires councils, as responsible authorities to use planning schemes to enable the orderly and systematic development and use and protection of land for the present and long term interests for Victorians. The land use zones, as set out in the planning schemes will determine the land use activities that are prohibited, require a permit or do not require a permit. Local government can issue fines or carry out prosecutions for breaches of planning permit conditions (under s126 *PE Act*) or if a nuisance (odour or smell) is deemed to be offensive under the Health Act 1958.

Planning schemes set out policies and provisions for the use, development and protection of land for an area. Each municipality in Victoria is covered by a planning scheme. These are legal documents prepared by the local council or the Minister for Planning, and approved by the Minister. They contain:

- Planning scheme maps, which show how the land is zoned and overlays affecting the land - Zones reflect the primary character of land, such as residential, industrial or rural, and indicate the type of use which may be appropriate in that zone. Sometimes, local areas have special planning

controls (known as overlays), such as areas of significant vegetation or special heritage significance. These controls are in addition to the zone controls and ensure that important aspects of the land are recognised.

- An ordinance - which sets out the written requirements of a scheme, including local policies and the types of use or development which needs a permit.
- Incorporated documents - such as the Codes of Practice for certain development types.

Health Act 1958

This act is administered by Local Council. The function of this Act is to seek to prevent diseases, prolong life and promote public health through organised programs including the prevention and control of:

- 1) Environmental health dangers.
- 2) Diseases.
- 3) Health problems of particularly vulnerable population groups.

Areas governed by the Act that may be applicable to poultry industry include pest control, management of infectious diseases and meat supervision.

By-product Utilisation

In Victoria, there is no specific guideline for the egg industry in regards to by product utilisation. By products must be managed in accordance with the general provisions of the *Environment Protection Act 1970* and associated policies. Generally by products should be managed to avoid nutrient overloading, leaching and run-off leaving the property. Odours and dust must also be managed to avoid offsite impacts.

Environmental Guidelines for Composting and other Organic Recycling Facilities (EPA 1996) provides suggested best practise environmental measures for a range of issues associated with composting.

Western Australia

Environmental Protection Act 1986

The *Environmental Protection Act 1986* is administered by the Department of Environment (DoE) and the Environmental Protection Authority Services Unit (EPASU).

This Act provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing.

This Act covers:

- Preparation of environmental protection policies;
- Environmental impact assessment;
- Environmental regulation (including prescribed premises, licensing and work approvals);

- Financial assurances; and
- Enforcement.

Certain industries with a significant potential to pollute the environment must hold a Works Approval (for construction) and a Licence or Registration (for operation) under the Act. Licences and Works Approvals are issued with legally binding conditions that apply to specific premises and are intended to prevent or minimise this potential for pollution. Registrations are issued to premises that are managed through industry-generic Regulations and Codes of Practice.

Whilst other intensive farming industries (cattle feedlots and piggeries) are considered prescribed premises and require works approval, licensing and/or registration, poultry farms are not considered prescribed premises and are not subject to specific works approval, licensing and/or registration requirements under this Act. Other pollution prevention and enforcement provisions under this Act are still applicable to egg industry operations.

Associated regulations include:

- *Environmental Protection (Controlled Waste) Regulations 2004*. These regulations apply to the transportation of wastes that may cause environmental or health risks. The regulations provide for the licencing of carriers, drivers and vehicles involved in the transportation of controlled waste on public roads.
- *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. These regulations apply to clearing of native vegetation. Clearing of native vegetation requires a permit unless the clearing is for an exempt purpose. Exempt purposes related to the poultry industry include clearing of up to one hectare to construct a building and those for standard agricultural activities such as clearing for fire access tracks, fence lines and regrowth less than five years old to maintain an existing land use.
- *Environmental Protection (Noise) Regulations 1997*. These regulations apply to the control of noise emissions and set noise limits for acceptable noise levels for different land uses.

Health Act 1911

The *Health Act 1911* is administered by Local Councils and Health Department (WA). This Act has nuisance provisions and deals with odour, dust and flies. Cage farms are identified as an offensive trade. Local councils issue licenses for cage farms. Slatted floors and free-range chickens are not licensed. Regulation applies to the City of Armadale, City of Cockburn, City of Joondalup, City of Rockingham, City of Swan, City of Wanneroo, Town of Kwinana, Shire of Chittering, Shire of Gingin, Shire of Harvey, Shire of Kalamunda and Shire of Serpentine-Jarrahdale.

Additionally, untreated poultry manure is specified to be a hazardous substance under this Act. There can only be temporary storage of the manure at a landfill site that is subject to an appropriate license under Part V of the *EP Act*. The regulation limits the months when a person can store, supply, sell, transport, or use commercially derived untreated poultry manure.

Associated Regulations include:

- *Health (Poultry Manure) Regulations 2001*. These regulations apply to the sale, supply and use of poultry litter and manure.

- *Health (Pesticides) Regulations 1956*. These regulations apply to the use, storage, handling and disposal of pesticides and are administered by the Health Department (WA).

Town Planning and Development Act 1928

The Town Planning and Development Act 1928 is administered by the WA Planning Commission, Department for Planning and Infrastructure and Local Government.

This Act regulates development assessment and strategic planning. It specifically relates to the poultry industry through the subdivision of land, land zoning and development approval.

By-product Utilisation

In Western Australia the document 'Environmental Code of Practice for poultry farms in Western Australia' outlines clear and precise guidelines for planning, biosecurity and good management practices. Recommendations include:

- Manure and spent litter should be contained in a weather proof compound (preferably on hard-stand areas within a shed) until removal from the farm for disposal.
- There are no restrictions on the quantity of manure and spent litter that can be stored.
- The land application of manure and spent litter in Western Australia is governed by the *Health (Poultry Manure) Regulations 2001*. The regulation applies to 13 local government districts only. This imposes restrictions over the sale, supply and use of manure and spent litter. Regulation was introduced to control the breeding of nuisance flies associated with the utilisation of manure and spent litter.
- Market gardeners (Perth district) are no longer permitted to obtain or use untreated manure and spent litter for crop production during the months of September to April.
- Application of manure and spent litter should not occur on the following situations:
 - In Priority 1 or 2 Public Drinking Water Source Areas or Wellhead Protection Zones.
 - Within 50 metres of any private water supply bore or in-ground reservoir.
 - Within at least 50 meters of the outside edge of a wetland/waterways fringing vegetation (depending on adequacy of vegetation).
 - Within 200 meters of a Conservation Category Wetland or wetland/waterway listed on any Environmental Protection Policy.
 - Land susceptible to flooding or where the water table may rise to within two metres of the surface.
 - Where the topography or soil factors may cause stormwater run-off to flush contaminants into surface waters.
 - Spread onto land between poultry sheds or on land within the recommended buffer to another owner's poultry sheds.

Appendix B. Observe Environmental Work Practices

RTC2702A

Observe environmental work practices

This competency standard covers the process of observing and contributing to positive environmental work practices. It requires the ability to follow workplace directions and instructions, recognise basic environmental hazards and threats and communicate accurately with supervisors and workplace colleagues, and keep simple records. Observing environmental work practices requires awareness of relevant environmental legislation, policies and workplace/industry practices, approaches to improving environmental performance, and environmental issues (especially in regard to water catchments, air, noise, ecosystems, habitat, efficient use of resources, sustainability and waste minimisation).

| Element | Performance Criteria |
|--|--|
| 1. Follow environmental workplace practices | <p>1.1 Workplace practices and work instructions relating to potential environmental impacts are recognised and followed, and clarification is sought where necessary.</p> <p>1.2 Changes to work practices and procedures are responded to positively and promptly in accordance with enterprise requirements.</p> <p>1.3 Relevant legislation, codes and national standards that impact on workplace environmental practices are recognised and followed.</p> |
| 2. Contribute to improved environmental work practices | <p>2.1 Suggestions are made to designated personnel for improvements to workplace practices where possible.</p> <p>2.2 Information is gathered and improvements are suggested to support the development of improved workplace approaches to environmental practices.</p> <p>2.3 Environmental issues and their relationship to workplace practices are discussed in the workplace with colleagues and designated personnel.</p> <p>2.4 Contributions to the review of environmental practices and policies are made within limits of responsibility.</p> |

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| 3. Recognise and report on a potential environmental threat | <p>3.1 Signs or symptoms of the potential environmental threat are recognised.</p> <p>3.2 Information about or observations of a potential environmental threat are reported to supervisors and/or appropriate authorities.</p> <p>3.3 Location and extent of the potential environmental threat is accurately recorded.</p> <p>3.4 Reports on the potential environmental threat are completed according to enterprise guidelines.</p> |
| 4. Maintain environmental records | <p>4.1 Environmental records are accurately prepared as required according to enterprise policies and procedures.</p> <p>4.2 Environmental records are stored securely in a form accessible for reporting purposes.</p> |

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

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| What does recognise and follow mean? | That a person will acknowledge that environmental impacts, hazards and risks exist and that they have a responsibility to work in a manner which will minimise the impact on the environment within the guidelines established by the workplace. |
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| What might environmental workplace procedures and work instructions include? | These could include written procedures or work instructions for environmental hazard and risk identification, avoiding or minimising environmental risks, improving environmental performance, waste minimisation and segregation, environmental monitoring, signs and labels (e.g., chemical labels), emergency procedures, hazard and incident recording and reporting procedures, and environmental data recording and reporting procedures where applicable. Verbal instructions from persons with responsibility related to environmental work practices are also included in this definition. |
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| What legislation, codes and national standards may be relevant to this competency standard? | Award and enterprise agreements, relevant environmental legislation from all levels of government, Australian standards, international agreements and relevant industry Codes of Practice. |
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| What environmental threats and hazards may be included in this competency standard? | These could include spills, leaks, pollution, planned and unplanned emissions, soil compaction, disturbance and erosion, accidents and disposal of waste, and damage or disruption to ecosystems resulting from work practices. Also includes plants, animals or diseases that are classified as an environmental threat or problem in an area, unauthorised changes in land use, fire risks and threats, and inappropriate human interaction on the environment. This may include damage to habitat resources, disruption of animal behaviour and territorial use, illegal vegetation clearance, seed collection, firewood gathering, nest disturbance and egg collecting. |
| Who are designated personnel in a workplace? | Managers, supervisors, and people who are responsible for work area or who may be assigned to act as a mentor/trainer to a person under instruction. |
| What suggestions may be included? | Ideas to minimise hazards and risks, reduce waste, make more efficient use of resources and improve environmental performance, reduce soil disturbance and improve habitat resources. |
| What workplace approaches to environmental practices may be relevant to this competency standard? | Preventing and minimising the production of pollution (e.g., discharges to air, land and water, hazardous waste, reducing 'burning off', composting, recycling materials, conservation practices), and improving workplace maintenance practices (e.g., using a broom instead of a hose, using environment-friendly cleaning agents). |
| What environmental issues are included in this competency standard? | Sustainability, reduction and disposal of waste, water quality, energy efficiency, biodiversity and habitat protection, conservation of natural resources, air quality, land contamination, noise, soil and salinity management and fire management. |
| What may be listed under environmental policies ? | Waste minimisation and management, sustainability, local, regional, state and national strategies on weed and pest management, protection of land and habitat and conservation of resources, energy use, greenhouse gas emissions, use of chemicals and plant and equipment. |
| What may be listed as signs or symptoms of a potential environmental threat? | Observation of the presence of weeds, pest animals or chemicals; damage caused to plants, animals or the environment, changes in plant (e.g., dieback of trees) and animal health, erosion of soils, soils in water suspension, and presence of salt. |

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| How may a report be made? | Verbally (face-to-face or through communication equipment) and in writing (notes, faxes, email or electronic messages). |
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| What environmental records may be included? | Environmental data, maintenance and inspection reports, incident or accident reports, and complaints from the public. |
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For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in observing environmental work practices requires evidence that skills and knowledge have been successfully and appropriately applied and demonstrated in a work place or equivalent situation. The skills and knowledge required to observe environmental work practices must be **transferable** to a range of work environments and contexts. For example, this could include different workplaces, environmental hazards and risks, and workplace practices and procedures.

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| What specific knowledge is needed to achieve the performance criteria? | |
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| | Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this unit are listed below: |
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- Relevant legislation from all levels of government on environmental issues.
 - Relevant environmental policies and workplace/industry practices and procedures.
 - Good practice approaches relevant to work area particularly in regard to minimising environment hazards and risks, and improving environmental performance.
 - Environmental issues, especially in regard to water catchments, air, noise, ecosystems, habitat, efficient use of resources, sustainability and waste minimisation.
 - Potential environmental threats and problems relevant to a given region and occupation.
 - General work place practices and their potential impact on the environment.
-

What specific skills are needed to achieve the performance criteria? To achieve the performance criteria, some complementary skills are required. These skills include the ability to:

- Communicate with supervisors and workplace colleagues.
- Recognise basic environmental hazards and threats.
- Follow workplace directions and instructions.
- Keep simple records.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

| | |
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| 1. How can communication of ideas and information (1) be applied? | Verbally with supervisor and others on environmental work practices and potential hazards and risks. |
| 2. How can information be collected, analysed and organised (1) ? | Through maintaining and analysing environmental records. |
| 3. How are activities planned and organised (1) ? | According to enterprise environmental and work place practices and policies. |
| 4. How can team work (1) be applied? | Through working with others to follow and improve environmental practices. |
| 5. How can the use of mathematical ideas and techniques (1) be applied? | Through quantification (e.g., counting, estimating areas) of environmental hazards or problems and through collection of data. |
| 6. How can problem-solving skills (1) be applied? | Through recognition of and responses to environment hazards and risks, and determining ways that work practices can be more environmentally friendly. |
| 7. How can the use of technology (1) be applied? | Technology may be required to record information, deal with environmental hazards, and improve work practices to be more environmentally friendly. |

Are there other competency standards that could be assessed with this one?

This competency standard could be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance and where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

Appendix C. Compost Management

Composting can turn manure and spent litter into a more marketable, value added and environmentally acceptable product. Composting is defined as the process whereby organic materials are microbiologically transformed under aerobic conditions for a period not less than 6 weeks, which includes a pasteurisation phase (Australian Standard AS 4454 – 2003).

A range of factors influence the speed and completeness of composting. These factors can be controlled through appropriate selection of raw materials and management methods. The main factors influencing the compost process include:

- Carbon:Nitrogen ratio (ideally 30:1 to avoid excessive loss of nitrogen).
- Surface area and particle size (rows approximately 1.2 m high and 2.4 m wide).
- Aeration.
- Porosity.
- Moisture Content (ideally 40-50%).
- Temperature.
- pH of materials.
- Nutrients.
- Toxic Substances.

Stabilised compost is easier to handle than untreated manure and spent litter (due to a decrease in volume and particle size), does not emit odours or attract flies, is free of pathogens, does not contain viable weed seeds, is a more reliable source of nutrients for plants and an excellent soil conditioner.

A significant disadvantage of composting is that the process requires equipment, labour and management. Producers also need sufficient land, a suitable site and storage when composting. Other considerations include odour management, marketing (if producers wish to sell the product), potential loss of nitrogen and possible emissions of greenhouse gases.

Practical and detailed technical information is readily available for people seeking advice on how to compost. In addition to this information, the Council of Standards Australia in 2003 approved an Australian Standard on Composts, soil conditioners and mulches. This document is the benchmark for compost quality in Australia and applies to organic products and mixtures of organic products that are used to amend the physical and chemical properties of soils and other growing media

The Australian Standard provides manufacturers, suppliers and government agencies with the minimum processing requirements for the elimination of pathogens and weeds. It also details reporting requirements for physical, chemical and biological properties of products that have been treated by pasteurisation or composting procedures. Table 2 lists the limits for contaminants in composts, soil conditioners and mulches for unrestricted use. Table 3 lists the limits for contaminants in composts, soil conditioners and mulches for land application.

TABLE 2. LIMITS FOR CONTAMINANTS IN COMPOST, SOIL CONDITIONERS AND MULCHES FOR UNRESTRICTED USE (MG/KG)

| Contaminant | ARMCANZ | NSW EPA | VIC EPA |
|------------------|---------|---------|---------|
| Arsenic | 20 | 20 | 20 |
| Cadmium | 3 | 3 | 1 |
| Chromium (total) | 400 | 100 | 400 |
| Copper | 200 | 100 | 100 |
| Lead | 200 | 150 | 300 |
| Mercury | 1 | 1 | 1 |
| Molybdenum | 4 | - | - |
| Nickel | 60 | 60 | 60 |
| Selenium | 3 | 5 | 3 |
| Zinc | 250 | 200 | 200 |

ARMCANZ: Australian Guidelines for Sewerage Systems-Biosolids Management (2004)

NSW EPA: Environmental Guidelines for Use and Disposal of Biosolid Products (1997)

VIC EPA: Guidelines for Environmental Management-Biosolids Land Application (2004)

TABLE 3. LIMITS FOR CONTAMINANTS IN COMPOST, SOIL CONDITIONERS AND MULCHES FOR LAND APPLICATION (MG/KG)

| Contaminant | ARMCANZ | NSW EPA | VIC EPA |
|------------------|----------|---------|---------|
| Arsenic | 60 | 30 | 60 |
| Cadmium | 20 | 32 | 10 |
| Chromium (total) | 500-3000 | 600 | 3000 |
| Copper | 2500 | 2000 | 2000 |
| Lead | 420 | 500 | 500 |
| Mercury | 15 | 19 | 5 |
| Nickel | 270 | 300 | 270 |
| Selenium | 50 | 90 | 50 |
| Zinc | 2500 | 3500 | 2500 |

ARMCANZ: Australian Guidelines for Sewerage Systems-Biosolids Management (2004)

NSW EPA: Environmental Guidelines for Use and Disposal of Biosolid Products (1997)

VIC EPA: Guidelines for Environmental Management-Biosolids Land Application (2004)