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See part publication below.

6 ENVIRONMENTAL IMPACTS AND HOW TO MANAGE THEM

6.1 THE ENVIRONMENTAL MANAGEMENT PLAN

Outline

Effective operation and management of a meat chicken farm may significantly reduce the potential for environmental problems to arise. An environmental management plan (EMP) specifies operational and management standards and practices, and also develops strategies and measures for minimising environmental risks and contingency actions for managing environmental problems that may arise. The EMP should be based on an environmental management system (EMS) approach of plan, do, check, and act, with a philosophy of continual improvement of the system and operations. To facilitate effective environmental management, an EMP may contain a number of separate management plans depending on the development's scale, complexity and/or the sensitivity of the receiving environment. Other plans that can be nested in an overall EMP include:

- Stormwater Management
- Erosion Control
- Monitoring
- Revegetation.

These plans could have separate components covering the construction and operational phases. The plans may not be applicable in all cases.

Objective

Apply best practice management to the meat chicken farm to minimise the environmental impacts associated with farm operation and management and comply with legislative requirements.

Performance criteria

An EMP is developed and implemented that includes strategies and measures for minimising environmental risks and contingency actions for managing environmental problems that may arise on the farm. The EMP is submitted with the DA for approval.

Best practice guidelines

- An EMP is submitted as part of the DA and forms part of the planning approval.
- The EMP is site-specific and is prepared to meet the objectives, criteria and best practice guidelines of the elements in section 6 of these Guidelines.
- A generic EMP that is acceptable to the appropriate regulatory authority may be used as a template for developing the farm's site-specific EMP.
- The EMP is agreed on between the grower and their processor.
- Where any element is not addressed in the EMP lodged with the DA, the applicant must explain why it is not considered relevant or applicable.
- The EMP is maintained and updated as required by the farm manager and is available for inspection by the appropriate regulatory authority.
- The EMP is annually reviewed by the farm manager in cooperation with the processor.
- To help determine whether the EMP is effective, neighbours may need to be enlisted to keep diaries of environmental events that are deemed unacceptable. Try to ensure that a range of compass directions and distances from the farm are represented to allow assessment of the direction and dilution of the impact.
- EMPs have the following components in an auditable format:
 - contact details, description of the farm and operations and an environmental management policy statement
 - overall objectives and specific, measurable and time-bounded targets for each identified risk event
 - a list of risk events identified using risk management principles



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An Environmental Management Plan should address environmental aspects for the whole farm.

- day-to-day best practice management strategies to minimise the potential for risk events
- details of contingency plans to deal with accidents and emergencies (flood, fire, mass bird deaths, chemical spill, power and water interruption), including trigger points and target response times for critical incidents
- details of the responsibilities of the processor and grower for environmental management
- details of monitoring systems for assessing environmental performance and procedures to ensure regular and accurate recording of data. Monitoring records are to be available to responsible authorities upon request.
- procedures for responding to complaints
- provision for annual review and auditing of performance against EMP objectives, with appropriate adjustment made in light of findings and in accordance with continuous improvement principles
- provision for post-incident investigation, review of emergency actions carried out, and reporting to the local council if requested
- environmental training undertaken by staff.

Information on Environment Management Systems and Plans can be obtained from NSW Agriculture and the Rural Industries Research and Development Corporation.

6.2 SURFACE WATER, GROUND WATER AND SOILS

Outline

Meat chicken farms use a considerable amount of water for drinking, cooling and cleaning. Water usage from surface and ground water resources must be managed within the sustainable yield so that the integrity of the water resource and the ecosystems that it supports are not compromised.

Planning, design, operation and management of the chicken farm must ensure natural resource protection. Transport of organic matter, nutrients, salts, microorganisms and chemicals to surface water and ground water must be avoided.

Sustainable use of used litter as a fertilizer is achieved by applying the litter at a rate (tonnes/ha) that meets the nutrient requirements for plant growth (crop or pasture). Additional nutrients may need to be added to balance nutrient levels to meet plant requirements. Sustainable land application of litter needs to be addressed in the EMP.

Objective

Ensure that best practice is adopted in planning, design, development, operation and management of the farm so that surface water, ground water and soil are used sustainably and protected from contamination and degradation.

Performance criteria

- Best environmental management practice is applied in planning, design, development,

operation and management of the farm so that water quality is maintained. Further information on best practice water management can be obtained from DIPNR.

- An Erosion and Sediment Control Plan is submitted with the DA. The plan meets the requirements of the DIPNR guidelines *Preparing an Erosion and Sediment Control Plan* (1997). The owner and the builder are responsible for controlling soil erosion and preventing sediment from the building site from being washed into stormwater drains or other waters, as required under section 120 of the *Protection of the Environment Operations Act 1997*. Erosion and sediment control guidance notes are available from DIPNR and DEC.

Waters: Requirements of the PoEO Act

The occupier of any premises must not cause or permit any waters to be polluted (section 120).

- A licence is obtained from DIPNR for use of surface or ground water in the operation of the farm.
- Irrigation scheduling is managed to prevent soil from becoming waterlogged and to prevent excess nutrient run-off or percolation to ground water.
- Storage of contaminated surface water is managed to ensure adequate capacity to store water during wet weather. Chemicals (for example, pesticides, detergents and disinfectants), pathogens and nutrients all have the potential to contaminate water.

- An EMP is developed and implemented that includes strategies and measures for minimising contamination and degradation of surface water, ground water and soil from the farm and contingency actions for managing problems that may arise.

Best practice guidelines

- Reasonable separation distances for natural resource protection are achieved.
- The farm is not in a flood prone area.
- Ground water vulnerability is assessed and appropriate siting, design and management strategies used to protect ground water.
- Waste storage areas are designed to avoid contact with stormwater, and any contaminated stormwater is collected, treated and disposed of without causing pollution.
- Areas of nutrient and chemical storage, including the chicken sheds, litter stockpiles and dead bird management areas are on an impervious base material to protect ground water from pollution. Chemicals should be stored in bunded and roofed areas.
- Spills of litter, feed, chemicals and other potential pollutants are cleaned up promptly.
- Vegetated buffer strips are developed and maintained around sheds and stockpile and disposal areas to catch and filter pollutants.
- Chemical storage and usage ensures protection of natural resources from chemical contamination. (See section 6.10 *Chemical usage*.)
- Land application of litter and wastewater is done using a water and nutrient balance that

Erosion and sediment control are needed on the construction site to manage large areas of exposed soil until grass cover can establish.



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matches application rate to safe soil storage ability, safe infiltration rates, crop uptake and allowable losses. (See section 6.11 *Management of waste and nutrient reuse*.)

- Spreading on slopes greater than 10 per cent is avoided (that is, 10 metre rise in 100 metres).
- Erosion problems are actively controlled.
- Pastures are managed to maintain vegetative cover and stabilise soils.
- Stock access to streams and damage to stream banks are minimised.
- Farm dams are constructed and maintained, and unsealed roads are located and managed, to reduce soil movement, erosion and dam leakage.
- Local wetlands are protected for their role in filtering natural sediment and nutrient loads and providing a diversity of wildlife habitat.
- On-site household wastewater systems (septic tanks and aerated wastewater treatment units) are maintained and operated to prevent nutrients getting into streams or ground water.
- Management strategies are used to control site erosion and the water quality of run-off, and include preventive measures as well as appropriately placed and maintained sediment controls such as sediment traps, sediment barriers, silt fences and straw bales below fill batters or highly disturbed areas.

6.3 ODOUR

Outline

Odour is the largest source of complaint against meat chicken farms. Odour problems generally arise when residential developments encroach on existing agricultural areas, when a farm is inappropriately located near a residential development, or when a farm changes technology or operations, resulting in increased odours. Unsatisfactory management practices can also lead to an increase in odour generation, and hence odour complaints.

The emission of offensive odour from licensed premises where scheduled activities are carried on is an offence under the PoEO Act unless the emission is identified in the licence as potentially offensive and was emitted in accordance with the licence, or the only affected persons

were engaged in the management or operation of the premises.

Controlling and managing odour is difficult, because odour levels may vary significantly with weather conditions, shed design, management practices, flock age and health status. Odours may have considerable impacts on sensitive land uses beyond the farm property boundary, depending on the sensitivity of individuals.

Odour is primarily produced from the anaerobic decomposition of manure, spilled feed, dead birds and other organic matter. High litter moisture content increases this biological reaction, so keeping litter dry is the primary factor in odour control. The chickens also have a distinct odour that is more noticeable when their feathers are damp.

The potential nuisance caused by odour emissions is a function of many interrelated factors, including:

- the nature, strength and offensiveness of the emissions, which depends on:
 - total number and stocking density of birds
 - disease and digestive upsets in the birds
 - feed formulation (for example, nitrogen content)
 - amount of faecal material in the litter and its moisture content
 - farm management and operation
 - shedding, equipment and other technologies
 - pollution control and waste management practices.
- the frequency, intensity, duration and character of odour impacts, which are influenced by:
 - local meteorological conditions and topographical features that govern the transport and dispersion of odorous emissions
 - distance of the receptor or sensitive land use from the odour source
 - nature and sensitivity of the receptor.

Separation of emission sources and sensitive land uses by appropriately locating and sizing the poultry farm provides protection from the adverse impacts of emissions. However, it does not relieve farm management of the responsibil-

ity to use best practice in the design, operation and management of the meat chicken farm. Farm management has the greatest influence on odour generation.

Objective

Ensure that best practice is adopted in the planning, design, development, operation and management of meat chicken farms so that odour emissions do not cause unacceptable impacts on nearby sensitive land uses or receptors.

Performance criteria

- Site selection and design is informed by an odour impact assessment that identifies appropriate separation distances. (See 'Odour impact assessment' in section 5.1.)
- Best environmental management practice is applied in the selection and use of shedding technology, farm equipment and farm management so that farm operations and odour emission comply with the requirements of the PoEO Act. Information on best practice shedding technology can be obtained from industry associations or NSW Agriculture.

Correct feed storage and formulation helps minimise odour problems. A concrete pad under feed silos helps in easy clean-up of spilt feed. Spilt feed can attract pests and cause odour.



Odour: Requirements of the PoEO Act

The occupier of any premises must not cause air pollution (including odour) through a failure to maintain or operate equipment, to carry out maintenance work on plant, or to deal with materials, in a proper and efficient manner. The operator must also take all practicable means to minimise and prevent air pollution [sections 124, 125, 126 and 128 of the PoEO Act].

The occupier of a premise on which scheduled activities are undertaken must not emit an offensive odour, unless the emission is identified in the environment protection licence as potentially offensive and was emitted in accordance with the licence [section 129 of the PoEO Act].

- An EMP is developed and implemented that includes strategies and measures for minimising odour emission from the farm and contingency actions for managing odour problems that may arise.

Best practice guidelines

- A log of key conditions and activities with potential to affect odour generation is maintained and periodically reviewed. The log addresses relevant factors such as flock age, the condition of feed, drinkers, foggers and litter, and climatic conditions.
- Best practice waste management is followed. (See section 6.11 *Management of waste and nutrient reuse*.)
- Litter moisture levels are maintained between 15 and 30 per cent to avoid odour generation.
- Vegetative screens or constructed impact walls are used to slow airflow and/or redirect the odour plume. (See section 6.7 *Visual impact and landscaping*.)
- To minimise the impact of odour on nearby sensitive land uses or receptors, plan and perform farm operations taking into account weather conditions, forecasts and time of day (for example, when neighbours are at work).
- Minimise dust emission, as odour molecules are carried on dust particles. (See section 6.5 *Dust*.)

- Superior technologies are used where economically and operationally practicable. These technologies may include dispersion, incineration, scrubbing systems, adsorption systems, biofiltration and adding masking compounds to odorous air. (Information on technologies is available from *Technical Notes. Draft Policy: Assessment and Management of Odour from Stationary Sources in NSW* (NSW EPA 2001) and the Rural Industries Research and Development Corporation environmental database/odour control strategies project).

6.4 NOISE

Outline

Noise from meat chicken farms may adversely affect nearby sensitive land uses. Noise from farms may be continuous or intermittent. Typical sources of noise are truck and tractor movements, feed equipment and fans. Other noise sources are emergency generators and alarms. Noise and vibration may also be an issue during construction.

The transmission of noise and resulting impacts are affected by many factors, including atmospheric conditions, local topography and noise barriers. Residents are much more sensitive to noise in the evening and night when background noise levels are lower and the potential for sleep disturbance is greater. Night-time pick-up of birds is preferred by the industry for bird welfare and product quality reasons, and noise impact from this activity must be minimised where sensitive receptors are located near the farm.

The effect of noise on nearby land uses can be minimised during the design and planning stage of meat chicken farm development.

Although meat chicken farms with fewer than 250 000 birds do not require a DEC licence under the PoEO Act, the criteria presented below would be used by local councils in:

- developing action plans to resolve noise conflict situations
- setting conditions for development consent
- setting noise targets in LEPs and REPs.

Proponents should therefore site, design and develop meat chicken farms to meet these criteria in order to minimise the risk of noise complaints.

Objective

Ensure that noise levels generated by the meat chicken farm and associated activities do not have unacceptable impacts on nearby sensitive land uses.

Performance criteria

- Noise levels generated by the farm and related activities do not exceed the requirements of the *NSW Industrial Noise Policy* (NSW EPA 2000).
- An EMP is developed and implemented that includes strategies, measures and contingency actions for minimising noise and vibration impact.

Noise: Requirements of the PoEO Act

The occupier of a premises must not cause noise to exceed prescribed levels, or cause offensive noise, or conduct activities in an environmentally unsatisfactory manner [sections 95–100 and 263–279]

Best practice guidelines

- Noise levels generated by the farm and related activities meet the requirements of the *NSW Industrial Noise Policy*. The noise from vehicle movements associated with development is covered by the Policy if the vehicles are not on a public road. If the vehicles are on a public road, the *Environmental Criteria for Road Traffic Noise* (NSW EPA 1999) apply.
- Noise and vibration from the construction as well as the operational phase are addressed in the EMP.
- Access points and roads are located to minimise noise impacts on neighbouring sensitive land uses.
- Farm design and layout reduce the need for vehicles to reverse and allow vehicles to leave the farm travelling in a forward direction.
- The design and siting of all mechanical equipment, including fans and pneumatic feed systems, minimise the generation of mechanical noise and the likelihood of off-site vibration.

- Landscaping is used to mitigate noise if required (for example, earth mounds or solid fences).
- Bird pick-up and associated night-time activities are undertaken with minimum noise generation. (Birds are normally collected at night for bird welfare and product quality reasons.)
- Low noise levels are important criteria in the selection and operation of mechanical equipment and vehicles, including consideration of exhaust muffling equipment and adjustable reversing alarms or lights on vehicles.
- All vehicles and machinery are maintained to ensure that noise does not exceed manufacturers' specifications. Tonal effects and frequency modulations or impulses are minimised.
- Except in emergencies or with council consent, feed deliveries and other truck movements (apart from bird pick-up where necessary) do not take place outside daylight hours.
- Details of the management of noise are given in the EMP and include measures to minimise noise at all times from equipment and machinery, and from pick-up and delivery vehicles.
- The farm operator liaises closely with drivers, pick-up crews and processors to ensure all are aware of the potential for conflict arising from noisy vehicle use and behaviour.
- The *NSW Industrial Noise Policy* (NSW EPA 2000) sets two separate noise criteria, to account for controlling intrusive noise impacts and maintaining noise level amenity for residences and other land uses. Both components must be taken into account for residential receivers, but in most cases only one will become the limiting criterion.

Intrusive noise criteria limit maximum noise levels from a source to no more than 5 decibels (dB) above the measured background level, with the minimum background level being 30 dB-A.

Amenity noise criteria set recommended noise levels for specific receivers. The acceptable noise levels are listed in Table 2.1 on page 16 of the DEC's *NSW Industrial Noise Policy* (NSW EPA 2000).



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Design and siting of mechanical equipment, including extraction fans, should aim to minimise noise generation and impact. Fan hoods help to direct noise and dust.

For further information on noise contact the DEC.

6.5 DUST

Outline

Dust from poultry farms can be generated from the chicken sheds (litter and feathers), vehicle movement, on-site operations (for example feed delivery, site construction, litter spreading, and shed cleaning) and movement of wind across bare soil. Odour particles can be carried on dust, so minimising dust emission from the farm can significantly reduce odour.

Dust from meat chicken farms may arise from dried manure, feathers, grain husks and other organic matter, and may be associated with allergies, asthma and other respiratory ailments in humans.

A combination of good design, operation and management practices and provision of adequate buffer distances must be employed to minimise the risk of unacceptable dust impacts.

For large-scale proposals, the DEC may require an air quality impact assessment to be done to predict the impact of dust emissions with the use of computer-based dispersion modelling. The DEC's requirements for computer-based dispersion modelling are provided in the *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW* (NSW EPA 2001).

Objective

Ensure that the design, development, operation and management of the farm minimise the generation of dust emission that may affect sensitive land uses.

Performance criteria

- Site selection and design are informed by a dispersion-model-based dust impact assessment if appropriate.
- Best environmental management practice is applied in the selection and use of shedding technology, farm equipment and farm management so that farm operations and dust emission comply with the requirements of the PoEO Act.
- An EMP is developed and implemented to include strategies and measures for minimising dust emission from the farm and contingency actions for managing dust problems that may arise.

Best practice guidelines

- Reasonable separation distances and buffer zones are used for protecting biosecurity, community amenity and natural resources from dust impact. (See 'Separation distances' in section 5.1).
- Moderate driving speeds are maintained on unsealed roads.
- Loads are securely covered for transport.
- Spills are cleaned up promptly.
- Temporarily stored poultry manure is covered.
- Ground cover plants and vegetation screens are developed and maintained. (See section 6.7 *Visual impact and landscaping*.)
- Farm operations are planned and performed taking into account weather conditions and forecasts (for example, wind direction and strength) to minimise the impact of windblown dust on nearby sensitive land uses.
- Litter moisture is monitored and maintained above 15 per cent to avoid potential dust emission from over-dry litter. Fogging with water or a dust-suppressing agent is a contingency action taken if dust emission from sheds is a problem.

Dust: Requirements of the PoEO Act

The occupier of **any premises** must not cause air pollution (including dust) through a failure to maintain or operate equipment, or to deal with materials, in a proper and efficient manner. The operator must also take all practicable means to minimise and prevent air pollution [sections 124, 125, 125, and 128].

The occupier of any premises must not carry on an activity or operate any plant so as to cause the emission of air impurities (including solid particles) at above the concentration and/or rate set out in the Clean Air (Plant and Equipment) Regulation [section 128 of the Act].

- Road wetting is a contingency action taken if unacceptable dust emission from significant truck movements is likely.
- Impact walls, earthen mounds or fan hoods may be installed at the end of tunnel-ventilated sheds as a control measure against unacceptable dust impact.

6.6 LIGHT

Outline

Stray lighting from vehicle headlights, security lighting and sheds lit to maintain regular light periods can be intrusive to neighbouring residences. Stray light and shadows moving through poultry sheds may also panic the birds and result in increased mortalities. Planning of vehicle movements and farm lighting must ensure light does not adversely affect neighbouring sensitive land uses or bird behaviour.

Objective

Ensure that the movement of vehicles and the lighting design of the farm is planned to minimise any light impact on the amenity of nearby sensitive land uses and on bird behaviour.

Performance criteria

- Access points and roads on the property are located (or shielded) to minimise light impacts on neighbouring sensitive land uses and avoid stray light entry into chicken sheds.

- Lighting of the farm is designed to avoid excessive illumination and to minimise illumination of neighbouring sensitive land uses.
- An EMP is developed and implemented to include strategies and measures for minimising light impacts from the farm.

Best practice guidelines

- Lights used to illuminate the site for security and bird pick-up must be angled or shielded so that they do not directly illuminate any nearby sensitive land uses.
- Car parks and roads are situated and/or screened to avoid stray lighting from vehicle headlights directly illuminating any nearby sensitive land uses.
- Vegetative screening, earthen banks and constructed walls are used, if required, to screen against light impact.

6.7 VISUAL IMPACT AND LANDSCAPING

Outline

Chicken sheds and supporting farm infrastructure can be visual intrusions on the landscape that may be offensive to the aesthetic values of some people. Landscaping can play an important part in softening the visual impact of meat chicken farms and can also help reduce noise, dust and odour impacts. Choice of construction materials and use of topography also help reduce visual impact. Ensuring that the farm is constantly maintained in a tidy condition not only improves visual amenity, but helps with control of other impacts like pests, disease and odour.

Objective

Ensure that planning, design, operation and management minimise the visual impact of the farm, and use landscaping and screening to reduce the impact of noise, dust, light and odour on surrounding properties.

Performance criteria

- Existing vegetation is retained wherever practicable.
- Proposed landscaping provides substantial visual screening from roads, public areas, nearby residences and other sensitive land uses.

- The plant species selected blend in with the local vegetation and landscape and are low maintenance and suited to the site.
- Building materials, equipment and plant are selected to minimise visual impact.
- The topography of the site is used to best advantage to maximise visual screening.
- An EMP is developed and implemented that includes strategies and measures for minimising visual impact from the farm and for providing and maintaining landscaping.

Best practice guidelines

- The natural topography and terrain of the site and the existing vegetative cover are used to best advantage to maximise visual screening.
- Construction materials are selected where practicable to minimise visual impact. For example, use green curtain materials or shorter feed silos if appropriate.
- Early contact is made with the local council to establish a list of plant species suitable for screening that are appropriate to the local conditions and are low maintenance.
- A landscape plan is designed to ensure the long-term effectiveness of landscaping for screening of farm sheds and structures, and is approved by the approval authority. The plan includes a reasonably detailed estimate of the quantity and types of materials, plants, irrigation equipment and other inputs required and a time limit for the completion of the landscape works.

Screening trees around the farm facility reduce the visual impact of farm infrastructure and noise, dust, light and odour impacts.



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- Landscape planting is no closer than 15 metres to the perimeter of the chicken sheds and ensures effective upper and lower level screening, utilising trees and shrubs. To achieve a semi-permeable buffer, plant three or four rows of fine-leaved vegetation with different height.
- Mounds to a height of about 2 metres are used if the combination of natural topography and tree planting cannot effectively screen the farm. Soil from construction of dams, drains and sheds may be suitable for these mounds.
- Landscaping is maintained and dead plants are replaced.
- Buildings (including gutters, walls, and roof and side curtains) and site (including grassed surrounds, drains, fences, dams and roads) are maintained in a functional and tidy condition at all times.

6.8 TRAFFIC

Outline

Movement of vehicles to and from the site, and accommodation of farm vehicles on the site, can affect the safety and amenity of the public and neighbours. Problems of odour, noise, dust, feathers and vehicle lights can be associated with traffic movement. Site access must not interfere with the function of adjoining roads, and off-site impacts on nearby sensitive land uses must be minimised.

Contact the approval authority at an early stage of development planning to determine appropriate access and road layout requirements and to identify whether the approval of the Roads and Traffic Authority (RTA) is required.

Objective

- Provide appropriate access to the property from adjoining roads to minimise interference with traffic.
- Ensure that the movement and accommodation of articulated vehicles and employee and visitor car parking are adequate and are planned to minimise any detrimental impact on the amenity of nearby sensitive land uses.

Performance criteria

- Access to the site is from a road constructed to accommodate articulated vehicles, and the

access point is designed to be wide enough to provide for turning vehicles and allow safe ingress and exit.

- Adequate area is provided within the site to accommodate all service vehicle movements and for parking of vehicles within the property.
- Access points and roads on the property are located to minimise noise impacts on neighbouring sensitive land uses.
- An EMP is developed and implemented that includes strategies and measures for minimising traffic impacts.

Best practice guidelines

- The approval authority approves the location and design of access to the site.
- Access is constructed to a standard that minimises deterioration of the road pavement, avoids sharp turns, and provides sufficient road width for turning vehicles. If there is a farm boundary gate, enough off-road parking space is provided to allow trucks to park safely before entering the gate.
- Areas are provided for parking articulated vehicles for loading and unloading, and sufficient on-site manoeuvring area is provided to enable all vehicles to enter and exit the site in a forward direction.
- The surfaces of roads, loading areas and parking spaces are maintained to allow all-weather access.
- The farm operator liaises with contract drivers, bird pick-up crews and processors to ensure awareness and minimisation of traffic impacts (for example, noise from exhaust brakes) on neighbouring sensitive land uses.

Contact the local council or the Roads and Traffic Authority for further information. (Also see 'Road access' in section 5.1.)

6.9 PESTS

Outline

Pests increase the risk of disease on farm and can be an environmental health risk to humans. They also damage shedding and equipment. Pests affecting meat chicken farms include rodents (rats and mice), foxes, wild birds, flies, manure beetles, mosquitoes, cats, dogs, and external parasites like mites and lice. Effective

pest control is achieved through appropriate design and management of the farm.

Objective

Minimise health and disease risk to chickens and humans and risk of pest damage to sheds by keeping pest levels on the farm to a minimum.

Performance criteria

- Pest exclusion and control are factored into design criteria for construction of new farms and expansion of existing farms.
- An EMP is developed and implemented that includes strategies and measures for minimising pest infestation and contingency actions for managing pest problems that may arise.

Best practice guidelines

- All buildings, plant and equipment are designed and maintained to exclude vermin from the farm, sheds, water and feed.
- Feed supplies and breeding sites used by pests are eliminated from the farm. For example, feed spills and carcasses must be cleaned up quickly, and breeding sites and harbours are eliminated by keeping grass around sheds mown, the farm tidy and the environment as dry as possible.
- Pest numbers are regularly monitored, and targeted pest extermination programs are undertaken, maintained and monitored for

Sheds should be designed and maintained to exclude pests. Wire mesh over ventilation openings helps keep wild birds and other pests out of sheds.



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effectiveness. Routine baiting for rats and mice is essential.

- Pesticide use must meet the requirements of the *Pesticides Act 1999* and associated Regulations. This legislation is administered by the DEC and requires all users of pesticides to use products in accordance with label directions. The Pesticides Amendment (Records) Regulation 2001 requires people who use pesticides for commercial purposes to keep records of pesticide use. User training requirements will also shortly be introduced. All poultry farmers who use pesticides will be required to meet the accreditation requirements of ChemCert or SMARTtrain programs.

6.10 CHEMICAL USAGE (SPRAY DRIFT AND SPILLS)

Outline

The use and storage of agricultural chemicals are associated with potential risks for users, consumers, the community and the environment. Agricultural chemicals used on meat chicken farms include detergents, disinfectants, fumigants, fuels, herbicides, pesticides and veterinary medications. Minimisation of risk to health and the environment is achieved through good planning and management.

Objective

Minimise the risk to public health, property and the environment from chemical use and movement of agricultural chemicals on to non-target areas.

Performance criteria

- An EMP is developed and implemented that includes strategies and measures for minimising environmental risks and contingency actions for managing environmental problems that may arise from chemical usage.
- Pesticide use meets the requirements of the *Pesticides Act 1999* and associated regulations such as the Pesticides Amendment (Records) Regulation 2001 and the proposed Pesticides Amendment (User Training) Regulation (administered by the DEC).
- Storage, transport and use of chemicals meet the requirements for protection of the health and safety of workers and visitors to the

workplace and meet the Hazardous Substances requirements laid down in the Occupational Health and Safety Regulation 2001 under the *Occupational Health and Safety Act 2000* (administered by NSW WorkCover).

Best practice guidelines

- All agricultural chemicals used on farm are registered by, or allowed to be used subject to a permit issued by, the Australian Pesticides and Veterinary Medicines Authority. They are stored, mixed, applied and disposed of in accordance with the instructions on the relevant label or permit and NSW WorkCover Authority's *Code of Practice for the Safe Use and Storage of Chemicals (including Pesticides and Herbicides) in Agriculture* (WorkCover NSW 1998).
- Standards on the storage and handling of dangerous goods comply with the *Dangerous Goods Act 1975*. Standards Australia has published standards on the storage and handling of dangerous goods.
- Chemical records covering the purchase or procurement of chemicals and details of their application are maintained for a period of at least 3 years. Records are available to the responsible authorities to confirm that chemical use meets regulatory requirements. Refer to the Pesticides Amendment (Records) Regulation 2001.
- All people applying chemicals on the farm have successfully completed training in safe use of chemicals (for example a SMARTrain Chemical Application course or Managing Chemical Use course).
- Sheds are closed during chemical applications to minimise off-site chemical spray drift. Sheds are kept closed for the recommended time after spraying of toxic or odorous chemicals.
- There is no spray drift or run-off from sprayed areas into sensitive land-use areas such as watercourses, wildlife habitats, residential areas, public amenities or other sensitive land uses, including enterprises using integrated pest management or organic practices.
- Minimise chemical use and choose chemicals with the lowest toxicity and water contamination potential.

Further information on agricultural chemical usage can be obtained from NSW Agriculture, WorkCover or the DEC. (Also see section 9 *References and further reading*.) Also, provisions in the *Occupational Health and Safety Act 2000* about the use of hazardous substances and pesticides must be complied with.

6.11 MANAGEMENT OF WASTE AND NUTRIENT REUSE

Outline

Waste management on a meat chicken farm involves solid and liquid waste control. The sustainable reuse of used litter and dead birds as a source of nutrient and soil conditioner is encouraged.

Waste management includes:

- the collection, storage and disposal of dead birds
- shed cleanout, storage, disposal and spreading of litter as a fertiliser or removal from site
- on-site litter stockpiling and composting
- disposal of used chemical containers
- avoidance of contaminated run-off,
- collection and appropriate re-use of run-off
- potential for re-use of waste products

Objective

Manage waste from the farm to prevent pollution of surface water, ground water and land, to minimise odour and dust generation and to follow the waste management hierarchy of:

1. waste avoidance
2. recycling/reclamation
3. waste reuse
4. waste treatment to reduce potential degrading impacts
5. waste disposal.

Performance criteria

- Farm operations meet the requirements of waste management legislation such as the *Protection of the Environmental Operations Act 1997*.
- For large (more than 250 000 birds) licensed poultry farms the occupier assesses and

Waste: Requirements of the PoEO Act

It is an offence under the PoEO Act to dispose of waste in a manner that harms or is likely to harm the environment. It is also an offence to transport waste to an unlawful waste facility, or to permit the disposal of waste at such a facility. [sections 115, 143 and 144]

classifies their waste in accordance with *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-liquid Wastes* (NSW EPA 1999).

- An EMP is developed and implemented that includes strategies, measures and contingency actions for waste management, including a nutrient management plan for application of litter and contingencies for disposal of mass bird mortalities.
- Management and disposal systems for waste are designed and operated so that odour generation and the likelihood of disease transmission are minimised.

Best practice guidelines

Removal of litter

- Litter is removed from the shed and loaded directly into trucks and taken off-site.
- Used litter is transported from the farm in covered vehicles to avoid spillage and dust emission.
- Spillages are contained and cleaned up immediately to minimise the likelihood of stormwater contamination.
- Litter removal is preferably not undertaken when climate factors (wind and temperature) increase the likelihood of offensive off-site odour or dust impacts.
- Avoid litter becoming wet during the removal process.
- Reduce ventilation from the shed during removal to minimise off-site odour and dust impacts, always giving priority to a safe working environment.

Litter management in the shed

- Monitor the moisture content of the poultry litter with the aim of maintaining it between

15 and 30 per cent. The moisture content of the litter is the greatest influence on odour and dust generation. The litter moisture level is relatively easy to estimate with a reasonable degree of accuracy by using Table 3. For greater accuracy use a low-cost moisture meter.

Assess moisture levels in each shed on a weekly or other regular basis at equally spaced points along and across the shed, such as:

- Three points under the drinker lines,
- Three points between the drinker lines, and
- Three points near the shed wall.

- Material used for litter in meat chicken sheds must be dry and absorbent, remain friable, and be suitable for reuse.
- Aerate wet litter to enhance drying, or preferably remove wet litter.
- Control excessive dust generation by fogging the shed when required.
- Enteric problems in the birds can cause wet litter, and immediate action must be taken to identify and, if possible, eliminate these problems.
- Prevent rainwater, water from irrigation sprinklers, and surface water entering the sheds, and ensure fogger and drinker systems are not wetting the litter.

On-farm litter storage and use

- Used litter is stored and stockpiled on an impervious base to avoid ground water contamination. Stockpiles should also be located to avoid surface water contamination
- Temporary and permanent storage pad sites are out of public view and the prevailing

Table 3. Litter condition and moisture content

Litter description	Moisture content (%)
Dusty	Less than 15
Dry–friable	15–20
Friable to moist	20–30
Sticky/caking	30–45
Wet and sticky/ heavy caking	45–60
Very wet and sticky	More than 60



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Land application of litter should meet nutrient balance requirements. Timing of spreading should be informed by weather conditions and consideration of impacts on neighbours.

wind to an extent that is economically and operationally practicable.

- Extraneous surface water is excluded from the stockpile site.
- Short-term stockpiles are covered and banded to exclude water and minimise dust and odour emissions.
- Long-term uncovered stockpiles are managed to avoid odour and dust emissions and have a catchment dam to collect any run-off from the pile. Excess effluent from the dam is land-applied at sustainable rates, as determined by a nutrient balance.
- Land application of litter and wastewater is done by using a nutrient and water balance that matches application rate to infiltration rate and matches application volume to safe soil-storage ability, crop uptake and allowable losses and is monitored.
- Litter is incorporated as soon as practicable after application.
- Litter is not spread in weather conditions (wet or windy) that will cause odour or dust impact on neighbouring sensitive land uses or contamination of natural resources.
- Litter spreading is avoided when there is a greater likelihood of public exposure – such as on weekends and holidays – to an extent that is economically and operationally practicable.

Litter storage and application on farm follow best practice guidelines, as provided in the

National Environmental Management System for the Meat Chicken Industry (RIRDC 2002).

Dead bird management and disposal

- Dead birds are disposed of legally and following best practice and standards. Disposal may be by:
 - rendering
 - composting
 - incineration
 - burial
 - acid preservation.
- Farm practices for dead bird management and disposal comply with the *Broiler Industry Biosecurity Code* (Australian Chicken Meat Federation 2002).
- Dead birds are disposed of or stored appropriately (for example, frozen) within 24 hours of dying.
- A contingency plan is in place for disposal of mass bird mortalities (for example, from endemic disease, heat stress or exotic disease).
- Consideration should be given to the impacts on the physical environment and any nearby receptors of the disposal method. In locations where on-site disposal is possible, choose a site by taking into consideration the prevailing winds so that the impact of windblown odour and dust on nearby sensitive land uses is minimised. Composting

and rendering produce the smallest physical environmental impacts.

- Dead bird collection vehicles and all containment systems are leakproof and vermin-proof.
- Where there is regular removal of dead birds from the farm, dead birds are collected, placed in an enclosed container and either taken off-site daily or stored in freezers until the regular collection.
- Where permitted by the Protection of the Environment Operations (Control of Burning) Regulation 2000, on-site incineration or burial of dead birds must be undertaken only when more sustainable options are not viable, or in an emergency situation with the approval and to the standards of the relevant authorities. This practice is suitable only on larger land areas with good separation distances.
- On-site incineration units are sited out of public view or enclosed in a shelter; are capable of incinerating 1 day's accumulation of normal mortality; use after-burners to eliminate smoke, odour and air emissions; and are maintained and cleaned weekly. Incinerators must meet PoEO Act emission and standards.
- On-site burial sites are located out of public view. The bottom of the trench or pit must be at least 3 metres above the maximum ground water table. The trench or pit must

On-site incineration should be done only where more sustainable options are not viable. It is suitable only for farms with good separation distance.



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be designed so that there is no surface or sub-surface seepage and no surface water entering. The final cover will be at least 1 metre of compacted clay soil. The trench or pit must be covered daily to contain odours and exclude pests. Not all soil types or locations are suitable for on-site burial: consult with DIPNR.

- On-site composting systems must comply with best practice standards and be preferably sited out of public view.

Further information on dead bird disposal technologies and their environmental impact control may be obtained from industry organisations, NSW Agriculture, DEC or DIPNR.

Wastewater

- Any contaminated water, including liquid effluent, is collected, treated and disposed of without causing pollution. Land area should be sufficient for sustainable disposal of liquid wastes. Irrigation areas and treatment systems should be properly managed. Refer to the Draft Effluent Irrigation Guidelines (NSW EPA 1995) for further information.
- Wastewater generated by meat chicken farming activities may be regarded as liquid trade waste. For sewerred areas in Sydney Water's area of operations, written approval must be sought before any collected and treated effluent is discharged to the sewage system. The relevant requirements are in the *Sydney Water Act 1994* (Section 49) and its *Trade Waste Policy and Management Plan* (Sydney Water Corporation 2001). Further information can be obtained from Sydney Water on 131 110 or their website, www.sydneywater.com.au. Other water authorities may have varying requirements.

6.12 COMMUNITY LIAISON AND COMPLAINT MANAGEMENT

Outline

Liaison between the property owner/manager and neighbours can be helpful in communicating information for the purposes of avoiding and managing complaints. Open lines of communication help in identifying problems, verifying complaints and successfully applying relevant remedies to minimise the impact of farm operations on neighbouring sensitive land uses.

Objective

Maintain systematic communication between the farm and neighbouring sensitive land users to minimise environmental complaints.

Performance criteria

An EMP is developed and implemented that includes strategies, measures and contingency actions for managing community liaison and complaints about environmental impacts or problems that may arise.

Best practice guidelines

- Inform neighbouring sensitive land users of unusual events or problems that may affect their amenity, the timeframe of the impact, and the mitigation strategies that have been initiated.
- When a complaint is justified, gather relevant evidence and identify and implement strategies to remedy the problem. Inform the complainant of the outcome of the investigation and any actions taken to avoid recurrence of the problem.
- Record full details of complaints received, results of investigations and corrective actions in a complaint register.
- Record significant operational activities on the farm, particularly those that have potential environmental impact. Measure and record daily weather conditions and prevailing wind direction. These records will help in the investigation of problems.
- Participate in and cooperate with the mediation process in cases of dispute.

Mediation services are available for free from the Dispute Resolution Services section of the Community Justice Centre. The Land and Environment Court may also provide mediation services in an attempt to resolve a matter brought before them through mediation rather than in court.



NSW Meat Chicken Farm Guidelines - Readers' Note

This document is part of a larger publication. The remaining parts and full version of the publication can be found at:

<http://www.agric.nsw.gov.au/reader/orchard-plant-protection>

Updated versions of this document can also be found at the above web address.

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