



Department of
Primary Industries

Best Practice Management for Meat Chicken Production in NSW

Manual 2 – Meat Chicken Growing Management

INTENSIVE ANIMAL INDUSTRIES DEVELOPMENT | POULTRY MEAT INDUSTRY COMMITTEE



Best Practice Management for Meat Chicken Production in New South Wales

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Poultry Meat Industry Committee

INTENSIVE ANIMAL INDUSTRIES DEVELOPMENT



Department of
Primary Industries

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Author: Stephen Carroll, Chairman, Poultry Meat Industry Committee

This manual has had valuable input from Joanna Blunden (NSW Department of Primary Industries); Glenda Briggs (NSW Department of Primary Industries); Tim Burfitt (NSW Department of Primary Industries); Peter Cashman (NSW Farmers); John Cordina (Cordina Chicken Farms Pty Ltd); Martin Cooper (Wollondilly Shire Council); Paul Elias (Cordina Chicken Farms Pty Ltd); Lindsay Fulloon (Environment Protection Authority); Penny Goldin (NSW Department of Planning and Infrastructure); Emmanuel Isbester (Hawkesbury City Council); Michael Leahy (Baiada Poultry Pty Ltd); Robert O'Hern (Environment Protection Authority); Byron Stein (NSW Department of Primary Industries); Yolande Stone (NSW Department of Planning and Infrastructure); and Peter van Vliet (Inghams Enterprises Pty Ltd).

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1 Introduction

This Manual should be read in conjunction with Manual 1 – Site Selection & Development.

1.1 Purpose of this Manual

This Manual provides guidance for the management of meat chicken farms in NSW, with a particular focus on minimising environmental impacts such as odour.

The Manual recognises the involvement of both growers and processors in meat chicken farming. Whereas the grower directly operates the farm, processors determine shed specifications, provide and own the chickens, arrange transport, provide the feed, provide veterinary and management advice, and process and market the chickens. In most instances the grower operates under a contract to a processor, and the ongoing performance of the farm is therefore dependent on the actions of both the farmer and the processor.

An understanding of industry operating practices may help consent and regulatory agencies to work with growers to ensure sustainable poultry development and avoid land-use conflict.

Growers considering building a new farm, or expanding or renovating an existing farm, should use the Manual to find out what management practices to use to minimise environmental impact.

Operators of existing farms may use the Manual to check that they are using best management practices. Where action is required to improve the performance of an existing farm that does not comply with environmental or health requirements, growers and responsible authorities are encouraged to use the Manual as a reference for defining appropriate practices and performance outcomes.

The Manual is intended to promote consistent application of best practice and uniform regulation of poultry farming in NSW and may be referenced in planning applications. However, no two broiler sheds are completely identical, and every flock of broilers will differ subtly in its requirements. Responsive management satisfies these requirements by observing specific local features together with changes in the birds and their environment, and also by adopting appropriate management practices. Such an approach will help to ensure optimum performance in every flock.

This manual does not provide definitive information on every aspect of farm and stock management. However, it draws attention to important features, which, if overlooked, may adversely affect environmental outcomes – particularly odour and noise risks.

Contract growers must refer to their Broiler Growers' Manual provided by the processor for detailed flock and shed management requirements.

1.2 Scope of the Manual

The Manual concentrates on the intensive farming of meat chickens in NSW in modern tunnel-ventilated sheds that are standard for all new or expanding meat chicken operations. Many of the principles, however, are equally applicable to naturally ventilated (conventional) sheds.

Many of the principles and some of the practices may also be relevant to other forms of poultry production



The Manual does **not** apply to:

- » poultry farms operating for egg production (egg farms and breeder and pullet raising farms)
- » non-meat-chicken poultry species, such as quail, ducks, turkeys and geese
- » chickens for meat production where the chickens have access to an outdoor range.

Contact the NSW Department of Primary Industries (NSW DPI) or your local council for further advice on these alternative poultry developments.

The word **must** is used in the Manual to refer to any obligatory requirements to meet relevant legislation, policies or regulations. Not meeting these specific requirements can mean a direct contravention of legislation.

Lawfully established meat chicken farms may continue to operate in accordance with current approvals under existing legislation, although the Manual is intended to encourage all farms to adopt and implement a culture of continuous improvement.

1.3 Review of the Manual

The Manual will be revised as new information and expertise relating to the operation, management and environmental impact of meat chicken farms becomes available. Major reviews should be done every 5 years, or more often if justified (e.g. if there are legislative changes or major changes in farm design) by industry and government.

The best practice guidelines included in this document are based on current information, knowledge and practice at the time of publication. Further investigation, research and innovation in farm practice may, in future, establish new accepted standards and redefine best practice for the industry

The most current version of the Manual will be available on the NSW DPI website (www.dpi.nsw.gov.au).



2 Managing environmental impacts during production

The extent to which a meat chicken farm affects the surrounding environment depends largely upon the management techniques applied. A well sited, designed and managed farm should have few impacts on community amenity (odour, dust, noise, light, and visual) and the environment (water and soil).

Generally, odour is the most important issue associated with meat chicken farms, as its impacts are frequently extensive. Even if the design includes best practice shed-insulation, ventilation, cooling and drinking systems and automated controls, poor management can easily offset these positive aspects and result in excessive odour emissions.

Noise can be an issue at some farms, especially where pick-ups occur at night, when the noise tends to travel farther, background levels are lower and neighbours have an expectation that noise will not disturb their sleep.

Meat chicken farms are not significant sources of wastewater. However, dust fallout may contaminate watercourses either directly or by being washed in by runoff. Hence, it is important to ensure that watercourses are isolated from any areas where significant dust fallout occurs. If farms spread spent litter on-farm, then specific management practices are required to minimise any impacts.

All chickens remain the property of the processor supplying the chickens to the farm and must be grown in accordance with the processor's Broiler Growing Manual, which is supplied free to all growers as a requirement under the *Poultry Meat Industry Act 1986*.

Sheds must be set up in accordance with the Broiler Grower Manual, taking into account the practices in the following sub-sections:

2.1 Shed preparation - bedding

The type of clean bedding used will depend on the availability and price of products, but it should have the following attributes:

- » dry
- » friable (crumbly) and highly absorbent
- » rapidly drying
- » containing no matter that will restrict the use of the end product (litter) on land.

Wood shavings, hardwood sawdust, softwood sawdust, shredded paper and chopped straw and rice hulls are all used in NSW.

Best management practice recommendations:

- ✓ Bedding is dry and level.
- ✓ New bedding is of sufficient depth (typically 50mm) to keep the birds from contact with the floor and provide warmth and comfort.
- ✓ Bedding is transported to farm and installed in sheds during daylight hours.
- ✓ If stockpiled, bedding is kept under cover in an area that limits its impact on neighbours.



2.2 Managing water and feed

Adequate supply of good quality water is imperative at all times. Town water is preferred, but if bore or surface water from a dam or river is used then the water quality must be tested and there must be written permission from the processor for use of the water.

Feed is provided for and delivered by the processor as required. Feed is managed as per the processor's Broiler Growing Manual. Storage requirements are around 1 tonne per 1000 birds on feed.

Best management practice recommendations:

- ✓ Adequate water is provided and treated in accordance with the processor's requirements.
- ✓ All new farms proposing to use bore, dam or river water test the water for water quality and have written permission from the processor before building the farm.
- ✓ Existing farms test the bore, dam or river water annually for mineral analysis and microbacterial cleanliness and discuss the results with the processor. Guidelines for acceptable quality are described in the *National Water Biosecurity Manual - Poultry Production* (DAFF 2009).
- ✓ Feed silos are kept secure against all pests.
- ✓ Any spillage around silos is cleaned up immediately.
- ✓ Automated delivery systems are maintained daily and feed lines are kept flowing.
- ✓ The appropriate number of feeder pans or feeder trays is provided for the number of birds placed.

2.3 Ventilation, temperature and humidity

Correct temperature and humidity relative to the age of the birds are critical for the welfare and efficient rearing of meat chickens and must be maintained in accordance with the Broiler Growing Manual.

Cooling systems are integral to the operation of both tunnel and conventional sheds to maintain the necessary bird welfare and production rates. Gas heating and a closed shed may also be used to maintain ideal temperatures and humidity for very young chicks at the start of the batch.

Adjusting the use of fans or cooling systems in response to possible noise or odour concerns is not feasible and may result in high levels of flock stress and mortality.

Conventional sheds rely on wind flow, fans and fogging to regulate temperatures.

Various ventilation modes are used in tunnel-ventilation sheds; they range from minimum ventilation, where small side vents may be open and a minimum of fans are operated at low flow rates, to full tunnel-ventilation sheds using evaporative cooling systems and high air-flow rates to maintain temperature and humidity for bird comfort.



Different cooling options are used at different times throughout a batch in accordance with the Broiler Growing Manual to match the local climatic conditions and bird requirements; cooling may operate 24 hours a day if required for bird welfare.

Best management practice recommendations:

- ✓ Maximum and minimum temperatures are recorded daily on the shed record cards and Hazard Analysis and Critical Control Points (HACCP) sheets as required.
- ✓ The shed is pre-warmed in winter to suit the birds' requirements and also in summer if needed, in accordance with the Broiler Growing Manual.
- ✓ Shed temperature is adjusted as the birds grow, in accordance with the Broiler Growing Manual.
- ✓ Humidity is managed to optimise bird comfort (target range between 50% and 70% relative humidity).
- ✓ Water for cooling purposes should be of potable standard or sanitised with an approved disinfectant applied in accordance with label requirements and the processor's biosecurity requirements.

2.4 Internal shed lighting

Lights are operated inside sheds for management and animal welfare purposes in accordance with the processor's Broiler Growing Manual. Managing light intensity is important to bird welfare; light intensity is varied according to the birds' age and the operations being undertaken within the sheds.

Best management practice recommendations:

- ✓ The lighting program is operated in accordance with the Broiler Growing Manual.
- ✓ Energy-efficient lighting is used wherever possible.



2.5 Managing for bird health and welfare

It is imperative that all birds are treated in a humane and appropriate manner. The key provisions for this are prescribed in the *Model Code of Practice for the Welfare of Animals - Domestic Poultry* (CSIRO 2002) as amended from time to time.

Bird placement and pick-up must be done in a way that meets the welfare needs of the birds. Available shed cooling and ventilation options must also be used to optimise bird welfare.

Best management practice recommendations:

- ✓ Sheds are stocked only at densities that comply with the *Model Code of Practice for the Welfare of Animals - Domestic Poultry* (CSIRO 2002).
- ✓ Shed temperatures do not exceed optimal levels for the birds' age, in accordance with the Boiler Grower Manual. This includes avoiding chilling the birds or subjecting them to draughts that may adversely affect health, welfare or performance.
- ✓ Sheds are kept free from predators (e.g. cats, foxes and rats) at all times.
- ✓ Ammonia levels in sheds are controlled (for both bird and human health) by ensuring that they are consistently below levels that can be detected by smell (10 to 15 ppm).
If ammonia reaches levels that cause irritation to humans (>25 ppm), immediate action must be taken to reduce levels by reducing litter moisture content and/or increasing ventilation.
- ✓ When ventilation is used to remove ammonia from the shed, temperature and humidity must be maintained to a standard appropriate to the age of the birds.
- ✓ Each shed is inspected daily and birds that are injured or unable to move to reach food and water are culled humanely and promptly.
- ✓ Dead birds are removed from sheds at least once daily.
- ✓ Immediately before bird pick-up, the sheds are cleared of all dead birds and any birds not suitable for catching.
- ✓ Birds are picked up during the cooler time of the day (generally at night), as this is less stressful for them.
- ✓ During pick-up the grower is available to help maintain all aspects of bird welfare.
- ✓ Feed-lines are lifted not more than 3 to 6 hours before pick-up, in accordance with the instructions given by the processor.
- ✓ Access to water is not removed until the pick-up crew arrives on the farm.
- ✓ As soon as a part-pick up is finished, the water lines and feed-lines are promptly reinstated.



2.6 Noise control during feed delivery and pick-up of birds

Two of the main sources of noise from meat chicken farming operations are the delivery of feed and the pick-up (harvesting) of birds. Farm managers must manage noise levels by closely liaising with processors and contractors to ensure compliance with legislation and maintain good neighbourhood relationships.

Night-time noise is typically of greatest concern owing to lower acceptable noise levels, lower background noise and greater risk of still conditions and temperature inversions that can increase the area affected. Although feed should preferably be delivered during daylight hours, pick-up of birds during daylight hours is not recommended owing to animal welfare considerations. Cooler night-time temperatures and darkness help to reduce bird stress during pick-up operations and transport to the processing plant. Night-time pick-ups are also necessary to fit processing schedules and minimise bird-holding times.

Noise from reversing beepers on vehicles used during pick-up can be a source of complaint. Workplace health and safety requirements stipulate that safety devices such as reversing beepers or beeper alarms must be fitted to plant or vehicles and cannot be permanently or temporarily disabled. Nor is it legal to rely purely on visual warnings (e.g. flashing lights).

If reversing beepers are creating noise problems, some options to consider are:

- » using proximity sensors that activate reversing beepers only when an object or person comes within a certain range of the rear of the operating vehicle or mobile plant
- » constructing noise barriers between the pick-up area (sheds) and affected residence
- » use of self-adjusting broadband or beeper alarms that vary in level depending on the surrounding noise.

It is essential that any alternatives to beeper alarms are assessed in accordance with workplace health and safety requirements to confirm that they offer the required level of protection to the people who work at, or visit, the meat poultry farm. For further information on the possible use of alternatives to beeper alarms see:

www.environment.nsw.gov.au/noise/constructnoise.htm

Best management practice recommendations:

- ✓ Neighbours are considered when planning feed deliveries and bird pick-ups.
- ✓ Forklifts and other vehicles are maintained to reduce noise levels.
- ✓ Reversing distances are minimised.
- ✓ Close liaison is fostered between the farm manager and drivers, pick-up crews and processors to ensure that all are aware of the potential conflicts caused by the vehicles and machinery used and the actions of the pick-up crews.
- ✓ Where fitted, flashing lights or other suitable warning devices are used on vehicles in combination with reverse warning beepers in accordance with legal requirements.
- ✓ If required and feasible, noise barriers are installed between the sheds and sensitive receptors (e.g. nearby houses).



2.7 Shed and equipment maintenance

Sheds and fixed equipment such as fans, feed augers and bird drinking systems must be effectively maintained to minimise odour, dust and noise impacts on neighbours.

Best management practice recommendations:

- ✓ Shed walls and roofs are inspected for leaks; leaks are immediately repaired to prevent wet patches forming in the litter.
- ✓ Ventilation and cooling systems are regularly inspected and maintained in good working order.
- ✓ Automated environmental controllers and sensors are regularly checked.
- ✓ Water reticulation systems are frequently checked, and equipment is repaired or replaced immediately where there is a leak or break.
- ✓ Feeding and drinking systems are inspected and adjusted daily.
- ✓ Silos and feed-lines are properly maintained.
- ✓ Noise suppressing equipment is maintained and any excessive noise from machinery and mechanical ventilation is minimised.
- ✓ Sheds and surrounds are maintained to ensure they are clean and tidy.

2.8 Pest management

Pests increase the risk of disease on-farm and can also damage shedding and equipment. Effective pest control is achieved through appropriate design and management of the farm.

Wild birds can spread diseases to meat chickens, and vice versa.

Rodents such as rats and mice can migrate to neighbouring properties and generate health and nuisance complaints. As well as posing a risk of disease transfer between farms, they waste and contaminate feed. Rats can transmit salmonella to humans via contaminated meat chicken carcasses. Rats and mice also damage insulation, curtains, hoses and electrical wiring and can kill young chicks.

Insects in litter may also be a problem (see section 2.12.1).

Best management practice recommendations:

- ✓ Sheds are built and maintained to exclude wild birds.
- ✓ Spilled feed is cleaned up immediately, as it attracts wild birds.
- ✓ Rat-proof dwarf walls are maintained on sheds and entry points are blocked with durable materials (iron grills, heavy-gauge sheet metal and concrete).
- ✓ Breeding sites (e.g. holes, burrows, rubbish piles) are minimised.
- ✓ A baiting program is maintained.
- ✓ Bait stations are regularly checked and maintained to minimise risks to non-target species.
- ✓ A record of the baiting program is kept in accordance with the requirements of the *National Farm Biosecurity Manual - Poultry Production* (DAFF 2009) and the *Pesticides Act 1999*.



2.9 Managing chemicals and fuel

The use and storage of agricultural chemicals and fuel 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.

Storage and use of chemicals on farms are highly regulated via various Regulations, including those under the *Work Health and Safety Act 2011*, regarding the use of hazardous substances and pesticides.

Avoiding environmental and health risks should be a standard on-farm practice; separate regulations that duplicate this via land-use planning consent conditions are not required.

Further information on agricultural chemical use and safety requirements can be obtained from NSW DPI, WorkCover or the EPA. (Also see Manual 1, Appendix 5, 'References and further reading'.)

Best management practice recommendations:

- ✓ All staff and contractors are trained in the safe use and handling of chemicals and spills and have access to appropriate protective equipment.
- ✓ Only accredited people are involved in the use of chemicals.
- ✓ Chemicals are stored and applied correctly to avoid spills that may contaminate ground and surface waters; incompatible chemicals are kept separate. Only small quantities of necessary chemicals are kept on site.
- ✓ Strictly adhere to the manufacturers' and labelling instructions when using chemicals. Material Safety Data Sheets (MSDSs) for chemicals are available from www.msds.com.au
- ✓ A record of all chemicals used is kept in accordance with the requirements of the *Pesticides Act 1999* and associated Regulations and Occupational Health and Safety Legislation.
- ✓ A register is kept of all dangerous goods or combustible liquids (e.g. gas or diesel) in accordance with Occupational Health and Safety Legislation.
- ✓ Appropriate signage (e.g. HAZCHEM) is affixed on storage areas.
- ✓ Procedures are in place and equipment is available to contain and clean up a spill or leak. These procedures are documented in an emergency response plan, and staff are familiar with emergency procedures.
- ✓ Empty drums are disposed of in accordance with manufacturer's instructions.



2.10 Environmental monitoring and recording

Environmental monitoring and recording must form part of the management of a chicken meat farm to effectively identify and address any deficiencies and ensure that the requirements of the *Protection of the Environment Operations Act 1997* (POEO Act) are met. Additionally, the farm manager must ensure that the consent conditions set out in the development approval and any associated licences (such as water-use licenses) are complied with. This may include requirements for monitoring, recording and reporting.

In locations with a high risk of odour or noise impacts, site-representative weather data are very useful for managing and avoiding conflict.

Best management practice recommendations:

- ✓ Growers are encouraged to develop, document and implement an Environmental Management Plan for the farm (see Appendix 3).
- ✓ Regular subjective checks are performed to monitor potential sources of odour, dust or noise, particularly at potentially high impact times such as during litter clean-out, shed disinfection and spent litter application, and when adverse weather conditions prevail.
- ✓ Any problems encountered, and the proposed method of solving the problems, are recorded.
- ✓ In high-risk locations and/or during high-risk activities (such as shed clean-out) a record is kept of prevailing weather conditions and management actions adopted to minimise the risks.
- ✓ Relevant authorised regulatory authorities are able to have access to weather and management records to help resolve formal complaints or possible regulatory breaches.
- ✓ Protocols and equipment required for ground water and surface water monitoring, as determined by the appropriate regulatory authority, are maintained.

Information on ground water and surface water monitoring is available in the *Sampling Manual for Environmental Monitoring by Intensive Livestock Producers* (Redding 2003).



2.11 Managing biosecurity risks

Because poultry farms house large numbers of birds, it is imperative that all practicable steps are taken to avoid the introduction of disease onto the farm and the transmission of disease from the farm to other sites.

It is preferable that people entering the farm have not visited another poultry farm within 3 days, unless they have undertaken appropriate decontamination. For further information on biosecurity practices, see:

- » *National Farm Biosecurity Manual – Poultry Production* (DAFF 2009)
- » *The National Farm Biosecurity Manual for Chicken Growers* (ACMF 2010)
- » Processor biosecurity requirements listed in Broiler Growing Manuals.

Best management practice recommendations:

- ✓ Staff are trained in biosecurity procedures and comply with the requirements of the *National Farm Biosecurity Manual – Poultry Production* (DAFF 2009) and with any additional processor biosecurity requirements.
- ✓ Visitors are not allowed into the chicken meat production area without signing in. A visitors' book should be available and used all times.
- ✓ Visitors are not permitted into the sheds unless they are authorised to do so and are wearing appropriate protective equipment.
- ✓ A clean footbath filled with approved disinfectant is maintained for the use of all people entering sheds.
- ✓ Wild birds, pets and other animals are kept out of the sheds at all times.
- ✓ Approved rodent control products and procedures are used.
- ✓ On-farm equipment is not shared with other poultry farmers.
- ✓ The presence of other poultry farmers on the farm is avoided.
- ✓ All vehicles entering the biosecure area are disinfected using wheel-wash facilities.
- ✓ Rubbish is removed from the farm and the shed environs are kept mown and neat.
- ✓ Feed silos and medication tanks have lids and are secure to prevent access by birds and animals.
- ✓ Any material brought in for shed bedding is totally free of rodent and bird droppings.
- ✓ Dead birds are disposed of in an approved manner.
- ✓ Cooling pads are regularly treated with disinfectant.



2.12 Litter management in the shed

Effective litter management is integral to a well-operated chicken meat farm. It has implications for both the health of the flock and for dust and odour levels. Factors affecting litter quality are shown in Figure 1.

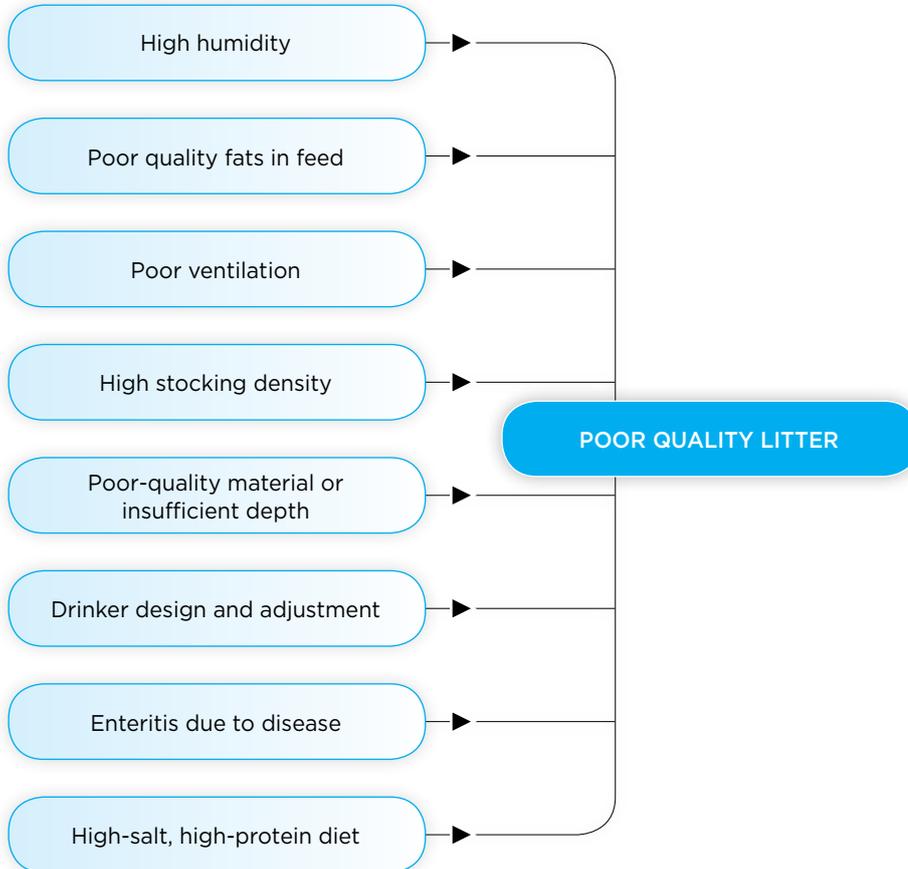


Figure 1: Factors leading to poor quality litter (Source: Ross Broiler Management Manual)

The moisture content of the poultry litter needs to be monitored regularly with the aim of maintaining it between 15% and 30%. The litter moisture level is relatively easy to estimate with a reasonable degree of accuracy by using Table 2. For greater accuracy use a low-cost moisture meter.

Table 2: Litter condition and moisture content

LITTER DESCRIPTION	MOISTURE CONTENT (%)
Dusty	Less than 15
Dry - friable	15 to 20
Friable to moist	20 to 30
Sticky/caking	30 to 45
Wet and sticky/heavy caking	45 to 60
Very wet and sticky	More than 60



Best management practice recommendations:

- ✓ A vendor declaration is received from the bedding supplier certifying that the material provided is free of contamination (such as, but not restricted to, treated pine). The declaration is kept with the batch records.
- ✓ If the shed floor is constructed of compacted earth, this should be kept level and repaired if necessary before bedding is spread to ensure that at least 50 millimetres of uncompacted bedding material is evenly distributed for each batch.
- ✓ Record the amount of bedding required and supplied in each shed on the batch card to ensure consistency.
- ✓ Litter moisture content is visually monitored daily in each shed, with particular emphasis on likely high-moisture areas (such as around the air inlet or near drinkers).
- ✓ Litter moisture content is maintained between 15% and 30% (wet basis). Assess moisture levels in each shed on a weekly basis at equally spaced points along and across the shed (e.g. three points under the drinker lines; three points between the drinker lines; three points near the shed wall).
- ✓ Bird health is monitored and any digestion problems are promptly identified and reported to the processor's representatives and rectified if possible, as gut problems in birds can make litter wet.
- ✓ Areas of wet or caked litter within the shed are topped up aerated (rotary hoed) to enhance drying, or otherwise the wet litter is removed and replaced to reduce odour and bird health risks.
- ✓ Any foggers must be maintained and operated to avoid forming coarse drops that fall to the floor. The misted water should evaporate before reaching the floor so as not to soak the litter or birds.
- ✓ Fans and ventilation management must be used in cold weather in a manner that will avoid moist incoming air condensing on the floor next to the wall and causing the litter to become wet and cold. Heaters should be used if necessary to maintain target temperature.
- ✓ Excessive dust generation is controlled by fogging the shed when required; care is taken to avoid chilling the birds or saturating the litter.

2.12.1 Managing litter beetles

Beetles breed in litter within sheds or stockpiled on-farm and should be controlled in order to minimise damage to insulation and wood structures and reduce the risk of spreading diseases such as salmonella. This should be done in an environmentally responsible manner.

Best management practice recommendations:

- ✓ Beetle populations within shed litter are controlled via an integrated pest management approach by using pesticides, composting and total shed-litter clean-out.
- ✓ Use only products that do not restrict the productive re-use of litter as a fertiliser.
- ✓ Records of all chemical use kept are in accordance with appropriate procedures (see section 2.9).



2.13 Additional steps to manage odour risks

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

- » the nature, strength and offensiveness of the emissions, which depend on:
 - the total number and stocking density of birds
 - the age of the birds
 - disease and digestive upsets in the birds
 - the feed formulation (e.g. the nitrogen content)
 - the amount of faecal material in the litter and its moisture content.
- » 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
 - the distance of the receptor or sensitive land use from the odour source
 - the nature and sensitivity of the receptor.

Farm management has the greatest influence on odour generation. It is imperative that best management practice is applied in the selection and use of shedding technology and farm equipment, and in farm management, so that farm operations and odour emissions comply with the requirements of the POEO Act.

With respect to assessing compliance with sections 124 to 126 of the POEO Act, regulatory authorities must generally determine whether air pollution has been caused by the manner in which the occupier of any premises has performed their activities. This is where the concept of documented best practice becomes important.

Information on best practice shedding technology can be obtained from industry associations or NSW DPI.

As covered in section 2.12, the key to odour control is the maintenance of dry, friable litter that is not decomposing anaerobically and emitting significant odours.

Attention to detail and strict adherence to a daily schedule of checking, maintenance and necessary adjustments of the shed environment, litter, feeders, water and ventilation system are required to maintain dry litter.

Odour molecules are carried on dust particles, so it is important to minimise both odour and dust generation and emissions. Vegetative screens can help to filter airflow and reduce dust levels. Constructed impact walls can be used to redirect the odour plume. (See section 2.18 'Managing visual impact and landscaping').

If appropriate for the particular site, additional odour control technologies may be adopted. Options currently being trialled include constructed barrier walls or enclosures with foggers, or cyclone filters or exhaust stacks to redirect the odour plume and increase dispersion. Note that these technologies have not yet been scientifically proven.



Best management practice recommendations:

- ✓ An Environmental Management Plan (EMP) should be developed and implemented. It should include strategies and measures for minimising odour emission from the farm and contingency actions for managing odour problems that may arise.
- ✓ Best practice waste management is followed for the removal of litter. See section 3, 'Managing wastes'.
- ✓ Optimum litter moisture levels are maintained to minimise dust and odour emissions in accordance with section 2.12.
- ✓ Dust emissions are also minimised. (See section 2.14, 'Managing dust'.)
- ✓ Vegetative screens and/or constructed impact walls are used to filter and redirect the odour plume. (See section 2.18, 'Managing visual impact and landscaping'.)
- ✓ Critical operations (e.g. shed clean-out or litter spreading) that have a high risk of creating odour are planned and performed by taking into account weather forecasts and the time of day (e.g. when neighbours are at work) to minimise the impact of odour on nearby sensitive land uses or receptors.
- ✓ Adopt proven odour reduction technologies in consultation with regulatory authorities (such as the local council or the EPA) and the processor.

2.14 Managing dust

Dust from poultry farms can be generated from the chicken sheds and vehicle movements, from on-site operations such as feed delivery, and from site construction and shed cleaning.

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.

Best management practice recommendations:

- ✓ Moderate driving speeds (<40 km/h) are maintained on unsealed internal roads.
- ✓ Loads are securely covered for transport.
- ✓ Farm operations are planned and performed by taking into account weather conditions and forecasts (e.g. wind direction and strength) to minimise the impact of windblown dust on nearby sensitive land uses.
- ✓ Roads are wetted as a contingency action if unacceptable dust impacts on neighbours during peak periods of truck movement are likely during pick-up (e.g. in particularly dry and windy conditions).
- ✓ Vegetative screens, impact walls, earthen mounds or enclosures at the end of tunnel-ventilated sheds are installed as control measures against unacceptable dust impact.



2.15 Managing noise

Noise from meat chicken farms may adversely affect nearby sensitive land uses. Typical noise sources include truck movements, feed equipment, fans, emergency generators and alarms.

Two of the main sources of noise from meat chicken farming operations are the delivery of feed and the pick-up (harvesting) of birds. Farm managers must manage noise levels by closely liaising with processors and contractors to ensure that they remain committed to compliance with legislation and maintain good neighbourhood relationships.

Night-time noise is typically of greatest concern owing to lower acceptable noise levels, lower background noise and greater risk of still conditions and temperature inversions, which can increase the area affected. Feed should preferably be delivered during daylight hours, but pick-up of birds during daylight hours is not recommended because of animal welfare considerations. Cooler night-time temperatures and darkness help to reduce bird stress during pick-up operations and transport to the processing plant. Night-time pick-ups are also necessary to fit processing schedules and minimise bird-holding times.

Noise from reversing beepers on vehicles used during pick-up can be a source of complaint. Workplace health and safety requirements stipulate that safety devices such as reversing beepers or beeper alarms must be fitted to plant or vehicles and cannot be permanently or temporarily disabled. Nor is it legal to rely purely on visual warnings (e.g. flashing lights).

If reversing beepers are creating noise problems, some options to consider are:

- » using proximity sensors that activate reversing beepers only when an object or person comes within a certain range of the rear of the operating vehicle or mobile plant.
- » constructing noise barriers between the pick-up area (sheds) and the affected residence.
- » using self-adjusting broadband or beeper alarms that vary in level depending on the surrounding noise. It is essential that any alternatives to beeper alarms are assessed in accordance with workplace health and safety requirements to confirm that they offer the required level of protection to the people who work at, or visit, the meat chicken farm.

For further information on the possible use of alternatives to beeper alarms see: www.environment.nsw.gov.au/noise/constructnoise.htm

WorkCover NSW may require the risks of these alternative solutions to be assessed before they are implemented

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, and the lower of the two becomes the limiting criterion. The acceptable amenity criteria are listed in Table 2.1 on page 16 of the NSW Industrial Noise Policy (NSW EPA 2000). The intrusive noise criteria relevant to a site are calculated following a background noise assessment completed in accordance with the methods defined in Appendix B of the NSW Industrial Noise Policy.

The noise from vehicle movements directly associated with development must comply with the Industrial Noise Policy if the vehicles are on the farm property. While vehicles are on a public road, the NSW Road Noise Policy (DECCW 2011) applies.



Best management practice recommendations:

- ✓ Neighbours are considered in the planning of feed deliveries and bird pick-ups.
- ✓ Farm staff are aware of noise risks and minimise noise outside sheds.
- ✓ Close liaison is fostered between the farm manager and drivers, pick-up crews and processors to ensure that all are aware of the potential conflicts caused by the vehicles and machinery used and the actions of the pick-up crews.
- ✓ Forklifts and other vehicles are maintained to reduce noise levels, and reversing distances are minimised where possible.
- ✓ Exhaust muffling equipment and, where fitted, flashing lights or other suitable warning devices are used on vehicles in combination with reverse warning beepers in accordance with legal requirements.
- ✓ Mechanical equipment, including fans and pneumatic feed systems, are maintained to minimise the generation of mechanical noise and the likelihood of off-site vibration.
- ✓ If required and feasible, noise barriers are installed between the sheds and sensitive receptors (such as houses in close proximity).
- ✓ Landscaping or other noise controls (e.g. earth mounds or solid fences) are managed and maintained to mitigate noise.
- ✓ The surfaces of roads, loading areas and parking spaces are maintained to allow all-weather access and minimise noise and dust impacts.
- ✓ Feed deliveries and other truck movements (apart from bird pick-up where necessary) do not take place outside daylight hours, except in emergencies or with council consent or where there is low impact on neighbours.

2.16 Managing traffic

Problems of odour, noise, dust, feathers and vehicle lights can all result from the movement of vehicles, either on the farm or travelling between the farm and processors.

Vehicle access to the site must not interfere with the function of adjoining roads, and off-site traffic impacts on nearby sensitive land uses must be minimised.

Each farm should develop and implement plans to ensure that vehicle movements have minimal detrimental amenity impacts. The management of traffic on farm includes not only vehicles operated by the farm but also vehicles operated by contractors.

Best management practice recommendations:

- ✓ Develop and implement a plan to ensure that off-farm vehicle movements have minimal detrimental amenity impacts.
- ✓ Vehicles on the farm are driven at moderate speeds (<40 km/h). This is especially important for delivery and pick-up trucks, which generate higher noise levels than other vehicles.
- ✓ Plan pick-up operations to minimise the need to reverse vehicles and hence trigger the operation of reversing alarms at night. (See also section 2.15.)
- ✓ Avoid the use of truck air/exhaust brakes near sensitive receptors or areas.
- ✓ Liaise with contract drivers to ensure that they are aware of impacts on neighbours (e.g. noise from exhaust brakes or speeding over uneven roads) and adopt practices to minimise such problems.



2.17 Managing external light sources

Low-level outdoor lighting is used to facilitate night-time operations (such as pick-ups) and is designed to have minimal amenity impacts. However, 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.

Best management practice recommendations:

- ✓ Angle or shield lights used to illuminate the site for security and bird pick-up so that they do not directly illuminate any nearby sensitive land uses.
- ✓ Situate and/or screen car parks and roads to avoid stray lighting from vehicle headlights directly illuminating any nearby sensitive land uses.
- ✓ Use vegetative screening, earthen banks or constructed walls, if required, to screen against light impact.

2.18 Managing visual impact and landscaping

Well-maintained 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.

Best management practice recommendations:

- ✓ Landscaping and vegetative screens are maintained to ensure that they remain effective.
- ✓ The 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.



2.19 Management of extremes and emergencies

Extremes and emergencies on a meat chicken farm (i.e. during high temperatures or loss of power and/or water supply) may result in mass bird losses. Farms must assess the risks to their operations and have contingency plans in place to avoid mass bird deaths, welfare issues, impacts on surface and ground waters and the spread of disease vectors.

The highest risk is interruption to the power supply, because of its impact on shed cooling systems and on feed and water supplies for the birds.

2.19.1 Failure of power and/or water supply

Power supply problems that result in interruptions to ventilation and cooling equipment can result in mass bird deaths.

Best management practice recommendations:

- ✓ Warning systems are installed to notify the operator of power or water supply failure.
- ✓ A back-up power supply with adequate fuel supply is available.
- ✓ Standby generators are regularly run (at least weekly) to ensure that they are working effectively.
- ✓ An adequate supply of spare parts is kept on hand (such as water pumps for the cooling or drinker system).
- ✓ Potential noise impacts of standby generators are addressed by installing mufflers and considering acoustic screening.
- ✓ A back-up supply (tanks) or contingency for at least 2 days' water is provided in case of breakdown or loss of supply (at least 2 litres per bird).

2.19.2 Mass mortality events

Farms require a contingency plan to cope with occurrences of high mortalities. The disposal options available for mass deaths of birds depend upon the cause of death. Subject to local council, EPA and NSW DPI approval, mass-death disposal options may include:

- » rendering (if facilities are available)
- » in-shed composting
- » external composting
- » disposal in a landfill site
- » burial on-farm.

In the event of mass deaths the farm operator must immediately contact the processor. This will enable an investigation to ascertain the cause of death and the best option for the disposal of the dead birds. Where normal disposal methods are not feasible, the relevant regulatory authorities (e.g. the local council, the EPA or NSW DPI) may need to be contacted to help identify alternative options.

If the cause of the deaths is an Emergency Animal Disease, then the relevant Australian Veterinary Emergency Plan (Ausvetplan) will be activated and the appropriate authorities will be notified. Disposal of carcasses, spent litter, feed and equipment in this instance will be under the direct control of the Chief Veterinary Officer, NSW DPI.



Best management practice recommendations:

- ✓ The processor is immediately notified and, when appropriate, the processor will promptly notify the relevant authority.
- ✓ Farms have a written contingency plan for disposal of mass mortalities; the plan is kept up to date and is available to all staff.
- ✓ All staff are aware of their responsibilities should a mass mortality event occur.

2.20 Managing community liaison and complaints

Where effective consultation has been undertaken at the site selection and development stages (in accordance with Manual 1, section 3.11) channels of communication are established early and the likelihood of complaints is minimised.

2.20.1 Good neighbour policy

Ongoing contact between the property owner or manager and neighbours can be helpful in building goodwill and avoiding and managing complaints at the first opportunity. 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.

It is therefore important for the operators of meat chicken farms to have a policy concerning good neighbour procedures and practices.

A good neighbour policy encourages the operator to:

- » communicate and consult with neighbours
- » seek opportunities to explain and interpret management practices
- » provide detailed information about proposed activities or works in progress
- » be responsive to neighbours' concerns and professionally conciliate any issues
- » cooperate with neighbours to resolve concerns.

Some farm operations may be subject to conditions of consent, such as additional monitoring requirements. In these cases, it is particularly important to ensure effective, positive communications with neighbours and regulatory authorities. Particular care should also be taken to manage contact with neighbours if there are recurrent complaints.

Routine engagement with your neighbours and community early on can establish a foundation for good relationships and ensure that they know what is happening, rather than having to rely on rumours or speculation. Taking people on tours of your farm can help neighbours or community stakeholders gain a better understanding of the practical operation of meat chicken farms and the best practices you are already implementing.

It may be possible to avoid the coincidence of peak odour risk periods or activities with events planned on neighbouring properties by either mutually adjusting the timing of maintenance or production operations or giving an indication of your proposed production schedule.

Key issues you may need to discuss with your neighbours on an ongoing basis include the following:

- » odour management
- » dead-bird disposal and poultry litter management
- » vehicle movements and noise.



2.20.2 Abnormal events

Even well-managed meat chicken farms may emit some odour or noise. Keeping in touch with neighbours can reduce the risk of conflict by helping them understand the processes, the steps being taken to reduce potential problems, and the practical limitations.

Abnormal odour may be due to feed or digestive problems with a particular batch. Odour or noise impacts may also be related to clean-out of the sheds during summer. Letting neighbours know about planned clean-out event as early as possible helps to reduce community annoyance and should be part of the good neighbour policy. Operators should also inform neighbours about what is being done to remedy any problems, and how long the problem will take to fix. The level of annoyance may be reduced if neighbours see that operators are genuinely addressing adverse effects in a proactive manner.

Best management practice recommendations:

- ✓ Inform neighbouring sensitive land users of unusual events or problems that may affect their facilities. Also tell them of the time frame of the impact and the mitigation strategies that have been initiated.
- ✓ Record significant operational activities on the farm – particularly those that have potential environmental impact.
- ✓ Ensure that the person with the best communications skills handles contact with neighbours; this may not necessarily be the farm manager.
- ✓ When a complaint is formally or directly made, take a proactive rather than defensive approach. Gather relevant evidence, identify options, and implement strategies to remedy the problem. Inform the complainant of the outcome of the investigation and any actions taken to avoid a recurrence of the problem.
- ✓ Participate in and cooperate with the mediation process in cases of dispute.

2.20.3 Complaints management

It is important for the meat chicken farm to have a transparent complaints-handling procedure. The procedure could be developed in consultation with the neighbours.

To help assess more accurately the cause and validity of any reported conflict incident, maintain a daily log of weather conditions (prevailing wind direction and strength, temperature) and farm activities.

This is particularly important where there might be an existing history of conflict. If future expansions are proposed, complaints and activity logs can also demonstrate the effectiveness of current management practices in avoiding conflict.

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



Best management practice recommendations:

- ✓ A good neighbour policy is developed. It includes a complaints-management system.
- ✓ An abnormal odour event procedure is developed.
- ✓ Weather conditions are monitored daily if complaints are ongoing, because many community amenity impacts are closely related to weather conditions. This can also help in assessing the validity of complaints.
- ✓ Full details of any complaints received are recorded, along with results of investigations and corrective actions taken, in a Complaints Register. If there are regular complaints, correlate them with the complaint data to identify any trends. Surrounding residents are encouraged to phone the grower directly with complaints.
- ✓ An automatic weather station is installed and maintained on farms where there is an increase in validated complaints. This will help with complaint investigation.



3 Managing wastes

Waste management on a chicken meat farm includes:

- » shed cleanout with removal of poultry litter (bedding plus poultry manure) for productive re-use
- » any re-use of manure on the farm as a fertiliser
- » collection, storage and disposal of dead birds
- » disposal of used chemical containers and other refuse
- » prevention of contaminated run-off.

The handling of poultry litter and waste products on farm must meet the requirements of waste management legislation such as the POEO Act. Composting operations must also be consistent with the *Environmental Guidelines: Composting and Related Organics Processing Facilities* (DEC 2004).

A range of general exemptions have been issued by the EPA; they permit certain products, including poultry litter, to be applied to land subject to a range of conditions defined in each exemption. (*Clause 3B (2) of the Protection of the Environment Operations (Waste) Regulation 2005 specifically exempts bulk agricultural crop materials and manure from the definition of waste in the POEO Act for the purposes of its application to land for resource recovery purposes.*)

Where a waste product is not covered by the current general exemptions, it is possible to apply for a specific exemption to permit the product's re-use or application to land. For instance, if the poultry litter contains any other additives or contaminants a special exemption may need to be obtained from the EPA to permit its application to land for re-use purposes. Further information can be found at: www.environment.nsw.gov.au/waste/Waste_regulation.htm

3.1 Litter clean-out

There are three common practices adopted in NSW for litter replacement: single use, partial re-use and multi-use. The issues to consider when deciding on a system include:

- » contractual arrangements and the requirements in the Broiler Growing Manual
- » availability and cost of new bedding material
- » ammonia and odour levels
- » risk of disease transfer between batches
- » litter beetles. These may cause increased problems with multi-use litter. Extra disinfection may be required between batches to control them.

Immediate removal of spent litter is encouraged to reduce the risk of disease transfer from one batch to the next. It also reduces the risk of off-site impacts.

If litter is stored on farm (or composted) it must be managed to avoid contamination of surface waters and ground waters, as well as any nuisance (odour, dust and noise) to neighbouring residents and excessive fly breeding. Best practice guidelines for litter storage and application on farm are set out in the *National Environmental Management System for the Meat Chicken Industry* (RIRDC 2002).



Best management practice recommendations:

- ✓ A well-managed shed clean-out and shed disinfection program is developed and implemented to minimise the increased risk of disease, odour, dust and noise emissions from the farm during this activity.
- ✓ Shed clean-out is normally done during daylight hours, as this minimises the noise impact. It also reduces dust and odour impacts because of the increased dispersion potential of atmospheric conditions during daylight hours.
- ✓ Any material that represents a risk to flock health is removed from the sheds and aprons during a partial or full clean-out. Shed walls, ceilings and equipment are then disinfected with a biodegradable, registered product (see section 2.9).
- ✓ Litter removal is preferably undertaken when climate factors (wind and temperature) limit the likelihood of offensive off-site odour or dust impacts.
- ✓ Spent litter is removed from the farm or operational area immediately as sheds are being cleaned out.
- ✓ Used litter is transported from the farm in covered vehicles to avoid spillage and dust emissions.

3.2 Poultry litter re-use on farm

Spent litter is used in a broad range of applications for its nutrient value as an organic fertiliser and for its soil ameliorant qualities. Some of the common uses of spent litter are:

- » broadacre agriculture
- » horticulture
- » mushroom substrate production
- » pelleted and bagged product for home gardens
- » turf farms
- » soil mixes.

The definition of manure in the POEO Act encompasses any biodegradable animal bedding materials. Hence the productive re-use of poultry litter as a fertiliser for pastures does not require approval from the EPA (such as an Environment Protection Licence or a resource recovery exemption), provided that it does not incorporate dead birds or any other additives or contaminants.

The use of poultry litter on-farm should always make the best use of the nutrients while avoiding potential deleterious effects, such as the contamination of ground and surface waters by nutrient-rich run-off exceeding the capacity of the plants and soils on the site. The application of litter should comply with current guidelines and regular soil testing is require to check soil nutrient levels. Particularly critical is the resultant levels of phosphate.



Because of the high botulism risk in poultry litter it is illegal to feed litter to livestock. For the same reason, pastures spread with spent litter should not be grazed until it is well broken down. Restrictions in the *Stock Diseases Act 1923* and Regulations prohibit the feeding (or making available) of poultry litter that might contain prohibited substances (*restricted animal material means tissue, blood or feathers derived from the carcass of an animal, including any substance produced from, or containing, any such tissue, blood or feathers (but it does not include tallow or gelatin)*) such as chicken carcasses to ruminants, such as beef cattle, and to pigs. Guidelines for poultry farmers and for other producers on biosecurity provisions for storing and applying poultry litter are available from the NSW DPI (see www.dpi.nsw.gov.au/agriculture/livestock/health/specific/cattle/poultry-litter-manure-bse-controls and www.dpi.nsw.gov.au/__data/assets/pdf_file/0018/110259/poultry-producers-and-bse-controls.pdf)

Spent litter should be covered during transportation to prevent spillage and minimise odour emissions.

Best management practice recommendations:

- ✓ Poultry litter is managed, stored and applied in accordance with NSW DPI guidelines, namely *Poultry producers and BSE controls*, *Poultry litter BSE controls for carriers and spreaders* and *Best practice guidelines for using poultry litter on pastures*. See note below.
- ✓ Litter storage and application on farm should also follow the best practice guidelines provided in the *National Environmental Management System for the Meat Chicken Industry* (RIRDC 2002).
- ✓ Litter re-use areas are designed and managed to achieve a nutrient balance, and nutrients are used sustainably. Consult your local agronomist for help with soil nutrient management.

Note: Bovine spongiform encephalopathy (BSE, often called 'mad cow disease') is a disease of cattle that causes brain changes and death. BSE does not occur in Australia. Overseas the disease has been shown to spread through meat products fed to cattle. New South Wales has banned the feeding of all animal products, including fish meals and feathers (called 'restricted animal material') to ruminant animals such as cattle, sheep, goats and deer. These bans provide insurance against any spread of the disease in Australia and satisfy the requirements of our meat export markets.

3.3 Dead birds

Bird deaths result from a range of routine diseases, with the largest number of deaths usually occurring in young, very small birds. Mass death events may also occur from catastrophic equipment failure or significant disease events. This section deals with the safe disposal of birds that have died during routine operations. Mass death events are covered by section 2.19.2.

Several alternatives exist that should be selected in consultation with the regulatory authority.

Carcass disposal practices must not contaminate ground and surface waters or cause odour nuisance or land contamination, as per the provisions of the POEO Act. Poor management of dead and or diseased birds can also increase biosecurity risks.



Best management practice for the treatment of dead birds requires daily collection from the shed and removal from the farm for rendering. If farms do not have ready access to a rendering plant, the next preferred method of disposal is composting.

Other methods of disposal, subject to approval, include transport to existing licensed waste facilities, composting on site, burial or incineration. The relevant local government authorities must be consulted on the most appropriate and allowable carcass disposal method.

Although incineration is biologically the safest carcass disposal method, it is not the preferred practice, for the following reasons:

- » It **must** to be performed efficiently, consistently and effectively to ensure complete incineration and to avoid odour and particulate nuisance complaints.
- » Appropriate incineration is expensive. It requires specific approval and use of specifically designed and authorised incineration equipment.
- » The process eliminates the nutrients and organic matter that can be beneficially re-used.
- » Burning carcasses in open fires is unacceptable, as this creates smoke and odour and is unlikely to maintain a sufficiently high and consistent temperature. It is also a biosecurity hazard, as thermal updraughts can disperse feathers and other matter.

Further information on dead-bird disposal technologies and their environmental impact control may be obtained from industry organisations, the NSW DPI or the EPA.

Best management practice recommendations:

- ✓ Farm practices for dead-bird management and disposal comply with the *National Farm Biosecurity Manual for Chicken Growers* (ACMF 2010).
- ✓ Dead birds are removed from the sheds daily and disposed of, or stored appropriately (e.g. in freezers), within 24 hours of death.
- ✓ An appropriate method of disposing of dead birds is adopted in consultation with the processor and regulatory authority (e.g. the local council or the EPA).
- ✓ A contingency plan is in place for the disposal of birds from mass mortalities (e.g. from endemic disease, heat stress or exotic disease) (see section 2.19.2).

3.3.1 Off-site disposal

Rendering involves the removal of dead birds off farm. It is limited by economies of scale and is viable only if a rendering plant is located close by (typically within 100 km). Transport to a licensed waste facility requires prior discussion with the local waste facility manager.

Birds may also be temporarily stored on site and, subject to the agreement of the processor and facility manager, may be disposed of to an authorised site such as a commercial composting or waste management facility. This option may be supported by contract provision of secure, on-farm storage bins for the temporary storage of birds before their bulk removal. These bins are also referred to as bio-bins.



Best management practice recommendations:

- ✓ Dead birds are stored in specially designed pick-up containers with secure lids and are taken off site daily or stored in freezers until collection.
- ✓ The collection point is in a designated area located as far away from the operational area of the farm and as far from adjoining residences as possible. It should also be appropriately screened or signposted. Ideally the collection vehicle should not enter the production area.
- ✓ Provide adequate room near the collection point for stopping and loading.
- ✓ A contingency plan (e.g. short-term freezing) is developed and maintained for situations where dead birds cannot be collected promptly.
- ✓ Any spillage in the collection areas is immediately cleaned and disinfected. Carcass-storage containers and the collection area are also regularly cleaned and disinfected to minimise the spread of disease by flies.
- ✓ Records of collection (date and mass) are maintained.
- ✓ Personnel disposing of dead birds should be instructed on the need to maintain personal hygiene and environmental protection measures.

3.3.2 On-site disposal – composting

Dead birds and litter should be composted on a concrete slab or other suitably impermeable material that is covered by a roof. These measures are designed to prevent contamination of ground or surface waters or the surrounding area and to achieve the temperatures needed to destroy pathogenic bacteria and viruses. Further information on this can be obtained from the *Maryland Co-operative Extension Fact sheet 537 – Composting Dead Birds (Murphy, D and Carr, L 1991)* and the *NSW Environmental Guidelines: Composting and Related Organics Processing Facilities* (NSW DEC 2004).

Details on the Australian Standard for *Composts, soil conditioners and mulches* (AS 4454-2012) are available from Standards Australia (www.standards.com.au).

Current carcass composting practices use either purpose-built compost bins, which may be rotary, or composting bays or piles. The size and number of units required depend on the size of the operation and normal levels of bird mortality (3% to 5%). Rotary units require careful management to ensure that an aerobic environment is maintained in order to reduce the possibility of excessive odour generation.

If performed correctly, composting of carcasses in open bays and piles is an environmentally and biologically safe option. However, these facilities require correct design and management to avoid any biosecurity and odour issues and may require development consent and/or licensing under the POEO Act, depending on Local Environmental Plan requirements and the scale of the proposed composting operation.

The optimum moisture content for carcass composting is about 50%. Adding a co-composting material to the carcasses provides additional carbon, which helps to maintain a high level of microbial activity. On meat chicken farms, the most readily available and suitable co-composting materials are spent litter and clean bedding.

Information on the design and management of compost bins is available from NSW DPI. The agronomic re-use of composted materials via land application may require a resource recovery exemption. (See section 3.2 for more information.)



Best management practice recommendations:

- ✓ The design of any on-site composting systems complies with council regulations and the *Environmental Guidelines: Composting and Related Organics Processing Facilities* (NSW DEC 2004).
- ✓ The compost facility is big enough to more than manage the predicted volume of routine dead birds during production cycles. Additional capacity should be present to manage periodic fluctuations, but additional disposal methods will be required for mass death events.
- ✓ Compost facilities are located as far as possible from property boundaries and sensitive land uses and are preferably out of public view. To minimise biosecurity risks they should also be located away from production areas and sheds.
- ✓ Any composting bins are sealed and are regularly serviced and maintained.
- ✓ Compost facilities are located on an impermeable pad (made of concrete or similar material). Any leachate is collected and managed via drains or ponds with impermeable liners.
- ✓ Rodents, cats, dogs, feral animals and scavenging birds are excluded from the composting carcasses.
- ✓ Minimise the presence of flies in dead-bird collection and disposal areas by ensuring that birds are not left uncovered.
- ✓ Personnel disposing of dead birds should be instructed on the need to maintain personal hygiene.

3.3.3 On-site disposal - burial

Burial is a traditional and economical option and may be appropriate on those sites where other options are not feasible. Not all soil types or locations are suitable for on-site burial; for instance, areas may have a high risk of watertable contamination or shallow soils. Dead-bird disposal via burial is also unlikely to be suitable in more closely settled areas and on smaller properties, owing to the higher risk of odour or of predation by domestic animals.

Animal waste is additionally defined in the POEO Act as including ‘... dead animals, animal parts and any mixture of dead animals and animal parts’. Animal waste is classified as General Solid Waste (Putrescibles); hence the disposal of dead birds to land requires a resource recovery exemption (see below) or will need to be subject to an Environment Protection Licence. Seek advice from the local council or EPA before you consider this option.



Resource recovery exemptions and Environment Protection Licences

The application of waste to land, and the use of it as a fuel in NSW, may trigger various regulatory requirements such as the need to hold an environment protection licence or pay the waste and environment levy.

Resource recovery exemptions are granted by the Office of Environment and Heritage (OEH) where the land application or use as fuel of a waste material is a bona-fide, fit for purpose, reuse opportunity that causes no harm to the environment or human health, rather than a means of waste disposal. An exemption facilitates the use of these waste materials outside of certain requirements of the waste regulatory framework.

OEH encourages the recovery of resources from waste by issuing both general and specific resource recovery exemptions.

General exemptions are issued for commonly recovered, high-volume and well characterised waste materials. A general exemption may be used by anyone, without seeking approval from OEH, provided the generators, processors and consumers fully comply with the conditions of the exemption.

Where no general exemption is available for the intended use, a specific exemption may be issued after an application is made to OEH.

For more information visit the OEH website www.environment.nsw.gov.au

In the Sydney drinking water catchment, the Sydney Catchment Authority does not permit the disposal of dead birds on site except during an outbreak of exotic disease that results in a farm being quarantined.

Best management practice recommendations:

- ✓ Consult with local regulatory authorities before considering disposal by burial. You are likely to need an Environment Protection Licence.
- ✓ The bottom of the trench or pit should be at least 3 metres above the maximum watertable.
- ✓ Burial cells should be lined with a modified soil or clay liner of at least 900 millimetres of re-compacted clay with in-situ permeability (k) of less than 10^{-9}ms^{-1} , or an equivalent synthetic liner product. The liner must cover the base and all sides of the burial cell, so that the ground water is protected from contamination. The final cover is at least 1 metre of compacted clay soil. The trench or pit must be covered daily to contain odours and exclude pests.
- ✓ The trench or pit is designed so that there is no surface or sub-surface seepage and no surface water entering.
- ✓ Burial sites are located out of public view and are securely fenced to exclude predation by birds and domestic animals.
- ✓ All dead birds placed in the pit are immediately covered by suitable fill material.



3.4 Protecting surface water, ground water and soils

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

The main risk for impacts on water sources is the management of poultry litter. Good siting of poultry litter application areas and appropriate litter application practices are critical for protecting water resources.

Meat chicken sheds operate as closed systems, with little or no water escaping into the outside environment. Any water spilled inside the shed from bird drinking equipment or during cleaning is readily absorbed by the flooring material and subsequently evaporated.

As a safeguard, a vegetated buffer or other run-off control system (e.g. sedimentation pond) should be provided between meat chicken production areas (including spent litter utilisation areas) and any nearby surface waters. The width of any vegetated buffer or set-back should be determined on a case-by-case basis, with the aim of protecting sensitive waters but not being overly onerous. Generally, buffer width is related to slope and rainfall intensity: steeper slopes and higher average rainfall intensities are associated with wider buffer distances.

In the Sydney drinking water catchment the following fixed buffer distances apply: 40 metres to watercourses and 100 metres to drinking water reservoirs.

Guidance on the design and construction of controls to manage soil erosion risks from disturbed sites (such as during construction) can be found in the *The Blue Book – Managing Urban Stormwater: Soils and Construction* Volume 1, 4th Edition, March 2004 guidelines available from Landcom. Note that this guideline applies to both rural and urban areas. Other volumes of the guideline dealing with other specific activities (e.g. unsealed roads and installation of services) are available at: www.environment.nsw.gov.au/stormwater/publications.htm

Pollution of waters as a result of failure to apply appropriate erosion and sediment controls is considered a contravention of section 120 of the POEO Act and is an offence. Penalties for the pollution of waters can be significant, so it is important that growers implement and maintain appropriate controls in order to protect the environment, themselves and their businesses.



Best management practice recommendations:

- ✓ Vegetated filter strips are developed and maintained around sheds.
- ✓ Spent litter is managed to protect watercourses and ground water in accordance with the NSW DPI guidelines. See *Best practice guidelines for using poultry litter on pastures* (Griffiths 2011).
- ✓ In the **Sydney drinking water catchment** and in **protected oyster catchments** the following poultry litter application buffer distances apply: 40 metres to watercourses and 100 metres to drinking water reservoirs.
- ✓ Farm dams are constructed and maintained, and unsealed roads are located and managed, to reduce soil movement, erosion and dam leakage.
- ✓ On-site wastewater systems (such as septic tanks and aerated wastewater treatment units) are maintained and operated to prevent nutrients getting into streams or ground water.
- ✓ During shed construction, management strategies are adopted to control site erosion and the water quality of runoff as per the requirements of *The Blue Book - Managing Urban Stormwater: Soils and Construction* (Landcom 2004). This includes limiting areas of disturbance and ensuring appropriate placement and maintenance of sediment controls such as sediment traps or ponds, sediment barriers, silt fences and straw bales below fill batters or highly disturbed areas.



Appendix 1: Best management practice checklist

The following list includes best management practices for meat chicken farms.

The checklist is designed to help growers to manage new and existing farms and to help the relevant authorities to assess development applications (DAs).

The checklist can also be used as a planning tool for proposed changes to existing meat chicken farms to identify potential issues that will require further consideration and management.

We strongly recommend that you take a draft of the checklist to any preliminary meeting with the local council (before the DA lodgement) so that you can review it with council planners. You should also consider attaching the final checklist to the DA.

The checklist for planning issues that require addressing as part of a farm management system is included in Manual 1 (Appendix 2).

Note that issues such as the utilisation of spent litter on farm may not be relevant.

BEST MANAGEMENT PRACTICE	YES	NO	N/A
Managing environmental impacts during production (refer to section 2)			
Shed preparation			
Is bedding dry and level? (2.1)			
Is new bedding of sufficient depth (typically 50 mm) to keep the birds from contact with the floor and provide warmth and comfort? (2.1)			
Is bedding transported to the farm and installed in sheds during daylight hours? (2.1)			
If stockpiled, is bedding kept under cover in an area that limits its impact on neighbours? (2.1)			
Water and feed			
Is adequate water provided and treated in accordance with the processor's requirements? (2.2)			
If you propose to use bore, dam or river water, has the water quality been tested and do you have written permission from the processor before building the farm? (2.2)			
In the case of existing farms, has the bore, dam or river water been tested twice a year for mineral analysis and microbacterial cleanliness, and have you discussed the results with the processor? (2.2)			
Are the feed silos kept secure against all pests? (2.2)			
Are systems in place to clean up any spillage around silos immediately if it occurs? (2.2)			
Are automated delivery systems maintained daily and feed-lines kept flowing? (2.2)			
Have the appropriate number of feeder pans or feeder trays been provided for the number of birds placed? (2.2)			
Ventilation, temperature and humidity			
Are maximum and minimum temperatures recorded daily on the shed record cards and Hazard Analysis and Critical Control Point (HACCP) sheets? (2.3)			
Has the shed been pre-warmed in winter to suit the birds' requirements and also in summer if needed, in accordance with the requirements of the Broiler Growing Manual? (2.3)			
Is the shed temperature being adjusted as the birds grow in accordance with the requirements of the Broiler Growing Manual? (2.3)			
Is relative humidity maintained between 50% and 70% to optimise bird comfort? (2.3)			
Is water for cooling purposes of potable standard, or has it been sanitised with an approved disinfectant applied in accordance with label requirements and the processor's biosecurity requirements? (2.3)			



BEST MANAGEMENT PRACTICE	YES	NO	N/A
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Internal shed lighting

Is the lighting program operated in accordance with the requirements of the Broiler Growing Manual? (2.4)			
Is energy-efficient lighting used wherever possible? (2.4)			

Bird health and welfare

Are sheds stocked only at densities that comply with the <i>Model Code of Practice for the Welfare of Animals - Domestic Poultry</i> (ARMCANZ 2002)? (2.5)			
Do you ensure that shed temperatures do not exceed optimal levels for the birds' age, in accordance with the requirements of the Broiler Grower Manual? (2.5)			
Are sheds kept free of predators (cats, foxes, rats, etc) at all times? (2.5)			
Are ammonia levels in sheds controlled (for both bird and human health) by ensuring they are consistently below levels that can be detected by smell (10 to 15 ppm)? (2.5)			
When you are ventilating to remove ammonia from the shed, has temperature and humidity been maintained to a standard appropriate to the age of the birds? (2.5)			
Are all birds that are unable to reach food and water, injured, or unable to walk culled promptly and humanely? (2.5)			
Are dead birds removed from sheds at least once daily? (2.5)			
Immediately before pick-up are the sheds cleared of all dead birds and birds not suitable for catching? (2.5)			
Are birds picked up in the cooler time of the day (generally at night)? (2.5)			
Are you present or readily available during pick-up to help maintain all aspects of bird welfare? (2.5)			
Do you ensure that birds continue to have access to feed until 3 to 6 hours before pick-up, in accordance with the instructions given by the processor? (2.5)			
Is water lifted only when the pick-up crew are arriving at the farm? (2.5)			
Is water and feed promptly provided as soon as a part pick-up is finished? (2.5)			

Noise control during feed delivery, placement and pick-up of birds

Are neighbours considered in the planning of feed deliveries and bird pick-ups? (2.6)			
Are forklifts and other machinery maintained to reduce noise? (2.6)			
Have reversing distances been minimised? (2.6)			
Is close liaison fostered between the farm manager and drivers, pick-up crews and processors to ensure that all are aware of the potential conflicts caused with neighbours by vehicle and machinery use? (2.6)			
Are flashing lights or other suitable warning devices (at night), in combination with reverse warning beepers on trucks and machinery, used in accordance with legal requirements? (2.6)			
Have noise barriers been installed between the sheds and sensitive receptors (such as houses in close proximity)? (2.6)			

Shed and equipment maintenance

Are shed walls and roofs inspected regularly for leaks and immediately repaired to prevent wet patches forming in the litter? (2.7)			
Are ventilation and cooling systems regularly inspected and maintained in good working order? (2.7)			
Are automated environmental controllers and sensors regularly checked? (2.7)			
Are water reticulation systems frequently checked and equipment repaired or replaced immediately where there is a leak or break? (2.7)			
Are feeding and drinking systems inspected and adjusted daily? (2.7)			
Are silos and feed-lines properly maintained? (2.7)			
Is noise-suppressing equipment maintained and excessive noise from machinery and mechanical ventilation minimised? (2.7)			
Are sheds and surrounds maintained to ensure they are clean and tidy? (2.7)			



BEST MANAGEMENT PRACTICE	YES	NO	N/A
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Pest management

Are sheds maintained to exclude wild birds? (2.8)			
Is spilled feed cleaned up immediately to avoid attracting wild birds? (2.8)			
Are rat-proof dwarf walls maintained and any entry points blocked with durable materials (iron grills, heavy-gauge sheet metal and concrete)? (2.8)			
Are pest breeding sites checked for and minimised (holes, burrows, rubbish piles, etc)? (2.8)			
Is a baiting program maintained? (2.8)			
Is a record of the baiting program kept in accordance with the requirements of the <i>National Farm Biosecurity Manual - Poultry Production and the Pesticides Act 1999</i> ? (2.8)			

Managing chemicals and fuel

Are all staff and contractors trained in the safe use and handling of chemicals and spills? (2.9)			
Do all staff have access to appropriate protective equipment? (2.9)			
Are only accredited people involved in the use of chemicals? (2.9)			
Are chemicals stored and used correctly? (2.9)			
Are only small quantities of necessary chemicals kept on site? (2.9)			
Are manufacturers' instructions of use strictly adhered to? (2.9)			
Is a record kept of all chemicals used, in accordance with the requirements of the <i>Pesticides Act 1999</i> and associated Regulations and Occupational Health and Safety Legislation? (2.9)			
Is a register kept of all dangerous goods or combustible liquids (e.g. gas or diesel), in accordance with Occupational Health and Safety Legislation? (2.9)			
Are Material Safety Data Sheets (MSDSs) available on-site for all chemicals stored and used? (2.9)			
Is appropriate signage affixed on storage areas (e.g. HAZCHEM)? (2.9)			
Are procedures in place, and is equipment available, to contain and clean up a spill or leak, and are these procedures documented in an emergency response plan? (2.9)			
Are empty drums disposed of in accordance with the manufacturers' instructions? (2.9)			

Environmental monitoring and recording

Has an Environmental Management Plan been developed, documented and implemented? (2.10) (Appendix 3).			
Are regular subjective checks performed to monitor potential sources of odour, dust or noise, particularly at potentially high impact times such as during litter clean-out, shed disinfection and spent litter application, and when adverse weather conditions prevail? (2.10)			
Are records kept of any problems encountered and proposed methods of solving the problems? (2.10)			
Are records kept of prevailing weather conditions and management actions adopted to minimise risks associated with high-risk situations (2.10)			
Are the protocols and equipment required for ground water and surface water monitoring maintained? (2.10)			

Biosecurity

Are staff trained in biosecurity procedures in accordance with the <i>The National Farm Biosecurity Manual for Chicken Growers</i> (ACMF 2010) and with any additional processor biosecurity requirements? (2.11)			
Are visitors required to sign in before entering the production area, and is a visitors' book available for use all times? (2.11)			
Are visitors prohibited from entering the sheds unless they are authorised to do so and wear appropriate protective equipment? (2.11)			
Is a clean foot-bath filled with approved disinfectant maintained for the use of anyone entering sheds? (2.11)			
Are wild birds, pets and other animals kept out of the sheds at all times? (2.11)			
Are approved rodent-control products and procedures being used? (2.11)			



BEST MANAGEMENT PRACTICE	YES	NO	N/A
Do you ensure that on-farm equipment is not shared with other poultry farmers? (2.11)			
Are other poultry farmers discouraged from entering the farm ? (2.11)			
Are all vehicles entering the biosecure area disinfected using wheel-wash facilities (2.11)			
Is rubbish regularly removed from the farm, and are the shed environs kept mown and neat? (2.11)			
Do feed silos and medication tanks have lids, and are they secured to prevent access by birds and animals? (2.11)			
Is any material brought in for shed bedding checked for freedom from rodent and bird droppings? (2.11)			
Are dead birds being disposed of in an approved manner? (2.11)			
Are cooling pads regularly treated with disinfectant? (2.11)			

Litter management in the shed

Do bedding suppliers provide a vendor declaration certifying that the material provided is free of contamination, and is the declaration kept with the batch records? (2.12)			
Are shed floors constructed of an impermeable material, and are floors level before bedding is spread? (2.12)			
Is the amount of bedding required and supplied in each shed recorded on the batch card? (2.12)			
Is litter moisture content visually monitored in each shed daily, with particular emphasis on likely high moisture areas? (2.12)			
Is litter moisture content maintained between 15% and 30% (wet basis)? (2.12)			
Do you take immediate action to identify, and if possible eliminate, gut problems in birds causing wet litter problems? (2.12)			
Are areas of wet or caked litter within the shed regularly removed and replaced, topped up or aerated (rotary hoed) to enhance drying? (2.12)			
Are foggers maintained and operated to avoid the formation of coarse drops that fall to the floor? (2.12)			
Are fans and ventilation systems used in cold weather in a manner that will prevent moist incoming air from condensing on the floor next to the walls and making the litter wet and cold? (2.12)			
Is excessive dust generation controlled by fogging the shed, when required? (2.12)			
Are beetle populations controlled via an integrated pest management approach by using pesticides, composting and total shed-litter clean-out? (2.12.1)			
Are chemicals used that do not restrict the application of used litter to land? (2.12.1)			

Managing odour

Is best practice waste management followed? (2.13)			
Are appropriate shed clean-out, cleaning and disinfection practices implemented between bird batches? (2.13)			
Are vegetative screens used to filter airflow and reduce dust levels, and/or are impact walls constructed to redirect the odour plume? (2.13) (2.18)			
Are farm operations planned and performed to minimise the impact of odour on nearby sensitive land uses or receptors? (2.13)			
Is dust emission minimised? (2.13) (2.14)			
Are proven odour reduction technologies used in consultation with regulatory authorities (such as the local council or EPA) and the processor? (2.13)			

Managing dust

Are moderate driving speeds (<40 km/h) maintained on unsealed roads? (2.14)			
Are loads securely covered for transport? (2.14)			
Are farm operations planned and performed to minimise the impact of windblown dust on nearby sensitive land uses? (2.14)			
Is road wetting undertaken as a contingency action if unacceptable dust emission from significant truck movements is likely? (2.14)			
Have vegetative screens, impact walls, earthen mounds or enclosures at the end of tunnel-ventilated sheds been installed as control measures against unacceptable dust impact? (2.14)			



BEST MANAGEMENT PRACTICE	YES	NO	N/A
Managing noise			
Is all mechanical equipment regularly maintained to minimise the generation of mechanical noise and the likelihood of offsite vibration? (2.15)			
Are landscaping or other noise controls managed and maintained to mitigate noise? (2.15)			
Are farm staff aware of noise risks, and do they minimise noise outside sheds? (2.15)			
Are bird pick-ups and associated night-time activities done with minimum noise generation? (2.15)			
Are exhaust-muffling equipment and adjustable reversing alarms or lights used on vehicles? (2.15)			
Are the surfaces of roads, loading areas and parking spaces maintained to allow all-weather access and minimise noise and dust impacts? (2.15)			
Are feed deliveries and other truck movements (apart from bird pick-up) restricted to daylight hours, except in emergencies or with council consent or where there is low impact on neighbours? (2.15)			
Managing traffic			
Do you have a plan to ensure that off-farm vehicle movements have minimal detrimental amenity impacts? (2.16)			
Is the use of truck air/exhaust brakes avoided near sensitive receptors/areas? (2.16)			
Have you liaised with contract drivers, bird pick-up crews and processors to ensure awareness and minimisation of traffic impacts on neighbouring sensitive land uses? (2.16)			
Managing external light sources			
Are lights used to illuminate the site for security and bird pick-up angled or shielded so that they do not directly illuminate any nearby sensitive land uses? (2.17)			
Are car parks and roads situated and/or screened to prevent stray lighting from vehicle headlights directly illuminating any nearby sensitive land uses? (2.17)			
Are vegetative screenings, earthen banks or constructed walls used to screen against light impact? (2.17)			
Managing visual impact and landscaping			
Is landscaping being maintained to ensure that it remains effective? (2.18)			
Are the buildings and the overall site being maintained in a functional and tidy condition at all times? (2.18)			
Management of extremes and emergencies			
Are warning systems installed to notify the operator of power or water supply failure? (2.19.1)			
Is back-up power supply available with adequate fuel supply? (2.19.1)			
Are standby generators run regularly (at least weekly) to ensure that they are working effectively? (2.19.1)			
Is an adequate supply of spare parts kept on hand (e.g. for water pumps for the cooling or drinker system)? (2.19.1)			
Have noise impacts been addressed during the installation of standby generators? (2.19.1)			
Has a back-up supply of at least 2 days' water been provided in case of breakdown or loss of supply? (2.19.1)			
Does the farm have a written current contingency plan for reporting and disposal of mass mortalities that is available to all staff, and are they aware of their responsibilities? (2.19.2)			
Managing community liaison and complaints			
Are neighbouring sensitive land users informed of unusual events or problems that may affect their facilities? (2.20.2)			
Are significant operational activities recorded - particularly those that have potential environmental impacts? (2.20.2)			



BEST MANAGEMENT PRACTICE	YES	NO	N/A
When a complaint is justified, is relevant evidence gathered and identified, with strategies implemented to remedy the problem? (2.20.2)			
Is the complainant informed of the outcome of the investigation and any actions taken to avoid recurrence of the problem? (2.20.2)			
Do you have a good neighbour policy, including a complaints management system? (2.20.3)			
Has an abnormal odour event procedure been developed? (2.20.3)			
If complaints are ongoing, are weather conditions monitored daily? (2.20.3)			
Are full details of any complaints received recorded in a complaints register, along with results of investigations and corrective actions taken? (2.20.3)			
Has an automatic weather station been installed and maintained on farms where there is an increase in validated complaints? (2.20.3)			

Managing wastes

Is a well-managed shed clean-out and shed disinfection program maintained to minimise the increased risk of disease, odour, dust and noise emissions from the farm? (3.1)			
Is shed cleanout normally done during daylight hours to minimise noise, dust and odour impacts? (3.1)			
Is any material that represents a risk to flock health removed from the sheds and aprons during a partial or full clean-out? (3.1)			
Are shed walls, ceilings and equipment disinfected with a biodegradable, registered product? (3.1)			
Is litter removed at times when climate factors limit the likelihood of offensive off-site odour or dust impacts? (3.1)			
Is spent litter removed from the farm or operational area immediately as sheds are cleaned-out? (3.1)			
Is used litter transported from the farm in covered vehicles to avoid spillage and dust emissions? (3.1)			
Is poultry litter managed, stored and applied in accord with NSW DPI guidelines and the <i>National Environmental Management System for the Meat Chicken Industry</i> (RIRDC 2002)? (3.2)			
Are litter re-use areas designed and managed to achieve a nutrient balance and ensure nutrients are used sustainably? (3.2)			

Dead birds

Do farm practices for dead-bird management and disposal comply with the <i>National Farm Biosecurity Manual for Chicken Growers</i> (ACMF 2010)? (3.3)			
Are dead birds disposed of or stored in a freezer within about 24 hours of dying? (3.3)			
Has an appropriate method of disposing of dead birds been adopted in consultation with the processor and regulatory authority (e.g. the local council or the EPA)? (3.3)			
Do you have a contingency plan in place for disposal of mass bird mortalities? (3.3)			
Is the collection point in a designated area located as far away as possible from the operational area of the farm and from adjoining residences? (3.3.1)			
Is the collection point appropriately screened or signposted, and does it have adequate room for stopping and loading? (3.3.1)			
Is spillage in collection areas immediately cleaned and decontaminated? (3.3.1)			
Are carcass-storage containers and the collection area regularly cleaned and disinfected to minimise spread of disease by flies? (3.3.1)			
Do you have a contingency plan for situations where dead birds cannot be collected promptly? (3.3.1)			
Are records maintained of collection (date and mass)? (3.3.1)			
Are personnel disposing of dead birds instructed on the need to maintain personal hygiene? (3.3.1)			
Do the designs of on-site composting systems comply with council regulations and the <i>Environmental Guidelines: Composting and Related Organics</i> (DECC 2004)? (3.3.2)			



BEST MANAGEMENT PRACTICE	YES	NO	N/A
Is the size of the compost bins sufficient to handle the predicted volume of routine dead birds, with additional capacity to manage periodic fluctuations? (3.3.2)			
Are compost bins located as far as possible from property boundaries and sensitive land uses and out of public view? (3.3.2)			
Are compost bins located away from production areas and sheds? (3.3.2)			
Are compost bins sealed and regularly serviced and maintained? (3.3.2)			
Are compost facilities located on an impermeable base, with any leachate being collected and managed via drains or ponds? (3.3.2)			
Are rodents, cats, dogs, feral animals and scavenging birds excluded from composting carcasses? (3.3.2)			
Are dead-bird collection and disposal areas covered to minimise the presence of flies? (3.3.2)			
Are bird-burial sites located out of public view? (3.3.3)			
Is the bottom of the trench or pit at least 3 metres above the maximum watertable? (3.3.3)			
Is the trench or pit designed so that there is no surface or sub-surface seepage and no surface water entering? (3.3.3)			
Are burial cells lined with a modified soil or clay liner of at least 900 mm of re-compacted clay with in-situ permeability (k) of less than 10^{-9} ms ⁻¹ , or an equivalent synthetic liner product? (3.3.3)			
Does the liner cover the base and all sides of the burial cell, so that the ground water is protected from contamination? (3.3)			
Have all dead birds placed in the pit been immediately covered by suitable fill material? (3.3.3)			
Is the trench or pit covered daily to contain odours and exclude pests? (3.3.3)			

Surface water, ground water and soils management

Are vegetated filter strips maintained around sheds? (3.4)			
Is spent litter managed to protect watercourses and ground water in accordance with NSW DPI guidelines? (3.4)			
Have you adhered to the appropriate poultry litter application buffer distances in the Sydney drinking water catchment and protected oyster catchments (40 metres to watercourses and 100 metres to drinking water reservoirs)? (3.4)			
Are farm dams constructed and maintained, and unsealed roads located and managed, to reduce soil movement, erosion and dam leakage? (3.4)			
Are on-site wastewater systems (septic tanks and aerated wastewater treatment units) maintained and operated to prevent nutrients getting into streams or ground water? (3.4)			
During shed construction, have management strategies been adopted to control site erosion and the water quality of runoff, as per the requirements of the <i>Managing Urban Stormwater Guidelines</i> ? (3.4)			



Appendix 2: Quality assurance systems

Food consumers have become more sophisticated and knowledgeable in their buying habits, placing greater pressure on retailers and processors to ensure that the food they provide is demonstrably wholesome and safe. Regulatory authorities are also taking a greater interest in the ability of food companies to demonstrate that the food they supply meets acceptable standards for food safety.

In this environment, processors have to be able to demonstrate that they have programs in place to assure that their products are produced hygienically and meet minimum standards for food safety. To do this, they are required to operate a quality assurance program incorporating Hazard Analysis and Critical Control Points (HACCP). This requirement is now being extended right along the food production chain to include poultry growers.

It is now a requirement in NSW that each grower develops and implements a Food Safety Management Statement (FSMS) for their farm that is based on quality assurance principles in accordance with the **Food Standards Australia New Zealand (FSANZ) standard**. Processors are helping growers to do this.

Any inquiries regarding implementation of the FSANZ Primary Production and Processing Standard for Poultry Meat (Standard 4.2.2) should be referred to the NSW Food Authority (www.foodauthority.nsw.gov.au or phone 1300 552 406).

Key elements of an effective quality assurance system

Quality assurance (QA) for a poultry farm refers to a program set up by you for systematic monitoring and evaluation of the various aspects of running your farm. This ensures that your broiler-raising operation is effective and that set standards are being met.

It is important to recognise that poultry production quality standards are generally determined by the processor in response to the requirements of their customers and the regulatory authorities. Although QA cannot absolutely guarantee the production of quality products, it makes it more likely.

Two key principles characterise QA: 'fit for purpose' (the product should be suitable for the intended purpose) and 'right first time' (mistakes should be eliminated). QA includes all functions on the farm, including shed set-up, receiving of chickens and feed, husbandry of the chickens, chicken pick-up, environmental management, occupational health and safety, and hygiene and food safety.

There are three particular tools available to help growers to develop effective quality assurance programs:

- » Hazard Analysis and Critical Control Points (HACCP)
- » A food safety management statement (FSMS) for NSW Poultry Producers
- » Environmental Management Plans (EMPs).

Hazard Analysis and Critical Control Points (HACCP)

HACCP is an international principle defining the requirements for effective control of food safety.

Hazard analysis identifies food safety hazards that are likely to cause illness or injury to consumers, whereas Critical Control Points (CCPs) identify points in the process that are critical to reducing, preventing or eliminating food safety risks.



HACCP is used to control any point in the food system that presents a hazardous situation, preventing hazards at the earliest point in the food chain. The benefits of HACCP are:

- » The focus is on prevention of problems rather than detection of problems.
- » It provides a scientific approach to problem solving.
- » It promotes awareness of food hazards and how to take immediate corrective action.
- » It is the most effective method of maximizing product safety.
- » It provides increased confidence that safe food is produced.
- » It provides proof of all reasonable precaution and all due diligence.

HACCP requirements include the implementation of seven principles plus five other preliminary steps:

Preliminary steps

- » assembly of the HACCP team if appropriate (all people involved with growing of chickens on farm)
- » description of product
- » identification of the intended use
- » construction of flow diagrams
- » on-site confirmation of flow diagrams.

Seven principles

- » Conduct hazard analysis.
- » Determine CCPs.
- » Establish critical limits.
- » Establish a monitoring system for CCPs.
- » Establish corrective actions.
- » Establish verification procedures.
- » Establish documentation and record-keeping procedures.

Growers should contact their processors for help in developing their programs.

Developing a food safety management statement (FSMS)

Note: This guideline FSMS is intended for contract chicken growers. It was developed by the Australian Chicken Meat Federation to reflect the circumstances and structures generally in place in contract poultry growing.

- » Completion of an FSMS is a legal requirement for all commercial poultry producers under the Australia New Zealand Food Standards Code – Standard 4.2.2 – Primary Production and Processing Standard for Poultry Meat, which came into effect on 20 May 2012.
- » This document was developed to help businesses that produce poultry under contract to poultry meat processors.
- » The *National Farm Biosecurity Manual for Poultry Production* (2009) is an important reference document, in that the Implementation Sub-Committee of the Food Regulation Standing Committee (consisting of all relevant regulators of the states and territories) has agreed that compliance with the manual will be deemed to satisfy the requirements of the FSANZ Poultry Meat Standard for poultry production.



- » The *National Farm Biosecurity Manual for Chicken Growers*, published in February 2010 reflects the specific circumstances encountered in the industry that grows meat chickens under contract to processors. The manual is entirely consistent with the 2009 *National Farm Biosecurity Manual for Poultry Production*. Both manuals are available at www.chicken.org.au/downloads. Accordingly, compliance with the *National Farm Biosecurity Manual for Chicken Growers* demonstrates compliance with the *National Farm Biosecurity Manual Poultry Production*.

The FSMS must include the following:

Purpose

The purpose of the FSMS is to demonstrate management of this poultry production business in accordance with the FSANZ Poultry Primary Production Processing Standard and the *National Farm Biosecurity manual for Chicken Growers* (which is equivalent to the *National Farm Biosecurity Manual for Poultry Production*).

Business details

Name of business:

Address of business:

Phone no:

Email:

Description of activities undertaken by this business: Growing of meat chickens under contract to _____ (add name of processor). One-day-old meat chickens are delivered by the processor for whom birds are grown. Ownership of the birds remains with the processor, who will arrange for pick-up when they reach the required processing size. Processors provide the feed, medication, technical and veterinary advice.

Approximate capacity (maximum number of meat chickens on the farm at any one time): _____ birds in _____ separate sheds

Approximate number of meat chickens sent for processing each year: _____ birds

Name of Proprietor or designated representative:

Signature:

Date:

Name of processors/businesses supplied to:

Name of State Regulatory Authority:

Simple schematic farm map specifying site of poultry production (attached).

Management responsibility

Scope of the Food Safety Management Statement (activities undertaken at the business):

- » The scope of this Food Safety Management Statement covers the activities undertaken at: _____ (add name of poultry business).
- » The business receives one-day-old meat chickens delivered by the processor for whom the business grows birds, keeping them until they reach processing size, at which point they get picked up by the processor.



Management commitment

The management at this poultry business is committed to ensuring that poultry is grown and presented to the processor in a healthy condition suitable for processing into poultry meat for human consumption. It is management's responsibility to ensure that the outcomes are achieved through the application of the procedures and maintenance of records as described in the Food Safety Management Statement.

Poultry production operations

Flock maintenance

Monitoring of sheds:

- » Each shed is checked physically at least twice a day and monitored for suitable water and feed supply. Sheds with computer control can also be monitored remotely at other times.
- » Dead birds are removed from the shed daily.
- » Sick and unthrifty birds are culled at least daily.
- » Mortalities and culls are recorded daily, either on paper or on the shed computer, or both.
- » Issues identified during the process of removal of dead birds will be rectified.
- » Nominated person for removal of dead birds is identified.

Use of veterinary pharmaceuticals:

- » Veterinary pharmaceuticals are administered only in accordance with instructions from the company vet or his/her representative.
- » Documentation from the processor representative will provide details of sheds to be treated and dosage and duration of treatment, as well as details of any withholding periods.
- » Grower will attach this document to batch records.

Live poultry transport

Before pick-up:

- » Immediately before pick-up, the shed is inspected by walking through and removing any unthrifty birds or birds unfit to load.
- » Farm operator or a nominated worker is responsible.

Records of pick-up:

- » Documentation, including shed number, number of birds picked up and trailer identification, will be completed by pick-up supervisor.
- » Farm operator will keep the documents with the batch records.

Note: Transport, including provision of transport equipment, crates or modules and pick-up crews, is under the control and responsibility of the processor.

Inputs

Stockfeed

Feed receipt:

- » Farm operator provides written instructions for the driver of each delivery on the placement of feed in the appropriate bins.
- » The delivery docket for each delivery is retained with the batch records.
- » A record is made of each delivery, showing date received quantity and type of feed.



Feed storage and handling:

- » Feed is pumped or augured into closed bins.

Feeding of birds:

- » Closed augers deliver feed into the shed as required by the feeding system in the shed.

Feed records:

- » Records are maintained by the farm operator.

Note: Feed is provided by the processor, and feed composition and quality at the time of delivery are the processor's responsibility.

Veterinary medicines

Veterinary medicine use:

- » Veterinary pharmaceuticals are used in accordance with the label or as per the directions of the company's veterinarian and any withholding periods are adhered to.
- » Veterinary pharmaceuticals are only administered by trained personnel in accordance with instructions from the company vet or his/her representative.

Records:

- » Records are maintained as described in section 2.1.

Note: Veterinary medicines (including any in-feed medications) are administered only at the direction of the processor.

Water supply

- » The water-sanitizing system (other than for town water) is checked regularly and at least once for every batch of birds, and there is a system for checking treatment levels daily. Pathogen levels are checked annually.
- » Water treatment systems are checked daily and the appropriate parameters are recorded (e.g. chlorine levels in ppm or an oxidation reduction potential reading). A record sheet is retained with batch records at the end of the batch.
- » Treated water is used for drinking water for birds (closed system) and for cooling systems and shed washdowns.

Sourced chicks

Receival of day-old chicks:

- » Day-old chicks are delivered to the farm in suitably designed vehicles. Delivery times are designated by the hatchery. Birds are placed in sheds set up for brooding (i.e. feed and water is easily accessible by day-olds and the shed temperature is at a specified level).

Records:

- » Placement docketts are kept with batch records. The number of birds delivered to a shed and the donor flock age or chick weight is also transferred to batch cards.

Note: Day-old chicks are provided by the processor and the disease status of chicks is not independently checked by the grower.



Litter

Purchase:

- » Litter is purchased from an appropriate industry-recognised supplier.
- » Litter must be delivered in clean trucks and not sourced from treated timber (e.g. chromate copper arsenate, CCA). Litter should also be dry; where dry litter cannot be sourced then it must be dried in the shed before chick placement.

Handling of new litter:

- » Litter is placed in sheds and spread by mechanical means.

Waste disposal

Dead birds

Dead birds are collected from sheds once daily and dealt with in one of the following ways:

- » collected by a contractor on at least a weekly basis
- » stored in freezer until collected by a contractor
- » composted in purpose-built structures
- » incinerated by approved farm personnel.

If dead birds are removed from the farm by a contractor then the invoice for the service is kept with the batch records. Mortalities and culls are recorded and disposal of dead birds is recorded.

Spent litter

- » Spent litter (i.e. litter not intended to be re-used) is removed from the production site by the litter contractor at the end of each batch.
- » The contractor provides documentation of the quantity removed from each shed. The documentation is kept with the batch records.
- » Litter that is to be re-used is pasteurized by being heaped in windrows to facilitate heating, or otherwise treated.
- » The type of cleanout is noted in the batch records.

Health and hygiene

Hygiene and sanitation practices of employees and visitors

Staff:

- » All personnel are required to comply with the *National Farm Biosecurity Manual for Chicken Growers* requirements, including the use of freshly laundered clothing and footwear before commencing operations, as approved by the facility manager.
- » All personnel must practise hand sanitizing and use foot baths before entering sheds.

Visitors:

- » All visitors are required to comply with the *National Farm Biosecurity Manual for Chicken Growers* requirements, including the use of freshly laundered clothing and footwear as approved by the facility manager, before entering sheds.
- » All visitors must practice hand sanitizing and use of footbaths before entering sheds.
- » Visitors shall move through the premises in one direction (i.e. from day-old chicks through to older birds).



Records:

- » A record of visitors is kept. Entry to sheds is limited to essential personnel only.

Biosecurity measures

The farm has biosecurity measures in accordance with the *National Farm Biosecurity Manual for Chicken Growers* in place to protect the birds from the introduction of illnesses or other health-associated ailments that may affect poultry meat safety.

These measures include:

- » access-control procedures (staff, visitors and equipment)
- » bird, wild animal, livestock and rodent control
- » water sanitation.

Cleaning of sheds after each batch

- » Walls, ceilings, drinkers and feeders are washed with clean water and detergent as required to ensure that the pathogen load is minimised before the spreading of new or pasteurized/treated used litter and placement of day-old chicks.
- » Sheds are treated as required in accordance with the cleanout program specified by the processor.
- » Chemicals used are supplied or specified by the processor or approved for use by the supplier.

Chemicals used:

Detergent

Insecticide

Sanitiser

Skills and knowledge – biosecurity

Induction of personnel

- » All new staff are trained in the biosecurity requirements and given a copy of the *National Farm Biosecurity Manual for Chicken Growers* when they are first employed.
- » All staff are required to read and sign the personnel quarantine declaration (Appendix 1 of the *National Farm Biosecurity Manual for Chicken Growers*).
- » Dated copies of the signed personnel quarantine declarations are kept in the personnel file.
- » Operational training is given before the start of duties (new employees).
- » All new staff are given training in their particular duties before they start each activity.

Refresher training

- » At least yearly, all staff are required to undertake refresher training in the biosecurity requirements applicable to their duties and to re-sign the declaration in Appendix 1 of the *National Farm Biosecurity Manual for Chicken Growers*.
- » Training is noted on the quarantine declaration form in Appendix 1 of the *National Farm Biosecurity Manual for Chicken Growers*.



Design, construction and maintenance of premises, equipment and transportation vehicles

Premises

- » Maintenance is done as required under the direction of the farm operator.
- » Staff are required to report any items requiring attention. Records are maintained of any major items.

Cleaning of sheds after each batch

See section 5.3.

Equipment

- » Machinery (e.g. tractors entering a shed in production or ready for production) must be clean before entry.

Transportation

- » The processor is responsible for the transport of day-old-chick delivery to the farm and finished poultry pick-up and delivery to the processing plant.

Pest control

- » A detailed log of all rodent baiting, including a location map, is maintained. Bait stations are checked regularly and replaced as necessary. Further evidence of pest control will be the fact that the production area and its surrounds are kept neat and tidy, with no long grass or debris, no open standing water, no spilt feed.
- » Sheds are to be treated for insects in accordance with the program required by the processor.
- » Insecticides are to be either supplied by the processor or approved for use by an approved supplier.
- » Pest control is in line with sections 2.8 to 2.12 of the *National Farm Biosecurity Manual for Chicken Growers*.
- » A log of inspections is maintained and kept with the batch records. The farm operator is responsible for this.

Traceability

Traceability system

All inputs (day-old-chicks, feed, litter, and pharmaceuticals) are documented in terms of origin, date and quantity.

All outputs (poultry for processing, dead birds, used litter) are documented (date, quantity and destination, including processing plant, purchasing organisation and contractor details).

The information listed above is maintained in the farm records, giving details (where appropriate) of the specific sheds or flocks to which the information relates, in order to ensure the greatest possible traceability at the flock level.

Sale and supply

Unlike other livestock producers, contract chicken growers do not own the birds but rather are contracted by a processor to manage the birds from the day they are delivered to the farm until they are picked up by the processor for delivery to the processing plant.



Before pick-up

- » Immediately prior to pick-up, the shed is inspected by walking through and removing any unthrifty birds or birds unfit to load.
- » See also section 2.2 for details.

Records of pick-up

- » See section 2.2 for details.

Note: Transport, including provision of transport equipment, crates or modules and pick-up crews, is under the control of the processor.



Appendix 3: Developing an Environmental Management Plan

Effective operation and management of a meat chicken farm is critical for avoiding or significantly reducing potential environmental problems and for minimising conflict with neighbours and regulatory authorities.

Manuals 1 and 2 document a comprehensive range of possible best practices to avoid or reduce significant environmental impacts and ensure that relevant legislation is complied with. Each meat chicken farm, however, has its own specific features and corresponding risks. Hence not all best practices are applicable or relevant to every farm. Environmental issues and relevant practices can also change over time.

Environmental Management Plan (EMP) features and benefits

Developing an EMP demonstrates a formal commitment by the grower to take all reasonable and practical steps to operate the meat chicken farm in an environmentally (as well as economically) sustainable manner and to be a good neighbour.

An EMP for a meat chicken farm additionally provides a structure for identifying and documenting:

- » the significant environmental risks specific to a particular farm
- » the specific, relevant design or management practices that will be adopted to either avoid or minimise those farm specific risks
- » a timetable (schedule) for checking those farm management practices to verify that the most relevant practices are adopted
- » who is responsible for checking (monitoring) what actually happens on site
- » what records should be kept and who is responsible for keeping those records
- » any required additional improvements identified as a result of periodic monitoring.

An EMP is also a useful tool for:

- » checking that relevant best practices have been adopted in time to avoid conflict with neighbours and authorities
- » helping to avoid the need for costly retrofit solutions that attempt to partially fix a problem that might have been dealt with far better (and for less cost and with less stress) if it had been identified much earlier and acted on sooner
- » ensuring that staff and contractors are aware of the key environmental issues and the best practices you expect to be adopted
- » demonstrating to regulatory authorities that you are aware of the critical issues and willing to adopt relevant practical management actions that comply with industry standards.

Hence completing an EMP can help with preparing a Development Application and may be an essential condition for gaining development consent.

An up-to-date EMP that documents routine checking of any issues and of any relevant changes adopted may also be a practical defensive tool when regulatory authorities investigate formal complaints about possible breaches of development consent or of environmental regulations such as those under the POEO Act.

Developing an EMP also can be a useful first step in developing and adopting a more formal quality assurance program if this is required by the processor.



Reviewing the EMP

Although reviewing the issues and listing the key steps that should be adopted to manage the farm sustainably is a good start, routinely reviewing (checking) the EMP is also essential to ensure that:

- » the relevant actions have been completed
- » best practices are consistently implemented (and do not lapse)
- » new issues have not arisen, or better technologies options have not emerged for managing difficult issues (e.g. poultry odour).

Under more formal quality assurance programs and environmental management systems, the monitoring and reporting on environmental performance and any necessary improvements is done by an independent, qualified assessor.

For meat chicken farms with a low or moderate risk of conflict or environmental challenges, completion of an annual EMP check and review that is signed off and dated by the farm manager is sufficient. However, a joint or independent review by another person who is not regularly involved in farming operations on the site (e.g. another poultry farmer, or a processor or industry representative) can really help to make sure that the review is completed on time and that important issues or treatment options are not overlooked.

EMP components

Each issue and response needs to be relevant to the particular site and farming operations. Hence there is no set format as to the topics covered or the prescribed responses. However, a list of common procedures relevant to the operation of a meat chicken farm may include, but not be limited to, the following:

- » maintenance of feeders and feed infrastructure
- » maintenance of water system, including drinkers and delivery system
- » management and storage of dead birds
- » monitoring of litter conditions
- » management and maintenance of stormwater and infrastructure
- » management of pests and vermin
- » litter clean-out
- » shed cleaning and decontamination
- » irrigation of stormwater
- » management of vegetation/landscaping
- » application of spent litter on-farm (if required)
- » sales of spent litter (if required)
- » chemical storage and use
- » community amenity monitoring
- » water resources monitoring (if required)
- » soil monitoring (if required)
- » sampling containers and record sheets (if required)
- » construction requirements
- » location of documentation, including the farm management plan
- » traffic, equipment and vehicle movements and maintenance
- » staff training
- » mass disposal of dead birds
- » community consultation
- » complaints recording.



Additional procedures can be developed to improve the general operation and environmental performance of a farm.

The EMP can also set out the training requirements and training records of all relevant personnel. Train all staff, contractors and visitors in relevant procedures and operations of the farm. Other training may also be required, depending on the staff and contractor tasks. Training may include:

- » development of a farm EMP
- » environmental awareness
- » farm biosecurity measures
- » dangerous goods handling and use
- » application of chemicals
- » workplace health and safety.

Getting started with your EMP

A training program run by the Australian Chicken Growers Council Limited (ACGC), with support from the Commonwealth Department of Agriculture, Fisheries and Forestry 'Pathways to Industry EMP Program', aims to help meat chicken growers to develop and implement EMPs on farm. Growers, processor representatives and regulators are encouraged to participate in this initiative and attend a training course.

Several generic EMPs for meat chicken farms can also be obtained from:

- » RIRDC (Rural Industries Research and Development Corporation) 2003. National Environmental Management System for the Meat Chicken Industry. Publication No. 03/038, available at www.rirdc.gov.au
- » Department of Infrastructure, Planning and Natural Resources 2004. Guideline for the Preparation of Environmental Management Plans. Available at www.planning.nsw.gov.au/rdaguidelines/documents/emp_guideline_publication_october.pdf
- » Victorian Department of Primary Industries 2001. Generic Environmental Management Plan. Available from www.dpi.vic.gov.au/agriculture/about-agriculture/legislation-regulation/all-acts/code-broiler-farms/generic-emp

Additional Information on Environmental Management Plans and systems is available from NSW DPI and the Rural Industries Research and Development Corporation.



Appendix 4: Definitions

These definitions apply to both Manual 1 and Manual 2.

Advice agencies – Agencies consulted by the assessment manager for advice in relation to planning applications. They may only recommend that conditions be opposed and have no powers over approvals.

Applicant – Any person or company submitting a DA for land-use approval (also called the proponent or developer).

Appropriate regulatory authority – The authority responsible for development consent approval other approvals or licences under environmental legislation and/or for regulating or providing advice on development and operational issues. Examples are the local council or the Office of Environment and Heritage (OEH).

Assessment manager – The agency responsible for deciding if a planning application has been properly made, issuing acknowledgment notices, determining the referral agencies that require input into the application assessment and assessing whether the application is successful through an assessment of the environmental impact of proposals against the provisions of the EP&A Act 1979 and relevant industry guidelines.

Best management practice (BMP) – The underlining philosophy of BMP is the adoption of management practices that reflect the best information and technologies presently available. The best management practices continually change as new information and research demonstrates improved methods. Hence, BMP encourages continual improvement.

Bioaerosol – An aerosol that contains live or dead micro-organisms or biological fractions.

Biosecurity – Protection from biological contaminants such as disease organisms.

Buffer zone – The distance between the odour source (shed centroid [see below] or spent litter utilisation area) and the boundary of the property from which the odour source arises. (i.e. on the land owned by the poultry farm).

Bund – Watertight wall designed to prevent liquid escaping or entering as a result of seepage or leaks, or to reflect noise.

Centroid – A centroid is a point 25 metres out from the exhaust end of a tunnel-ventilated meat chicken shed, assuming that 90% or more of the total emissions from the shed are discharged by the fans and the shed is operated only as a fan-forced tunnel shed. Each shed will have its own centroid for the purposes of calculating separation and buffer zone distances. Where it cannot be demonstrated that 90% of the emissions will be discharged from fans in sheds operated as fan-forced tunnel sheds, the centroid concept is not applicable.

Community amenity – A fact or condition being agreeable to the community.

Composting – Breakdown of organic matter by microbial action.

Concurrence agencies – Agencies used by the assessment manager for advice in the assessment of planning applications. These agencies are able to request further information from the applicant, direct the imposition of approval conditions, and direct the assessment manager to refuse an application.

Conditional consent – Approval of a DA by a consent authority subject to one of more binding conditions.



Consent authority – Authority responsible for approving a DA (usually the local council in relation to a development, or the EPA in relation to a licence).

Contaminant – A gas, liquid or solid; an odour; an organism (whether alive or dead), including a virus; energy, including noise and heat; or a combination of these.

Contamination – The release of a contaminant to the environment in the form of a gas, odour, liquid, solid, organism or energy.

Controlled drainage area – An area that collects contaminated stormwater runoff and excludes clean rainfall runoff.

Development application (DA) – Application to a consent authority for approval to develop the land.

Development control plan (DCP) – Council guidelines for development, often with prescriptive requirements for setbacks of sheds, etc.

Designated development – A development with the potential for significant environmental effect, and therefore requiring an EIS to accompany the DA. Criteria for designated developments are determined in the EP&A Act 1979. Many designated developments will also require a licence from the OEH.

Dispersion modelling – Computer-based software modelling used to mathematically simulate plume dispersion under varying atmospheric conditions; used to calculate special and temporal fields of concentrations and particle deposition due to emissions from various source types.

Environmental Impact Statement (EIS) – A detailed assessment of the potential environmental impacts of a proposed development. It is submitted as part of a DA. An EIS is necessary for designated developments and for state significant development.

Environmental Management Plan (EMP) – A plan developed by the applicant to explain how they will manage the environmental impact of their operations on the basis of an Environmental Management System (EMS) approach.

Environmental Management System (EMS) – A system developed using a ‘plan, do, check and act’ approach, with a philosophy of continual improvement of the system and operation to manage the environmental impact of operations.

Enteritis – Inflammation of the small intestine.

Environmental harm – Any adverse effect or potential adverse effect (whether temporary or permanent) to an environmental value.

Erosion – The wearing away of the land surface by rain or wind, removing soil from one point to another (e.g. gully, rill or sheet erosion).

Friable – Crumbles easily.

General environmental duty – All practical measures are taken to prevent harm to the environment.

Grower – Farmer who provides shedding and care of poultry from when they arrive on the farm until they are removed for processing.

Ground water – All water below the land surface that is free to move under the influence of gravity.

Integrated development – A development that requires one or more licences or approvals as well as development consent. Determination of approvals and licences is integrated with determination of development consent. Many designation developments are integrated developments.



Integrator – Company that owns birds and provides food and technical advice for the grower to grow-out birds until they are picked up for processing.

Leaching – Process where soluble nutrients (e.g. nitrogen) are carried by water down through the soil profile.

Local environmental plan (LEP) – A plan formulated by the local government to specify planning controls in a local government area, including zoning into land-use categories. The LEP outlines the permitted and prohibited uses for each zone and sets standards for certain aspects of land use.

Local government – The council for the area in which the existing or proposed poultry farm is located.

Major water supply storage – Any public water supply storage, lake, lagoon, marsh or swamp.

Meat chicken farm complex – Includes the sheds used to produce meat chickens and associated infrastructure (e.g. silos) and any nearby spent litter/compost stockpiles. Excludes any spent litter utilisation areas. For tunnel-ventilated sheds it includes a distance of 25 metres out from the exhaust end of the sheds.

Meat chicken production – the growing of chickens specifically for commercial meat production involving in excess of 1000 birds, as defined in the *Poultry Meat Industry Act 1986*

Must – Used in the Manuals to refer to any obligatory requirements to meet relevant legislation, policies or regulations. Not meeting these specific requirements can mean a direct contravention of the legislation.

Nutrient – A food essential for a cell, organism or plant growth. Nitrogen, phosphorus and potassium are examples of foods essential for plant growth. In excess they are potentially serious pollutants that encourage nuisance growth of algae and aquatic plants in water. Nitrate-nitrogen in water supplies is harmful to human health. Phosphorus present with nitrogen is considered the major element responsible for potential algal blooms.

Nutrient balance – Matching of nutrient application rates with safe soil-storage ability, crop uptake and allowable losses to avoid pollution and ensure environmentally sustainable nutrient application.

Odour criteria – Measures of the nuisance impact (both potential and actual) of odour on affected sensitive land uses.

Odour units (OU) – Units used to measure the concentration of odorous mixtures. The number of odour units is the concentration of a sample divided by the odour threshold or the number of dilutions required for the sample to reach the threshold. This threshold is the numerical value at which 50% of a testing panel correctly detect an odour.

Offensive odour – An odour that, by reason of its nature, character, components, quality or strength, or the time at which it is made, is likely to be harmful to, and/or to be offensive to, and/or to interfere unreasonably with the comfort or rest of, people at/or beyond the boundaries of the premises from which the odour originates.

Olfactometry – A procedure where a selected and controlled panel of up to eight respondents are exposed to precise variations in odour concentrations in a controlled sequence. The results are analysed by using standard methods to determine the point at which half the panel can detect the odour.

Organic matter – Living or dead plant and animal material.



Planning focus meeting (PFM) – A meeting usually held on the site of the proposed development to identify the issues to be covered in the DA. The meeting is usually attended by the applicant, their consultant/s, representatives from local and state government agencies, and other potentially involved parties.

Poultry farming – Farming of poultry, including egg and fertile egg production and the rearing of hatchlings, starter pullets, layers and poultry for meat.

Pollution – Direct or indirect alteration of the environment, causing contamination or degradation.

Principal certifying authority (PCA) – An accredited certifier that ensures work is done in accordance with the development consent and approved construction plans.

Production area – includes the meat chicken sheds and immediate surrounding biosecure area, which together are typically fenced or segregated from the remainder of the farm.

Recharge – The replenishment of a ground water body by gravity movement of surplus soil water that percolates through the soil profile.

Referral agencies – Agencies consulted by the assessment manager in relation to planning applications. They include concurrence agencies, advice agencies or third-party advice agencies.

Responsible authority – an authority responsible for providing advice on planning, development and operational issues (but without approval authority); an example is NSW DPI.

Runoff – Runoff consists of all surface water flow, both over the ground surface as overland flow and in streams as channel flow. It may originate from excess precipitation that cannot infiltrate the soil, or as the outflow of ground water along lines where the watertable intersects the Earth's surface.

Salinity – Electrical conductivity (EC) is the generally accepted measure of salinity (i.e. the concentration of salts in solution). The salts that occur in significant amounts are the chlorides, sulfates and bicarbonates of sodium, potassium, calcium and magnesium. In water these salts dissociate into charged ions, and the EC of the solution is proportional to the concentration of these ions, providing a convenient means of measuring salinity. Usually expressed as deciSiemens per metre (dS/m) or its equivalent, milliSiemens per centimetre (mS/cm),

Scheduled activities – Activities that require licensing by the EPA under the POEO Act. Many designated developments are classed as scheduled activities.

Sensitive land use – Includes a dwelling, dependent persons unit, residential building, hospital, school, child care centre, caravan park and other uses involving the presence of people for an extended period of time.

Separation distance – The shortest distance measured from the centroid of the meat chicken shed or edge of the spent litter utilisation area to the nearest part of a building associated with a sensitive land use. The land is not necessarily owned by the chicken farm. (See also definitions for 'buffer', 'centroid' and 'sensitive land use').

Statement of environmental effects (SEE) – An assessment, prepared by the developer, of the potential environmental impacts of a proposed development. It is submitted with the DA for proposals that are local, rather than regionally or state significant, and are not designated developments.

State environmental planning policies (SEPP) – Policies formulated by DP&I that specify planning controls to deal with issues significant to the state.



Surface waters - Include dams, impoundments, rivers, creeks and all waterways where rainfall is likely to collect.

Third-party advice agencies - Agencies consulted by the assessment manager to help assess and decide on the merits of a planning application. Although not formally recognised in legislation, they can provide non-binding advice to the assessment manager to help understand issues and help with decision-making.

Topography - The shape of the ground surface as depicted by the presence of hills, mountains or plains; that is, a detailed description or representation of the features, both natural and artificial, of an area, such as are required for a topographic map.

Watercourse - A naturally occurring drainage channel that includes rivers, streams and creeks. It has a clearly defined bed and bank, with water flows at any time. Refer to the *Water Management Act 2000* for a legal definition.



Appendix 5: References and further reading

References and further reading can be found in Manual 1 – Site Selection & Development, Appendix 5.



Best Practice Management for Meat Chicken Production in NSW
Manual 2 – Meat Chicken Growing Management

Intensive Animal Industries Development
Poultry Meat Industry Committee



Department of
Primary Industries

