

Appendix V: Good management practices for intensive poultry farming

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This appendix has been included in the plan for guidance to the poultry industry, and for general public information and education purposes. The information contained in this appendix provides general guidance on the range of options for preventing or minimising adverse effects on the environment from emissions from poultry farming, whether for egg production or broiler farming. It also provides a general indication of the matters that the Taranaki Regional Council will consider and the nature of the conditions that might be attached to a resource consent for the discharge of contaminants into the air from poultry farms (refer Rules 51 to 54).

The material presented in this appendix must not be considered as a set of rules that will be applied universally. Each individual situation will be considered by the Taranaki Regional Council on its particular merits and circumstances, with regard for the level of environmental protection that is appropriate in that situation.

Before starting a new poultry farm, or extending an existing operation, it is strongly advised that the proposal should be discussed with officers of the Taranaki Regional Council as well as with the local district council and the neighbours of the site.

This appendix is based primarily on experience gained in the Taranaki region since 1992, together with information contained in 'Code of Good Agricultural Practice for the Protection of Air' (UK Ministry of Agriculture, Fisheries and Food 1998), 'Odour Management at Intensive Livestock Installations' (UK Environment Agency 2005, www.environment-agency.gov.uk/agriculture then select 'pigs and poultry'), 'Poultry Industry Agreed Standards and Codes of Practice', October 1995, developed by the Poultry Industry Association of NZ (Inc), a draft code of practice prepared by Environmental Science and Research for Taranaki Regional Council, 1994, the 'NSW Poultry Farming Guidelines (draft)' October 1992, developed by NSW Agriculture and referenced by the Environment Protection Authority (NSW), and 'Victoria Code for Broiler Farms 2001' (Department of Primary Industries Victoria, www.dpi.vic.gov.au).

a) Environment management plan (EMP)

Applicants and operators should prepare an Environmental Management Plan (EMP) that describes measures for minimising environmental risks and contingency actions for responding to problems. The EMP should cover:

- a list of all key risk events for odour;
- a list of all key risk events for dust;
- waste management issues;

- the day-to-day best management practices and responses that will be put in place on the site to avoid or reduce these events and issues;
- details of contingency plans, describing actions, allocating responsibilities, and providing contact details for any outside advice, notification or assistance that might be required;
- details of any self-monitoring that will be carried out, including property boundary odour surveys;
- familiarisation of all staff with consent conditions and the contents of the EMP;
- trigger events and target response times;
- procedures for corrective actions taken as a result of an owner's own identification of any issue; and
- procedures for addressing complaints and incidents.

Readers should in particular refer to the Victoria Code and to the Department of Primary Industries (Victoria) Generic EMP, and the UK Environmental Agency Integrated Pollution Prevention and Control (IPPC) guides for greater detail than is set out above (note that not all information or requirements set out in these references are applicable in Taranaki).

Operators should seek to ensure that they incorporate the best practicable options currently available for reducing emissions regardless of whether their operations meet the recommended buffer distances set out on page 168.

The EMP should be updated every five years (at a minimum).

b) Buffer distances

Preferred minimum buffer distances between sheds and other features are set out in Table 1 (page 168). It should be noted that buffer separation is not a substitute for good management of sheds, nor will observation of these distances without consideration of other factors ensure no odour problems off site.

Table 1: Recommended buffer distances

Number of poultry	1. Distance to nearest off site dwellinghouse	2. Distance to nearest sensitive area (refer to Policy 2.3)	3. Distance to road	4. Distance to any boundary
	metres	metres	metres	metres
Fewer than 30,000	100	100	100	50
30,000 – 59,999	200	200	100	50
60,000 – 79,999	300	300	100	50
more than 80,000	400	400	100	50

The Taranaki Regional Council will have regard to these buffer distances in determining whether notification of resource consent applications is required, and in determining the extent of any mitigation requirements. If these buffer distances cannot be met, it does not mean that resource consents will automatically be declined.

The distances in Table 1 above are calculated from the wall of the nearest shed. However, in the case of 'tunnel' sheds (fan-forced ventilation along the length of the shed, exiting at one end), the buffer distances are calculated from the shed exit end, provided that shed construction and maintenance are such that all fugitive emissions are minimised.

c) Future expansion

Applicants should consider whether their proposed site is capable of supporting an expansion without increasing off site effects to adjacent neighbouring properties, even if this is not immediately planned. The granting of a consent for a particular size of operation does not guarantee a consent can be varied to accommodate an expanded activity at some time in the future.

d) Prevailing winds

If sensitive land uses (refer policy 2.3 of the Plan) are located downwind under prevailing wind directions, or are located downslope, the preferred buffer distances above may be increased by up to 50%. Prevailing wind directions are generally as follows -

North Taranaki: from south-east, west, and north-east
 Central Taranaki: north and south
 South Taranaki: from west and south-east

Local micro-climates may be different to these. For advice on particular localities, operators should check with the Taranaki Regional Council. Consent applicants will be expected to have obtained information on local wind directions.

e) Meteorology

Some parts of Taranaki are more prone than others to atmospheric conditions that trap emissions and prevent them dispersing. Operators should seek advice from the Taranaki Regional Council when considering both a general locality and a specific site for their facilities.

f) Shed configuration

Shed design and specific site considerations will apply. In general, the preferred shed configuration is:

- across the direction of prevailing winds, rather than parallel to them; and
- with multiple emission points, rather than a single discharge source (but see below re: 'discharge point design');

Shed layout should be such that bird and litter removal takes place at the end of the sheds furthest from neighbours.

It is acknowledge that other site specific considerations will also have to apply, such as (1) the avoidance of conflict between air discharge points and neighbouring dwellings (2) land contours (3) orientation to the sun.

g) Discharge point design

Dispersion of discharges is enhanced by:

- increasing the height of discharge points;
- avoiding the use of conical rain shields over the top of discharge stacks;
- increasing vertical exhaust velocities by appropriate fan speeds, fan sizes, and shaft sizes;
- the use of vertical discharge fan units with minimal obstruction to the outside shaft's airflow;
- tunnel shed design, with large capacity fans in one end wall to discharge to one end of a farm;
- the use of air direction baffles or ramps; and
- possibly shelter belt plantings (but see [I] 'Screening' below).

Having the point of discharge at least 3 metres above the peak roofline of the shed and adjacent buildings provides maximum dispersion, by avoiding eddies and downdraughts and promoting dilution.

h) Shed construction

Sheds should be constructed in a manner that makes them free of draughts and leaks, and subsequently well maintained. Materials should be impervious, to assist in cleaning and to avoid absorption of odours. Horizontal surfaces (other than the floor) will tend to accumulate dust and other wastes, and should be avoided. Flooring must be impervious and easily cleaned and disinfected. Ventilation systems should not allow rain to enter the building and dampen litter.

A well-insulated shed will mean less air flow is required to maintain shed temperature, and hence improves dilution and mixing downwind of the shed.

i) Topography

Sheds should not be sited within the same valley system as sensitive receiving environments, unless the site is both downslope, and downwind under all prevailing wind directions. Sheds should not be sited on slopes above sensitive receiving environments. The direction of night breezes should be considered.

Notes and comments

Valleys tend to channel emissions, preventing dispersion. Katabatic drift (the movement of air at night as it cools down) tends to flow down slopes, and can carry long distances.

j) Aprons and access roading

These should be constructed of impervious material, and large enough to allow clean out of shed litter and loading for transport off site, without litter falling onto soil, surrounding gravel surfaces, or into any water or drainage channels.

k) Moisture control of litter

The moisture content of the litter should be controlled by:

- prompt repair of leaks in roof and exterior walls;
- prompt repair of leaks in drinking water piping and drinkers;
- a suitable depth of bedding litter;
- the removal of damp litter around drinkers; and
- adjustment of fogging spray systems, if used, so that droplets do not fall onto litter.

Nipple drinkers or drip cups (or alternative on-demand systems) are preferred over water troughs or bell drinkers, to avoid wetting litter.

A litter moisture content of 20-25% is considered optimal, avoiding dust (too dry) and odour (too damp), and promoting aerobic bacterial action. If litter is caking or sticky, it is too wet.

l) Screening

Tree planting that screens buildings from neighbours or other sensitive receiving environments should be

undertaken and maintained. While there is no clear evidence that vegetation reduces odour, it will disturb air flow (enhance mixing and thus dilution), and by reducing awareness of an activity will potentially reduce sensitivity. Planting should be high and dense enough to screen buildings from the sight of neighbours.

Earthen embankments or fences up to 2 metres high may also be used.

m) Air flow

When considering screening (see [l] above), it should at the same time be remembered that planting that encroaches around the buildings will prevent free air flow around them, and may need to be avoided in the interests of adequate ventilation of the sheds and dispersion of emissions. A minimum separation between buildings and trees of 20 metres is advised. However, shading and cooling of sheds by trees in summer may also be an advantage. Similarly, parallel poultry houses should be separated by a distance of at least five times the height of the buildings if dispersion of emissions is to be maximised.

n) Dead birds

Dead birds should be collected from the sheds and disposed of on a daily basis. Acceptable options include holding in frozen storage pending removal off site, incineration in a licensed incinerator, disposal in an offal hole, or a properly controlled composting operation.

o) Offal holes

Refer to Rule 35 of the plan for offal hole requirements. A sealed and lined offal hole will promote anaerobic decomposition and is generally favoured for small numbers of mortality, subject to avoiding an accumulation of methane gas (explosive and suffocating).

p) Litter spillage

Litter should be removed from site in covered/enclosed vehicles. Litter spillages (e.g. during its removal from sheds or from the property) should be recovered as soon and as completely as practicable, and particularly before becoming damp. To the extent practicable, litter removal should be timed and managed for periods when wind speed and direction are less likely to carry odour and dust towards neighbouring residences.

q) Litter stockpiling

If used litter is stockpiled on the property (whether prior to removal, or for ultimate use on the property), then it must be substantially covered by tarpaulins, sheeting or similar, or in a draught-proof building with closed doors, if the pile is within 200 metres of any dwellinghouse off the site.

r) Litter spreading

Animal litter spreading on any day between the last Sunday in September and the first Sunday in April should be undertaken prior to 2.00 pm (daylight saving time). Avoid spreading on weekends and public holidays. Records should be kept of date, locations, quantities, and weather conditions prevailing when litter is spread. As far

as practicable, spread litter only when the wind is away from neighbours, roads, and sensitive receiving environments.

s) Noise

Noise is not a matter that the Taranaki Regional Council can consider. However, it is a matter of observation that reducing awareness of an activity will reduce sensitivity to that operation. Appropriate management of noise generation and noise reduction measures will reduce the likelihood of complaints.

t) Complaints

Any complaints concerning dust, odour, or other effects of discharges to air, received by a farm operator, should be recorded in writing by the operator, and the records retained for at least six months. Details should include:

- the time, nature and extent of the effect as reported;
- the location, name and contact phone number of the complainant (if known);
- the wind direction and speed at the time of the incident;
- general weather conditions (e.g. humid, fine and clear, misty);
- general operational status of the farm;
- any on-farm circumstances that may be related to the incident;
- any investigations undertaken as a result of the complaint;
- any changes made to farm activities as a result of the incident; and
- the nature of any feedback given back to the complainant.

u) Emission abatement technology - dust

Dust mitigation measures include:

- control of dust content of supplied litter;
- misting sprays within sheds;
- avoiding over-dry litter;
- optimising bird movement and activity;
- maintaining a vegetation cover on areas around buildings;
- avoiding overly high air flow velocities inside sheds;
- using dust filters, baffle plates, nets, or other dust abatement systems on extraction ducting;
- adequate separation from neighbouring properties/premises;

- tree screening;
- avoiding dusty feedstocks; and
- controlling vehicle speeds on unpaved access tracks.

v) Emission abatement technology - odours

Odour mitigation measures include:

- an adequate depth of litter in the shed – 10-15 cm as a minimum;
- misting sprays within sheds;
- proper stocking rates;
- control of feed formulations and additives;
- avoiding over-damp litter;
- proprietary odour control systems of proven performance;
- proprietary litter additives of proven performance
- adequate separation from neighbouring properties/premises;
- elevated discharge into the air from buildings; and
- tree screening.

While there are proprietary odour masking or neutralising agents on the market, the efficacy of these is generally unproven.

w) Burning of wastes and rubbish

Other than as covered elsewhere in the Regional Air Quality Plan for Taranaki, or by a resource consent, the burning of wastes is not generally favoured because of the likelihood of smoke and odour nuisance.

x) Shed washdown water disposal systems - design and operation

Washdown collection and transport systems should be designed so as to avoid ponding or stagnation of washdown water.

Drains (other than collection channels) should be enclosed pipes rather than open. Site drainage should prevent stormwater ingress into sheds and contamination of stormwater systems by litter or washwater runoff.

Washdown water holding tanks or sumps should be covered or enclosed, to minimise odour release. Sediments in sumps should be removed at no longer than three monthly intervals.

Note: this section addresses only air emission effects from washdown water. Water quality impacts should also be addressed.

y) Washdown water and effluent disposal

Contaminated seepage from manure or litter on site, or washdown water from heavily soiled sheds, needs to be disposed of in a safe manner, as under Rule 40 or 55 in this plan.

z) Feed formulations

Research indicates that feed mixtures and formulations do influence the odour of manure. As yet this research is not sufficiently advanced to give comprehensive specific guidance. However, operators should remain abreast of continuing developments. All feed stock should be kept dry.

aa) Temperature control

A lower shed temperature reduces the rate at which odours are released. It also reduces microbial activity, which is a significant cause of odour. When shed temperatures are being optimised, these factors should be considered.

bb) Contingency planning

To safeguard against the consequences of a high mortality situation, a contingency plan for the rapid disposal of very large numbers of birds should be prepared e.g. access to off site incineration or prior discussion with the Taranaki Regional Council over an acceptable burial area and burial procedures.

cc) Reverse sensitivity

To safeguard the opportunity for future expansion, site owners should remain aware of any proposals to subdivide or to change the zoning (land use controls) of nearby land that may allow any establishment of activities that are incompatible with intensive farming.

