Mr Kenny's current and proposed operation employes good initial depth of litter at 10 to 15 cm and this is accepted to be sufficient to absorb the moisture loading.

2.4.2.3 Drinking systems

The management of drinking systems should ensure that all litter is kept dry i.e. moisture content is less than 40%. Mr Kenny will check the operation of his proposed houses on a daily basis, this includes water systems should be checked for leaks and action taken as necessary. The drinking system in the proposed houses will be new and modern in design and these system will include nipple drinkers and drip cups (operate on demand) should be used in preference to bell drinkers (always full of water) and they should be sited at the correct height to minimise spillage.

2.5 Odour and Litter management

2.5.1 Wash water and Litter handling

Wash water and litter handling and storage can be significant sources of odour. At Mr Kenny's proposed poultry operation every effort will be taken to reduce odour from litter and wash water as these sources can have a substantial positive effect on the overall odour impact of the installation on local receptors. In particular, anaerobic conditions can lead to the formation of high concentrations of odorous substances within the litter which will be released during `bubbling off or when it is disturbed. The need to keep the litter dry as discussed is critical to minimising odour generating potential.

The proposed operation aims to check access area and other set-down areas kept free of wash water or litter. Minimising the surface area of material exposed will reduce the odour emission.

2.5.2 Wash water and Litter storage

When the proposed poultry houses are emptied every effort will be made to clean the houses out to the best possible condition prior to washing. This reduces the wash waters nutrient and organic load. The Wash water storage tanks are covered and applied on to lands owned by the Kenny family.

Covering or enclosing wash water storage tanks will stop or significantly reduce odour escaping to atmosphere.

Litter removed from the buildings at the end of the production cycle should be stored dry. The storage area should be stored away from residential areas. In Mr Kenny's proposed poultry operation the litter will be removed and placed in a trailer for off-site recovery of the nutrient content. This avoids odours from storage of the litter and associated issues such as runoff, dust, etc.

2.5.3 Treatment of litter and wash water

There will be no treatment of litter at Mr Kenny's proposed poultry farm and all litter will be loaded into appropriate containers.

Wash water will be applied to lands owned by Mr Kenny without further treatment

2.6 Wash water Application to land

Odours released from animal manure spreading activities are one of the most frequent sources of odour complaint to Local Authorities. The wash water from Mr Kenny's poultry farm is low in odour as the cleaning of the poultry houses ensures that this is maintained.

3.0 Monitoring

3.1 Monitoring Controls

The monitoring of temperature in the proposed poultry houses will ensure that the litter is as dry as possible. In addition monitoring of feed and water systems on a daily basis is critical.

3.2 Monitoring Odorous Releases

3.2.1 Olfactory Monitoring

Odour shall be monitored daily at points around the site boundary and the surrounding locality (when necessary). Locations selected for offsite monitoring are based on the prevailing wind direction (i.e. upwind and downwind locations).

At each location observations shall be made concerning odour intensity, persistence and character. Surveys shall be carried out in accordance with the monitoring protocol contained within the EPA Air guidance Note AG 5. Details will be logged following the instruction provided in the form (see Appendix A).

The odour assessor may not be subject to significant compost odour in the 30 minutes prior to the assessment and shall be compliant with the requirements laid down in the Olfactory Survey procedure. This is to ensure that monitors are not suffering from odour fatigue and will be sensitive to poultry odours.

Wherever possible, odour assessor will be chosen from office or home based employees that are unlikely to suffer from adaptation to odour. Adaptation to odour process whereby a person gets used to (adapts to) an odour and so may be unable to detect an odour. All staff responsible for assessing odour will receive appropriate and adequate training from the site management on the odour inspection procedure. Each assessor carrying out odour assessments will be initially accompanied by a more experienced member of site management to ensure that the nature and offensiveness of any odours detected are being perceived similarly.

Assessor will be instructed to avoid strong food or drinks for at least one hour beforehand and those members of staff who have a cold, sore throat or sinusitis will not be used to carry out odour assessments.

3.3 Monitoring Pathways

3.3.1 Meteorological Conditions

Weather forecasts would be monitored (e.g. web based services) to enable potential contingency actions to be implemented.

The site will be equipped with a basic weather station providing logging of wind speed and direction to help the management of the site in accordance with local weather conditions.

Monitoring Requirements

- Rainfall
- Pressure
- Temperature
- Humidity
- Wind speed and
- Wind direction

All recorded continuously

3.4 Monitoring Impacts

Monitoring of impacts shall be achieved by recording and monitoring complaints. Complaints may be reported directly to site or via Local Authority or the EPA (24hr complaint reporting system).

Complaints records shall include:

- Date & time,
- Nature of complaint,
- Locality of complaint,
- Name of complainant (if available),
- A summary of investigation, actions taken and outcome.

3.5 Record Keeping

In addition to record keeping of poultry operation as required by planning permission, IPPC License and good practice, daily records shall be maintained and include the following details:-

- Results of inspections and olfactory monitoring carried out by site personnel;
- Weather conditions including wind speed and wind direction;
- Operational problems including date, time, duration, prevailing weather conditions and cause of problem;
- Complaints received including address of complainant (if available); and
- Details of corrective action taken and any subsequent changes to operational procedures.

4.0 Management Responsibilities and Review

The control of odour will be managed according to good practice.

It will be the responsibility of Mr Kenny (or designated responsible person) to ensure that the operation procedure and practices is adhered to at the site. This includes ensuring that the odour control measures detailed in above.

Mr Kenny (or designated responsible person) will be supported by an external consultant, Bord Bia Inspector, Local Authority personnel, etc. The Compliance Manager is responsible for

monitoring, auditing and evaluation of site performance, which will include ensuring good compliance.

Odour control measures will be reviewed through internal audits as part of the monitoring and reporting of the operation procedures.

5.0 Figures

Figure 1 – Pat Kenny's proposed poultry growing operation

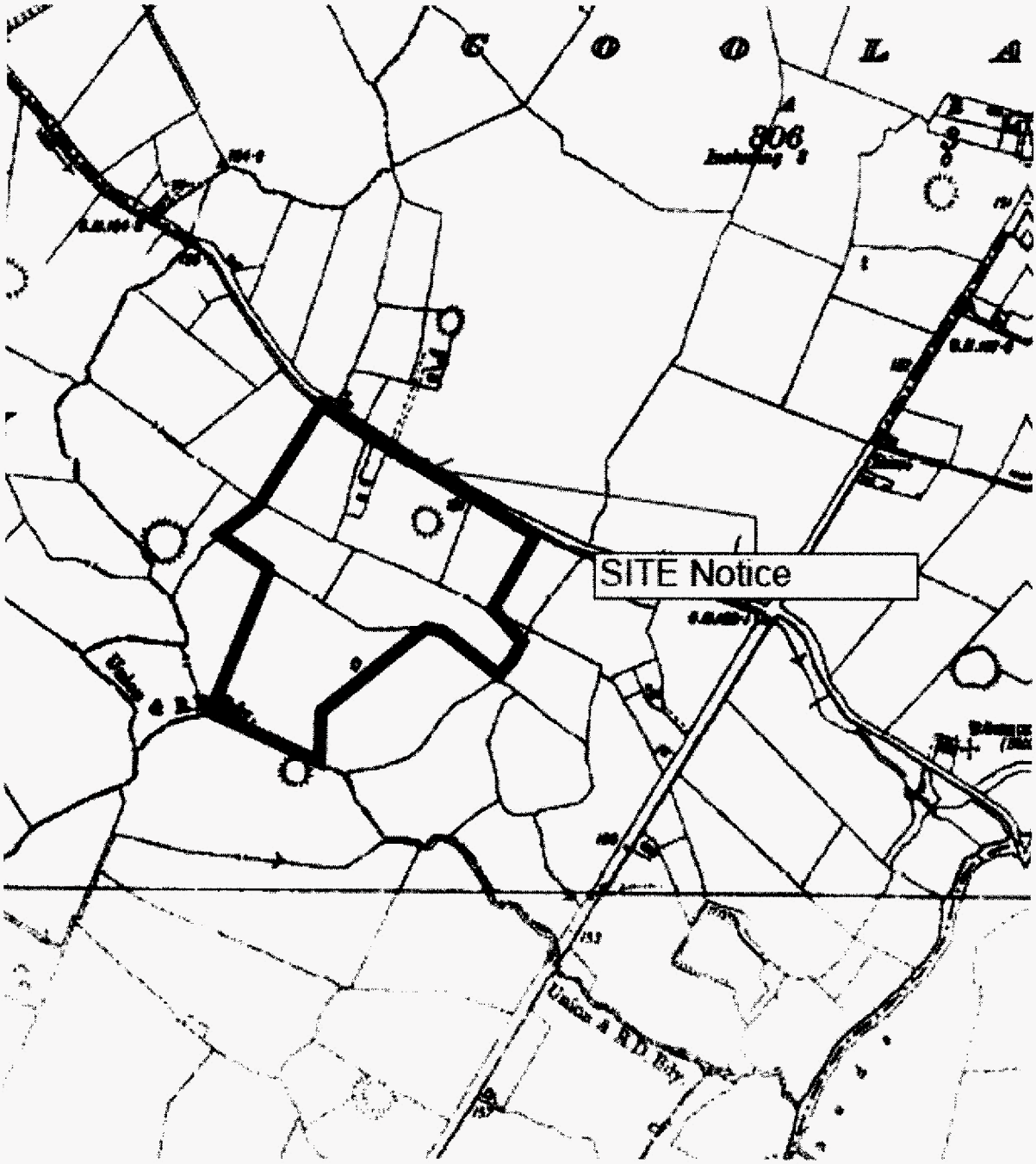
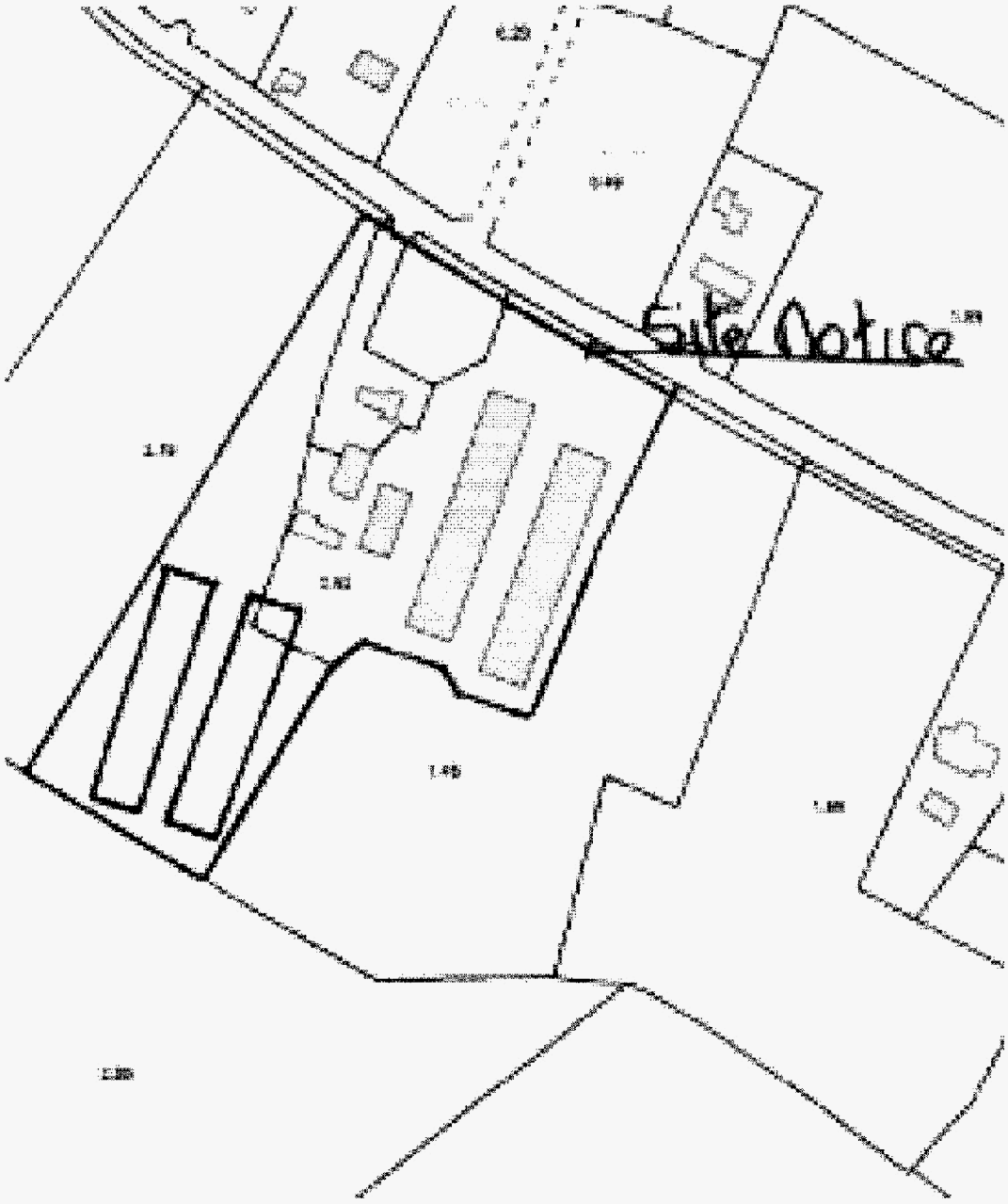


Figure 2 – Pat Kenny's proposed additional 2 poultry growing houses



5.0 Odour Sources and Actions Taken to Minimise Odours

Odour Related Issue	Potential Risks and Problems	Actions taken to minimise odour and odour risks at Poultry Farm
Manufacture and selection of feed	• Milling and mixing of compound feeds. • The use of poor quality and odorous ingredients. • Feeds which are 'unbalanced' in nutrients, leading to increased excretion and litter moisture and emissions of ammonia and other odorous compounds to air.	• No on-site milling and mixing. • Feed specifications are prepared by the feed compounder's nutrition specialist. • Feed is supplied only from accredited feed mills, so that only approved raw materials are used.
Feed delivery and storage	• Spillage of feed during delivery and storage. • Creation of dust during feed delivery.	• Feed delivery systems are sealed to minimise atmospheric dust. • Any spillage of feed around the bin is immediately swept up. • The condition of feed bins is checked frequently so that any damage or leaks can be identified.
Ventilation system	• Inadequate air movement in the house, leading to high humidity and wet litter. • Inadequate system design, causing poor dispersal of odours.	• The ventilation system is regularly adjusted according to the age and requirements of the flock. • The ventilation system is designed to efficiently remove moisture from the house.

Odour Related Issue	Potential Risks and Problems	Actions taken to minimise odour and odour risks at Poultry Farm
Litter management	• Odours arising from wet litter (see above). • The use of insufficient or poor quality litter. • Spillage of water from drinking systems. • Disease outbreaks, leading to wet litter.	• Controls on feed and ventilation (see above) help to maintain litter quality. Additional controls include:- • Use of nipple drinking systems which minimise spillage. • Insulated walls and ceilings to prevent condensation. • Concrete floors to prevent water ingress. • Stocking density at optimal levels to prevent overcrowding. • Use of a health plan, with specialist veterinary input used as necessary.
Carcass disposal	• Inadequate storage of carcasses on site. • On-site disposal of carcasses by incineration.	• Carcasses are placed in sealed containers immediately after they are removed form the house. • Use of a purpose-designed incinerator which is approved by Animal Health.
House Clean Out	• Creation of dust associated with litter removal from houses. • Use of odorous products to clean houses.	• Litter is carefully placed into trailers positioned at the entrance to each house. When full, the trailer is covered. • Only approved and suitable products are used.
Used litter	• Storage of used litter on site. • Transport of litter and applications to land.	• There is no storage of used litter outside the houses at any time. • Litter is transported in covered trailers. • Most of the litter is used for power generation, any which is land-spread is under the control of a separate farming business. A written agreement is in place.
Dirty water management	• 'Standing' dirty water during the production cycle or at clean out. • Applications of dirty water to land.	• Areas around the house are concreted and remain clean during the production cycle. • At clean-out, dirty water is directed to underground tanks for storage. It is then spread onto land, under the control of a separate farming business. A written agreement is in place.

6.0 References

Standard Farming Installation Rules for Pig and Poultry PPC Installations. Version 1.1, February 2001, Scottish Environment Protection Agency.

IPPC Guidance Note H4: Horizontal Odour Guidance Part 1 - Regulation and Permitting, Part 2 - Assessment and Control, Environment Agency, October 2002 (consultation document).

Code of Good Agricultural Practice for the Protection of Air, Ministry of Agriculture, Fisheries and Food (now Defra), October 1998.

Nielsen, V.C. `Prevention and control of smells on livestock farms, farm waste management.' Booklet 2840, Ministry of Agriculture, Fisheries and Food (now Defra), 1985.

Sneath R.W. and Robertson A.P. Odours from Modern Poultry Production.

Clarkson and Misselbrook `Odour emissions from broiler chickens' in `Odour and ammonia emissions from livestock farming' (Neilsen, Voorburg & L'Hermite eds.), Elsevier Applied Science, London. 1991.

Odour impacts and odour emission control measures for intensive agriculture. Environmental Protection Agency 2001, environmental research R&D report series No 14.

Schauberger and Piringer (1997)`Guidelines to assess the protection distance to avoid annoyance by odour sensation caused by livestock husbandry', Proceedings of the Fifth
International Environmental Symposium, May 29 - 31, pp170-178 in Environment Agency R&D Technical Report P4-079/TR/2 Best Available Techniques for Assessment and Control
of Odour pp. 202-213.

Environment Agency Odour Guidance Internal Guidance for the Regulation of Odour at Waste Management Facilities July 2002 VERSION 3.0.

Environmental Agency - Technical Guidance note IPPC4, Draft Horizontal Guidance for Odour Part 1 - Regulation and Permitting.

Environmental Agency - Technical Guidance note IPPC4, Draft Horizontal Guidance for Odour Part 2: Assessment and Control.

New Zealand Ministry for the Environment - Good Practice Guide for Assessing and managing Odour in New Zealand.

Scottish Executive - Code of Practice on Assessment and Control of Odour Nuisance from Waste Water Treatment Works, April 2005.

Scottish Executive - Guidance on Statutory Code of Practice on Sewerage Nuisance, April 2006.

Verein Deutscher Inegieure (VDI) 3940 – PART 2 Measurement of Odour Impact by Field Inspection – Measurement of the Impact Frequency of Recognisable Odours Plume Measurement, February 2006.

Appendix 1 Odour Investigation Field Record Sheet

General	**Your Reference**	**Site Licence No.**	**Assessment by**		**Date of Assessment**
			Your name: (other Investigator(s) present):		
Pre-Assessment Preparation	**Observer is free from medical conditions (cold, sore throat, sinus trouble)?** Yes No	**Observer abstinence (30 min) from smoking, flavoured drinks, scented toiletries and deodorisers?** Yes No	**Reason for odour assessment – Complaint verification; routine; other (specify).**	**Map – Has a map showing assessment locations been attached?** Yes No	**Weather Conditions Note 3 (record wind info on page 2):**

Notes (the ranking systems in these notes must be used when completing the field observations table overleaf)

Note 1: Observation point Sensitivity (assuming detectable, if not then 0)

1 Remote (no housing, commercial/industrial premises or public area within 500m of observation point)
2 Low sensitivity (no housing, commercial/industrial premises or public area within 100m of observation point)
3 Moderate sensitivity (housing commercial/industrial premises or public area within 100m of observation point)
4 High sensitivity (housing, commercial/industrial premises or public area within area of observation point)
5 Extra sensitive (complaints arising from residents, business and users of public areas within area of observation point)

Note 2: Wind Strength

0	Calm	Smoke rises vertically
1	Light air	Direction of wind shown by smoke drift, but not wind vanes
2	Light Breeze	Wind felt on face; leaves rustle, ordinary vane moved by wind
3	Gentle Breeze	Leaves and small twigs in constant motion
4	Moderate Breeze	Raises dust and loose paper, small branches are moved
5	Fresh Breeze	Small trees in leaf begin to sway
6	Strong Breeze	Large branches in motion; umbrellas used with difficulty against the wind
7	Near Gale	Whole trees in motion; inconvenience felt when walking against wind
8	Gale	Twigs break off trees; progress generally impeded
9	Strong Gale	Slight structural damage occurs (chimney pots and slates removed)

Note 3: Weather Conditions

Precipitation – dry, rained recently, drizzle, raining, foggy
Temperature – cold, cool, warm, hot

Note 4: Odour Persistence

0 No Odour
1 Intermittent (detected intermittently during the period of assessment)
2 Persistent (detected throughout the period of assessment)

Note 5: Odour Intensity

0 No Detectable Odour
1 Faint Odour (barely detectable, need to stand still and inhale facing into wind)
2 Moderate Odour (easily detectable while walking and breathing normally, possibly offensive)
3 Strong Odour (bearable but offensive – might make clothes / hair smell?)
4 Very Strong Odour (unbearable, difficult to remain in area affected by odour)

Odour Source Investigation (Post Odour Survey)	Start Time:	Do any of the odours experienced on-site match in character those recorded during the off-site survey?	List areas Inspected:
	Finish Time:	Potential on-site odour sources identified:	

What relevant activities were occurring on-site during the off-site odour assessment?

	Observer Location		Wind (nd = if not detectable)			Time		Odour Rating		Odour Description Comments
Parameter	Name of household / commercial site (describe so that location can be easily identified again by a third party)	Sensitivity (1-5) Note 1	Direction from which wind blows	Orientation (Observer Vs facility)	Strength Note 2	Start Time (24hr clock)	Period of observation	Odour Persistence (0-2) Note 4	Odour Intensity (0-4) Note 5	Description of any odours, other source(s) of odours etc, (Also note variable weather conditions etc)
Thresholds that could indicate nuisance	---	≥3	---	Down-Wind Approx DW or not detectable etc	---	---	---	1 or 2	≥2	Guide- A location where the score meets or exceeds all the threshold values may be deemed subject to nuisance/significant impairment, particularly if the observations are supported by public complaints on impact, frequency and duration of odours.
Field observations										

Brief details of any meeting with local residents/complaints received during assessment (include names/addresses/telephone numbers etc):