

11 June 2015

Ms A Lewis,
Principal Permitting Officer,
Natural Resources Wales,
Floor 5, Cambria House,
29 Newport Road,
Cardiff, CF24 0TP

Dear Anna,

Application reference	EPR/GP3130VZ/002
Operator	Hendre Poultry Limited
Facility	Hendre Poultry Unit, Felindre, Knighton, LD7 1YT

My response to this permit application commences at page 3, summarised as follows:

Fans

There are no specifications for the fans:

- The odour report uses 800mm diameter fans;
- Matrix Plant Noise Assessment M1325/R01 23 July 2013 for the existing unit is based on 630mm diameter fans;
- The 16 gable fans which operate an average 29 days per year have not been specified.

Fan specifications are essential to model noise, odour, dust, ammonia and ecology.

Noise

Noise has not been modelled, which is a pre-requisite, especially as the nearest receptor is within 400m. **The modelling must include plant noise, operational noise and night-time noise.**

Dust

There is no Dust Management Plan as recommended by PHW (page 11, and letter dated 10 October 2014 in NRW's Upper Heath file).

The application advises that "trees and hedges will trap dust particles" and "dust deposited on hard standing by end gable fans is regularly swept up and disposed of" (even though the gable fans are at the opposite ends of the building to the hardstanding).

The dust contains toxic PM10s and PM2.5s, I have seen no evidence that:

- dust dispersed to upper atmosphere is not a hazard to health;
- dust expelled from low-level gable fans is not a hazard to health or the environment;
- dust expelled by roof fans and gable fans is controlled during adverse weather conditions.

Dust from the gable fans will land on pasture, and rain will carry this into the stream that flows between the buildings. **Pollution of the Teme SSSIs and Wye SAC appears to be inevitable.**

Odour

The application has not considered peak odour emissions on clean-out which (according to the Upper Heath permit application) may well extend to:

- Litter removal approx 4 hours duration per house;
- “One house will be de-littered at a time before commencing next house”;
- “One house will be washed per day”:

These statements advise that odour on clean-out is likely to last for six days, greater than the 2 hours per shed used in “The_Hendre_Odour_Report_sgs121214.docx”.

Six days of “peak odour emission” every 40 days is significant and must be considered.

The application claims that odour will not exceed 30uE for 98% of the time. That means that it may well exceed 30uE for 2% of the time - equivalent to one morning or afternoon per week.

Peak odour emission and odour emission during production would be significant.

Health (see page 10 for details)

Bio-aerosols. PHW advises that “there is considerable uncertainty about the health risks to local residents”, and is concerned about “meteorological conditions”.

Dirty water, contaminated water, surface water

- The inadequate site layout sketch omits the local stream that runs between the existing and proposed units.
- Dust from the gable fans will land on pasture and rain will carry this into this stream;
- No secondary containment of dirty wash-out water is illustrated; accidental overspill will pollute the stream;
- No containment of contaminated yard wash water is illustrated; this will flow to the soakaway and/or stream;
- Surface water from the roofs will be contaminated by dust; this will flow to the soakaway and/or stream;
- There are no details of the small soakaways which are very close to the stream, no percolation tests, no demonstration that the water will not flow to the stream.

Pollution of the Teme SSSIs and Wye SAC appears to be inevitable.

Permit Application

The application is notable for its lack of information, especially how emissions will be controlled.

Document control is non-existent; there are no document numbers as required by EPR6.09, no issue numbers or dates on the documents. It is understood that some of the documents have been re-issued for 180,000 birds, but these were not included on NRW's CD indicating that I have not been provided with the latest issue of the documents.

It is vital that documents which form part of a permit are controlled with issue and date.

Yours sincerely,

Alan Loveridge

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“Contingency Plan.doc”

The text:

“Litter/Wash Water Removal – Agreement with neighbouring farms for removal”

means that the cumulative effect of odour of land spreading together with the unit should be considered, ref letter from PHW to A Loveridge, 26 May 2015.

The text:

“Staff shortage – In the event of staff shortages Operator has other poultry installations where fully trained staff could be called upon in the event of sickness or absenteeism of Frogmore poultry unit, ensuring the continuation of normal operations.”

is inappropriate as it is not viable for staff to commute from Frogmore in Worcestershire.

The text:

“Adverse weather conditions road closures – Monitored daily by Integrator with bird collection delayed or brought forward.”

does not consider feed deliveries that are required about every three days.

“Emergency Plan (1) (1).doc”

The text “Gatehouse at site entrance” (pages 1 and 4) is incorrect because there is no gatehouse.

“Harrys Farm” (pages 7 and 10) is in Derbyshire or Worcestershire, is this the correct Emergency Plan?

“Energy Efficiency.doc”

The text:

“7. Use of low energy light bulbs, installation of windows in side walls to allow ingress of natural light.”

means that there will be light pollution and this is an emission controlled by NRW. It is also a variation from the planning consent. I understand that there is only 20 minutes dark per night.

Where are the calculations verifying that windows save more energy in light gain compared with heat loss?

The text:

“9. Use of biomass boilers to provide hot water heating system.”

conflicts with Mr Raasch’s email of 31 March 2015 advising that there will be an LPG boiler installed for every house.

“Fugitive Emissions.docx”

The text:

“Nuisance – dust on surrounding vegetation, cars and clothing. Smothering and direct damage to nearby vegetation.” (row 1)

is cause for concern as dust is a pollutant containing faecal matter, skin, feathers, bedding, proteins, fungal and bacterial species, various endotoxins, ammonia, nitrogen, phosphorous, heavy metals, methane and nitrous oxides.

The risk of this dust being spread to humans, and water courses is significant.

“Hendre poultry ltd (1).xlsx”

This inadequate sketch omits the stream that runs between the existing and proposed units.

The gable fans will operate an average 29 days per year (see email from the agent for Upper Heath dated 9 December 2014 - page 15 of this letter). This means that toxic dust will be blown direct into the stream, or onto surrounding land and thence into the stream which leads to the Teme SSSIs and Wye SAC.

There are no details of the dirty water system, concrete hardstanding, slopes, kerbs, etc.

The volumes of the dirty water tanks have not been specified. In addition to the dirty water tank, a contaminated water tank was proposed for Upper Heath, EPR/WP3734/VB/A001. The combined dirty and contaminated water tank proposed for 100,000 broilers at The Gaer, Meifod, Powys P/2014/0449 has a capacity of 88.3 m³.

The single soakaway for each pair of enormous buildings appears to be woefully inadequate and is likely to cause subsidence of the hardstanding with the result that dirty water will escape to the adjoining stream, especially since “the site is underlain with a minor aquifer” (“Site Condition Report.docx” page 2 row 1).

“Technical Standards.docx” advises that “Rainwater run-off will be collected by the guttering system and routed to the ditch” (page 4 para 1). It is essential to establish whether rainwater flows to soakaways for treatment or the ditch/stream and thence to the Teme/Wye without treatment.

There are no percolation test results for the soakaways. These are necessary to demonstrate that pollutants will not enter the stream/Teme/Wye SAC.

The drawings show LPG tanks which conflict with the biomass boilers described in “Emergency Plan (1) (1).doc”.

“Noise and Vibration.docx.”

The text advises:

“Route selection made with due consideration to nearby neighbours” (row 1)
when there is no choice of route.

The plan does not address operational noise – eg “emergency generators, mobile plant, feed silos site deliveries and stock despatch activities” as required by Public Health Wales in its letter to A Loveridge dated 26 May 2015 (page 13 section 6). This would include an assessment of feed lorries and night working in this exceptionally quiet area with a background noise level of only 19dB (ref Matrix Plant Noise Assessment M1325/R01 23 July 2013).

Working hours of 07:00 to 23:00 should be restricted to 08:00 to 20:00 5½ days per week.

Audible reversing warnings need to be silenced between 20:00 and 08:00.

“Noise Mangement Plan.doc”

The text advises:

A walk around assessment will be conducted to establish possible sources of noise emissions, and consideration given to different operations occurring during the whole of the production cycle.

The frequency of this assessment has been omitted.

“Non technical Summary.doc”

This document refers to 180,000 birds and needs to be re-issued.

The text advises:

Birds will be housed at day old and depopulated at around thirty-three to thirty-nine days of age with approximately seven days empty, which will give between 7 to 7.5 cycles per annum

If the birds are removed at day 33, then the cycle is 40 days which equates to 9.125 cycles per annum – and not 7 - resulting in more traffic, more operational noise, more disturbance to the neighbours and more odour on clean-out.

The text confirms that “gable fans are fitted for hot weather cooling” (line 13). These operate an average of 29 days per year reference the email from the agent for Upper Heath dated 9 December 2014 (page 15 of this letter). They need to be included in assessments of noise, odour, dust, ammonia and ecology.

The text advises:

“At depletion the litter will be removed from the site and spread on operator controlled land.” (line 26). The cumulative effect on odour of land spreading together with the unit should be considered, ref letter from PHW to A Loveridge, 26 May 2015 (page 13 section 4).

The text advises that “trees and hedges will trap dust particles”. Dust is a pollutant as defined by NRW at <http://naturalresources.wales/apply-and-buy/installations/intensive-farming-pigs-and-poultry/?lang=en>. It should not be allowed to pollute the surrounding countryside.

The text confirms that “both litter and wash water will be spread on operator controlled land.” (last line). The cumulative effect on odour of land spreading together with the unit should be considered, ref letter from PHW to A Loveridge, 26 May 2015 (page 13 section 4).

This conflicts with:

“At clean out dirty water from houses together with lightly contaminated yard wash is directed to the underground storage tanks (see site plan), before being removed off site and spread to land under control of a separate farming business.” (“Odour Management Plan (5).docx” page 9, last row).

“Odour Assessment.docx”

The risk of odour on clean out is assessed as “not significant”. This conflicts with “The_Hendre_Odour_Report sqs12124.docx” which advises:

“Peak odour emission rates are likely to occur when the housing is cleared of spent litter at the end of each crop. There is little available information on the magnitude of this peak emission, but it is likely to be greater than any emission that might occur when there are birds in the house.”

Hence peak odour rates have not even been assessed.

Odour on clean-out together with the use of disinfectants has not been assessed by “The_Hendre_Odour_Report sqs12124.docx”.

“Odour Management Plan (5).docx”

Pages 5 & 6 do not take account of PHW’s recommendations in its letter to A Loveridge 21 May 2015 (page 12 of this letter):

- “That neither the annual mean or 24hr daily mean air quality objectives for PM10 should be exceeded at any sensitive receptor;
- Regulators must be satisfied that any predictive dust model inputs, outputs and conclusions are locally applicable;
- Operators have a Dust Management Plan.”

PHW letter dated 10 October 2014 to Powys CC (in NRW’s Upper Heath permit file) advised “Best Available Techniques; including dust management plans, are required by permit conditions to avoid or mitigate emissions, including fugitive emissions.”

No Dust Management Plan has been provided.

“At clean out dirty water from houses together with lightly contaminated yard wash is directed to the underground storage tanks” (page 9, last row). The unspecified dirty water tank needs to be large enough to accept yard wash. The tank at The Gaer, Meifod, Powys P/2014/0449 has a combined capacity of 88.3 m³ for 100,000 broilers.

“Proposed changes.docx”

This document states that the number of birds will be 180,000. It needs to be re-issued.

“Scan 0030.jpg”

This plan shows a tributary of the Teme (SSSIs) and Wye SAC flowing between the existing and new units. Pollution from accidental spillage of wash-out water, dust from the gable fans appears to be inevitable.

“Site Closure Plan.doc”

Soil, water and microbial samples need to be taken before construction starts and on site closure.

“Site Condition Report.docx”

The text advises that “the site is underlain with a minor aquifer” (page 2 row 1). This is of concern because dust and wash-out water are likely to flow into the stream between the existing and new developments, and pollute the Teme and Wye.

The text advises that the “Closest watercourse is the river Teme” (page 2 row 1). This is not true because a stream flows between the existing and new developments.

The text advises that “The nearest water course is the River Teme, some 100m away” (page 2 row 1). This is not true because a stream flows between the existing and new developments.

The text advises that “dust deposited on hard standing by end gable fans is regularly swept up and disposed of” (page 2 row 3). This is not true; the 16 gable fans are at the opposite ends to the buildings from the hardstanding. Dust from the gable fans will land on pasture and the stream that flows between the buildings. Pollution of the Teme and Wye appears to be inevitable.

“Site Condition Report.docx” (continued)

The text advises that “Expansion of site of two additional poultry houses increasing bird places to 180,000” (page 4 row 2). The document needs to be re-issued for 175,000 birds.

The text advises that “7.0 Soil, gas and water quality monitoring. No monitoring will be undertaken at the installation” (page 3 row 5). Water quality monitoring is essential in view of the stream that flows through the site into the Teme and Wye.

“Technical Standards.docx”

The text advises that “Rainwater run-off will be collected by the guttering system and routed to the ditch” (page 4 para 1). It is essential to establish whether rainwater flows to soakaways for treatment or to the ditch/stream and thence to the Teme/Wye without treatment.

“The Hendre_Ammonia_report sqs12124.docx”

Figure 3 illustrates the existing and new units as being the same size, however:
The existing buildings are 91,435 x 24,383 each ref drawing IP/TH/03 May 13;
Table 3b advises that the buildings are 55m x 5 m, which is incorrect.

Page 13 para 4.2 confirms that the existing and proposed poultry houses are/would be fitted with gable end fans which are/would be used to provide supplementary ventilation in hot weather conditions.

“The_Hendre_Odour_Report_ sgs121214.docx”

The text advises:

“Peak odour emission rates are likely to occur when the housing is cleared of spent litter at the end of each crop. There is little available information on the magnitude of this peak emission, but it is likely to be greater than any emission that might occur when there are birds in the house.” (page 7 para 3.5)

How can the report conclude that “there are currently no exceedances of the Environment Agency’s benchmark for moderately offensive odours”, when it has not considered peak odour emissions?

The text advises:

“The time taken to perform the operation is usually around two hours per shed and it is normal to maintain ventilation during this time.” (page 7 para 3.5)

The “Odour Management Plan for Upper Heath Poultry Unit” page 8 row 1) advises:

- “Litter removal carried out within 24 hours of bird depletion per house approx 4 hours duration”.
- “One house will be de-littered at a time before commencing next house”
- “Minimal ventilation rate compliant with health and safety during litter removal”

Page 9 (row 1) for Upper Heath advises:

- “One house will be washed per day”

These statements advise that odour on clean-out is likely to last for at least six days.

Six days of “peak odour emission” every 40 days is significant and must be considered.

Why is ventilation maintained during this time? Not only does ventilation spread odour, but also it spreads dust polluting the stream, Teme and Wye.

“The_Hendre_Odour_Report_sgs121214.docx” (continued)

The text advises:

“There are measures that can be taken to minimise odour production whilst the housing is being cleared of spent litter and there is usually some discretion as to when the operation is carried out; therefore, to avoid high odour levels at nearby sensitive receptors it may be possible to time the operation to coincide with winds blowing in a favourable direction.” (page 7 para 3.5)

- What are these measures?
- How will they be enforced?
- How will clearing operations be timed to coincide with winds blowing in a favourable direction?

The text advises:

“In this case it is assumed for the calculations for both the existing and proposed scenarios that the crop length is 39 days, with 30% thinning at day 33 and that there is an empty period of 7 days after each crop.” (page 8 last para)

“Non technical Summary.doc” advises:

“Birds will be housed at day old and depopulated at around thirty-three to thirty-nine days of age with approximately seven days empty, which will give between 7 to 7.5 cycles per annum.”

If the birds are removed at day 33, then the cycle is 40 days which equate to 9.125 odorous clean-outs per annum.

“Non technical Summary.doc” does not mention any thinning, and therefore “The_Hendre_Odour_Report_sgs121214.docx” needs to be adjusted for an “all in, all out” basis.

“Variation-to-bespoke-permit.pdf”

Table 1a and appendix 3 advise that there will be 180,000 birds. The document needs to be re-issued for 175,000.

Table 2 refers to “clean yardwater” and “clean roof water”. This is incorrect, they will be contaminated with yard washings and toxic dust respectively.

“Varying-a-bespoke-permit.pdf”

Table 2b advises that there will be 180,000 birds. The document needs to be re-issued for 175,000.

Issues arising from letter from Dr M Lyons of PHW dated 26 May 2015 (page 11)

Poultry dust

Latest “best practice” relies on high velocity fans to eject the dust into the atmosphere to fall wherever. Hence **Page 2 paras 1 and 4** advising that “the greater the separation between the source of emissions and sensitive receptors the greater the chance for dilution” does not apply to high velocity fans that are used on all modern broiler units and which disperse dust to the upper atmosphere to fall over an extensive area. Apparently uniquely in Europe, the British government classifies unfiltered roof fans on poultry sheds as the “best available technology”.

I cannot understand why it is safe to expel this toxic dust, when surely it is better to contain the dust at source. “What goes up must come down” and therefore toxic dust is being inhaled by the public at some considerable distance from the broiler unit.

The dust contains PM10s and PM2.5s, and the latter penetrate the alveoli of the lungs where they can be especially dangerous. I have seen no evidence that:

- dust dispersed to upper atmosphere is not a hazard to health.
- dust expelled from low-level gable fans is not a hazard to health. Gable fans are typical for broiler units and are used on average for 29 days per year (page 15 of this letter).
- dust expelled by roof fans and gable fans is controlled during adverse weather conditions – eg strong winds, low cloud and temperature inversion.

How/when is the “annual mean or 24 hour mean air quality objective” for PM10s and PM2.5s, measured at sensitive receptors? (**Page 2 Bullet 1**)

There is no predictive dust model, how will you satisfy yourself that “dust model inputs, outputs and conclusions are applicable”? (**Page 2 Bullet 2**)

How will you ensure that dust emissions are minimised? (**Page 2 bullet 3**)

PHW recommends a Dust Management Plan. (see also letter from PHW 10 October 2014 in Upper Heath permit file) (**Page 2 bullet 4**)

Bio-aerosols

Page 2 para 7 advises that “there is considerable uncertainty about the health risk to local residents”. This is a comment of real concern.

How can you approve this permit application without evidence that there is no risk to residents?

Page 2 para 8 and page 3 para 1 refer to “any off-site dispersion” - the use of high velocity roof fans means that off-site dispersion is inevitable for every broiler unit and bio-aerosols will be dispersed over a very wide area, rather than being contained locally. Gable fans mean that there is also low-level local dispersion.

The paragraph also refers to “environmental circumstances” and “meteorological conditions”. This means that the health of the neighbours may be impacted when there is low cloud or the wind is in the wrong direction.

Since “there is considerable uncertainty about the health risk to local residents”, how can you approve this application without any control of dispersion?

Letter from PHW to A Loveridge, 26 May 2015



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26 May 2015

Our ref A00J60

Mr Alan Loveridge
Pencwm
Saint Harmon
Rhayader
Powys
LD6 5NG

Dear Mr Loveridge

Health impacts of broiler units

Thank you for your letter dated 20th May 2015. I can confirm that Public Health Wales may be consulted upon relevant planning or environmental permitting applications for intensive poultry units. We may receive consultation either directly from local authorities or regulators, or indirectly via Local Health Boards. Public Health Wales is consulted because there is either a statutory requirement to do so or where there may be public health queries.

Below is an outline of potential health issues we may comment upon. The nature of our comments ultimately depends upon the context of the individual planning or environmental permit application.

1. Health Concerns

Such operations have the potential for fugitive emissions to air, discharges to water and manure management impacts. Nuisances including noise, malodours and flies also need consideration. The impact of nuisance upon quality of life and wellbeing are difficult to quantify, as they can be subjective.

However adoption of the best available techniques, strict adherence to regulatory guidance and industry best practice can minimise such impacts. Mitigation measures addressing occupational health of workers within the farm and farm buildings may also contribute to the protection of local communities.

In general the greater the separation between the source of emissions and sensitive receptors the greater chance for dilution, subject to local topography and meteorological conditions.

2. Potential health effects from poultry dust

Dust particles can vary in composition and size. Large dust particles above 10 micrometers (μm) in diameter are too large to be inhaled, but can cause irritation and visible deposition on surfaces. These can be referred to as 'nuisance dust'.

Dust with an aerodynamic diameter of less than or equal to $10\mu\text{m}$ (termed PM_{10}) can be breathed-in and may penetrate the respiratory system beyond the larynx. People with pre-existing lung or heart disease, the elderly and children are particularly sensitive to particulate air pollution. For the most part, people will not notice any serious or lasting ill health effects from levels of particles commonly experienced in the UK.

Any fugitive emissions released to atmosphere, depend upon climatic and atmospheric conditions and local topography. Therefore actual deposition rates are difficult to predict due to dust particle size, but will reduce the greater the distance from the source.

Therefore our recommendations

- that neither the annual mean or 24 hr daily mean air quality objectives for PM_{10} should be exceeded at any sensitive receptor
- regulators must be satisfied that any predictive dust model inputs, outputs and conclusions are locally applicable
- that emissions are minimised using best available techniques and strict adherence to regulatory guidance and industry best practice
- operators have a dust management plan.

3. Bio-aerosols

Poultry house activities may generate an aerosol of bacteria, fungi, microbial toxins, allergens and organic dust. This is typically termed a bio-aerosol. The effects of bio-aerosols on health are difficult to examine due to their ubiquitous and variable nature. Possible health effects include exposure to infectious diseases, allergic reactions, respiratory symptoms and lung function impairment.

Bio-aerosols can present a health risk to staff working in intensive farming industries however; there is considerable uncertainty about the health risks to local residents.

Any off-site dispersion of bio-aerosols will depend upon environmental circumstances and operational protocols to mitigate and control aerosol formation. In general the greater the separation between the source of

emissions and sensitive receptors the greater chance for dilution, subject to local topography and meteorological conditions.

Therefore our recommendation is to ensure that emissions can be minimised in the use of best available techniques and strict adherence to regulatory guidance and industry best practice.

4. Manure management and application on nearby land

The handling, storage, transport and manure spreading may cause odours. Sometimes odour impacts are modelled during the planning and permitting process, generating odour contours.

Manure management should include the control of flies and other pests to avoid nuisance and potential vector borne disease.

We would advise that manure storage and spreading impacts are also within any modelled odour contours or that overlap the modelled odour contours to avoid cumulative adverse odour impacts upon local residents.

We therefore would recommend that

- manure storage and spreading associated with the poultry sheds must be considered including manure storage and spreading within or overlapping the predicted odour contours to avoid cumulative odour impacts
- manure management should include the control of flies and other pests to avoid nuisance and potential vector borne disease
- regulators be satisfied that any odour model inputs, outputs and conclusions are locally applicable.

5. Public health impacts via groundwater/private drinking water supplies due to of manure storage and spreading

Manure spreading must not compromise local water supplies and therefore farm operators should be required to devise, maintain and review a manure management plan detailing the control measures to avoid ground water contamination.

6. Noise

A noise management plan is in place for all potentially noisy site sources and activities including for example

- Ventilation / roof fans
- Generators including emergency generators mounted plant
- Mobile plant
- Feed silos
- Site deliveries and stock despatch activities

7. Ammonia

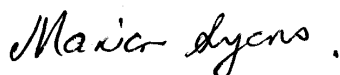
Ammonia may be emitted from poultry houses which may potentially impact on local people. The health effects of exposure to ammonia at low levels include cough, phlegm, headaches, nausea, wheezing, breathing difficulties and asthma. However, it is unlikely that ammonia emissions from a well run and regulated farm will be sufficient to cause ill health. Levels of ammonia will decrease rapidly once diluted in ambient air. We therefore recommend that the regulator is satisfied that the construction and operation of the sheds and the appropriate management of manure and feed/feeding cycles are appropriate to minimise ammonia emissions.

For information on control measures you may wish to view "Intensive farming environmental permitting guidance" via www.gov.uk.
<https://www.gov.uk/government/publications/intensive-farming-introduction-and-chapters>

Public Health Wales provides its comments via Local Health Boards who may in turn offer additional local health advice. However final decision upon local planning or permitting rest with either local authorities or regulators - Natural Resources Wales.

I trust the above outlines Public Health Wales response. If you do have further queries you can contact the Environmental Health Protection Team.

Yours sincerely



Dr Marion Lyons
Director of Health Protection

Email dated 9 December 2014 - gable fans are used on average 29 days per year

Parry, Mathew

From: [REDACTED]@gmail.com>
Sent: 09 Rhagfyr 2014 18:19
To: Williams, Paul C.
Subject: Upper Heath Noise

Hi Paul please see below info from Tom Judd at EA

Gable End Fans.

The work we did on gable end fans related to the dispersion of ammonia emissions rather than noise or odour. The purpose of the work was to inform a position whereby Operators could install gable fans (intended for occasional heat extraction) through an agreement in writing with the EA, without having to apply for a variation providing certain criteria were met.

The position is available here:

http://webarchive.nationalarchives.gov.uk/20131108051347/http://www.environment-agency.gov.uk/static/documents/Business/Position_statement_-_Gable_End_Fans.pdf

I have had a look at my records. In 2010 we based our ammonia assessment of gable end fans on the following information about fan use received from the industry.

We asked:

- *Are gable end fans used in every crop cycle and at all times of the year?*
- *Could they give an indication of the proportion of time, when sheds are occupied, that gable end fans are used?*

The feedback from the industry is that gable end fans are only used to supplement the last stage of ventilation. This is normally during daylight and only during the hottest summer months when the ambient outside temperature is greater than 25°C and the birds are large enough to be off heat.

Results

Assuming the average occupancy rate is 278 days per year based on industry operational data provided for the Revision of the Broiler Emission Factor paper.

Farm 1

Gable end fans used 2/3 periods per year of 8/10 days = 16- 30 days per year (6%-11%)

Farm 2

Gable end fans used 2 period per year of 21 days = 42 days per year (15% - 24 hours)

(7.5% - 12hours)

Farm 3

Gable end fans used for 28 days per year (10%)

Farm 4

Gable end fans used for 24 days per year (9%)

I hope this helps.

Regards
Tom

Tom Judd