Environment Agency permitting decisions

Variation

We have decided to issue the variation for Top Farm Poultry Unit operated by Annakin Farms Limited.

The permit number is EPR/TP3133UG

The variation number is EPR/TP3133UG/V003

This was applied for and determined as a substantial variation.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Structure of this document

- Key issues
- Annex 1 the decision checklist
- Annex 2 the consultation and web publicising responses

Key issues of the decision

Ammonia emissions

There are two Sites of Special Scientific Interest (SSSI) located within 5 km of the installation. There are also six Local Wildlife Sites (LWS) and three Ancient Woodlands (AW) within 2 km of the installation.

Ammonia assessment – SSSIs

There are two SSSIs within the 5km distance criteria – Goslings Corner and Bardney Limewoods.

The following trigger thresholds have been applied for assessment of SSSIs. If the process contribution (PC) is below 20% of the relevant critical level (CLe) or critical load (CLo) then the farm can be permitted with no further assessment. Where this threshold is exceeded an in combination assessment and/or detailed modelling may be required.

Screening using ammonia screening tool (version 4.4) has indicated that emissions from Top Farm P:oultry Unit will only have a potential impact on SSSIs with a critical level of 1 μg/m^3 if they are within 2738 metres of the emission source. Screening indicates that beyond this distance, the PC at conservation sites is less than 0.2 μg/m^3. 0.2 μg/m^3 is 20% of the 1 μg/m^3 CLe and therefore beyond this distance the PC is insignificant. See Table 1 below for a SSSI that is beyond this distance.

Table 1 – distance from source

Site	Distance (m)
Goslings Corner SSSI	5146

Bardney Limewoods SSSI did not screen out at the pre-application stage using the ammonia screening tool, therefore the operator was required to carry out detailed modelling.

Screening using the detailed modelling[1] has indicated that the PC for Bardney Limewoods is predicted to be less than 20% critical level for ammonia, acid and nitrogen deposition therefore it is possible to conclude no damage. The results of the detailed modelling are given in the tables below.

The ammonia modelling assessment has been audited in detail by our Air Quality Modelling and Assessment Unit and we have confidence that we can agree with the report conclusions.

[1] "A report on the Modelling of the Dispersion and Deposition of Ammonia from the Existing and Proposed Broiler Rearing Units at Top Farm near Stainfield in Lincolnshire, LN8 5JL, dated 11/08/14."

Table 2 – Ammonia emissions

Name of SSSI	Ammonia CLe (µg/m^3)	PC (µg/m^3)	PC as % of Critical level
Bardney Limewoods SSSI	1*	0.161	16.1

* A precautionary level of 1 µg/m^3 has been used during the screen. Where the precautionary level of 1 µg/m^3 is used, and the process contribution is assessed to be less than the 20% insignificance threshold in this circumstance it is not necessary to further consider nitrogen deposition or acid deposition critical load values. In these cases the 1 µg/m^3 level used has not been confirmed, but it is precautionary.

Table 3 – Nitrogen deposition

Site	Critical load kg N/ha/yr [1]	PC kg N/ha/yr	PC % critical load
Bardney Limewoods SSSI	10	1.25	12.5

Note [1] Critical load values taken from APIS website (www.apis.ac.uk) – 11/08/14

No further assessment is required.

The ammonia modelling carried out by the operator for the proposed changes was based on the reduced broiler emission factor 0.0221 kg-NH_3/place/yr. The operator has stated in their application that they can achieve a 35% reduction in ammonia emissions through the use of indirect heating in the form of biomass boilers. Please see below section on ammonia monitoring for further details.

Ammonia assessment - LWS/AW

There are six Local Wildlife Sites (LWS) and three Ancient Woodlands (AW) within 2 km of Top Farm. The following trigger thresholds have been applied for the assessment of these sites.

1. If PC is <100% of relevant critical level or load, then the farm can be permitted (H1 or ammonia screening tool)
2. If further modelling shows PC <100%, then the farm can be permitted.

For the following sites this farm has been screened out at stage 1, as set out above, using results of the ammonia screening tool (version 4.4).

Screening using ammonia screening tool (version 4.4) has indicated that emissions from Top Farm will only have a potential impact on sites with a critical level of 1 µg/m^3 if they are within 945 metres of the emission source. Screening indicates that beyond this distance, the PC at conservation sites is less than 1 µg/m^3. 1 µg/m^3 is 100% of the 1 µg/m^3 CLe and therefore beyond this distance the PC is insignificant. See Table 4 below for LWS and AW that are beyond this distance.

Table 4 – distance from source

Site	Distance (m)
Long Wood LWS and AW	1904
Branston Delph LWS	1515
Fiskerton Fen LWS	1654
Foxhall Wood LWS and AW	1799
Snakeholme Pit LWS	1259
Great South/Demerose Woods AW	1132

The PC at these sites has been screened as insignificant. It is possible to conclude no significant pollution will occur at these sites and no further assessment is required.

For the Barlings Eau LWS this farm has been screened out, using the ammonia screening tool (version 4.4). The predicted PC on the LWS for ammonia, acid and nitrogen deposition from the application site are under the 100% significance threshold and can be screened out as having no likely significant effect.

Table 5 - Ammonia emissions

Site	Critical level ammonia µg/m^3	Predicted PC µg/m^3	PC % of critical level
Barlings Eau LWS	3**	1.802	60

** CLe 3 applied as no protected lichen or bryophytes species were found when checking easimap layer

Table 6 – Nitrogen deposition

Site	Critical load kg N/ha/yr [1]	Predicted PC kg N/ha/yr	PC % of critical load
Barlings Eau LWS	20*	9.358	46.8

Note [1] Critical load values taken from APIS website (www.apis.ac.uk) – 13/06/14

Table 7 – Acid deposition

Site	Critical load keq/ha/yr [1]	Predicted PC keq/ha/yr	PC % of critical load
Barlings Eau LWS	1.31	0.668	51

Note [1] Critical load values taken from APIS website (www.apis.ac.uk) – 13/06/14

No further assessment is required.

Ammonia Monitoring and Reporting

The operator has stated in their application that they can achieve a 35% reduction in ammonia emissions through the use of indirect heating in the form of biomass boilers. The operator has carried their ammonia modelling based on the reduced ammonia emission factor for broilers – 0.0221 kg-NH_3/place/yr.

To ensure that a 35% reduction is being achieved process monitoring has been inserted into the permit via Condition 3.5.1,and Table S3.3. Additional reporting requirement have also been inserted through condition 4.2.3 (Tables S4.1 and S4.2). Ammonia measuring equipment connected to a computer system is to be installed in two new poultry houses 8 and 9 on Top Farm Poultry Unit. One house will be heated using indirect heating (biomass boiler) and the second house will be using direct-fired heating (LPG). Three ammonia monitors and three combined temperature and humidity monitors are to be installed in each of the houses. Internal sensors will be positioned equidistantly across the length and width of the houses and at 1 metre above ground level. The sensors will also be positioned away from ventilation fans and/or air inlets or heater distribution fans that could cause potential interference. Ammonia emissions, temperature and humidity are to be monitored on a continuous basis over the crop cycle, with data sets generated at 10 minute intervals.

In accordance with Condition 4.2.3 and Table S4.1, the operator is required to report the ammonia emissions as an annual average (in kg/place/year) from each of the two monitored houses on Top Farm Poultry Unit. This information should be provided to the Environment Agency at the end of each crop cycle. If a 35% reduction is not being achieved then the operator will be required to put in place alternative mitigation measures to ensure that 35% reduction in ammonia emissions is achieved in subsequent reporting periods.

Improvement Condition 3 has been set regarding ammonia emissions reduction. The operator is required submit a report providing evidence to demonstrate that an ammonia emissions reduction of at least 35% can be achieved by installing biomass boilers on site or that implementation of alternative appropriate mitigation measures can achieved this reduction. This reduction should be in line with the predicted ammonia modelling assessment dated 11th August 2014 submitted in support of variation application EPR/TP3133UG/V003. Evidence for reduction through biomass instalment will need to include at least 12 months of operational data collected at Top Farm Poultry Unit (EPR/TP3133UG/V003). The report shall be submitted in writing to the Environment Agency for approval.

Pre-operational measures for future development The operator shall submit details outlining the instalment of the ammonia monitoring trial equipment in line with that proposed in the Top Farm Poultry Unit variation application EPR/TP3133UG/V003 at least 2 weeks before the commencement of operations. Stocking of sheds 8 and 11 and stocking of greater than 270,000 broiler places.

Biomass boiler

The applicant is varying their permit to include one 1MW biomass boiler.

In line with the Environment Agency's May 2013 document "Biomass boilers on EPR Intensive Farms", an assessment has been undertaken to consider the proposed addition of the biomass boilers.

This guidance states that the Environment Agency has assessed the pollution risks and has concluded that air emissions from small biomass boilers are not likely to pose a significant risk to the environment or human health providing certain conditions are met. Therefore a quantitative assessment of air emissions will not be required where:

- the fuel will be derived from virgin timber, miscanthus or straw, and;
- the biomass boiler appliance and installation meets the technical criteria to be eligible for the Renewable Heat Incentive, and;
  - A. the aggregate net rated thermal input is less than 0.5MWth, or:
  - B. the aggregate boiler net rated thermal input is less than or equal to 4 MW_{th}, and no individual boiler has a thermal input greater than 1 MW_{th}, and;
    - o the stack height must be a minimum of 5 meters above the ground (where there are buildings within 25 meters the stack height must be greater than 1 meter above the roof level of buildings within 25 meters) and,
    - o there are no sensitive receptors within 50 meters of the emission points.

This is in line with the Environment Agency's document "Air Quality and Modelling Unit C1127a Biomass firing boilers for intensive poultry rearing", an assessment has been undertaken to consider the proposed addition of the biomass boilers.

Our risk assessment has shown that biomass boiler will use virgin timber and straw, however it does not hold a RHI certificate, therefore further assessment was required.

As the biomass boiler on the installation does not meet the above criteria further assessment is necessary. Further screening has been undertaken using the boiler specifications provided by the operator.

Parameters	
Flue diameter	0.3m
Stack height (from ground level)	13m
Thermal input in MW or kW per hour of each boiler	1000kW
Adjacent Building heights	6m
Flue nominal load temperature in ^{o}C	170
Exit velocity in m/sec	12
NO_x concentration in mg/Nm^3	250
CO concentration in mg/Nm^3	250
PM_{10} (dust) concentration in mg/Nm^3	200

O_2 concentration %	6
The Grid reference of the stack	TF 10219 71699 (510219,371699)

The Air Quality Monitoring and Assessment Unit (AQMAU) screening tool (version 4) has been run for Carbon Monoxide (CO), Nitrogen Dioxide (NO2) and Particulates (PM10), to assess the emissions' impacts on the receptors at:

- Receptor 1 – dwelling at Top Farm, Stainfield, Market Rasen, LN8 5JL, TF10262 71727;
- Receptor 2 – dwelling to the north of the farm, TF10323 71946;
- Receptor 3 - Hermitage Farm, Stainfield, Market Rasen, LN8 5JL, TF10571 71900 .

Sulphur Dioxide (SO2) has not been assessed due to the boiler fuel being clean woodchip which would contain very little or no sulphur.

Process Contributions (PC)
For NO2, the short term Air Quality Standard (AQS) is 200 µg/m3 and for long term, 40 µg/m3. Process contribution significance thresholds are 10% of the AQS for short term and 1% for long term.

For PM10, the short term AQS is 50 µg/m3 and for long term, 40 µg/m3. Process contribution significance thresholds are 10% of the AQS for short term and 1% for long term.

For CO the short term AQS is 10mg/m3, there is no long term AQS. Process contribution significance threshold is 10% of the AQS for the short term.

The results highlighted in blue are process contributions (PCs) that are not insignificant as a percentage of the relevant AQS.

Pollutant	**Term**	**PC µg/m^3**	**AQS µg/m^3**	**PC %age of AQS**
Receptor 1 – dwelling at Top Farm				
NO_2	Short	6.3	200	**3**
NO_2	Long	1.4	40	**4**
PM_{10}	Short	3	50	**6**
PM_{10}	Long	1.1	40	**3**
CO	Short	12.5	10000	**0.125**
Receptor 2 – dwelling to the north of Top Farm				
NO_2	Short	6.4	200	**3**
NO_2	Long	0.96	40	**2**

PM_{10}	Short	2.1	50	**4**
PM_{10}	Long	0.77	40	**2**
CO	Short	12.7	10000	**0.127**
Receptor 3 – Hermitage Farm				
NO_2	Short	5.7	200	**3**
NO_2	Long	0.75	40	**2**
PM_{10}	Short	1.5	50	**3**
PM_{10}	Long	0.6	40	**1**
CO	Short	11.2	10000	**0.112**

Predicted Environmental Contributions (PEC)

Because annual means of NO_2 and PM_{10} for all three sensitive receptors are not insignificant, we must take background concentrations into consideration to examine whether a PC is going to contribute significantly to a possible exceedance of its AQS. PC plus background is known as predicted environmental concentration (PEC).

The background maps held on the DEFRA website were used to obtain relevant background concentrations.

Long term emissions are considered unlikely to give rise to an exceedance of an AQS where:

PC long term + background concentration < 70% of the AQS.

Pollutant	**Term**	**PC µg/m^3**	**AQS µg/m^3**	**Background µg/m^3**	**PEC %age of AQS**
Receptor 1 – dwelling at Top Farm					
NO_2	Long	1.4	40	9.762254	**28**
PM_{10}	Long	1.1	40	19.04328	**50**
Receptor 2 – dwelling to the north of Top Farm					
NO_2	Long	0.96	40	9.762254	**27**
PM_{10}	Long	0.77	40	19.04328	**50**
Receptor 3 – Hermitage Farm					
NO_2	Long	0.75	40	9.762254	**26**
PM_{10}	Long	0.6	40	19.04328	**49**

The PEC values for long term emissions of NO_2 and PM_{10} in the table above are less than 70% of the AQS and therefore screen out from requiring further assessment.

We are satisfied that the emissions from biomass boiler do not pose a significant risk to the sensitive receptors.

Industrial Emissions Directive (IED)

The Environmental Permitting (England and Wales) (Amendment) Regulations 2013 were made on the 20 February and came into force on 27 February. These Regulations transpose the requirements of the IED.

This permit implements the requirements of the European Union Directive on Industrial Emissions.

Groundwater and soil monitoring

As a result of the requirements of the Industrial Emissions Directive, all permits are now required to contain a condition relating to protection of soil, groundwater and groundwater monitoring. However, the Environment Agency's H5 Guidance states that it is only necessary for the operator to take samples of soil or groundwater and measure levels of contamination where there is evidence that there is, or could be existing contamination and:

- The environmental risk assessment has identified that the same contaminants are a particular hazard; or
- The environmental risk assessment has identified that the same contaminants are a hazard and the risk assessment has identified a possible pathway to land or groundwater.

H5 Guidance further states that it is not essential for the Operator to take samples of soil or groundwater and measure levels of contamination where:

- The environmental risk assessment identifies no hazards to land or groundwater; or
- Where the environmental risk assessment identifies only limited hazards to land and groundwater and there is no reason to believe that there could be historic contamination by those substances that present the hazard; or
- Where the environmental risk assessment identifies hazards to land and groundwater but there is evidence that there is no historic contamination by those substances that pose the hazard.

The Site Condition Report (SCR) for Top Farm Poultry Unit (dated 21/08/2014) demonstrates that there are no hazards or likely pathway to land or groundwater and no historic contamination on site that may present a hazard from the same contaminants. Therefore, on the basis of the risk assessment presented in the SCR, we accept that they have not provided base line reference data for the soil and groundwater at the site at this stage.

Annex 1: decision checklist

This document should be read in conjunction with the Duly Making checklist, the application and supporting information and permit/notice.

Aspect considered	Justification / Detail	Criteria met Yes
Consultation		
Scope of consultation	The consultation requirements were identified and implemented. The decision was taken in accordance with RGN 6 High Profile Sites, our Public Participation Statement and our Working Together Agreements.	✓
Responses to consultation and web publicising	The web publicising and consultation responses (Annex 2) were taken into account in the decision. The decision was taken in accordance with our guidance.	✓
Operator		
Control of the facility	We are satisfied that the applicant (now the operator) is the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with EPR RGN 1 Understanding the meaning of operator.	✓
European Directives		
Applicable directives	All applicable European directives have been considered in the determination of the application.	✓
The site		
Extent of the site of the facility	The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility. A plan is included in the permit and the operator is required to carry on the permitted activities within the site boundary.	✓
Site condition report	The operator has provided a description of the condition of the site. We consider this description is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under IED– guidance and templates (H5).	✓
Biodiversity, Heritage, Landscape and Nature Conservation	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat . A full assessment of the application and its potential to affect the sites has been carried out as part of the permitting process. We consider that the application will not affect the features of the sites.	✓

Aspect considered	Justification / Detail	Criteria met Yes
	We have not formally consulted on the application. The decision was taken in accordance with our guidance. See Key Issues above for further details.	
Environmental Risk Assessment and operating techniques		
Environmental risk	We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment is satisfactory.	✓
Operating techniques	We have reviewed the techniques used by the operator and compared these with the relevant guidance notes. The proposed techniques for priorities for control are in line with the benchmark levels contained in the Sector Guidance Note EPR 6.09 and we consider them to represent appropriate techniques for the facility. The operator has proposed the following key techniques with regards to the biomass boiler on site: • the fuel is derived from virgin timber, and • the stack is 1m or more higher than the apex of the adjacent buildings. We consider that the operating techniques specified in the permit reflect the BAT for the installation.	✓
The permit conditions		
Updating permit conditions during consolidation.	We have updated previous permit conditions to those in the new generic permit template as part of permit consolidation. The new conditions have the same meaning as those in the previous permits. The operator has agreed that the new conditions are acceptable.	✓
Raw materials	We have specified limits and controls on the use of raw materials and fuels. We have specified that only virgin timber (including wood chips and pellets), straw, miscanthus or a combination of these. These materials are never to be mixed with, or replaced by, waste.	✓
Incorporating the application	We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process. These descriptions are specified in the Operating Techniques table in the permit.	✓
Monitoring	We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified in table S3.3 as	✓

Aspect considered	Justification / Detail	Criteria met Yes
	referred to in condition 3.5.1. The monitoring requirement has been imposed in order to ensure 35% reduction in ammonia emissions is being achieved by the inclusion of indirect heating – biomass boiler. The operator will install equipment which allows for continuous monitoring of ammonia emissions within the poultry house allowing for an average ammonia concentration over the crop cycle to be derived. From this, the ammonia emission factor (in kg/bird place/yr) can be calculated and reported to the Environment Agency. Based on the information in the application we are satisfied that the operator's techniques, personnel and equipment are satisfactory and have been approved by the Environment Agency.	
Reporting	We have specified reporting in the permit as per table S4.1 referred to in condition 4.2.3. The operator is required to report ammonia emissions in kg/bird place/yr as an annual average from Poultry Houses 8 and 9 at Top Farm Poultry Unit. This information should be recorded on reporting form within 10 days (or one week) of the end of each crop cycle. This frequency of reporting is required to ensure that a 35% reduction in ammonia emissions through the use of biomass boiler is achieved.	✓
Pre-operational conditions	Based on the information in the application, we consider that we need to impose pre-operational conditions. The operator shall submit details outlining the instalment of the ammonia monitoring trial equipment in line with that proposed in the Top Farm Poultry Unit variation application EPR/TP3133UG/V003 at least 2 weeks before the commencement of operations.	✓
Improvement conditions	Based on the information on the application, we consider that we need to impose improvement conditions. We have imposed improvement conditions to ensure that: The operator shall submit a report providing evidence to demonstrate that an ammonia emissions reduction of at least 35% can be achieved by installing biomass boilers on site or that implementation of alternative appropriate mitigation measures have achieved this reduction. The reduction shall be in line with the predicted ammonia modelling assessment dated August 2014 submitted in support of variation application EPR/TP3133UG/V003. Evidence for reduction through biomass instalment will	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	need to include at least 12 months of operational data collected at Top Farm Poultry Unit (EPR/TP3133UG/V003). The report shall be submitted in writing to the Environment Agency for approval.	
Operator Competence		
Environment management system	There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.	✓
Financial provision	There is no known reason to consider that the operator will not be financially able to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.	✓

Annex 2: Consultation and web publicising responses

Summary of responses to consultation and web publication and the way in which we have taken these into account in the determination process.

Response received from
Health and Safety Executive on 08/12/14
Brief summary of issues raised
No issues raised.
Summary of actions taken or show how this has been covered
n/a

Environmental Health and Planning Departments of West Lindsey District Council were also consulted. There were no responses received.

This proposal was also publicised on our website between 09/12/14 and 12/01/14 and no representations were received.