

Permitting decisions

Variation

We have decided to issue the variation for Barn Farm Pig Unit operated by Wrights Produce Limited.

The variation number is EPR/PP3931FP/V002.

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 provides a record of the decision making process. It summarises the decision making process in the decision checklist to show how all relevant factors have been taken in to account. This decision document provides a record of the decision making process. It:

- highlights [key issues](#) in the determination
- summarises the decision making process in the [decision checklist](#) to show how all relevant factors have been taken into account
- explains why we have also made an Environment Agency initiated variation
- shows how we have considered the [consultation responses](#).

Unless the decision document specifies otherwise we have accepted the applicant's proposals. Read the permitting decisions in conjunction with the environmental permit and the variation notice. The introductory note summarises what the variation covers.

Key issues of the decision

This is a substantial variation to convert four existing unpermitted open cattle enclosures to seven modern pig finishing barns for the rearing of production pigs from 30kg to their final weight of approximately 105kg. The newly built finishing barns as well as the existing pig finisher houses hold a maximum capacity of 9,300 places (increased from 3,100 places currently permitted). Each barn can house up to a maximum of 1,000 pigs.

1) Permit Changes implemented due to the revised Intensive Farming BReF, 2017

The new Best Available Techniques (BAT) Reference Document (BReF) for the Intensive Rearing of Poultry or Pigs (IRPP) was published on the 21 February 2017. There is now a separate BAT Conclusions document which sets out the standards that permitted farms will have to meet.

There are some new requirements for permit holders. The conclusions include BAT associated emission levels (AELs) for ammonia emissions which will apply to the majority of permits as well as BAT AELs for nitrogen and phosphorous excretion. For some types of rearing practices stricter standards will apply to farms and housing permitted after the new BAT Conclusions were published such as:

BAT 3 - nutritional management of nitrogen excretion

BAT 4 - nutritional management phosphorous excretion

BAT 24 - monitoring of emissions and process parameters. Total nitrogen and phosphorous excretion

BAT 25 - monitoring of emissions and process parameters. Ammonia emissions

BAT 30 - ammonia emissions from pig houses.

The new BAT conclusions include a set of BAT AELs for ammonia emissions to air from animal housing for pigs. For variations all new housing on existing farms will need to meet the BAT AEL while the existing housing will be allowed the less stringent 'existing plant' BAT AEL. The 'existing plant' BAT AEL will apply indefinitely to any existing housing on any site permitted before 21 February 2017 or at least until the next revision of the BReF. Application EPR/PP3931FP/V002 is for increasing the place numbers for >30kg production pigs therefore any new or existing housing needs to meet the new BAT AEL of 5.65kgNH₃ per place per year. As an emission factor of 2.97kgNH₃ per place per year has been used in the Applicants proposal then their proposal appears to be within the BAT AEL.

Currently the Environment Agency conclude that no further changes need to be made to application EPR/PP3931FP/V002 with regards to the recent publication of the IRPP BReF and BAT Conclusions document. However, this may change once the review of all UK intensive farming permits is undertaken within the next four years and thus, this permit could be amended during this timeframe as a result of the IRPP BReF.

2) Ammonia Impacts

There are three Special Areas for Conservation (SAC), one Ramsar Site and one Special Protection Area (SPA) within 10km, five Sites of Special Scientific Interest (SSSI) within 5km and seven Local Wildlife Sites (LWS) within 2km of the facility.

No pre-application screening report has been completed for this site using the Environment Agency Ammonia Screening Tool spreadsheet as it was already known from the previous permit application (EPR/PP3931FP/A001) that a detailed habitats modelling assessment and report would be required because of the sensitivity of the surrounding environment. A detailed air modelling report of the dispersion and deposition of ammonia was provided within the application supporting documents (Ammonia Emissions Impact Assessment and Emission Reduction Plan, ref: MPA017AQ Barn Farm Bridgham) dated August 2016.

The Environment Agency Guidance on modelling the concentration and deposition of ammonia emitted from intensive farming - Air Quality Modelling and Assessment Unit, 22 November 2010, v3 was used to cross check the model version, input parameters, meteorological dataset, emission rate calculation, emission rate used in the modelling, data sets and data source types. On this basis we accepted that the results and conclusions presented in the detailed modelling report are correct.

Assessment of statutory and non-statutory designations

Detailed air quality dispersion modelling was carried out using ADMS 5.2 and a quantitative assessment of the parameters was completed based on calculated ammonia emission rates from the barns, atmospheric dispersion modelling and literature derived deposition velocities for nitrogen and acid deposition. Pollutant emission rates were calculated based on the unit emission factors for intensive farming sources published by the Environment Agency (EA 2010). An emission factor of 2.97kg/yr/place for finishing pig housing with straw and a solid floor was applied.

The 2010 meteorological data from the Met Office station at Wattisham is associated with the highest modelled ammonia values (ug/m³) across most of the percentile values and as such 2010 was selected as the most conservative year of meteorological data for completion of subsequent model runs. A background concentration of 3ug/m³ was applied based on the data provided for the farm location on the Air Pollution Information System (APIS) website. The deposition velocity of 0.03m/sec for woodland systems and 0.02m/sec for shrub-land were used in the model as per Environment Agency guidance. A surface roughness of 1 was assigned to the grid points within woodland areas and 0.5 to the rest of the model space.

Deposition of ammonia was modelled as per Environment Agency guidance (EA, 2010). Modelling was conducted in two stages:

- dispersion modelled assuming no plume depletion due to deposition to provide a worst case estimate of ammonia concentrations at each of the receptor points. Deposition at each receptor point was then derived by multiplying the calculated air concentration by the appropriate deposition velocity based on the receptor specific vegetation.
- where the modelled concentrations (no plume depletion) exceeded thresholds, further assessment with plume depletion were undertaken.

Detailed modelling, using the first stage process as described above, indicated that the process contribution (PC) for all the environmental designations identified as potentially being at significant risk exceeded the critical level (CLe) for ammonia, critical load (CLo) for nitrogen deposition and/or the CLo for acid deposition. Remodelling was then completed using the stage two principle (plume depletion) as well as adding any in-combination effects from nearby farms. Twenty permitted farms were identified as being within a 10km radius and as potentially acting in-combination with Barn Farm Pig Unit. These were modelled to assess an in-combination effect with Barn Farm Pig Unit using the maximum modelled ammonia concentration and deposition from these sources.

The results from this second modelling run identified that exceedances of the CLe for ammonia, CLo for nitrogen deposition and the CLo for acid deposition were likely at Breckland SSSI/SPA and an exceedance of the CLo for nitrogen deposition was likely at the River Thet and Black Carr LWSs.

In these circumstances, the Environment Agency requires mitigating further the potential impacts from ammonia emissions to air by further reducing ammonia emissions. Therefore, a site specific Emission Reduction Plan has been developed by the applicant for the installation which details specific measures to be applied to reduce emissions to suitable levels as required by the Environmental Permit. This includes:

- two stage low protein feed with a third low protein stage added for finisher pigs grown onto weights over 100kg (fed to pigs from 90kg onwards) to reduce excreted ammonia
- addition of benzoic acid (VevoVital) to pig diets improving metabolism of dietary proteins and acidification of wastes with the potential to increase dietary supplementation if required to further reduce potential ammonia emissions to air
- stock rotation of finisher pigs is likely to mean that the installation is not stocked to capacity all the time
- bedding type and quantity – deeper bedding to soak up more fluids with barns cleaned and refreshed more often to remove wastes to reduce the potential for increased ammonia emissions to air.

When the ADMS model was re-run a third time accounting for the potential reductions in ammonia from implementing the site specific Emission Reduction Plan, all environmental sites screened out except for the CLo for N deposition relating to Breckland SSSI/SPA. For Breckland SSSI/SPA, the combined prediction of 23% is a worst case as depletion has not been considered. Establishing precisely how much of an over-prediction this is would not be necessary as the Environment Agency expect modelling uncertainties overall to be greater than any reductions from other plant due to plume depletion. However, the area potentially affected equates to about 18Ha of an 850Ha area. Whilst this is only an area of about 2%, Natural England were formally consulted regarding the potential harmful effect on Breckland SSSI/SPA.

Natural England formally responded to an Appendix 11 consultation made by the Environment Agency regarding the potential significant affects on Breckland SSSI/SPA. Natural England considers that, providing mitigation is put in place in accordance with the measures outlined in the Appendix 11 consultation, the application is not likely to have a significant effect on Breckland SSSI/SPA, either alone or in-combination. However, Natural England concludes that it expects further mitigation measures to be put in place if the Emission Reduction Plan is found to be ineffective during the monitoring and assessment period in order to protect Breckland SSSI/SPA. Natural England do not have any concerns regarding any of the other designated sites listed.

Norfolk Wildlife Trust (NWT) and Norfolk County Council Ecologist (NCCE) were also formally consulted regarding the River Thet and Black Carr LWSs due to their close proximity to the installation. The consultation was passed from NCCE to NWT as NWT holds information on the two sites.

Citations for both LWSs were provided by NWT indicating that these are unmanaged wet and dry broad-leaved semi-natural woodlands with marginal riverine plants. It is not known how sensitive these sites are to the affects of ammonia, nitrogen deposition and/or acid deposition and the current condition of both sites is unknown. NWT was unable to provide any assessment of the likely impacts of ammonia on the sites because of the lack of recent knowledge for the sites. They were unable to confirm if there were any bryophytes or lichens present from the information that they hold.

In order to monitor and mitigate for any potential future effects on the designations, the Environment Agency has added several improvement conditions to the permit. These improvement conditions would require the operator to:

- implement their Emission Reduction Plan
- monitor, record and assess their ammonia emissions to air with regards to their Emission Reduction Plan
- confirm the effectiveness of their Emission Reduction Plan with the scope to make changes and updates
- use of BAT in further reducing their ammonia emissions to air.

3) Dietary Supplementation/Management and Low Protein Diets

Trials cited in the former Intensive Farming BReF indicate that it is possible to reduce the protein level in pig feed by up to 2% resulting in a decrease in nitrogen excretion and ammonia emissions of up to 20% in pigs weighing between 25kg and 110kg.

Originally production pigs at Barn Farm Pig Unit were fed on diets containing typical protein dietary levels between 19% and 21%. Currently two diets are fed to the pigs over the production cycle. For production pigs the diet change over is around 50kg to 60kg changing from 18.7% (stage 1) protein to 15.0% (stage 2). A third feed stage is to be added for production pigs grown over 100kg to a feed containing 13.5% protein when these pigs reach 90kg in weight (having been feed on stage 1 and 2 diets of 17.2% and 15.5% protein respectively). The weighted average feed protein level is calculated to be 16.2% giving an average reduction of about 3.8%. This could equate to reductions between 20% (based on the former BReF findings) and 38% (based on extrapolated site data) giving a reduction in the ammonia emission factor of 2.97kg/place/year to between 1.84kg/place/year and 2.38kg/place/year.

Phosphorus levels in the pig feeds are reduced over the production cycle with the addition of digestible phosphorus or the use of enzymes such as phytase to ensure optimum healthy production growth whilst limiting the excretion of phosphorus.

Benzoic acid (VevoVital) is added to pig feed at a rate of 5kg/tonne feed. Reports on scientific field trials indicate a reduction of around 10% can be expected at this feed rate. This forms part of the site specific Emission Reduction Plan and an improvement condition has been set within the permit to record and monitor the effectiveness and make provision for changes to dietary supplementation if required.

The Environment Agency confirms that it is reasonable to accept protein reduction in pig feed and dietary supplements as ammonia mitigation methods. The applicant must provide evidence that the protein and phosphorus feed levels are reducing through-out the growing cycle and that they are adding VevoVital in the feed. Records from the feed suppliers or the pig feeding regime documents for the installation recording protein levels and the amount of VevoVital added to feeds will be required and improvement conditions are in place in the permit for these reasons.

4) Odour

The principle odour sources are ammonia emissions to air from the pig housing units and under the current site operation (3,100 production pigs) the installation has not been the source of any previous odour complaints. The applicant submitted a revised odour management plan (OMP) as part of a Schedule 5 Notice request providing detailed site specific odour mitigation measures and a review of the sensitive receptors. The applicant has considered all relevant human receptors in their odour assessment and has altered the installation boundary as part of EPR/PP3931FP/V002 to include the property 'Old Barn'. This property is occupied by the farm owner and is no longer regarded as a relevant sensitive receptor. The closest sensitive receptors are now approximately 500m to 600m west and 700m to 800m east and south-east (refer to the plan copied on page 5).

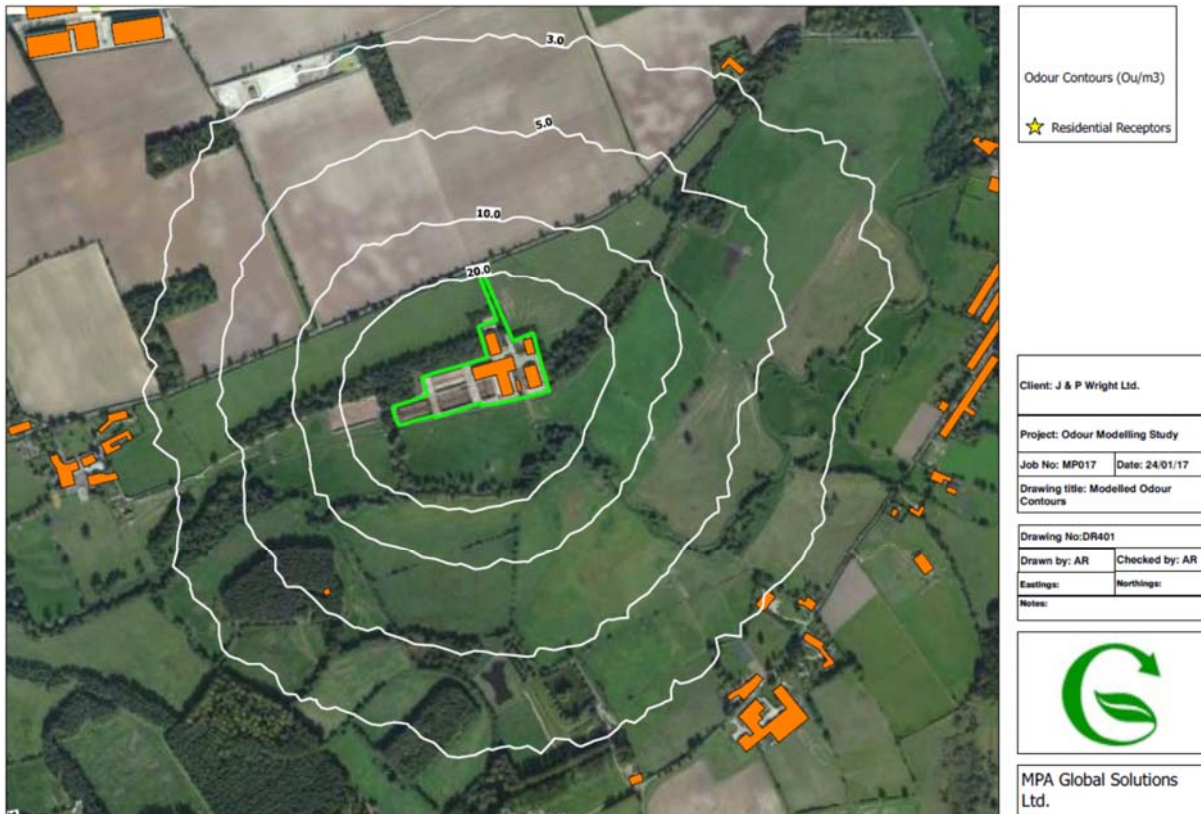
Results of the detailed odour modelling assessment (Barn Farm, Bridgham, Norfolk: Odour Emission and Dispersion Modelling Report Revision 1, August 2016) indicates that odour exposures at these receptors would be less than the Environment Agency's benchmark for odours from intensive farms (30UE/m³). The Environment Agency has checked the modelling data files and, taking modelling uncertainties into account and by selecting worst case emission rates for the model, agrees with the assessment conclusions.

Given that there is always a risk of odour nuisance from pig finishing facilities and the proximity of the installation to sensitive receptors, a revised OMP is in place for the site to prevent and minimise the likelihood of odour annoyance. This includes:

- identification of site specific odour sources
- minimising odour nuisance such as no manure or slurry stored on site (regularly removed from site), dirty water tanks emptied frequently and not vented, pig feed composition and diets, observe wind direction during house clean-out periods
- details of operating and facility controls such as a formalised complaints system, site inspections for subjective monitoring of odour levels at identified odour sources, reviews of stocking densities and animal welfare
- abnormal operating scenarios – site specific contingency plan for the installation to mitigate elevated odour pollution for each potential abnormal operating scenario where there is the potential for elevated odour nuisance.

The OMP is to be reviewed at least every three years or after a substantiated odour complaint or after significant changes have been made to the facility.

The Environment Agency consider that there are satisfactory controls in place to ensure that the installation can be operated adequately preventing odours from reaching unacceptable levels. However, an improvement condition has been added to the permit to review the effectiveness of the site OMP with regards to reducing potential odour nuisance as well as the effectiveness of the site specific contingency plan for controlling odours during abnormal operating scenarios.



5) 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 IED. Amendments have been made to the conditions of this permit so that it now implements the requirements of the EU Directive on Industrial Emissions.

Soil and Groundwater Monitoring

As a result of the IED requirements all permits must now have condition 3.1.3 relating to groundwater monitoring. However, the Environment Agency's Guidance states that it is only necessary for the operator to take samples of soil or groundwater and measure levels of contamination where the 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 your risk assessment has identified a possible pathway to land or groundwater.

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.

Decision checklist

Aspect considered	Decision
Receipt of application	
Confidential information	A claim for commercial or industrial confidentiality has not been made.
Identifying confidential information	We have not identified any information provided as part of the application that we consider to be confidential.
Consultation/Engagement	
Consultation	<p>The consultation requirements were identified in accordance with the Environmental Permitting Regulations and our public participation statement. The application was publicised on the GOV.UK website. We consulted the following organisations:</p> <ul style="list-style-type: none"> ➤ Local Authority (Environmental Health and the Planning Department) ➤ Natural England ➤ Norfolk County Council Ecologist ➤ Norfolk Wildlife Trust ➤ Health and Safety Executive. <p>The comments and our responses are summarised in the consultation section.</p>

Aspect considered	Decision
The site	
Extent of the site of the facility	The operator has provided plans which we consider are satisfactory, showing the extent of the site of the facility. A plan is included in the permit.
Site condition report	<p>The operator has provided a description of the condition of the site, which we consider is satisfactory. The decision was taken in accordance with our guidance on site condition reports.</p> <p>The site condition report (SCR) for Barn Farm (dated 02 January 2016) demonstrates that there are no significant hazards or likely pathways to land or groundwater and no historic contamination sources on site that may present a significant risk.</p> <p>Therefore, on the basis of the assessment presented in the SCR the Environment Agency accepts that no baseline reference data needs to be provided for the site soil and groundwater conditions as part of application EPR/PP3931FP/V002.</p>
Biodiversity, heritage, landscape and nature conservation	<p>The application is within the relevant distance criteria of a site nature conservation and protected habitat. We have assessed the application and its potential to affect all known sites of nature conservation and protected habitats identified as part of the permitting process.</p> <p>We consider that the application will affect the features of the site and improvement conditions have been added to the permit to mitigate against these effects. Operational controls and conditions have been added to the permit and are discussed in more detail in the key issues section.</p> <p>We have consulted Natural England on our Habitats Regulations assessment and taken their comments into account in the permitting decision. This was done by completing an Appendix 11 Habitats Directive Assessment and is discussed in more detail in the key issues section. The Appendix 11 was completed on 01 February 2017 and is recorded on the public register.</p> <p>In accordance with our guidance, as there are statutory sites within 10km of the installation, we are required to complete an Appendix 4 CRoW Act Assessment for the Sites of Special Scientific Interest. The Appendix 4 was completed for auditing purposes on 26 January 2017 and is recorded for information only on the public register.</p> <p>We have also consulted Norfolk Wildlife Trust and Norfolk County Council Ecologist due to the close proximity of the River Thet LWS and Black Carr LWS. This is discussed further in the key issues section.</p>
Environmental risk assessment	
Environmental impact assessment	In determining the application we have considered the Environmental Statement.
Environmental risk	We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment is satisfactory.

Aspect considered	Decision
Operating techniques	
General operating techniques	We have reviewed the techniques used by the operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility. The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.
Operating techniques for emissions that do not screen out as insignificant	<p>The detailed modelling supplied by the operator and reviewed by ourselves shows that emissions of ammonia to air have been screened out as insignificant with the exception of nitrogen deposition relating to the Breckland SSSI/SPA.</p> <p>We have assessed whether the proposed techniques are BAT. The proposed techniques are in line with the techniques contained in the technical guidance and we consider them to represent appropriate techniques for the facility. The permit conditions ensure compliance with relevant BREFs and BAT Conclusions. This currently also includes the new BREF and BAT Conclusions document published on 21 February 2017. Please refer to the key issues section.</p> <p>Nitrogen deposition only just exceeds threshold criteria for the critical load and has been modelled on a worst case basis. Given modelling uncertainties we have imposed operational controls in the form of an Emission Reduction Plan with monitoring, reporting and improvement conditions added to the permit variation to mitigate against these effects. Please refer to the key issues section.</p>
Odour management	We have reviewed the odour management plan in accordance with our guidance on odour management. We consider that the odour management plan is satisfactory. Further details are discussed in the key issues section.
Noise management	We have reviewed the noise management plan in accordance with our guidance on noise assessment and control. We consider that the noise management plan is satisfactory.
Permit conditions	
Changes to the permit conditions due to an Environment Agency initiated variation	We have varied the permit as stated in the variation notice with regards to regulatory changes brought about by the Industrial Emissions Directive (IED). Further details are discussed in the key issues section.
Improvement programme	<p>Based on the information on the application, we consider that we need to impose an improvement programme. We have imposed improvement conditions to ensure that:</p> <ul style="list-style-type: none"> ➤ implementation of a site Emissions Reduction Plan ➤ review the odour management plan ➤ monitor, record and assess the ammonia emissions to air with regards to low protein diets and feed supplementation ➤ use of BAT in further reducing their ammonia emissions to air.

Aspect considered	Decision
Emission limits	No emission limits have been added, amended or deleted as a result of this variation but could be added within the next four years as part of the Intensive Farming Sector Review.
Operator competence	
Management system	There is no known reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.
Growth Duty	
Section 108 Deregulation Act 2015 – Growth duty	<p>We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit. Paragraph 1.3 of the guidance says:</p> <p>“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”</p> <p>We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.</p> <p>We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.</p>

Consultation

The following summarises the responses to consultation with other organisations, our notice on GOV.UK for the public and the way in which we have considered these in the determination process.

Responses from organisations listed in the consultation section

Response received from: Norfolk Wildlife Trust dated 22 February 2017.
Brief summary of issues raised
Norfolk Wildlife Trust hasn't been able to provide details on the impacts of ammonia on the affected sites as this has been made difficult because of a lack of recent knowledge for the sites of interest. It is not known whether there are any bryophytes or lichens present from the information held on the sites.
Summary of actions taken or show how this has been covered
The Environment Agency has undertaken its own assessment as well as reviewed the detailed modelling report provided by the consultant and are satisfied with the conclusions presented. Improvement conditions have been added to the permit to further monitor and reduce the ammonia emissions to air.

Response received from: Lead Conservation Officer – Norfolk and Suffolk Team, Natural England dated 27 February 2017.
Brief summary of issues raised
Natural England considers that, providing mitigation is put in place in accordance with the measures outlined in the Appendix 11, the application is not likely to have a significant effect on Breckland SPA, either alone or in-combination. However note that we have concluded the above on the basis that further mitigation measures will be put in place if the Emission Reduction Plan is found to be ineffective during the monitoring and assessment period. We do not have any concerns regarding any of the other designated sites listed.
Summary of actions taken or show how this has been covered
The Environment Agency has added three improvement conditions to the permit to ensure the assessed ammonia reduction measures are implemented by the operator at this installation as follows: <ul style="list-style-type: none">➤ detail the implementation of the site specific Emission Reduction Plan for the installation to comply with the appropriate measures in S3.2 of SGN How to Comply – Intensive Farming, Version 2➤ implement feeding low protein diets to pigs as per specialist feed formulations submitted with application EPR/PP3931FP/V002 to comply with the appropriate measures in S2.3 of SGN How to Comply – Intensive Farming, Version 2 to reduce ammonia emissions to air➤ submit a written plan for approval on the effectiveness of benzoic acid added to pig feed to reduce ammonia emissions including monitoring and reporting proposals.

Response received from: Ecologist, Norfolk County Council dated 02 March 2017.
Brief summary of issues raised
Norfolk County Council has not been able to provide details on the impacts of ammonia on the affected sites and would have to leave it to the Environment Agency to assess whether the levels of ammonia represent a risk for these habitats. However, as the Local Wildlife Sites are both unmanaged woodland, the habitats are not as sensitive as say heathland or diverse fen meadows would be to the deposition of ammonia or nitrate.
Summary of actions taken or show how this has been covered
The Environment Agency has undertaken its own assessment as well as reviewed the detailed modelling report provided by the consultant and are satisfied with the conclusions presented. Improvement conditions have been added to the permit to further monitor and reduce the ammonia emissions to air.

The Local Authority Planning Department and Environmental Health Officer as well as the Health and Safety Executive were consulted on this application. However, no consultation responses from these parties were received.

The application was advertised externally on the GOV.UK website between 01 February 2017 and 01 March 2017 to invite any responses and comments from the general public. No responses were received.