Application Variation Air Cleaning System for Methwold (Breckland) Farm Poultry Unit 02/10/2024

2 About your proposed change

Q2a Have you told us already about this application

1. Wayland Farms Ltd have updated the design of the proposed new poultry houses since submitting an application to vary the permit, and duly making by the EA. Having recognised the availability of new technology wet acid air cleaning systems suitable for larger poultry houses. Offers significant environmental benefits to reduce dust and ammonia emissions.

2. Environment Agency have provided advice on the air cleaning system the applicant has committed to incorporate into the design of all poultry houses in the new proposed development at Methwold (Breckland) Farm Poultry Unit in email dated 30/09/2024:

   Thank you for your call earlier today. As discussed, I have liaised with a senior colleague in relation to the applicant's proposal to install acid scrubbers at Methwold Farm on all poultry houses.

   Firstly, thank you for advising us that the applicant is exploring additional mitigation measures in order to reduce ammonia emissions from the installation. In preparation for the imminent public consultation for this application, **we would ask that you submit a document which presents the applicants proposal for acid scrubbers at Methwold Farm in simple terms by Thursday 3rd October 2024.** We will then publish this document as part of the application proposal for public consultation. **Please note** it should be clear in the document that the applicant is committing to the addition of acid scrubbers as part of the proposed variation application and is not just a potential option.

   I understand from our conversation that the applicant does have a preferred technology in mind, however there are a few points / questions I have listed below which you may wish to consider as part of your final technology selection:

   a) We will not be able to begin assessing the acceptability of the acid scrubbers until the technology is certified.

      The wet acid scrubber technology is currently going through official testing in Germany for certification of the reduction efficiency factors for removing ammonia and dust when installed on housing for broiler chickens. Certification expected in January 2025. Submitted Application Variation; Lavamatic XL for Poultry; Technical data; Munters Reventa Germany February 2021.

b) As part of your technology choice, we would recommend you consider both the predicted ammonia and odour reduction capability. Any reductions claimed will need to be evidenced. *Note: The current BAT requirement for acid scrubbers is for the technology to provide a minimum of 70% reduction in ammonia emissions and for odour the target is 300 odour units at the outlet point.*

Manufacturer advises the scrubbers will provide a minimum of 70% reduction in ammonia emissions at the outlet point. Expect official testing will certify significantly more - based on preliminary results and also certification on housing for laying hens.

The scrubbers have not been designed to reduce odour. Applicant will use dispersion modelling to design optimum vertical exhaust stacks on the scrubbers, above the ridges of the houses, to ensure outlet points will be sufficiently high to disperse odour and effects will not be significant at sensitive receptors.

In addition, it is entirely reasonable to expect the technology will achieve associated environmental benefits of wet acid scrubbers to reduce odour emissions as described in the Best Available Techniques Reference Document. Odour removal is, on average, 30% for acid scrubbers, although the efficiency is highly dependent on raw gas concentration. Odour reduction will be limited to compounds of an alkaline nature that can be diluted in acid solution, as well as to odorous substances that can be attached to dust particles.

c) You may wish to consider the ability of the chosen acid scrubber technology to operate simultaneously with the proposed heat exchangers on the poultry houses. Would the applicant want to reconsider their proposal for the use of heat exchangers on the poultry houses and focus on the reduction of ammonia emissions achieved via the acid scrubbers? Normally, scrubber certification requires a minimum 70% of airflow to pass through the scrubber, meaning it is not clear if the heat exchangers can function/be economically viable located on residual air flow.

Applicant will install heat exchangers plus wet acid scrubbers on all houses, but not operate them simultaneously. Will operate heat exchangers first 14 days of rearing cycle then switch off. From day 15 provide high velocity ventilation to the end of rearing cycle via the extraction fans in the scrubbers. The heat exchangers will reduce ammonia emission by 27.8% during use according to certification previously submitted. Applicant recognises them for their principal benefit for energy efficiency and reduce the quantity of liquified petroleum gas required to provide birds warmth and ventilation and reduce consequential carbon emissions from combustion of LPG.

High velocity ridge extraction fans will be installed on the poultry houses for additional ventilation to mitigate the effects of warm weather on bird welfare. Summer daily maximum temperature may be around 7°C higher compared to summer temperatures now according to EA advice on adapting for climate change for intensive farming.

d) Depending on the design of the acid scrubber selected, it may be an opportunity to consider stack height optimisation which may be beneficial in reducing ammonia impacts further.

Described in point (b), above.

e) Any operating techniques associated with the chosen acid scrubber technology will form part of the requirements of the permit, should it be granted, and therefore the operator would need to ensure compliance with these when the final technology is installed.

Applicant will operate wet acid scrubbers in accordance with the manufacturer's instructions and store and handle chemicals and waste residues in accordance with legal requirements and as part of the permit requirements. A programme of planned preventive maintenance will be carried out with inspection and maintenance schedules based on manufacturer's recommendations. A record of all faults and maintenance work and inspections will be kept in the site office. Workers will be provided with formal training including to be able to detect abnormal operation and investigate its causes and get back to normal operation and ensure the problem does not reoccur.

f) Does the applicant also propose to install acid scrubbers on the pig housing in addition to the acid scrubbers on the poultry housing?

Not proposing to install wet acid scrubbers in new pig houses. Designed the ventilation with Galebreaker curtains to provide fresh air inlets, high velocity extraction fans on ridges and normal atmospheric pressure inside, so scrubbers not expected achieve the reduction efficiency factors for ammonia or dust. Poultry houses will be closed, and ventilation designed to operate with slightly negative pressure - with small inlet vents in the walls and high velocity extraction fans into the scrubbers to provide optimum ventilation and maximum reduction in ammonia and dust in emissions.

We do appreciate your consideration and engagement in providing further mitigation measures to reduce ammonia emissions, however, please note that we are at the very early stages of our assessment of this proposal, and we may consider that further mitigation measures are required as our assessment progresses. In addition, please note

that whichever technology option you choose for the acid scrubbers, there would be a future requirement to provide monitoring data through a monitoring regime to demonstrate the effectiveness of the acid scrubbers should the permit be granted.

Monitoring techniques will be in accordance with BATc28 and BATc32. Specific techniques to be confirmed and approved by EA.

Additional information not included in the Application Variation Supporting Information previously submitted to apply to vary permit.

4 Management systems

Q7 Emissions to air, water, and land at Methwold (Breckland) Fm Poultry Unit

Table 2 Emissions (releases)

Emission point description and location	Source
Point source emissions to air	
Exhaust outlets from air cleaning systems on poultry houses 1-20 as shown on the site layout plan, drawing No. BRECK-LAY1-15 dated 23/09/24 included with application EPR/XP3632QE/V003	Poultry houses 1-20
Point source emissions to water	
None	
Point source emissions to land	
None	
Point source emissions to sewer, effluent treatment plants or other transfers offsite	
None	

8 Operating techniques

Q8a Technical standards & main measures to control emissions at Methwold (Breckland) Fm Poultry Unit

Schedule 1 activity	Section 6.9; Part A(1)(a) Rearing poultry or pigs intensively at installation with more than – (i) 40,000 places for poultry
Technical guidance	Environment Agency (2010) EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming Version 2. Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs 2017.

Table 3 Measures in accordance with Environment Agency (2010) EPR 6.09 V2 at Methwold (Breckland) Fm Poultry Unit

Fugitive emissions	Appropriate measures for preventing and minimising fugitive emissions will be in place with provisions for: • Dirty water from air cleaning system will be collected in package storage tanks shown on the drainage plan. • Package storage tanks will be designed to deal with the volumes of waste water generated and manufactured to conform to the specification in SGN EPR6.09 or an appropriate specification for an acid-resistant storage tank to be confirmed.
Dust	The H1 Environmental Risk Assessment submitted with the application shows sources of dust have been identified as having potentially moderate and minor significance. At Methwold (Breckland) Fm Poultry Unit there are receptor locations potentially sensitive to dust including residential dwellings for farm workers and public rights of way within 100m of the installation boundary. Dust & bio-aerosol management plan in place, and mitigation and management measures are in accordance with EPR6.09 How to comply: • Scrubbers (wet acid) will be installed on all poultry houses. • Updated H1 Environmental risk assessment, dust and odour management plans with air cleaning system and heat exchangers to reduce ammonia and dust emissions.
Measures for bunding and containment	(a) Agricultural fuel oil and other chemical storage: • Sulphuric acid containers will be provided with secondary containment capable of retaining any spillage and stored in dry, frost-free buildings and secure against unauthorised access.

Q8a Technical standards contd. EC (2017) Best Available techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs at Methwold (Breckland) Fm Poultry Unit

Environment Agency initiated a variation of permit EPR/XP3632QE/V002 on 24/05/2021 following the Intensive Farming BAT compliance permit review. Concluded the operator will be compliant with the Environmental Permitting Regulations/Industrial Emissions Directive if they are compliant with their existing permit as varied including updated permit conditions and schedules. Included the Agency's permitting decisions (*italic*) in how the site is demonstrating compliance in Table 4.

Table 4 Measures in accordance with Best Available techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs 2017 at Methwold (Breckland) Fm Poultry Unit

BAT	Description	How is the site demonstrating compliance
BAT 11	**Dust emissions** *In order to reduce dust emissions from each animal house, BAT is to use one or a combination of the techniques given [in the BAT conclusions document].*	*Techniques are already in place to reduce dust generation inside sheds such as ad-libitum feeding.* *The operator is already required to minimise dust emissions through existing permit conditions on general management, operating techniques and emissions of substances not controlled by emission limits.* Dwelling houses and public rights of way within 100m of Methwold Fm are sensitive receptors. Operator will be using a combination of the techniques given to reduce dust generation inside the poultry houses including BATc11(c)(4) Wet acid scrubber.
Monitoring of emissions and process parameters		
BAT 28	*BAT is to monitor ammonia, dust and/or odour emissions from each animal house equipped with an air cleaning system by using all of the following techniques with at least the frequency given [in the BAT conclusions document].*	*If an air scrubber or cleaning system is in place, the operator will be required to comply with this BAT conclusion. Air abatement systems are not common as they are costly and only work with closed housing systems so are not appropriate for a retrofit to older housing. Where such abatement is in place (for ammonia or odour abatement) the criteria has been met via process monitoring.* Operator will use all of the techniques with at least the frequency given: BATc28(a) Air cleaning system will be verified in combination with a similar housing system and operating conditions in official testing and certification. BATc28(b) Control of the effective function of the air cleaning system (e.g. by continuously recording operational parameters or using alarm systems) daily. Specific techniques to be confirmed and approved by EA.
BAT 32	**Ammonia emissions from houses for broilers** *In order to reduce ammonia emissions to air from each house for **broilers**, BAT is to use one or a combination of the techniques given [in the BAT conclusions document].*	*We are confident that broiler farm installations will be able to comply with the objective of BAT 32 via the usage of existing housing and operating techniques.* *This is based on the operator using techniques listed in this conclusion and achieving the BAT-AELs or by demonstrating the method used produces an equivalent level of protection. 'Equivalence' will need to be confirmed through emissions monitoring to show compliance with the BAT-AELs. Our review of housing types in England indicated that all operators should already be compliant with the techniques set out in BAT31. This will be checked during routine compliance inspections.*

		The operator is required to comply with the new permit condition to carry out annual monitoring and reporting. The results will need to meet the associated BAT-AELs. We expect the operator will demonstrate compliance using emission factors. *Compliance with AELs is covered under a new condition and associated process monitoring table.* Operator will be using a combination of the techniques given including BATc32(f)(1) Wet acid scrubber.

8 Operating techniques

Q8c Raw materials inventory for Methwold (Breckland) Fm Poultry Unit

Raw materials inventory	Quantity stored onsite (litres/kg)	Quantity used per year (litres/kg)	Justification for use of this material
Sulphuric acid	tbc	tbc	Design requirement for wet acid air cleaning system, readily available, efficacy & cost

Inventory will be reviewed every 4 years and updated if alternative products are available.

Q10c How we avoid producing waste in line with Council Directive 2008/98/EC on waste at Methwold (Breckland) Fm Poultry Unit

1. Dirty water from the air cleaning system will be treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive. Waste will be segregated and securely stored for export offsite for recovery by land treatment to confer agricultural or ecological benefit.