EPR/XP3632QE/V003 Methwold Farm Pig Unit (comprising Airfield Farm, Feltwell Farm and Methwold Farm), Methwold Group, Brandon Road, Methwold, Thetford, Norfolk, IP26 4RJ

Supporting information to vary an intensive farming permit for proposed development at Methwold (Breckland) Farm Poultry Unit

July 2023

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2 About your proposed change

Q2a Have you told us already about this application

1. Obtained intensive farming pre-application advice via government website including an initial ammonia screening assessment. The Agency Pre-application Report dated 28/07/22 confirmed predicted emissions of ammonia or ammonia deposition (nutrient nitrogen or acid) would require detailed modelling for Cranwich Camp SSSI, Breckland Forest SSSI, Breckland Farmland SSSI, Norfolk Valley Fens SAC, Breckland SAC/SPA.

2. Obtained enhanced advice, and Agency reported by email dated 13/12/2022:

   a) ***Q. In principle, will an application to vary a permit likely be successful to replace some pigs with broiler chickens on a like-for-like basis as regards ammonia emissions to air, nitrogen and acid deposition (No increase of emissions from an installation)?***

   EA: "As stated in the ammonia screening advice letter, dated 28/07/22, in principle an application to vary the permit as outlined may be successful if it is supported by detailed modelling which demonstrates that impacts on the nature conservation sites affected are not increasing. We would advise that you apply to vary the permit, with associated ammonia modelling which compares the current and proposed impact at the affected conservation sites. We would need to review the modelling during determination and may need to consult Natural England before a decision can be made.

   If you wish to, you can submit the ammonia modelling for review as part of the enhanced pre-application service. Our air quality team will be able to carry out a high-level check of the modelling methodology, but it is not in our remit to review the modelling results and pre-determine the outcome as part of the pre-application service".

   b) ***Q. Will an actual application to vary the permit in place likely be successful to replace some pigs with broiler chickens on the basis ammonia emissions to air, nitrogen, and acid deposition at European sites and SSSI will be significantly reduced (Betterment)?***

   c) ***Q. Will expected ongoing exceedances of critical limits and loads at European sites in particular, prejudice an application to successfully vary the permit and make the proposed changes, considering the changes significantly reduce exceedances at all sites and will eliminate exceedances over significantly bigger areas?***

   EA. "More specific guidance on emission reduction cases is pending, including more details on cases where European/Ramsar impacts are crucial to overall determination. We can send this guidance to you when available. Otherwise, we underline our openness to consider a betterment proposal within a formal variation application; however, we are not able to pre-determine an application through pre-application advice, nor can we rule out that we may require further reduction in emissions to be achieved through enhanced BAT, including abatement, to bring the impacts down to an acceptable level.

Please also be aware that the original permit for the site, EPR/GP3130UC, issued in 2008, did include ammonia emission reduction improvement conditions. It appears that these were removed in 2011 but this will need further consideration during determination"

3. Obtained further enhanced advice regards choice of ammonia and odour emission factors and Agency reported by email dated 18/01/2023:

   Scenario: Propose to create a better-quality environment for chickens with lower ammonia emissions and improved energy efficiency in broiler rearing houses. Using 4.6.4.2.2 litter-based system with circulating fans and a heat exchanger. Plus 4.6.4.2.3 litter-based system with air recirculated (equally spread) by indoor fans and heaters. In effect package recirculating fans and heaters being equivalent to circulating fans. BREF pp338-342.

   Application must be submitted with ammonia modelling on nearby European Sites and want to confirm lower emission factors that might be used. Table 4.6.4: Summary of reported emissions from broiler housing with different system configuration; BREF pp331-332 shows ammonia and odour at 0.021 kg/p/year and 0.24 oue/s/bird respectively for litter-based systems with circulating fans and a heat exchanger. Circulating fans and heat exchanger were not referenced in the original request for screening advice.

   Agency standard ammonia emission factor for broiler chickens is 0.034 kg/p/year, and the factor in the table is 38.2% lower. Nearly equivalent to standing advice on Natural Resources Wales website *"Heat exchangers; An ammonia reduction factor of 35% can be applied to broilers…".* The BREF factor is lower and appears reasonable to be lower considering additional equipment (circulating/recirculating) fans for forced drying of litter compared to using a heat exchanger alone.

   Q: Would we be correct in presenting ammonia modelling with an application to vary permit using the BREF emission factors for ammonia and odour at 0.021 kg/p/year and 0.24 oue/s/bird respectively for litter-based systems with circulating fans and a heat exchanger?

   EA. "Where heat exchangers are proposed for use in broiler housing we have an established principle of applying a 35% reduction to the standard Emission Factor (EF) taking it down from 0.034 to 0.0221 Kg NH_3/place/year. This agreed reduction is based on evidence from monitoring trials in Europe, as well as in the UK. It takes account of the use of recirculating fans to ensure even distribution of heat around the sheds.

   Provided you can submit sufficient details of the proposed heat exchangers to ensure they are acceptable, and evidence that they can achieve the percentage reduction claimed, it would be acceptable to use an emission factor of 0.0221 Kg NH_3/place/year in the ammonia modelling. If you propose to use a lower emission factor (e.g., the slightly lower 0.021 Kg NH3/place/year referred to in the pre-application request form) then you will need to supply robust evidence to support this greater reduction. Please note that the figures you have quoted from the BREF outline some research carried out in the Netherlands which are not definitive figures that can routinely be applied.

Please be aware that where your modelling shows there will still be exceedances at European, Ramsar and SSSI sites, you will need to propose additional ammonia reduction measures to achieve a total reduction in ammonia emissions of at least 70%.

In terms of your question with regards to the odour emission factor, given this is for planning purposes and not in connection to your EPR application you would need to discuss this with the planning authority".

2 About your proposed change

Q2b Summary of proposed change

4. Existing operator details for Wayland Farms Ltd are unchanged including company name, registered address, and company number.

5. Development proposed at Feltwell Fm and Methwold Fm to extend installation boundaries and demolish most existing buildings for construction of 14 new rearing houses for pigs and 20 new rearing houses for poultry, respectively.

6. At Airfield Fm already ceased rearing pigs so propose to remove from the permit all 4,874 places for production pigs >30kg. Will not be used for rearing pigs, but not proposing to surrender any part of the permit.

7. At Feltwell Fm propose to reduce places for production pigs >30kg from 16,074 to 14,000 in the permit. Extend installation boundary to enclose 4.3ha of adjoining greenfield agricultural land (Total installation area 11.05ha). Demolish most existing buildings and retain four for storing straw and solid manure. For construction of 14 modern pig houses each with capacity for rearing 1,000 pigs (Total 14,000 pigs >30kg), and a new straw barn.

8. At Methwold Fm already ceased rearing pigs so propose to remove all 1,360 places for sows and piglets in the permit and replace them with 870,000 places for broiler chickens. Extend installation boundary to enclose 13.70ha of adjoining greenfield agricultural land (Total installation area 25.86ha). Demolish all existing buildings for construction of 20 modern poultry houses with capacity for rearing 43,500 broiler chickens (Total 870,000 broiler chickens).

9. Planning application for demolition and construction awaiting decision by Borough Council of Kings Lynn & West Norfolk District Council, Reference number 22/00866 FM, received Fri 29 April 2022. Environmental impact assessment (EIA) supplied with the application.

10. Will be applying to partially transfer the permit after variation is issued to another operator. Specifically, Breckland Farm Poultry Unit (Methwold Farm) to Crown Chicken Ltd.

Methwold (Breckland) Fm Poultry Unit non-technical summary

11. Poultry houses designed to be operated in accordance with SGN EPR 6.09 and Best Available Techniques (BAT) Conclusions Document - fan ventilation, fully littered floors, and non-leaking drinkers. Constructed with concrete floors poured over a continuous damp proof membrane, clear span steel portal frames with insulated low-pitched roofs covered with steel cladding, concrete panel walls and, and concrete apron for access to all areas.

12. Forced ventilation via high velocity extraction fans (Vents greater than 5.5m high, fan efflux velocity greater than 7m/s), with fresh air inlets in the side walls and uncapped roof outlets evenly distributed along the ridges of houses. Pre-warm houses start of each rearing cycle using package, indirect, LPG-fired heaters inside and keep incubated eggs and chicks at correct temperature. Heat exchangers manage ventilation for first three weeks to improve energy efficiency and minimise ammonia, odour, and dust emissions. As birds grow ridge extraction fans turned on and side inlets opened as more fresh air is required for cooling until ventilation achieved via ridge extraction fans only, and heaters and heat exchangers can be switched off.

13. Gable end fans and mechanical evaporative cooling units on sides of houses used infrequently for cooling in warm weather.

14. Computer controlled ventilation to remove moisture under all weather and seasonal conditions. Regularly adjust ventilation to match age, weight, and health requirements of chickens, and minimise ammonia, odour, and dust emissions.

15. Package, diesel-fired back-up generators provide electricity for equipment on which chickens depend in event of grid electricity outage.

16. Separate surface and dirty water drainage to prevent cross-contamination and pollution in any watercourse, underlying geology, or groundwater.

17. Sustainable urban drainage system (SuDS) for clean roof-water to ground, via stone-filled French drains with perforated pipes under eaves of poultry houses and buildings for infiltration into ground. Convey surplus water via solid underground pipes, sealed against pollutants entering into the system, and outfall into unlined, basins scraped out of the land for infiltration into the ground.

18. Clean runoff the kerbed concrete apron (excluding during periods for litter removal and washing-out) falls into catch-pits and via isolation/diverter valves, and also conveyed via the solid underground pipes and outfall into the infiltration basins.

19. The concrete apron becomes dirty during destocking, when litter is removed and when the houses and heat exchangers are washed out and disinfected, and from the lorry wash areas. Dirty water also falls into the catch pits and via the isolation/diverter valves into separate solid underground pipes, sealed to prevent pollutants escaping from the system, and into package below ground dirty water storage tanks. No plans to use a pre-existing lined lagoon north end of site.

20. Chickens reared in batches, all-in-all-out for biosecurity. Supplied to farm as incubated eggs or day-old chicks from a hatchery. Reared to around 31 days of age, then start destocking houses when a quarter will be removed, 'thinned', and transported to a local abattoir, and remainder reared on to around 38 days of age. Houses and equipment all pressure washed, disinfected, and dried, before spreading new litter and restocking. Normally 10 days washing-out and empty in between batches so approx. 7.6 batches per annum.

21. New litter material evenly spread over entire floor prior to delivery of eggs or chicks. Use a proprietary blend of dust extracted chopped straw/wood shavings or chopped straw.

22. Chickens reared on four-stage pelleted diets appropriate to chickens' nutritional requirements at each stage of growth. A lower percentage crude protein and phosphorous in each diet supplemented with essential amino acids, inorganic phosphates, and authorised additives to minimise nitrogen and phosphorous excretion.

23. Store feedstuffs in fully enclosed package silos and feed delivery equipment to minimise waste, dust, and odour, located in between houses to protect them from collision damage.

24. Drinking water provided via non-leaking drinkers to keep litter dry to minimise ammonia and odour, and water consumption monitored daily with meters in every house.

25. Chicken mortalities removed from houses daily and recorded. Carcasses stored in secure, covered containers to minimise odour and flies and frequently removed offsite by an approved transporter under National Fallen Stock Scheme. Dead-in-shell and non-viable eggs collected up after the hatching are macerated using package mobile equipment delivered to site and washed and disinfected before leaving. Macerated material and dirty wash water stored in containers with mortalities to remove offsite, not via dirty water tanks.

26. Used litter removed immediately after houses destocked. Exported offsite in covered trailers for spreading on land to confer agricultural benefit or supplied as fuel to a local power station. Dirty water from the below ground storage tanks exported offsite for spreading on land by a registered carrier.

27. European and national sites for nature conservation within 10km screening distance. Breckland Special Area of Conservation (SAC) including Cranwich Camp Site of Special Scientific Interest (SSSI)/The Brinks Northwold SSSI/Weeting Heath SSSI. Breckland Special Protection (SPA) includes Breckland Farmland SSSI/Breckland Forest SSSI, and Norfolk Valley Fens SAC. Dwelling houses, industrial premises and public rights of way are receptors within 400m.

4 Management systems

Q4 Summary of environment management system for Methwold (Breckland) Fm Poultry Unit

Table 1 – Measures implemented in accordance with Environment Agency (2010) SGN EPR 6.09 V2

EMS	• EMS implemented in accordance with Environment Agency (2010) SGN EPR 6.09 V2.
Normal operations	• Daily records will be kept on all aspects of the farm's operation including: o Water consumption o Feed consumption and deliveries o Bird mortalities o Poultry house temperature and humidity o Waste collections. • Daily inspection by staff around the site to ensure equipment is operating correctly.
Maintenance schedule and records	• A programme of planned preventive maintenance will be carried out on all plant and equipment including the ventilation fans, feeding and water systems. • Inspection and maintenance schedules based on manufacturer's recommendations. • Back-up generator will be tested weekly to ensure it is working properly. • Buildings and equipment on site will be regularly inspected and checked for visual signs of leakage, corrosion, structural damage, security, and correct operation. • A record of all faults and maintenance work and inspections will be kept in the site office.
Incidents and abnormal operations	• Measures will be in place to identify incidents and abnormal operations. Staff will be trained to be able to detect abnormal operation and investigate its causes and get back to normal operation and ensure the problem does not reoccur.
Complaint system	• Complaints will be logged and referred to the Site Manager for investigation and follow-up action. A record will be kept of any remedial action to prevent or minimise the causes and we will respond to concerns raised by the local community as appropriate.
Accidents	• Site has an accident management plan which will be implemented if an accident occurs. Events or failures that could damage the environment have been identified using the H1 environmental risk

	assessment for accidents. The format of the site Accident Management Plan is in accordance with the Environment Agency's accident prevention and management plan at https://www.gov.uk/guidance/develop-a-management-system-environmental-permits#accident-prevention-and-management-plan.
Training and qualifications	• All staff are suitably qualified to work at the installation. • All staff will receive formal training from both the Site Manager and an external training provider. • All staff will receive formal training on health and safety, the accident management plan and will be trained about the requirements of the environmental permit and pollution prevention. • New staff will be mentored as part of their on-the-job training. • Staff and contractors will have defined roles. • Training and instruction of staff and contractors will be recorded in the training plan.
Site security	• Site will have a secure perimeter fence, and also some distance from the nearby road. • Poultry houses are securely locked at night. • Site gates locked at night to prevent pedestrian and vehicle access out of hours. • The fuel oil and LPG tanks will be secure and locked. • There is no public footpath through any part of the site.
Site closure plan	• A site closure plan will be created and reviewed in pursuance of any conditions in the Permit or inspection scheme. Such a plan will include removal of any potentially polluting substances and decommissioning and removing equipment, plant, buildings, hard standing and underground structures.
Certification	• Installation will be operated in accordance with a poultry assurance certification scheme including the EMS.

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	
High velocity roof fan outlets (vents greater than 5.5m high, fan efflux velocity greater than 7m/s) on poultry houses 1-20 as shown on the site layout plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Poultry houses 1-20
Gable end fan outlets on poultry houses 1-20 as shown on the site layout plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Poultry houses 1-20
Exhaust outlets on roofs from indirect, LPG-fired heaters on poultry houses 1-20 as shown on the site layout plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Poultry houses 1-20
Exhaust outlets from heat exchangers on poultry houses 1-20 as shown on the site layout plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Poultry houses 1-20
Exhaust outlet from standby generator as shown on the site layout plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Standby generator for poultry houses1-10
Vent from diesel tank as shown on the site layout plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Diesel tank for standby generator for poultry houses 1-10
Exhaust outlet from standby generator as shown on the site layout plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Standby generator for poultry houses11-20
Vent from diesel tank as shown on the site layout plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Diesel tank for standby generator for poultry houses 11-20
Point source emissions to water	
None	

Point source emissions to land	
W1 Onsite filter trench filled with stones acting as soakaway for North Road for poultry houses 1-10 as shown on the site drainage plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Surface water from North Road for poultry houses 1-10 (excluding all times concrete apron is contaminated e.g., catching, mucking-out or washing)
W2 Onsite infiltration basin acting as soakaway for North Road for poultry houses 1-10 as shown on site drainage plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Surface water from North Road for poultry houses 1-10 (excluding all times concrete apron is contaminated e.g., catching, mucking-out or washing)
French drains filled with stones acting as soakaways under eaves of poultry houses as shown on the site drainage plan, drawing No. BRECK-DRAIN-N dated 07/11/23 included with application EPR/XP3632QE/V003	Roof water from poultry houses 1-10
W3 Onsite infiltration basin acting as soakaway for poultry houses 1-10 as shown on the site layout plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Roof water from poultry houses 1-10 and uncontaminated mains water drained from storage tanks and pumps for evaporative cooling units on poultry houses 1-10
W4 Onsite filter trench filled with stones acting as soakaway for South Road for poultry houses 11-20 as shown on the site drainage plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Surface water from South Road for poultry houses 11-20 (excluding all times concrete apron is contaminated e.g., catching, mucking-out or washing)
W5 Onsite infiltration basin acting as soakaway for South Road for poultry houses 11-20 as shown on the site drainage plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Surface water from South Road for poultry houses 11-20 (excluding all times concrete apron is contaminated e.g., catching, mucking-out or washing)
French drains filled with stones acting as soakaways under eaves of poultry houses as shown on the site drainage plan, drawing No. BRECK-DRAIN-S dated 07/11/23 included with application EPR/XP3632QE/V003	Roof water from poultry houses 11-20
W6 Onsite infiltration basin acting as soakaway for poultry houses 1-20 as shown on the site layout plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	Roof water from poultry houses 1-20 and uncontaminated mains water drained from storage tanks and pumps for evaporative cooling units on poultry houses 1-20
W7 Onsite infiltration basin acting as soakaway for poultry houses 1-20 as shown	Roof water from poultry houses 1-20 and uncontaminated mains water drained from

on the site layout plan, drawing No. BRECK-LAY1-12 dated 07/11/23 included with application EPR/XP3632QE/V003	storage tanks and pumps for evaporative cooling units on poultry houses 1-20
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

Selection & use of feed. Technical standard: you must take appropriate measures to provide a diet which minimises the excretion of nitrogen and phosphorous.	• Operator will use a nutritional strategy to reduce levels of nitrogen excreted and consequently ammonia, and phosphorous excretion while meeting the nutritional needs of the chickens. • Package feed delivery equipment - storage silos, augers, pipes, and feeders, etc will be designed to accommodate the required feeding regime for rearing broiler chickens.
Housing design & management. Technical standard: you must take appropriate measures in the design and management of housing to minimize the emissions from those systems	<u>Housing</u> Poultry houses designed and constructed to modern specifications – clear span portal construction on concrete floors poured over a continuous damp proof membrane, concrete panel walls and insulated walls and roofs with steel cladding. Walls and roofs fully insulated with a U-Value of approximately 0.4 $W/m^2/^oC$ to reduce condensation and heat loss. <u>Litter</u> Litter will be kept loose and friable and regularly inspected to ensure it does not become excessively wet or dry and steps taken to rectify any changes to the quality of the litter.

	<u>Temperature</u> Temperature in the houses will meet the health and welfare needs for the age and number of chickens. Liquid petroleum gas heaters will be regularly spaced in the houses to prevent cold spots and extremes of temperature. Extraction fans will be fitted with back draught shutters to prevent draughts and unnecessary heat loss. Houses will be accessed via a control room/vestibule area, which prevents draughts. <u>Ventilation</u> Package computer-controlled ventilation systems will be installed to control ventilation rates, so they are appropriate to the age, weight, and health and welfare needs of the chickens: • Operated to achieve optimum humidity levels for the stage of production in all weather and seasonal conditions. • Control of minimum ventilation rates planned to avoid build-up of moisture. • Houses managed to maintain litter as dry and friable as possible. • Dust controlled through the management of litter and air quality. • High velocity extraction fans (Vents greater than 5.5m high, fan efflux velocity greater than 7m/s), and heat exchangers. • Uncapped outlets on the ridge of the roofs to avoid dust deposition on the roofs and contamination of rainwater runoff. • Uncontaminated roof water and runoff from open concrete roads (excluding during periods of catching, mucking out and washing) will be conveyed into onsite filter drains and basins, acting as soakaways, for infiltration into groundwater. <u>General management</u> In accordance with the management system at the farm, the buildings and equipment will be regularly inspected and well maintained. The floors and walls of the houses will be kept clean.
Livestock numbers and movements	• A system will be in place to record the number of bird places and bird movements on and off the site. These records will be available for inspection.
Slurry spreading and manure management planning – offsite activity	According to the Agency spreading of solid manure and slurry on land outside installation boundary is not considered to be part of the permitted installation in accordance with Agency comments in BATs 20-22 below.
Slurry spreading and manure management	• Litter will not be stored at the installation. • Litter will not be spread on land belonging to the operator.

planning – onsite activity	• Litter will be exported offsite for example for recovery by land treatment resulting in benefit to agriculture or ecological improvement, or a biogas plant or power station as a fuel. • Records will be kept of the quantities and date of transfers.
Spreading of manure and slurry to minimise emissions to air Technical standard: you must take appropriate measures when spreading manure or slurry to land to prevent , or where this is not possible to minimise the emissions to air in implementing your manure management plan	• Where any third party is used to remove poultry litter we will have written confirmation the third party will ensure the manure and slurry is spread on land in accordance with the Code of Good Agricultural Practise; or that the spreading will be in accordance with a manure management plan for the receiving land.
Waste sent off-site	• Waste removed offsite by a registered carrier with a transfer document for non-hazardous waste - mostly packaging waste, or a consignment note for any hazardous waste in accordance with legal requirements.
Fugitive emissions	Appropriate measures for preventing and minimising fugitive emissions will be in place with provisions for: • Buildings & equipment will be well maintained & kept in good repair. • Areas around buildings kept free from build-up of litter & spilt feed. • Drainage from poultry houses and water from washout will be collected in package underground storage tanks shown on the drainage plan. • Diverter valves shown on the drainage plan will be used during wash down periods to prevent contamination of surface water systems and to divert wash water into the dirty water tank. Clean drainage systems will not be contaminated. • Drainage from yards contaminated by litter or wash water will be collected in below ground dirty water tanks. • The dirty water collection systems and package below ground storage tanks will be designed to deal with the volumes of wash water generated and manufactured to conform to the specification in SGN EPR6.09. • Footbaths will be managed so that they do not overflow and spent disinfectants emptied into the dirty water tanks. • Wheel washings will be prevented from entering into surface or groundwater.

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 Fm Poultry Unit there will be 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: • Poultry feed will be stored in package feed silos with augers and pipes and protected from collision damage by careful siting relative to traffic flows – in between the poultry houses, or with measures such as provision of kerbs or other markers to stop reversing vehicles or use of barriers in more vulnerable locations. • Feed will be delivered directly from suppliers and blown directly into silos. • Feed will be delivered into the houses by package augers and pipes. • No milling or mixing of feed will take place at the farm. • Used litter will not be stored onsite.
Carcase management	Carcasses of dead chickens will be disposed of in accordance with Animal By-Products Regulations, stored in secure, covered containers and frequently collected by an approved transporter under the National Fallen Stock Scheme.
Flies	Appropriate actions will be implemented to prevent, and control flies should problems occur.
Measures for bunding and containment	(a) Agricultural fuel oil and other chemical storage: • Package, diesel-fired back-up generators with integrally bunded fuel tanks will meet requirements under the Water Resources (Control of Pollution)(Silage, Slurry and Agricultural Fuel Oil) Regulations 2010 (SSAFO Regulations). The generators will be regularly inspected. • Pesticides and veterinary medicines will be kept in stores that are resistant to fire, dry, frost-free, and secure against unauthorised access and capable of retaining any spillage. (b) <u>Feedstuffs</u> • Poultry feedstuffs will be stored in package feed silos with augers, pipes with careful siting relative to traffic flows – in between the houses, or with measures such as provision of kerbs or other markers to stop reversing vehicles or use of barriers in more vulnerable locations.
Odour	The H1 Environmental Risk Assessment submitted with the application shows sources of odour have been identified as having potentially moderate and minor significance. At Methwold Fm Poultry Unit there will be receptor locations potentially sensitive to odour including residential dwellings, industrial premises, and public rights of way within 400m of the installation boundary. Odour

	management plan in place, and mitigation and management measures are in accordance with EPR6.09 How to comply.
Noise & vibrations	The H1 Environmental Risk Assessment submitted with the application shows sources of noise have been identified as having potentially moderate and minor significance. At Methwold Fm Poultry Unit there will be receptor locations potentially sensitive to noise including residential dwellings, industrial premises, and public rights of way within 400m of the installation boundary. Noise management plan in place, and mitigation and management measures are in accordance with EPR6.09 How to comply.

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 1	**EMS** *In order to improve the overall performance of farms, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features [in the BAT conclusions document].*	*Operator already holding a written management system comprising a suite of documents to help identify and minimise the risk of pollution. These include an accident management plan, maintenance plan, staff training and where necessary odour and noise management plans. This is a requirement of the existing general management condition in the permit.* *By 21 February 2021, the operator will be required to update their management system to include an environmental policy statement and demonstrate their commitment of their management to the EMS. This will be checked during routine compliance inspections.* Checked for application the Cranswick plc, Group Environmental & Energy Policy (ultimate parent holding) is in place.
BAT 2	**Good housekeeping** *In order to prevent or reduce the environmental*	*The operator is already required to manage their operation as set out in the existing general management and operating techniques conditions in the permit. In complying with these conditions, we expect the operator to use most of the techniques identified in BAT2.*

	impact and overall performance, BAT is to use all the techniques given [in the BAT conclusions document].	Operator will use all of the techniques given:- • Proper location of the plant/farm and spatial arrangements of the activities in order to: o consider prevailing climatic conditions (e.g., wind and precipitation). Specifically, extension and redevelopment of the farm will not be upwind of receptors likely to have high sensitivity and will not increase risk of flooding. o prevent the contamination of water. • Educating and training of staff in place, in particular for: o relevant regulations, livestock farming, animal health and welfare, manure management, worker safety, and operator and stockmen have formal qualifications. o manure transport and land-spreading o planning of activities o emergency planning and management o repair and maintenance of equipment. • Prepared an emergency plan for dealing with unexpected emissions and incidents such as pollution of water bodies including: o a plan of the farm showing the drainage systems and water /effluent sources o plans of action for responding to certain potential events for example fire, oil spillages. o available equipment for dealing with a pollution incident for example spill kit for oil spillages. • Regularly check, repair, & maintain structures & equipment such as: o slurry store for any sign of damage, degradation, leakage, and slurry pumps o water and feed supply systems o ventilation systems and temperature sensors, o silos, and transport equipment, o cleanliness of the farm, and pest management. • Storing dead animals in such a way as to prevent or reduce emissions.
Nutritional management		
BAT 3	*In order to reduce total nitrogen excreted and consequently ammonia emissions while meeting the nutritional needs of the animals, BAT is to use a diet formulation and nutritional strategy which includes one or*	*Operator already required to have a nutritional strategy to reduce nitrogen and phosphorous. This requirement is incorporated into the existing operating techniques condition in the permit.* *In addition, the variation included a new condition requiring the operator to report annually the levels of nitrogen and phosphorous excretion per animal place to demonstrate compliance with the BAT-associated total nitrogen and phosphorous excreted. The operator will now need to submit monitoring to demonstrate they are compliant. If they are not*

	a combination of the techniques given [in the BAT conclusions document].	*compliant with the BAT-associated total nitrogen and total phosphorous excreted they will be in breach of the permit and will need to revisit their nutritional management techniques. Based on our review, and engagement with industry, we expect all operators to meet the BAT-associated excretion levels.* *Where the BAT-associated total nitrogen and total phosphorous excreted level is not met the operator will be required to consider and adopt alternative diets or feed additives which enable them to meet the level.* Checked for application a diet formulation and nutritional strategy is in place for rearing broiler chickens from hatching to slaughter which includes a combination of the techniques given:- • Reducing crude protein content using a N-balanced diet based on the energy needs and digestible amino acids. Flaked soya bean will be added into the feedstuffs during milling to increase crude protein and supplement otherwise low natural levels in wheat grains, especially in first diets. Percentage of flaked soya will be reduced as chickens grow. • Multiphase feeding with a diet formulation adapted to the specific requirements of the production period – 4 separate diets will be provided which contain an increasingly lower percentage of crude protein as chickens grow. • Addition of controlled amounts of essential amino acids to a low crude protein diet. Highly digestible amino acid analogues will be added into all of the feedstuffs during milling, including lysine, methionine, threonine, and valine to supplement otherwise low natural levels in wheat grains. • Use of authorised feed additives which reduce total nitrogen excreted. Specifically, xylanase enzyme, added into all of the feedstuffs during milling, for breaking down macro-molecules and antinutritional factors such as non-starch polysaccharides for example cellulose in wheat grain into absorbable nutrients in feedstuffs.
BAT 4	*In order to reduce total phosphorous excreted while meeting the nutritional needs of the animals, BAT is to use a diet formulation and nutritional strategy which includes one or a combination of the techniques given [in the*	*As BAT 3.* Checked for application a diet formulation and nutritional strategy is in place for rearing broiler chickens from hatching to slaughter which includes a combination of the techniques given:- • Multiphase feeding with a diet formulation adapted to the specific requirements of the production period – 4 separate diets will be provided which contain an increasingly lower percentage of phosphorous.

	BAT conclusions document].	• Use of authorised feed additives which reduce the total phosphorous excreted. Specifically, 6-phytase enzyme will be added into all the feedstuffs during milling. The enzyme degrades the phytate phosphorous in grain during digestion, making more naturally occurring phosphorous and other nutrients available to the chickens. • Use of highly digestible inorganic phosphates for the partial replacement of conventional sources of phosphorous in the feed. Specifically, calcium hydrogen orthophosphate/ calcium phosphate will be added into all the feedstuffs during milling.
BAT 5	**Efficient use of water** *In order to use water efficiently, BAT is to use a combination of the techniques given [in the BAT conclusions document].*	*Operator is already required to minimise the use of water as set out in the existing efficient use of raw materials in the permit.* Operator will use a combination of techniques given:- • Keep a record of water use • Detect and repair water leakages • Use high pressure cleaners for cleaning animal housing and equipment • Select and use suitable equipment for example nipple drinkers while ensuring water availability (ad-libitum). • Verify and (if necessary) adjust on a regular basis the calibration of the drinking water equipment.
Emissions from waste water		
BAT 6	*In order to reduce the generation of waste water, BAT is using a combination of the techniques given [in the BAT conclusions document].*	*These requirements are fulfilled through existing permit conditions on general management, the efficient use of raw materials and emissions of substances not controlled by emissions limits.* Operator will use a combination of techniques given:- • Keep the fouled yard areas as small as possible • Minimise use of water • Segregate uncontaminated rainwater from waste water streams that require treatment.
BAT 7	*In order to reduce emissions to water from waste water, BAT is to use one or a combination of the techniques given [in the BAT conclusions document].*	*The operator is already required to minimise emissions of waste water through existing permit conditions on general management, operating techniques and emissions of substances not controlled by emissions limits.* *Where appropriate the operator is already expected to have dedicated slurry and/or wash water storage which is compliant with BAT standards (equivalent to the standards set out in The Silage Slurry and Agricultural Fuel Oil Regulations (SSAFO). These requirements also apply to*

		reception pits, channels, underground tanks, and pipework and requires that slurry is collected and contained. Operator will use one of the techniques given:- • Drain waste water to dedicated containers, in dirty water tanks for export offsite for land spreading.
BAT 8	**Efficient use of energy** *In order to use energy efficiently in a farm. BAT is to use a combination of the techniques given [in the BAT conclusions document].*	*The operator is already required to minimise the use of energy through existing permit conditions on general management and energy efficiency.* Operator will use a combination of techniques given:- • High efficiency heating/cooling using package LPG heating and cooling equipment – high velocity extraction fans (Vents greater than 5.5m high, fan efflux velocity greater than 7m/s). • Insulation of the walls and ceilings of animal housing • Use of energy efficient lighting.
Noise emissions		
BAT 9	*In order to prevent, or where that is not practicable, to reduce noise emissions, BAT is to set up and implement a noise management plan, as part of the environmental management system (see BAT 1).* *BAT 9 is only applicable to cases where a noise nuisance at sensitive receptors is expected and/or has been substantiated.*	*A noise management plan (NMP) is in place when there are relevant receptors within 400m of the installation boundary or there have been substantiated complaints. This reflects our current approach, and no change is required.* *This conclusion is only applicable where we expect noise pollution, or it has been substantiated. We anticipate the potential for noise pollution within 400m of sites, and require operators with receptors located within this distance, or at sites where noise complaints have been substantiated at receptors outside this distance, to have an NMP. This is already detailed in the existing permit condition on noise and vibration in the permit. This condition allows for us to require a NMP if not previously in place. In the event of noise complaints or other evidence of risk of noise pollution beyond the installation boundary.* *The NMP needs to be regularly updated and reviewed to prevent noise pollution and ensure compliance.* Dwelling houses, industrial premises, and public rights of way within 400m of Methwold Fm are receptors. Submitted an updated NMP with application that includes the following elements: • A protocol containing appropriate actions and timelines • A protocol for conducting noise monitoring • A protocol for response to identified noise events.

		Operator has no records or recollections of having substantiated any noise concerns or complaints, so a noise reduction programme to implement elimination and/or reduction measures is not considered necessary.
BAT 10	*In order to prevent, or where that is not practicable, to reduce noise emissions, BAT is to use one or a combination of the techniques given [in the BAT conclusions document].*	*Nose minimisation has been considered in equipment location and operation in the permit determination stage.* *The operator is already required to prevent and minimise noise through the existing permit conditions on general management, operating techniques and noise and vibration. The existing operating techniques permit condition already allows us to require the operator to update the NMP to introduce additional BAT measures to minimise the risk of noise pollution beyond the installation in the event of substantiated noise complaints at local receptors.* Checked for application noise minimisation has been considered in redevelopment of the site including for new equipment, and changes to operational measures. Operator will be using a combination of the techniques given:- • Equipment location for example installed package feed bins in between the houses so as to minimise the length of feed delivery equipment for noise abatement and minimise movement of vehicles on the farm. • Operational measures include keeping doors closed, equipment operated by experienced staff, avoidance of noisy activities at night and during weekends wherever possible, provisions for noise control during maintenance activities, operating augers full of feed. • Low noise equipment for example high efficiency fans, and water pumps. • Noise control equipment for example sound proofing the poultry houses with thermal insulation. The BAT measures have also been identified in the NMP.
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 receptors. Submitted an updated DMP with application. Operator will

		be using a combination of the techniques given to reduce dust generation inside the poultry houses:- • Use a proprietary mixture of chopped straw & coarser wood shavings (rather than only chopped straw). • Applying fresh litter using a low-dust littering technique for example supplied in wrapped bales and applied by hand. • Ad-libitum feeding. • Crumb for chicks up to 12 days of age, then pellets.
Odour emissions		
BAT 12	*In order to prevent, or where that is not practicable, to reduce odour emissions from a farm, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes the following elements [in the BAT conclusions document].*	*An odour management plan (OMP) is in place when there are relevant receptors within 400m of the installation boundary or there have been substantiated complaints. This reflects our current approach, and no change is required.* *This conclusion is only applicable where we expect odour pollution, or it has been substantiated. We anticipate the potential for odour pollution within 400m of sites, and require operators with receptors located within this distance, or at sites where odour complaints have been substantiated at receptors outside this distance, to have an OMP. This is already detailed in the existing permit condition on odour in the permit. The condition allows for us to require an OMP if not previously in place, in the event of odour complaints or other evidence of risk of odour pollution beyond the installation boundary.* *The OMP needs to be regularly updated and reviewed to prevent odour pollution and ensure compliance.* Dwelling houses, industrial premises, and public rights of way within 400m of Methwold Fm are receptors. Submitted an updated OMP with application, that includes the following elements: • A protocol containing appropriate actions and timelines • A protocol for conducting odour monitoring • A protocol for response to identified odour events. Operator has no records or recollections of having substantiated any odour concerns or complaints, so an odour reduction programme to implement elimination and/or reduction measures is not considered necessary.
BAT 13	*In order to prevent, or where that is not*	*Odour minimisation has been considered in equipment location and operation in the permit determination stage.*

	practicable, to reduce odour emissions and/or odour impact from a farm, BAT is to use a combination of the techniques given [in the BAT conclusions document].	*The operator is already required to prevent and minimise odour through the existing permit conditions on general management, operating techniques, and odour. The existing operating techniques permit condition already allows us to require the operator to update the OMP to introduce additional BAT measures to minimise the risk of odour pollution beyond the installation in the event of substantiated odour complaints at local receptors.* Checked for application odour minimisation has been considered in redevelopment of the site including for new equipment, and changes to operational measures. Operator will be using a combination of the techniques given:- • Use a housing system which implements a combination of the principles for keeping the chickens and the surfaces dry and clean, and keeping the litter dry and under aerobic conditions. • Optimise the discharge conditions of exhaust air from the poultry houses using a combination of the techniques given for example maximised outlet heights – exhaust air above roof level, stacks with uncapped outlets, air exhaust through the ridge instead of through the low part of the walls, increasing the vertical outlet ventilation velocity. Install package high velocity extraction fans (Vents greater than 5.5m high, fan efflux velocity greater than 7m/s). • Effective placement of external barriers to create turbulence in outgoing air for example vegetation under gable end fans. • Add deflector covers in exhaust apertures located in low parts of wall in order to divert exhaust air towards the ground for gable end fans. The BAT measures have also been identified in the OMP.
Emissions from solid manure storage		
BAT 14	*In order to reduce ammonia emissions to air from the storage of solid manure, BAT is to use one or a combination of the techniques given [in the BAT conclusions document].*	Not applicable, no used poultry litter to be stored onsite.
BAT 15	*In order to prevent, or where that is not practicable, to reduce emissions to soil and water from the storage of solid manure, BAT is to*	Not applicable, no used poultry litter to be stored onsite. .

	use a combination of the techniques given[in the BAT conclusions document].	
Emissions from slurry storage		
BAT 16	*In order to reduce ammonia emissions to air from a slurry store, BAT is to use a combination of the techniques given [in the BAT conclusions document].*	Not applicable, no plans to use the lined lagoon onsite.
BAT 17	*In order to reduce ammonia emissions to air from an earth-banked slurry store (lagoon), BAT is to use a combination of the techniques [in the BAT conclusions document].*	Not applicable, no earth-banked slurry store onsite.
BAT 18	*In order to prevent emissions to soil and water from slurry collection, piping and from a store and/or an earth-banked storage (lagoon), BAT is to use a combination of the techniques given [in the BAT conclusions document].*	Not applicable, no plans to use the synthetic lined lagoon onsite.
BAT 19	**On farm processing of manure** *If on farm processing of manure is used, in order to reduce emissions of nitrogen, phosphorous, odour and microbial pathogens to air and water and facilitate manure storage and/or land spreading, BAT is to process the manure by applying one or a*	Not applicable, no manure processing onsite.

	combination of the techniques given [in the BAT conclusions document].	
Manure land spreading		
BAT 20	*In order to prevent or, where that is not practicable, to reduce emissions of nitrogen, phosphorous, odour and microbial pathogens to soil and water from land spreading BAT is to use all the techniques given [in the BAT conclusions document].*	*Spreading of manure and slurry on land outside of the installation boundary is not considered to part of the permitted installation. In the rare circumstances where spreading occurs within the installation boundary the requirements are covered by the existing operating techniques permit condition.* Not applicable, no used poultry litter to be spread onsite.
BAT 21	*In order to reduce ammonia emissions to air from slurry land spreading, BAT is to use a combination of the techniques given [in the BAT conclusions document].*	*Spreading of manure and slurry on land outside of the installation boundary is not considered to part of the permitted installation. In the rare circumstances where spreading occurs within the installation boundary the requirements are covered by the existing operating techniques permit condition.* Not applicable, no used poultry litter to be spread onsite.
BAT 22	*In order to reduce ammonia emissions to air from manure land spreading, BAT is to incorporate the manure into the soil as soon as possible.*	*Spreading of manure and slurry on land outside of the installation boundary is not considered to part of the permitted installation. In the rare circumstances where spreading occurs within the installation boundary the requirements are covered by the existing operating techniques permit condition. The time delay between land spreading and incorporation into the soil is now a maximum of 12 hours.* Not applicable, no used poultry litter to be spread onsite.
BAT 23	*In order to reduce ammonia emissions from the whole production process for the rearing of pigs (including sows) or poultry, BAT is to estimate or calculate the reduction of ammonia emissions from the whole production process using the BAT implemented on the farm.*	*An operator complying with the relevant existing conditions in the permit will meet this BAT conclusion in so far as they will have reduced ammonia emissions compared to those they would have produced had they not implemented BAT. The operator is not required to report they are meeting the BAT-AELs annually.*

Monitoring of emissions and process parameters		
BAT 24	*BAT is to monitor the total nitrogen and total phosphorous excreted in manure using one or more of the following techniques [in the BAT conclusions document] with at least the frequency given [in the BAT conclusions document].*	*The operator will now be required to comply with a new permit condition which sets out a requirement to monitor nitrogen and phosphorous levels in livestock manure.* *This can be carried out using a mass balance of nitrogen based on the feed intake, dietary content of crude protein and animal performance or estimation by using manure analysis for total nitrogen content and the equivalent for phosphorous.* Operator will start monitoring when poultry houses are brought into use, most probably using estimation by manure analysis, and submit annual report on the levels of nitrogen and phosphorous excretion per animal place.
BAT 25	*BAT is to monitor ammonia emissions to air using one of the following techniques with at least the frequency given [in the BAT conclusions document].*	*The operator will now be required to comply with a new permit condition setting out a requirement for annual reporting on ammonia emissions. This should not represent a new requirement as they already submit this in their Pollution Inventory return.* *We expect all operators will demonstrate compliance using emissions factors (one of the identified techniques) however they may choose to monitor ammonia emissions using a suitable and agreed monitoring protocol.* Operator will use estimation technique using emission factors published by the Environment Agency for annual reporting in the Pollution Inventory.
BAT 26	*BAT is to periodically monitor odour emissions to air.*	*Routine monitoring (e.g., subjective 'sniff testing') is not expected in most cases, as we would expect the odour management plan to minimise and prevent any odour pollution. It will only be expected as part of ongoing odour management at sites where there have been substantiated odour complaints.* Dwelling houses, industrial premises, and public rights of way within 400m are receptors. Submitted an updated OMP with application including 'sniff-testing'. Operator has no records or recollection of any substantiated complaints so any more detailed protocol for odour monitoring is not considered to be necessary.
BAT 27	*BAT is to monitor dust emissions from each animal house using one of the following techniques with at least the frequency given [in*	*The operator will now be required to comply with a new permit condition setting out a requirement for annual reporting of dust emissions. For pigs this is a new requirement. We expect all operators will demonstrate compliance using the emissions factors techniques.*

	the BAT conclusions document].	Operator will use estimation technique using emission factors published by the Environment Agency for annual reporting in the Pollution Inventory.
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.* Not applicable, air scrubbers or cleaning systems are not being proposed.
BAT 29	*BAT is to monitor the following process parameter at least once every year:-* • *Water consumption* • *Electric energy consumption* • *Fuel consumption* • *Number of incoming and outgoing animals* • *Feed consumption* • *Manure generation.*	*The operator is already required to keep records for these parameters in their current permit through existing permit conditions on energy efficiency, efficient use of raw materials and operating techniques. These will be checked during routine compliance inspections.* Operator will be keeping records in their Crop Information Charts and waste records.
BAT 30	**Ammonia emissions from pig houses** *In order to reduce ammonia emissions to air from each pig house, BAT is to use one or a combination of the techniques given [in the BAT conclusions document].*	Not applicable to rearing broiler chickens at Methwold Fm Poultry Unit.
BAT 31	**Ammonia emissions from houses for laying hens, broiler breeders or pullets**	Not applicable to rearing broiler chickens at Methwold Fm Poultry Unit.

	*In order to reduce ammonia emissions to air from each house for **laying hens, broiler breeders or pullets**, BAT is to use one or a combination of the techniques given [in the BAT conclusions document].*	
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 mee 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: • Forced ventilation and a non-leaking drinking system (in case of solid floor with deep litter). • Forced drying system of litter using indoor air (in case of solid floor with deep litter). Proposing to install litter-based systems in each of the poultry houses with air recirculated (equally spread) by indoor fans and heaters and a heat exchanger on each house. Operator will use estimation technique using emission factors published by the Environment Agency for annual reporting in the Pollution Inventory in accordance with BAT 25.

BAT 33	**Ammonia emissions from houses for ducks** *In order to reduce ammonia emissions to air from each house for **ducks**, BAT is to use one or a combination of the techniques given [in the BAT conclusions document].*	Not applicable to rearing broiler chickens at Methwold Fm Poultry Unit.
BAT 34	**Ammonia emissions from houses for turkeys** *In order to reduce ammonia emissions to air from each house for turkeys, BAT is to use one or a combination of the techniques given [in the BAT conclusions document].*	Not applicable to rearing broiler chickens at Methwold Fm Poultry Unit.

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
Biocides (includes disinfectants, wood preservatives, slimicides)			
Disinfectants brought onsite by contractors to washout and disinfect houses & equipment, at other times minimal/no stock stored onsite	tbc	tbc	Defra Disinfectants Approved for use in England, Scotland, and Wales.
Pesticides (including herbicides, vertebrate control products, biological pesticides)			
Rodenticide baits, often in proprietary bait boxes	tbc	tbc	HSE UK List of Authorised Biocidal Products
Veterinary medicines (excluding dietary additives)			
Provided only in accordance with a veterinary prescription as required	tbc	tbc	Chicken welfare/disease/pest control
Bedding types			
Litter bales (proprietary mix chopped straw/wood shavings), delivered in time for setting up & small quantity stored onsite for topping up as required	tbc	tbc	Industry standard, readily available, efficacy & cost
Fuels and oils			
Liquid petroleum gas for heating poultry houses	tbc	tbc	Industry standard, efficacy & cost
Gasoline (red diesel) for back-up generators	tbc	tbc	Industry standard, efficacy & cost

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

Q10a Basic measures for improving how energy efficient the activities are

Table 5 Energy usage at Methwold (Breckland) Fm Poultry Unit

Energy source	Use
Grid electricity	Lighting, ventilation system including extraction fans and computer systems, feed augers, winches, water pumps and pressure washers.
Liquid petroleum gas	Space heating in the poultry houses
Gasoline (red diesel)	2no. backup diesel-fired generators

Table 6 Basic energy efficiency measures at Methwold (Breckland) Fm Poultry Unit

Activity	Basic energy efficiency measures
Heating	• Houses will be constructed with a continuous damp-proof membrane installed under all the concrete floors preventing moisture being drawn up from the ground to ensure the litter is dry and friable and reduce the need to heat houses to keep litter dry. • Nipple drinking systems will reduce water spillages. • Houses will be fully insulated with a U-value of approximately 0.4 $W/m^2/^oC$ to reduce condensation and heat loss. • Space heaters will be equally distributed through the housing to prevent cold spots and sensors triggering and activating the heaters unnecessarily. • Control sensors will be checked regularly and kept clean, so they are able to detect the temperature at stock level. • Each house will be monitored by a computer system, which automatically controls and records the humidity and temperature. • Pre-warm houses start of each rearing cycle using package, indirect, LPG-fired heaters inside and keep incubated eggs and chicks at correct temperature. Heat exchangers manage ventilation for first three weeks to improve energy efficiency and minimise ammonia, odour, and dust emissions. As birds grow ridge extraction fans turned on and side inlets opened as more fresh air is required for cooling until ventilation achieved via ridge extraction fans only, and heaters and heat exchangers can be switched off. • The poultry houses will be maintained in good condition, cracks and open seams will be repaired. • The concrete flooring will be maintained, and cracks will be repaired.
Ventilation system	• The correct environment for the birds will be maintained in the poultry houses using ventilation systems. • Professionally designed and installed roof ventilation via fresh air inlets in the side walls with package high velocity extraction fans (Vents greater than 5.5m high, fan efflux velocity greater than

	7m/s), and uncapped roof outlets evenly distributed along the ridges of houses. • Appropriate size and power fans to minimise energy consumption The fans are low energy per m^3 of air. • Computer controlled and regularly adjust ventilation to match age, weight, and health requirements, and provide enough ventilation under all weather and seasonal conditions to meet chickens needs as they grow, and to minimise, as far as the indoor requirements allow heat losses from the houses, and minimise ammonia, odour, and dust emissions. • The computer control systems will control the ventilation for maximum efficiency i.e., one fan operating at full capacity rather than two operating at half their capacity. • Extraction fans will be fitted with back draft shutters to reduce heat loss and rainwater ingress. • Gable end fans and mechanical evaporative cooling units on sides of houses used infrequently for cooling in warm weather. • Fans regularly maintained and cleared of debris. • Preventive maintenance programme includes farm workers check fan settings, and for faulty noisy fans, during walk-through checks start of every day. Repair minor faults or callout maintenance team, or electrical contractor. Inspected & maintained by maintenance team or contractor in accordance with manufacturers or suppliers' instructions and keep records.
Lighting	• Lighting will follow a 24-hour rhythm allowing enough light for normal behaviours, inspections, and dark periods for rest in accordance with conditions in Red Tractor certification scheme. • Designed and installed windows in side walls providing natural daylight and low energy LED lighting across the site.
Gasoline (red diesel)	• Package, diesel-fired back-up generators provide electricity for equipment on which chickens depend in event of grid outage. • Back-up generators will be regularly maintained by professional contractors in accordance with the manufacturer's instructions to ensure they operate efficiently.
Monitoring	• Read electricity meters every day and recording kWh used. • Recording LPG and diesel litres delivered to site.
CCA	• No climate change agreement.

Table 7 - Breakdown of delivered and primary energy consumption will be recorded and provided to the Environment Agency annually in the following format:

Energy source **Delivered MWh**	**Energy consumption** **Primary MWh**	**% Of total**
Electricity		
LPG		
Diesel		
Other (Operator to specify)		
Exported energy	**MWh**	**Source**
	N/a	N/a

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

28. Used poultry litter, dirty water, and packaging waste arising from the poultry rearing activities 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 recycling, recovery by land treatment to confer agricultural or ecological benefit or used as fuel for biogas or in a power station.

29. Dead-in-shell, non-viable eggs, macerator wash water and carcasses of dead chickens will be treated in accordance with EU 142/2011 Commission Regulation implementing Regulation 1069/2009 of The European Parliament and of the Council laying down health rules as regards animal by-products 'The EU Implementing Regulation. Animal by-products will be segregated from waste and securely stored for export off-site by an approved transporter under the National Fallen Stock scheme.