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 Feltwell Farm Pig Unit

Contents

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

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

2. 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.

3. ~~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.~~ Continue stocking 4,874 production pigs >30kg at Airfield Fm as a temporary measure during demolition and construction phases at Feltwell Fm, no livestock will be housed at Airfield Fm.

4. 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 5.88 + 0.06 + 0.49ha ~~4.3ha~~ of adjoining greenfield agricultural land for new proposed development and enclose and enclose a soakaway (0.06ha) and lagoon A (0.49ha) inside installation boundary (Total installation area 13.04ha ~~12.55ha~~ ~~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.

5. 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).

6. 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.

7. 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.

8. Pig houses designed to be operated in accordance with SGN EPR 6.09 and Best Available Techniques (BAT) Conclusions Document - fan ventilation, solid floor system, and non-leaking drinkers. To be constructed with concrete floors poured over a continuous damp proof membrane, steel portal frames, low-pitched insulated roofs covered with steel cladding, precast concrete grain wall panels, blockwork walls for pens with separate lying and dunging areas, and a concrete apron for all round access.

9. Forced ventilation via package Galebreaker curtains above concrete wall panels and 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. Solid doors on gable ends. Curtains manually lowered to provide narrow air inlets, or infrequently larger inlets for additional cross-ventilation for cooling pigs in warm weather.

10. Computer controlled ventilation to remove moisture under all weather and seasonal conditions to minimise emissions of ammonia and odour. Regularly adjust ventilation to match age, and weight and health requirements of pigs. As pigs grow, the ventilation rate increases.

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

12. Sustainable urban drainage system (SuDS) for clean roof water to ground, via gutters and downpipes on pig houses, and solid underground pipes, sealed against pollutants entering into the system, convey roof water offsite into package cellular crate storage system for infiltration into the ground. Clean surface water runoff the concrete apron into infiltration trench filled with stones and crate system for infiltration into the ground.

13. Design changed to package fibreglass below ground slurry storage tank not above ground tank outside building for farm yard manure (FYM), and continually pump into lagoon B and possibly A if required. Proposed new livestock yard designed to slope and convey slurry into the below ground tank. Lagoons to be covered to reduce ammonia emissions to air.

14. Pigs reared in batches all-in-all-out for biosecurity. Supplied from operators' or third-party breeding farms for rearing from approx. 35kg to 110kg in 15 weeks, then transported to a local abattoir. At end of rearing periods houses are destocked, and remaining solid manure and straw pushed out. Houses and equipment pressure washed, disinfected, and dried, before restocking. Typically, each house is 1 week empty for washing-out in between batches so approx. 3.25 batches per annum.

15. Sufficient new bedding spread over lying areas prior to pigs arriving and regularly replaced. Barley straw generally preferred subject to availability, or wheat straw. Solid manure and straw regularly pushed out of houses into enclosed manure barn.

16. Pigs reared on three-stage pelleted diets appropriate to pigs' 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.

17. 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.

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

19. Pig 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 the National Fallen Stock Scheme.

20. Solid manure and slurry exported offsite for spreading on land to confer agricultural benefit.

21. 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 at Feltwell Fm Pig Unit

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

EMS	• Stock movements and pig numbers onsite recorded as per statutory requirements in Nitrate Pollution Prevention Regulations 2015, and Pigs (Records, Identification and Movement) Order 2011. • Manure management complies with Nitrate Pollution Prevention Regulations. • Storage facilities comply with the Water Resources (Control of Pollution) (Silage, Slurry and Agricultural Fuel Oil) (England) Regulations 2010 (SSAFO). • AHDB model template B3.5 8b Odour management plan. • AHDB model template B3.5 8c 1 Noise management plan. • AHDB model template B3.5 8c 2 Dust & bioaerosol management plan. • Staff trained and are aware of their own and contractors' responsibilities.
Normal operations	• Daily records are kept on all aspects of the farm's operation including: ○ Pig movements ○ Feed consumption and deliveries ○ Delivery of goods and materials ○ Medication ○ Mortalities ○ Temperatures of areas within pig housing. • Weekly records of water and fuel consumption are kept.

	• Daily inspection by staff around the site to ensure equipment is operating correctly. • Farm Manager frequently reviews information and operation with staff to identify any unexpected or abnormal changes in operation and agree suitable remedial action, if necessary.

Maintenance schedule and records	• A programme of planned preventive maintenance is carried out on all plant and equipment including:
	  ○ ventilation equipment
	  ○ sensors and detectors
	  ○ feed and water systems.
	• Inspection and maintenance schedules based on manufacturer's recommendations.
	• Buildings and equipment on site are inspected weekly and checked for visual signs of leakage, corrosion and structural damage, security, and correct operation.
	• A record of all faults and maintenance work and inspections is kept in the farm office.

Incidents and abnormal operations	• Measures in place to identify incidents and abnormal operations such as breakdowns, damage, etc. • Staff are trained to notice and respond to abnormal changes in by investigating the causes. They then either take steps to get back to normal operation and ensure the problem does not reoccur or report issues that cannot be immediately addressed. • A copy of the permit is available and accessible for staff to read. • Staff have been given training on the potential environmental impacts of the unit and their role in ensuring environmental impacts are minimised.
Complaints system	• Complaints relating to the farm's activity are logged and referred to the Farm Manager for investigation and follow-up action. A record is kept of any remedial action to prevent or minimise the causes, and staff also respond to concerns raised by the local community, as appropriate. • We have placed a site identification notice at the entrance of the site clearly visible from a public highway in accordance with EPR 6.09 SGN 'How to comply'; Version 2; 2010. The sign will notify neighbours and members of the public about the nature of the farm they can contact for further information or to notify a concern.
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 in the H1 Environmental Risk Assessment. • All staff are aware of the location and content and their responsibilities in event of an accident.
Training and qualifications	• All staff are suitably qualified to work at the installation. • All staff receive formal training from both farm manager and external training providers, which includes making them aware of their (and contractors) roles and responsibilities.

	• All staff will have received formal training on health and safety, the accident management plan and will be trained in 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 have defined roles and understand what is required of them and what others will carry out. • Training and instruction of staff and contractors is recorded in the training plan, which is kept in the farm office.
Site security	• Site does not have a secure perimeter fence although it is located at some distance from the public highway and accessed via a private roadway. • Housing, stores, tanks, and equipment are securely locked at night. • Site gates locked at night to prevent pedestrian and vehicle access out of hours. • Fuel oil tanks are secure and locked. • Signs placed around perimeter to warn people against entering the farm. • There is no public right of way 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. Plan will include removal of any potentially polluting substances and decommissioning and removing equipment, plant, buildings, hard standing and underground structures, etc.

Q7 Emissions to air, water, and land at Feltwell Fm Pig 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 pig houses 1-14 as shown on the site drainage plan 20-L45-IP002A dated June 2023 included with application EPR/XP3632QE/V003	Pig rearing houses 1-14
Vent from diesel tank as shown on the site drainage plan 20-L45-IP002A dated June 2023 included with application EPR/XP3632QE/V003	Diesel tank
Point source emissions to water	
None	
Point source emissions to land	
SW1 Offsite outlet to soakaway filled with stones east of installation boundary as shown on the site drainage plan 20-L45-IP002A dated June 2023 included with application EPR/XP3632QE/V003	Uncontaminated roof water from straw barn via gutters, downpipes, and solid underground pipes.

SW2 Onsite outlet to soakaway filled with stones north end of straw barn as shown on the site drainage plan 20-L45-IP002A dated June 2023 included with application EPR/XP3632QE/V003	Uncontaminated roof water from straw barn via gutters, downpipes, and solid underground pipes.
SW3 Onsite outlet to soakaway filled with stones north end of straw barns as shown on the site drainage plan 20-L45-IP002A dated June 2023 included with application EPR/XP3632QE/V003	Uncontaminated roof water from straw barns via gutters, downpipes, and solid underground pipes.
SW4 Onsite outlet to soakaway filled with stones north end of straw barn as shown on the site drainage plan 20-L45-IP002A dated June 2023 included with application EPR/XP3632QE/V003	Uncontaminated roof water from straw barn via gutters, downpipes, and solid underground pipes.
SW5 Onsite outlet to soakaway filled with stones north end of manure barn as shown on the site drainage plan 20-L45-IP002A dated June 2023 included with application EPR/XP3632QE/V003	Uncontaminated roof water from manure barn via gutters, downpipes, and solid underground pipes.
SW6 Onsite outlet to soakaway filled with stones north end of manure barn as shown on the site drainage plan 20-L45-IP002A dated June 2023 included with application EPR/XP3632QE/V003	Uncontaminated roof water from manure barn via gutters, downpipes, and solid underground pipes.
SW7 Onsite outlet to soakaway filled with stones south end of manure barn as shown on the site drainage plan 20-L45-IP002A dated June 2023 included with application EPR/XP3632QE/V003	Uncontaminated roof water from manure barn via gutters, downpipes, and solid underground pipes.
SW8 Onsite outlet to soakaway filled with infiltration crate system east end of (new) straw barn as shown on the site drainage plan 20-L45-IP002A dated June 2023 included with application EPR/XP3632QE/V003	Uncontaminated roof water from (new) straw barn via gutters, downpipes, and solid underground pipes.
SW9 Offsite outlet to infiltration basin as shown on the site drainage plan 20-L45-IP002A dated June 2023 included with application EPR/XP3632QE/V003	Uncontaminated roof water from pig houses 1-14 via gutters, downpipes, and solid underground pipes.
SW10 Onsite soakaway French drain filled with stones as shown on the site drainage plan 20-L45-IP002A dated June 2023 included with application EPR/XP3632QE/V003	Uncontaminated surface water from the concrete apron, roadways.
Point source emissions to sewer, effluent treatment plants or other transfers offsite	
None	

Q7 Emissions to air, water, and land at Airfield Fm Pig Unit

Table 2 Emissions (releases)

Emission point description and location	Source
Point source emissions to air	
Natural ventilation via ridge outlets on pig houses 1&2 as shown on the Airfield Fm, Scale 1:480 site drainage plan included with application EPR/XP3632QE/V003	Pig rearing houses 1&2
Point source emissions to water	
None	
Point source emissions to land	
AFSW1 Onsite outlet to soakaway filled with stones west side of pig house 1 as shown on the Airfield Fm, scale 1:480 site drainage plan included with application EPR/XP3632QE/V003	Uncontaminated roof water from pig house 1 via gutter, downpipe & solid underground pipe
AFSW2 Onsite outlet to soakaway filled with stones west side of pig house 1 as shown on the Airfield Fm, scale 1:480 site drainage plan included with application EPR/XP3632QE/V003	Uncontaminated roof water from pig house 1 via gutter, downpipe & solid underground pipe
AFSW3 Onsite outlet to soakaway filled with stones west side of pig house 1 as shown on the Airfield Fm, scale 1:480 site drainage plan included with application EPR/XP3632QE/V003	Uncontaminated roof water from pig house 2 via gutter, downpipe & solid underground pipe
AFSW4 Onsite outlet to soakaway filled with stones west side of pig house 1 as shown on the Airfield Fm, scale 1:480 site drainage plan included with application EPR/XP3632QE/V003	Uncontaminated roof water from pig house 2 via gutter, downpipe & solid underground pipe
AFSW5 Overland flow into offsite infiltration ditch east side of pig houses 1&2 as shown on the Airfield Fm, scale 1:480 site drainage plan included with application EPR/XP3632QE/V003	Uncontaminated roof water and water draining from concrete apron areas east side of pig houses 1&2 and south side pig house 2 (excluding all times apron is contaminated e.g. storing manure)
Point source emissions to sewer, effluent treatment plants or other transfers offsite	
AFFW1 Offsite emission to slurry lagoon B east side of pig house 1 as shown on the Airfield Fm, scale 1:480 site drainage plan included with application EPR/XP3632QE/V003	Slurry (mixture of excreta, rainwater and washings) draining from concrete apron areas south side of pig houses 1&2 via reception pits and solid underground pipe

8 Operating techniques

Q8a Technical standards & main measures to control emissions at Feltwell Fm Pig Unit

Schedule 1 activity	Section 6.9; Part A(1)(a) Rearing poultry or pigs intensively at installation with more than – (ii) 2,000 places for production pigs (over 30kg)
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 accordance with Environment Agency (2010) EPR 6.09 V2 at Feltwell Fm Pig Unit

Selection and use of feed Technical standard: you must take appropriate measures to provide a diet which minimises the excretion of nitrogen and phosphorous.	<u>Nitrogen</u> • A minimum of two diets will be available for all pigs over the production cycle. At Feltwell Farm rearing pigs from approx. 35 to 110kg, use three stage diets appropriate to pigs' nutritional requirements at each stage of growth. Lower percentage crude protein in each diet and supplemented with synthetic essential amino acids minimising excretion of nitrogen. <u>Phosphorous</u> • Addition of digestible phosphorus, and use of enzymes such as phytase ensures optimum performance and maintenance, whilst limiting excretion of phosphorus. Use of highly digestible inorganic phosphates for the partial replacement of conventional sources of phosphorus in the feed. Phytase, an authorized feed additive, is used to increase digestibility, release, and utilization of naturally occurring but otherwise bound phosphates (phosphorous) in phytate molecules in wheat, barley, and soya. Pigs normally lack sufficient intestinal phytase which is the enzyme required to break down phytate molecules to release more of the bound phosphorus. <u>Buildings and associated infrastructure</u> • Package, feed storage bins, transfer systems (Pipes and augers) and feeders in pig pens specifically designed to allow at least a two-stage feeding regime.
Pig housing design and management. Technical standard: you must take appropriate measures in the design and management of housing to minimize the emissions from those systems	<u>General proposed construction</u> • Extend installation boundary to enclose 5.88 + 0.06 + 0.49ha ~~4.3ha~~ of adjoining greenfield agricultural land for new proposed development and enclose and enclose a soakaway (0.06ha) and lagoon A (0.49ha) inside installation boundary (Total installation area 13.04ha ~~12.55ha~~ ~~11.05ha~~). Demolish existing buildings onsite and retain four for storing solid manure and straw. To make space for construction of 14 modern pig houses each with capacity for rearing 1,000 pigs (Total 14,000 pigs >30kg). • Proposed houses to be positioned in two rows of seven spaced out along with an access road to front and rear making them easily accessible. Layout designed to maximise hygiene and welfare whereby the 'clean ends' of the pig house face outwards and the 'dirty ends' face inwards. • A new straw barn to be built to the north of new pig houses and a water service shed to the west of the new straw barn as well as a concrete base for water tanks.

	<u>Appropriate measures for design to minimise emissions</u> • Pig houses designed and constructed to modern specifications – clear span portal construction on concrete floors poured over a continuous damp proof membrane to eliminate water ingress and concrete panels and blockwork pens. • Use solid concrete floor system comprising dung passages and straw bedded lying areas sloped to drain urine and prevent ponding. • Package drinkers are used to prevent leakage (wastage). <u>Appropriate measures for management minimising emissions</u> • Dunging and raised lying areas clearly differentiated to ensure lying areas are kept clean and dry. • Dung passages cleaned out by scraping at least three times a week. • Lying areas will have sufficient straw or other bedding material to keep the area clean and dry, and to bind nitrogen to reduce ammonia emissions. • Floors are kept free from urine or slurry puddles, either through provision of additional bedding to soak it up, or management to address puddles as they arise including scraping or washing down. <u>Ventilation</u> • Fans exhaust air above roof level through the ridge, and uncapped outlets. High velocity extraction fans (Vents greater than 5.5m high and fan efflux velocity greater than 7m/s). • Draughts avoided in lying areas. • Dung passages sited under air inlets. <u>Temperature</u> • Maintain minimum temperature so pigs do not need to huddle together. <u>General management</u> • Drinkers operated to prevent leakage. • Floors and walls kept clean, keeping pigs clean will help keep walls clean. • Cracked and damaged areas of any wall will be repaired.
Livestock numbers and movements	• System in place to record the number of pigs on the farm at any one time and movements on and offsite. Records will be available for inspection.
Slurry spreading and manure management planning – off site activity	• According to the Environment Agency spreading of solid manure and slurry on land outside installation boundary is not considered to be part of the permitted installation (See Agency comments in BATs 20-22 below). • Solid manure and slurry exported offsite for recovery by land treatment resulting in benefit to agriculture or ecological improvement, or a biogas plant as a fuel. • Records will be kept of the quantities and date of transfers. • Names and addresses and land acreage available where solid manure and slurry are exported for spreading to land. • Where any third party is used to remove manure and slurry 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.
Slurry spreading and manure management planning – on site activity	Not applicable, no manure of slurry spread onsite.
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	Not applicable, no manure of slurry spread onsite.
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	<u>Appropriate measures for preventing and minimising fugitive emissions</u> <u>General building and site maintenance</u> • Buildings maintained in good repair to minimise water leaks into pig houses. • Areas around buildings kept free from build-up of manure, slurry, or spilt feed. • Maintain in good repair the impervious surfaces and containment kerbs where these may be contaminated with potentially polluting substances. For example, concrete areas around buildings will be free from cracks which might pose a risk to groundwater. <u>Management of drainage systems and runoff</u> • Clean roof water and surface water runoff from clean yards and hardstanding areas will be drained to groundwater. • Drainage systems will be identified on clean and dirty water plans. • Clean water drainage systems will not be contaminated. Under no circumstances will slurry (including seepage from solid manure) be allowed to enter surface water drains and into groundwater.

	• Roof water runoff from systems with high efflux velocity fans (i.e., above 5m/s) does not require interception and treatment provided roofs remain clean with no visible signs of dust. • Contamination of yard area will be minimised to reduce quantity of contaminated water for disposal and keep drainage channels clear. • Slurry at Feltwell Fm will contain a mixture of pig excreta, bedding, rainwater and washings from the pig houses • Design changed to package fibreglass below ground slurry storage tank not above ground tank outside building for farm yard manure (FYM), and continually pump into lagoon B and possibly A if required. Proposed new livestock yard designed to slope and channel slurry into the below ground tank and exported offsite for land spreading or disposal. • Drainage from yards in regular use by pigs, or likely to be contaminated with manure or slurry, especially during mucking out will be collected in the storage tank and lagoons prior to exporting offsite. • Slurry storage tank and lagoons designed with appropriate size and constructed for the quantity to be contained. • Procedures in place to prevent contamination of surface water systems and divert drainage to slurry tanks at other times, through the use of temporary bunds around drains or drain blockers. <u>Disinfectant footbaths</u> • Disinfectant footbaths will be properly managed so that they do not overflow and spent disinfectants from footbaths and wheel washes will be added to the solid manure or liquid slurry tank and exported offsite. • Wheel washings will be prevented from entry into surface or groundwater. <u>Feedstuff</u> • Pig feed stored in package silos with automatic transfer systems in augers and pipes direct into the feeders in the pig houses • Silos and transfer systems protected from collision damage by careful siting relative to HGV traffic flows – in between houses, or with kerbs or other markers to stop reversing vehicles. • No onsite milling or mixing of feedstuffs. <u>Housing ventilation</u> • Ventilation systems operated to achieve optimum air quality conditions at each stage of growth in all weather and seasonal conditions. • Control of minimum ventilation rates planned to prevent build-up of moisture (humidity) in the houses. • Ventilation will be appropriate to the age, weight, and health of the pigs. <u>Slurry storage</u> <u>Infrastructure design and construction</u> • Slurry from the pig houses, livestock yard and manure store will be channelled into a package below ground slurry storage tank and pumped into the lagoon. • Minimum slurry storage capacity is normally 4 months production including allowance for rainwater, or 6 months in a NVZ as at Feltwell Fm.

	• Storage tank will conform to the technical measures detailed in the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991, amended. • Slurry will be frequently exported offsite. Manure storage Infrastructure design and construction • Solid manure stored in a covered building with an impermeable base and a collection and containment system for liquid runoff into a below ground slurry storage tank and pumped into a lagoon. • Solid manure frequently exported offsite. Carcase management • Carcasses will be disposed of offsite under the National Fallen Stock Scheme and in accordance with animal by-products legislation. They will be covered to prevent access by birds or rodents in secure containers with lids and removed offsite frequently to prevent odour nuisance. Flies • Appropriate measures will be implemented to prevent flies including, keeping carcases covered, regular inspections and traps to control flies. Agricultural fuel oil and other chemical storage • Package, integrally bunded oil storage tank for agricultural diesel will meet requirements of the Water Resources (Control of Pollution)(Silage, Slurry and Agricultural Fuel Oil) Regulations 2010 (SSAFO Regulations). • 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. Odour • Created and submitted a written odour management plan as part of the application to vary permit owing to sensitive receptors within 400m. Noise and vibrations • Created and submitted a written noise management plan as part of the application to vary the permit owing to sensitive receptors within 400m.
	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. In accordance with the measures described in EPR 6.09 SGN How to comply:- • Regularly exporting all the solid manure and slurry offsite. • Records will be kept of the quantities and date of transfers, for example to a third party for spreading to land, biogas plant for recovery; waste water treatment plant for disposal. • The names and addresses and land acreage available where manure and slurry are exported for spreading to land.

	• Where any third party is used to remove manure and slurry we will have written confirmation the third party will ensure that 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.

Q8a Technical standards contd. EC (2017) Best Available techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs at Feltwell Fm Pig 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 Feltwell Fm Pig 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 impact and overall performance, BAT is to use all the techniques given [in the BAT conclusions document].*	*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.* Operator is using 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:
		  ○ relevant regulations, livestock farming, animal health and welfare, manure management, worker safety, and operator and stockmen have formal qualifications.
		  ○ manure transport and land-spreading
		  ○ planning of activities
		  ○ emergency planning and management
		  ○ repair and maintenance of equipment.
		• Prepared an emergency plan for dealing with unexpected emissions and incidents such as pollution of water bodies including:
		  ○ a plan of the farm showing the drainage systems and water /effluent sources
		  ○ plans of action for responding to certain potential events for example fire, oil spillages.
		  ○ available equipment for dealing with a pollution incident for example spill kit for oil spillages.
		• Regularly check, repair, & maintain structures & equipment such as:
		  ○ slurry store for any sign of damage, degradation, leakage, and slurry pumps
		  ○ water and feed supply systems
		  ○ ventilation systems and temperature sensors,
		  ○ silos, and transport equipment,
		  ○ 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 a combination of the techniques given [in the BAT conclusions document].*	*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 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 pigs 35-110kg 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. Soya bean meal added into feedstuffs during milling to increase crude protein and supplement otherwise low natural levels in cereal grains. Percentage of soya reduced as pigs grow. • Multiphase feeding with a diet formulation adapted to the specific requirements of the production period – 3 separate diets will be provided which contain an increasingly lower percentage of crude protein as pigs 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 feedstuffs during milling, including lysine, methionine, threonine, and valine to supplement otherwise low natural levels in cereal grains.
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 BAT conclusions document].*	*As BAT 3.* Checked for application a diet formulation and nutritional strategy is in place for rearing pigs 35-110kg which includes a combination of the techniques given:- • Multiphase feeding with a diet formulation adapted to the specific requirements of the production period – 3 separate diets will be provided which contain an increasingly lower percentage of phosphorous as pigs grow. • 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 pigs. • Use of highly digestible inorganic phosphates for the partial replacement of conventional sources of phosphorous in the feed. Specifically, dicalcium phosphate will be added during milling into the first of the 3 diets for younger pigs.
BAT 5	**Efficient use of water** *In order to use water efficiently, BAT is to use a*	*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 is using a combination of the techniques given:-

	combination of the techniques given [in the BAT conclusions document].	• 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 package nipple drinkers and troughs for rearing pigs 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 is using 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 is using one of the techniques given:- • Drain waste water to a slurry store 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 be using a combination of techniques given:- • High efficiency heating/cooling using package high velocity extraction fans (Vents greater than 5.5m high, fan efflux velocity greater than 7m/s). • Insulation of the… ceilings of animal houses. • Use 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 and industrial premises within 400m of Feltwell Fm are receptors. Submitted an updated NMP with application which 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, and keep outdoor scraped areas to a minimum to reduce noise from scraper tractors. • Low noise equipment includes high efficiency fans, water pumps, feeding system which reduces the pre-feeding stimulus including use of package feeders and ad-libitum feeding. 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 within 100m of Feltwell 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 pig houses:- • Use coarser long barley or wheat straw for bedding. • Applying fresh straw bedding by hand. • Ad-libitum feeding. • Pelleted feed. • Designed and operate ventilation system with low air speed inside the pig houses.

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 and industrial premises within 400m of Feltwell Fm are receptors. Submitted an updated OMP with application, and 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 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].*	*Odour minimisation has been considered in equipment location and operation in the permit determination stage.* *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 including keeping pigs and the surfaces dry and clean, removing manure frequently to an external covered manure store, decreasing the air flow and velocity over the manure surface. • Optimise the discharge conditions of exhaust air from pig houses using a combination of the techniques given including increasing the outlet height – 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). • Storing solid manure in a building, located downwind of the receptors. 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].*	*The operator is already required to prevent and minimise emissions of ammonia from solid manure through the existing permit conditions on general management, operating techniques and emissions of substances not controlled by emission limits.* Checked for application reducing ammonia emissions to air has been incorporated in redevelopment of the site to use one of the techniques:- • Cover solid manure heap – to repurpose an existing building, retained to store solid manure in a barn.
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 use a combination of the techniques given[in the BAT conclusions document].*	*The operator is already required to prevent and minimise emissions to soil and water through the existing permit conditions on general management, operating techniques and emissions of substances not controlled by emission limits.* Checked for application reducing emissions to soil and water has been incorporated in redevelopment of the site to use a combination of the techniques given:- • Store solid manure in a barn – to repurpose an existing building, retained to store solid manure in a barn. • Store solid manure on solid impermeable floor equipped with a drainage system and a collection tank for the runoff.

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].*	*The operator is already required to prevent and minimise emissions of ammonia from slurry through the existing permit conditions on general management, operating techniques and emissions of substances not controlled by emission limits.* Checked for application reducing ammonia emissions to air has been incorporated in redevelopment of the site to use a combination of the techniques given:- • Appropriate design and management of the slurry store by using a combination of the following techniques:- • Reduce the ratio between the emitting surface area and the volume of the slurry store – includes install of a new package above ground slurry storage tank. • Cover the slurry store with a rigid or flexible cover. • Storage tank will conform to technical measures detailed in the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991, amended.
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].*	*The operator is already required to prevent and minimise emissions of ammonia from slurry through the existing permit conditions on general management, operating techniques and emissions of substances not controlled by emission limits.* Checked for application reducing ammonia emissions to air has been incorporated in redevelopment of the site to use both the techniques given:- • Minimise stirring of slurry – stirring, agitation generally limited to occasions when slurry is being removed from the lagoon for land spreading. • Cover the earth-banked slurry store (lagoon) with a flexible and and/or floating cover such as light bulk materials.
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].*	*Existing permit conditions on general management, operating techniques and emissions of substances not controlled by emission limits will ensure this requirement is met.* Checked for application preventing emissions to soil and water from slurry collection, piping and from a store and an earth-banked storage (lagoon) have been incorporated in redevelopment of the site to use a combination of the techniques given:- • Use stores that are able to withstand mechanical, chemical, and thermal influences for example install package above ground slurry store.

		• Select a storage facility with sufficient capacity to hold the slurry during period in which land spreading is not possible. Adequate capacity in the pre-existing onsite earth-banked storage lagoon, and also reducing number of pig places onsite. Minimum statutory slurry storage capacity is normally four months production including allowance for rainwater, or for six months in a designated nitrate vulnerable zone at Feltwell Fm. • Construct leak-proof facilities and equipment for collection and transfer of slurry for example concrete hardstanding areas, pits, and pump station. • Store slurry in an earth-banked store (lagoon) with an impermeable base and walls, and the onsite lagoon is lined with clay. • Check structural integrity of stores at least once every year.
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 combination of the techniques given [in the BAT conclusions document].*	Not applicable, no processing of manure onsite.
Manure land spreading		
BAT 20	*In order to prevent or, where that is not practicable, to reduce emissions of nitrogen, phosphorous, and microbial pathogens to soil and water from manure 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 solid manure or slurry 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 solid manure or slurry 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 solid manure or slurry 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 uses estimation technique using manure analysis to 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 uses estimation technique using emission factors published by the Environment Agency or AHDB ammonia emission factor for straw-based buildings 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 and industrial premises 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 BAT conclusions document].*	*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.* Operator uses 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 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].*	*We are confident that pig farm installations will be able to comply with the objective of BAT 30 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 indicates that all operators should already be compliant with the techniques set out in BAT30. 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 is using a combination of techniques given:- • Apply a combination of the principles given, including increase the frequency of manure removal to external storage [daily] and keep litter clean and dry. • Straw flow system (in case of a solid concrete floor).
BAT 31	**Ammonia emissions from houses for laying hens, broiler breeders or pullets** *In order to reduce ammonia emissions to air from each house for **laying***	Not applicable to rearing pigs at Feltwell Fm Pig Unit.

	***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].*	Not applicable to rearing pigs at Feltwell Fm Pig Unit.
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 pigs at Feltwell Fm Pig 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 pigs at Feltwell Fm Pig Unit.

8 Operating Techniques

Q8f Is slurry stored on the installation at Feltwell Fm Pig Unit

22. Proposing the slurry storage system at Feltwell will be enlarged with the addition of new sloping concrete livestock yard, reception pit, submersible electric pumps, and pipes into a package, ~~above ground slurry storage tank~~ fibreglass below ground slurry storage tank, not above ground tank, outside building for farm yard manure (FYM), and continually pump into lagoon B and possibly A if required as shown on the site drainage plan. The reception pit and tank to be located close to the new pig houses and manure barn to minimise the area of the yard that will be contaminated during pushing out the solid manure, bedding and during washout in between batches of pigs.

23. All of the equipment will be selected by a professional designer and installed in accordance with the technical measures detailed in the Water Resources (Control of Pollution) (Silage, Slurry and Agricultural Fuel Oil) (England) Regulations 2010, and as amended 2013 (SSAFO). ~~The package, above ground storage tank will be covered, most likely with a package, fixed cover~~

24. Operator will continue using the existing onsite earth banked slurry storage lagoons on the north side of the installation at Feltwell Fm shown on the drainage plan. To provide the mandatory six months slurry storage capacity in a nitrate vulnerable zone in accordance with The Nitrate Pollution Prevention Regulations 2015. However, the existing reception pit and submersible electric pump in the east side of the site will be removed when the existing pig houses are demolished.

~~25.~~ No slurry planned to be stored on the installation at Methwold (Breckland) Fm Poultry Unit. ~~However, the existing earth banked slurry lagoon with a synthetic liner at the north end of the site may be retained in the redevelopment for potential use at a later date. 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, so recognise another partial transfer or variation might be required to bring the storage lagoon back into use.~~

Q8g Is existing slurry storage covered at Feltwell Fm Pig Unit

26. No, however operator will conduct an options appraisal in accordance with the advice in Environment Agency (2012) EPR 6.09 Producing a proposal for covering slurry stores as part of the redevelopment. Demonstrated slurry has a dry matter content of less than 1% owing to rearing pigs on straw and slurry is a mixture of livestock yard run-off and wash down water and delayed covering the slurry lagoon until 21 August 2022 in accordance with the Agency Regulatory Position Statement and recognises this has been withdrawn.

10 Resource efficiency and climate change

Q10a Basic measures for improving how energy efficient the activities are

Table 5 Energy usage at Feltwell Fm Pig Unit

Energy source	Use
Grid electricity	Ventilation system in pig houses including extraction fans and control systems, lighting, feed augers, and water pumps, heating in office and welfare facilities for workers.
Red diesel	Tractors & scrapers.

Table 6 Basic energy efficiency measures at Feltwell Fm Pig Unit

Activity	Basic energy efficiency measures
Ventilation system	• Professionally designed and installed roof ventilation 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. Curtains manually lowered to provide narrow air inlets, or infrequently larger inlets for additional cross-ventilation for cooling pigs in the warmest weather. • Appropriate size and power fans to minimise energy consumption. • Computer controlled and regularly adjust ventilation to match age, weight, and health requirements, and provide enough ventilation throughout the year to meet pigs' needs as they grow. • Fans are computer/frequency controlled to regulate the minimum ventilation. One outlet is fitted with a measuring fan to measure the ventilation volume, and a second outlet runs parallel to first one. To maintain 10m/s efflux velocity there is an oval valve inside the outlet. Valve will open the speed of the fan accordingly. As more ventilation is needed fans switched on in groups along the length of the house, so most fans operating at full capacity. • Designed to avoid draughts affecting pigs. Butterfly valve on top of each outlet closes tube when fan is switched off to prevent draughts and rainwater ingress. Solid doors on gable ends. • 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	• Designed with low energy LED lighting installed across the site.
Tractors & scrapers.	• Preventive maintenance programme for farm vehicles. Farmworkers carry out pre-start safety checks, working properly,

	repair minor faults or callout maintenance team, or vehicle engineers. • Inspect and maintain farm vehicles with professional engineers in accordance with manufacturers or supplier's instructions and keep records.
Monitoring	• Read electricity meter every day and recording kWh used. • Recording 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		
Diesel		
Other (Operator to specify)		
Exported energy	**MWh**	**Source**
	N/a	N/a

10 Resource efficiency and climate change

Q10c How we avoid producing waste in line with Council Directive 2008/98/EC on waste at Feltwell Fm Pig Unit

27. Solid manure, slurry, and packaging waste arising from the pig 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

28. Carcasses of dead pigs 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 segregated and securely stored for export offsite by an approved transporter under the National Fallen Stock Scheme