##### Bioaerosol and Dust Management Plan

**Farm name:** Red House Farm, South Green, EYE, Suffolk **Operator:** Ford Farms (Suffolk) Ltd **Permit number:** EPR/xxxxxxx

**Date:** September 2023  **Prepared by:** L Bentley

**Introduction**

The bespoke Bioaerosol Management Plan (BMP) has been prepared to support the overall Environmental Management System in place at Red House Farm.

The overriding principle of the BMP is to ensure the day-to-day activities are carried out in accordance with this document to help minimise the overall environmental impact. There are no residential sensitive receptors within the installation boundary. There are two adjacent properties and a number of other properties within 400m of the installation boundary. There is no history of complaints. The nearest receptors to the installation boundary is the farmhouse for Red House Farm lived in by the operator and Red House Farm Lodge occupied by the operator’s father. The nearest neighbours are nearby housing to the south-east occupied by third parties.

**Setting**

The installation is located at National Grid Reference TM 17363 74950. Please refer to Appendix 4.

**Figure 1: 400m buffer zone and sensitive receptors**



m

300

150

0

**Table 1: Sensitive Receptor Locations and distance from Installation Boundary to nearest point of domestic curtilage.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Receptor** | **Type of Receptor** | **Distance from nearest housing (m)** | **Direction to Receptor** |
| Farmhouse adjacent to installation boundary – property owned by C Ford and occupied by farm staff | House | Adjacent | E |
| Red House Farm Lodge – owned and occupied by C Ford | House | Adjacent | N |
| South Green Farm | Farm | 75 | NE |
| Ash Lodge/Gissing Farm House/Gissing Farm/Gissing Farm Cottages/Cork Oak Barn/Mertle Cottages | Farm and Residential | <250 | N |
| Minor Road – (no-through road leading to neighbouring properties) | Public road | Adjacent | W |
| Hoxne Brick Pit | SSSI | 1,600 | N |
| Remains of medieval fishponds at the Leys | Scheduled Monument | 1,250 | E |
| Denham College Moated Site | Scheduled Monument | 1,700 | E |
| Remains of Eye Priory at Abbey Farm | Scheduled Monument | 1,960 | SW |
| The Pennings, Eye | Local Nature Reserve | 2,380 | SW |
| Gypsy Camp Meadows, Thrandeston | SSSI | 6,220 | NW |
| Mellis Common | Local Nature Reserve | 7,230 | W |

The purpose of this Bioaerosol and Dust Management Plan is to:

* Establish the likely source of bioaerosol and dust arising from the farm
* Set out procedures at the farm in order to mitigate or minimise the risk of bioaerosol and dust
* Formalise an effective method of dealing with any bioaerosol and dust complaints quickly and efficiently.

**Potential bioaerosol and dust sources**

In accordance with Section 3 of H4 guidance, a risk assessment of bioaerosol and dust pollution was performed (Appendix 5).

As a result, the following sources have been identified as contributing to a potential *medium risk* bioaerosol and dust source:

* Bioaerosol and dust emissions from feed selection, feed delivery and storage
* Bioaerosol and dust emissions from manure/slurry storage and removal
* Bioaerosol and dust emissions from yard areas
* Bioaerosol and dust emissions from housing and ventilation
* Bioaerosol emissions from drinking water systems
* Bioaerosol and dust emissions from pig moving and loading
* Bioaerosol emissions from dirty water generation (wash water)
* Bioaerosol and dust emissions from carcase storage and disposal
* Bioaerosol and dust emissions from incinerator
* Bioaerosol and dust emissions from diesel powered generator
* Bioaerosol and dust emissions from dust build up

**Pathways and receptors**

The pathway for all of the above sources is via the atmosphere. With the most sensitive receptors being inhabitants of nearby residential dwellings the wind direction will significantly influence how receptors are affected. We have not received any complaints from neighbours within 400m relating to bioaerosols and dust from the farm, either during normal or unusual operations on Red House Farm.

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| --- | --- | --- |
| **Bioaerosol and dust related issues** | Actions taken to minimise bioaerosol and dust | **Completion date** |
| Effects of diet on bioaerosol and dust and ammonia emissions (feed selection) | * Feed composition is closely matched to the pigs’ requirements
* Feed specifications are prepared by the feed compounder’s nutrition specialist. The nutritionist ensures that protein and phosphorous content is reduced as the rations change throughout the growth cycle.
* All rations are bought-in and are from UFAS (or equivalent) approved mills. Only approved raw materials are utilised in production.
* Dry, pelleted diets are fed, binding dusty ingredients. Fat content is optimised to reduce dust emissions. Diets are precision fed according to the pigs’ requirements to reduce wastage and risk of feed spoiling and of producing bioaerosols and dusts.
* Records of crude protein levels and diet formulation are kept in the site office.
 | On-going |
| Feed delivery and storage | * Bulk delivery and storage of dry feed takes place on site.
* All feed silos are collision protected.
* Diets are delivered, via sealed systems, reducing potential for dust release to the atmosphere. Feed systems are fully enclosed through to feed trough.
* Any and all spillages are cleaned up immediately. For any major spillage greater than 500kg that is unfit for animal consumption the spillage will be cleared up in to skips and removed from site for disposal via the appointed waste contractor within 24 hours of the incident. For any spillage less than 500kg, feed would be cleared up using bags and placed in the onsite general waste container for disposal.
* Internally, the feed never falls any great distance which reduces the dust plume effect. Any leaks are repaired quickly and any spillage cleaned up
* Open surface of troughs/feeders kept to a minimum consistent with purpose in order to minimise exposed feed surface.
* Feed wastage is monitored for daily, and feedback would be given to mill if quality of feed was reduced or there were issues with palatability.
* Feed protected from birds, flies and rodents.
* The feed storage is checked by the site manager in accordance with the site’s maintenance schedule.
 | On-going |
| Ventilation techniques | * The ventilation system is computer controlled (where appliable) and regularly adjusted to aid optimum internal environmental conditions.
* The ventilation system is designed to efficiently control and, when required, remove humidity from within the buildings.
* Maintenance schedules are in place and are carried out in line with manufacturers’ recommendation and guidance. This minimises the risk of any breakdowns.
* Fans are designed to mitigate risk of deposits of dust being made on the roofs (where applicable). Risk of contaminating roof water is thereby reduced. The roofs are monitored and cleaned where applicable to reduce contamination risk further.
 |  |
| All housing and management | * Buildings are in line with BAT requirements, as will any future refurbishments be
* All housing and stock are checked for cleanliness as part of daily welfare checks
* All housing is cleaned out in accordance with written cleaning plan
* Potentially odorous spillages (e.g. feed ingredients) are cleaned up promptly
* Stocking density maintained at or below levels set out in Defra Welfare Regulations
* Temperature and ventilation correspond to animals’ requirements to optimise the housed environment for the pigs and air quality conditions. Housing is insulated to help keep cool in the summer.
* Feeders and drinkers have been designed to reduce scope for wastage and leaks
* Floor and wall surfaces are constructed from non-porous smooth surfaces
 | On-going |
| Bedding conditions and management  | * Bedding only applicable in Shed 2
* Straw bedding management aids in the binding of dust and liquids. Frequent removal of wet areas reduces risk of stagnation and ammonia and bioaerosol and dust build up.
* Straw quality chosen to minimise dust and bioaerosols, including mould spores. Bedding material is stored to ensure it is kept clean and dry to prevent wastage and deterioration
* Controls on feed, ventilation (and therefore temperature and humidity) help maintain bedding quality
* Comfortable pigs are more likely to maintain a dry lying area
* Bedding applied internally and at low level to reduce dust creation.
* Use of nipple drinkers to minimise spillage
* Use of a veterinary health plan, with specialist veterinary input used as necessary, to mitigate risks of disease outbreak leading to poorly pigs and excessive defecation.
* All walls and ceiling voids have been insulated to prevent condensation and cold bridging. Continual Damp Proof Membrane (DPM) is laid under the concrete floor of the solid floor housing to prevent moisture being drawn up from the ground.
 | On-going |
| Carcass Disposal | * Dead pigs are removed from the houses when found (or following euthanasia) without delay and the numbers recorded. They are held in a sealed and locked container, preventing leaks, until they are disposed of in the on-site incinerator (or collected by a licenced fellmonger).
* Additional ad hoc removals can be arranged in the case of increased mortality and/or necessity to cull larger numbers on farm.
 | On-going |
| Destocking of livestock | * Walkways, out-loading pens and loading ramps are kept clean and well maintained with no ponding of effluents
 | On-going |
| Clean out (mucking out and/or wash down) | * Cleaning out occurs as soon as possible after destock
* Yards and open surfaces designed to ensure effective separation of uncontaminated rainwater from slurry and manure
* The slurry collection system works effectively to prevent ponding of slurry, which may release high levels of bioaerosols.
* Only Defra approved disinfectants and detergents are used on site and are applied by trained personnel, in accordance with the manufacturer’s guidance.
* Cleaning and disinfection protocol followed, reviewed by the vet as part of the Veterinary Health Plan, including cleaning of feeding and water systems.
* Lights and ventilation systems cleaned as necessary to prevent build-up of dust and bio-aerosols.
 | On-going |
| Manure storage | * Manure is produced from Shed 2 only.
* The bunded muck store is located adjacent to S2 and there is minimal contaminated surface area.
* 150t maximum tonnage expected in the store at any one time. Removed from site to be stored or applied to operator owned and managed land. Removal infrequent, so reducing impact of spikes in muck handling activities and of transporting muck past nearest receptors.
* Effluent and rainfall on to contaminated concrete is directed to an adjacent lagoon with floating cover.
* Increased bioaerosol and dust emissions are expected when mucking out and transporting muck. We will avoid removing manure when the wind direction is blowing towards the nearest receptors, if cropping/soil constraints allow.
 | On-going |
| Slurry storage | * Slurry is transferred from underslat pits in the buildings by vacuum pump to tankers and then pumped in (under the slurry surface) to the above ground circular slurry tank.
* The tank is has a rigid cover
* The slurry lagoon (see above) has a floating cover
* Slurry stores designed and operated with effective emptying and agitation functions
* Slurry in store only stirred, if necessary, during emptying.
* Slurry is removed from site on an infrequent basis through sealed systems, reducing bioaerosol creation when out-loading
* Slurry introduced beneath surface of store
* Unnecessary running of vacuum pumps avoided.
* Routinely, the storage tanks are checked before and after wash down or following any prolonged rainfall (though the area of concrete capturing contaminated rainwater is minimal)
* Slurry is applied to operator owned and managed land in accordance with a Manure Management Plan and relevant legislation and guidance.
 | On-going |
| Dirty water storage | * There is no separate dirty/waste water collection system.
 | On-going |
| Cleanliness of yard areas | * Yard surfaces are properly maintained and kept clean
* The drainage system works effectively to prevent ponding of water, which may release bioaerosols. This is achieved by gradient and type of yard surface, ensuring effective drainage. Inspection and maintenance in the long term will ensure that this remains the case.
* Housing, yards and equipment cleaned regularly to prevent dust build-up.
* The site surfacing is stone. There is a soakaway at the northern end of Shed 1 taking uncontaminated water from roof and yard areas associated with Shed 1. Uncontaminated water from roof areas (via gutters and downpipes) from sheds 2, 3, 4 & 5 and yard areas (via drain inlets and pipework) ultimately drains into the nearby drainage ditch located on the western boundary of the installation.
 | On-going as part of the inspection and maintenance programme |
| Incinerator | * The incinerator is an APHA approved facility that meets emissions requirements
* Incinerator ash is collected in sealed system and disposed of via incorporation in to FYM and application to land, under U15 waste exemption approval.
 | On-going |
| Spreading slurry/FYM | * Storage and spreading follows NVZ regulations and Defra Code of Good Agricultural Practice; applications are co-ordinated with local weather forecasts and techniques are designed to reduce creation of bioaerosols.
 | On-going |
| Dealing with complaints  | * Any bioaerosol and dust complaints will be reported to the operators who will log and investigate causes of all bioaerosol and dust complaints; identifying the source of the bioaerosol and dust issue and monitoring bioaerosol and dust levels at the site boundary as part of the investigation
* The complaint details and subsequent investigation will be recorded on the site general complaint form (see Appendix 1 to this plan) and a copy will be kept in the site office.
* The complaints procedure will follow the requirements set out in the Environment Agency’s guidance
* We will keep auditable records of any investigations we carry out. These records will be invaluable to us in analysing incidents and stopping them from happening again, as well as being a requirement of this management plan and to meet permit conditions.
 | On-going |
| General comments | * Neighbours will be informed (where necessary) prior to activities which may cause bioaerosol and dust
* Bioaerosol and dust levels will be monitored on site by all staff. The source of abnormal bioaerosol and dusts will be identified and appropriate action will be taken to reduce levels back to normal
* The effectiveness of control measures will be reviewed at least once a year or sooner in the event of any complaint or relevant changes to operations.
* The permit operators or their delegate are able and responsible for checking bioaerosol and dust emissions daily; checking for any abnormal levels or potential for increased bioaerosol and dust production. Site tours will be undertaken daily by the operators or their representative to ensure risks of bioaerosol and dusts are assessed. Where there is potential for abnormal elevated bioaerosol and dust emission, control measures will be put in place to mitigate the risk.
 | On-going |

**Contingency Plan**

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| **Abnormal Scenario** | **Remedial Action** | **Time Limit** |
| Damage to building | Damage would be repaired asap and, depending on nature of damage, area made safe and covered/contained in the meantime to prevent increased odour emissions and/or destocked in the immediate area if necessary. | Depends on severity of damage and whether environment or animals are at risk.Immediate action required to make safe.Mitigation measures will continue until the damage is repaired and it is assessed as safe to revert to normal practice. This will be recorded in the inspection and maintenance records. |
| Slurry store damage or overflow | Contingency margin in store capacity so overflow risk low. Availability of other storage options off-site.Tank should be repaired immediately and any contaminated water held or collected in the meantime. | If any risk of pollution, immediate action must be taken to remove risk. Mitigation measures will continue until the damage is repaired/situation remedied and it is assessed as safe to revert to normal practice. This will be recorded in the inspection and maintenance records and/or incident records. |
| Pipework damage | Immediately stop use of the pipe. Replace/repair pipe. Immediately install additional containment measures in the meantime if needed (e.g. using straw/sand or bucket brush) | Immediately stop potential for leak.Replace/repair pipe - Time frame depends on dependency on pipe.Mitigation measures will continue until the damage is repaired and it is assessed as safe to revert to normal practice. This will be recorded in the inspection and maintenance records and/or incident records. |
| Livestock illness | Veterinary advice and treatment plan would be referred to and additional measures taken where necessary; i.e. more frequent removal of FYM from pens where e.g. gastrointestinal illness or behaviour problems is leading to increased mucking of the pens. Where pigs need removing from their peers, hospital pens are included within each building – but these are managed exactly the same as the other pens, with dirty areas removed frequently, preventing elevated odour levels. A decision making protocol is also in place regarding acceptable treatment windows and when to make the decision to euthanise. This reduces the risk of animals which aren’t recovering in an acceptable timeframe for high welfare, or aren’t likely to be ultimately fit for transport, being kept on in hospital pens indefinitely.In the case of a notifiable disease outbreak, the site is designed for accommodating pigs to their full adult size so the feed, water and space requirements are correct for an extended housing period if required. The nature of the muck management system means that pens can be cleaned regularly throughout the batch. We would not expect an increased daily odour output for these reasons. In the instance that it is not possible to remove FYM from the site at all, advice would be sought regarding location for a temporary field heap and a tanker would be deployed to increase the dirty water holding capacity on the site. Advice from the EA and APHA would be sought. | Immediate referral to veterinary advice for prompt treatment and management plans.Assess the risk for increased odour production, and adjust bedding and mucking out schedules accordingly. Mitigation measures will continue until the situation is under control and it is assessed as safe to revert to normal practice. This will be recorded in the animal management records and/or incident records as applicable.  |
| Fire  | Control the fire as quickly as possible. If the fire is not immediately possible to extinguish and is spreading, contact fire brigade immediately and remove at-risk animals if safely possible, also remove animals from nearby buildings. Unless there is sufficient, and safe, accommodation available on site at the correct stocking densities - arrange for removal of these animals from the site within 8 hours maximum. There is contingency margin for housing available within the operators control. All firewater will be draining to the dirty water tank, so this will need frequent emptying and appropriate disposal/removal to other storage tanks/tankers. Contact Environment Agency for advice on disposal.Follow fire brigade advice regarding creation of fire breaks/protection and removal of flammable materials (e.g. straw bales),Once the fire is under control and it is safe to do so, remove all burnt material within 24 hours and thoroughly clean and decontaminate the area.  | Ring fire brigade immediatelyRefer to Emergency Action Plan – Fire sectionRing haulier/pig group (see Emergency Contacts) to arrange for movement of stock, if necessary, within 8 hours maximum.Mitigation measures will continue until the damage is repaired/situation remedied and it is assessed as safe to revert to normal practice. This will be recorded in the inspection and maintenance records and/or incident records. |
| Diet problems | In the case of a diet issue (e.g. where feed quality was below standard or feed type was incorrect), we have the capacity to remove and replace feed in the bins. Diets are continually reviewed by a professional nutritionist and feedback on feed quality and requirements given via the pig group and veterinary practice.N.B. Diets are only sourced from UFAS accredited mills. | Contact pig group/owner immediately (and vet if applicable).Mitigation measures will continue until the situation is remedied. This will be recorded in the inspection and maintenance records and/or incident records. |
| Failure of containment of food | In the case that a feed pipe leaks within the pig buildings, the system should be stopped and leaked feed cleared up promptly. No potential for contamination of clean water system. In the case that the feed bin leaks or the blow pipe fails and feed is spilled on to an outdoor area, the surface water drainage point should be immediately protected to prevent contamination of clean water systems. Any and all spillages should be cleaned up immediately. For uncontaminated feed fit for animal consumption, it can be transported by teleporter bucket to the feeders in pens or blown into another silo by the feed company vehicle (dependent on biosecurity risk). For any major spillage greater than 500kg that is unfit for animal consumption the spillage will be cleared up in to skips and removed from site for disposal via the appointed waste contractor within 24 hours of the incident. For any spillage less than 500kg, feed would be cleared up using bags and placed in the onsite general waste container for disposal.  | Stop the potential for leaks immediately.Protect clean water inlet immediately by shutting it off or containing the spillage area through use of e.g. straw/sandbags. Protect from rainfall and pests if it is not possible to remove the spilled feed, or feed from a damaged bin, within a few hours. The affected area/feedbin should be free of feed within 24 hours. Mitigation measures will continue until the damage is repaired/situation remedied and it is assessed as safe to revert to normal practice. This will be recorded in the inspection and maintenance records and/or incident records. |
| Carcass disposal route failure | In the case of increased mortality or/and culling of large numbers, the deadstock collector must be able to collect all deadstock immediately or within short timescale. Where immediate collection is not possible, all carcases must be stored in sealed, locked containers capable of retaining all effluents and of reducing risk of odours.In the case of normal contracted deadstock collector being unable to collect the carcases within the required timeframe, there are multiple other collectors used within the wider supply chain which can be called on.  | Immediate communication with deadstock collector(s) and/or pig group/owner.Mitigation measures will continue until the situation is concluded/remedied and it is assessed as safe to revert to normal practice. This will be recorded in the animal management records and/or incident records as appropriate. |
| Temporary storage and disposal of any wastes arising from incidents | Used sand, straw bales, and other waste materials arising from containing pollutants should be stored on an impermeable surface protected from drainage routes.  | Where applicable, the waste contractor (see emergency contacts) should be contacted within 24 hours of an incident and arrangements made for safe disposal.Mitigation measures will continue until the situation is remedied. This will be recorded in the incident records. |

To ensure remedial action has been completed successfully, the operators are responsible for inspecting the situation or equipment/infrastructure and assessing whether it is made safe and can operate in compliance with the permit and other regulatory requirements. Inspection and monitoring schedules may be revised to monitor the specific situation more frequently/closely thereafter, as appropriate.

**Summary**

Bioaerosol and dust are assessed daily by operators or their representative. Air quality within the buildings is also assessed (sensory assessment). Weather monitoring/forecasting, also help to assess the risks and take additional actions to mitigate them if necessary.

We have always worked hard to minimise our impact on our closest receptors. We continually assess management techniques to improve our control of bioaerosol and dusts and emissions.

In accordance with Environment Agency guidance, we will review the effectiveness of our control measures at least **once a year** and in the light of any building and management changes and on the outcome of investigations into the causes of any future complaints, if any occur.

Any complaints will be recorded and investigated using the guidance from EPR 6.09 3.1 and 3.2 odour and emissions management on intensive livestock installations.

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**Appendix 1**

**General Complaint Form**

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| --- | --- | --- | --- |
| Date | Received from | Nature of complaint | Action taken |
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