Bioaerosol and Dust Management Plan

Farm name: Southfield Pig Farm **Operator:** Cattle (Holderness) Limited **Permit number:** EPR/AP3531FB

Date: May 2024 **Prepared by:** L Bentley

Introduction

This bespoke Bioaerosol Management Plan has been prepared to support the overall Environmental Management System in place at Southfield Farm. The overriding principle of this plan is to ensure the day-to-day activities are carried out in accordance with this document to help minimise the overall environmental impact.

The application site is within 400m of two residential dwellings. Only Point A is within 100m of the installation boundary and therefore relevant to this BMP. Point A, adjacent to the installation, is owned by the operator and resided in by a stockman working on the unit.

Point B, to the North of the installation, is just within the 400m buffer zone and is a third-party residence.

The prevailing wind direction is Westerly.

The changes greatly reduce potential for nuisance/emissions.

There are no other sensitive receptors within 400m. There are no historical complaints on record.

Setting

The installation is located at National Grid Reference **TA 38036 21037**. Please refer to Appendix 4.
Figure 1: Site references and 400m buffer zone

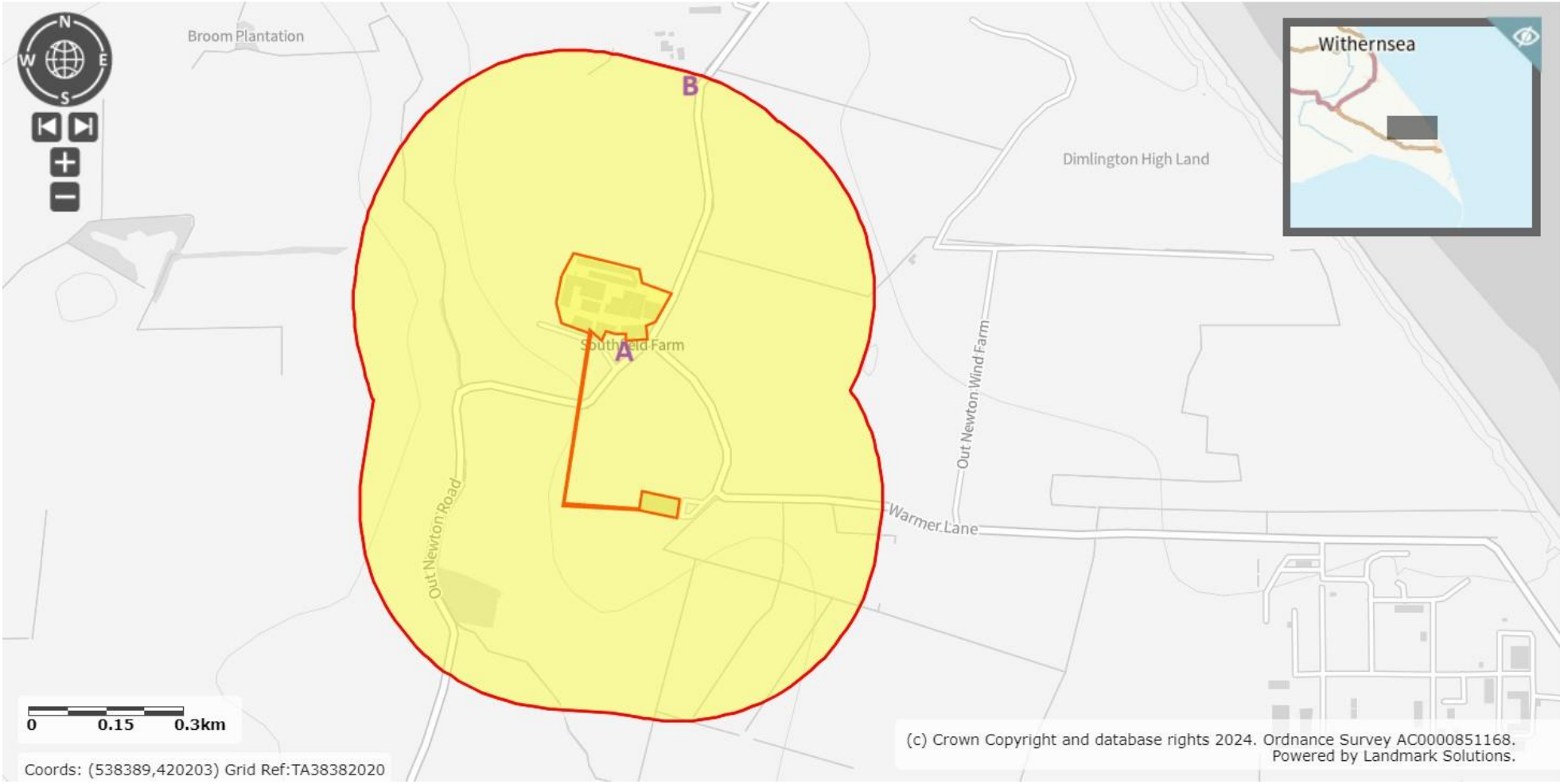

Table 1: Distance of Sensitive Receptors from Installation Boundary to nearest point of property curtilage

Reference in Figure 1	Grid Reference	Address	Type	Distance (m) from installation boundary
A	TA 38017 20985	Southfield Farm, HU19 2RE	Residence	0m
B	*TA 38135 21501*	*Spring Farm Bungalow, HU19 2RE*	*Residence (adjacent to other working agricultural sites)*	357m *(not a relevant receptor for the purpose of this BMP, as located outside of 100m buffer zone)*

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, milling and mixing 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 Southfield Farm.

Bioaerosol and dust related issues	**Actions taken to minimise bioaerosol and dust**	**Completion date**
Effects of diet on bioaerosol and dust and ammonia	• 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. • Feed composition is closely matched to the pigs' requirements	On-going

emissions (feed selection)	• 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. • Only approved raw materials are utilised in production. • Dry and liquid diets are fed. Fat content optimised to reduce dust emissions. Liquid feed diets further reduce creation of dust. • Diets are precision fed according to the pigs requirements to reduce wastage and risk of feed spoiling and producing odours. • Records of crude protein levels and diet formulation are kept in the site office.	
Feed delivery, milling and mixing and storage	• Bulk delivery and storage of dry and liquid feed/ingredients takes place on site. • All feed silos/tanks are collision protected. • Feed milling and preparation is carried out in an enclosed building. • Diets are delivered, via sealed systems, reducing potential for dust release to the atmosphere. Feed systems are fully enclosed through to feed trough. • Cyclone dust catchment systems in place on all silos • 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. • No waste feed. 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 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.	

	• High speed roof fans, where applicable, ensure effective dispersal and dilution of exhausted air. • 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. Roof water is therefore not contaminated.	
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. • Most buildings are ventilated by high speed roof fans, with vents 5m+ high and running at between 11 - 12m/sec speed at outlet. Please refer to Buildings Inventory in Technical Standards (Appendix 6) for detail of emission heights and fan efflux velocity. This optimises the ventilation and dispersion (and therefore dilution) of emissions. • Build-up of waste feed is avoided through precision feeding • Feeders and drinkers have been designed to prevent wastage and leaks • Floor and wall surfaces are constructed from non-porous smooth surfaces	On-going
Bedding conditions and management	• Straw bedded sheds, where applicable, is scraped through 2-3 times per week • Deep straw system aids in the binding of dust and liquids. Frequent removal of wet areas reduces risk of stagnation and ammonia and bioaerosol 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/bowls to minimise spillage	On-going

	• 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.	
Emissions from farrowing housing (FSF)	• Heat pads for piglets – targeted heating • Slurry removed from buildings as frequently as possible to slurry store, by vacuum system • Shallow pit system • Slurry and drainage channels kept clear of deposits • Manure (in excess) is not allowed to accumulate above the slats	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 strong odours • 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	• The muck stores are bunded and covered. Rainfall is therefore excluded. Effluent captured and sent to slurry reception tanks (underground, enclosed, capture tanks which drain in to the slurry system) • FYM is removed from the site frequently to temporary field heaps, on operator owned land. 200t maximum tonnage expected between the stores at any one time. • Increased bioaerosol 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. • Temporary field heap sites chosen carefully to keep away from sensitive receptors as much as reasonably possible.	On-going
Slurry storage	• Slurry is transferred from underslat pits in the buildings by vacuum pump to the reception tanks. • The reception tanks are fully enclosed, underground, with concrete covers. • Slurry is separated, with solids then stored with FYM and the liquid separate piped to the slurry lagoon • The slurry lagoon has a floating cover • Slurry stores designed and operated with effective emptying and agitation functions • Slurry is removed from site on a regular basis, through sealed systems – therefore preventing peaks of biosaerosol creation when out-loading • Slurry introduced beneath surface of stores • 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/managed land by dribble bar to reduce aerosol effect.	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. • Clean water drains to ditches	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 by mixing with FYM and applying to land under U15 exemption.	On-going
Spreading slurry/FYM	• All slurry and FYM is applied to operator owned/managed land • 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

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 bioaerosol and dust 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	Level sensor on slurry reception tanks to shut off pump if maximum level is reached. Tank contents will be checked regularly and assessed prior to removing slurry from under-slat storage. On site lagoon also available and inspected regularly. Having storage options underslats, in tank and in lagoon gives multiple options for additional storage should there be any damage or concern about a store.	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.

	Damaged store can be outloaded to another on-site store, or exported from the site for slurry to be applied to land if conditions and regulations allow. Tank should be repaired immediately and any slurry/contaminated water production held, diverted or collected in the meantime. If underground store damaged and leaking in to surrounding land – empty tank to below line of damage. Seek advice from Environment Agency.	
Pipework damage	Immediately stop use of the pipe. Replace/repair pipe. Immediately install additional containment measures in the meantime if needed.	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	Immediate referral to veterinary advice for prompt treatment and management plans.

	from pens where e.g. gastrointestinal illness or behaviour problems is leading to increased mucking of the pens. In the case of a notifiable disease outbreak, the site operates a continuous flow system so additional accommodation would be required if no animal movements possible for even a short period. The site is a breeder only, with no grower or finisher accommodation, so piglets would require moving off site as soon as possible, with little room for flexibility. Should movements not be allowed off the site, we would utilise e.g. the serving shed for short term weaner accommodation. We would work closely with the vets, authorities and abattoirs to enable off-movements of pigs at the earliest opportunity. With culling being a last resort. Advice from the EA and APHA would be sought.	Assess the risk for increased bioaerosol and dust 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	Ring fire brigade immediately Refer to Accident Management Plan – Fire

	extinguish and is spreading, contact fire brigade immediately and remove at-risk animals if safely possible, also remove animals from nearby buildings if necessary. 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. All firewater will be draining to the slurry system which will need frequent emptying and appropriate disposal/removal to other storage tanks/tankers. Contact Environment Agency for advice on disposal. If the fire is in the straw shed, firewater will require containment, if safe to do so, to prevent pollution of clean water pathways. Follow the Accident Management Plan. 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.	section Ring 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.
Failure of containment of food	In the case that a feed pipe leaks within the pig buildings, the system should be stopped and	Stop the potential for leaks immediately. Protect from rainfall and pests if it is not possible to remove the spilled feed, or feed from a

	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, any and all spillages should be cleaned up immediately. Risk of clean water systems being contaminated, so prompt removal is necessary (and containment if the weather is increasing risk of dust or water contamination). For uncontaminated food fit for animal consumption, it can be transported by teleporter bucket to trailer or blown in to another silo (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.	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, a deadstock collector must be able to collect all deadstock immediately or within short timescale. Where immediate collection is not possible, all carcases must be	Immediate communication with deadstock collector(s). Mitigation measures will continue until the situation is concluded/remedied and it is assessed as safe to revert to normal practice. This will be

	stored in sealed, locked containers capable of retaining all effluents and of reducing risk of bioaerosol and dust.	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.

Appendix 1

General Complaint Form

Date	Received from	Nature of complaint	Action taken
