Dust and Bioaerosols Risk Assessment

This Dust and Bioaerosols Risk Assessment was undertaken following the methodology in Sector Guidance Note EPR 6.09 – How to comply with your environmental permit for intensive farming – Appendix 11 - Assessing dust control measures on intensive poultry installations (Version 1, March 2011).

Dust from poultry houses mainly originates from feathers, skin particles and used litter, and to a lesser extent from feed, bedding, micro-organisms and fungi.

A dust and bioaerosol management plan is required where there are sensitive receptors within 100m of the Installation.

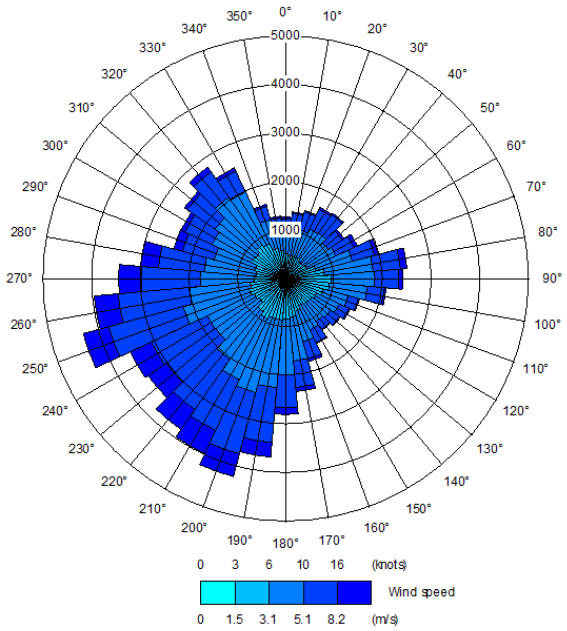
The following receptors are present within 100m of the installation boundary:

Receptor	Location	Distance from boundary (metres)	Grid Reference	Direction from installation
Dwelling (proposed)	Shaws Farm	Adjacent	TF 11910 57001	NE

This proposed dwelling is owned by the applicant and is to be used for agricultural accommodation.

A robust complaints system is in place to record and investigate dust, noise and odour complaints. Please refer to document titled “Noise Management Plan” and “Odour Management Plan”. At the time of this application there had been no known dust or odour complaints made against the existing poultry operation.

Below is a wind rose from weather stations at RAF Coningsby, approximately 10km east of the installation.



This wind rose over the period 2010-2019 shows the prevailing wind direction comes from the west/south west direction, which would be expected to direct any dust or odour towards the north east.

The following table sets out:

- Likely sources of dust and bio-aerosols arising from an egg laying unit.
- The procedures and processes employed by Stonegate Agriculture to reduce or prevent dust and bio-aerosols emissions.

At poultry units operated by Stonegate Agriculture Ltd. the preference is for dust control at source rather than relying on control at exhaust. This reduces energy consumption and minimises waste streams.

Control of dust

Dust source	Method	Actions taken to reduce	Achieved
Poultry feed	• Dust from silos	Covers are placed over silo feed pipes when not in use.	Yes
	• Dust extraction in feed mill areas	No milling undertaken on site.	Yes
	• Storage of feed	Use of covers for feed containers.	Yes
	• Feed spill control	Collection of any feed spill is undertaken to avoid dust being generated.	Yes
	• Form of feed	Feed delivered in pre-mixed form according to age of laying hens.	Yes
	• Fat content	Fat content in feed matched to nutritional requirements and binds dusty ingredients together.	Yes
	• Feed ingredients	Feed ingredients are wheat and barley with some maize and soya. Use of approved and accredited feed supplier with dedicated feed vehicles, and sealed feed systems.	Yes

	• Feeding method	Automatic feeders with screw augers are provided which are covered to prevent loss of feed and drop into feed pans to reduce release of dust. Hand feeding impractical with large numbers of birds.	Yes
	• Over administration of feed to birds	Feed is metered carefully dependent on bird numbers to prevent overfeeding. This avoids spilled feed crushed on the floor into particles which become airborne.	Yes
Bedding Material	• Type of bedding	Soft whitewood shavings are used, for cleanliness and pathogen control reasons, in preference over straw, but also results in less dust.	Yes
	• Treatment of bedding	Wood shavings have dust removed prior to delivery. No further treatment is required.	Yes
	• Amount of bedding	Deep bedding is applied to provide effective floor coverage and environment for laying hens. The aviary system allows the birds to roost and lay away from the litter, further reducing disturbance of the litter.	Yes
	• Application of bedding	Plastic wrapped bales delivered directly into housing. Applied by vehicle and manually with rakes. No blowing or augering required.	Yes
	• Age of bedding	Shavings are applied before stocking and remain in place until destocking (c. 58-60 weeks). Temperature and humidity control prevent overdrying. Additional shaving applied to areas as required.	Yes
Litter systems	Cages not applicable to pullet rearing		
Ventilation	• Increasing ventilation	Ventilation is computer controlled using manufacturer's specifications. High velocity roof fans prevent dust from building up in the poultry house and from depositing on the roof. The correct operation of ventilation systems will be verified should odour or dust complaints be received. Pop holes for chicken access to outside also provide a source of low-level ventilation across the litter. The correct operation of ventilation systems will be verified should odour or dust complaints be received.	Yes

	• Increasing humidity	Humidity is automatically controlled through ventilation and heating to keep litter appropriately dry. No misting systems are present. Too high humidity can lead to wet litter and disease.	Yes
House cleaning	• Good management	Rigorous cleaning regime to remove all litter and sanitise between flocks, to comply with biosecurity protocols also reduces potential for litter to remain as dust. Manure belt system removes waste from beneath the aviary system on a weekly basis, and is moved by covered conveyor to a covered trailer, reducing airborne dust.	Yes
	• Equipment cleaning	Areas where dust can settle in the poultry houses (such as on top of equipment) are cleaned between flocks.	Yes
Genotype	• Animal activity	Birds are stocked from 15-16 weeks old and destocked by 76 weeks old (58-60 weeks at the installation). Adult birds are expected to have reduced feather drop than young birds. In any case, this is not excessive and does not generate significant dust.	Yes
	• Feather crunchiness	Modern hybrid birds are bred for egg laying but also exhibit desirable characteristics relating to feather drop/moulting.	Yes
Number of birds	• Reduced flock numbers	Bird density within the houses is maintained at levels in compliance with Defra welfare codes. This allows the design of the feeding system to provide access for the correct number of birds, minimising feed spillage into the litter.	Yes
Crop cycle length	More appropriate to broiler rearing. Reducing crop cycle length not applicable to laying hens as they have access to aviaries and outside the sheds through use of pop holes.		

Litter Removal

Removing litter is acknowledged as having the greatest potential for releasing dust, bioaerosols and odour. Litter is only removed once at the end of every growing cycle approximately once per year. However, manure from beneath the tiered aviary system is removed once per week using manure belts without forced drying. This is removed via cross conveyor to a wating covered trailer/container. This trailer/container is removed from site approximately every 7-10 days depending on the quantity removed by the belts.

Professional contractors remove all litter and wash the poultry houses, typically within one day of destocking, and not usually more than 3 days (e.g. destocking on a Friday and cleaning out on Monday), and cleaning out all the houses is scheduled to takes place as close to destocking as possible and for short duration to minimise aerosol generation.

Removing litter and cleaning on weekdays avoids causing weekend nuisance at sensitive receptors which maybe downwind of the site. While no nearby sensitive receptors have been identified, Stonegate Agriculture Ltd. continues this practice at all of its sites to maintain good relations with neighbours.

Stonegate Agriculture Ltd. relies on control of dust at source; control of exhaust methods are not installed, i.e. dust filtration. Instead, opening inlet vents to provide natural ventilation and using high velocity roof ventilation fans while depopulating poultry houses is accepted industry best practice, as this:

- limits worker dust exposure.
- maximises atmospheric dispersion
- minimises roof dust deposition, preventing rainwater contamination.

Litter is removed from the poultry house floors using a front end loader to shovel the bulk of the litter carefully and directly from the floor into a waiting trailer positioned outside the doors on hardsurfacing which drains to a slurry tank. This avoids double handling outside and tipping from minimal height. All collection vehicles and/or trailers are kept covered unless loading and depart the site immediately once full.

Animal and litter collection vehicles may drive past some sensitive receptors such as houses, but all loads are covered, and this is a temporary situation. The installation is located in a rural area of Lincolnshire where poultry and other agricultural activities are widespread.

Poultry house doors and pop holes are kept closed and locked following destocking and litter removal, and outside working areas swept clean at the end of each day where litter has been present.