

Dust & Bio-aerosol Management Plan Lingar Hill Farm Poultry Unit

Poultry dust may vary in composition from pure wood dust to a complex mixture of organic and inorganic particles, faecal material, feathers, dander (skin material) and bio-aerosols – dust particles containing living organisms including mites, bacteria, fungi and fungal spores and endotoxins depending on the type of birds, the work activity, and the point in the growing or production cycle. Poultry dust deposition on vegetation, cars and clothing in the back garden and façade of the sensitive receptors can cause annoyance, especially in summer when people are more likely to have windows open and to be outdoors.

The H1 Environmental Risk Assessment submitted with application EPR/YP3805LA/A001 for a bespoke installation permit for 3No. houses for rearing poultry intensively and directly associated activities shows that sources have been identified as contributing to potentially moderate and minor risk of dust and bio-aerosols. The risk assessment was conducted with reference to EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010; Appendix 11, assessing dust control measures on intensive poultry installations.

A dust and bio-aerosol management plan (DMP) has been created as part of the environmental management system owing to sensitive receptors within 100 metres of the boundary of Lingar Hill Farm. A dwelling for the Farm Manager and their family is closest then commercial premises in Watton Road (B1111) shown in Table 1 and Figure 1.

Table 1 - Lingar Hill Farm sensitive receptors 400m

Location	Name	Postcode	Receptor	Direction	Distance from boundary	Grid reference
Watton Road (B1111), Shropham	Lingar Hill Farm	NR17 1EE	Dwelling	SW	5m	TL 97099 92183
Watton Road (B1111), Shropham	Silverstream Kennels	NR17 1ED	Commercial premises	W	115m	TL 96981 92253

Distances measured on MAGIC Maps

Fig 1. Linger Hill Farm sensitive receptors 100m



Wind direction is defined as the direction from which the wind is blowing. According to the Met Office Eastern England climate report - as Atlantic depressions pass by the UK the wind typically starts to blow from the south or south-west, but later comes from the west or north-west as the depression moves away. Directions between south and north-west account for the majority of occasions and the strongest winds nearly always blow from this range. Averaged across the year the prevailing wind direction is from the southwest.

Sensitive receptors are located upwind of Linger Hill Farm so most of the time will not be affected, especially in summer when people are more likely to have windows open and to be outside. They may be affected when the wind blows from the east and southeast. but such winds occur infrequently and mostly in winter months. Operators have no recollection of any dust complaints or concerns and will continue to foster good relationships with their neighbours.

The following table sets out:-

- Likely sources of dust and bio-aerosols arising from a typical broiler chicken unit
- Procedures followed or planned at Linger Hill Farm to prevent or minimise dust and bio-aerosols emissions causing annoyance.
- Contingency and emergency planning to limit exposure to elevated dust and bio-aerosol emissions beyond the installation boundary.

Dust & bio-aerosol related issue	Potential risks and problems	Actions & contingency action to minimise dust & bio-aerosol risks at Lingar Hill Farm Poultry Unit
Manufacture & feed selection	<ul style="list-style-type: none"> • Milling & mixing compound feed • Feed ingredients • Fat content 	<p>Measures are described in Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs; 2017, and EPA 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010:</p> <ul style="list-style-type: none"> • Use compound feedstuff in pellet form, crumbled at mill for the first 2 weeks for chicks. • Feed specifications prepared and continually monitored by company nutrition specialists. • Specifications will include fats as an ingredient for energy & also binding dusty ingredients. • Feed supplied from mills in certification schemes so only approved ingredients will be used. • No feed manufacturing, milling, or mixing on-site.
Feed delivery & Storage	<ul style="list-style-type: none"> • Dust from silos • Storage of feed • Feed spillage • Form of feed 	<p>Measures are described in Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs; 2017, and EPA 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010, and HSE; Controlling exposure to poultry dust; Guidance for employers; 2012, and DEFRA; 2018 Code of practice for the welfare of meat chickens and meat breeding chickens:-</p> <ul style="list-style-type: none"> • Feed delivery vehicles will be covered at all times to minimise dust. • Deliveries will be monitored by drivers and stockman and any spillage cleared up immediately, including dust from beneath the vent tubes. • Feed silos protected from collision damage by careful siting relative to traffic flows, in between the poultry houses keeping them out of the path of HGVs and with concrete kerbs. • Installed package enclosed silos, automatic augers for transferring feedstuffs into the houses. • Pan feeders installed and feeding chickens ad-libitum, reducing dust compared to using track feeders. • Stockman will be inspecting automatic equipment on which chickens depend not less than once per day to check there are no defects and any defects will be repaired immediately or on the same day by the stockman or by professional contractors. • Maintaining an inspection and preventive maintenance programme and keeping records on buildings and equipment by stockman and professional contractors.

<p>Ventilation fans for normal flock management</p>	<ul style="list-style-type: none"> • Dust contains large amounts of bird proteins and mite residues with a high risk of respiratory sensitisation for workers inside the poultry houses. • Increasing ventilation may reduce airborne dust inside the house, but still exhausts dust to outside. 	<p>Measures are described in Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs; 2017, and EPA 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010, and HSE; Controlling exposure to poultry dust; Guidance for employers; 2012, and DEFRA; 2018 Code of practice for the welfare of meat chickens and meat breeding chickens:-</p> <ul style="list-style-type: none"> • Forced ventilation installed in all the poultry houses and computer controlled to remove moisture under all weather and seasonal conditions while meeting the physiological needs of the birds. Regularly adjusting to match age, weight, and health requirements of the chickens. • Installed high velocity extraction fans on all the houses (vents greater than 5.5 metres high and fan efflux velocity greater than 7m/s), • Optimising discharge conditions of exhaust air from poultry houses using a combination of techniques to disperse ammonia and odour emissions more quickly, including maximised outlet heights – exhausting air above roof level through the ridge, and maximised vertical outlet velocity - designed with uncapped outlet cones and will also help with dispersing dust. • Stockman will be inspecting automatic equipment on which chickens depend not less than once per day to check there are no defects and any defects will be repaired immediately or on the same day by the stockman or by professional contractors. • Clearing build-up of dust with compressed air from around vents, fans, ceilings, and feeding equipment end of every cycle, and this also helping reduce the quantity of dirty water produced. • Maintaining an inspection and preventive maintenance programme and keeping records on buildings and equipment by stockman and professional contractors.
<p>Gable end fans used for warmer weather</p>	<p>More frequent extreme weather events are to be expected result of climate change for example hotter and longer heat waves in June, July & August.</p>	<p>Measures are described in Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs; 2017, and EPA 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010, and DEFRA; 2018 Code of practice for the welfare of meat chickens and meat breeding chickens and the DEFRA booklet; Heat Stress in Poultry, Solving the Problem; 2005:-</p> <ul style="list-style-type: none"> • Gable end fans on north gables of all the poultry houses away from sensitive receptors. • Deflectors installed externally direct exhaust air and dust on to the ground. • Grass and established hedges create turbulence and increase deposition on to the ground. • Fans switched on manually to provide additional tunnel ventilation when outside temperature is approx. 27°C in June, July and August including during heat waves (Met Office definition for a UK heat wave is an extended period

		<p>of hot weather for 3 consecutive days with daily maximum temperatures meeting or exceeding the heat wave temperature threshold of 27°C for Norfolk).</p> <ul style="list-style-type: none"> • Gable end fans switched on infrequently - on hot weather days in June, July, and August and usually towards the end of growing periods when chickens are nearly fully feathered. Based on a production cycle of approximately 7 weeks, the fans might be used at the end of 2 cycles for up to approximately 7 days each or up to 14 days in the hottest 3 months each year. The frequency and duration of use in the future is likely to increase in the future owing to climate change. • Gable end fans switched on immediately when chickens start exhibiting uncomfortable feeling hot behaviours for example lifting their wings and exposing more of their bodies to get rid of excess heat, and panting. Chickens heat shedding mechanisms become less and less effective and if the situation isn't controlled, they will die. This additional tunnel ventilation gets air moving close to the floor and over the chickens and wind chill helps them cope with high temperatures. Chickens are always nearly fully feathered, never used for brooding chicks or young birds, which would be chill stressed. • Running fans continually day and night while outside temperatures are approx. 27°C or higher. • Chickens can tolerate higher daytime temperatures if the night time temperatures drop 14°C or more below daytime highs. During the cool night time chickens can get rid of excess body heat built up during the day. Running fans to get air moving over the chickens during the night can help by reducing the 'effective' night time temperature. So, the chickens can then start the next day fresh, which helps keep performance up and lessens the risk of possible mortalities if day time temperatures are high again. • Fans switched off as soon as they are not required, when daytime outside temperature goes down <27°C and chickens stop exhibiting uncomfortable feeling hot behaviour, to minimise odour and dust emissions. • Never used any other times for example when removing litter and washing out.
Litter quality	<ul style="list-style-type: none"> • Type of bedding • Treatment of bedding • Amount of bedding • Application of bedding • Age of bedding 	<p>Measures are described in EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010 and HSE; Controlling exposure to poultry dust; Guidance for employers; 2012:-</p> <ul style="list-style-type: none"> • Dust filtration equipment not installed, but will be closing doors, opening vents for natural air dilution, and switching on ventilation fans to create effective airflow, which is industry best practise to limit workers exposure to dust for litter spreading, depopulating, and removing litter. • Use a proprietary dust extracted chopped straw or a blend of chopped straw/wood shavings for absorbent bedding which when mixed with droppings binds urine and faeces in the litter and provides a dry area. Dust extracted

		<p>straw/wood shavings are commercially available, cost effective and readily disposed of after each production cycle.</p> <ul style="list-style-type: none"> • According to How to comply sawdust and flax straw have been found to produce less dust than wheat or barley straw, but neither are normal UK industry practise for commercial broiler production. • Delivered in plastic wrapped bales directly into the houses for unpacking and spreading over the entire floor area to minimise dust start of every growing period. • Dust filtration not installed but closing doors, opening vents for naturally diluting air, and switching on extraction fans to create effective airflow during litter placement is industry best practise to limit workers exposure to dust. • Use new litter every time, never reuse litter.
Bird activity	<ul style="list-style-type: none"> • Increased flock numbers • Birds exhibiting higher activity levels create elevated levels of dust in the air. 	<p>Measures are described in EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010:-</p> <ul style="list-style-type: none"> • Overall number of bird places increased and more dust after bringing the third poultry house into operation but optimising ventilation for routine flock management and use of gable end fans in warmer weather to minimise dust emissions. • Stockman will be inspecting chickens daily while disturbing them and litter as little as possible.
Destocking chickens	Dust & bio-aerosols released via fans & open doors.	<p>Measures are described in Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs; 2017, and EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010, and HSE; Controlling exposure to poultry dust; Guidance for employers; 2012, and DEFRA; 2018 Code of practice for the welfare of meat chickens and meat breeding chickens and the DEFRA booklet; Heat Stress in Poultry, Solving the Problem; 2005:-</p> <ul style="list-style-type: none"> • Destocking and collecting chickens end of every growing cycle, 6 or 7 times each year • Less than a single day each time for taking/ thinning some smaller chickens and larger chickens at the end. • Dust filtration not installed but closing doors, opening vents for naturally diluting air, and switching on extraction fans to create effective airflow during litter placement is industry best practise to limit workers exposure to dust • Catching and collecting techniques designed to minimise bird disturbance and minimise dust and odour including using subdued lighting to keep birds calm and using a modular transporting system. • Modules nearly always covered to protect chickens during transport to protect them and also providing a barrier to the releasing of dust, but modules will be uncovered in warmer weather.

		<ul style="list-style-type: none"> • HGVs transporting chickens pass-by some sensitive receptors but takes only seconds.
<p>Removing litter</p> <p>Generally considered the dustiest activity</p>	<p>Dust & bio-aerosols released via fans & open doors</p>	<p>Measures are described in Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs; 2017, and EPA 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010, and HSE; Controlling exposure to poultry dust; Guidance for employers; 2012:-</p> <ul style="list-style-type: none"> • Removing litter after destocking occurs only 6 or 7 times every year and takes less than a day. • Professional contractors removing litter as soon as possible, normally within a day of destocking, and not normally more than 3 days for example destocking on a Friday and cleaning out on a Monday). • Removing litter on normal weekdays to avoid causing annoyance at weekends or on bank holidays. • Removing the litter in as short a time as possible. • Reducing workers exposure to dust by keeping doors closed and switching on more fans to create the required airflow, and dispersing dust and bio-aerosols via the high velocity extraction fans. The ventilation will be controlled and reduced immediately after all the litter is removed and works in the poultry houses are finished. • Clearing build-up of dust with compressed air from around vents and extraction fans and ceilings, and feeding equipment end of every cycle, and also helps reduce the amount of dirty water produced. • Removing litter from the floor, using a front end or skid-steer loader to shovel the bulk of the litter carefully and directly off the floor into a large heap the length of the house to minimise time spent loading into waiting trailers positioned outside the doors to avoid double handling. The doors will be open on to the concrete hard standing areas where the trailers will be parked, so not in close proximity to sensitive receptors. • Trailers will be kept covered at all times except during loading. • No used litter stored on site. • Trailers will be passing-by some sensitive receptors but takes only seconds. • Stockman keeping poultry houses closed and locked after removing litter to contain residual dust. • Litter used for power generation or land-spreading under the control of a separate farming business, and a written agreement will be in place. • Keep checking actions taken to minimise dust and bio-aerosols are being adhered to until task is finished. • Sometimes opportunities to delay removing litter/washing out houses to avoid causing annoyance to sensitive receptors, but cleaning/disinfection/drying and setting-up must be completed in readiness for the chicks being hatched for each house. Setting/incubation/hatching is scheduled weeks in advance and generally chicks can't be delivered anywhere else.

<p>Cleaning</p> <p>Generally considered the least dusty of all the activities being an essentially wet activity carried out by contractors.</p>	<p>Dust & bio-aerosols released via fans & open doors</p>	<p>Measures are described in Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs; 2017, and EPA 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010, and HSE; Controlling exposure to poultry dust; Guidance for employers; 2012, and DEFRA; 2018 Code of practice for the welfare of meat chickens and meat breeding chickens and the DEFRA booklet; Heat Stress in Poultry, Solving the Problem; 2005:-</p> <ul style="list-style-type: none"> • Washing out end of every growing cycle approximately only 6/7 times each year. • Professional contractors washing out the houses as soon as possible, normally within one day of destocking, and not normally more than 3 days for example destocking on a Friday and cleaning out on Monday. • Washing out all the houses in as short a time as possible. • Stockman and contractors keeping roadways, areas around buildings, dirty water grates and drains clear of litter, etc to avoid backing-up, pooling, or over spilling into surface water drains or on to unmade land.
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1. Responsibility

The Agricultural Director of Crown Chicken Ltd shall undertake to adhere to the agreed plan at all times. The Environment Agency shall be notified without delay of any incident or accident, which is causing or may cause significant pollution as result of dust and bio-aerosols causing annoyance.

2. Contingency control measures including monitoring and complaints

(a) Monitoring

- i. Farm Manager/ Stockmen are responsible for monitoring dust onsite and for emissions beyond the site boundary which may cause annoyance and ensuring the actions and contingency actions to minimise dust are being adhered to and properly, managing any complaints.
- ii. Inform relevant sensitive receptors (neighbours) of any extraordinary dust that might be expected, and actions are being taken to minimise the amount and duration.
- iii. Record in the farm diary any dust nuisance at sensitive receptors which was expected or substantiated and actions or contingency actions to minimise the dust as quickly as possible.

(b) Complaints

- i. Complaints must be recorded and investigated immediately including checking the actions and contingency actions to minimise dust are being adhered to. If the dust is no longer apparent the investigation must still be completed and recorded on the same day.
- ii. Tell the complainant and anyone else likely to have been affected what you have done.
- iii. Details of the complaint and the actions taken must be recorded on the Dust Complaint Report form (below) and kept in the site office. A copy must be sent to the Agricultural Director immediately.

3. Review

Review the effectiveness of the DMP including the dust related issues, actions, and contingency actions to minimise dust risks at least annually. Sooner if there have been complaints or relevant changes to any operations or infrastructure.

History of changes

Version	Date	Change
1	June 2021	Created by Green Inc Solutions Ltd for an application for an environmental permit for Lingar Hill Farm Poultry Unit to be approved by the Environment Agency.

Dust Complaint Report

Date	
Reference number	
Name and address of complainant	
Telephone number of complainant	
Time and date of complaint	
Date, time and duration of offending dust	
Weather conditions <i>(e.g. dry, rain, fog, snow)</i>	
Wind strength and direction <i>(e.g. light, steady, strong, gusting)</i>	
Callers description of dust	
Has the caller any other comments about the offending dust?	
Any other previous known complaints relating to the installation (all aspects, not just dust)	
Any other relevant information	
Potential dust sources that could give rise to the complaint	
Operating conditions at the time offending dust occurred	
Actions taken	
Final outcome	
Complainant visited	
Complainant contacted with explanation Yes/No Date By whom	
Form completed by	Date: Signed:

Complaints and results of the investigation must be recorded on the Dust Complaint Report form and kept in the Complaints Log in the site office. A copy must be sent to the Agricultural Director immediately.