

## H1 Environmental Risk Assessment & Climate Change Risk Assessment Lingar Hill Farm Poultry Unit

Source of emission	Emission (e.g., ammonia, dust, run-off, spillage, noise, odour)	Receptor (e.g., air, water, land, humans, plants)	Description of impact and duration of impact i.e., short term (ST), medium term (MT) or long term (LT)	Significance of negative impacts Major +++ Moderate ++ Minor + Nil 0	Mitigation / management measures for this emission
1. Poultry production (for the complete production & cleaning cycle)	Ammonia	Air	Aerial deposition and direct toxic effect on trees (ST)	+++	<p>Measures are described in EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010 and Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs; 2017:-</p> <ul style="list-style-type: none"> <li>• Feed specifications prepared &amp; continually monitored by nutrition specialists.</li> <li>• Feed composition closely matched to the chicken’s nutritional requirements - using multiphase, ad-lib feeding with a minimum of 3 nitrogen balanced diets to reduce crude protein in each subsequent stage of growth.</li> <li>• Authorised feed additives used to lower crude protein by adding essential amino acid supplements &amp; non-starch polysaccharide enzymes to improve otherwise poorly digestible feed components &amp; reduce nitrogen excretion into the litter.</li> <li>• Forced ventilation installed in all poultry houses with high velocity extraction fans (vents greater than 5.5 metres high and fan efflux velocity greater than 7m/s).</li> <li>• Ventilation computer controlled in all houses to remove moisture under all weather &amp; seasonal conditions while meeting the physiological needs of the birds.</li> <li>• Regularly adjusting ventilation to match age, and weight and health requirements of the chickens to help keep droppings and litter dry and friable.</li> <li>• Optimising discharge conditions of exhaust air from all the poultry houses using a combination of techniques to disperse ammonia including:- <ul style="list-style-type: none"> <li>• Maximised outlet heights – exhausting air above roof level through the ridge.</li> <li>• Maximised vertical outlet velocity - designed with uncapped outlet cones.</li> <li>• Two European sites and one site of Special Scientific Interest (SSSI) within 5km of the installation, and an Ancient Woodland (AW) within 2km. Site screened out for ammonia so not required to provide computer modelling for permit application, see Environment Agency Pre-application Report dated 14/12/2020.</li> </ul> </li> </ul>
		Land	Nutrient enrichment of soils (e.g., hyper-eutrophication and acidification) (LT)	++	
		Plants	Changes to sensitive ecosystems (LT)	+++	

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	Dust	Humans	Nuisance (ST) Contributor to odour (ST)	+	<p>Measures are described in EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010 and Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs:-</p> <ul style="list-style-type: none"> <li>Sensitive receptors, dwelling houses within 100m of installation boundary.</li> <li>Created a Dust &amp; Bio-aerosol Management Plan with mitigation/ management measures.</li> </ul>
			Human health (LT)	+	
		Plants	Covers leaves, inhibits photosynthesis (ST)	++	
		Land	Nutrient enrichment of soils (LT)	++	
		Water	Nutrient enrichment of water courses (MT)	++	
		Air	Adverse effect on air quality (ST)	+	
	Dirty water (e.g., due to run-off during or after clean-out)	Land	Nutrient enrichment of soils (LT)	+++	<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"> <li>Concrete apron and kerbs channel dirty water into a packaging storage tank.</li> <li>Underground, concrete encased package dirty water tank installed with capacity for storing all the dirty water, comes with diverter valve to keep dirty &amp; clean water separate.</li> </ul>
		Water	Nutrient enrichment of water courses (ST)	++	

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					<ul style="list-style-type: none"> <li>• Stockman and cleaning 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 unmade land.</li> <li>• Professional contractors emptying the dirty water tanks after cleaning finished in readiness for the next time and taken off-site.</li> <li>• Collections can be increased anytime.</li> <li>• Maintaining an inspection and preventive maintenance programme with record keeping for buildings and equipment with stockman &amp; professional contractors.</li> </ul>
	Noise	Humans	Nuisance (ST)	++	<p>Measures are described in EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010 and Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs:-</p> <ul style="list-style-type: none"> <li>• Sensitive receptors, dwelling houses within 400 metres of installation boundary.</li> <li>• Created a Noise Management Plan with mitigation/ management measures.</li> </ul>
	Odour	Humans	Nuisance (ST)	++	<p>Measures are described in EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010 and Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs:-</p> <ul style="list-style-type: none"> <li>• Sensitive receptors, dwelling houses within 400 metres of installation boundary.</li> <li>• Created an Odour Management Plan with mitigation/ management measures.</li> </ul>
	Zoonoses & notifiable diseases	Humans & livestock	Human and livestock health implications (ST)	+	<p>Measures are described in EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010 and Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs; 2017and DEFRA; 2018 Code of practice for the welfare of meat chickens and meat breeding chickens:-</p>

Source of emission	Emission (e.g., ammonia, dust, run-off, spillage, noise, odour)	Receptor (e.g., air, water, land, humans, plants)	Description of impact and duration of impact i.e., short term (ST), medium term (MT) or long term (LT)	Significance of negative impacts Major +++ Moderate ++ Minor + Nil 0	Mitigation / management measures for this emission
					<ul style="list-style-type: none"> <li>• Stockman who are responsible for the care of chickens at any point in time, including holiday cover, part-time and temporary workers will be appropriately trained and qualified.</li> <li>• Using a Health Plan with professional veterinary input as required.</li> <li>• Maintaining the bio-security precautions.</li> <li>• Signage warning people against unauthorised entry.</li> <li>• DEFRA approved disinfectants used for cleaning houses and boot dips.</li> <li>• Clean protective clothing for stockman and visitors.</li> <li>• Daily livestock inspections by stockman.</li> </ul>
	Feed (e.g., due to spillage from bins)	Land  Water	Nutrient enrichment of soils (LT)  Nutrient enrichment of water courses (MT)	+  +++	<p>Measures are described in EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010 and Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs; 2017 and DEFRA; 2018 Code of practice for the welfare of meat chickens and meat breeding chickens:-</p> <ul style="list-style-type: none"> <li>• Package enclosed feed delivery systems installed (silos, pipes, augers, etc) minimising spillages &amp; dust.</li> <li>• Feed silos protected from collision damage by careful siting relative to traffic flows - in between poultry houses keeping them out of the path of HGVs &amp; easily connected to lorries blowing in feed over as short a distance as possible.</li> <li>• Deliveries will be monitored by drivers &amp; stockman and any spillage cleared up immediately.</li> <li>• Automatic equipment on which chickens depend will be inspected by the stockman not less than once per day to check there are no defects, and any defects will be repaired immediately.</li> <li>• Maintaining an inspection and preventive maintenance programme with record keeping for buildings and equipment with stockman &amp; professional contractors.</li> </ul>

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	Pests	Humans	Nuisance caused by vermin and flies (ST)	+	<p>Measures are described in and EPA 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010:-</p> <ul style="list-style-type: none"> <li>• Dead chickens removed daily from poultry houses by the stockman.</li> <li>• Carcasses stored in secure, non-leaking, containers and kept covered.</li> <li>• Containers removed weekly by an approved transporter under the National Fallen Stock scheme. Weekly collections are normally considered adequate to avoid attracting vermin and flies but can be increased anytime, for example in warmer weather or in event of higher mortality as result of disease.</li> <li>• Transporter exchanging clean and disinfected containers for the filled ones, so no cleaning or disinfecting of containers on site.</li> <li>• Scheduled programme of pest control with professional contractors licensed to use pest control products, or stockman or other workers will be trained to maintain pest control arrangements.</li> </ul>
2. Use of vehicles onsite	Feed, used litter or dirty water (e.g., due to spillage from vehicles)	Land  Water	Nutrient enrichment of soils (LT)  Nutrient enrichment of water courses (MT)	+  +++	<p>Measures are described in EPA 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010 and in the DEFRA; 2018 Code of practice for the welfare of meat chickens and meat breeding chickens:-</p> <ul style="list-style-type: none"> <li>• Feed silos protected from collision damage by careful siting relative to traffic flows - in between poultry houses keeping them out of the path of HGVs and easily connected to lorries blowing in feed over as short a distance as possible.</li> <li>• Deliveries monitored by drivers &amp; stockman; any spillage cleared up immediately.</li> <li>• Removing litter from the floor, using a front end or skid-steer loader to shovel the bulk of the litter carefully &amp; directly off the floor into waiting trailers positioned outside the doors to avoid double handling outside &amp; tipping from minimal height.</li> </ul>

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					<ul style="list-style-type: none"> <li>• Vehicles/ trailers will be kept covered unless loading.</li> <li>• Concrete apron and kerbs channel dirty water into a package storage tank.</li> <li>• Stockman and cleaning 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.</li> <li>• Maintaining an inspection and preventive maintenance programme with record keeping for buildings and equipment with stockman &amp; professional contractors.</li> </ul>
	Noise	Humans	Nuisance (ST)	++	<p>Measures are described in EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010 and Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs:-</p> <ul style="list-style-type: none"> <li>• Sensitive receptors, dwelling houses within 400 metres of installation boundary.</li> <li>• Created a Noise Management Plan with mitigation/ management measures.</li> </ul>
	Odour	Humans	Nuisance (ST)	+	<p>Measures are described in EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010 and Best Available Techniques (BAT) Reference Document for the Intensive Rearing of Poultry or Pigs:-</p> <ul style="list-style-type: none"> <li>• Sensitive receptors, dwelling houses within 400 metres of installation boundary.</li> <li>• Created an Odour Management Plan with mitigation/ management measures.</li> </ul>

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3. Storage facilities	Dirty water (e.g., due to overflow or leakage from underground storage tanks)	Land  Water	Nutrient enrichment of soils (LT)  Contamination of surface and groundwater (MT)	++  +++	Measures are described in EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010:-  <ul style="list-style-type: none"> <li>Concrete apron and kerbs channel dirty water into a package storage tank.</li> <li>Underground, concrete encased package dirty water storage tank installed with capacity for all the dirty water, comes with diverter valve to keep dirty and clean water separate and manholes will be kept covered.</li> <li>Stockman and cleaning 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.</li> <li>Professional contractors emptying the dirty water tank after cleaning is finished in readiness for next time and taken off-site - avoids anaerobic conditions developing in the settled sludge. Emptying can be arranged anytime if any of the tanks are overfilled for example where a diverter valve was not reset and resulting in a tank being filled with rainwater, to stop dirty water backing up and over spilling on to the concrete apron during washing. If any dirty water backs up and overflows the tank will be emptied within 24 hours and the concrete apron and drains cleaned &amp; disinfected same day to prevent odour.</li> <li>Maintaining an inspection and preventive maintenance programme with record keeping for buildings and equipment with stockman &amp; professional contractors.</li> </ul>
	Fuel, disinfectant and other chemicals (e.g., due to spills or leakage)	Water	Contamination of surface & groundwater with consequential effects on animals (ST)	+++	Measures are described in EPR 6.09 Sector Guidance Note; How to comply – Intensive Farming v2; 2010 and in the DEFRA; 2018 Code of practice for the welfare of meat chickens and meat breeding chickens:-  <ul style="list-style-type: none"> <li>Concrete apron &amp; kerbs channel spillages into a package storage tank.</li> <li>Package back-up generator fuel level will be checked for use/ signs of leaks.</li> </ul>

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		Land	Contamination of land (MT)	+++	<ul style="list-style-type: none"> <li>• Automatic equipment on which chickens depend must be inspected by the stockman not less than once per day to check there are no defects and any defects repaired immediately.</li> <li>• Disinfectants, pesticides &amp; veterinary medicines to be stored in dry, frost-free, fire-resistant stores, kept secure against unauthorised use and capable of retaining any spillage.</li> <li>• Package footbaths to be used to avoid overflowing.</li> <li>• Spent disinfectant from footbaths emptied into dirty water tank.</li> <li>• Implementing the accident management plan if disinfectant poses risk of entering any surface or groundwater, including using spill kit equipment.</li> <li>• Maintaining an inspection and preventive maintenance programme with record keeping for buildings and equipment with stockman and professional contractors.</li> </ul>
	Health risks due to contact with stored materials, inhalation, etc.	Humans	Human health issues (ST)	+	<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"> <li>• Manufacturer's safety data sheets for materials kept on site.</li> <li>• Measures set out in the Environmental Accident Management Plan.</li> <li>• Maintaining an inspection and preventive maintenance programme with record keeping for buildings and equipment with stockman &amp; professional contractors.</li> </ul>



## B6.6b Anglian River basin district: climate change risk assessment worksheet

Name (as on your part A application form): **Lingar Hill Farm Poultry Unit, Watton Road, Shropham, Attleborough, NR17 1EE**  
Our permit reference number (if you have one): **EPR/YP3805LA/A001**  
Your document reference number: **N/a**

### Risk assessment worksheet for the 2050s

#### Anglian River basin district

You must carry out a climate change risk assessment for any new bespoke waste and installations permit applications if you expect to operate for more than 5 years. Use the [user guide](#) to complete the table. You can add in extra pages if necessary.

Consider how your operations will be affected by the changes in weather and climate described in the table. Consider any changes to average climate conditions that may impact on your operations, for example extreme rainfall.

Also consider:

- critical thresholds - where a 'tipping point' is reached, for example a specific temperature where site processes cannot operate safely
- changes to averages - for example, an entire summer of higher-than-expected rainfall causing waterlogging
- where hazards may combine to cause more impacts

You can add in other climate variables if you wish.

If you have stated on your application form that you do not expect to be operational in 2050, you must still consider climate change risks for the time you do intend to operate. Whilst the variables are for the 2050s, this is an estimated date, and you may experience these conditions before then.

This worksheet will sit in your management system. It must appear on the management system summary you submit with your application, even if you do not need to submit the whole risk assessment with your application.

If your pre-mitigation risk score (column D) is 5 or higher, you must complete columns E to H.

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)																																																																	
<p>1. Summer daily maximum temperature may be around 7°C higher compared to average summer temperatures now.</p>	<p>Computer controlled ventilation system unable to maintain optimum temperature for chickens owing to higher summer temperatures.</p> <p>The climate summary for Eastern England from the Met Office website reports the summer mean daily temperature peaks at 23°C in July. Extreme daily peaks of 36.9°C in 2003 and 38.7°C in 2019 were recorded at Cambridge Botanic Garden and temperatures &gt;30°C are occurring more regularly.</p> <div data-bbox="331 707 996 1332" data-label="Figure"> <p style="text-align: center;"><b>Mean daily maximum and minimum temperature (1981-2010) and extremes (1947-2014) at Cambridge Botanic Garden (12 metres amsl)</b></p> <table border="1"> <caption>Estimated data from the temperature graph</caption> <thead> <tr> <th>Month</th> <th>MAX TEMP (°C)</th> <th>MIN TEMP (°C)</th> <th>EXTREME MAX (°C)</th> <th>EXTREME MIN (°C)</th> </tr> </thead> <tbody> <tr><td>Jan</td><td>8</td><td>2</td><td>15</td><td>-16</td></tr> <tr><td>Feb</td><td>8</td><td>2</td><td>19</td><td>-17</td></tr> <tr><td>Mar</td><td>12</td><td>4</td><td>24</td><td>-12</td></tr> <tr><td>Apr</td><td>15</td><td>5</td><td>28</td><td>-6</td></tr> <tr><td>May</td><td>18</td><td>8</td><td>32</td><td>-4</td></tr> <tr><td>Jun</td><td>21</td><td>11</td><td>35</td><td>0</td></tr> <tr><td>Jul</td><td>24</td><td>13</td><td>37</td><td>3</td></tr> <tr><td>Aug</td><td>24</td><td>13</td><td>38</td><td>4</td></tr> <tr><td>Sep</td><td>20</td><td>10</td><td>32</td><td>-2</td></tr> <tr><td>Oct</td><td>16</td><td>8</td><td>30</td><td>-6</td></tr> <tr><td>Nov</td><td>12</td><td>5</td><td>22</td><td>-8</td></tr> <tr><td>Dec</td><td>8</td><td>3</td><td>16</td><td>-15</td></tr> </tbody> </table> </div>	Month	MAX TEMP (°C)	MIN TEMP (°C)	EXTREME MAX (°C)	EXTREME MIN (°C)	Jan	8	2	15	-16	Feb	8	2	19	-17	Mar	12	4	24	-12	Apr	15	5	28	-6	May	18	8	32	-4	Jun	21	11	35	0	Jul	24	13	37	3	Aug	24	13	38	4	Sep	20	10	32	-2	Oct	16	8	30	-6	Nov	12	5	22	-8	Dec	8	3	16	-15	4	1	4	Risk<5 mitigation not required			
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	<p>Daily mean maximum temperatures might also be 7°C higher, up to 33°C in July. Met Office definition of a heat wave is an extended period 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> <p>Furthermore, mean daily extreme temperatures might be 7°C higher by 2050 and more frequent extreme events for example heat waves might be expected when mean daily extreme temperatures might reach 41, 43 or 44°C. in June, July, and August, and maybe for periods longer than 3 days. High ambient temperature can have a major impact on the performance of modern poultry, and when coupled with high humidity, can become critical according to DEFRA (2005) Heat Stress in Poultry. The body temperature of the broiler chicken must remain very, close to 41°C and if it rises more than 4°C above this, the bird will die. Heat stress not only causes suffering and death, but also results in reduced or lost production owing to less feed consumption and adversely affects profitability of a poultry enterprise.</p> <p>Severity of such impacts is considered to be minor and short term on basis it is unlikely to breach any permit conditions so overall risk score would be less than 5. Consequential impacts include increased electricity use for the extraction and gable end fans. Otherwise, noise and odour should continue to be successfully managed to prevent or minimise causing annoyance at sensitive receptors for example fan noise and</p>							

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	odour from poultry houses and carcasses, etc in accordance with odour and noise management plans.							
2. Winter daily maximum temperature could be 4°C more than the current average, with the potential for more extreme temperatures , both warmer and colder than present.	Operations are not dependent on winter temperatures. Poultry houses designed with computer-controlled ventilation to remove moisture under all weather and seasonal conditions while meeting physiological needs of the chickens.	1	1	1	Risk<5 mitigation not required			

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
3. The biggest rainfall events are up to 20% more intense than current extremes (peak rainfall intensity)*.	Site located in Flood Zone 1 – very, low risk, less than 0.1% (1 in 1,000) chance of flooding each year according to Environment Agency Flood Maps for Planning (from rivers and the sea) available on the government website. Also top of the adjacent watercourse is lower than ground level onsite used for development with poultry houses, etc.	1	1	1	Risk<5 mitigation not required			
4. Average winter rainfall may increase by 35% on today's averages.	Operations are not dependent on winter rainfall so very, low risk of breaching any permit condition.	1	1	1	Risk<5 mitigation not required			
5. Sea level could be as much as 0.6m higher compared to today's level*.	Site located in Flood Zone 1 – very, low risk, less than 0.1% (1 in 1,000) chance of flooding each year according to Environment Agency Flood Maps for Planning (from rivers and the sea) available on the government website.	1	1	1	Risk<5 mitigation not required			

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6. Drier summers, potentially up to 39% less rain than now.	Operations are not dependent on summer rainfall so very, low risk of breaching any permit condition.	1	1	1	Risk<5 mitigation not required			
7. At its peak, the flow in watercourses could be 35% more than now, and at its lowest it could be 80% less than now.	Operations are not ordinarily dependent on flow in any watercourse so very, low risk of any negative impact on operations.  Low risk of surface water (flash) flooding between 0.1% (1 in 1,000) and 1% (1 in 100) according to Environment Agency Ambient Risk Analytics surface water (pluvial) FloodMap available on the government website. Risk appears limited to east side of site, but flood risk advice provided with a caveat - very unlikely to be reliable for a local area and extremely unlikely to be reliable for identifying individual properties at risk.	4	1	4	Risk<5 mitigation not required			

\*Indicates data has come from climate change allowances as part of the spatial planning process. Evidence from your planning submission is acceptable evidence for this worksheet.