

Anglian river basin district: climate change risk assessment worksheet

Name (as on your part A application form): **Lower Barn Poultry Unit, Thetford Road, Garboldisham, Diss, Norfolk, IP22 2SP**

Our permit reference number (if you have one): **EPR/EP3204SE/A001**

Your document reference number:

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

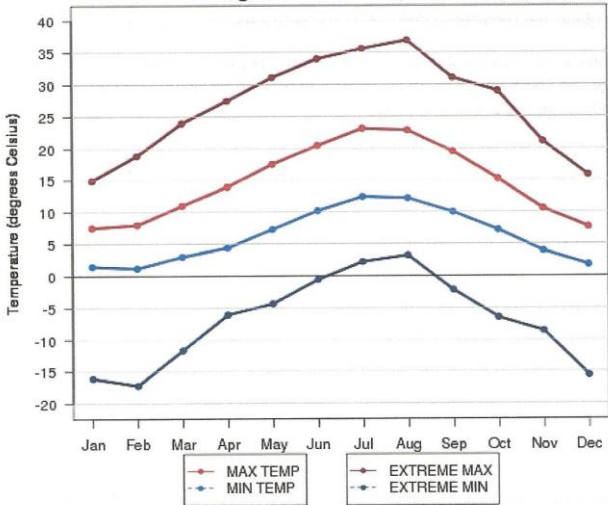
You can add in other climate variables if you wish.

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.

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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>Ventilation system unable to maintain optimum temperature in poultry houses owing to extreme outside temperature in summer months.</p> <p>The Met Office climate summary for Eastern England reports 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. Temperatures greater than 30°C are occurring more regularly.</p> <p style="text-align: center;">Mean daily maximum and minimum temperature (1981-2010) and extremes (1947-2014) at Cambridge Botanic Garden (12 metres amsl)</p>  <table border="1" data-bbox="344 799 949 1305"> <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>11</td><td>3</td><td>24</td><td>-12</td></tr> <tr><td>Apr</td><td>14</td><td>4</td><td>28</td><td>-6</td></tr> <tr><td>May</td><td>18</td><td>7</td><td>32</td><td>-4</td></tr> <tr><td>Jun</td><td>21</td><td>10</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>23</td><td>13</td><td>38.7</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>15</td><td>7</td><td>29</td><td>-6</td></tr> <tr><td>Nov</td><td>11</td><td>4</td><td>22</td><td>-8</td></tr> <tr><td>Dec</td><td>8</td><td>2</td><td>16</td><td>-15</td></tr> </tbody> </table>	Month	MAX TEMP (°C)	MIN TEMP (°C)	EXTREME MAX (°C)	EXTREME MIN (°C)	Jan	8	2	15	-16	Feb	8	2	19	-17	Mar	11	3	24	-12	Apr	14	4	28	-6	May	18	7	32	-4	Jun	21	10	35	0	Jul	24	13	37	3	Aug	23	13	38.7	4	Sep	20	10	32	-2	Oct	15	7	29	-6	Nov	11	4	22	-8	Dec	8	2	16	-15	4	1	4	N/a			
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	<p>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>If summer daily maximum temperatures can be expected to be around 7°C higher by 2050 then daily mean maximum temperatures will presumably also be higher - up to 33°C in July. Similarly, applying 7°C to the mean daily extreme temperatures we can probably expect more frequent extreme events (e.g. heat waves) when mean daily extreme temperatures could reach 41, 43 or 44°C. in June, July, and August, and maybe for periods longer than 3 days.</p> <p>According to DEFRA (2005) booklet, Heat Stress in Poultry, high ambient temperature can have a major impact on performance of modern poultry. When coupled with high humidity, the combination can become critical. 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 the poultry enterprise. The severity of the impact is considered to be minor and short term, and unlikely to</p>							

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	breach any permit conditions so overall risk is less than 5. Consequential impacts include increased electricity use for extraction and gable end fans. Otherwise more fan noise and odour from the poultry houses and possibly more carcasses should continue to be successfully managed in accordance with the noise and odour management plans that might otherwise cause annoyance to the sensitive receptors within 400m.							
2. Winter daily maximum temperature could be 4°C more than the current average.	No likelihood of any negative impacts on operations.	1	1	1	N/a			
3. Drier summers, potentially up to 39% less rain than now.	No likelihood of any negative impacts on operations.	1	1	1	N/a			

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4. The biggest rainfall events are up to 20% more intense than current extremes (peak rainfall intensity)*	Development of the land with poultry houses, ancillary buildings and an open concrete apron will result in an increased amount of surface water runoff compared to greenfield. The Flood Risk Assessment & Surface Water Drainage Strategy Plandescil provided for planning identified a requirement for surface water drainage to be attenuated to a greenfield runoff rate, so a Sustainable Urban Drainage System (SuDS) is incorporated into the design of the development. The runoff will discharge into a proposed attenuation pond to be located in the south of the site, and outfall at a controlled rate into an offsite drainage ditch at the south-western corner of the site to reduce instantaneous runoff on to the surrounding land and risk of localised flooding, The attenuation drainage system will be designed to contain up to and including the 1 in 100 year rainfall plus climate change. The severity of impact is considered to be minor, short term and unlikely to breach any permit condition.	4	1	4	N/a			
5. Average winter rainfall may increase by 35% on today's averages.	Consequently, the flow in watercourses could be 35% more than now and is considered to be a more relevant changing climate variable and is considered below. Otherwise no likelihood of any negative impacts being expected on operations owing to winter rainfall increasing.	1	1	1	N/a			

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<p>6. At its peak, the flow in watercourses could be 35% more than now, and at its lowest it could be 80% less than now</p>	<p>The Groundsure Insights Report shows the Environment Agency Ambient Risk Analytics surface water (pluvial) FloodMap identifies areas of the site at risk of surface water flooding in 2020. Highest Risk 1 in 30 years (3.3%) and greater than 1.0m, with surface water flowing from the north-eastern corner of the site to the south western corner. The two boundary ditches have been connected with an underground culvert in place of an older ditch to take drainage from the north-eastern corner to the south western corner, but still a High Risk of flooding. The flood water has been shown to ingress into the proposed footprints of the poultry houses and flow across the yard to the south of the buildings.</p> <p>Any flood water ingress into the poultry houses will affect operations owing to increasing moisture content of the litter and increasing humidity in the houses resulting in elevated ammonia concentration and higher emissions into the outside air. Severity of impact considered to be minor and short term, and unlikely to breach any permit conditions so overall risk is less than 5. Consequential impacts on energy efficiency owing to using more extraction fans and heating and using more replacement litter.</p>	4	1	4	N/a			

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7. Sea level could be as much as 0.6m higher compared to today's level *.	The Environment Agency Flood Map for Planning indicates the site is located in Flood Zone 1, so less than 0.1% chance of fluvial or tidal flooding at a location in any one given year. No negative impact expected on operations.	1	1	1	N/a			

*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.