

Warwickshire County Council

# Bird Broiler Unit Impact Assessment

An analysis of the potential health impacts, both beneficial and adverse, that the proposed 40,001 bird broiler unit in North Warwickshire Borough might have on local residents

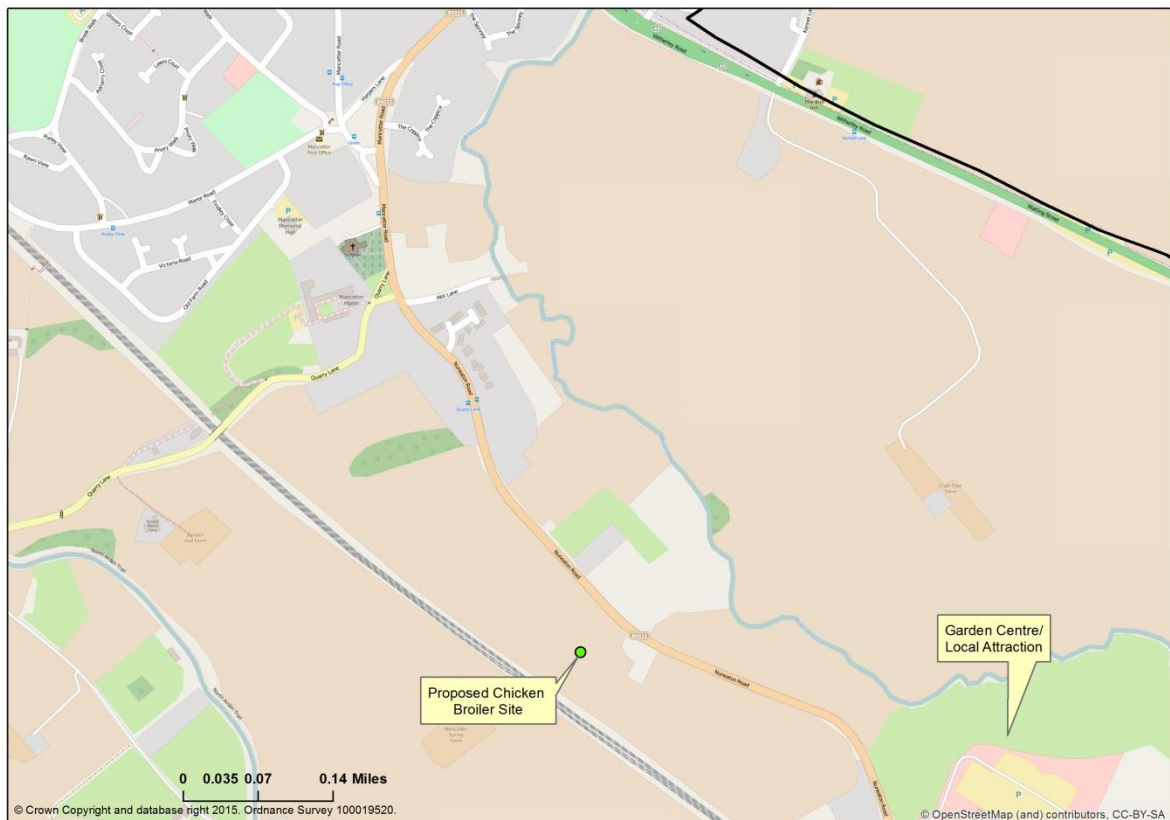
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10/30/2015

# 1. Context

## 1.1 Site description and policy framework

1.1.1 The following assessment has been prepared to explore the potential health impacts (both beneficial and adverse) of a Bird Broiler Unit installation may have on local residents within North Warwickshire Borough.

1.1.2 The proposed location of the installation is at Crown Stables, Nuneaton Road, Mancetter, as shown in figure 1.



**Figure 1: Proposed 40,000 Bird Broiler Unit site**

1.1.3 The site area is situated in a predominantly rural area characterised by arable and grassland agriculture. Topography in the area is very gently undulating, with large flat areas on flood plains to the east, with the land rising more steeply to the west. Drainage in the area is provided by the River Anker which flows to the east, and the Coventry Canal which passes west of the site.<sup>i</sup>

1.1.4 The nearest urban areas are Mancetter (1km), Witherly (1.5km) and Atherstone (2km) to the north and Hartshill (1km) and Nuneaton (5km) to the south-east.<sup>ii</sup>

### *National Policy*

- 1.1.5 The National Planning Policy Framework (NPPF) set out the Government's planning policies for England and how these are expected to be applied. As highlighted in paragraph 171 It places a duty on the County Council and the Director of Public Health to provide advice and guidance on health and wellbeing matters:

*“local planning authorities should work with public health leads and health organisations to understand and take account of the health status and needs of the local population (such as for sports, recreation and places of worship), including expected future changes, and any information about relevant barriers to improving health and wellbeing.”*

- 1.1.6 The NPPF calls on the planning system to prevent both new and existing development from contributing to, or being put at unacceptable risk from being adversely affected by unacceptable levels of soil, air, water, or noise pollution or land instability.
- 1.1.7 Action to manage and improve air quality is driven largely by EU policy. The [2008 Ambient Air Quality Directive](#) sets legally binding limits for concentrations in outdoor air of major air pollutants that impacts public health such as particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) and nitrogen oxide (NO<sub>2</sub>).
- 1.1.8 The Marmot review<sup>iii</sup> recommends 3 main policy actions to try to ensure that the built environment promotes health and reduces inequalities for all local populations.
1. Prioritise policies and interventions that both reduce health inequalities and mitigate climate change by:
    - Improving active travel;
    - Improving good quality open and green spaces;
    - Improving the quality of food in local areas; and
    - Improving the energy efficiency of housing
  2. Fully integrate the planning, transport, housing, environmental and health systems to address the social determinants of health in each locality
  3. Support locally developed and evidence-based community regeneration programmes that:
    - Remove barriers to community participation and action; and
    - Reduce social isolation

### *Local Policy*

- 1.1.9 Warwickshire County Council is in the process of drafting an Air Quality Position Statement to inform local decision making. This will align with National Policy on air quality, as stated in section 1.1.7.

1.1.10 Warwickshire's Health and Wellbeing Board has prioritised the following areas in order to ensure that health and social care outcomes for Warwickshire residents are improved:

1. Promoting independence;
2. Community resilience; and
3. Integration and working together.

The latter priority is integral to success and the Health and Wellbeing Board in Warwickshire is committed to enhanced integration and effective joint working across Health, Social Care, Public Health and Community sectors, but also across other key organisations such as Environmental Health, Housing, Planning and Transport

## 1.2 Project description

1.2.1 The following project description has been taken from the Environment Agency's draft application determination document.<sup>iv</sup> The installation consists of a single broiler unit providing capacity for 40,001 broiler places (broilers are chickens bred specifically for meat production).

1.2.2 Day old chicks are brought into the unit and fed and watered until they reach around 37 days of age, at which point they are removed from the site and taken to a meat processing facility. There is a 7 day cleaning period plus the stocking and destocking time resulting in an average cycle length of 48 days.

1.2.3 The chicks are bedded on wood shavings to a minimum depth of 2cm; fresh bedding is added throughout the cycle. Non-leaking drinking systems will be used so that the litter does not get too wet, reducing the likelihood of run off to the underground reception pit.

1.2.4 The clean out process takes place generally within 24 hours of destocking (maximum 48 hours), and comprises removing the manure / bedding from the building, steam cleaning and washing down the internal surfaces and applying disinfectant. Once the unit is fully dry, new bedding will be added and the building restocked with chicks.

1.2.5 Building ventilation will be reduced to a minimum during the clean out process to contain dust and particulate within the confines of the building.

1.2.6 All manure is exported from the installation on covered trucks for use in an energy recovery facility. No manure will be stored on site.

- 1.2.7 Water from the wash out of poultry houses, and condensate from heat exchanger, will drain to an underground reception pit (covered) close to the broiler unit to await collection and export off site by a road tanker.
- 1.2.8 There will be no emissions to sewer.
- 1.2.9 The broiler unit is ventilated by 18 high speed roof fans with emission point 7 meters above ground level and an efflux speed greater than 7 meters per second. In addition to the fans, windows on the sides of the building allow for natural ventilation.
- 1.2.10 Other associated infrastructure includes two feed silos, a heat exchanger to regulate the temperature in the building, the underground reception pit located within a concrete yard and an attenuation pond for collection of uncontaminated rainwater from the yard within the installation boundary.
- 1.2.11 Roof water and yard rain water is directed via the surface water drainage system into an attenuation pond before being released under controlled conditions to an adjacent watercourse which is a ditch that runs towards the River Anker. All water released from the pond will be uncontaminated, if there is a likelihood of contaminated water getting into the pond, the outlet from the pond to the ditch can be closed by means of a hydraulic brake. The pond will then be emptied with the contents being tinkered away for appropriate disposal. The capacity of the pond is 145m<sup>3</sup>.
- 1.2.12 The dirty water drainage system collects wash down water from the broiler unit, directing it to the underground reception pit. The storage capacity of the pits is 15.2m<sup>3</sup>. The pit will be emptied at the end of each cleaning operation. Water levels within the pit will be monitored at all other times, and it will be emptied more frequently than necessary.
- 1.2.13 The broiler feed is stored in sealed feed bins, filled via a closed delivery system from a truck. Feed will be delivered weekly, during daylight hours. The feed will be supplied by a UKASTA accredited feed mill. UKASTA is the UK Agricultural Trade Association (now operating as Agricultural Industries Confederation (AIC)).
- 1.2.14 Carcasses are collected once a week and stored in a secure container on site prior to removal by a licensed waste disposal contractor.
- 1.2.15 The Environment Agency states that the site plan provided is satisfactory.

1.2.16 The Environmental Permit application for the installation is being considered in tandem with a planning application which is currently pending decision from North Warwickshire Borough Council.

### 1.3 Public health profile

1.3.1 For the purpose of this assessment, the residential areas which the scheme is expected to directly impact have been looked at. The proposed development is situated in the ward of Atherstone South and Mancetter, and is of a similar distance from the residential areas of Mancetter and Hartshill. For that reason, health profiles for both wards (Atherstone South and Mancetter, and Hartshill) are outlined below. Health profile data has been adapted from Public Health England's [Local Health](#) tool.



Figure 2: The ward boundaries of Atherstone South and Mancetter ward and; Hartshill ward

#### *Atherstone South & Mancetter ward*

- The population of the ward is 3,269.
- Life expectancy at birth for males is 79.2 years and 85.4 years for females. This is higher than the averages for both the Borough and the County.
- The level of income deprivation, child poverty and older people in deprivation is higher than the averages for the Borough and the County.

- The level of GCSE achievement is significantly worse than both the Borough and County averages, and the level of child development at age 5 is worse than the Borough and County averages.
- The level of unemployment, measured by Job Seekers Allowance (JSA) claimants is worse than the averages for the Borough and the County.
- The percentage of residents living in very bad health is significantly higher than the Borough and County averages.
- The level of obese children at reception age is higher than the Borough and County averages. However the percentage of children with excess weight in year 6 is lower than both the Borough and the County averages.
- The percentage of obese adults is higher than the Borough and County averages.
- The number of emergency hospital admission for chronic obstructive pulmonary disease (COPD) is worse than the average for the Borough and the County.
- There incidence rate of lung cancer within the ward, when compared with the Borough and County is higher.

#### *Hartshill Ward*

- The population of the ward is 3,748.
- Life expectancy at birth for males is 77 years and 78.1 years for females. This is higher than the averages for both the Borough and the County, and significantly worse than the national average for females.
- The level of income deprivation, child poverty and older people in deprivation is higher than the averages for the Borough and the County.
- The level of GCSE achievement is better than the Borough average but worse than the average for the County, and the level of child development at age 5 is worse than both the Borough and County averages.
- The level of unemployment, measured by Job Seekers Allowance (JSA) claimants is worse than the averages for the Borough and the County.
- The percentage of residents living in very bad health is the same as the Borough average and higher than the average for the County.
- The level of obese children at reception age is higher than the Borough and County averages. However the percentage of children with excess weight in year 6 is lower than both the Borough and the County averages.
- The percentage of obese adults is lower than the Borough average, but higher than the average for the County.
- The number of emergency hospital admission for chronic obstructive pulmonary disease (COPD) is worse than the average for the Borough and the County.
- There incidence rate of lung cancer within the ward, when compared with the Borough and County is higher.

## 2 Assessment

### 2.1 Description of health effects

2.1.1 The Environment Agency's Permit Applications for Poultry Units FAQs states that as part of the permit determination process, Public Health England is consulted to ensure that there will be no harm to human health as a result of the installation. Public Health Warwickshire is not aware that Public Health England has been consulted on the proposed installation.

2.1.2 Public Health England's (previously the Health Protection Agency (HPA)) guidance on Intensive Farming is in the process of being updated. The HPA's 2006 Position Statement states that although installations are likely to be of low public health impact, they have the potential to affect the environment, and therefore public health, through a number of ways. These are outlined below (and used as headings within this assessment):

- Air pollution
- Discharges to water
- Manure management
- Nuisance issues

#### *Air Pollution*

2.1.3 Poultry installations release a number of pollutants into the air. Those which have the potential to harm human health are particulate matter, ammonia, and bioaerosols.

2.1.4 The major components of particulate matter are sulphate, nitrates, ammonia, sodium chloride, black carbon, mineral dust and water. The most health damaging particles are those with a diameter of 10 microns or less, (PM<sub>10</sub> and PM<sub>2.5</sub>), which can penetrate and lodge deep inside the lungs. Chronic exposure to particles contributes to the risk of developing cardiovascular and respiratory diseases, as well as lung cancer. Particulate matter affects more people than any other pollutant, and poultry installations are responsible for five percent of UK emissions of PM<sub>10</sub>.

2.1.5 There is a clear association between long-term exposure to particulate air pollution (PM 2.5 and sulphate dioxide) and a reduction in life expectancy caused by cardiovascular disease.<sup>v</sup> As well as this, greater air pollution has been linked to deprived neighbourhoods, with mortality rates from air pollution related causes highest amongst groups with lower socioeconomic status.<sup>vi</sup> This indicates that the proposed installation has the potential to negatively impact on deprivation. Levels of deprivation are already higher than the averages for both the Borough and County within the wards of South



Atherstone and Mancetter, and Hartshill, suggesting that the installation has the potential to exacerbate health inequalities.

- 2.1.6 As well as this, both Atherstone South and Mancetter ward and Hartshill ward have worse health outcomes for COPD and lung cancer than the average for the Borough and County. If residents with pre-existing respiratory and lung conditions live within close proximity to the installation, the emissions could potentially worsen conditions, and exacerbate health inequalities.
- 2.1.7 To minimise the amount of particulate matter emitted, the applicant will use Best Available Techniques (BAT). The use of BAT is also recommended by PHE as a mitigation measure. The applicants state that during the clean out process, ventilation within the buildings will be reduced to a minimum. This will reduce the potential for dust and particulate to enter the outdoor air and affect neighbouring communities.
- 2.1.8 As previously stated, ammonia is a component of particulate matter, and it may be emitted from livestock and from manure, litter or slurry. Low levels of ammonia have the potential to cause headaches, nausea and respiratory problems such as coughs, wheezing and asthma. The applicant states that no manure will be left on site, and that it will be transported off site in covered trucks. This may help to reduce the amount of ammonia released into ambient (outdoor) air, and should be part of measures to minimise emissions. It is unlikely that ammonia emissions from a well-run and regulated farm will be sufficient to cause ill health<sup>vii</sup>.
- 2.1.9 Bioaerosols are airborne particles that contain living organisms, fragments, toxins, and waste products. Similar to the effects of ammonia, emissions of bioaerosols can cause respiratory problems and lung function impairment. As well as this, bioaerosols can also transmit infectious diseases. For example, in the case of swine farm installations, multi-drug resistant organisms have been found 150m downwind of the source.<sup>vii</sup>
- 2.1.10 Sites which produce considerable quantities of bioaerosols should not be within a 250m distance of local communities. This limit is based on evidence from studies which indicate that bioaerosols are generally reduced to background levels within 250m of a facility. However, dispersal depends on environmental conditions and it is widely accepted that in stable atmospheric conditions, bioaerosol emissions may not be reduced to background levels within 250m.<sup>vii</sup> There are a number of residences which lie within (and slightly outside of) this parameter. These include:
1. Residences and equestrian centre approximately 40m to the north of the installation boundary at the top of the entrance road; approximately 100m from the broiler house.

2. A residence / farm approximately 110m west of the installation boundary.
3. Residences on the outskirts of Mancetter village, approximately 280m north-west of the installation boundary

2.1.11 A local business is also located within close proximity (approximately 100m) of the site. Dobbies garden centre includes a food store, a butchers and restaurant and attracts visitors from a wide area. Employees / customers of the garden centre should be considered as vulnerable to the potential negative health impacts of bioaerosols.

2.1.12 An Odour Management Plan (OMP) has been produced to prevent and/or minimise ammonia emissions from the farm, and it is a requirement of the permit that the site is operated in accordance with the OMP. Despite measures to mitigate the amount of air pollution which is emitted, it should be noted that there is no threshold which has been identified below which no damage to health is observed, and small particulate pollution has health impacts even at very low concentrations.<sup>viii</sup>

2.1.13 Once operational it is expected that the proposed installation would employ one worker full time, with a six person catching / cleaning crew used for 2-3 days at the end of each cycle. Being in good employment protects health, and the installation may create agricultural jobs within the local area. However, acute and chronic work related symptoms are very common in poultry workers, and include: cough, phlegm, eye irritation, chest tightness, wheezing, sneezing, headache, throat irritation and fever. These symptoms are said to improve during periods away from work. In order to minimise potential impacts, it is recommend that health surveillance should be undertaken on employees including a pre-employment screening and questionnaire as well as lung function testing to assess respiratory health.<sup>ix</sup>

#### *Discharges to water*

2.1.14 The potential to impact on water should be low since emissions to ground surface water should fully comply with regulations and limits set out in Groundwater Regulations 1998 and the European Groundwater Directive (80/68/EEC).<sup>vii</sup>

2.1.15 The applicant states that all water released from the attenuation pond will be uncontaminated but if there is the potential that the water may be contaminated, the outlet from the pond can be closed. To ensure that the risk of contamination is minimised, liquid feeds, fuel oil, pesticides and veterinary medicines should be stored correctly in secured and bunded areas to reduce the potential for spillages and pollution of water courses.

2.1.16 The installation site is not within a Source Protection Zone, and there will be no emissions to sewers therefore it is unlikely that there will be any significant pollution of ground or surface water, or impact on human health.

#### *Manure management*

2.1.17 As part of the permit a manure management plan should be developed, maintained and reviewed in order to reduce the potential for nuisance or disease transmission. This may occur because manure can contain a range of zoonotic pathogens and incorrect storage can encourage the development of large fly populations. As previously discussed, the applicant states that no manure will be left on site, and that it will be transported off site in covered trucks. As well as this, all feed will be stored in sealed feed bins and carcasses will be stored in secure containers and collected once a week.

#### *Nuisance issues*

2.1.18 Nuisance issues include odour, noise, vermin and insect infestation. It should be ensured that there is “no reasonable cause for annoyance” beyond the boundary of the site. This is because environmental problems can lead to sleep disturbance, cardiovascular disease and impaired mental health.

2.1.19 When poorly managed, the odour associated with intensive livestock units can reduce the quality of life for nearby residents. There is the potential for operation at the installation site to adversely affect the amenity of nearby dwellings which are located within 400m of the site boundary. As discussed in section 2.1.12, an Odour Management Plan (OMP) has been produced by the applicant, and will require close monitoring and reviewing to minimise the potential impacts to local residents.

2.1.20 As well as odour, noise from fans associated with climate control within poultry buildings can also cause disturbance. One of the conditions of the permit is that a Noise Management Plan is in place. A noise assessment produced by the applicant found that the proposal is unlikely to adversely impact nearby properties, but that close monitoring should be undertaken.

### 3 Conclusion

3.1.1 The assessment has highlighted that there will be specific residences and businesses which may be impacted by the proposed installation. The main impact that will need to be minimised will be in relation to an increase in air pollution.

3.1.2 The scheme has the potential to contribute towards exacerbating health conditions and health inequalities for the local community if poorly managed, or mitigated, or if all relevant public health bodies haven't been consulted.

### 3.2 Recommendations

- We recommend that to ensure potential health impacts are minimised, the proposed installation complies with any conditions set by the Environment Agency.
- We recommend that in order to minimise potential health impacts to poultry workers, health assessments are undertaken and regularly reviewed.

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<sup>i</sup> Reading Agricultural Consultants (2014) *Supporting Statement / Policy Appraisal*

<sup>iii</sup> Marmot M, Allen J, Goldblatt P et al (2010) [\*Fair Society, Healthy Lives: Strategic review of Health Inequalities in England post 2010 \(The Marmot Review\)\*](#). London, England.

<sup>iv</sup> Environment Agency (2015) Determination of an Application for an Environmental Permit under the Environmental Permitting (England & Wales) Regulations 2010

<sup>vi</sup> Ben Cave Associates Ltd (2014), *Health Impact Assessment – Nuneaton and Bedworth Borough Plan*. Leeds, England

<sup>vii</sup> Public Health England (then Health Protection Agency) (2006) *Position Statement: Intensive Farming*

<sup>viii</sup> WHO (2014) [\*Ambient \(outdoor\) air quality and health\*](#) [online] Accessed 26.10.2015

<sup>ix</sup> Health and Safety Executive (2009) [\*Statement of evidence: Respiratory hazards of poultry dust\*](#). HSE: Suffolk, England