Odour Risk Assessment

Land to the East of Leeds Road, Chidswell

Presented to **CC Projects**

Issued: December 2019

Delta-Simons Project No. 19-0865.07

deltasimons

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Report Details

Client	CC Projects
Report Title	Odour Risk Assessment
Site Address	Land to the East of Leeds Road, Chidswell
Project No.	19-0865.07
Delta-Simons Contact	Gabor Antony

Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
2	Issue	4th December 2019	-	Gabor Antony (MSc MIAQM MIEnvSc) Air Quality Unit Manager	Simon Johnson (MSc URP, AssocRICS, MRTPI) Principal Consultant	Gabor Antony (MSc MIAQM MIEnvSc) Air Quality Unit Manager

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Executive Summary

Site and Report Context	Delta-Simons, was instructed by CC Projects (the 'Client') to undertake an Odour Risk Assessment in support of the planning application for a proposed mixed-use development (the 'Proposed Development') on Land to the East of Leeds Road, Chidswell (the 'Site'). The Site is located in an area where existing odour levels are influenced by nearby agricultural activities. Given that phasing of the Proposed Development is not yet confirmed, it appears there would be a possibility that early residential phases of the development would become occupied prior to livestock rearing on land connected with two existing farms cease operations. These farms are Chidswell Farm to the west and Heybeck Farm to the north-west. As such, there are concerns that odour emissions from the farm operations may cause loss of amenity for future residents and act as a constraint to planning. A Qualitative Odour Assessment has therefore been undertaken in order to consider existing conditions at the Site and assess its suitability for the proposed end-use.
Summary	The Odour Risk Assessment was undertaken based on the assessment of the prevailing meteorological conditions at the Site and nature of the relevant odour sources. This utilised professional judgement to identify potential risk of sensitive receptor to odour exposure as a result of the operation of the nearby farms. Orientation of the proposed land uses at the Site indicated that the operation of the Heybeck Farm would not have any risk to loss of amenity given its significant distance away from proposed sensitive receptor locations within the Site. Odours from a number of sources at the Chidswell Farm have the potential to cause impacts at sensitive locations. Due to the prevailing wind direction, orientation of the Site and nature of potential odour releases impacts are considered unlikely to result in any significant loss of local residential amenity. Based on the assessment results, it is not anticipated that significant odour impacts would occur at any sensitive location as a result of operation of the farm. As such, the potential for adverse odour impacts at the Site is considered to be **low**. Applying the IAQM assessment method indicates that the farm activities are likely to have a **slight adverse** impact on the housing development. An impact of this magnitude would be considered **not significant**, i.e., it would not be a deciding factor in planning determination and would not trigger the implementation of additional mitigation. It is concluded, therefore, that the existing farm activities adjacent to the Site are not considered to result in significant loss of amenity and consequently the resulting risk of potential odour complaints is **low**. Based on the assessment results, odour effects associated with the operation of the farms are not considered a constraint to planning.
This is intended as a summary only. Further detail and limitations of the assessment is provided within the main body of the Report.	

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1 Introduction

1.1 Appointment

1.1.1 Delta-Simons, was instructed by CC Projects (the 'Client') to undertake an Odour Risk Assessment in support of the planning application for a proposed mixed-use development (the 'Proposed Development') on Land to the East of Leeds Road, Chidswell (the 'Site').

1.1.2 Reference should be made to **Figure 1** for a map of the Site and surrounding area.

1.2 Site Location and Context

1.2.1 The Site is located to the east of the A653 Leeds Road dual carriageway, which is a strategic corridor between Dewsbury and Leeds. In the immediate vicinity of the Site, Leeds Road runs in a north-south direction, adjoining the A638 Wakefield Road and Junction 28 (the Tingley Interchange) of the M62 Motorway to the north. The A638 Wakefield Road links with the M1 Motorway Junction 40 to the east of the Site.

1.2.2 The Site is located in an area where existing odour levels are influenced by nearby agricultural activities.

1.2.3 An initial response from the Environmental Health Officer has been received and states the following:

> "Given that phasing is not yet confirmed (and would not be fixed if outline permission is approved), it appears there would be a possibility that early residential phases of the development would become occupied before livestock rearing on land connected with Chidswell Farm and Heybeck Farm ceases. Given this possibility, an odour assessment will indeed need to be submitted at outline application stage."

1.2.4 As such, there are concerns that odour emissions from the farm operations may cause loss of amenity for future residents and act as a constraint to planning consent. A Qualitative Odour Assessment has therefore been undertaken in order to consider existing conditions at the Site and assess its suitability for the proposed end-use.

1.2.5 The standard limitations associated with this assessment are presented in **Appendix A**.

1.2.6 A glossary of terms used in this report is provided in **Appendix B**.

2 Odour Background

2.1 Odour Definition

2.1.1 The Department for Environment, Food and Rural Affairs (DEFRA) guidance[1] defines odour as:

> "An odour is the organoleptic attribute perceptible by the olfactory organ on sniffing certain volatile substances. It is a property of odorous substances that make them perceptible to our sense of odour. The term odour refers to the stimuli from a chemical compound that is volatilised in air. Odour is our perception of that sensation and we interpret what the odour means. Odours may be perceived as pleasant or unpleasant. The main concern with odour is its ability to cause a response in individuals that is considered to be objectionable or offensive.
>
> Odours have the potential to trigger strong reactions for good reason. Pleasant odours can provide enjoyment and prompt responses such as those associated with appetite. Equally, unpleasant odours can be useful indicators to protect us from harm such as the ingestion of rotten food. These protective mechanisms are learnt throughout our lives. Whilst there is often agreement about what constitutes pleasant and unpleasant odours, there is a wide variation between individuals as to what is deemed unacceptable and what affects our quality of life."

2.1.2 Although it is recognised that the DEFRA guidance[1] has been formally withdrawn, the definition of odour provided within the document is still considered to be relevant in the context of the assessment.

2.2 Odour Impacts

2.2.1 The magnitude of odour impact depends on a number of factors and the potential for complaints varies due to the subjective nature of odour perception. The FIDOL acronym, as outlined below, is a useful reminder of the factors that will determine the degree of odour pollution:

- **F**requency of detection - frequent odour incidents are more likely to result in complaints;
- **I**ntensity as perceived - intense odour incidents are more likely to result in complaints;
- **D**uration of exposure - prolonged exposure is more likely to result in complaints;
- **O**ffensiveness - more offensive odours have a higher risk of resulting in complaints; and,
- **L**ocation of sensitive receptors - sensitive areas are more likely to have a lower odour tolerance.

2.2.2 It is important to note that even infrequent emissions may cause loss of amenity if odours are perceived to be particularly intense or offensive.

2.2.3 The FIDOR factors can be further considered to provide the following issues in regard to the potential for an odour emission to cause a nuisance:

- The rate of emission of the compound(s);
- The duration and frequency of emissions;
- The time of the day that this emission occurs;
- The prevailing meteorology;
- The sensitivity of receptors to the emission i.e. whether the odorous compound is more likely to cause nuisance, such as the sick or elderly, who may be more sensitive;
- The odour detection capacity of individuals to the various compound(s); and,
- The individual perception of the odour (i.e. whether the odour is regarded as unpleasant). This is greatly subjective and may vary significantly from individual to individual. For example, some individuals may consider some odours as pleasant, such as petrol, paint and creosote.

[1] Odour Guidance for Local Authorities, DEFRA, 2010.

2.3 Odour Legislative Control

2.3.1 The main requirement with respect to odour control from premises not authorised under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such as WwTWs, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). The Act defines nuisance as:

> "Any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance."

2.3.2 Enforcement of the Act, in regard to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the Local Authority is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). Enforcement can insist that there be no odour beyond the boundary of the works. The only defence is to show that the process to which the nuisance has been attributed and its operation is being controlled according to best practicable means (BPM). The term BPM is defined as:

- "Practicable" means reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to the financial implications;
- The "means" to be employed include the design, installation, maintenance and manner and periods of operation of plant and machinery, and the design, construction and maintenance of buildings and structures;
- The test is to apply only so far as compatible with any duty imposed by law; and,
- The test is to apply only so far as compatible with safety and safe working conditions, and with the exigencies of any emergency or unforeseeable circumstances.

2.3.3 It should be noted that where an operator can demonstrate that BPM is being applied, or where an agreed degree of abatement deemed to be BPM is added, this will not necessarily result in the total elimination of odours.

2.4 Odour Benchmark Levels

2.4.1 There is no statutory limit in the UK for ambient odour concentrations, whether set for individual chemical species or for mixtures. However, a number of indicative criteria have been utilised for the assessment of potential impacts, as discussed in the following sections.

Environment Agency Criteria

2.4.2 The Environment Agency (EA) has issued guidance on odour which contains indicative benchmark levels for use in the assessment of potential impacts from facilities regulated under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments.

2.4.3 Benchmark levels are stated as the 98th percentile (%ile) of hourly mean concentrations in European odour units (ou_E) over a year for odours of different offensiveness. In practice this is the 175th highest hourly average recorded in the year. This parameter reflects the previously described FIDOR factors, where an odour is likely to be noted on several occasions above a particular threshold concentration before an annoyance occurs. EA odour benchmark levels are summarised in **Table 1**.

Table 1 - Odour Benchmark Levels

Relative Offensiveness of Odour	Benchmark Level as 98th %ile of 1-hour Means (ou_E/m^3)
Most offensive odours: Processes involving decaying animal or fish Processes involving septic effluent or sludge Biological landfill odours	1.5

Relative Offensiveness of Odour	Benchmark Level as 98th %ile of 1-hour Means (ou_E/m^3)
Moderately offensive odours: Intensive livestock rearing Fat frying (food processing) Sugar beet processing Well aerated green waste composting	3.0
Less offensive odours: Brewery Confectionery Coffee roasting Bakery	6.0

Department for Environment, Food and Rural Affairs Guidance

2.4.4 In order to provide some context to the odour benchmark values, DEFRA have provided the following descriptors[1]:

- $1ou_E/m^3$ is the point of detection;
- $5ou_E/m^3$ is a faint odour; and,
- $10ou_E/m^3$ is a distinct odour.

2.4.5 An odour at a strength of $1ou_E/m^3$ is in reality so weak that it would not normally be detected outside the controlled environment of an odour laboratory by the majority of people (that is individuals with odour sensitivity in the "normal" range - approximately 96% of the population). It is important to note that these values are based on laboratory measurements and in the general environment other factors affect our sense of odour perception. These include:

- The population is continuously exposed to a wide range of background odours at a range of different concentrations, and usually people are unaware of there being any background odours at all due to normal habituation. Individuals can also develop a tolerance to background and other specific odours. In an odour laboratory the determination of detection threshold is undertaken by comparison with non-odorous air, and in carefully controlled, odour-free, conditions. Normal background odours such as those from traffic, vegetation, grass mowing etc, can provide background odour concentrations from 5 to $60ou_E/m^3$ or more[1];
- The recognition threshold[1], may be about $3ou_E/m^3$ although it might be less for offensive substances or higher if the receptor is less familiar with the odour or distracted by other stimuli; and,
- An odour which fluctuates rapidly in concentration is often more noticeable than a steady odour at a low concentration.

2.5 National Planning Policy

2.5.1 The revised National Planning Policy Framework[2] (NPPF) was published in February 2019 and sets out the Government's planning policies for England and how these are expected to be applied. The NPPF states that:

> "The planning system should contribute to and enhance the natural and local environment by: […]
>
> preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability […]"

[2] Ministry of Housing, Communities & Local Government (2019). National Planning Policy Framework

2.5.2 With regard to assessing cumulative effects the NPPF states:

> "Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development."

2.5.3 The implications of the NPPF have been considered throughout this assessment.

2.6 Institute of Air Quality Management Guidance

2.6.1 The IAQM first published the 'Guidance on the Assessment of Odour for Planning'[3] document on 20th May 2014 (updated July 2018). This guidance specifically deals with assessing odour impacts for planning purposes, namely potential effects on amenity. The assessment methodology outlined in the guidance has been utilised in this report where relevant.

[3] IAQM, Version 1.1 - July 2018. Guidance on the Assessment of Odour for Planning

3 Scope & Methodology

3.1 Scope

3.1.1 The operation of the existing Farm operations within the vicinity of the Site may result in odour emissions at the Site during normal operation. There are a number of tools available for the assessment of odour, ranging from site observations to quantitative measurement and computer modelling. In this case, based on an understanding of the key issues, the background to the project and the nature of the adjacent farm operations, a qualitative odour assessment has been completed. The scope of the assessment has been determined in the following way:

- A review of the masterplan for the Proposed Development to establish the location of new sensitive receptors; and
- Discussion and confirmation of proposed assessment methodology by the Environmental Health Officer, Pollution & Noise Control Kirklees Council (Environmental Health)[4].

3.1.2 The scope of the assessment includes the following assessment stages:

- Review of Wind Data:
  - Wind data was obtained from Leeds-Bradford Airport meteorological station. This was reviewed in the context of the relative positioning of the Site and the identified potential sources of odour at the existing farms within the vicinity of the Site.
- Qualitative Odour Assessment:
  - A qualitative odour assessment was completed based on the IAQM guidance[3].

3.2 Methodology

3.2.1 In 2014 the IAQM published a guidance document[3] which provides recommendations on how odour should be considered in the preparation and determination of planning applications and gives guidance on the application of various techniques for odour assessments. The IAQM method for qualitative assessment essentially comprises four stages.

Qualitative Odour Assessment

Stage 1 - Characterisation of the Source Odour Potential

3.2.2 Source odour potential are identified by the IAQM guidance as: Large, Medium and Small. The judgement over the source odour potential is based on three key factors:

- The magnitude of the odour release (taking into account control measures);
- how inherently odorous the compounds or materials being assessed are; and
- the unpleasantness (or offensiveness) of the odour.

3.2.3 Definitions are provided for each category as detailed in **Table 2**.

Table 2 - Source Odour Potential

Source Odour Potential	Suggested Definition
Large	Magnitude - Larger Permitted processes of odorous nature or large Sewage Treatment Works (STWs); materials usage hundreds of thousands of tonnes/m^3 per year; area sources of thousands of m^2. The compounds involved are very odorous (e.g. mercaptans), having very low Odour Detection Thresholds (ODTs) where known. Unpleasantness – processes classed as "Most offensive" in H4; or (where known) compounds/odours having unpleasant (-2) to very unpleasant (-4) hedonic score. Mitigation/control - open air operation with no containment, reliance solely on good management techniques and best practice.

[4] Phone conversation with Richard Hume on 22nd November 2019.

Source Odour Potential	Suggested Definition
Medium	Magnitude - smaller Permitted processes or small STWs; materials usage thousands of tonnes/m^3 per year; area sources of hundreds of m^2. The compounds involved are moderately odorous. Unpleasantness - processes classed in H4 as "Moderately offensive"; or (where known) odours having neutral (0) to unpleasant (-2) hedonic score. Mitigation/control - some mitigation measures in place, but significant residual odour remains.
Small	Magnitude - falls below Part B threshold; materials usage hundreds of tonnes/m^3 per year; area sources of tens m^2. The compounds involved are only mildly odorous, having relatively high ODTs where known. Unpleasantness - processes classed as "Less offensive" in H4; or (where known) compounds/odours having neutral (0) to very pleasant (+4) hedonic score. Mitigation/control - effective, tangible mitigation measures in place (e.g. BAT, BPM) leading to little or no residual odour.

Stage 2 - Assessment of Transport Mechanism Effectiveness

3.2.4 This stage aims to assess the means by which odours released from the source may affect sensitive receptors; in this case, occupants of the proposed new residential development. This effectiveness of transport of odours (or the pathway) takes into account five main factors:

- distance from source to receptor;
- the frequency of winds blowing from the source towards the receptor;
- the effectiveness of any mitigation or controls;
- the effectiveness of dispersion and dilution (a tall stack for example); and
- topography and terrain in the local areas.

3.2.5 Pathway effectiveness as defined by the guidance are summarised in **Table 3**.

Table 3 - Pathway Effectiveness

Pathway Effectiveness	Suggested Definition
Highly Effective	Distance - receptor is adjacent to the source/site; distance well below any official set-back distances. Direction - high frequency (%) of winds from source to receptor (or, qualitatively, receptors downwind of source with respect to prevailing wind). Effectiveness of dispersion/dilution - open processes with low-level releases, e.g. lagoons, uncovered effluent treatment plant, landfilling of putrescible wastes.
Moderately Effective	Distance - receptor is local to the source. Where mitigation relies on dispersion/dilution - releases are elevated, but compromised by building effects.
Ineffective	Distance - receptor is remote from the source; distance exceeds any official set-back distances. Direction - low frequency (%) of winds from source to receptor (or, qualitatively, receptors upwind of source with respect to prevailing wind). Where mitigation relies on dispersion/ dilution - releases are from high level (e.g. stacks, or roof vents > 3m above ridge height) and are not compromised by surrounding buildings.

Stage 3 - Prediction of Risk of Odour Exposure

3.2.6 The source odour potential and pathway effectiveness are combined to predict the resulting risk of odour exposure at the receptor being considered. The guidance recommends that this is done based on a matrix approach, replicated in **Table 4**.

Table 4 - Risk of Odour Exposure

Pathway Effectiveness	**Source Odour Potential**		
	High	**Medium**	**Low**
Highly Effective	High Risk	Medium Risk	Low Risk
Moderately Effective	Medium Risk	Low Risk	Negligible Risk
Ineffective	Low Risk	Negligible Risk	Negligible Risk

Stage 4 - Assessment of Odour Effect

3.2.7 The last stage assesses the likely impact on the receptor based on the level of risk. Differing levels of receptor sensitivity are defined by the guidance but as this assessment is only concerned with future occupants of the Site, which corresponds to **high** sensitivity, full definitions are not repeated here. The matrix utilised to predict the level of odour effect is summarised in

Table 5 - Odour Effect Levels

Risk of Odour Exposure	**Receptor Sensitivity**		
	High	**Medium**	**Low**
High	Substantial Adverse Effect	Moderate Adverse Effect	Slight Adverse Effect
Medium	Moderate Adverse Effect	Slight Adverse Effect	Negligible Effect
Low	Slight Adverse Effect	Negligible Effect	Negligible Effect
Negligible	Negligible Effect	Negligible Effect	Negligible Effect

4 Assessment

4.1 Overview

4.1.1 The existing sheds may result in odour emissions at the Site during normal operation.

4.1.2 Orientation of the proposed land uses at the Site indicated that the operation of the Heybeck Farm would not have any risk to loss of amenity given its significant distance away from proposed sensitive receptor locations within the Site, as such associated effects are not considered further within this assessment.

4.1.3 The assessment, therefore, has focused on potential odour emissions associated with the operation of the Chidswell Farm.

4.2 Prevailing Meteorological Conditions

4.2.1 The potential for odour to impact at sensitive locations depends significantly on the meteorology, particularly wind direction and wind speed, during emissions. In order to consider prevailing conditions at the site review of historical weather data was undertaken. The closest observation station with suitable dataset to the Site is Leeds-Bradford Airport observation station is located approximately 17.5km north-north-west of the Site. It is anticipated that conditions would be reasonably similar over a distance of this magnitude. The data was therefore considered suitable for an assessment of this nature.

4.2.2 Meteorological data was obtained from Leeds-Bradford Airport Airfield meteorological station over the period 1st January 2009 to 31st December 2018 (inclusive). The frequency of wind from the 12 sectors which best describe the directions which may cause impacts in the vicinity of site is shown in **Table 6.** The directions which has the potential to impact at the closest proposed sensitive receptors are shown in **bold**. Reference should be made to **Appendix C** for a wind rose of the meteorological data and also an overlay on **Figure 1**.

Table 6 - Wind Frequency Data

Wind Direction (Degrees)	Frequency of Wind (%)
345 - 15	4.66
15 - 45	6.18
45 - 75	5.11
75 - 105	4.55
105 - 135	4.37
135 - 165	6.25
165 - 195	4.41
195 - 225	**8.75**
225 - 255	**14.96**
255 - 285	**22.84**
285 - 315	**8.36**
315 - 345	2.65
Total	93.09
Missing/Incomplete	6.91
Calms	1.71

4.2.3 As shown in **Table 6**, the prevailing wind direction at the Site is from the west-south-west through from the west-north-west. Winds from other directions are relatively infrequent, which is indicative of conditions throughout the UK. It is noted that the distance between the closest proposed residential receptor locations and the existing farm operations is approximately 20m, based on the Site boundary and not the actual farm activities, which is considered to be further away from proposed sensitive locations within the Site boundary. This provides a worst case scenario for dispersion during wind conditions when wind is blowing towards the Site from the existing farm units.

4.2.4 The Site is considered to be downwind from the Chidswell Farm in the sectors of 195° - 225°, 225° - 255°, 255° - 285° and 285° - 315° occurring for 8.75, 14.96, 22.84 and 8.36% of the time annually, respectively.

4.2.5 Additionally, odour episodes tend to occur during stable atmospheric conditions with low wind speed, which gives poor dispersion and dilution; receptors close to the source in all directions around it can be affected under these conditions. The IAQM guidance states that when conditions are not calm, it will be the downwind receptors that are affected. Overall therefore, receptors that are downwind with respect to the prevailing wind direction tend to be at higher risk of odour impact.

4.2.6 Analysis of the 10-years of meteorological data from Leeds-Bradford Airport meteorological station indicated wind speeds of 3m/s or lower occur on average for approximately 27,61% of the year. A review of the 20-years Climate Averages obtained from the Met Office[5] from Birchencliffe, (Huddersfield, Oakes, 1981-2010) Climate Station indicated that the average annual rainfall is 1028.4mm with over 154 days of greater than 1mm rainfall. As such, the potential for entrainment of odours into the air is limited by both wind speed and rainfall.

4.2.7 The analysis of cumulative effects of the directional winds and wind speeds indicated that proposed receptor locations closest to the existing Chidswell Farm, to the north-north-east through to the east-south-east of the farm operations, could be affected by potential odour episodes for approximately 2.22, 2.79, 2.82 and 1.69% of the time, respectively, in accordance with the main wind frequency directions as assessed in **Table 6**.

4.3 Risk Assessment

4.3.1 The Risk Assessment has been undertaken in accordance with the general principles of the Institute of Air Quality Management IAQM guidance[3], as detailed in section 3.2.

Source Odour Potential

4.3.2 The livestock are generally held indoors on farms and infrequently some cattle and sheep graze although this represents a maximum of 50 cattle and 200 sheep. Cattle only graze in the summer and generally sheep in the winter months.

4.3.3 The farm activities are classed as "Moderately offensive" in H4 and have an "unpleasant" hedonic score. The Source Odour Potential of the activities is therefore assessed as being **medium** with reference to the IAQM guidance[3].

Effectiveness of Pathway

4.3.4 The Site is located to the east of the existing Chidswell Farm, to a recognised set-back distance of 20m between closest proposed sensitive receptors and the farm operations, as such, the separation distance is classified as 'receptor is adjacent' in the IAQM terminology.

4.3.5 The main sources of odour from the farm operation are, as described, mainly open, uncontrolled and low level.

4.3.6 Winds blow from the direction of the odour sources towards the sensitive receptor locations for approximately 54.91% of the time with the potential to result in odour impact due to low wind speeds at the closest proposed sensitive locations within the Site to the north-north-east through to the east-south-east of the farm operations, for approximately 2.22, 2.79, 2.82 and 1.69% of the time, respectively.

4.3.7 The effectiveness of the pathway is therefore assessed as **Moderately Effective** with reference to the IAQM definitions.

[5] https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gcw9q2z5u

Risk of Odour Exposure

4.3.8 With a medium source odour potential and ineffective pathway, the risk of odour exposure of future occupants of the proposed residential development is **low risk**.

Assessment of Impact

4.3.9 The sensitivity of the proposed receptor locations is considered to be **high**, therefore in line with the IAQM impact assessment criteria for a high sensitivity receptor and a low risk of odour exposure results in a **slight adverse** impact.

4.4 Summary

4.4.1 It should be noted that the assessment is based on worst case assumption and stand-off distances are considered from the Site boundary, which provided a robust assessment scenario. Based on the assessment results, it is not anticipated that significant odour impacts would occur at any sensitive location as a result of operation of the farm. As such, the potential for adverse odour impacts at the Site is considered to be **low**.

4.4.2 Applying the IAQM assessment method indicates that the farm activities are likely to have a **slight adverse** impact on the housing development. An impact of this magnitude would be considered **not significant**, i.e., it would not be a deciding factor in restricting planning consent and would not trigger the implementation of additional mitigation.

4.4.3 It is concluded, therefore, that the existing farm activities adjacent to the Site are not considered to result in significant loss of amenity and consequently the resulting risk of potential odour complaints is **low**.

5 Summary and Conclusions

5.1.1 Delta-Simons, has been appointed to prepare this Odour Risk Assessment in support of the planning application for a proposed mixed-use development on Land to the East of Leeds Road, Chidswell.

5.1.2 In order to address the concerns of the Council, a Qualitative Odour Assessment has been undertaken in to consider existing conditions at the Site and assess its suitability for residential use.

5.1.3 The close proximity of the Site to the farm activities, and its location downwind for approximately 3% in the wind direction with any potential to carry odour towards the site, mean that where odours do occur, there will be little natural attenuation over the distance between the source and the Site and there will be a very low probability at any given time that some odours will be carried towards the housing development.

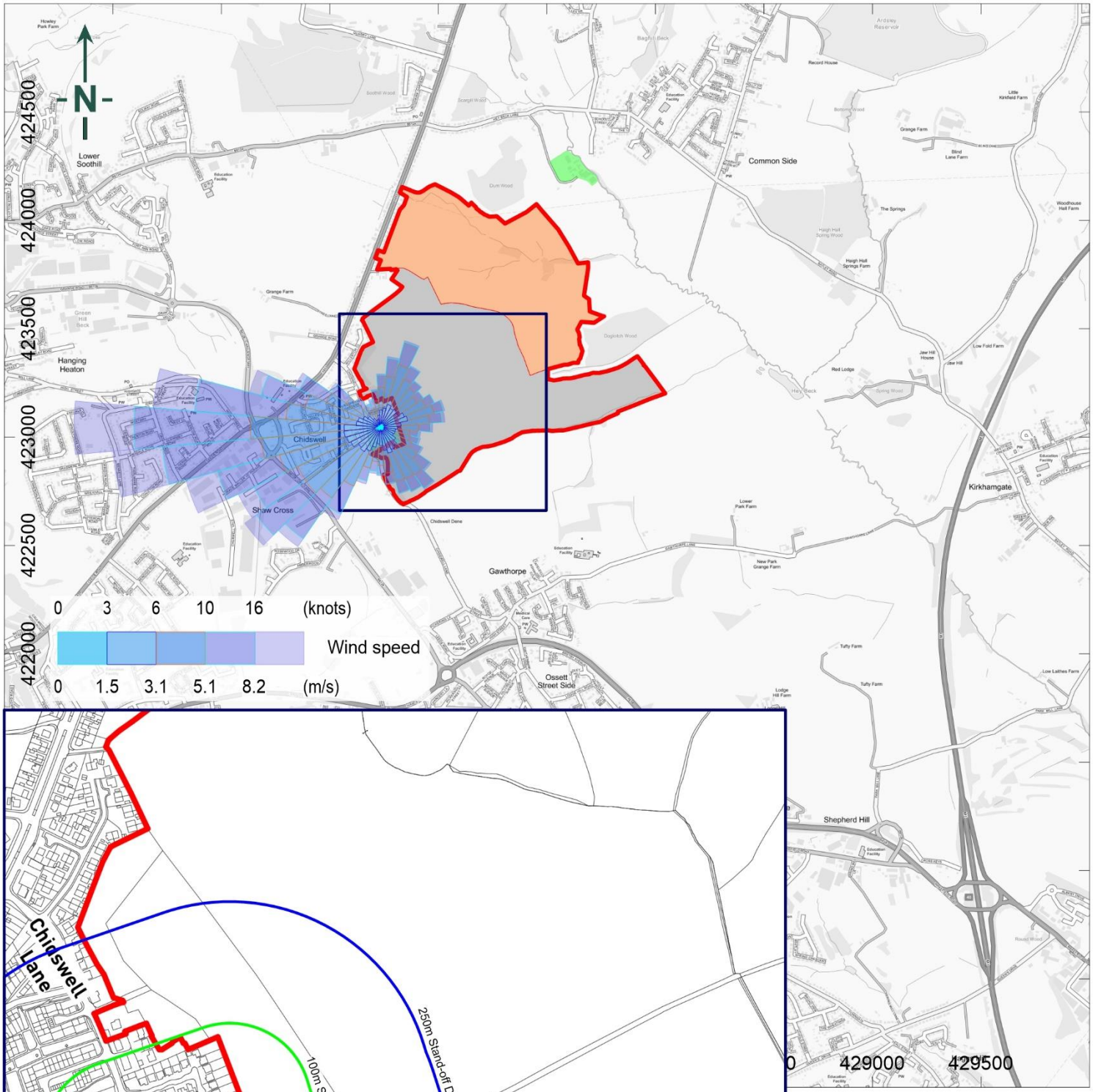
5.1.4 Based on the assessment results, it is not anticipated that significant odour impacts would occur at any sensitive location as a result of operation of the farm. As such, the potential for adverse odour impacts at the Site is considered to be **low**.

5.1.5 Applying the IAQM assessment method indicates that the farm activities are likely to have a **slight adverse** impact on the housing development. An impact of this magnitude would be considered **not significant**, i.e., it would not be a deciding factor in planning determination and would not trigger the implementation of additional mitigation.

5.1.6 It is concluded, therefore, that the existing farm activities adjacent to the Site are not considered to result in significant loss of amenity and consequently the resulting risk of potential odour complaints is **low**.

5.1.7 Based on the assessment results, odour effects associated with the operation of the Chidswell Farm are not considered a constraint to planning consent.

Figures



LEGEND

- Site Boundary
- Indicative Sensitive Use Area
- Indicative Employment Area
- Potential Odour Source Location

deltasimons
Environment - Health & Safety - Sustainability

TITLE: Site Location and Assessment Extents

DRAWN BY: SG	SCALE: NTS	PROJECT NO: 18-0865.07	
CHECKED BY: GA	REVISION: -	FIGURE NO: 1	
DATE: 19th November 2019			

Appendix A - Limitations

Limitations

The recommendations contained in this Report represent Delta-Simons professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant. Delta-Simons does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Delta-Simons obtained, reviewed and evaluated information in preparing this Report from the Client and others. Delta-Simons conclusions, opinions and recommendations has been determined using this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

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Appendix B - Glossary

Glossary

Term	Definition
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
IAQM	Institute of Air Quality Management
NPPF	National Planning Policy Framework
ou_E	European Odour Unit

Appendix C - Leeds-Bradford Airport Airfield 2009 to 2018

Windrose for Leeds-Bradford Airport Airfield 2009 to 2018