

Odour Assessment
Hothersall Lane, Hothersall

Client: Kiernan Construction Limited

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Executive Summary

Redmore Environmental Ltd was commissioned by Kiernan Construction Limited to provide an Odour Assessment in support of the change of use of an agricultural building to a commercial livery stable on land off Hothersall Lane, Hothersall.

The development has the potential to cause odour impacts at sensitive locations in the vicinity of the site. As such, an Odour Assessment was undertaken to evaluate potential effects as a result of the scheme.

The risk of potential odour impact was assessed using a standard industry method. This involved consideration of a number of factors relating to the proposed development including the scale and nature of the potential emission sources, the location of receptors and the prevailing meteorological conditions.

Following consideration of the relevant factors, overall effects from the development were not predicted to be significant. As such, potential odour impacts are not considered to represent a constraint to the proposals.

Table of Contents

1.0	INTRODUCTION	1
1.1	Background	1
1.2	Site Location and Context	1
2.0	ODOUR BACKGROUND	3
2.1	Odour Definition	3
2.2	Odour Impacts	3
2.3	Odour Legislative Control	4
2.4	National Planning Policy	5
2.5	Local Planning Policy	6
2.6	Institute of Air Quality Management Guidance	6
3.0	METHODOLOGY	7
3.1	Introduction	7
3.2	Background	7
3.3	Risk Assessment Procedure	8
4.0	BASELINE	14
4.1	Introduction	14
4.2	Site Description	14
4.3	Sensitive Receptors	14
4.4	Meteorological Conditions	15
5.0	ASSESSMENT	17
6.0	CONCLUSION	21
7.0	ABBREVIATIONS	22

Appendix

Appendix 1 - Curricula Vitae

1.0 INTRODUCTION

1.1 Background

1.1.1 Redmore Environmental Ltd was commissioned by Kiernan Construction Limited to provide an Odour Assessment in support of the change of use of an agricultural building to a commercial livery stable on land off Hothersall Lane, Hothersall.

1.1.2 The development has the potential to cause odour impacts at sensitive locations in the vicinity of the site. As such, an Odour Assessment was undertaken to evaluate potential effects as a result of the scheme.

1.2 Site Location and Context

1.2.1 The proposed development is located on land off Hothersall Lane, Hothersall, at approximate National Grid Reference (NGR): 361965, 436700. Reference should be made to Figure 1 for a map of the site and surrounding area.

1.2.2 The development comprises the change of use of an existing agricultural building to a commercial livery yard comprising eight stables, a tack room, a sand paddock, parking and turning area. Reference should be made to Figure 2 for a site layout plan.

1.2.3 The existing building comprises a block structure to 1.5m, with Yorkshire boards above and a box-profile tin roof. This will be retained, with internal alterations to provide eight stable enclosures to be used for both full and part-time livery as well as a tack room and hay storage room. The stables will be cleaned out by hand twice daily, with wet bedding removed and replaced as necessary.

1.2.4 The proposed sand paddock will be used to ensure that the animals can be safely exercised in all weathers. This will measure 40m x 60m and will be cleaned following each use.

1.2.5 Muck from the stables and the sand paddock will be stored adjacent to the stable building on a concrete base with walls constructed from concrete blocks, measuring 6m x 4m. The muck storage bay will be emptied once a month, with manure spread on local

agricultural land as fertiliser. In addition, hay will be stored within a dedicated area in the stable.

- 1.2.6 A pre-application response¹ was received from Ribble Valley Borough Council (RVBC) requesting an Odour Assessment in support of the development due to the potential for odour impacts at nearby existing receptors (reference: RV/2025/ENQ/00117). An Odour Assessment has therefore been undertaken in order to evaluate potential effects and identify any necessary mitigation to control impacts to an acceptable level. This is outlined in the following report.

¹ Pre-application Response RV/2025/ENQ/00117, RVBC, 2026.

2.0 ODOUR BACKGROUND

2.1 Odour Definition

2.1.1 The Institute of Air Quality Management (IAQM) guidance² defines odour as:

"[...] the human olfactory response (perception followed by psychological appraisal) to one, or more often a complex mixture of, chemical species in the air."

2.1.2 The stated definition is considered to be relevant in the context of this 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 is a useful reminder of the factors that will determine the degree of odour pollution. These are described by the IAQM³ as follows:

- **F**requency - how often an individual is exposed to odour;
- **I**ntensity - the individual's perception of the strength of the odour;
- **D**uration - The overall duration that individuals are exposed to an odour over time;
- **O** odour unpleasantness - Odour unpleasantness describes the character of an odour as it relates to the 'hedonic tone' (which may be pleasant, neutral or unpleasant) at a given odour concentration/ intensity. This can be measured in the laboratory as the hedonic tone, and when measured by the standard method and expressed on a standard nine-point scale it is termed the hedonic score; and,
- **L**ocation - The type of land use and nature of human activities in the vicinity of an odour source. Tolerance and expectation of the receptor. The 'Location' factor can be considered to encompass the receptor characteristics, receptor sensitivity, and socio-economic factors.

² Guidance on the Assessment of Odour for Planning v1.1, IAQM, 2018.

³ Guidance on the Assessment of Odour for Planning v1.1, IAQM, 2018.

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 **FIDOL** factors can be considered further to provide the following issues in regard to the potential for an odour emission to cause an impact:

- 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.

2.3 Odour Legislative Control

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

"Any dust, steam, odour 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). The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

2.3.3 The legislative controls described above were considered as necessary throughout the undertaking of this assessment.

2.4 National Planning Policy

2.4.1 The revised National Planning Policy Framework⁴ (NPPF) was published in December 2024 and amended in February 2025. The document sets out the Government's planning policies for England and how these are expected to be applied.

2.4.2 The purpose of the planning system is to contribute to the achievement of sustainable development. In order to ensure this, the NPPF recognises three overarching objectives, including the following of relevance to odour:

"c) An environmental objective - to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy"

2.4.3 Chapter 12 of the NPPF details objectives in relation to achieving well-designed place. It states that:

"Planning policies and decisions should ensure that developments:

[...]

f) create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users; and where crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesions and resilience."

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

⁴ NPPF, Ministry of Housing, Communities and Local Government, 2024.

2.5 Local Planning Policy

2.5.1 The Local Development Framework (LDF) provides the basis for planning decisions in the Ribble Valley. The Core Strategy⁵, adopted on 16th December 2014, forms the central document of the LDF. Review of the Core Strategy⁶ indicated the following policy of relevance to this assessment:

"Policy DMG1: General Considerations

In determining planning applications, all development must:

[...]

- Consider the density, layout and relationship between buildings, which is of major importance. Particular emphasis will be placed on visual appearance and the relationship to surroundings, including impact on landscape character, as well as the effects of development on existing amenities.
- Not adversely affect the amenities of the surrounding area. [...]"

2.5.2 The above policy was taken into consideration throughout the undertaking of the assessment.

2.6 Institute of Air Quality Management Guidance

2.6.1 The IAQM published the 'Guidance on the Assessment of Odour for Planning'⁷ document on 20th May 2014. This was updated in 2018⁸ and specifically deals with assessing odour impacts for planning purposes, namely potential effects on amenity. The assessment methodology outlined in the guidance has been utilised throughout this report where relevant.

⁵ Core Strategy 2008 - 2028 A Local Plan for Ribble Valley, RVBC, 2014.

⁶ Core Strategy 2008 - 2028 A Local Plan for Ribble Valley, RVBC, 2014.

⁷ Guidance on the Assessment of Odour for Planning, IAQM, 2014.

⁸ Guidance on the Assessment of Odour for Planning v1.1, IAQM, 2018.

3.0 **METHODOLOGY**

3.1 **Introduction**

3.1.1 Odour emissions from the development have the potential to cause impacts at nearby receptors. The potential risk of adverse effects has therefore been assessed using the IAQM 'Guidance on the Assessment of Odour for Planning v1.1'⁹ document. The relevant methodology is outlined in the following Sections. The methodology was discussed and agreed with Nicola Berry, Environmental Health Officer at RVBC, on 31st March 2026.

3.2 **Background**

3.2.1 The basic concept of a risk assessment is that the overall risk depends on the probability of an event occurring together with the likely consequences if it was to occur. For odour assessments the probability can be considered as the likelihood of exposure (impact), and the consequence can be considered to be the effect on the receptor if that exposure (impact) took place. These two facets can be summarised by the source-pathway-receptor concept.

3.2.2 Behind the source-pathway-receptor concept, is the fundamental relationship:

$$\text{Effect} \approx \text{Dose} \times \text{Response}$$

3.2.3 In the specific case of odour assessments, the dose can be considered equivalent to the odour exposure, or impact. This will be determined by **FIDO** of the **FIDOL** factors. The effect is the result of the changes on specific receptors (people in the case of odour) taking into account their sensitivities (i.e. responsiveness to odour), the **L** (location) in **FIDOL** is to categorise the sensitivity.

3.2.4 The IAQM guidance states that a qualitative risk-based approach is appropriate for:

- Screening of odour impacts;
- Development proposals likely to have a low risk of adverse effects;

⁹ Guidance on the Assessment of Odour for Planning v1.1, IAQM, 2018.

- Situations where there is insufficient information to carry out detailed predictive dispersion modelling;
- Situations where the information has wide uncertainties and its use as input to a detailed predictive dispersion model would be at best a waste of time, money and effort or, worse, would lead to an illusory and false impression of accuracy and precision in the numbers generated; and,
- When the model is not able to properly represent the reality of the situation being assessed, e.g. if the odour effects are likely to be significantly influenced by accidental, unexpected, or unknown releases. In such instances a qualitative estimate may be more appropriate, on the basis that it is better to be broadly correct than precisely wrong.

3.2.5 It is considered that the first and second of these criteria are met for this project. As such, a qualitative assessment methodology was deemed appropriate.

3.3 Risk Assessment Procedure

3.3.1 The first step in the assessment was to estimate the odour generating potential of the site activities. This is termed the Source Odour Potential, which takes into account three factors:

- The scale (magnitude) of the release from the odour source, taking into account the effectiveness of any odour control or mitigation measures that are already in place. This involves judging the relative size of the release rate after mitigation and taking account of any pattern of release (e.g. intermittency);
- How inherently odorous the emission is. In some cases, it may be known whether the release has a low, medium or high Odour Detection Threshold (ODT). This is the concentration at which an odour becomes detectable to the human nose. In most instances the odours released by a source will be a complex mixture of compounds and the detectability will not be known. However, for some industrial processes the odour will be due to one or a small number of known compounds and the detection thresholds will be a good indication of whether the release is highly odorous or mildly odorous; and,
- The relative pleasantness/unpleasantness of the odour.

3.3.2 Using the example risk ranking in Table 1, the Source Odour Potential was categorised as **small, medium** or **large**.

Table 1 Source Odour Potential

Source Odour Potential	Comments
Large	<p>Magnitude - larger Environmentally Permitted processes of odorous nature or large Sewage Treatment Works (STWs); materials usage of hundreds of thousands of tonnes/m³ per year; area sources of thousands of m². The compounds involved are very odorous (e.g. mercaptans), having very low ODTs, where known</p> <p>Unpleasantness - processes classed as "Most offensive" in Environment Agency (EA) Guidance H4¹⁰; or (where known) compounds/ odours having unpleasant (-2) to very unpleasant (-4) hedonic score</p> <p>Mitigation/control - open air operation with no containment, reliance solely on good management techniques and best practice</p>
Medium	<p>Magnitude - smaller Environmentally Permitted processes or small STWs; materials usage of thousands of tonnes/m³ per year; area sources of hundreds of m². The compounds involved are moderately odorous</p> <p>Unpleasantness - processes classed in EA Guidance H4¹¹ as "Moderately offensive"; or (where known) odours having neutral (0) to unpleasant (-2) hedonic score</p> <p>Mitigation/control - some mitigation measures in place, but significant residual odour remains</p>
Small	<p>Magnitude - falls below Environmental Permit Part B threshold; materials usage of hundreds of tonnes/m³ per year; area sources of tens m². The compounds involved are only mildly odorous, having relatively high ODTs, where known</p> <p>Unpleasantness - processes classed as "Less offensive" in EA Guidance H4¹²; or (where known) compounds/odours having neutral (0) to very pleasant (+4) hedonic score</p> <p>Mitigation/control - effective, tangible mitigation measures in place leading to little or no residual odour</p>

3.3.3 It should be noted that the EA Guidance H4¹³ has been withdrawn. However, the IAQM guidance retains reference to this document. As such, application of the descriptors within the EA Guidance H4¹⁴ in accordance with the IAQM criteria is still considered to

¹⁰ H4: Odour Management, EA, 2011.

¹¹ H4: Odour Management, EA, 2011.

¹² H4: Odour Management, EA, 2011.

¹³ H4: Odour Management, EA, 2011.

¹⁴ H4: Odour Management, EA, 2011.

represent best practice. In addition, the provided definitions of odour offensiveness and how this is categorised are still considered to be relevant in the context of this assessment.

3.3.4 The next step was to estimate the effectiveness of the pollutant pathway as the transport mechanism for odour through the air to the receptor, versus the dilution/ dispersion in the atmosphere. Any factor that increases dilution and dispersion of the plume as it travels from source to receptor will reduce the concentration at the end point and hence reduce exposure. Important factors for consideration are:

- The distance between sensitive receptors and the odour source;
- Whether receptors are downwind with respect to the prevailing wind direction. Odour episodes often 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 can be affected under these conditions. When circumstances are not calm, it will be the downwind receptors that are affected. As such, receptors that are downwind with respect to the prevailing wind direction tend to be at higher risk of odour impact;
- The effectiveness of the point of release in promoting good dispersion e.g. releasing emissions from a high stack will increase the pathway, dilution and dispersion; and,
- The topography and terrain between the source and receptor. The presence of topographical features such as hills and valleys, or urban terrain features such as buildings, can affect air flow and therefore increase, or inhibit, dispersion and dilution.

3.3.5 Using the example risk ranking in Table 2, the pollutant pathway from source to receptor was categorised as **ineffective, moderately effective** or **highly effective**.

Table 2 Pathway Effectiveness

Pathway Effectiveness	Comments
Highly effective	<p>Distance - receptor is adjacent to the source/ site; distance well below any official set-back distances</p> <p>Direction - high frequency of winds from source to receptor, or, qualitatively, receptors downwind of source with respect to prevailing wind</p> <p>Effectiveness of dispersion/dilution - open processes with low-level releases, e.g. lagoons, uncovered effluent treatment plant, landfilling of putrescible wastes</p>

Pathway Effectiveness	Comments
Moderately effective	<p>Distance - receptor is local to the source</p> <p>Where mitigation relies on dispersion/ dilution - releases are elevated, but compromised by building effects</p>
Ineffective	<p>Distance - receptor is remote from the source; distance exceeds any official set-back distances</p> <p>Direction - low frequency of winds from source to receptor, or, qualitatively, receptors upwind of source with respect to prevailing wind</p> <p>Where mitigation relies on dispersion/ dilution - releases are from high level (e.g. stacks, or roof vents greater than 3m above ridge height) and are not compromised by surrounding buildings</p>

3.3.6 The sensitivity of the receiving receptor was defined based on the criteria shown in Table 3.

Table 3 Odour Receptor Sensitivity

Sensitivity	Description
High	<p>Surrounding land where:</p> <ul style="list-style-type: none"> • Users can reasonably expect enjoyment of a high level of amenity; and, • People would reasonably be expected to be present here continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land <p>Examples may include residential dwellings, hospitals, schools/ education and tourist/ cultural</p>
Medium	<p>Surrounding land where:</p> <ul style="list-style-type: none"> • Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or, • People would not reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land <p>Examples may include places of work, commercial/ retail premises and playing/ recreation fields</p>
Low	<p>Surrounding land where:</p> <ul style="list-style-type: none"> • The enjoyment of amenity would not reasonably be expected; or, • There is transient exposure, where the people would reasonably be expected to present only for limited periods of time as part of the normal pattern of use of the land <p>Examples may include industrial use, farms, footpaths and roads</p>

3.3.7 The estimates of Source Odour Potential and Pathway Effectiveness were considered together to predict the risk of odour exposure (impact) at the receptor location, as shown by the matrix in Table 4.

Table 4 Risk of Odour Exposure

Pathway Effectiveness	Source Odour Potential		
	Small	Medium	Large
Highly effective	Low	Medium	High
Moderately effective	Negligible	Low	Medium
Ineffective	Negligible	Negligible	Low

3.3.8 The final step was to determine the significance of odour effect at the specified receptor location through the interaction between sensitivity and risk, as outlined in Table 5.

Table 5 Significance of Odour Effect

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

3.3.9 The IAQM guidance¹⁵ states that an assessment must reach a conclusion on the likely significance of the predicted impact. Where the overall effect is **moderate** or **substantial**, the effect is likely to be considered **significant**, whilst if the effect is **slight** or **negligible**, the impact is likely to be considered **not significant**. It should be noted that this is a binary judgement of either it is **significant**, or it is **not significant**. This has been considered to determine the overall significance of potential odour effects associated with the development.

¹⁵ Guidance on the Assessment of Odour for Planning v1.1, IAQM, 2018.

3.3.10 The IAQM guidance recognises that assessment of odour requires some degree of professional judgement¹⁶. Qualitative methodologies such as those utilised within this report provide guidance for assessing potential impacts. However, professional judgement should be exercised in order to take account of the specific details which are unique to each development. This has been considered as necessary throughout the assessment. The IAQM also suggest that the assessor's qualifications and experience are detailed within an Odour Assessment. These are provided in Appendix 1.

¹⁶ Guidance on the Assessment of Odour for Planning v1.1, IAQM, 2018.

4.0 **BASELINE**

4.1 **Introduction**

4.1.1 Existing conditions in the vicinity of the site were identified in order to provide a baseline for the assessment. These are detailed in the following Sections.

4.2 **Site Description**

4.2.1 The proposed development is located in a rural setting, surrounded by agricultural land on all sides, with access via Hothersall Lane. The closest residential property is located approximately 125m south-east of the stable location.

4.3 **Sensitive Receptors**

4.3.1 A desk-top study was undertaken in order to identify sensitive locations in the vicinity of the site that required specific consideration during the assessment. The identified receptors and associated sensitivity are summarised in Table 6.

Table 6 Sensitive Receptors

Receptor		NGR (m)		Sensitivity	Distance from Odour Source (m)	Direction from Odour Source
		X	Y			
R1	Residential - Hothersall Lane	362051	436595	High	110	South-east
R2	Residential - Lower College Farm	361885	436506	High	180	South-south-west
R3	Residential - The Old Barn	361573	437089	High	505	North-west
R4	Education - Hillside Specialist School and College	361889	437035	High	310	North-north-west
R5	Residential - Preston Road	362054	437092	High	370	North-north-east
R6	Residential - Hothersall Lane	362167	436822	High	190	North-east

4.3.2 Reference should be made to Figure 3 for a map of the sensitive receptor locations.

4.4 Meteorological Conditions

4.4.1 The potential for atmospheric emissions to impact at sensitive locations depends significantly on the meteorology, particularly wind direction, during release. In order to consider prevailing conditions at the site, review of historical weather data was undertaken. Meteorological data used in the assessment was obtained from Blackpool Airport Meteorological Station at NGR: 332308, 430915, which is approximately 30.7km west of the site boundary. It is considered that conditions are likely to be reasonably similar over a distance of this magnitude and the information is a suitable source of data for an assessment of this nature.

4.4.2 Meteorological data was obtained from Blackpool Airport Meteorological Station over the period 1st January 2020 to 31st December 2024 (inclusive). This is summarised in Table 7. Reference should be made to Figure 4 for a wind rose of the meteorological data.

Table 7 Wind Frequency Data

Wind Direction (°)	Frequency of Wind (%)
345 - 15	4.57
15 - 45	3.62
45 - 75	3.70
75 - 105	7.56
105 - 135	10.49
135 - 165	8.34
165 - 195	8.72
195 - 225	5.78
225 - 255	9.24
255 - 285	14.75
285 - 315	12.05
315 - 345	9.27
Sub-Total	98.09

Wind Direction (°)	Frequency of Wind (%)
Calms	0.77
Missing/Incomplete	1.15

4.4.3 As shown in Table 7, the prevailing wind direction at the site is from the west. Winds from the north-east are relatively infrequent, which is indicative of conditions throughout the majority of the UK.

4.4.4 All meteorological data used in the assessment was provided by Atmospheric Dispersion Modelling Ltd, which is an established distributor of meteorological data within the UK.

5.0 ASSESSMENT

5.1.1 There is the potential for odour impacts as a result of emissions from the proposed development. The risk was therefore assessed at the identified receptor locations in accordance with the IAQM methodology¹⁷.

5.1.2 A review of potential odour sources associated with the stables was undertaken to determine the overall Source Odour Potential. This was classified as **medium** due to the following:

- Magnitude - Activities associated with the development will not be controlled under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments. This would indicate a Source Odour Potential of **small** in isolation;
- Unpleasantness - Odours associated with livestock housing would be classified as 'moderately offensive' in accordance with EA guidance 'H4: Odour Management'¹⁸. This would indicate a Source Odour Potential of **medium** in isolation; and,
- Mitigation/ control measures - Horses will be housed in the stables for the majority of the year. The structure of the barn will provide natural ventilation and partial containment of odour emissions. However, there is the potential for fugitive odour emissions from the muck heap which is uncovered and the paddock prior to cleaning. This would indicate a Source Odour Potential of **medium** in isolation.

5.1.3 The Pathway Effectiveness was subsequently defined between the source and the receptors based on the distances between the locations and the prevailing meteorological conditions. The results are summarised in Table 8.

¹⁷ Guidance on the Assessment of Odour for Planning v1.1, IAQM, 2018.

¹⁸ H4: Odour Management, EA, 2011.

Table 8 Pathway Effectiveness Classification

Receptor		Pathway Effectiveness	Justification
R1	Residential - Hothersall Lane	Moderately effective	<p>Receptor is local to the source</p> <p>Receptor is neither upwind nor downwind with respect to prevailing wind</p> <p>Horses will be housed in the stables for the majority of the year. The structure of the barn will provide natural ventilation and partial containment of odour emissions. However, there is the potential for fugitive odour emissions from the muck heap which is uncovered and the paddock prior to cleaning</p>
R2	Residential - Lower College Farm	Moderately effective	<p>Receptor is local to the source</p> <p>Receptor is neither upwind nor downwind with respect to prevailing wind</p> <p>Horses will be housed in the stables for the majority of the year. The structure of the barn will provide natural ventilation and partial containment of odour emissions. However, there is the potential for fugitive odour emissions from the muck heap which is uncovered and the paddock prior to cleaning</p>
R3	Residential - The Old Barn	Ineffective	<p>Receptor is remote from the source</p> <p>Receptor is neither upwind nor downwind with respect to prevailing wind</p> <p>Horses will be housed in the stables for the majority of the year. The structure of the barn will provide natural ventilation and partial containment of odour emissions. However, there is the potential for fugitive odour emissions from the muck heap which is uncovered and the paddock prior to cleaning</p>
R4	Education - Hillside Specialist School and College	Ineffective	<p>Receptor is remote from the source</p> <p>Receptor is neither upwind nor downwind with respect to prevailing wind</p> <p>Horses will be housed in the stables for the majority of the year. The structure of the barn will provide natural ventilation and partial containment of odour emissions. However, there is the potential for fugitive odour emissions from the muck heap which is uncovered and the paddock prior to cleaning</p>
R5	Residential - Preston Road	Ineffective	<p>Receptor is remote from the source</p> <p>Receptor is neither upwind nor downwind with respect to prevailing wind</p> <p>Horses will be housed in the stables for the majority of the year. The structure of the barn will provide natural ventilation and partial containment of odour emissions. However, there is the potential for fugitive odour emissions from the muck heap which is uncovered and the paddock prior to cleaning</p>

Receptor		Pathway Effectiveness	Justification
R6	Residential - Hothersall Lane	Ineffective	<p>Receptor is remote from the source</p> <p>Receptor is neither upwind nor downwind with respect to prevailing wind</p> <p>Horses will be housed in the stables for the majority of the year. The structure of the barn will provide natural ventilation and partial containment of odour emissions. However, there is the potential for fugitive odour emissions from the muck heap which is uncovered and the paddock prior to cleaning</p>

5.1.4 As shown in Table 8, the Pathway Effectiveness was classified as **moderately effective** at R1 and **ineffective** at all remaining locations.

5.1.5 The above information has been used with the land use sensitivity identified within Table 3 to assess odour risk and effect significance of emissions associated with the proposed development. This is summarised in Table 9.

Table 9 Risk Assessment

Source	Source Odour Potential	Pathway Effectiveness	Exposure Risk	Sensitivity of Receptor	Effect Significance
R1 Residential - Hothersall Lane	Medium	Moderately effective	Low	High	Slight
R2 Residential - Lower College Farm	Medium	Moderately effective	Negligible	High	Slight
R3 Residential - The Old Barn	Medium	Ineffective	Negligible	High	Negligible
R4 Education - Hillside Specialist School and College	Medium	Ineffective	Negligible	High	Negligible
R5 Residential - Preston Road	Medium	Ineffective	Negligible	High	Negligible
R6 Residential - Hothersall Lane	Medium	Ineffective	Negligible	High	Negligible

5.1.6 As shown in Table 9, the predicted odour effect significance was **slight** at R1 and R2 and **negligible** at all remaining locations as a result of emissions from the proposed development.

5.1.7 The IAQM guidance states that only if the impact is greater than **slight**, the effect is considered **significant**. As such, potential impacts from the development are considered to be **not significant**, in accordance with the stated methodology.

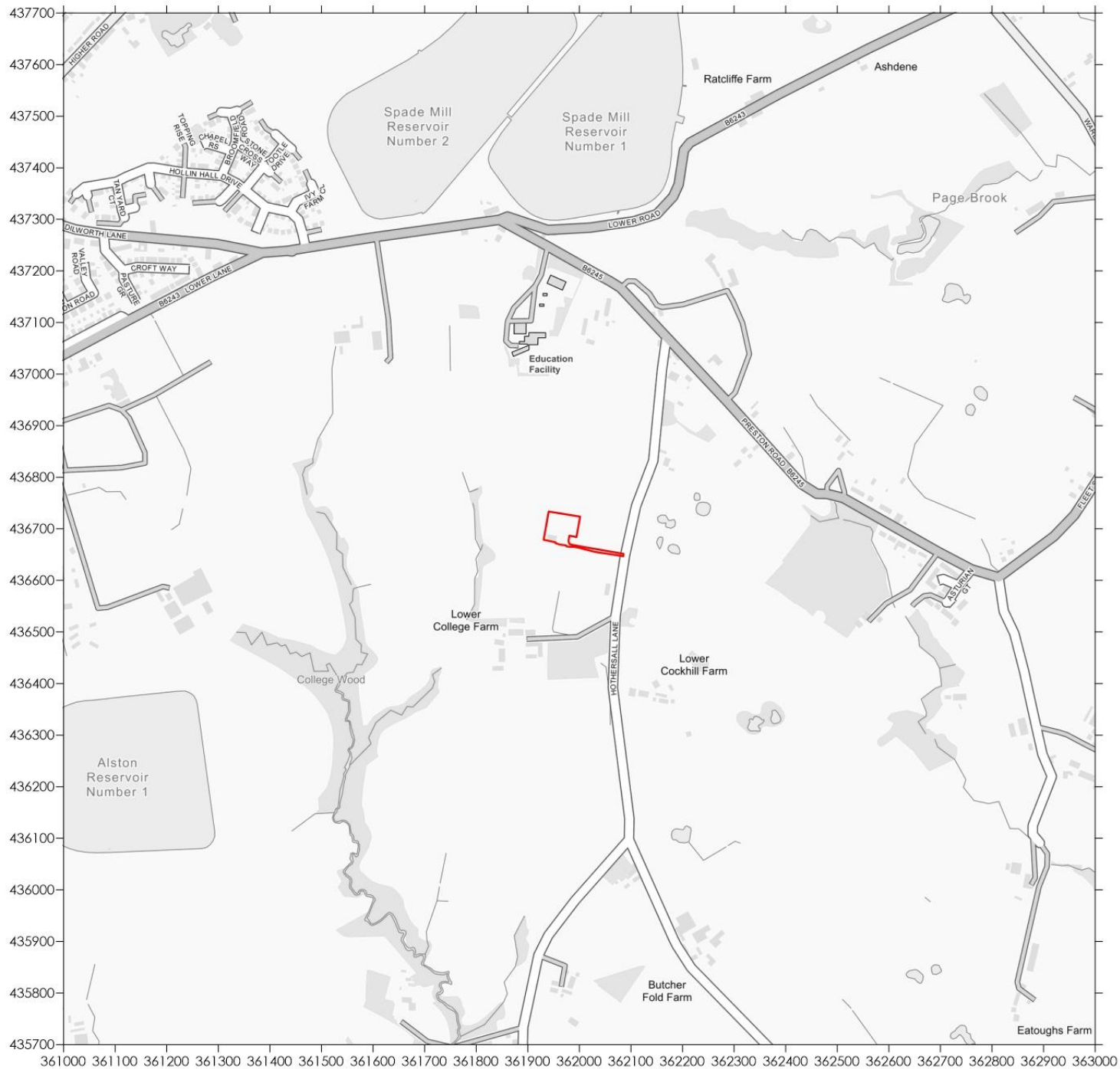
6.0 CONCLUSION

- 6.1.1 Redmore Environmental Ltd was commissioned by Kiernan Construction Limited to provide an Odour Assessment in support of the change of use of an agricultural building to a commercial livery stable on land off Hothersall Lane, Hothersall.
- 6.1.2 The development has the potential to cause odour impacts at sensitive locations in the vicinity of the site. As such, an Odour Assessment was undertaken to evaluate potential effects as a result of the scheme.
- 6.1.3 The risk of potential odour effects from the development was assessed using the IAQM methodology. This included consideration of the Source Odour Potential, Pathway Effectiveness and receptor sensitivity. The results of the assessment indicated the predicted odour effect significance was **slight** at two receptors and **negligible** at all remaining sensitive locations as a result of emissions from the development.
- 6.1.4 Based on the findings of the assessment, overall effects from the development are considered to be **not significant**. As such, odour is not considered to represent a constraint to planning consent for the scheme.

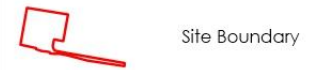
7.0 **ABBREVIATIONS**

EA	Environment Agency
IAQM	Institute of Air Quality Management
LDF	Local Development Framework
NGR	National Grid Reference
NPPF	National Planning Policy Framework
ODT	Odour Detection Threshold
RVBC	Ribble Valley Borough Council
STW	Sewage Treatment Works

Figures



Legend



Title
Figure 1 - Site Location Plan

Project
Odour Assessment
Hothersall Lane, Hothersall

Project Reference
10737

Client
Kiernan Construction Limited





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Legend

-  Site Boundary
-  Stable
-  Paddock
-  Muck Store

Title

Figure 2 - Site Layout Plan

Project

Odour Assessment
Hothersall Lane, Hothersall

Project Reference

10737

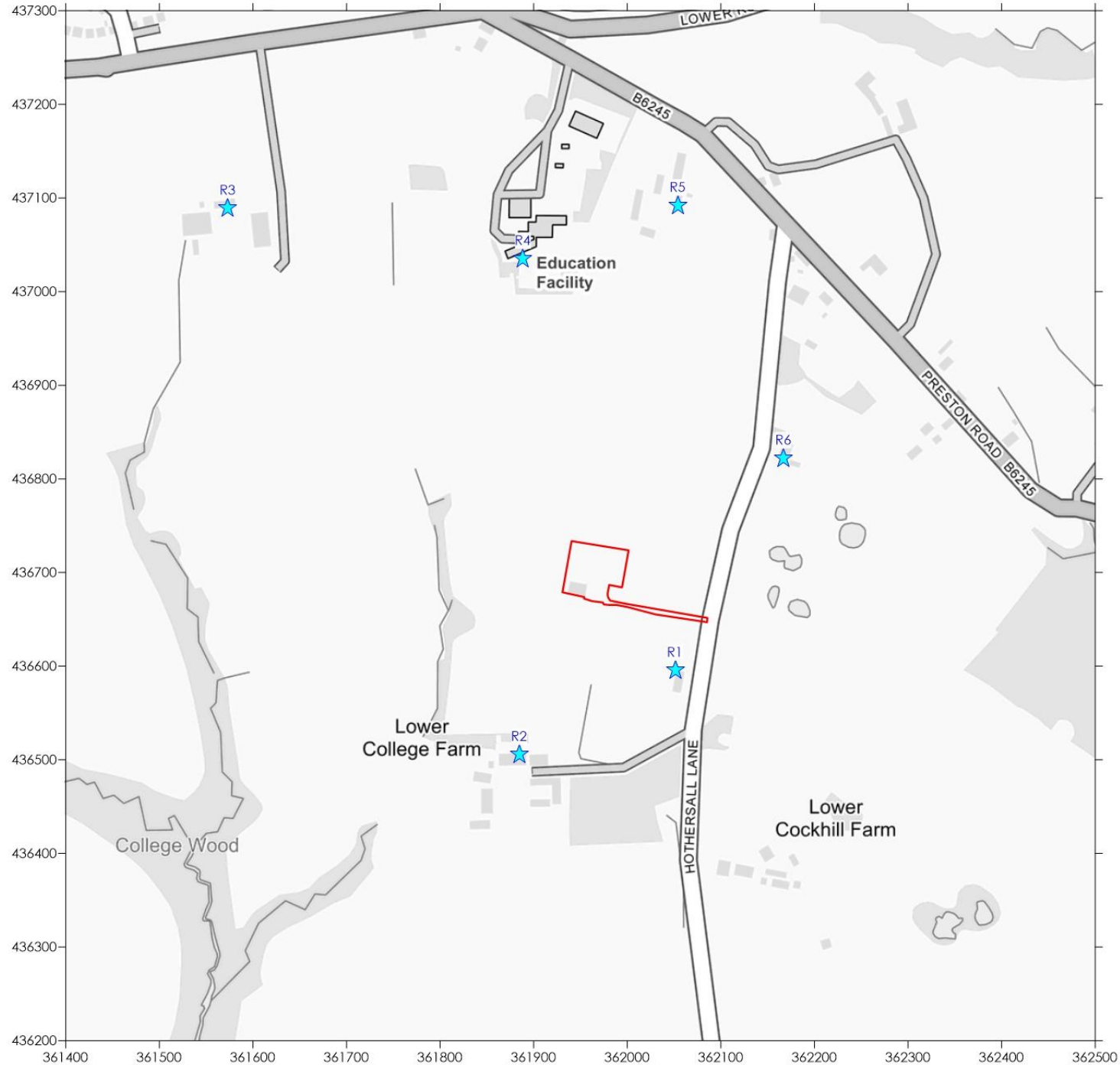
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Legend

-  Site Boundary
-  Sensitive Receptor

Title

Figure 3 - Sensitive Receptor Locations

Project

Odour Assessment
Hothersall Lane, Hothersall

Project Reference

10737

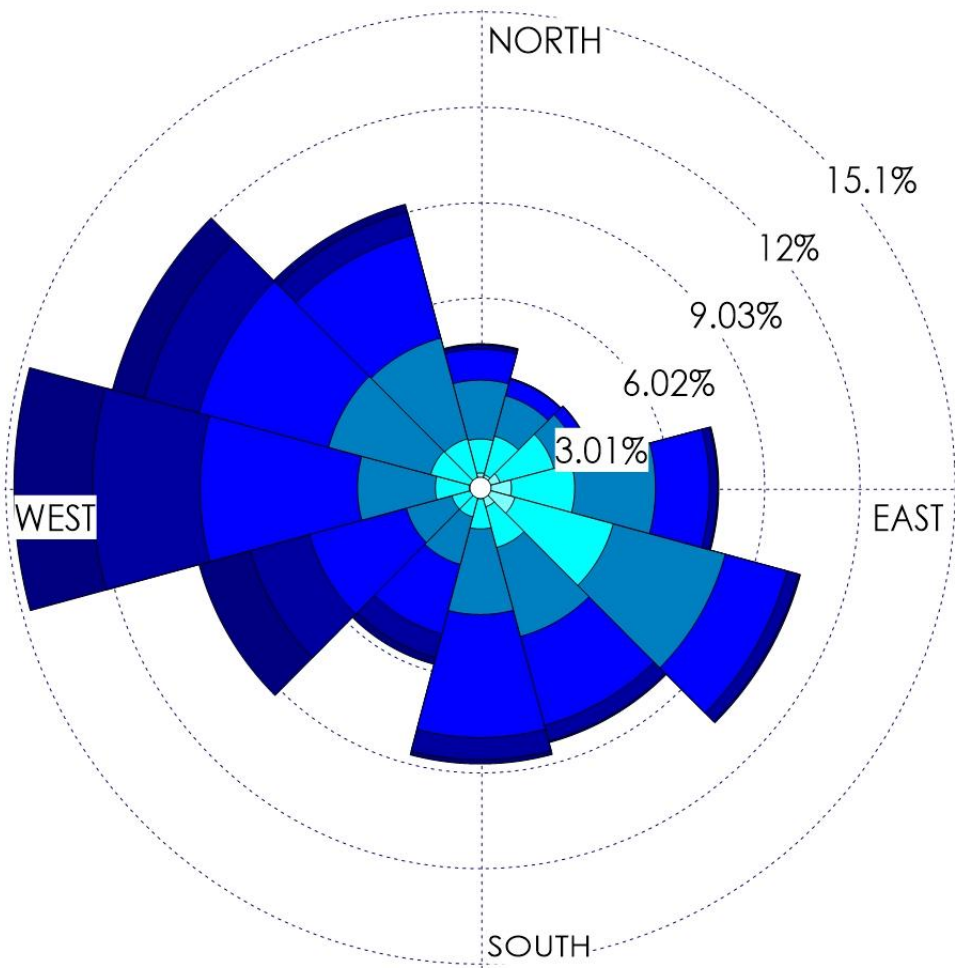
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Legend

WIND SPEED
(m/s)

- >= 11.10
- 8.80 - 11.10
- 5.70 - 8.80
- 3.60 - 5.70
- 2.10 - 3.60
- 0.50 - 2.10

Calms: 0.77%

Title

Figure 4 - Wind Rose of 2020 to 2024
Blackpool Airport Meteorological
Data

Project

Odour Assessment
Hothersall Lane, Hothersall

Project Reference

10737

Client

Kiernan Construction Limited



Appendix 1 - Curricula Vitae

KEY EXPERIENCE:

Pearl is a Principal Environmental Consultant with specialist experience in the air quality sector. Her key capabilities include:

- Production of Air Quality Assessments in accordance with DEFRA methodologies for a range of residential, commercial and industrial sectors.
- Detailed dispersion modelling of road vehicle exhaust emissions using ADMS-Roads. Studies have included assessment of road traffic exhaust emissions on sensitive receptors and exposure of new residents to poor air quality.
- Assessment of construction dust impacts from a range of development sizes.
- Assessment of fugitive dust impacts from a range of mineral extraction and industrial developments.
- Production of air quality mitigation strategies specifically tailored to address issues at individual sites.
- Definition of baseline air quality and identification of sensitive areas across the UK.
- Odour surveys to assess amenity and suitability of sites for potential future development for residential use.
- Odour monitoring at industrial sites to quantify odour emission rates.

SELECT PROJECTS SUMMARY:**Industrial and Agricultural**

Discovery Park, Sandwich - Air Quality Assessment including dispersion modelling of gas fired steam generating boilers in support of a Medium Combustion Plant (MCP) Environmental Permit Application.

St Thomas House, Ellesmere Port - Air Quality Assessment including dispersion modelling of two biomass boilers firing wood pellets.

Herriard Anaerobic Digester - H1 Screening Assessment in accordance with Environment Agency guidance.

Halls Farm, Bude - Ammonia and Odour Assessments in support of a proposed farm expansion, including the construction of a cattle slurry lagoon and livestock housing

London Luton Airport - Air Quality Assessment including dispersion modelling of gas fired boilers in support of a MCP Environmental Permit Application.

Rectory Farm, Aldborough - Odour Assessment in support of the development of livestock housing.

Ashfields, Tilbury - Dust Assessment in support of the extraction of Pulverised Fuel Ash associated with the former Tilbury Power Station.

Poplar Farm, Bedfield - Dust Assessment and Management Plan for an aggregate processing facility.

Crown Chicken, Kenninghall - Air Quality, Odour and Dust Environmental Impact Assessment (EIA) in support of a farm expansion.

Residential

Jack Chase Way, Caister - Air Quality EIA in support of a planning application for circa 725 dwellings.

New Road, Tintwistle - Odour Assessment including dispersion modelling of the Tintwistle Sewage Treatment Works in order to determine suitability of adjacent land for residential use

St Nicholas Circle, Leicester - Air Quality Assessment including dispersion modelling of road traffic sources to determine suitability of the site for student accommodation.

Land East and West of A140, Long Stratton - Air Quality EIA for a large scale residential development.

Meadley Square, Knaresborough - Odour Assessment including site surveys and a risk assessment to determine potential for loss of amenity to future occupants due to adverse odours generated by an adjacent takeaway.

Main Street, Port Rush - Kitchen Odour Impact Assessment in support of a proposed restaurant with residential apartments above

Commercial and Retail

Downtown Grantham Designer Outlet - Air Quality EIA in support of the development of a retail outlet

North Acton Road, London - Air Quality Assessment in support of the development of a seven storey building to include a café and commercial floor space.

Great Homer Street, Liverpool - Investigative Odour Survey at an existing McDonalds restaurant.

Ashdown Business Park, Kent - Air Quality Assessment in support of a Premier Inn Hotel and Drive-Thru Costa Coffee.

Sandbrook Park, Rochdale - Air Quality Assessment in support of 14 business/industrial units.

KEY EXPERIENCE:

Ceri is an Environmental Consultant with specialist experience in the air quality and odour sectors. Her key capabilities include:

- Definition of baseline air quality and identification of sensitive areas across the UK.
- Field Odour Surveys in line with Institute of Air Quality Management (IAQM) methodology to assess amenity and suitability of sites for potential future development for residential use.
- Dispersion modelling of odours from a range of sources, including industrial and commercial facilities to predict the odour footprint and likely effects on amenity of nearby sensitive receptors.
- Kitchen Odour Assessments in line with the EMAQ+ and Department of Environmental, Food and Rural Affairs (DEFRA) guidance to assess the potential for odour impacts as a result of emissions from commercial kitchens.
- Odour Risk Assessments following the IAQM methodology to identify the source-pathway-receptor relationship between proposed odour sources and existing sensitive receptor locations.

SELECT PROJECTS SUMMARY:

Greenoakhill Landfill Site, Glasgow

Environmental Impact Assessment comprising Field Odour Surveys and Dispersion Modelling in support of the extension of Greenoakhill Landfill, Glasgow. The facility has the potential to form a source of odour emissions during normal operation. Following consideration of the Field Odour Surveys and Dispersion Modelling of predicted impacts, the significance of change was concluded to be not significant as a result of the extension.

Castle Street, Macclesfield

Kitchen Odour Assessment undertaken in line with the EMAQ+ and DEFRA guidance in support of four hot food retail units on land off Castle Street, Macclesfield. Site-specific odour abatement options were identified in order to conform with best practice guidance. Based on the inclusion of the specified mitigation, odour effects associated with the development were not considered a constraint to planning consent.

Kings Arms Hotel, Stansted

Odour Assessment in support of a Discharge of Condition application for a consented development on land to the rear of the Kings Arms Hotel, Stansted. The site was located in close proximity to several fast food restaurants which have the potential to cause odour emissions during normal operation. A mitigation scheme was therefore identified to protect future residents from loss of amenity. Subject to the inclusion of the specified mitigation, overall effects of odour were considered to be not significant at the development.

Manchester Road West, Little Hulton

Odour Assessment in support of construction of 152 residences on land off Manchester Road West, Little Hulton. The development was located in the vicinity of several waste management facilities which may form a source of odour emissions and cause loss of amenity for future residents. A two stage Odour Assessment was undertaken to assess baseline conditions across the site and consider the risk of reduced amenity. Results of the assessment indicated odour effects at the site did not represent a constraint to planning consent.

Gravel Pit Farm, Sand Hutton

Odour Assessment in support of the conversion of existing buildings into two residential dwellings on land at Gravel Pit Farm, Sand Hutton. The development was located in the vicinity of the Sand Hutton Anaerobic Digestion Plant, which may form a source of odour emissions and cause loss of amenity for future residents. Results of a two stage Odour Assessment indicated odour effects at the site were not significant. As such, odour was not considered to represent a constraint to planning consent.

A1 Trunk Road, Long Bennington

Odour Assessment in support of a planning application for a residential development on land off the A1 Trunk Road, Long Bennington. The development was located in the vicinity of a maggot farm growing bait for fishermen. Results of a two stage Odour Assessment indicated that at the location of the proposed dwellings, impacts were not at a level considered to cause loss of amenity as a result of emissions. As such, odour was not considered to represent a constraint to planning consent.

KEY EXPERIENCE:

Megan is an Environmental Consultant with specialist experience in the air quality sector. Her key capabilities include:

- Production of Air Quality Assessments in accordance with Department for Environment, Food and Rural Affairs (DEFRA) methodologies for a range of residential, commercial and industrial sectors.
- Detailed dispersion modelling of road vehicle exhaust emissions using ADMS-Roads. Studies have included impact assessments on sensitive receptors and exposure of new residents to poor air quality.
- Advanced Canyon Modelling to evaluate the impact of altered urban topography on air quality in built up areas.
- Assessment of construction dust impacts from a range of development sites.
- Production of Air Quality Neutral Assessments in accordance with The London Plan.
- Installation and management of diffusion tube monitoring campaigns in order to determine the potential for exposure of sensitive receptors to poor air quality.

SELECT PROJECTS SUMMARY:

Whitebirk, Blackburn

Air Quality Assessment in support of a residential development comprising demolition of existing buildings and construction of 152 dwellings on land at the Whitebirk Estate, Blackburn. The development had the potential to expose future occupants to any existing air quality issues and cause impacts at sensitive locations. Dispersion modelling was undertaken using ADMS-Roads. A construction dust assessment was also performed to provide mitigation for proposed dust generating activities. Results of the study indicated that air quality impacts and fugitive dust emissions were not significant.

Willow Lane, Mitcham

Air Quality Assessment in support of an industrial development off Willow Lane, Mitcham. Due to the size of the development, it was possible that traffic generated from the scheme may cause negative impacts on sensitive receptors nearby. NO₂ and PM₁₀ concentrations were quantified at specific receptor points to ensure there would be no significant increases in pollution levels. Results revealed negligible impacts at all locations. An Air Quality Neutral Assessment was also undertaken in accordance with the London Plan. Following implementation of relevant mitigation measures, the development was considered Air Quality Neutral.

Harrow Road, London

Air Quality Assessment in support of a nursery. Detailed dispersion modelling, including advanced canyon inputs, was undertaken to evaluate the potential for exposure of future occupants to any existing issues at the site. The results indicated air quality conditions did not present an issue to planning consent.

The Green, Cheadle

Air Quality Assessment in support of a new Aldi store off the Green, Cheadle. Following concerns from the Local Authority regarding the potential for traffic generated by the proposals to cause air quality impacts, dispersion modelling was undertaken in order to quantify changes in pollutant concentrations at sensitive locations in the vicinity of the site. Results revealed negligible impacts at all locations.

Holloway Road, London

Kitchen Odour Assessment undertaken in line with the EMAQ+ and DEFRA guidance in support of a new restaurant on Holloway Road, London. Site-specific odour abatement options were identified in order to conform with best practice guidance. Based on the inclusion of the specified mitigation, odour effects associated with the development were not considered a constraint to planning consent.

Wyebridge Motors, Hereford

Ambient Air Quality Monitoring in support of a residential development. The Local Authority raised concerns regarding the exposure of future residents to poor air quality as a result of pollution from the adjacent A49. Due to the irregular topography of the area, a scheme of diffusion tube monitoring was undertaken to determine baseline NO₂ concentrations at the site. Results indicated that concentrations were below the Air Quality Objective at the building façade and as such, the risk for exposure of future residents to poor air quality was not considered significant.