# Air Quality Assessment

# Guildford Road, Horsham

**Client: Welbeck Strategic Land IV LLP**

**Reference: 9275r1**

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## Report Issue

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## Executive Summary

Redmore Environmental Ltd was commissioned by Welbeck Strategic Land IV LLP to undertake an Air Quality Assessment in support of a residential development on land off Guildford Road, Rudgwick, Horsham.

An Air Quality Assessment was undertaken to:

- Assess potential impacts associated with fugitive dust emissions during the construction phase of the proposed development;
- Assess potential impacts associated with road transport emissions during the operational phase of the proposed development; and,
- Identify any requirement for relevant mitigation measures.

Potential construction phase impacts from fugitive dust emissions were assessed as a result of earthworks, construction and trackout activities. It is considered that the use of the identified site-specific control measures would provide suitable mitigation for a development of this size and nature and reduce potential impacts to an acceptable level.

Potential impacts during the operational phase of the proposals may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the site. These were assessed using standard screening criteria. Due to the low number of vehicle trips associated with the development, road traffic exhaust emission impacts were not predicted to be significant.

Potential emissions from the proposals were assessed in line with the requirements of the Air Quality and Emissions Mitigation Guidance for Sussex. This included completion of an Emissions Mitigation Assessment in order to determine the appropriate level of mitigation required for the scheme.

Based on the assessment results, air quality factors are not considered a constraint to planning consent for the proposals.

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# 1.0 INTRODUCTION

## 1.1 Instruction

1.1.1 Redmore Environmental Ltd was commissioned by Welbeck Strategic Land IV LLP to undertake an Air Quality Assessment in support of a residential development on land off Guildford Road, Rudgwick, Horsham.

## 1.2 Site Location and Context

1.2.1 The site is located on land off Guildford Road, Rudgwick, Horsham, at approximate National Grid Reference (NGR): 507980, 133040. The relevant Local Authority (LA) is Horsham District Council (HDC). Reference should be made to Figure 1 for a map of the site and surrounding area.

1.2.2 The proposals comprise the construction of 90 residential dwellings with associated car parking, access and landscaping.

## 1.3 Assessment Scope

1.3.1 The proposals have the potential to cause air quality impacts at sensitive locations. As such, an Air Quality Assessment was undertaken to:

- Assess potential impacts associated with fugitive dust emissions during the construction phase of the development;
- Assess potential impacts associated with road transport emissions during the operational phase of the development; and,
- Identify any requirement for relevant mitigation measures.

1.3.2 This is detailed in the following report.

# 2.0 LEGISLATION AND POLICY

## 2.1 Legislation

2.1.1 The Air Quality Standards Regulations (2010) and subsequent amendments include Air Quality Limit Values (AQLVs) for the following pollutants:

- Nitrogen dioxide ($NO_2$);
- Sulphur dioxide;
- Lead;
- Particulate matter with an aerodynamic diameter of less than 10µm ($PM_{10}$);
- Particulate matter with an aerodynamic diameter of less than 2.5µm ($PM_{2.5}$);
- Benzene; and,
- Carbon monoxide.

2.1.2 Air Quality Target Values were also provided for several additional pollutants. It should be noted that the AQLV for $PM_{2.5}$ stated in the Air Quality Standards Regulations (2010) was amended in the Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020).

2.1.3 The Air Quality Strategy (AQS) was produced by the Department for Environment, Food and Rural Affairs (DEFRA) and published on 28th April 2023[1]. The document contains standards, objectives and measures for improving ambient air quality, including a number of Air Quality Objectives (AQOs). These are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedences over a specified timescale. These are generally in line with the AQLVs, although the requirements for the determination of compliance vary.

2.1.4 The Environmental Improvement Plan 2023[2] was published in January 2023, providing long term and Interim Targets in order to reduce population exposure to $PM_{2.5}$. The Concentration Target for 2040 was subsequently adopted in the Environmental Targets (Fine Particulate Matter) (England) Regulations (2023).

[1] AQS: Framework for Local Authority Delivery, DEFRA, 2023.

[2] Environmental Improvement Plan 2023, DEFRA, 2023.

2.1.5 Table 1 presents the AQOs, Interim Target and Concentration Target for pollutants considered within this assessment.

**Table 1 Air Quality Objectives/ Interim Target /Concentration Target**

| Pollutant | Air Quality Objective/ Interim Target/ Concentration Target | |
|---|---|---|
| | Concentration (µg/m³) | Averaging Period |
| $NO_2$ | 40 | Annual mean |
| | 200 | 1-hour mean, not to be exceeded on more than 18 occasions per annum |
| $PM_{10}$ | 40 | Annual mean |
| | 50 | 24-hour mean, not to be exceeded on more than 35 occasions per annum |
| $PM_{2.5}$ | 12[(a)] | Annual mean |
| | 10[(b)] | Annual mean |

Note: (a) Interim Target to be achieved by end of January 2028.
(b) Concentration Target to be achieved by 2040.

2.1.6 Table 2 summarises the advice provided in DEFRA guidance[3] on where the AQOs for pollutants considered within this report apply.

**Table 2 Examples of Where the Air Quality Objectives Apply**

| Averaging Period | Objective Should Apply At | Objective Should Not Apply At |
|---|---|---|
| Annual mean | All locations where members of the public might be regularly exposed<br>Building façades of residential properties, schools, hospitals, care homes etc. | Building façades of offices or other places of work where members of the public do not have regular access<br>Hotels, unless people live there as their permanent residence<br>Gardens of residential properties<br>Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term |

[3] Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

| Averaging Period | Objective Should Apply At | Objective Should Not Apply At |
|---|---|---|
| 24-hour mean | All locations where the annual mean objective would apply, together with hotels<br>Gardens of residential properties | Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term |
| 1-hour mean | All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets)<br>Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more<br>Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer | Kerbside sites where the public would not be expected to have regular access |

## 2.2 Local Air Quality Management

2.2.1 LAs are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves comparing present and likely future pollutant concentrations against the AQOs. If it is predicted that levels at locations of relevant exposure, as summarised in Table 2, are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA). For each AQMA the LA is required to produce an Air Quality Action Plan, the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

## 2.3 Dust

2.3.1 The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such as construction sites, 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 LA 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.

## 2.4 National Planning Policy

2.4.1 The revised National Planning Policy Framework[4] (NPPF) was published in December 2024 and 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 achievements of sustainable development. In order to ensure this, the NPPF recognises three overarching objectives including the following of relevance to air quality:

> "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 15 of the NPPF details objectives in relation to conserving and enhancing the natural environment. It states that:

> "Planning policies and decisions should contribute to and enhance the natural and local environment by:
>
> […]
>
> e) preventing new and existing development from contributing to, or being put at unacceptable risk from, or being adversely affected by, unacceptable levels of

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

soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality […]"

2.4.4 The NPPF specifically recognises air quality as part of delivering sustainable development and states that:

"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."

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

## 2.5 National Planning Practice Guidance

2.5.1 The National Planning Practice Guidance[5] (NPPG) web-based resource was launched by the Department for Communities and Local Government to support the NPPF and make it more accessible. The air quality pages are summarised under the following headings:

1. What air quality considerations does planning need to address?
2. What is the role of plan-making with regard to air quality?
3. Are air quality concerns relevant to neighbourhood planning?
4. What information is available about air quality?
5. When could air quality be relevant to the planning development management process?
6. What specific issues may need to be considered when assessing air quality impacts?

[5] https://www.gov.uk/guidance/air-quality--3.

7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?

2.5.2 These were reviewed and the relevant guidance considered as necessary throughout the undertaking of this assessment.

## 2.6 Local Planning Policy

2.6.1 The Horsham District Planning Framework[6] was adopted by HDC in November 2015. A review of the document indicated the following policies of relevance to this assessment:

> "Policy 1
>
> Strategic Policy: Sustainable Development
>
> When considering development proposals the Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the National Planning Policy Framework. It will always work pro-actively with applicants jointly to find solutions which mean that proposals can be approved wherever possible, and to secure development that improves the economic, social and environmental conditions in the area.
>
> Planning applications that accord with the policies in this Local Plan (and, where relevant, with polices in neighbourhood plans) will be approved without delay, unless material considerations indicate otherwise.
>
> Where there are no policies relevant to the application or relevant policies are out of date at the time of making the decision then the Council will grant permission, unless material considerations indicate otherwise – taking into account whether:
>
> - Any adverse impacts of granting permission would significantly and demonstrably outweigh the benefits, when assessed against the policies in the National Planning Policy Framework taken as a whole; or

6 Horsham District Planning Framework, HDC, 2015.

- Specific policies in that Framework indicate that development should be restricted."

"Policy 24

Strategic Policy: Environmental Protection

The high quality of the district's environment will be protected through the planning process and the provision of local guidance documents. Taking into account any relevant Planning Guidance Documents, developments will be expected to minimise exposure to and the emission of pollutants including noise, odour, air and light pollution and ensure that they:

[…]

4. Minimise the air pollution and greenhouse gas emissions in order to protect human health and the environment;
5. Contribute to the implementation of local Air Quality Action Plans and do not conflict with its objectives;
6. Maintain or reduce the number of people exposed to poor air quality including odour. Consideration should be given to development that will result in new public exposure, particularly where vulnerable people (e.g. the elderly, care homes or schools) would be exposed to the areas of poor air quality; […]"

2.6.2 The Sussex Air Quality Partnership has produced the 'Air Quality and Emissions Mitigation Guidance for Sussex'[7] document in order to provide guidance on air quality considerations that should be made in relation to new developments. The guidance focusses on measures to reduce transport and construction related emissions from proposals in the district.

2.6.3 The above policies and guidance were taken into consideration throughout the undertaking of the assessment.

[7] Air Quality and Emissions Mitigation Guidance for Sussex, Sussex Air Quality Partnership, 2021.

# 3.0 METHODOLOGY

## 3.1 Introduction

3.1.1 The proposed development has the potential to cause air quality impacts during the construction and operational phases. These have been assessed in accordance with the following methodology.

## 3.2 Construction Phase Assessment

3.2.1 There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the Institute of Air Quality Management (IAQM) document 'Guidance on the Assessment of Dust from Demolition and Construction V2.2'[8].

3.2.2 Activities on the proposed construction site have been divided into three types to reflect their different potential impacts. These are:

- Earthworks;
- Construction; and,
- Trackout.

3.2.3 The potential for dust emissions was assessed for each activity that is likely to take place and considered three separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and,
- The risk of health effects due to a significant increase in exposure to $PM_{10}$.

3.2.4 The assessment steps are detailed below.

8 Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

**Step 1 - Screen the Need for an Assessment**

3.2.5 Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 250m from the boundary or 50m from the construction vehicle route up to 250m from the site entrance, then the assessment proceeds to Step 2. Additionally, should ecological receptors be identified within 50m of the site or the construction vehicle route up to 250m from the site entrance, then the assessment also proceeds to Step 2.

3.2.6 Should sensitive receptors not be present within the relevant distances then **negligible** impacts would be expected and further assessment is not necessary.

**Step 2 - Assess the Risk of Dust Impacts**

3.2.7 Step 2 assesses the risk of potential dust impacts. A site is allocated a risk category based on two factors:

- The scale and nature of the works, which determines the magnitude of dust arising as: small, medium or large (Step 2A); and,
- The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity (Step 2B).

3.2.8 The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied.

3.2.9 Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table 3.

**Table 3 Construction Dust - Magnitude of Emission**

| Magnitude | Activity | Criteria |
|---|---|---|
| Large | Earthworks | • Total site area greater than 110,000m$^2$<br>• Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size)<br>• More than 10 heavy earth moving vehicles active at any one time<br>• Formation of bunds greater than 6m in height |

| Magnitude | Activity | Criteria |
|---|---|---|
| | Construction | • Total building volume greater than 75,000m$^3$<br>• On site concrete batching<br>• Sandblasting |
| | Trackout | • More than 50 Heavy Duty Vehicle (HDV) trips per day<br>• Potentially dusty surface material (e.g. high clay content)<br>• Unpaved road length greater than 100m |
| Medium | Earthworks | • Total site area 18,000m$^2$ to 110,000m$^2$<br>• Moderately dusty soil type (e.g. silt)<br>• 5 to 10 heavy earth moving vehicles active at any one time<br>• Formation of bunds 3m to 6m in height |
| | Construction | • Total building volume 12,000m$^3$ to 75,000m$^3$<br>• Potentially dusty construction material (e.g. concrete)<br>• On site concrete batching |
| | Trackout | • 20 to 50 HDV trips per day<br>• Moderately dusty surface material (e.g. high clay content)<br>• Unpaved road length 50m to 100m |
| Small | Earthworks | • Total site area less than 18,000m$^2$<br>• Soil type with large grain size (e.g. sand)<br>• Less than 5 heavy earth moving vehicles active at any one time<br>• Formation of bunds less than 3m in height |
| | Construction | • Total building volume less than 12,000m$^3$<br>• Construction material with low potential for dust release (e.g. metal cladding or timber) |
| | Trackout | • Less than 20 HDV trips per day<br>• Surface material with low potential for dust release<br>• Unpaved road length less than 50m |

3.2.10 Step 2B defines the sensitivity of the area around the development to potential dust impacts. The sensitivities of specific receptors are summarised in Table 4.

**Table 4 Construction Dust - Sensitivities of People and Ecological Receptors**

| Receptor Sensitivity | Examples | |
|---|---|---|
| | Human Receptors | Ecological Receptors |
| High | • Users expect high levels of amenity<br>• High aesthetic or value property<br>• People expected to be present continuously for extended periods of time<br>• Locations where members of the public are exposed over a time period relevant to the AQO for $PM_{10}$. e.g. residential properties, hospitals, schools and residential care homes | • Internationally or nationally designated site e.g. Special Area of Conservation |
| Medium | • Users would expect to enjoy a reasonable level of amenity<br>• Aesthetics or value of their property could be diminished by soiling<br>• People or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land e.g. parks and places of work | • Nationally designated site e.g. Sites of Special Scientific Interest |
| Low | • Enjoyment of amenity would not reasonably be expected<br>• Property would not be expected to be diminished in appearance<br>• Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, playing fields, shopping streets, farmland, short term car parks and roads | • Locally designated site e.g. Local Nature Reserve |

3.2.11 The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in Table 5.

**Table 5 Construction Dust - Sensitivity of the Area to Dust Soiling Effects on People and Property**

| Receptor Sensitivity | Number of Receptors | Distance from the Source (m) | | | |
|---|---|---|---|---|---|
| | | Less than 20 | Less than 50 | Less than 100 | Less than 250 |
| High | More than 100 | High | High | Medium | Low |
| | 10 - 100 | High | Medium | Low | Low |

| Receptor Sensitivity | Number of Receptors | Distance from the Source (m) | | | |
|---|---|---|---|---|---|
| | | Less than 20 | Less than 50 | Less than 100 | Less than 250 |
| | 1 - 10 | Medium | Low | Low | Low |
| Medium | More than 1 | Medium | Low | Low | Low |
| Low | More than 1 | Low | Low | Low | Low |

3.2.12 Table 6 outlines the criteria for determining the sensitivity of the area to human health impacts.

**Table 6 Construction Dust - Sensitivity of the Area to Human Health Impacts**

| Receptor Sensitivity | Background Annual Mean $PM_{10}$ Concentration | Number of Receptors | Distance from the Source (m) | | | |
|---|---|---|---|---|---|---|
| | | | Less than 20 | Less than 50 | Less than 100 | Less than 250 |
| High | Greater than 32µg/m$^3$ | More than 100 | High | High | High | Medium |
| | | 10 - 100 | High | High | Medium | Low |
| | | 1 - 10 | High | Medium | Low | Low |
| | 28 - 32µg/m$^3$ | More than 100 | High | High | Medium | Low |
| | | 10 - 100 | High | Medium | Low | Low |
| | | 1 - 10 | High | Medium | Low | Low |
| | 24 - 28µg/m$^3$ | More than 100 | High | Medium | Low | Low |
| | | 10 - 100 | High | Medium | Low | Low |
| | | 1 - 10 | Medium | Low | Low | Low |
| | Less than 24µg/m$^3$ | More than 100 | Medium | Low | Low | Low |
| | | 10 - 100 | Low | Low | Low | Low |
| | | 1 - 10 | Low | Low | Low | Low |
| Medium | Greater than 32µg/m$^3$ | More than 10 | High | Medium | Low | Low |
| | | 1 - 10 | Medium | Low | Low | Low |
| | 28 - 32µg/m$^3$ | More than 10 | Medium | Low | Low | Low |
| | | 1 - 10 | Low | Low | Low | Low |

| Receptor Sensitivity | Background Annual Mean $PM_{10}$ Concentration | Number of Receptors | Distance from the Source (m) | | | |
|---|---|---|---|---|---|---|
| | | | Less than 20 | Less than 50 | Less than 100 | Less than 250 |
| | 24 - 28µg/m$^3$ | More than 10 | Low | Low | Low | Low |
| | | 1 -10 | Low | Low | Low | Low |
| | Less than 24µg/m$^3$ | More than 10 | Low | Low | Low | Low |
| | | 1 - 10 | Low | Low | Low | Low |
| Low | - | 1 or more | Low | Low | Low | Low |

3.2.13 Table 7 outlines the criteria for determining the sensitivity of the area to ecological impacts.

**Table 7 Construction Dust - Sensitivity of the Area to Ecological Impacts**

| Receptor Sensitivity | Distance from the Source (m) | |
|---|---|---|
| | Less than 20 | Less than 50 |
| High | High | Medium |
| Medium | Medium | Low |
| Low | Low | Low |

3.2.14 Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts.

3.2.15 Table 8 outlines the risk category from earthworks, construction and trackout activities.

**Table 8 Construction Dust - Dust Risk Category from Earthworks, Construction and Trackout Activities**

| Receptor Sensitivity | Dust Emission Magnitude | | |
|---|---|---|---|
| | Large | Medium | Small |
| High | High | Medium | Low |
| Medium | Medium | Medium | Low |
| Low | Low | Low | Negligible |

**Step 3 - Site-specific Mitigation**

3.2.16 Step 3 requires the identification of site-specific mitigation measures within the IAQM guidance[9] to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with **negligible** risk, mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

**Step 4 - Determine Significant Effects**

3.2.17 Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step is to determine the significance of any residual impacts. For almost all construction activity, the aim should be to control effects through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be **not significant**.

3.2.18 The determination of significance relies on professional judgement and reasoning should be provided as far as practicable. The IAQM guidance suggests the provision of details of the assessor's qualifications and experience. These are provided in Appendix 1.

## 3.3 Operational Phase Assessment

3.3.1 The development has the potential to increase concentrations of $NO_2$, $PM_{10}$ and $PM_{2.5}$ as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site during the operational phase. An assessment was therefore undertaken using the criteria contained within the IAQM 'Land-Use Planning & Development Control: Planning for Air Quality'[10] guidance to determine the potential for trips generated by the development to affect local air quality.

3.3.2 The following criteria are provided to help establish when an assessment of potential impacts on the local area is likely to be considered necessary:

A. If any of the following apply:

[9] Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

[10] Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

- 10 or more residential units or a site area of more than 0.5ha; or,
- More than 1,000m$^2$ of floor space for all other uses or a site area greater than 1ha.

B. Coupled with any of the following:

- The development has more than 10 parking spaces; or,
- The development will have a centralised energy facility or other centralised combustion process.

3.3.3 Should these criteria not be met, then the IAQM guidance[11] considers air quality impacts associated with a scheme to be **not significant** and no further assessment is required.

3.3.4 Where the above criteria are met, then the assessor should proceed to assess the development proposals against the following Stage 2 screening criteria:

- The development leads to a change of Light Duty Vehicle (LDV) flows of:
  - More than 100 Annual Average Daily Traffic (AADT) within an AQMA;
  - More than 500 AADT outside of an AQMA;
- The development leads to a change of Heavy Duty Vehicle (HDV) flows of:
  - More than 25 AADT within an AQMA;
  - More than 100 AADT outside of an AQMA;
- Introduce a new junction that would cause traffic flow to change behaviour with respect to acceleration/deceleration or introduce queueing traffic where there previously wasn't any (such as a roundabout or traffic lights); and,
- Introduce one or more significant combustion processes where there is a risk of impact to relevant receptors.

3.3.5 Should these criteria not be met, then the IAQM guidance[12] considers air quality impacts associated with a scheme to be **not significant** and no further assessment is required. Where the screening criteria is met, further assessment including atmospheric dispersion modelling of impacts may be required.

11 Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

12 Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

# 4.0 BASELINE

## 4.1 Introduction

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

## 4.2 Local Air Quality Management

4.2.1 As required by the Environment Act (1995), as amended by the Environment Act (2021), HDC has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual mean $NO_2$ concentrations are above the AQO within the district. Two AQMAs have therefore been declared. The closest of these to the site is described as follows:

> "Horsham Cowfold AQMA: Cowfold town centre incorporating The Street, part of Station Road and Bolney Road."

4.2.2 The site is located approximately 16.3km north-west of the AQMA. It is considered unlikely the proposals would cause air quality impacts over a distance of this magnitude. As such, the AQMA has not been considered further in the context of this assessment.

4.2.3 HDC has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs. As such, no further AQMAs have been designated.

## 4.3 Air Quality Monitoring

4.3.1 HDC do not undertake $NO_2$ monitoring within the vicinity of the site, with the closest survey position approximately 7.1km south-east of the development. It is considered unlikely that pollution levels would be comparable over a distance of this magnitude. As such, this source of data was not considered further in the context of the assessment.

## 4.4 Background Pollutant Concentrations

4.4.1 Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK to assist LAs in their Review and Assessment of air quality. The proposed development site is located in a number of grid squares. Data for these locations was downloaded from the DEFRA website[13] for the purpose of the assessment and is summarised in Table 9.

**Table 9 Background Pollutant Concentration Predictions**

| NGR (m) | Predicted 2025 Background Annual Mean Pollutant Concentration (µg/m³) | | |
|---|---|---|---|
| | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
| 507500, 132500 | 6.26 | 10.20 | 6.12 |
| 507500, 133500 | 6.39 | 10.62 | 6.21 |
| 508500, 132500 | 6.39 | 10.31 | 6.15 |
| 508500, 133500 | 6.46 | 10.39 | 6.34 |

4.4.2 As shown in Table 9, predicted background $NO_2$, $PM_{10}$ and $PM_{2.5}$ concentrations are below the relevant AQOs and Concentration Target at the development site.

## 4.5 Sensitive Receptors

4.5.1 A sensitive receptor is defined as any location which may be affected by changes in air quality as a result of a development. Receptors sensitive to potential dust impacts during earthworks and construction were identified from a desk-top study of the area up to 250m from the development boundary. These are summarised in Table 10.

**Table 10 Earthworks and Construction Dust Sensitive Receptors**

| Distance from Site Boundary (m) | Approximate Number of Human Receptors | Approximate Number of Ecological Receptors |
|---|---|---|
| Up to 20 | 10 - 100 | 0 |
| Up to 50 | 10 - 100 | 0 |

[13] http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021.

| Distance from Site Boundary (m) | Approximate Number of Human Receptors | Approximate Number of Ecological Receptors |
|---|---|---|
| Up to 100 | More than 100 | - |
| Up to 250 | More than 100 | - |

4.5.2 Receptors sensitive to potential dust impacts from trackout were identified from a desk-top study of the area up to 50m from the road network within 250m of the site access. These are summarised in Table 11.

**Table 11 Trackout Dust Sensitive Receptors**

| Distance from Site Access Route (m) | Approximate Number of Human Receptors | Approximate Number of Ecological Receptors |
|---|---|---|
| Up to 20 | More than 100 | 0 |
| Up to 50 | More than 100 | 0 |

4.5.3 There are no ecological receptors within 50m of the development boundary or the access route within 250m of the site entrance. As such, ecological impacts have not been assessed further within this report.

4.5.4 Based on the criteria shown in Table 4, the sensitivity of the receiving environment to potential dust impacts was determined as **high**. This was because the identified receptors included residential properties.

# 5.0 CONSTRUCTION PHASE ASSESSMENT

## 5.1 Introduction

5.1.1 There is the potential for air quality impacts as a result of the construction of the proposed development. These are assessed in the following Sections.

## 5.2 Step 1 - Screen the Need for an Assessment

5.2.1 The undertaking of activities such as excavation, ground works, cutting, construction, concrete batching and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements both on-site and on the local road network also have the potential to result in the re-suspension of dust from highway surfaces.

5.2.2 The potential for impacts at sensitive locations depends significantly on local meteorology during the undertaking of dust generating activities, with the most significant effects likely to occur during dry and windy conditions.

5.2.3 The desk-study undertaken to inform the baseline identified a number of sensitive receptors within 250m of the site boundary. As such, a detailed assessment of potential dust impacts was required.

## 5.3 Step 2a - Define the Potential Dust Emission Magnitude

**Earthworks**

5.3.1 Earthworks will primarily involve excavating material, haulage, tipping and stockpiling, as well as site levelling and landscaping. The area of the proposed development site is between 18,000m$^2$ and 110,000m$^2$. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from earthworks is therefore **medium**.

**Construction**

5.3.2 The total building volume will be between 12,000m$^3$ and 75,000m$^3$. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from

construction is therefore **medium**.

**Trackout**

5.3.3 Based on the site area, it is anticipated that the unpaved road length may be greater than 100m during specific stages of construction. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from trackout is therefore **large**.

## 5.4 Step 2b - Define the Sensitivity of the Area

**Dust Soiling**

5.4.1 Table 10 shows that there are between 10 and 100 **high** sensitivity receptors within 20m of the site boundary. The sensitivity of the area with respect to dust soiling from earthworks and construction, as defined using the criteria summarised in Table 5, is therefore considered to be **high**.

5.4.2 Table 11 shows that there are more than 100 **high** sensitivity receptors within 20m of the road network within 250m of the site access. The sensitivity of the area with respect to dust soiling from trackout, as defined using the criteria summarised in Table 5, is therefore considered to be **high**.

**Human Health**

5.4.3 Table 9 shows the highest annual mean $PM_{10}$ background concentration at the site is 10.62µg/$m^3$. As shown in Table 6, where the background annual mean $PM_{10}$ concentration is below 24µg/$m^3$ and there are between 10 and 100 **high** sensitivity receptors within 20m of the site boundary, the sensitivity of the area with respect to human health from earthworks and construction is considered to be **low**.

5.4.4 There are more than 100 **high** sensitivity receptors within 20m of the road network within 250m of the site access. The sensitivity of the area with respect to human health from trackout, as defined using the criteria in Table 6, is therefore considered to be **medium**.

## 5.5 Step 2c - Define the Risk of Dust Impacts

5.5.1 The derived dust emission magnitude for each activity has been combined with the sensitivity of the area to determine the risk of unmitigated impacts in line with the methodology set out in Table 8. A summary of the risk from each dust generating activity is provided in Table 12.

**Table 12 Summary of Potential Unmitigated Dust Risks**

| Potential Impact | Activity | Step 2A - Dust Emission Magnitude | Step 2B - Sensitivity of the Area | Step 2C - Risk |
|---|---|---|---|---|
| Dust Soiling | Earthworks | Medium | High | Medium |
| | Construction | Medium | High | Medium |
| | Trackout | Large | High | High |
| Human Health | Earthworks | Medium | Low | Low |
| | Construction | Medium | Low | Low |
| | Trackout | Large | Medium | Medium |

5.5.2 As indicated in Table 12, the potential risk of dust soiling impacts is **high** from trackout and **medium** from earthworks and construction. The potential risk of human health impacts is **medium** from trackout and **low** from earthworks and construction.

5.5.3 It should be noted that the potential for impacts depends significantly on the distance between the dust generating activity and receptor location. Risk was predicted based on a worst-case scenario of works being undertaken at the site boundary closest to each sensitive area. Therefore, actual risk is likely to be lower than that predicted during the majority of the construction phase.

## 5.6 Step 3 - Site-specific Mitigation

5.6.1 The IAQM guidance[14] provides potential mitigation measures to reduce impacts as a result of fugitive dust emissions during the construction phase. These have been adapted for the development site as summarised in Table 13. These may be reviewed prior to the

[14] Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

commencement of construction works and incorporated into a Construction Environmental Management Plan (CEMP) or similar if required by the LA.

**Table 13 Fugitive Dust Emission Mitigation Measures**

| Issue | Control Measure |
|---|---|
| Communications | • Develop and implement a stakeholder communications plan that includes community engagement before work commences on site<br>• Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager<br>• Display the head or regional office contact information<br>• Development and implement a Dust Management Plan |
| Site management | • Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken<br>• Make the complaints log available to the LA upon request<br>• Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the log book<br>• Hold regular liaison meetings with other high risk construction sites within 250m of the site boundary, to ensure plans are coordinated and dust and particulate matter emissions are minimised |
| Monitoring | • Undertake daily on-site and off-site inspection, where receptors are nearby, to monitor dust, record inspection results, and make the log available to the LA when asked<br>• Carry out regular site inspections, record inspection results, and make an inspection log available to the local authority<br>• Increase the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions |
| Site preparation | • Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible<br>• Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site<br>• Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period<br>• Avoid site runoff of water or mud<br>• Keep site fencing, barriers and scaffolding clean using wet methods<br>• Remove materials that have a potential to produce dust from site as soon as possible unless being re-used onsite<br>• Cover, seed or fence stockpiles to prevent wind whipping |

| Issue | Control Measure |
|---|---|
| Operating vehicle/machinery and sustainable travel | • Ensure all vehicles switch off engines when stationary - no idling vehicles<br>• Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable<br>• Impose and signpost a maximum speed limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas<br>• Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials |
| Operations | • Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques<br>• Ensure an adequate water supply on the site for effective dust suppression, using non-potable water where possible and appropriate<br>• Use enclosed chutes and conveyors and covered skips<br>• Minimise drop heights and use fine water sprays wherever appropriate<br>• Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods |
| Waste management | • Avoid bonfires and burning of waste materials |
| Construction | • Avoid scabbling (roughening of concrete surfaces) if possible<br>• Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out |
| Trackout | • Use water-assisted dust sweeper on access and local roads, if required<br>• Avoid dry sweeping of large areas<br>• Ensure vehicles entering and leaving site are covered to prevent escape of materials<br>• Implement a wheel washing system, if required<br>• Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits<br>• Access gates to be located at least 10m from receptors where possible |

## 5.7 Step 4 - Determine Significant Effects

5.7.1 Assuming the relevant mitigation measures outlined in Table 13 are implemented, the residual impact from all dust generating activities is predicted to be **not significant**, in accordance with the IAQM guidance[15].

15 Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

# 6.0 OPERATIONAL PHASE ASSESSMENT

## 6.1 Introduction

6.1.1 There is the potential for air quality impacts as a result of the operation of the proposed development. These are assessed in the following Sections.

## 6.2 Road Vehicle Exhaust Emissions

### Stage 1 Screening Criteria

6.2.1 Any vehicle movements associated with the development will generate exhaust emissions on the local road networks. The proposals have therefore been assessed against the IAQM[16] Stage 1 screening criteria detailed in Section 3.3. The development includes more than ten residential dwellings and more than ten car parking spaces. As such, the Stage 2 Screening Criteria have been considered below.

### Stage 2 Screening Criteria

6.2.2 Information provided by Motion, the Transport Consultants for the project, indicated the development is predicted to generate 492 daily vehicle movements, comprising 489 LDV movements and three HDV movements. Motion also provided the anticipated vehicle distribution across the local road network. This is summarised in Table 14.

**Table 14 Predicted Trip Generation**

| Road Link | Predicted Vehicle Trips (per day) | |
|---|---|---|
| | LDV | HDV |
| Lynwick Street | 5 | 0 |
| Loxwood Road | 20 | 0 |
| Haven Road | 54 | 0 |
| Church Street | 25 | 0 |
| A281 - Guildford Road (East) | 102 | 1 |

16 Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

| Road Link | Predicted Vehicle Trips (per day) | |
|---|---|---|
| | LDV | HDV |
| A281 - Guildford Road (West) | 283 | 2 |

6.2.3 As shown in Table 14, the proposal is not predicted to result in an increase in LDV flows of more than 500 AADT, or HDV flows of more than 100 AADT, on any road link. Additionally, the proposals do not include significant highway realignment or the introduction of a junction. As such, potential air quality impacts associated with operational phase road vehicle exhaust emissions are predicted to be **not significant**, in accordance with the IAQM[17] Stage 2 screening criteria shown in Section 3.3.

## 6.3 Air Quality and Emissions Mitigation Guidance for Sussex

### Development Classification

6.3.1 The Sussex Air Quality Partnership have developed Air Quality and Emissions Mitigation Guidance for Sussex[18] to improve air quality throughout the county and encourage emissions reductions to improve the environment and health of the population.

6.3.2 The guidance[19] provides a methodology for determining the scale of a development and the air quality mitigation required for the relevant banding. Review of the relevant criteria indicated the proposals were classed as a **major** development as:

- The number of dwellinghouses to be provided is 10 or more.

6.3.3 Based on the development classification, an Emissions Mitigation Assessment is required to determine the appropriate amount of required mitigation. This is summarised in the following Section.

17 Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

18 Air Quality and Emissions Mitigation Guidance for Sussex, Sussex Air Quality Partnership, 2021.

19 Air Quality and Emissions Mitigation Guidance for Sussex, Sussex Air Quality Partnership, 2021.

**Emissions Mitigation Assessment**

6.3.4 The guidance[20] sets out an Emissions Mitigation Assessment methodology in order to assess the local emissions from a development and determine the appropriate level of mitigation required to help reduce the potential effect on health and/or the local environment.

6.3.5 The first step of the Emissions Mitigation Assessment is to undertake a calculation to identify the monetary value of predicted emissions from the proposals and detail the mitigation measures to control air quality impacts associated with the scheme.

6.3.6 The calculation uses the Emissions Factor Toolkit (EFT) to calculate the amount of transport related pollutant emissions the development is likely to produce. The output is then multiplied by the Interdepartmental Group on Costs and Benefits damage costs for the key pollutants nitrogen oxides ($NO_x$) and $PM_{2.5}$ and finally multiplied by 5 to provide a five-year exposure cost value. This is the value of mitigation that is expected to be spent on measures to reduce the impact of the proposed development. This has been summarised in the following equation:

5 Year Exposure Cost Value = EFT Output x Damage Costs x 5

6.3.7 It should be noted that the calculation has been undertaken using the most recent damage costs released by DEFRA in March 2023[21].

6.3.8 The input data values used in the assessment are shown in Table 15.

[20] Air Quality and Emissions Mitigation Guidance for Sussex, Sussex Air Quality Partnership, 2021.

[21] Air Quality Appraisal: Damage Cost Guidance, DEFRA, 2023.

**Table 15 Emissions Mitigation Assessment - Inputs**

| Data | Value |
|---|---|
| Daily Vehicle Movements Produced by Development | 492 |
| HDV Proportion (%) | 0.61 |
| Average Speed (km/h) | 50 |
| Average Trip Length (km) | 10 |
| $NO_x$ Damage Costs (£/tonne)[(a)] | 7,545 |
| $PM_{2.5}$ Damage Costs (£/tonne)[(a)] | 52,114 |

Note: (a) Road Transport Urban Small Central Damage Cost.

6.3.9 The projected yearly emissions for each of the five years from opening are shown in Table 16.

**Table 16 Emissions Mitigation Assessment - Projected Emissions**

| Data | Value (tonnes/year) | | | | |
|---|---|---|---|---|---|
| | 2030 | 2031 | 2032 | 2033 | 2034 |
| $NO_x$ Output | 0.17 | 0.14 | 0.12 | 0.10 | 0.09 |
| $PM_{2.5}$ Output | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |

6.3.10 The calculation is shown in Table 17.

**Table 17 Damage Cost Calculation**

| Data | Value | | | | |
|---|---|---|---|---|---|
| | 2030 | 2031 | 2032 | 2033 | 2034 |
| Annual Cost of $NO_x$ Emissions (£) | 1,281 | 1,085 | 916 | 774 | 659 |
| Annual Cost of $PM_{2.5}$ Emissions (£) | 1,590 | 1,562 | 1,548 | 1,535 | 1,523 |
| Total Annual Exposure Cost Value (£) | 2,861 | 2,647 | 2,463 | 2,308 | 2,183 |
| Total Five Year Exposure Cost Value (£) | **12,463** | | | | |

6.3.16 As shown in Table 17, the total damage costs were calculated as £12,463.

**Mitigation**

6.3.17 The guidance[22] provides a number of mitigation measures that should be considered for inclusion within **major** developments. These were reviewed and those to be incorporated within the proposals include:

- Provision of Electric Vehicle (EV) charging points;
- Provision of secure cycle storage; and,
- Improvement of cycle paths to link to the existing local cycle network.

6.3.18 In addition to the above, the development will adhere to Fugitive Dust Emission Mitigation Measures throughout construction. These are outlined in Table 13.

6.3.19 Costs associated with the above measures were not available at the time of reporting. However, it is considered these are appropriate for a development of this scale and nature and will further control impacts during the operational phase. Exact details of mitigation can be secured by HDC via planning condition, if required.

## 6.4 Interim Planning Guidance for $PM_{2.5}$

6.4.1 Interim Planning Guidance[23] on the consideration of the $PM_{2.5}$ targets identified in the Environment Act (2021) in planning decisions has been produced by DEFRA. This requires evidence that the key sources of air pollution within a development have been identified and appropriate action to minimise $PM_{2.5}$ and its precursors as far as is reasonably practicable be provided in support of planning applications. To assist the process, two questions and associated considerations are provided. These are summarised in Table 18, along with the development response.

22 Air Quality and Emissions Mitigation Guidance for Sussex, Sussex Air Quality Partnership, 2021.

23 https://uk-air.defra.gov.uk/pm25targets/planning.

**Table 18 Interim Planning Guidance Questions**

| Question | Response |
|---|---|
| How has exposure to $PM_{2.5}$ been considered when selecting the development site?<br>Factors to consider include:<br>• Site proximity to people (particularly large populations and/or vulnerable groups, e.g. schools, hospitals, care homes, areas of deprivation) and the impact of the development on these<br>• Site proximity to pollution sources and the impact of these on users of the development<br>• Exposure and emissions during both construction and in-use | The proposals are located in a rural setting with a small number of residential properties and local businesses in the immediate vicinity. However, emissions from the proposals are unlikely to impact on these receptors. This is supported by the assessment results summarised in Section 3.0. There are no large populations or vulnerable groups in the vicinity of the site<br>The site is adjacent to the A281 - Guildford Road and associated vehicle emissions. However, $PM_{2.5}$ concentrations are unlikely to contribute significantly to pollution levels above background away from the kerbside. As such, users of the development are unlikely to be exposed to any existing air quality issues<br>As outlined in Table 13, a number of mitigation measures will be used throughout the construction phase in order to reduce fugitive dust emissions as far as practicable. This will control potential exposure at off-site locations |
| What actions and/or mitigations have been considered to reduce $PM_{2.5}$ exposure for development users and nearby receptors (houses, hospitals, schools etc.) and to reduce emissions of $PM_{2.5}$ and its precursors?<br>Factors to consider include:<br>• Site layout<br>• The development's design<br>• Technology used in the construction or installed for use in the development<br>• Construction and future use of the development | The design of the scheme includes provision of green infrastructure. This will aid in the reduction of $PM_{2.5}$ exposure for future residents through improved dispersion of pollution<br>In order to reduce emissions of $PM_{2.5}$ with associated impacts at nearby receptors, the following measures have been included within the scheme:<br>• Provision of EV charging point for each dwelling<br>• Provision of secure cycle storage<br>• Improvement of cycle paths to link to the existing local cycle network<br>Further to the above, in order to reduce emissions during the construction phase, a number of mitigation measures will be used to minimise dust generation from associated activities |

6.4.2 Based on the responses provided in Table 18 and the assessment results, as outlined in Sections 5.5 and 3.0, it is considered that the development has identified key sources of air pollution and taken appropriate action to minimise emissions of $PM_{2.5}$.

## 7.0 CONCLUSION

7.1.1 Redmore Environmental Ltd was commissioned by Welbeck Strategic Land IV LLP to undertake an Air Quality Assessment in support of a residential development on land off Guildford Road, Rudgwick, Horsham.

7.1.2 The development has the potential to cause air quality impacts at sensitive locations during the construction and operational phases. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions and consider potential effects as a result of the proposals.

7.1.3 During the construction phase of the development there is the potential for air quality impacts from fugitive dust emissions from the site. These were assessed in accordance with the IAQM methodology. Site-specific dust control measures were subsequently determined based on the identified risk ratings. Subject to implementation, residual air quality impacts from dust generated by earthworks, construction and trackout activities are predicted to be **not significant**.

7.1.4 Potential impacts during the operational phase of the proposed development may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the site. These were assessed against the screening criteria provided within the IAQM guidance[24]. Due to the low number of vehicle movements associated with the proposals, road traffic exhaust impacts were predicted to be **not significant**.

7.1.5 Potential emissions from the proposals were assessed in line with the requirements of the Air Quality and Emissions Mitigation Guidance for Sussex. This included completion of an Emissions Mitigation Assessment in order to determine the appropriate level of mitigation required for the scheme.

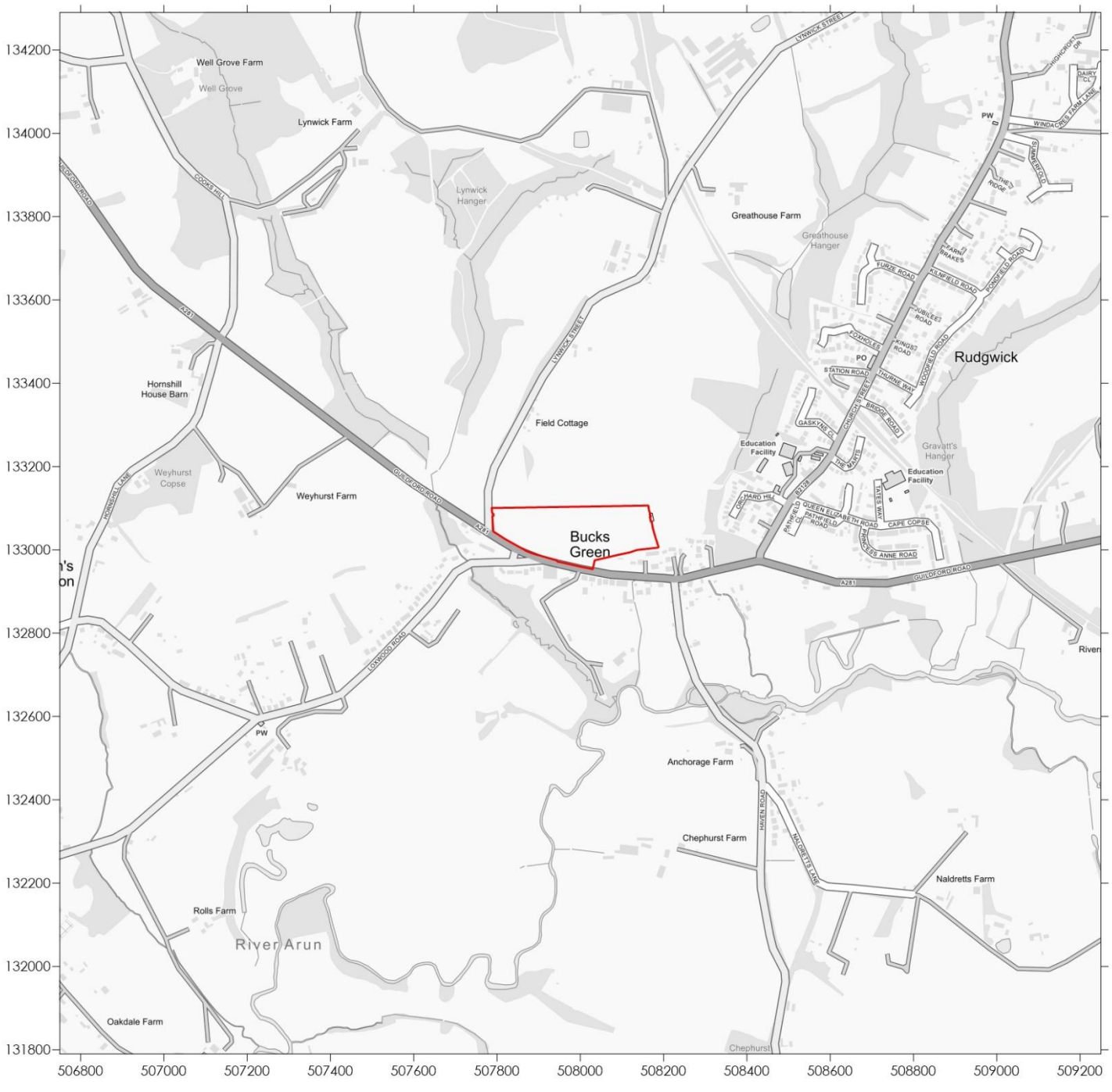
7.1.6 Based on the assessment results, air quality factors are not considered a constraint to planning consent for the development.

[24] Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

## 8.0 ABBREVIATIONS

| | |
|---|---|
| AADT | Annual Average Daily Traffic |
| AQLV | Air Quality Limit Value |
| AQMA | Air Quality Management Area |
| AQO | Air Quality Objective |
| AQS | Air Quality Strategy |
| ASR | Annual Status Report |
| CEMP | Construction Environmental Management Plan |
| DEFRA | Department for Environment, Food and Rural Affairs |
| EFT | Emissions Factor Toolkit |
| EV | Electric Vehicle |
| HDC | Horsham District Council |
| HDV | Heavy Duty Vehicle |
| IAQM | Institute of Air Quality Management |
| LA | Local Authority |
| LAQM | Local Air Quality Management |
| LDV | Light Duty Vehicle |
| NGR | National Grid Reference |
| $NO_2$ | Nitrogen dioxide |
| $NO_x$ | Nitrogen oxides |
| NPPF | National Planning Policy Framework |
| NPPG | National Planning Policy Guidance |
| $PM_{10}$ | Particulate matter with an aerodynamic diameter of less than 10µm |
| $PM_{2.5}$ | Particulate matter with an aerodynamic diameter of less than 2.5µm |

**Figure**




**Legend**

Site Boundary

**Title**
Figure 1 - Site Location

**Project**
Air Quality Assessment
Guildford Road, Horsham

**Project Reference**
9275

**Client**
Welbeck Strategic Land IV LLP



Redmore environmental
www.red-env.co.uk | 0161 7060075

# Appendix 1 - Curricula Vitae

# JETHRO REDMORE

## Director

BEng (Hons), MSc, MIAQM, MIEnvSc, PIEMA, CEnv

**KEY EXPERIENCE:**

Jethro is a Chartered Environmentalist and Director of Redmore Environmental with specialist experience in the air quality and odour sectors. His key capabilities include:

- Production and management of Air Quality, Dust and Odour Assessments for a wide-range of clients from the retail, residential, infrastructure, commercial and industrial sectors.
- Production and co-ordination of Environmental Permit applications for a variety of industrial sectors.
- Detailed dispersion modelling of road vehicle and industrial emissions using ADMS-Roads, ADMS-5, AERMOD-PRIME and BREEZE-ROADS. Studies have included impact assessment of ground level pollutant and odour concentrations and assessment of suitability of development sites for proposed end-use.
- Project management and co-ordination of Environmental Impact Assessments and scoping reports for developments throughout the UK.
- Provision of expert witness services at Planning Inquiries.
- Design and project management of pollutant monitoring campaigns.
- Co-ordination and management of large-scale multi-disciplinary projects and submissions.
- Provision of expert advice to local government and international environmental bodies, as well as involvement in production of industry guidance.

**SELECT PROJECTS SUMMARY:**

**Industrial**

Shanks Waste Management - Odour Assessments of two waste management facilities to support Environmental Permit Applications.

Tatweer Petroleum - dispersion modelling of Bahrain oil field.

Doha South Sewage Treatment Works - AQA for works extension in Qatar.

IRIS Environmental Appraisal Report Reviews, Isle of Man Government - odour assessment reviews.

Lankem, Greater Manchester - Environmental Permit Application for chemical manufacturing plant.

Newport Docks Bulk Drying, Pelleting and CHP Facility - air quality EIA for gas CHP.

Springshades, Leicester - Environmental Permit Variation Application for textile manufacturing plant.

Valspar, Chester - Odour Assessment and production of Odour Management Plan for a paint manufacturing plant in response to neighbour complaints.

Agrivert - dispersion modelling of odour and CHP emissions from numerous AD plants.

James Cropper Paper Mill, Cumbria - air quality EIA, Environmental Permit Variation and Human Health Risk Assessment for new biomass boiler adjacent to SSSI.

Rigg Approach, Leyton - Air Quality Assessment in support of waste transfer site.

Lynchford Lane Waste Transfer Station - biomass facility energy recovery plant.

Barnes Wallis Heat and Power, Cobham - biomass facility adjacent to AQMA.

**Residential**

Wood St Mill, Bury - residential development adjacent to scrap metal yard.

Hyams Lane, Holbrook - Odour Assessment to support residential development adjacent to sewage works.

North Wharf Gardens, London - peer review of EIA undertaken for large residential development.

Loxford Road, Alford - Air Quality EIA for residential development, included consideration of impacts from associated package sewage works

Elephant and Castle Leisure Centre - baseline AQA for redevelopment.

Carr Lodge, Doncaster - EIA for large residential development.

Queensland Road, Highbury - residential scheme including CHP.

Bicester Ecotown - dispersion modelling of energy centre.

Castleford Growth Delivery Plan - baseline air quality constraints assessment for town redevelopment.

York St, Bury - residential development adjacent to AQMA.

Temple Point Leeds - residential development adjacent to M1.

**Commercial and Retail**

Etihad Stadium - Air Quality EIA for the extension to the capacity of the Etihad Stadium, Manchester.

Wakefield College - redevelopment of city centre campus in AQMA.

Manchester Airport Cargo Shed - commercial development.

Manchester Airport Apron Extension - EIA including aircraft emission modelling.

National Youth Theatre, Islington - redevelopment to provide new arts space and accommodation.

# EMILY PEARS-RYDING

Director

BSc (Hons), MIAQM, MIEnvSc

Tel: 0161 706 0075 | Email: emily.pears-ryding@red-env.co.uk


**KEY EXPERIENCE:**

Emily is a Director 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 and industrial emissions using ADMS-Roads and ADMS-5. Studies have included impact assessment of ground level pollutant and odour concentrations and assessment of suitability of development sites for proposed end-use.
- Project management and co-ordination of Environmental Impact Assessments and scoping reports for developments throughout the UK.
- Assessment of fugitive dust impacts from a range of mineral extraction developments.
- Assessment of petrol stations to address benzene concentrations and their impact on adjacent developments.
- Production of air quality mitigation strategies specifically tailored to address issues at individual sites.
- Assessment of potential effects associated with network realignment schemes and highway developments.

**SELECT PROJECTS SUMMARY:**

**Broad Street, Birmingham**

Air Quality Assessment in support of a residential-led development on land at Broad Street, Birmingham. The proposals were located adjacent to a section of the Midland Metro Westside which runs along Broad Street. Consideration was made to the potential for re-alignment of the local road network as a result of the Metro to effect pollution levels at the development. The assessment indicated $NO_2$ concentrations exceeded air quality criteria from ground to third floor level as a result of road vehicle exhaust emissions. Mitigation was therefore specified for the affected units.

**Home Farm, Forest Road, Warfield**

Ecological Air Quality Assessment in support of a residential development. Natural England held concerns regarding potential impacts at sensitive ecological designations as a result of traffic exhaust emissions associated with the development. The predicted change in $NO_x$ and ammonia concentrations and nitrogen and acid deposition was below the relevant criteria at all locations within the ecological designations. Impacts were therefore not considered to be significant.

**Saltcoats Road, Stevenston**

Air Quality Assessment in support of an educational campus and associated energy centre. Impacts associated with emissions from the proposed gas and biomass boilers were assessed through detailed dispersion modelling. This indicated impacts on annual mean $NO_2$ and $PM_{10}$ concentrations were predicted to be not significant.

**Blackthorn & Piddington**

Environmental Impact Assessment in support of a railway embankment scheme on land at the Network Railway Embankment between Piddington and Blackthorn. Due to the extensive stabilisation works a Fugitive Dust Emissions Assessment was undertaken in addition to consideration of road vehicle exhaust emissions. Due to the location of the site in relation to nearby sensitive receptors, potential impacts associated with construction works were not considered to be significant.

**Blackmoorfoot Road, Huddersfield**

Air Quality in support of a residential-led development in close proximity to an operational minerals facility. Due to the presence of the Johnsons Wellfield Quarry to the south of the site a Fugitive Dust Emissions Assessment was undertaken to determine potential impacts. Dispersion modelling of road vehicle exhaust emissions was also undertaken in support of the scheme. Results indicated the overall significance of fugitive dust emissions from the quarry and air quality impacts associated with operation of the development itself were not significant.

**Lockwood Bar, Huddersfield**

Air Quality Assessment for the proposed highway realignment scheme along Lockwood Road, Huddersfield. Changes in pollution levels were considered at sensitive receptors as a result of variations to road geometry and associated redistribution of vehicle trips across the local area. Results of the dispersion modelling study indicated air quality impacts as a result of the scheme were not significant.