

Air Quality Assessment
Great Brighams, Reading

Client: Kings Oak Miami LLP

Reference: 7008r1

Date: 28th July 2023



Report Issue

Report Title: Air Quality Assessment - Great Brighams, Reading

Report Reference: 7008

Field	Report Version			
	1	2	3	4
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Date of Issue	28 th July 2023			
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Executive Summary

Redmore Environmental Ltd was commissioned by Kings Oak Miami LLP to undertake an Air Quality Assessment in support of a planning application for an aparthotel development at Great Brighams, Reading.

The development has the potential to cause air quality impacts at sensitive locations during the construction and operational phases, as well as expose future occupants to any existing air quality issues at the site. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions, assess potential impacts as a result of the scheme and consider location suitability for the proposed end use.

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

During the operational phase of the development there is the potential for air quality impacts as a result of traffic exhaust emissions associated with vehicles travelling to and from the site. These were assessed against the relevant screening criteria. Due to the low number of vehicle trips anticipated to be produced by the scheme, road traffic exhaust impacts were not predicted to be significant.

The potential for the exposure of future occupants to poor air quality was assessed based on the findings of a desk top study. This indicated that pollutant concentrations are likely to be below the relevant criteria at the development location. As such, the site is considered suitable for the proposed end use.

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

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Appendix 1 - Curricula Vitae

1.0 INTRODUCTION

1.1 Background

1.1.1 Redmore Environmental Ltd was commissioned by Kings Oak Miami LLP to undertake an Air Quality Assessment in support of a planning application for an aparthotel development at Great Brighams, Reading.

1.1.2 The development has the potential to cause air quality impacts at sensitive locations during the construction and operational phases, as well as expose future occupants to any existing air quality issues at the site. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions, assess potential impacts associated with the scheme and consider location suitability for the proposed end use.

1.2 Site Location and Context

1.2.1 Great Brighams is located at 1 Vastern Road, Reading, RG1 8DJ, at approximate National Grid Reference (NGR): 471368, 174211. Reference should be made to Figure 1 for a map of the site and surrounding area.

1.2.2 The proposals comprise the demolition of the existing roof and subsequent construction of a two-storey extension at third and fourth floor level to accommodate 100 aparthotel rooms with associated parking, cycle stores and bin stores.

1.2.3 The proposals have the potential to cause impacts at sensitive locations during the construction and operational phases. These may include fugitive dust emissions associated with construction works and road traffic exhaust emissions from vehicles travelling to and from the development during the operational phase. There is also the potential for the exposure of future occupants to any existing air quality issues at the site. An Air Quality Assessment was therefore undertaken in order to determine baseline conditions and consider potential air quality effects as a result of the scheme. 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 (NO₂);
- Sulphur dioxide;
- Lead;
- Particulate matter with an aerodynamic diameter of less than 10µm (PM₁₀);
- 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 have also been 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 2023¹. 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 2023² 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 The Air Quality Strategy, DEFRA, 2023.

² Environmental Improvement Plan 2023, DEFRA, 2023.

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

Table 1 Air Quality Objectives/Interim Target

Pollutant	Air Quality Objective/Interim Target	
	Concentration ($\mu\text{g}/\text{m}^3$)	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

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

2.1.6 Table 2 summarises the advice provided in DEFRA guidance³ 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 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 Hotels, unless people live there as their permanent residence 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
24-hour mean	All locations where the annual mean objective would apply, together with hotels 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

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

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
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) 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 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 Local Authorities (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 Framework⁴ (NPPF) was published in July 2021 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:

[...]

preventing new and existing development from contributing to, or being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality [...]"

⁴ NPPF, Ministry of Housing, Communities and Local Government, 2021.

2.4.4 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, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of 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 [...]."

2.4.5 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."

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

2.5 National Planning Practice Guidance

2.5.1 The National Planning Practice Guidance⁵ (NPPG) web-based resource was launched by the Department for Communities and Local Government on 6th March 2014 and updated on 1st November 2019 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?
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 Reading Borough Local Plan⁶ was adopted by RBC in November 2019. A review of the document indicated the following policy of relevance to this assessment:

"EN15: Air Quality

Development should have regard to the need to improve air quality and reduce the effects of poor air quality.

i. Development that would detrimentally affect air quality will not be permitted unless the effect is to be mitigated. The following criteria should be taken into account:

⁵ <https://www.gov.uk/guidance/air-quality--3>.

⁶ Reading Borough Local Plan, RBC, 2019.

- Whether the proposal, including when combined with the cumulative effect of other developments already permitted, would worsen air quality;
- Whether the development is within, or accessed via, an Air Quality Management Area; and
- Whether it can be demonstrated that a local worsening in air quality that would not detrimentally affect human health or the environment would be offset by an overall improvement in air quality, for instance through reduction in the need to travel.

ii. Where a development would introduce sensitive uses (such as residential, schools and nurseries, hospitals, care facilities) into, or intensify such uses within, an Air Quality Management Area, detrimental effects on that use will be mitigated. Mitigation measures should be detailed in any planning application. If there are significant detrimental effects that cannot be mitigated, the application should be refused.

iii. Where required, planning obligations will be used to secure contributions to measures to tackle poor air quality or for air quality monitoring."

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

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, as well as expose future occupants to elevated pollution levels. These issues 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 V1.1'⁷.

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

- Demolition;
- 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 PM₁₀.

3.2.4 The assessment steps are detailed below.

⁷ Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016.

Step 1

- 3.2.5 Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 350m from the boundary or 50m from the construction vehicle route up to 500m 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 500m 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

- 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	Demolition	• Total volume of building to be demolished greater than 50,000m³ • Potentially dusty material (e.g. concrete) • On-site crushing and screening • Demolition activities more than 20m above ground level

Magnitude	Activity	Criteria
	Construction	- Total building volume greater than 100,000m³ - On site concrete batching - Sandblasting
	Trackout	- More than 50 Heavy Duty Vehicle (HDV) trips per day - Potentially dusty surface material (e.g. high clay content) - Unpaved road length greater than 100m
Medium	Demolition	- Total volume of building to be demolished between 20,000m³ and 50,000m³ - Potentially dusty construction material - Demolition activities 10m to 20m above ground level
	Construction	- Total building volume 25,000m³ to 100,000m³ - Potentially dusty construction material (e.g. concrete) - On site concrete batching
	Trackout	10 to 50 HDV trips per day - Moderately dusty surface material (e.g. high clay content) - Unpaved road length 50m to 100m
Small	Demolition	- Total volume of building to be demolished less than 20,000m³ - Construction material with low potential for dust release (e.g. metal cladding or timber) - Demolition activities less than 10m above ground and during wetter months
	Construction	- Total building volume less than 25,000m³ - Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	- Less than 10 HDV trips per day - Surface material with low potential for dust release - 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 influencing factors are shown in Table 4.

Table 4 Construction Dust - Examples of Factors Defining Sensitivity of an Area

Receptor Sensitivity	Examples	
	Human Receptors	Ecological Receptors
High	• Users expect high levels of amenity • High aesthetic or value property • People expected to be present continuously for extended periods of time • Locations where members of the public are exposed over a time period relevant to the AQO for PM₁₀. 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 • Aesthetics or value of their property could be diminished by soiling • 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 • Property would not be expected to be diminished in appearance • Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, shopping streets, playing fields, farmland, short term car parks and roads	• Locally designated site e.g. Local Nature Reserve

3.2.11 The guidance also provides the following factors to consider when determining the sensitivity of an area to potential dust impacts:

- Any history of dust generating activities in the area;
- The likelihood of concurrent dust generating activity on nearby sites;
- Any pre-existing screening between the source and receptors;
- Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant the season during which works will take place;
- Any conclusions drawn from local topography;
- Duration of the potential impact, as a receptor may become more sensitive over time; and,

- Any known specific receptor sensitivities which go beyond the classifications given in the document.

3.2.12 These factors were considered in the undertaking of this assessment.

3.2.13 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 350
High	More than 100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low
	1 - 10	Medium	Low	Low	Low
Medium	More than 1	Medium	Low	Low	Low
Low	More than 1	Low	Low	Low	Low

3.2.14 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 200	Less than 350
High	Greater than 32µg/m ³	More than 100	High	High	High	Medium	Low
		10 - 100	High	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	28 - 32µg/m ³	More than 100	High	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	High	Medium	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 200	Less than 350
	24 - 28µg/m ³	More than 100	High	Medium	Low	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	Less than 24µg/m ³	More than 100	Medium	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
		1 - 10	Low	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	Low
		1 - 10	Low	Low	Low	Low	Low
	24 - 28µg/m ³	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	Less than 24µg/m ³	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	Low	-	1 or more	Low	Low	Low	Low

3.2.15 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

Receptor Sensitivity	Distance from the Source (m)	
	Less than 20	Less than 50
Low	Low	Low

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

3.2.17 Table 8 outlines the risk category from demolition activities.

Table 8 Construction Dust - Dust Risk Category from Demolition Activities

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

3.2.18 Table 9 outlines the risk category from construction activities.

Table 9 Construction Dust - Dust Risk Category from Construction Activities

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

3.2.19 Table 10 outlines the risk category from trackout activities.

Table 10 Construction Dust - Dust Risk Category from Trackout Activities

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Low

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
Medium	Medium	Low	Negligible
Low	Low	Low	Negligible

Step 3

3.2.20 Step 3 requires the identification of site specific mitigation measures within the IAQM guidance⁸ 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

3.2.21 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**.

3.2.22 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

Potential Development Impacts

3.3.1 The development has the potential to increase concentrations of NO₂, PM₁₀ 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. A screening assessment was therefore undertaken using the criteria contained within the IAQM 'Land-Use Planning & Development Control:

⁸ Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016.

Planning for Air Quality⁹ 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 road traffic impacts on the local area is likely to be considered necessary:

- A change of Light Duty Vehicle (LDV) flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA or more than 500 AADT elsewhere;
- A change of HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- Realignment of roads where the change is 5m or more and the road is within an AQMA; or,
- Introduction of a new junction or removal of an existing junction near to relevant receptors.

3.3.3 Should these criteria not be met, then the IAQM guidance¹⁰ considers air quality impacts associated with a scheme to be **not significant** and no further assessment is required.

Potential Future Exposure

3.3.4 The proposed development does not include any residential units, schools, hospitals or care homes. As such, it is not considered a location of relevant exposure for annual mean AQOs in accordance with the DEFRA guidance¹¹, as shown in Table 2. However, aparthotels are considered locations of relevant exposure for short term AQOs, including the 1-hour mean NO₂ AQO and the 24-hour mean PM₁₀ AQO. Existing air quality conditions at the site were therefore assessed through consideration of the following factors:

- AQMA designations;
- Local monitoring results; and,
- Site layout.

⁹ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

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

¹¹ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

3.3.5 The findings were subsequently used to determine the potential for AQO exceedence at the development location. Should the assessment indicate significant uncertainty over air quality conditions at the site then further quantitative methods, such as detailed dispersion modelling, could be utilised to refine the predictions.

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), RBC has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual mean concentrations of NO₂ are above the relevant AQO within the borough. One AQMA has therefore been declared. This is described as follows:

"An area encompassing all the main arterial routes in and out of Reading and central area."

- 4.2.2 The development is located within the AQMA. As such, there is the potential for emissions associated with the proposals to cause air quality effects within this sensitive location. This has therefore been considered within the assessment.
- 4.2.3 RBC 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 Monitoring of pollutant concentrations is undertaken by RBC throughout their area of jurisdiction. Recent NO₂ results recorded in the vicinity of the development are shown in Table 11. Exceedences of the relevant AQO are shown in **bold**.

Table 11 Monitoring Results - Annual Mean NO₂

Monitoring Site	Monitored NO ₂ Concentration (µg/m ³)		
	2017	2018	2019
RD1	37	40	35
Caversham AQMS	38	35	32
Caversham AQMS	36	37	31
Caversham AQMS	37	37	35
197 Caversham Road	36	34	31
131 Caversham Road	36	35	32
108 Caversham Road	40	42	35
31a Vastern Road	38	33	28

4.3.2 As shown in Table 11, annual mean NO₂ concentrations were above the AQO of 40µg/m³ at the 108 Caversham Road monitor in 2017 and 2018 and the RD1 monitor in 2018. As the sites are positioned at roadside locations within an AQMA, elevated pollution levels are to be expected. Levels dropped below the AQO in 2019. Concentrations were below the relevant criteria at the remaining monitoring locations in recent years.

4.3.3 Recent 1-hour mean NO₂ results recorded in the vicinity of the development are shown in Table 12.

Table 12 Monitoring Results - 1-Hour Mean NO₂

Monitoring Site	Number of 1-hour Mean NO ₂ Concentrations above 200µg/m ³		
	2017	2018	2019
RD1	0	7	0

4.3.4 As shown in Table 12, the number of 1-hour mean NO₂ concentrations above 200µg/m³ was below the permitted number of 18 at the RD1 monitor in recent years.

4.3.5 Recent annual mean PM₁₀ results recorded in the vicinity of the development are shown in Table 13.

Table 13 Monitoring Results - Annual Mean PM₁₀

Monitoring Site	Annual Mean PM ₁₀ Concentration (µg/m ³)		
	2017	2018	2019
RD1	23	24	24

4.3.6 As shown in Table 13, annual mean PM₁₀ concentrations were below the AQO of 40µg/m³ at the RD1 monitor in recent years.

4.3.7 Recent 24-hour mean PM₁₀ concentrations recorded in the vicinity of the development are summarised in Table 14.

Table 14 Monitoring Results - 24-Hour Mean PM₁₀

Monitoring Site	Monitored Number of Days with 24-hour Mean PM ₁₀ Concentration above 50µg/m ³		
	2017	2018	2019
RD1	7	3	11

4.3.8 As shown in Table 14, the number of days with 24-hour mean PM₁₀ concentrations above 50µg/m³ was below the permitted number of 35 at the RD1 monitor in recent years.

4.3.9 Reference should be made to Figure 2 for a map of the survey positions.

4.3.10 RBC does not undertake monitoring of PM_{2.5} within the vicinity of the site.

4.4 Background Pollutant Concentrations

4.4.1 Predictions of background annual mean 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 grid square NGR: 471500, 174500. Data for this location was downloaded from the DEFRA website¹² for the purpose of the assessment and is summarised in Table 15.

¹² <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>.

Table 15 Background Annual Mean Pollutant Concentration Predictions

Pollutant	Predicted 2023 Background Annual Mean Pollutant Concentration ($\mu\text{g}/\text{m}^3$)
NO ₂	20.32
PM ₁₀	16.68
PM _{2.5}	11.83

4.4.2 As shown in Table 15, predicted background annual mean NO₂, PM₁₀ and PM_{2.5} concentrations are below the relevant AQOs and Interim Target at the proposed 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 demolition and construction were identified from a desk-top study of the area up to 350m from the development boundary. These are summarised in Table 16. It should be noted that these account for residents living in the lower floors of Great Brighams, below the proposals.

Table 16 Demolition and Construction Dust Sensitive Receptors

Distance from Site Boundary (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
Up to 100	More than 100	-
Up to 350	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 500m of the site access. These are summarised in Table 17.

Table 17 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 500m of the site entrance. As such, ecological impacts have not been assessed further within this report.

4.5.4 A number of additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in Table 18.

Table 18 Additional Area Sensitivity Factors to Potential Dust Impacts

Guidance	Comment
Whether there is any history of dust generating activities in the area	The baseline review indicated a number of developments have recently been constructed in the vicinity of the site. As such, there may have been a history of dust generation in recent years
The likelihood of concurrent dust generating activity on nearby sites	A review of the planning portal indicated that a number of applications have recently been granted consent in the vicinity of the site. It is therefore possible that there will be concurrent dust generation should the construction phases of these schemes overlap with the proposed development
Pre-existing screening between the source and the receptors	Trees are located along the eastern, southern and western site boundaries. These may act as a barrier between emission sources and receptors should they be retained during construction
Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place	As shown in Figure 3, the predominant wind bearing at the site is from the south-west. As such, receptors to the north-east of the boundary are most likely to be affected by dust releases
Conclusions drawn from local topography	There are no significant topographical constraints to dust dispersion

Guidance	Comment
Duration of the potential impact, as a receptor may become more sensitive over time	Currently it is unclear as to the duration of the construction phase. However, it is likely that it will extend over one year. The sensitivity of nearby receptors is unlikely to change during this time
Any known specific receptor sensitivities which go beyond the classifications given in the document	No specific receptor sensitivities identified during the baseline assessment

4.5.5 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.

4.5.6 The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria shown in Section 3.2, is shown in Table 19.

Table 19 Sensitivity of the Surrounding Area to Potential Dust Impacts

Potential Impact	Sensitivity of the Surrounding Area		
	Demolition	Construction	Trackout
Dust Soiling	High	High	High
Human Health	Medium	Medium	Medium

5.0 **ASSESSMENT**

5.1 **Introduction**

- 5.1.1 There is the potential for air quality impacts as a result of the construction and operation of the proposed development, as well as exposure of future occupants to any existing air quality issues at the site. These factors are assessed in the following Sections.

5.2 **Construction Phase Assessment**

Step 1

- 5.2.1 The undertaking of activities such as demolition, construction and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements 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 350m of the site boundary. As such, a detailed assessment of potential dust impacts was required.

Step 2

Demolition

- 5.2.4 Demolition will involve clearance of the existing roof. It is estimated that the total building volume to be demolished is less than 20,000m³. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from demolition is therefore **small**.
- 5.2.5 Table 19 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 8, the development is considered to be a **medium** risk site for dust soiling as a result of demolition activities.

- 5.2.6 Table 19 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 8, the development is considered to be a **low** risk site for human health impacts as a result of demolition activities.

Construction

- 5.2.7 Due to the size of the development, the total building volume is likely to be less than 25,000m³. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from construction is therefore **small**.
- 5.2.8 Table 19 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 9, the development is considered to be a **low** risk site for dust soiling as a result of construction activities.
- 5.2.9 Table 19 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 9, the development is considered to be a **low** risk site for human health impacts as a result of construction activities.

Trackout

- 5.2.10 Based on the site area and existing hard standing, it is anticipated that the unpaved road length will be less than 50m. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from trackout is therefore **small**.
- 5.2.11 Table 19 indicates the sensitivity of the area to dust soiling effects to people and property is **high**. In accordance with the criteria outlined in Table 10, the development is considered to be a **low** risk site for dust soiling as a result of trackout activities.
- 5.2.12 Table 19 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 10, the development is considered to be a **negligible** risk site for human health impacts as a result of trackout activities.

Summary of the Risk of Dust Effects

- 5.2.13 A summary of the risk from each dust generating activity is provided in Table 20.

Table 20 Summary of Potential Unmitigated Dust Risks

Potential Impact	Risk		
	Demolition	Construction	Trackout
Dust Soiling	Medium	Low	Low
Human Health	Low	Low	Negligible

5.2.14 As indicated in Table 20, the potential risk of dust soiling is **medium** from demolition and **low** from construction and trackout. The potential risk of human health effects is **low** from demolition and construction and **negligible** from trackout.

5.2.15 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.

Step 3

5.2.16 The IAQM guidance¹³ 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 21. These may be reviewed prior to the commencement of construction works and incorporated into a Construction Environmental Management Plan or similar if required by the LA.

Table 21 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 - 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 - Display the head or regional office contact information - Develop and implement a Dust Management Plan or similar, which may include measures to control other emissions, approved by the LA

¹³ Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2017.

Issue	Control Measure
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 - Make the complaints log available to the LA upon request - Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book
Monitoring	- Carry out regular site inspections, record inspection results, and make an inspection log available to the LA upon request - 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 - Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site - Fully enclose site or specific operations where there is a high potential for dust production and they are active for an extensive period - Avoid site runoff of water or mud - Keep site fencing, barriers and scaffolding clean using wet methods - Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used - Cover, seed or fence stockpiles to prevent wind whipping
Operating vehicle/machinery and sustainable travel	- Ensure all vehicles switch off engines when stationary - no idling vehicles - Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable - 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 - Ensure an adequate water supply on the site for effective dust suppression, using non-potable water where possible and appropriate - Use enclosed chutes and conveyors and covered skips - Minimise drop heights and use fine water sprays wherever appropriate - Ensure equipment is available to clean any dry spillages, and clean up spillages as soon as reasonably practicable using wet cleaning methods
Waste management	Avoid bonfires or burning of waste materials

Issue	Control Measure
Demolition	• Ensure water suppression is used during demolition operations • Avoid explosive blasting, using appropriate manual or mechanical alternatives • Bag and remove any biological debris or damp down such material before demolition
Construction	• Avoid scabbling (roughening of concrete surfaces) if possible • 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 • Avoid dry sweeping of large areas • Ensure vehicles entering and leaving site are covered to prevent escape of materials • Implement a wheel washing system, if required

Step 4

5.2.17 Assuming the relevant mitigation measures outlined in Table 21 are implemented, the residual impact from all dust generating activities is predicted to be **not significant**, in accordance with the IAQM guidance¹⁴.

5.3 Operational Phase Assessment

Potential Development Impacts

5.3.1 Any vehicle movements associated with the proposals will generate exhaust emissions on the local and regional road networks. Information provided by Stantec, the Transport Consultants for the project, indicated the development is predicted to generate 254 daily vehicle trips.

5.3.2 There are three potential routes that any vehicle movements generated by the site could be distributed upon. These are:

- To the north-west along the A4155;
- To the south-east along the A329 Vastern Road; and,

¹⁴ Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2017.

- To the south-west along the A329 Caversham Road.

5.3.3 As traffic associated with the development is likely to be distributed in three directions the number of additional daily vehicle movements on any link is not anticipated to exceed 100.

5.3.4 Based on the above information, the proposals are not predicted to result in an increase of LDV flows of more than 100 AADT on any individual road link, include significant highway realignment or the introduction of a junction and there will not be more than 25 HDV movements per day. As such, potential air quality impacts associated with operational phase road vehicle exhaust emissions are predicted to be **not significant**, in accordance with the IAQM¹⁵ screening criteria shown in Section 3.3.

Potential Future Exposure

5.3.5 The proposed development includes land use sensitive to short-term pollutant concentrations. Existing conditions at the site are therefore considered in the following Sections.

AQMA Designation

5.3.6 The site is located within the RBC AQMA which has been declared due to exceedences of the annual mean AQO for NO₂. The designation does not cover 1-hour mean NO₂ or 24-hour mean PM₁₀, indicating exceedences of these AQOs have not been identified within the borough. As such, it is considered that exceedences of the short-term AQOs are unlikely to occur at the proposed development.

Local Monitoring Results

5.3.7 There are eight monitoring sites located in the vicinity of the development. The closest of these to the proposal are the 108 Caversham Road and the 31a Vastern Road monitors, which are located approximately 20m north and 50m south of the boundary, respectively. As shown in Table 11, the recorded annual mean NO₂ concentrations were below the relevant AQO at these locations in 2019. As both the site and monitors are

¹⁵ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

positioned adjacent to major road sources, similar concentrations would be anticipated at the development location. Recording of 1-hour mean NO₂ concentrations was not undertaken at these positions. However, as stated in DEFRA guidance¹⁶, if annual mean NO₂ concentrations are below 60µg/m³, then it is unlikely that the 1-hour mean AQO will be exceeded.

5.3.8 Additionally, 1-hour mean NO₂ concentrations are recorded at the RD1 monitor, approximately 250m north of the boundary. As shown in Table 12, levels were below the relevant AQO in recent years. As the proposed development is located adjacent to Caversham Road, concentrations are likely to be similar to monitored levels. As such, based the above information exceedences of the 1-hour mean AQO for NO₂ is considered unlikely at the proposals.

5.3.9 Daily mean PM₁₀ concentrations are recorded at the RD1 monitor. As shown in Table 14, levels were below the relevant AQO in recent years at this position. As such, exceedences of the 24-hour mean AQO for PM₁₀ are considered unlikely at the proposals.

Site Layout

5.3.10 As outlined in DEFRA guidance¹⁷ pollutant levels decrease with distance from sources, such as roads. Therefore, it is anticipated that NO₂ and PM₁₀ concentrations at the aparthotel rooms, located at third and fourth floor level, would be lower than those recorded at the ground level survey positions.

Summary

5.3.11 It is considered likely that pollutant concentrations are below the relevant AQOs at the proposed development site for the following reasons:

- The site is not located within an AQMA declared for exceedences of short-term AQOs;
- Local monitoring results indicate 1-hour mean NO₂ concentrations and 24-hour mean PM₁₀ concentrations are below the relevant AQOs; and,

¹⁶ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

¹⁷ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

- The site layout includes sensitive receptors from third floor level and above.

5.3.12 Based on the assessment results, exposure of future occupants to exceedences of the relevant AQOs is not considered likely. As such, the site is considered suitable for the proposed use from an air quality perspective.

6.0 CONCLUSION

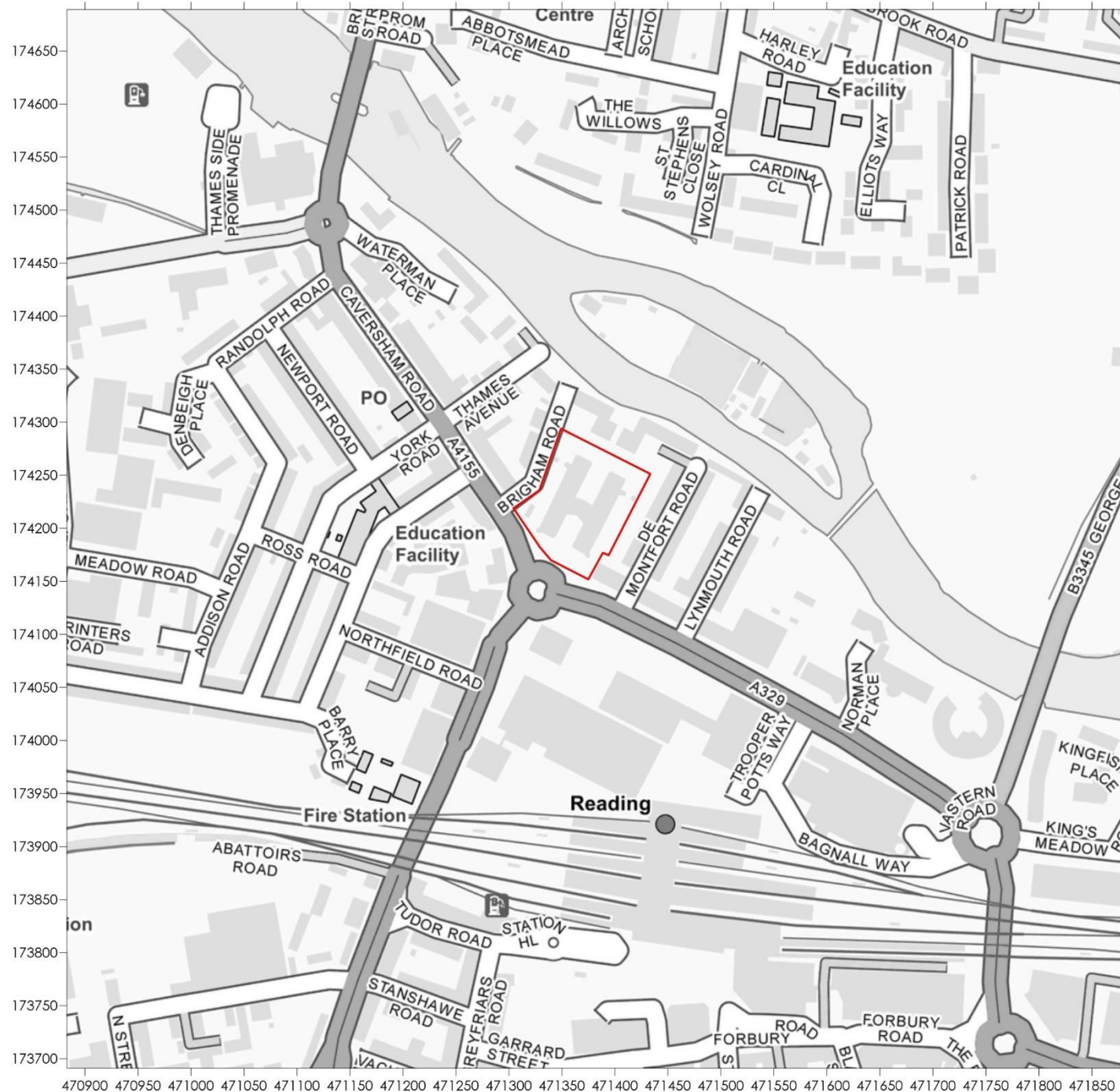
- 6.1.1 Redmore Environmental Ltd was commissioned by Kings Oak Miami LLP to undertake an Air Quality Assessment in support of a planning application for an aparthotel development at Great Brighams, Reading.
- 6.1.2 The development has the potential to cause air quality impacts at sensitive locations during the construction and operational phases, as well as expose future occupants to any existing air quality issues at the site. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions, assess potential impacts as a result of the scheme and consider location suitability for the proposed end use.
- 6.1.3 During the construction phase of the development there is the potential for air quality impacts as a result of fugitive dust emissions from the site. These were assessed in accordance with the IAQM methodology. Assuming good practice dust control measures are implemented, the residual significance of potential air quality impacts from dust generated by demolition, construction and trackout activities was predicted to be **not significant**.
- 6.1.4 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 IAQM¹⁸ guidance document. Due to the low number of vehicle trips anticipated to be produced by the scheme, road traffic exhaust impacts were predicted to be **not significant**.
- 6.1.5 The potential for exposure of future occupants to exceedences of the AQOs was assessed based on the AQMA designation, local monitoring results and site layout. This indicated that concentrations of NO₂ and PM₁₀ are likely to be below the relevant short-term AQOs at the development location. As such, the site is considered suitable for the proposed use from an air quality perspective.
- 6.1.6 Based on the assessment results, air quality factors are not considered a constraint to planning consent for the development.

¹⁸ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

7.0 **ABBREVIATIONS**

AADT	Annual Average Daily Traffic
AQLV	Air Quality Limit Value
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Strategy
DEFRA	Department for Environment, Food and Rural Affairs
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	Oxides of nitrogen
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
RBC	Reading Borough Council

Figures



Legend



Title

Figure 1 - Site Location Plan

Project

Air Quality Assessment
Great Brighams, Reading

Project Reference

7008

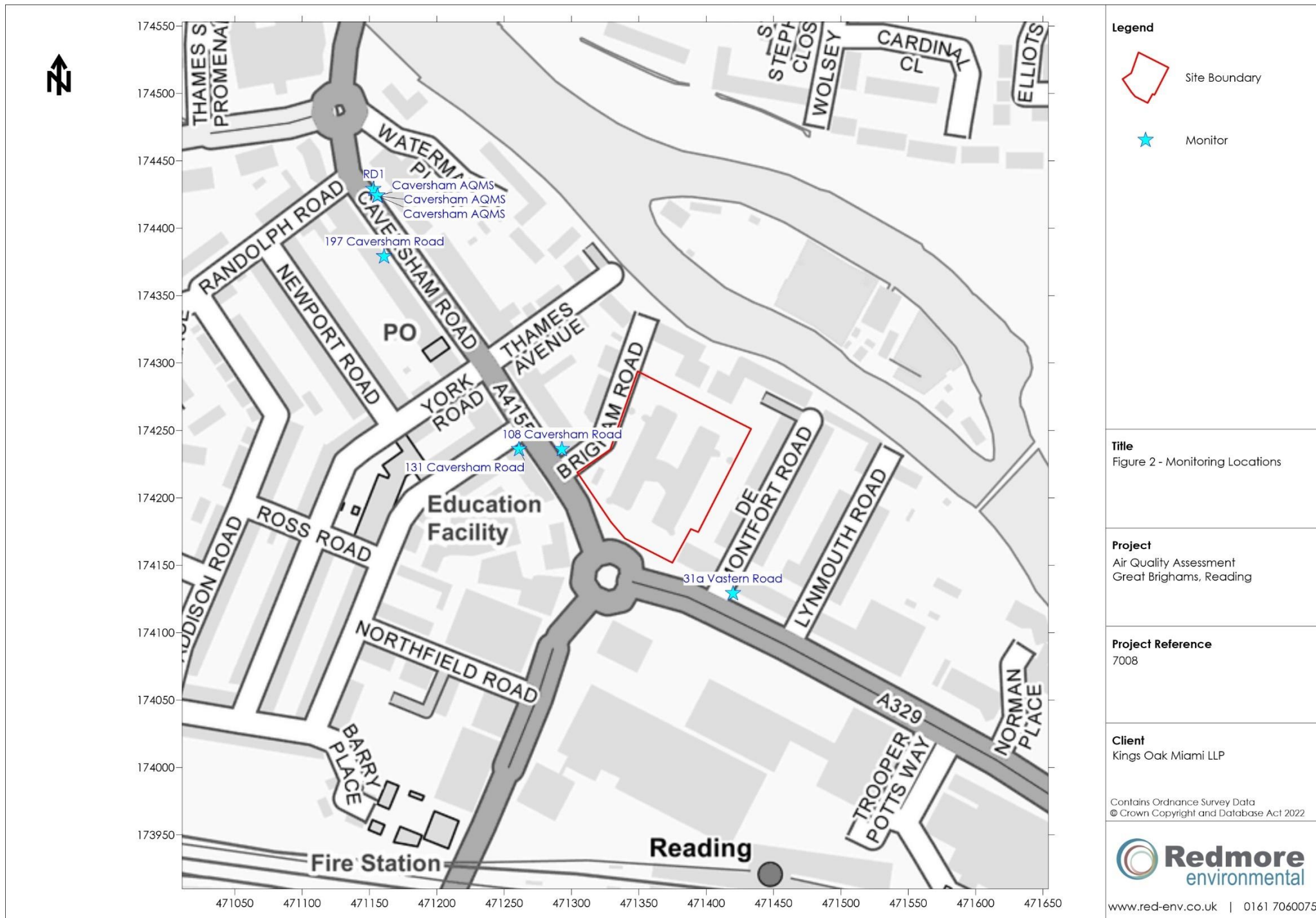
Client

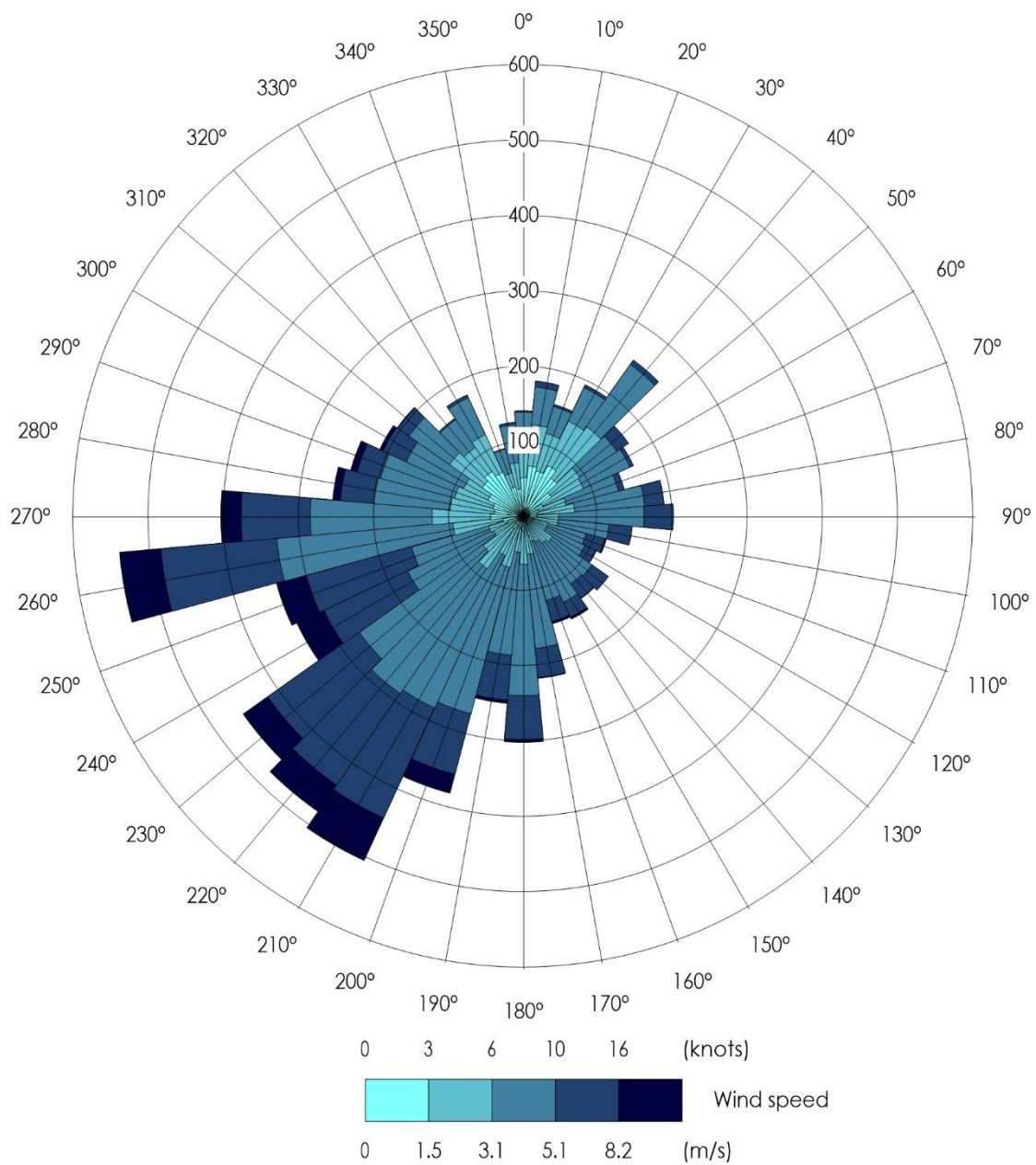
Kings Oak Miami LLP

Contains Ordnance Survey Data
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Legend

Title
Figure 3 - Wind Rose of 2019
Heathrow Airport Meteorological
Data

Project
Air Quality Assessment
Great Brighams, Reading

Project Reference
7008

Client
Kings Oak Miami LLP



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Appendix 1 - Curricula Vitae

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 MACEY

Senior Air Quality Consultant



BSc (Hons), MSc, MEnvSc, MIAQM

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

KEY EXPERIENCE:

Emily is a Senior 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 assessment of road traffic exhaust emissions 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 sizes.
- Definition of baseline air quality and identification of sensitive areas across the UK.
- Production of air quality mitigation strategies specifically tailored to address issues at individual sites.
- Air quality monitoring at industrial sites to quantify pollutant concentrations
- Odour surveys to assess amenity and suitability of sites for potential future development for residential use.

SELECT PROJECTS SUMMARY:

Bowlers Yard, Manchester

Air Quality Assessment in support of an eleven storey residential development to provide circa 65 units on land known as Bowlers Yard, Manchester. The site was located in an Air Quality Management Area (AQMA) and concerns were raised regarding the exposure of future occupants to poor air quality due to road traffic emissions. Detailed dispersion modelling was undertaken using ADMS-roads to assess PM_{2.5}, PM₁₀ and NO₂ concentrations across the site. Results indicated that pollution levels were below the air quality objectives across the development.

Freemasons Arms Hotel, Heywood

Air Quality Assessment to support a residential-led development in an AQMA. Detailed dispersion modelling was undertaken with the inclusion of advanced canyon modelling to evaluate the impact of the urban topography within the locality on the dispersion of traffic related pollutants. Predicted concentrations of NO₂ were found to exceed air quality criteria at the building façade fronting Market Place at first floor level. As such, mitigation was specified for the affected units to ensure future residents would not be exposed to poor air quality.

Griffin Road, London

Air Quality Assessment in support of a residential development located in an AQMA. Detailed dispersion modelling was undertaken using ADMS-roads to assess PM₁₀ and NO₂ concentrations across the site. Results indicated that pollution levels were classified as APEC - A in accordance with the London Councils Air Quality and Planning Guidance.

High Street, Dudley

Odour Impact Assessment in support of a proposed residential-led development. Due to the location of the site, being above an existing hot food takeaway, odour surveys were required to assess the level of odour across the development. A risk assessment was also undertaken in accordance with the relevant odour guidance. An appropriate ventilation system was identified on the basis of the assessment results.

East Common Lane, Selby

Air Quality Assessment in support of an industrial development on land associated with Access 63 Business Park, East Common Lane Selby. 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.

Wharton Road, Winsford

Air Quality Assessment in support of a residential development of circa 138 units on land off Wharton Road, Winsford. Using sensitive receptors, located in areas where increased road traffic may affect NO₂ concentrations, a comparison was made between overall concentrations with and without the development in place. Results revealed pollutant concentrations were below the relevant standards across the site and impacts were not significant.

KEY EXPERIENCE:

Emily is an Associate 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 NO₂ 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 NO₂ and PM₁₀ 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.