

Air Quality Assessment
Stone Street, Gravesend

Client: Kallarview Construction Limited

Reference: 1170-2r1

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Report Issue

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Executive Summary

Redmore Environmental Ltd was commissioned by Kallarview Construction Limited to undertake an Air Quality Assessment in support of the redevelopment of 24 Stone Street, Gravesend.

The proposals have the potential to cause air quality impacts as a result of road traffic exhaust emissions associated with vehicles travelling to and from the development during operation, 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, consider location suitability for the proposed end-use and assess potential effects as a result of the scheme.

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 using standard screening criteria. Due to the scale of the proposals, road traffic exhaust emission impacts were not predicted to be significant.

The potential for exposure of future occupants to elevated pollution levels was assessed based on the results of a desk top study. This indicated that pollutant concentrations are likely to be below the relevant criteria at the development location. The site is therefore considered suitable for the proposed end-use from an air quality perspective.

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

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1.0 INTRODUCTION

1.1 Background

- 1.1.1 Redmore Environmental Ltd was commissioned by Kallarview Construction Limited to undertake an Air Quality Assessment in support of the redevelopment of 24 Stone Street, Gravesend.
- 1.1.2 The proposals have the potential to cause air quality impacts as a result of road traffic exhaust emissions associated with vehicles travelling to and from the development during operation, 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, consider location suitability for the proposed end-use and assess potential impacts associated with the scheme.

1.2 Site Location and Context

- 1.2.1 The site is located at 24 Stone Street, Gravesend, DA11 0NP, at approximate National Grid Reference (NGR): 564690, 173981. Reference should be made to Figure 1 for a map of the site and surrounding area.
- 1.2.2 The proposals comprise the change of use of the first and second floor levels of the existing building to provide a House in Multiple Occupation (HMO).
- 1.2.3 Gravesham Borough Council (GBC) has declared an Air Quality Management Area (AQMA) due to exceedences of the Air Quality Objectives (AQOs) for annual mean concentrations of nitrogen dioxide (NO₂). The development is partly located within the AQMA. As such, there is the potential for the exposure of future occupants to poor quality, as well as adverse impacts in this sensitive area as a result of the operational phase of the proposals. An Air Quality Assessment was therefore undertaken in order to determine baseline conditions, assess potential effects as a result of the scheme and define any requirement for mitigation. 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:

- NO₂;
- Sulphur dioxide (SO₂);
- 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 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 2023¹. The document contains standards, objectives and measures for improving ambient air quality, including a number of AQOs. These are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedances 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 AQS: Framework for Local Authority Delivery, 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 (including all of playgrounds), hospitals (and their grounds), care homes (and their grounds) 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 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	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 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 **National Planning Policy**

2.3.1 The revised National Planning Policy Framework⁴ (NPPF) was published in September 2023 and sets out the Government's planning policies for England and how these are expected to be applied.

2.3.2 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, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and

⁴ NPPF, Ministry of Housing, Communities and Local Government, 2023.

mitigating and adapting to climate change, including moving to a low carbon economy."

2.3.3 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 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 [...]."

2.3.4 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."

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

2.4 National Planning Practice Guidance

2.4.1 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 considerations be relevant to the 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?

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

2.5 Local Planning Policy

2.5.1 The Development Plan for GBC comprises a number of documents. These include the Gravesham Local Plan Core Strategy⁶, adopted in September 2014, and the Gravesham Local Plan First Review - Saved and Deleted Policies⁷.

2.5.2 Review of the Local Plan Core Strategy identified the following policies of relevance to this assessment:

"Policy CS01: Sustainable Development

[...]

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

⁶ Gravesham Local Plan Core Strategy, GBC, 2014.

⁷ Gravesham Local Plan First Review - Saved and Deleted Policies, GBC, 2014.

4.1.7 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 and in this Core Strategy. It will work proactively 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.

4.1.8 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
- Specific policies in that Framework indicate that development should be restricted."

"Policy CS19: Development and Design Principles

5.15.14 New development will be visually attractive, fit for purpose and locally distinctive. It will conserve and enhance the character of the local built, historic and natural environment, integrate well with the surrounding local area and meet anti-crime standards. The design and construction of new development will incorporate sustainable construction standards and techniques, be adaptable to reflect changing lifestyles, and be resilient to the effects of climate change. This will be achieved through the criteria set out below:

[...]

New development will be located, designed and constructed to:

[...]

- avoid adverse environmental impacts from pollution, including noise, air, odour and light pollution, and land contamination;

[...]"

2.5.3 The above policies were taken into consideration throughout the undertaking of the assessment.

2.5.4 Review of the Gravesham Local Plan First Review - Saved and Deleted Policies did not indicate any policies of relevance to this assessment.

3.0 **METHODOLOGY**

3.1 **Introduction**

3.1.1 The proposed development has the potential to cause air quality impacts during the operational phase, well as expose future occupants to any existing air quality issues at the site. These were assessed in accordance with the following methodology.

3.2 **Potential Development Impacts**

3.2.1 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 Institute of Air Quality Management (IAQM) 'Land-Use Planning & Development Control: Planning for Air Quality'⁸ guidance document to determine the potential for trips generated by the development to affect local air quality.

3.2.2 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:

- 10 or more residential units or a site area of more than 0.5ha; or,
- more than 1,000 m² 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.

3.2.3 Should these criteria not be met, then the IAQM guidance⁹ considers air quality impacts associated with a scheme to be **not significant** and no further assessment is required.

⁶ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

⁶ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

3.2.4 Should screening of the relevant data indicate that any of the above criteria are met, then potential impacts at sensitive receptor locations can be assessed by calculating the change in pollutant concentrations as a result of the proposed development. The significance of predicted impacts can then be determined in accordance with the methodology outlined in the IAQM guidance¹⁰.

3.3 Potential Future Exposure

3.3.1 The proposed development is considered a location of relevant exposure for long and short-term AQOs in accordance with the criteria provided within DEFRA guidance¹¹, as summarised in Table 2. Existing air quality conditions at the site were therefore assessed through consideration of the following factors:

- AQMA designations;
- Proximity to significant pollution sources;
- Local monitoring results; and,
- Site layout.

3.3.2 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.

⁶ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

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

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), GBC has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual mean concentrations of NO₂ and annual and 24-hour mean concentrations of PM₁₀ are above the AQOs within the borough. As such, four AQMA's have been declared. The closest to the site has been declared due to exceedences of the annual mean AQO for NO₂ and is described as follows:

"A226 One-way system in Gravesend AQMA - An area incorporating the entirety of the A226 One-way system in Gravesend."

- 4.2.2 The development is partly located within the AQMA. As such, there is the potential for the exposure of future occupants to poor air quality and vehicles travelling to and from the site to increase pollution levels in this sensitive area. This has been considered throughout the assessment.
- 4.2.3 GBC has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs. As such, no further AQMA's have been designated.

4.3 Air Quality Monitoring

- 4.3.1 Monitoring of pollutant concentrations is undertaken by GBC throughout their area of jurisdiction. Recent NO₂ results recorded in the vicinity of the development are shown in Table 3.

Table 3 Monitoring Results

Monitoring Site		Monitored NO ₂ Concentration (µg/m ³)		
		2019	2020	2021
GR39	19 Stone Street (Downpipe), Gravesend, DA12	35.0	28.3	31.0
GR128	1a Railway Place (façade)	31.8	26.0	29.6
GR129	20 Stone Street (façade)	28.4	24.7	25.0
GR130	6 Wrotham Road, The Hair Shop (façade)	31.3	26.0	27.0
GR131	7 Wrotham Road, Martin Tolhurst Solicitors (façade)	26.4	22.5	22.1

4.3.2 As shown in Table 3, annual mean NO₂ concentrations were below the AQO of 40µg/m³ at all monitoring locations in recent years. Reference should be made to Figure 2 for a map of the survey positions.

4.3.3 Pollutant concentrations recorded during 2020 and 2021 were lower than 2019 due to a reduction in traffic and associated emissions caused by the COVID-19 pandemic. The results should therefore be viewed with caution.

4.3.4 GBC do not undertake monitoring of PM₁₀ or PM_{2.5} within the vicinity of the development.

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 grid square NGR: 564500, 173500. Data for this location was downloaded from the DEFRA website¹² for the purpose of the assessment and is summarised in Table 4.

Table 4 Background Pollutant Concentration Predictions

Pollutant	Predicted 2023 Background Pollutant Concentration (µg/m ³)
NO ₂	18.11

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

Pollutant	Predicted 2023 Background Pollutant Concentration (µg/m ³)
PM ₁₀	16.45
PM _{2.5}	11.44

- 4.4.2 As shown in Table 4, predicted background NO₂, PM₁₀ and PM_{2.5} concentrations are below the relevant AQOs and Interim Target at the development site.

4.5 **Rail Emissions**

- 4.5.1 The development site is located adjacent to the Southeastern railway line. Diesel locomotives are a source of atmospheric emissions and research has shown that NO₂ and SO₂ concentrations can be elevated alongside rail lines with a large number of movements. DEFRA has therefore issued guidance on the assessment of potential impacts for use in the LAQM process.
- 4.5.2 The DEFRA guidance¹³ indicates there is risk of exposure to exceedences of the 15-minute mean AQO for SO₂ should a stationary locomotive be situated within 15m of a sensitive land use on more than three occasions per day. Review of the area indicated that no trains are scheduled to be stationary for a period of 15-minutes or more within 15m of the site boundary. As such, exceedences of the relevant AQO for SO₂ due to rail emissions is not anticipated at the development location.
- 4.5.3 DEFRA guidance¹⁴ indicates there is risk of exposure to exceedences of the annual mean AQO for NO₂ should a sensitive land use be situated within 30m of a railway line identified as having a heavy flow of diesel locomotives and the annual mean background NO₂ concentration is above 25µg/m³. Review of Table 7.2 in the LAQM guidance¹⁵ indicates the Southeastern railway line has not been identified as a track experiencing a high number of diesel train movements. Additionally, the predicted annual mean background NO₂ concentration at the site is 18.1 µg/m³. As such, exceedences of the relevant AQO for NO₂ due to rail emissions are not anticipated at the development location.

¹³ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

¹⁴ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

¹⁵ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

- 4.5.4 Based on the above factors, air quality conditions at the proposed site are not predicted to be significantly affected by rail emissions.

5.0 **ASSESSMENT**

5.1 **Introduction**

- 5.1.1 There is the potential for air quality impacts as a result of the 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 **Potential Development Impacts**

- 5.2.1 Any vehicle movements associated with the proposals will generate exhaust emissions on the local and regional road networks. However, the proposals do not include any car parking spaces. As such, potential air quality impacts associated with the operational phase road vehicle exhaust emissions are predicted to be **not significant**, in accordance with the IAQM¹⁶ screening criteria shown in Section 3.2.

5.3 **Potential Future Exposure**

- 5.3.1 Residential land use is considered sensitive to elevated long term and short term pollutant concentrations. As such, the proposed development has the potential to introduce new receptors into an area of poor air quality. Existing conditions at the site are therefore considered in the following Sections.

AQMA Designation

- 5.3.2 The site is partly located within the A226 One-way system in Gravesend AQMA, which has been declared due to exceedences of the annual mean AQO for NO₂. The designation does not cover 1-hour NO₂, annual mean or 24-hour mean PM₁₀, indicating exceedences of these AQOs have not been identified within the area. As such, they have not been considered further in the context of this assessment.
- 5.3.3 Although the site is partly located within the A226 One-way system in Gravesend AQMA, it is likely that there are some locations within the designation that do not experience exceedences of the relevant AQO. This is shown in the 2019 monitoring results, as reported

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

in the GBC 2022 Annual Status Report¹⁷ (ASR), which indicates compliance with the annual mean AQO for NO₂ at five out of ten sites within the AQMA.

- 5.3.4 In summary, although AQO exceedences are considered possible at the site based on the AQMA, they are not certain.

Proximity to Significant Pollution Sources

- 5.3.5 A desk-top study was undertaken in order to identify any significant pollution sources within the vicinity of the site. The findings are provided in Table 5.

Table 5 Significant Pollution Sources

Source	Distance to Site (m)	Comment
Athboy Road	Adjacent	Athboy Road is an unclassified one-way minor road and volumes of traffic are likely to be very low
Stone Street	Adjacent	Stone Street is an unclassified one-way minor road and volumes of traffic are likely to be very low
A226 Rathmore Road	15	Rathmore Road is classified as an 'A' road with an Average Annual Daily Traffic flow of 7,997 and a Heavy Duty Vehicle (HDV) fleet proportion of 2.2% during 2019 ^(a)

Note: (a) Source: Department for Transport, <https://roadtraffic.dft.gov.uk/manualcountpoints/90097>.

- 5.3.6 As shown in Table 5, there are several emission sources within the vicinity of the site. Athboy Road and Stone Street are unclassified one-way minor roads and are unlikely to contribute significantly to pollution levels above background. Roads experiencing high traffic volumes, such as the A226 Rathmore Road, are distanced from the proposals and are therefore unlikely to contribute significantly to pollutant concentrations at the development location. As such, road traffic exhaust emissions are unlikely to contribute significantly to pollution levels above background at the proposals.

¹⁷ 2022 Annual Status Report, GBC, 2022.

Local Monitoring Results

- 5.3.7 A review of local monitoring results was undertaken in order to identify potential for exceedences of the annual mean AQO for NO₂ at the development location.
- 5.3.8 GBC undertake monitoring of annual mean NO₂ concentrations at five locations in the vicinity of the site. GR39 - 19 Stone Street and GR128 - 1a Railway Place are located adjacent to Stone Street approximately 30m north-east and 8m east of the site boundary, respectively. As shown in Table 3, the recorded annual mean NO₂ concentrations were below the AQO in 2019. As both the site and monitors are positioned adjacent to minor road sources, similar concentrations would be anticipated at the development location.
- 5.3.9 The GR129 - 20 Stone Street, GR130 - 6 Wrotham Road and GR131 - 7 Wrotham Road are located within close proximity to the A266 Rathmore Road. Due to the position of these monitors, concentrations recorded at these sites are not considered to accurately represent conditions at the proposals. However, as shown in Table 3, concentrations were below the relevant AQO at these locations in recent years.
- 5.3.10 Based on the above, exceedence of the annual mean AQO for NO₂ is considered unlikely at the proposed site.

Site Layout

- 5.3.11 As outlined in DEFRA guidance¹⁸ pollutant levels decrease with distance from sources, such as roads. Therefore, it is anticipated that NO₂ concentrations at the MHO rooms, located at first and second floor level, would be lower than those recorded at the ground level survey positions.

Summary

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

¹⁸ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

- Although the site is partly located within an AQMA, recent local monitoring has indicated compliance with the annual mean AQO for NO₂ at a number of locations within the designation;
- The site is distanced from major pollutant sources;
- Local monitoring results indicate annual mean NO₂ concentrations below the relevant AQO;
- The site layout includes sensitive receptors from first and second floor level.

5.3.13 Based on the assessment results, exposure of future occupants to exceedences of the annual mean AQO for NO₂ is not considered likely. As such, the site is considered suitable for the proposed end-use from an air quality perspective without the inclusion of mitigation.

6.0 CONCLUSION

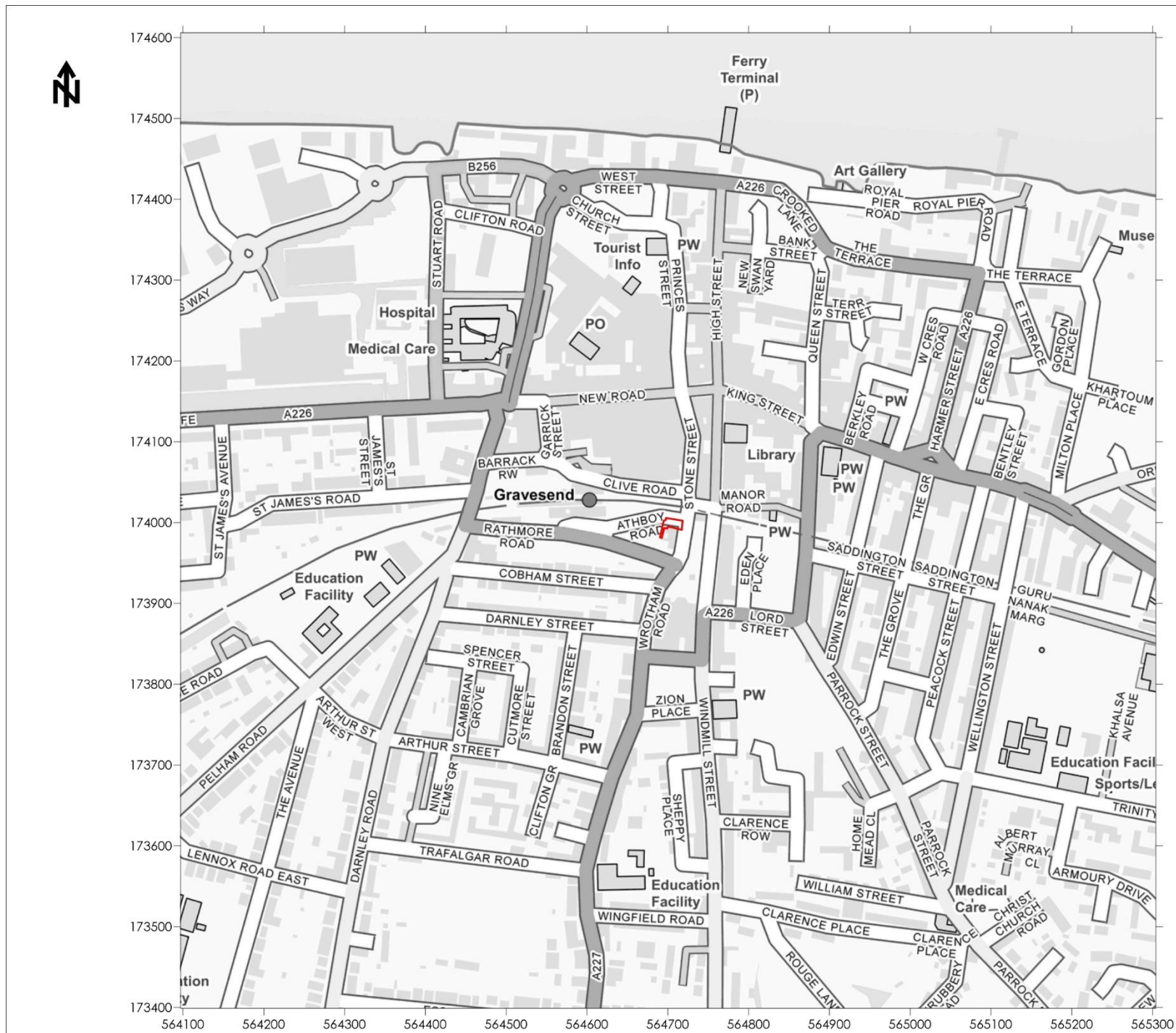
- 6.1.1 Redmore Environmental Ltd was commissioned by Kallarview Construction Limited to undertake an Air Quality Assessment in support of the redevelopment of 24 Stone Street, Gravesend.
- 6.1.2 The proposals have the potential to cause air quality impacts during operation as a result of road traffic exhaust emissions associated with vehicles travelling to and from the development during operation, 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, consider location suitability for the proposed end-use and assess potential effects as a result of the scheme.
- 6.1.3 The potential for air quality impacts as a result of traffic exhaust emissions associated with vehicles travelling to and from the site during the operational phase was assessed against the screening criteria provided within the IAQM¹⁹ guidance document. Due to the scale of the proposals, road traffic impacts were predicted to be **not significant**.
- 6.1.4 The potential for the exposure of future occupants to elevated pollution levels was assessed based on the AQMA designation, local pollution sources, recent monitoring results and site layout. This indicated that annual mean concentrations of NO₂ are likely to be below the relevant AQO at the development location. As such, the site is considered suitable for the proposed end-use from an air quality perspective without the inclusion of mitigation.
- 6.1.5 Based on the assessment results, air quality issues are not considered a constraint to planning consent for the development.

¹⁹ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

7.0 **ABBREVIATIONS**

AQLV	Air Quality Limit Value
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Strategy
ASR	Annual Status Report
DEFRA	Department for Environment, Food and Rural Affairs
GBC	Gravesham Borough Council
HDV	Heavy Duty Vehicle
HMO	House in Multiple Occupation
IAQM	Institute of Air Quality Management
LA	Local Authority
LAQM	Local Air Quality Management
NGR	National Grid Reference
NO ₂	Nitrogen dioxide
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
SO ₂	Sulphur dioxide

Figures



Legend



Site Boundary

Title

Figure 1 - Site Location Plan

Project

Air Quality Assessment
Stone Street, Gravesend

Project Reference

1170-2

Client

Kallarview Construction Limited

Contains Ordnance Survey Data
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Legend



Site Boundary



Monitor

Title

Figure 2 - Monitoring Locations

Project

Air Quality Assessment
Stone Street, Gravesend

Project Reference

1170-2

Client

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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.

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.