



RF | ENVIRONMENTAL

NOISE | VIBRATION | AIR QUALITY

JOSTEC LTD

LAND REAR OF 24 GEORGE STREET, READING

AIR QUALITY ASSESSMENT

TECHNICAL REPORT: RFE-0551-24-01-02 AQ

DATE: APRIL 2024



PROJECT TITLE: LAND REAR OF 24 GEORGE STREET, READING

REPORT REF: RFE-0551-24-01-02-AQ DRAFT REPORT

DATE: APRIL 2024

	Name	Position	Signature	Date
Prepared By	Kerrie Baggs	Air Quality Consultant		27/03/2024
Reviewed By	Richard Fenton	Director		28/03/2024
Approved By	Richard Fenton	Director		04/04/2024
For and on behalf of RF Environmental Ltd				

DOCUMENT HISTORY		
Status	Description	Date
01	Draft report for client comment	28/03/2024
02	Final report issued	04/04/2024

Notice: This report has been prepared by RF Environmental with all reasonable skill, care and diligence. RF Environmental Ltd accepts no responsibility whatsoever, following the issue of the report, for any matters arising outside the agreed scope of the works. This report is issued in confidence to the Client and RF Environmental Ltd has no responsibility of whatsoever nature to third parties to whom this report or any part thereof is made known. Any such party relies upon the report at their own risk. Unless specifically assigned or transferred within the terms of the agreement, RF Environmental Ltd retains all copyright and other intellectual property rights, on and over the report and its contents.



LAND REAR OF 24 GEORGE STREET, READING AIR QUALITY ASSESSMENT

CONTENTS

1	INTRODUCTION	2
1.1	Proposed Development	2
1.2	Site Location.....	2
2	LEGISLATION, POLICY AND GUIDANCE	3
2.1	Legislation	3
2.2	Planning Policy	3
2.3	Guidance	5
3	ASSESSMENT METHOD	7
3.1	Baseline method	7
3.2	Assessing Impacts of the Construction Phase.....	8
3.3	Assessing Impacts of the Operational Phase	8
4	BASELINE CONDITIONS.....	10
4.1	Air Quality Management Areas.....	10
4.2	Local Air Quality Monitoring	10
4.3	Background Concentrations.....	12
4.4	Summary	13
5	CONSTRUCTION PHASE IMPACT ASSESSMENT	14
5.1	Dust and Emissions Screening.....	14
5.2	Dust Emission Magnitude	14
5.3	Sensitivity of the Area	15
5.4	Dust Risk.....	15
5.5	Mitigation.....	16
5.6	Residual Effects	16
6	OPERATIONAL PHASE IMPACT ASSESSMENT.....	17
6.1	Traffic	17
6.2	Energy Plant	17
7	CONCLUSIONS	18
	Appendix A: Figures	19
	Appendix B: IAQM Mitigation Measures	24



1 INTRODUCTION

RF Environmental Ltd (RFE) has been commissioned to undertake an air quality assessment in support of a planning application for a proposed residential development at Land rear of 24 George Street, within the administrative area of Reading Borough Council (RBC).

The operational phase of the proposed development has the potential to cause air quality impacts on existing receptors from additional emissions.

The construction phase of the proposed development has the potential to cause temporary air quality impacts from dust-generating activities and construction vehicle exhaust emissions.

Emissions from road vehicles are a key source of air pollution. The main pollutants of health concern from road traffic are nitrogen dioxide (NO₂) and fine particles (PM₁₀ and PM_{2.5}). These pollutants have been considered in this assessment.

1.1 Proposed Development

The proposed development is for five two-storey, terraced townhouses. There will be no associated car parking spaces.

The site location plan and floor plans are presented in Figures' A1 and A2 of Appendix A.

The first proposed year of construction will be 2025 and the first operational year will be 2026.

1.2 Site Location

The proposed development site sits at the intersection of George Street and Gosbrook Road. To the northeast, it is bordered by George Street, where a lane branches off to meet Gosbrook Road positioned to the north. On the southern side of the site lies 24 George Street, the foremost property in a line of residences. Residential properties are situated adjacent to the site on George Street and across Gosbrook Road to the north. On the western boundary lies a playing field.

The site is situated in an urban area, comprising predominantly residential properties.

Currently, the site consists of undeveloped green space without any existing structures.

2 LEGISLATION, POLICY AND GUIDANCE

2.1 Legislation

Environment Act 2021

The Environment Act 2021¹ makes provisions about targets, plans and policies about air quality. Part 1 of the Act requires the Secretary of State to set long-term targets for priority areas including air quality. Under the Act, the Secretary of State will need to set a target for PM_{2.5}. Part 4 of the Act amends the Environment Act 1995² and the Clean Air Act 1993³.

Environment Act 1995

The Environment Act 1995 requires the Secretary of State to produce and review a national Air Quality Strategy which contains standards, objectives and measures for improving air quality. The UK government and the devolved administrations published the latest Air Quality Strategy for England, Scotland, Wales and Northern Ireland in July 2007⁴. The Strategy provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment.

Part 4 of the Environment Act requires every local authority to carry out a review of the likely future air quality within the authority's area. Where, as a result of an air quality review, it appears that any air quality standards or objectives are not being achieved, or are not likely within the relevant period to be achieved, the local authority must designate an air quality management area (AQMA). If a local authority has designated an AQMA, the local authority must prepare an action plan in relation to that area.

Local authorities in England undertake review and assessment against the Strategy's national objectives prescribed in the Air Quality Regulations (2000)⁵, as amended⁶.

Environmental Protection Act (1990)

Section 79 of the Environmental Protection Act 1990⁷ allows local authorities to take enforcement action if dust emissions become a statutory nuisance.

2.2 Planning Policy

2.2.1 National Policies

National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) (2021)⁸ sets out the government's planning policies for England and how these are expected to be applied. This revised framework

¹ 2021 c.30. Environment Act 2021. HMSO.

² 1995 c.25. Environment Act 1995. HMSO.

³ 1993 c.11. Clean Air Act 1993. HMSO.

⁴ The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Department for Environment, Food and Rural Affairs in partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland, July 2007

⁵ SI 2000 No. 928. Environmental Protection, England. The Air Quality (England) Regulations 2000. HMSO.

⁶ SI 2002 No. 3043. Environmental Protection, England. The Air Quality (England) (Amendment) Regulations 2002. HMSO.

⁷ 1990 c.43. Environmental Protection Act. HMSO.

⁸ Ministry of Housing, Communities and Local Government. National Planning Policy Framework. July 2021.



replaces the previous National Planning Policy Framework published in March 2012, revised in July 2018 and updated in February 2019.

Paragraph 105 refers to the promotion of sustainable transport and how this can contribute to improving air quality. It states that:

“The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.”

Paragraph 186 focuses on how air quality should be considered during planning decisions. It 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”.

2.2.2 Local Policy

RBC Local Air Quality Management

RBC's Local Plan⁹ was adopted on 4th November 2019. The Local Plan sets out the planning policies for development in Reading up to 2036 and is the main consideration in deciding planning applications. The Local Plan replaces previous development plans including the Core Strategy, Reading Central Area Action Plan and Sites and Detailed Policies Document.

The Local Plan includes a policy on air quality which aims to ensure that increased development within Reading does not lead to a net increase in emissions as well as ensuring any increased exposure within the poorest areas of air quality is accompanied by appropriate mitigation. Policy EN15 on Air Quality states that:

“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

⁹ Reading Borough Council. Reading Borough Local Plan 2019.

the effect is to be mitigated. The following criteria should be taken into account:

- *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.”

2.3 Guidance

National Planning Practice Guidance

The government has revised and updated the national planning practice guidance¹⁰ to support the NPPF to make it more accessible. The guidance includes advice on: planning and air quality; the role of local plans regarding air quality; when air quality is likely to be relevant to a planning decision; what should be included within an air quality assessment; and how impacts on air quality can be mitigated. The guidance encourages early communication with local planning authorities, which has been included in the proposed development assessment work undertaken to date.

Construction Guidance

The Institute of Air Quality Management (IAQM)¹¹ has published guidance on the assessment of dust from construction and demolition. Based on this guidance, the main air quality impacts that may arise during construction activities are:

- dust deposition, resulting in the soiling of surfaces;
- visible dust plumes, which are evidence of dust emissions;
- elevated PM₁₀ concentrations, as a result of dust generating activities on site; and
- an increase in concentrations of airborne particles and nitrogen dioxide due to exhaust emissions from diesel powered vehicles and equipment on site.

¹⁰ Ministry of Housing, Communities and Local Government. 2019. Planning Practice Guidance: Air Quality. Available from: <https://www.gov.uk/guidance/air-quality--3> (Accessed 12 March 2024)

¹¹ Holman et al (2024). IAQM Guidance on the assessment of dust from demolition and construction 2024. V2.2.



Activities on construction sites are assessed to reflect their different potential impacts and the construction activities are sub-divided between demolition, earthworks, construction and trackout. The sensitivity of the area is considered and the assessment is used to define appropriate mitigation measures.

Operational Guidance

For operational impacts, the Environmental Protection UK (EPUK) and the IAQM produced guidance to ensure that air quality is adequately considered in the land-use planning and development control processes¹².

The guidance document is particularly applicable to assessing the effect of changes in exposure of members of the public resulting from residential and mixed-use developments, especially those within urban areas where air quality is poorer. It is also relevant to other forms of development where a proposal could affect local air quality and for which no other guidance exists.

Air Quality Criteria

A summary of the air quality objectives relevant to the proposed development, as set out in the UK Air Quality Strategy, is presented in Table 2.1 below. These objectives apply to human receptors.

Pollutant	Time Period	Objective
Nitrogen Dioxide (NO₂)	1-hour Mean	200 µg/m ³ not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m ³
PM₁₀	1-hour Mean	50 µg/m ³ not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m ³
PM_{2.5}	Annual Mean	20 µg/m ³ (12 µg/m ³ by 2028)*

TABLE 2.1: UK AIR QUALITY OBJECTIVES FOR NITROGEN DIOXIDE AND PARTICULATES

* The presented PM_{2.5} objective in brackets is an interim target prescribed in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 and is the responsibility of national government and is not covered in Regulations aimed at the LAQM framework. Although local authorities have a role to play in delivering reductions in PM_{2.5}. The PM_{2.5} target of 20 µg/m³ is covered by the Air Quality Standards Regulations 2010 aimed at Local Authorities.

¹² Land-Use Planning & Development Control: Planning for Air Quality. Guidance from Environmental Protection UK and the Institute of Air Quality Management for the consideration of air quality within the land-use planning and development control processes. EPUK & IAQM. January 2017



3 ASSESSMENT METHOD

3.1 Baseline method

A review of baseline conditions was undertaken to understand existing air quality in the area.

3.1.1 Data sources

3.1.1.1 Local Air Quality Management

The latest publicly-available air quality monitoring data managed by RBC are for 2019. 2019 is still considered the most representative baseline year due to the impacts of the Covid pandemic in more recent years.

Monitoring data collected by RBC as part of their local air quality management (LAQM) duties was obtained to inform the baseline.

3.1.1.2 Defra Background Maps

Background pollutant concentrations across the study area have been defined using modelled national pollution maps published by Defra¹³. These cover the whole of the UK on a 1x1 km grid and cover each year until 2030.

Defra modelled data were used to predict future concentrations of NO₂, PM₁₀ and PM_{2.5} at the proposed development site, which provides an indication of the concentrations for the opening year of the proposed development and the predicted trend in background pollutants over time.

Predictions of total pollutant concentrations include contributions from local emissions sources (such as roads, chimney stacks, etc.) and local background concentrations.

3.1.2 Receptors

Human Receptors

The AQS objectives only apply where members of the public are likely to be regularly present for the averaging time of the objective. The LAQM guidance (2014) states that the annual mean objectives apply to all locations where members of the public might be regularly exposed. Defra technical guidance note TG22¹⁴ provides the following examples of where annual mean AQS objectives should apply:

- residential properties;
- schools;
- hospitals; and
- care homes.

¹³ Department for Environment, Food and Rural Affairs. (Defra). 2018. Background mapping for local authorities. <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018> (Accessed 26 March 2024)

¹⁴ Defra. 2022. Local Air Quality Management. Technical Guidance TG22



The 24-hour mean objective applies to all locations where the annual mean objective would apply, together with hotels and gardens of residential properties.

Annual mean NO₂ concentrations over 60 µg/m³ are used as an indication of potential exceedances of the 1-hour mean NO₂ objective.

Online mapping and aerial photograph resources were used to identify existing receptors.

The proposed development will introduce residential receptors to the area, which are considered as part of the assessment.

Ecological Receptors

There are no ecological receptors within 50m of the site or 250m of the site entrance; therefore, impacts on ecology have not been considered further in the assessment.

3.2 Assessing Impacts of the Construction Phase

There is the potential for fugitive dust emissions to occur during the construction-phase activities. The dust emissions from construction have been assessed in accordance with the IAQM document 'Guidance on the Assessment of Dust from Demolition and Construction'.

The IAQM guidance requires that construction dust impacts are assessed up to 250m from the boundary of the site. The construction phase study area also covers 50m from the edge of the road(s) used by construction vehicles on the public highway up to 500m from the site exit. For small sites this is 50m from the site exit.

3.3 Assessing Impacts of the Operational Phase

The IAQM and EPUK guidance provides criteria for establishing whether a development will require an air quality assessment and, if so, what level of assessment. The criteria are set out in a two-stage approach:

To meet the criteria in Stage 1, the development must have:

- 10 or more residential units or a site area of more than 0.5 ha; or
- more than 1,000 m² of floor space for all other uses or a site area greater than 1 ha.

This must be combined with any of the following:

- more than 10 parking spaces within the development; or
- the development has a centralised energy facility or combustion process.

The indicative Stage 2 criteria for requiring a detailed modelling assessment are:

- A change of LDV flows of:- more than 100 AADT within or adjacent to an AQMA- more than 500 AADT elsewhere.
- A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.



- Where the change is 5m or more and the road is within an AQMA.
- Where a junction is added or removed close to existing receptors
- Where one or more substantial combustion processes, where there is a risk of impacts at relevant receptors.

The proposed development will not introduce more than 100 AADT flows or more than 25 AADT HDV flows. It does not meet indicative Stage 2 criteria, so detailed assessment of road traffic has been scoped out. A qualitative assessment has been undertaken.

4 BASELINE CONDITIONS

The site is located in an urban area. George Street bounds the east and northeast of the site and Gosbrook Road lies to the north of the site.

4.1 Air Quality Management Areas

There is currently one large AQMA in Reading covering all the major arterial roads in and out of the town as well as the central area. The AQMA is declared for exceedances of the Annual NO₂ objective.

The site is situated within the AQMA.

4.2 Local Air Quality Monitoring

Data were taken from RBC's 2020 air quality annual status report¹⁵.

RBC undertakes monitoring of nitrogen dioxide (NO₂) concentrations using passive diffusion tubes across the administrative area. RBC operates three automatic monitoring stations measuring NO₂ and PM₁₀. RBC reports on one AURN monitoring site measuring NO₂, PM₁₀ and PM_{2.5}. RBC undertook nitrogen dioxide monitoring across 60 diffusion tube sites during 2019.

The closest roadside diffusion tube site comparable to the proposed development site is located c. 30m east of the proposed development site on Gosbrook Road, it is positioned c. 6m from the kerbside. The next closest roadside diffusion tube site comparable to the site is located at 40 George Street and is c. 35m south of the site. The tube is positioned c. 3m from the kerbside. Further south along the same line of residential properties is another roadside diffusion tube at 68 George Street, positioned c. 3m from the kerbside.

The closest roadside automatic monitoring station (RD1) is located on Caversham Road, c. 750m southeast of the site and approximately 3.8m from the kerbside.

The closest urban background monitoring location is the AURN site located c. 2.1km southeast of the site, measuring both PM₁₀ and PM_{2.5}.

The results are summarised in Table 4.1, Table 4.2 and Table 4.3 and the monitoring locations are shown in Figure A3 of Appendix A.

¹⁵ RBC 2020 Air Quality Annual Status Report. June 2020. Available from: <https://www.reading.gov.uk/climate-and-pollution/2020-air-quality-annual-status-report-asr/> Accessed 15/12/2022.

Site ID	Easting, Northing	Site Type	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)			
			2016	2017	2018	2019
40 George St	471909, 174543	Roadside	44	47	45	38
68 George St	471913, 174490	Roadside	33	31	33	27
241 Gosbrook Rd	532945, 182570	Roadside	35	34	35	31
RD1	471153, 174429	Roadside (Automatic)	39	37	40	35
Reading AURN	473441, 173198	Urban Background	34	29	26	22

TABLE 4.1: SUMMARY OF ANNUAL MEAN NO₂ MONITORING

Notes:

Exceedances of the NO₂ annual mean AQS objective of 40 $\mu\text{g}/\text{m}^3$ are shown in bold.

NO₂ annual means in excess of 60 $\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ hourly mean AQS objective are shown in bold and underlined.

Site ID	Easting, Northing	Site Type	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)				
			2015	2016	2017	2018	2019
Reading AURN	473441, 173198	Urban Background	12	13	12	13	13

TABLE 4.2: SUMMARY OF ANNUAL MEAN PM₁₀ MONITORING

Site ID	Easting, Northing	Site Type	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)				
			2015	2016	2017	2018	2019
Reading AURN	473441, 173198	Urban Background	7	9	10	7	8

TABLE 4.3: SUMMARY OF ANNUAL MEAN PM_{2.5} MONITORING

Monitoring data presented in Table 4.1 show that long term roadside and background monitoring locations fell within the AQS Objective of 40 $\mu\text{g}/\text{m}^3$ in 2019. However, the roadside diffusion tube site at 40 George Street was within 10% of this objective. The monitoring results show a general decreasing trend from 2016 to 2019.

The pavement at the proposed development site widens compared to the adjacent properties on George Street. Additionally, the proposed development will be situated slightly further back from the boundary with the use of a front garden, and a fence will be installed, creating a barrier between the development and the road. As a result, the closest facade of the nearest proposed property will be approximately 5m from the kerbside. The roadside diffusion tube site at 40 George Street is positioned about 3m from the kerbside. NO₂ concentrations typically decrease significantly with distance. Furthermore, the road width is notably larger



due to a lane branching off from George Street to connect with Gosbrook Road, thus facilitating better dispersion at the proposed development location. Considering the increased distance, the barrier, and the improved dispersion, it is likely that NO₂ concentrations at the proposed development will fall within the annual mean AQS objective of 40 µg/m³.

Monitoring data across all the roadside diffusion tube monitoring locations are below 60 µg/m³, which indicates the hourly mean NO₂ objective is unlikely to be breached.

The measured monitoring concentrations show that the PM₁₀ and PM_{2.5} concentrations are likely to be within the annual mean AQS objectives of 40 µg/m³ and 20 µg/m³, respectively.

TG22 states that when the annual mean NO₂ concentration at diffusion tube locations is less than 60 µg/m³, the short term (one-hour) objective for NO₂ is unlikely to be exceeded. The data in Table 4.1 demonstrate that the one-hour objective is not likely to have been breached between 2016 and 2019.

The report by Air Quality Consultants, Nitrogen Dioxide and Nitrogen Oxides Trends in the UK 2005 to 2018¹⁶, shows evidence from real-world testing that the introduction of the latest vehicle emissions standards (Euro 6 for light duty vehicles and Euro VI for heavy duty vehicles) has resulted in emissions reductions.

Monitoring data presented in Table 4.2 shows that PM₁₀ annual mean and 24-hour mean background concentrations have been within the AQS Objective in all reported years.

Monitoring data presented in **Error! Reference source not found.** shows that PM_{2.5} annual mean background concentrations have been within the AQS Objective in all reported years.

4.3 Background Concentrations

Estimated background concentrations at the proposed development have been determined for the baseline year of 2019, the construction year of 2025 and the operational year of 2026 using Defra's background maps¹⁷. Concentrations of NO₂, PM₁₀ and PM_{2.5} have been used for the grid square centred on 471500, 174500, which overlays the site. The background concentrations are set out in Table 4.4. The background concentrations are all within the AQS objectives in 2019 and predict a downward trend for NO₂ through to 2026. PM₁₀ and PM_{2.5} concentrations appear to level off in 2026.

¹⁶ Air Quality Consultants, 2019. Nitrogen Dioxide and Nitrogen Oxides Trends in the UK 2005 to 2018.

¹⁷ Department for Environment, Food and Rural Affairs. (Defra). 2018. Background mapping for local authorities. [online] <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>. Accessed 27/03/2024

Site ID	2019	2025	2026
NO ₂ (µg/m ³)	22.7	19.4	19.1
PM ₁₀ (µg/m ³)	17.6	16.3	16.3
PM _{2.5} (µg/m ³)	12.6	11.5	11.5

TABLE 4.4: PREDICTED ANNUAL MEAN BACKGROUND POLLUTANT CONCENTRATIONS

4.4 Summary

The site is in an urban area surrounded by predominantly residential properties, and sits within the designated AQMA.

Annual mean NO₂ concentrations measured at the roadside automatic and diffusion tube monitoring locations show that annual mean NO₂ concentrations remain below the AQS objective in 2019. However, the roadside diffusion tube at 40 George Street remains within 10% of the AQS Objective in 2019. Due to the increased distance of the proposed development from the kerbside, the use of barriers and the increased dispersion, annual mean NO₂ concentrations are likely to be lower at the proposed development site. The PM₁₀ and PM_{2.5} concentrations measured at the automatic monitoring station are within the AQS objective in all reported years.

Annual mean NO₂ concentrations recorded at the passive roadside diffusion tube monitoring locations are well below 60 µg/m³, which indicates the hourly mean NO₂ objective is unlikely to be breached. Mean hourly NO₂ concentrations recorded at the continuous roadside and urban background monitors did not exceed the 200 µg/m³ objective in all reported years.

Modelled Defra background annual mean pollutant concentrations at the 1km x 1km grid square overlaying the site predict that NO₂, PM₁₀ and PM_{2.5} pollutants currently meet the AQS objective. NO₂ concentrations show a downward trend throughout future years and PM₁₀ and PM_{2.5} concentrations appear to level off in future years.

Over the next few years, Euro 6/VI vehicles will dominate the fleet and will lead to lower NO_x emissions. This will lead to lower future baseline NO₂ levels and levels are likely to be lower than the last reported results in 2019.

Overall, the baseline data indicates that annual NO₂, PM₁₀ and PM_{2.5} objectives will be met at the proposed development site in the operational year of 2026.



5 CONSTRUCTION PHASE IMPACT ASSESSMENT

5.1 Dust and Emissions Screening

As there are human receptors within 50m of potential construction dust sources, human health impacts and dust soiling impacts are considered in this assessment.

Two-way construction traffic movements are expected to be less than 25 daily movements at peak. Annual average daily movements will be lower. The change in flow in heavy-duty vehicles (HDVs) during construction is not expected to meet indicative criteria for detailed assessment. Therefore, impacts from construction traffic are expected to be negligible.

5.2 Dust Emission Magnitude

Quantities and magnitude classifications used below correspond to those in IAQM guidance and are based on the information currently available.

Demolition

There are no existing structures and therefore there will be no demolition activities.

Earthworks

Earthworks activities will involve the excavation of the foundations over a total site area of 913m², with a soil type formed of Seaford Chalk Formation and Newhaven Chalk Formation¹⁸ comprising chalk, with a high potential for dust release. Given the relatively small area requiring earthworks, it is anticipated that the peak number of heavy earth-moving vehicles active at any one time will likely be less than 5. The site is considered to have a 'Small' dust emission magnitude for earthworks.

Construction

The project entails the construction of five newly built terrace houses over an area of approximately 570m³. Construction materials will primarily consist of brickwork and blockwork. There will be no on-site concrete batching. Construction activities are expected to take up to one year. The site is considered to have a 'Small' dust emission magnitude for construction.

Trackout

The peak number of HDV outward movements is expected to be less than 10 per day. Site access will likely be via George Street, towards the south end of the site. The site is considered to have a 'Small' dust emission magnitude for trackout.

¹⁸ British Geological Survey. Geology of Britain Viewer. Natural Environment Research Council.
https://geologyviewer.bgs.ac.uk/?_ga=2.163114175.2089862260.1699018418-1229685044.1699018418 Accessed 20/03/2024.

Activity	Dust Emission Magnitude
Demolition	N/A
Earthworks	Small
Construction	Small
Trackout	Small

TABLE 5.1: DUST EMISSION MAGNITUDE

5.3 Sensitivity of the Area

There are between 1 and 10 receptors with a high sensitivity to dust soiling and health effects within 20 m of the site boundary. These receptors include nearby residential properties located immediately south on George Street, which have a high sensitivity to dust soiling and health effects. The dust risk buffers are shown in Figure A4 of Appendix A.

Table 5.1 shows that the dust emission magnitude for trackout is small and therefore there is a risk of material being tracked 50m from the site exit. Since it is not known which roads construction vehicles will use, it has been assumed that all possible routes could be affected. It is assumed there are between 10 and 100 residential properties within 20m of the roads, with a high sensitivity to dust soiling and health effects.

The sensitivity of the area to dust soiling effects is defined as 'Medium' for demolition, earthworks and construction activities, and 'High' for trackout, due to the number and proximity of sensitive receptors. This is summarised in Table 5.2.

The sensitivity of the area to human health impacts is defined as 'Low' for all activities, due to the number and proximity of sensitive receptors and a predicted background annual mean PM₁₀ concentration of less than 24 µg/m³ in the vicinity of the site.

Sensitivity of the Area	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium	High
Human Health	Low	Low	Low	Low

TABLE 5.2: SENSITIVITY OF THE AREA

5.4 Dust Risk

The likely risk of dust effects, based on the contents of Table 5.1 and Table 5.2, at nearby sensitive receptors without mitigation in place is summarised in Table 5.3. There is a 'Negligible' risk from all activities causing health effects. There is a 'Low' risk from all activities causing dust soiling.

Summary	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low Risk	Low Risk	Low Risk	Low Risk
Human Health	Negligible	Negligible	Negligible	Negligible

TABLE 5.3: SUMMARY DUST RISK CATEGORY

5.5 Mitigation

The dust risk assessment has found that the site is, at worst, a 'Low Risk' Site. The IAQM guidance provides a 51-point list of potential mitigation measures and suggests where these measures are highly recommended, desirable or not required based upon the risk of the site. The measures relevant to this site, based on the dust risk category, are presented in Appendix B.

The IAQM guidance details that the dust risk assessment should inform an air quality and dust management plan, to confirm the dust and air quality emission control measures to be implemented, that non-road mobile machinery standards will be met and monitoring methods and complaint response procedures. The air quality and dust management plan may form part of a construction environmental management plan.

5.6 Residual Effects

The IAQM guidance does not provide a method for assessing the significance of effects before mitigation, and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be 'not significant'.



6 OPERATIONAL PHASE IMPACT ASSESSMENT

The proposed development will comprise five new terrace town houses. There will be no associated parking with the proposed development.

6.1 Traffic

Annual average daily traffic (AADT) flows associated with the proposed development will be much less than 100 vehicles, therefore, traffic associated with the proposed development does not meet indicative criteria in IAQM guidance for detailed assessment. Traffic is expected to have a negligible impact on local air quality.

6.2 Energy Plant

The development is proposing an electric energy supply, and therefore there will be no combustion plant associated with the development. Impacts from energy plant will be negligible in line with IAQM guidance.



7 CONCLUSIONS

Baseline conditions indicate that NO₂, PM₁₀ and PM_{2.5} objectives will be met in the operational year of 2026 at the proposed development site.

The construction works have the potential to create dust. During the construction phase it will therefore be necessary to adopt mitigation measures to minimise dust emissions. With the implementation of mitigation measures, the dust impacts from the construction phase will not be significant. Impacts from construction traffic will be negligible. A dust management plan will be required to determine the necessary mitigation measures, prior to the construction phase.

The traffic associated with the operation of the proposed development is predicted to have a negligible impact on local air quality. The energy plant associated with the proposed development will have a negligible impact on local air quality.

The assessment shows there is no conflict with relevant national, or local policy, and air quality poses no hindrance to the proposed development.



DRAFT

Appendix A: Figures



FIGURE A1: PROPOSED GROUND FLOOR PLAN



FIGURE A2: PROPOSED FIRST FLOOR PLAN

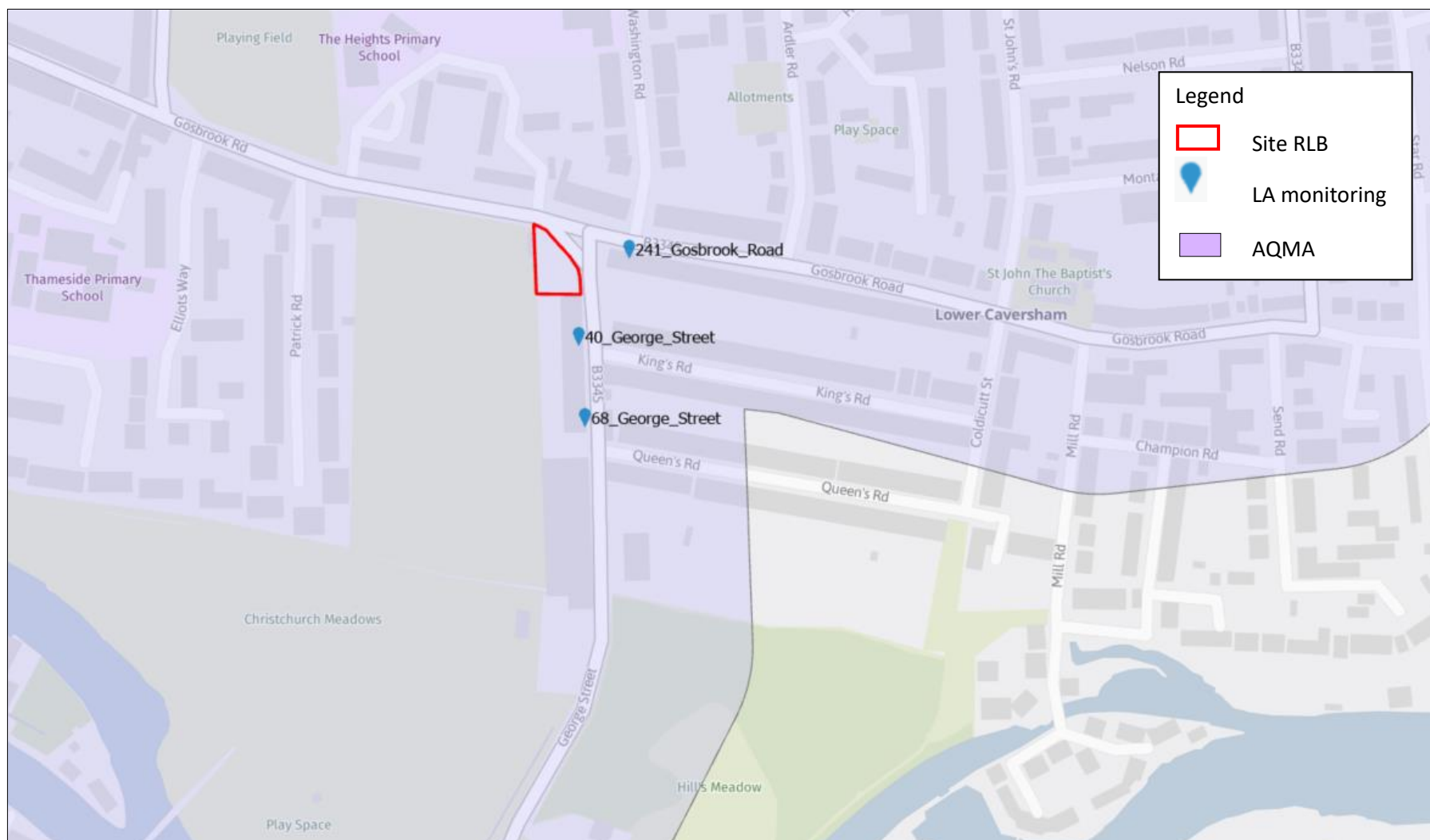


FIGURE A3: SITE LOCATION AND LA MONITORING LOCATION



FIGURE A4: SITE LOCATION AND LA MONITORING LOCATION



Appendix B: IAQM Mitigation Measures

DRAFT



Mitigation Measures	Low Risk	Medium Risk	High Risk
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.	H	H	H
Display the head or regional office contact information	H	H	H
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, realtime PM10 continuous monitoring and/or visual inspections.	D	H	H
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.	H	H	H
Make the complaints log available to the local authority when asked.	H	H	H
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.	H	H	H
Monitoring			
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary.	D	D	H
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.	H	H	H
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential	H	H	H



Mitigation Measures	Low Risk	Medium Risk	High Risk
to produce dust are being carried out and during prolonged dry or windy conditions.			
Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	H	H	H
Preparing and maintaining the site			
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H	H	H
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	H	H	H
Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period	D	H	H
Avoid site runoff of water or mud.	H	H	H
Keep site fencing, barriers and scaffolding clean using wet methods.	D	H	H
Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	D	H	H
Cover, seed or fence stockpiles to prevent wind whipping.	D	H	H
Operations			
Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable	H	H	H
Ensure all vehicles switch off engines when stationary - no idling vehicles.	H	H	H
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	H	H	H
Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)	D	D	H



Mitigation Measures	Low Risk	Medium Risk	High Risk
Operations			
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	H	H	H
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	H	H	H
Use enclosed chutes and conveyors and covered skips.	H	H	H
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	H	H	H
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	D	H	H
Waste Management			
Avoid bonfires and burning of waste materials.	H	H	H
Measures specific to demolition			
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	D	D	H
Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	H	H	H
Avoid explosive blasting, using appropriate manual or mechanical alternatives	H	H	H
Bag and remove any biological debris or damp down such material before demolition.	H	H	H
Measures specific to construction			
Avoid scabbling (roughening of concrete surfaces) if possible	D	D	H
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place	D	H	H
Measures specific to trackout			
Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	D	H	H



Mitigation Measures	Low Risk	Medium Risk	High Risk
Avoid dry sweeping of large areas.	D	H	H
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	D	H	H
Record all inspections of haul routes and any subsequent action in a site log book.	D	H	H
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	D	H	H

FIGURE A3: SITE LOCATION AND LA MONITORING LOCATION

DRAFT