



RF | ENVIRONMENTAL

NOISE | VIBRATION | AIR QUALITY

WOODSIDE (READING) LTD

362 OXFORD ROAD, READING

AIR QUALITY ASSESSMENT

TECHNICAL REPORT: RFE-0416-22-01-02 AQ

DATE: FEBRUARY 2022



PROJECT TITLE: 362 OXFORD ROAD, READING

REPORT REF: RFE-0416-22-01-02-AQ DRAFT REPORT

DATE: FEBRUARY 2022

	Name	Position	Signature	Date
Prepared By	Kerrie Baggs	Air Quality Consultant		25/01/2022
Reviewed By	Richard Fenton	Director		02/02/2022
Approved By	Richard Fenton	Director		21/02/2022
For and on behalf of RF Environmental Ltd				

DOCUMENT HISTORY		
Status	Description	Date
01	Draft report for client comment	02/02/2022
02	Final report issued	21/02/2022

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.



362 OXFORD ROAD, READING AIR QUALITY ASSESSMENT

CONTENTS

1	INTRODUCTION	4
1.1	Proposed Development	4
1.2	Site Location.....	4
2	LEGISLATION, POLICY AND GUIDANCE	5
2.1	Legislation	5
2.2	Planning Policy	6
2.3	Guidance	7
2.4	Air Quality Criteria	8
3	ASSESSMENT METHOD	9
3.1	Baseline method	9
3.2	Assessing Impacts of Construction Phase.....	10
3.3	Assessing Impacts of the Operational Phase	10
4	BASELINE CONDITIONS.....	12
4.1	Air Quality Management Areas.....	12
4.2	Local Air Quality Monitoring	12
4.3	Background Concentrations.....	14
4.4	Summary	15
5	CONSTRUCTION PHASE IMPACT ASSESSMENT	16
5.1	Dust and Emissions Screening.....	16
5.2	Dust Emission Magnitude	16
5.3	Sensitivity of the Area	17
5.4	Dust Risk.....	17
5.5	Mitigation.....	18
5.6	Residual Effects	18
6	OPERATIONAL PHASE IMPACT ASSESSMENT.....	19
6.1	Traffic	19
6.2	Energy Plant	19
7	CONCLUSIONS	20
	Appendix A: Figures	21
	Appendix B: 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 362 Oxford Road within the administrative boundary of Reading Borough Council (RBC).

The operational phase of the proposed development has the potential to result in air quality impacts on introduced receptors which may be exposed to poor air quality and the existing receptors due to a change in pollutant concentrations as a result of the proposed development.

The construction phase of the proposed development has the potential to result in temporary air quality impacts due to dust generating activities and from 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 consists of a mixed commercial and residential block, comprising retail space on the ground floor and 33 no. flats across the first to fifth floors. 17no. car parking spaces are included within the proposals of which 50% are electrical vehicle (EV) charging points. Covered cycle storage is proposed on the ground floor.

The existing site is used as a social club known as The Curzon Club and includes residential use on the first and second floors.

The site layout is presented in Figure A1 of Appendix A.

The proposed first year of construction is 2023 and the earliest proposed operational year is 2024.

1.2 Site Location

The site is located in an urban setting within the administrative area of RBC. The surrounding area is a mix of commercial and residential properties. The site is bounded by Oxford Road (A329) to the southwest of the site. This road comprises a single carriageway. A recess dedicated for car club permit holders only is located outside the site and a bus stop is located on the far side of the road. The main rail line into Reading station is located c. 500m north of the site.

2 LEGISLATION, POLICY AND GUIDANCE

2.1 Legislation

The following pieces of legislation are relevant to the assessment:

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 on the likely future air quality within the relevant period 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 shall 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.

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.



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.

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

"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 focusses on how air quality should be considered during planning decisions. It states:

"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:

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

⁹ Reading Borough Council. Reading Borough Local Plan 2019.



“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:

- 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 in order to make it more accessible. The guidance includes advice on: planning and air quality; the role of Local Plans with regard to 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;

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 25 January 2022)

¹¹ Holman et al (2014). IAQM Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London. www.iaqm.co.uk/text/guidance/construction-dust-2014.pdf

- 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.

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 taken into account and the assessment is used to define appropriate mitigation measures.

Operational Guidance

For operational impacts, the Environmental Protection UK (EPUK) and the Institute of Air Quality Management (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.

2.4 Air Quality Criteria

The ambient air quality criteria for the protection of public health were set by the standards implementing the UK National Air Quality Strategy (AQS).

The current air quality standards and objectives relevant to the LAQM framework and this assessment are summarised in Table 2.1.

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}^a	Annual Mean	25 µg/m ³

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

a The PM_{2.5} objective is not currently covered in Regulations and there is currently no requirement for local authorities to meet it.

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 has been 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 are for 2019, which is 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

The background pollutant concentrations across the study area have been defined using the national pollution maps published by Defra¹³. These cover the whole of the UK on a 1x1 km grid and are published for each year from 2018 until 2030.

Defra monitoring data was 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

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. LAQM Technical Guidance (TG16)¹⁴ provides the following examples of where annual mean AQS Objectives should apply:

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

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

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 25 January 2022).

¹⁴ Defra. 2018. Local Air Quality Management. Technical Guidance TG16



objective applies at these locations as well as at any outdoor location where a member of the public might reasonably be expected to stay for one hour or more, such as shopping streets, parks and sports grounds, as well as bus stations and railway stations that are not fully enclosed.

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 was used to identify existing receptors and the location of future roadside receptor locations.

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

Dust deposition due to demolition, earthworks, construction and trackout has the potential to affect sensitive habitats and plant communities. The sensitivity of receptors can be defined as High, Medium or Low, as defined in the IAQM construction dust guidance¹⁵. The guidance only considers designated ecological sites within 50 m to have the potential to be impacted by the construction works. There are no designated ecological sites within 50 m of the site boundary or those roads along which material may be tracked, thus ecological impacts will not be considered further.

3.2 Assessing Impacts of 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 350m 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 first step in considering the operational impacts of the proposed development has been to screen the proposed development against the criteria set out in the EPUK/IAQM guidance. Where impacts can be screened out there is no need to progress to a more detailed assessment.

The first stage is intended to screen out smaller development and/or developments where impacts can be considered to have insignificant effects. 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.

¹⁵ Institute of Air Quality Management. Guidance on the assessment for dust from demolition and construction. V1.1. 2014.



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 development is proposing retail space, 33 no. residential units and 17 no. parking spaces. Therefore, an air quality assessment looking at the impacts of the local area on the development and the impacts of the proposed development on the area has been carried out.

If the above do not apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area. If they do apply then you proceed to stage 2, the criteria for which are set out below. The criteria are more stringent where the traffic impacts may arise on roads where concentrations are close to the objective. The presence of an AQMA is taken to indicate the possibility of being close to the objective, but where whole authority AQMAs are present and it is known that the affected roads have concentrations below 90% of the objective, the less stringent criteria is likely to be more appropriate.

- A change of LDV flows of:- more than 100 annual average daily traffic (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.



4 BASELINE CONDITIONS

The site is located in urban surroundings in a mixed residential and commercial area. The site is bounded to the southwest by Oxford Road.

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 latest air quality annual status report¹⁶.

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 automatic monitoring station (RD3) is located on Oxford Road and measures NO₂ and PM₁₀. RD3 is located c. 1.1km northwest of the site and situated 6m from the kerbside.

The diffusion tube nearest to the site is located at 494 Oxford Road, c. 240m northwest of the site, situated 5m from the kerb. This is in a similar setting and distance from the roadside as the proposed development site. The next closest diffusion tube monitoring location to the site is located c.365m southeast at 327 Oxford Road, situated 7.5m from the kerb.

The closest NO₂ urban background monitoring location is an AURN site located c. 3.8km east of the site in Reading Old Cemetery. This monitor also measures PM₁₀ and PM_{2.5}.

The results are summarised in TABLE 4.1, TABLE 4.2 and TABLE 4.3. The monitoring locations are shown in Figure A2 of Appendix A.

¹⁶ RBC 2019 Air Quality Annual Status Report. June 2020.

Site ID	Easting, Northing	Site Type	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)				
			2015	2016	2017	2018	2019
RD3	468700, 174126	Roadside	31	30	28	28	26
494 Oxford Street	469470, 173715	Roadside	35	37	32	35	29
327 Oxford Street	470057, 173489	Roadside	43	40	40	39	34
Reading AURN	473441, 173198	Urban Background	22	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
RD3	468700, 174126	Roadside	23	22	21	23	21
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 between 2015 and 2019, presented in TABLE 4.1, show that the long-term roadside and urban background sites remained within the AQS objective of 40 $\mu\text{g}/\text{m}^3$ for mean annual NO₂ since 2018. The diffusion tube monitoring results show an overall downward trend since 2016.



The automatic monitoring station is situated in a similar setting to the proposed development site but c. 1m further from the kerb. The monitoring station is well within the nitrogen dioxide annual mean objective.

Of the nearby monitoring locations, the diffusion tube monitoring station at 494 Oxford Road is perhaps closest in nature to the development site. At 5m from the kerbside, it is situated a similar distance from the kerbside as the closest façade of the proposed development. The monitoring station is well within the nitrogen dioxide annual mean objective.

The monitoring location at 327 Oxford Road is located further from the kerbside than the proposed development, however, the monitoring location is directly opposite the Beresford Road junction, where traffic is likely queuing to turn right on to Beresford Road. This monitoring location is therefore likely to experience increased levels of congestion, and therefore increased levels of nitrogen dioxide levels, in comparison to the proposed development site.

The urban background monitoring location shows a downward NO₂ trend from 2015 to 2019.

The measured diffusion tube monitoring concentrations show that the NO₂ concentrations at the proposed development are likely to be below the annual mean AQS objective of 40 µg/m³.

The Local Authority guidance TG16¹⁷ 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 2015 and 2019.

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

Monitoring data presented in TABLE 4.3 shows that PM_{2.5} annual mean background concentrations have been within the AQO 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 2023 and the earliest proposed operational year of 2023 using Defra's background maps¹⁸. Concentrations of NO₂, PM₁₀ and PM_{2.5} have been extracted for the grid square centred on 469500, 173500, which overlays the site. The background concentrations are set out in TABLE 4.4. The background concentrations are all below the objectives in 2019 and predict a downward trend through to 2024.

¹⁷ Defra. 2018. Local Air Quality Management. Technical Guidance TG16

¹⁸ 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 25 January 2022

Site ID	2019	2024
NO ₂	16.1	13.7
PM ₁₀	17.2	16.1
PM _{2.5}	12.3	11.5

TABLE 4.4: PREDICTED ANNUAL MEAN BACKGROUND POLLUTANT CONCENTRATIONS (µg/m³)

Notes:

The PM_{2.5} objective, which is currently met, is not in Regulations and there is no requirement for local authorities to meet it.

4.4 Summary

The site is located in urban surroundings comprising a mixture of commercial and residential units. Annual mean NO₂ concentrations measured at the automatic and diffusion tube monitoring locations nearby to the site show that annual mean NO₂ concentrations are within the AQS objective. The NO₂ concentrations appear to have a downward trend over the reported years.

PM₁₀ annual mean and 24-hour mean background concentrations have been within the AQS objective in all reported years.

PM_{2.5} annual mean background concentrations have been within the AQS objective in all reported years.

Annual mean NO₂ concentrations recorded at the passive roadside diffusion tube monitoring locations are below 60 µg/m³, which indicates the hourly mean NO₂ objective is unlikely to be exceeded. 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 and show a downward trend throughout future years.

The Air Quality Consultants (AQC) report Nitrogen Dioxide and Nitrogen Oxides Trends in the UK 2005 to 2018¹⁹ indicates that there is evidence from real-world testing that the introduction of the latest vehicle emissions standards (Euro 6 for light duty vehicles (LDVs) and Euro VI for heavy duty vehicles) has resulted in emissions reductions. Over the next few years, Euro 6/VI vehicles will dominate the fleet and will lead to lower NO_x emissions.

Overall, the baseline data indicates that annual NO₂, PM₁₀ and PM_{2.5} objectives are currently being met at the development site and are expected to continue to do so.

¹⁹ AQC, 2019. Nitrogen Dioxide and Nitrogen Oxides Trends in the UK 2005 to 2018.



5 CONSTRUCTION PHASE IMPACT ASSESSMENT

5.1 Dust and Emissions Screening

An assessment of construction dust and emissions is required as there are human receptors within 50 m of the site and 50 m from the site exit. As there are human receptors within 50 m of the site, human health impacts and dust soiling impacts are considered in this assessment. There are no ecological receptors within 50 m of the site and so ecological receptors are not considered further in this assessment.

5.2 Dust Emission Magnitude

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

Demolition

The existing building with potentially dusty construction material, including concrete and brick, will be demolished. The total building volume is less than 25,000m³. Demolition will take place over approximately three months. The site is considered to have a 'Medium' dust emission magnitude for demolition.

Earthworks

Earthworks activities will include excavating material over a c. 1000m² site area. The soil type is part of the Seaford Chalk Formation And Newhaven Chalk Formation²⁰ and may have a high potential for dust release. The peak number of heavy earth-moving vehicles on site at one time is estimated between 5 and 10. Earthworks activities will take place for less than six months. The site is considered to have a 'Small' dust emission magnitude for earthworks.

Construction

The construction activities involves the construction of a mixed residential and commercial block comprising a concrete frame and using brick/block for the external walls. The total building volume to be constructed is less than 25,000m³. Construction is expected to take approximately one year. The site is considered to have a 'Small' dust emission magnitude for construction.

Trackout

The number of heavy-duty vehicle (HDV) outward movements is likely to be approximately 5 per day. Waste material and spoil from the site will be removed using grab lorries. Site vehicles will remain on paved roads. The site is considered to have a 'Small' dust emission magnitude for trackout.

²⁰ British Geological Survey, 2017. Geology of Britain Viewer. Natural Environment Research Council. <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>. Accessed 25/01/2022.

Activity	Dust Emission Magnitude
Demolition	Medium
Earthworks	Small
Construction	Small
Trackout	Small

TABLE 5.1: DUST EMISSION MAGNITUDE

5.3 Sensitivity of the Area

There are between 10 and 100 receptors with a high sensitivity to dust soiling and health effects within 20 m of the site boundary. Nearby receptors include residential properties which have a high sensitivity to dust soiling and health effects.

The sensitivity of the area to dust soiling effects is defined as 'High' for all activities, 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	High	High	High	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 'Medium' risk from demolition activities and a 'Low' risk from earthworks, construction and trackout activities causing dust soiling effects. There is a 'Low' risk from demolition activities causing health effects.

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

TABLE 5.3: SUMMARY DUST RISK CATEGORY



5.5 Mitigation

The dust risk assessment determines that the site is a “Medium Risk Site” in respect of demolition. 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

With appropriate mitigation in place, any dust impacts will be negligible.



6 OPERATIONAL PHASE IMPACT ASSESSMENT

6.1 Traffic

It is unlikely that the proposed development will introduce more than 100 AADT flows or more than 50 AADT HDV flows. Additionally, there are no proposed changes to the road layout. Therefore, a detailed assessment of road traffic impacts associated with the proposed development is not required and traffic associated with the proposed development is expected to have a negligible impact on local air quality when considered in accordance with IAQM Guidance.

6.2 Energy Plant

The development is proposing an air source heat pump which is powered by electricity and will therefore eliminate the gas supply to the building. Therefore, no assessment of energy plant is required and there will be no air quality impact from energy plant at the proposed development.



7 CONCLUSIONS

The proposed development will introduce new residential receptors to the area. Baseline conditions indicate that NO₂ and PM₁₀ objectives are currently being met and will continue to be met in the earliest proposed operational year of 2024. Therefore, the proposed development will not introduce new receptors into an area where objectives are breached and the site is appropriate for the proposed use.

The traffic associated with the proposed development is predicted to have a negligible impact on local air quality.

The energy plant associated with the proposed development will use an electrical supply only and therefore there will be no air quality impact from energy plant at the proposed development.

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 be negligible in accordance with IAQM guidance.



Appendix A: Figures

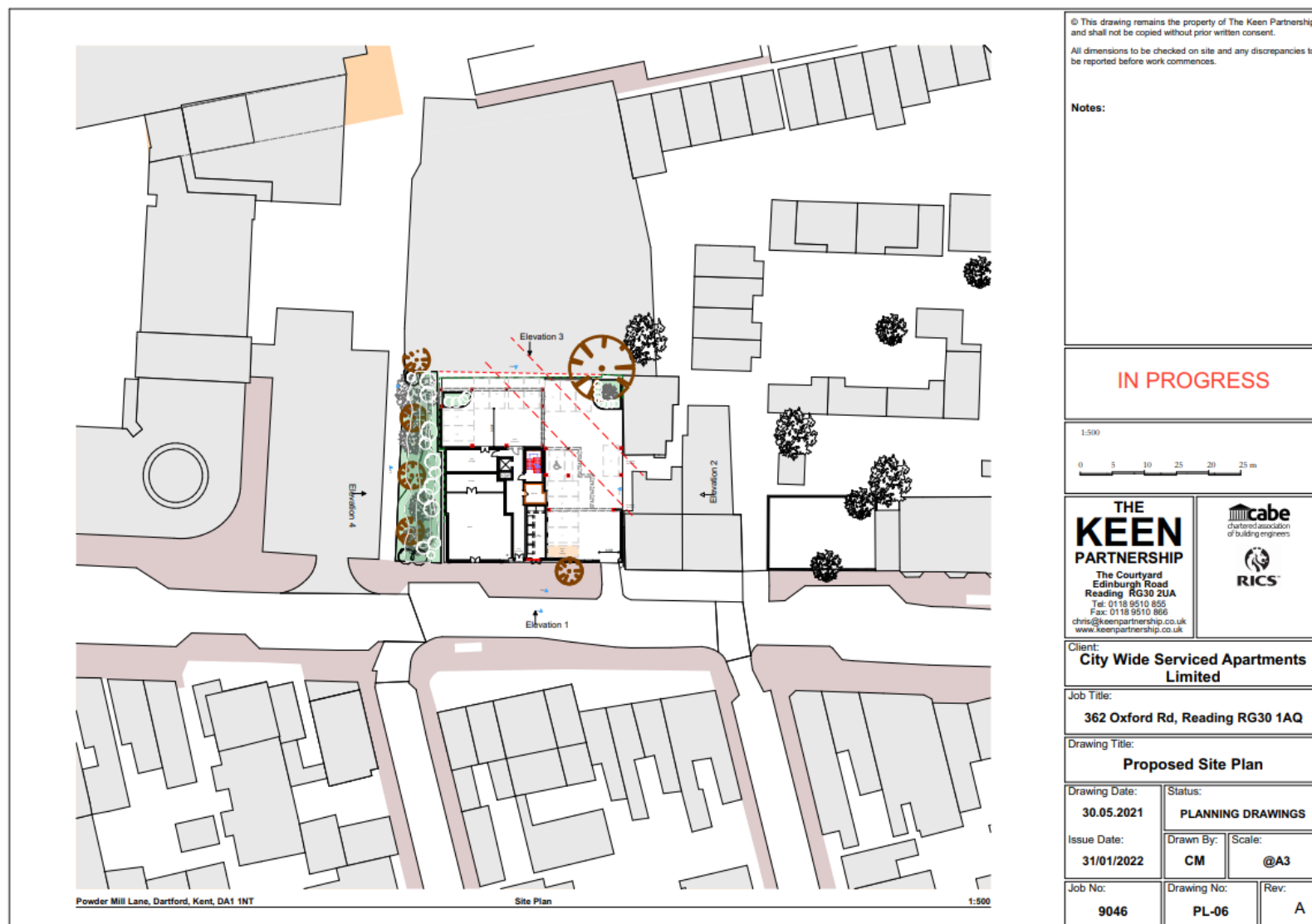


FIGURE A1: PROPOSED SITE LAYOUT

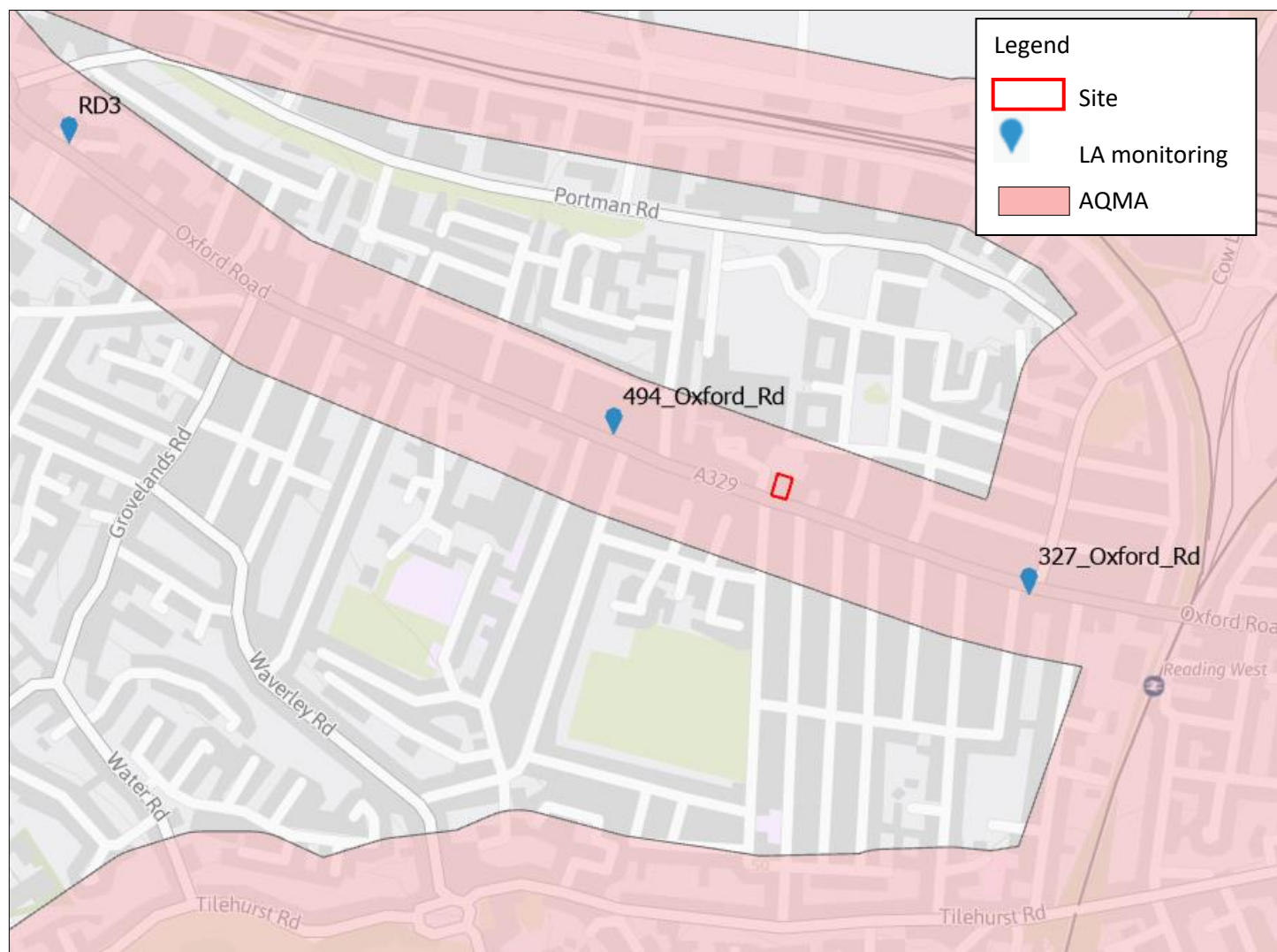


FIGURE A2: SITE LOCATION AND LA MONITORING LOCATIONS



Appendix B: Mitigation Measures



Mitigation Measures

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 (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.

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 local authority when asked.

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

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.

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.

Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential 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.

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.

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 the site is active for an extensive period

Avoid site runoff of water or mud.

Keep site fencing, barriers and scaffolding clean using wet methods.



Mitigation Measures

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.

Cover, seed or fence stockpiles to prevent wind whipping.

Operating vehicle/machinery and sustainable travel

Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable

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.

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)

Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

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.

Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.

Use enclosed chutes and conveyors and covered skips.

Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

Avoid bonfires and burning of waste materials.

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).

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.

Avoid explosive blasting, using appropriate manual or mechanical alternatives

Bag and remove any biological debris or damp down such material before demolition.



Mitigation Measures
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable
Only remove the cover in small areas during work and not all at once.
Measures specific to 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, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place
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.
Avoid dry sweeping of large areas.
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
Record all inspections of haul routes and any subsequent action in a site log book.
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

TABLE B3: SITE SPECIFIC MITIGATION MEASURES