

Air Quality Assessment

December 2025



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1. Introduction

Syntegra Consulting has been commissioned to undertake a quantitative air quality assessment to support the planning application for the development at 640 Oxford Road, Reading, RG30 1EH (hereafter referred to as the 'Application Site').

The Application Site lies within the administrative boundary of the Reading Borough Council. The Application Site related to a detached property located on the northern side of Oxford Road, on the corner of Alma Street. The site comprises of a retail unit at ground floor level, with a residential unit at first floor level. An office building is located beyond the rear hardstanding of the site and is within the ownership of the applicant.

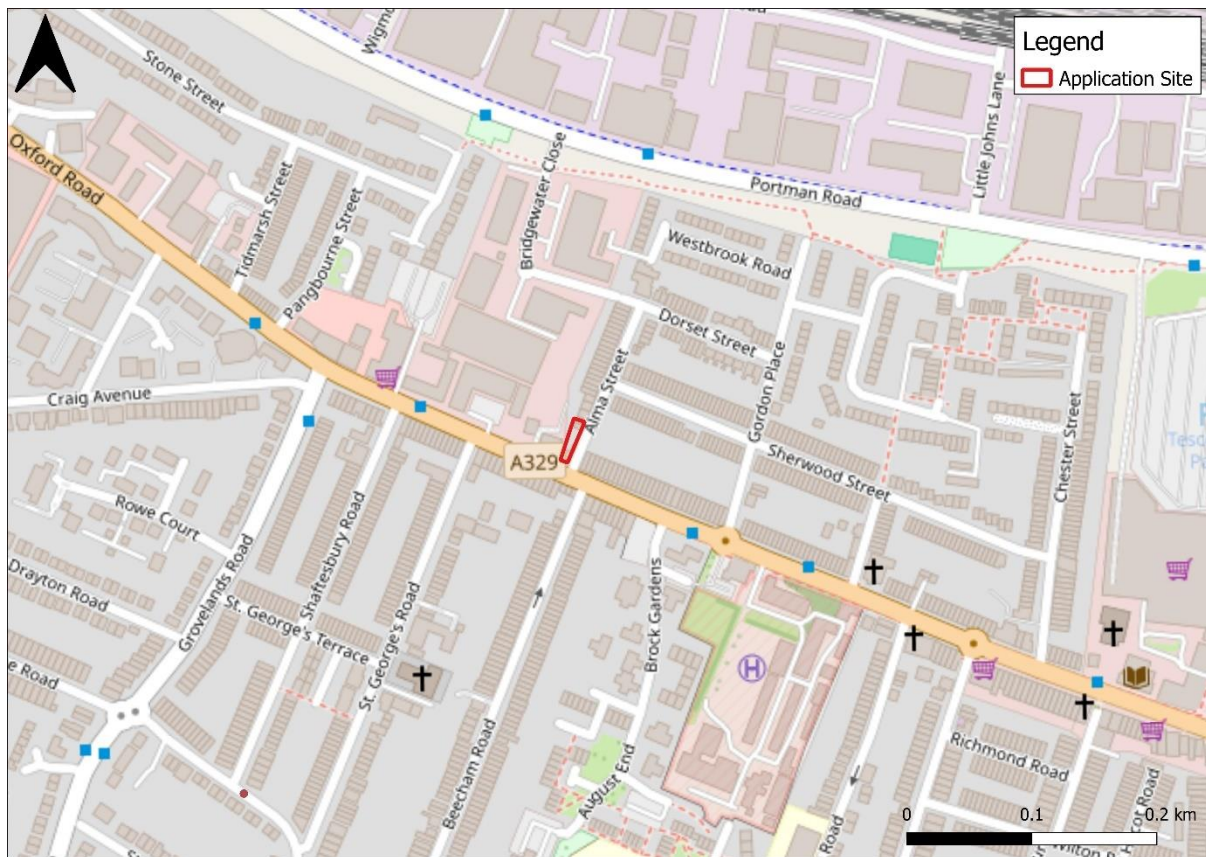


Figure 1: Site Location

The proposals, hereafter referred to as the 'Proposed Development', includes the provision of a mixed-use development comprising 3 x separate commercial units (one at basement level and two at ground floor level) and 2 additional self-contained dwellings (two at first floor and two at second floor) with associated extensions and alterations.

This report presents the findings of the assessment of the potential air quality impacts of the Proposed Development during the construction phase. The type, source and significance of the potential impacts are identified, and the measures that should be employed to minimise these described.

The potential exposure of new receptors, introduced by the Proposed Development, to poor air quality, given its urban setting, and proximity to heavily trafficked roads, such as Oxford Road, is also considered. Recommendations for further work, to help better understand local conditions, given existing constraints which have been identified, are proposed.

2. Legislative Context

Relevant legislation

Details of the relevant legislation that has been referred to within this air quality assessment are provided in Table 1 and a summary of the air quality standards are provided in Table 2.

Table 1: Legislation relevant to the assessment of air quality

Legislation	Legislative context
Environmental Protection Act 1990	Section 79 of the Environmental Protection Act 1990¹ gives the following definition of statutory nuisance relevant to dust and particles: <i>“Any dust, steam, smell or other effluvia arising from industrial, trade or business premises or smoke, fumes or gases emitted from premises so as to be prejudicial to health or a nuisance”;</i> and <i>“Any accumulation or deposit which is prejudicial to health or a nuisance”.</i> Following this, Section 80 says that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses. Statutory nuisance provisions are relevant to, amongst other things, the control of dust from demolition and construction. There are no statutory limit values for dust deposition above which ‘nuisance’ is deemed to exist. Nuisance is a subjective concept, and its perception is highly dependent upon the existing conditions and the change which has occurred. The party responsible for the premises giving rise to the emissions is responsible for ensuring use of Best Practicable Means to avoid statutory nuisance.
Environment Act 1995 (as amended, 2021)	Part IV of the Environment Act 1995² required the Secretary of State to publish a national Air Quality Strategy^{3,4} and set up a system of Local Air Quality Management (LAQM). The Environment Act 2021⁵ was subsequently enshrined into law in November 2021. Schedule 11 of the 2021 Act makes it clear that it remains a requirement for local authorities to periodically review and document local air quality within their area with the aim of meeting the air quality objectives defined in the Air Quality Regulations. Where the objectives are not likely to be achieved, an authority is required to designate an AQMA. For each AQMA the local authority is required to draw up an Air Quality Action Plan (AQAP) to secure improvements in air quality and show how it intends to work towards achieving the air quality objectives in the future.
Air Quality Regulations	The Air Quality (England) Regulations 2000⁶ (as amended⁷) set objectives for ambient pollutant concentrations. The objectives for human health apply where there is relevant exposure: <i>“...at locations which are situated outside of buildings or other natural or man-</i>

¹ The National Archives (1990) *Environmental Protection Act 1990* [online]. Available at: <https://www.legislation.gov.uk/ukpga/1990/43/contents>

² The National Archives (1995) *Environment Act 1995 - Statutory Instrument No.25* [online]. Available at: <https://www.legislation.gov.uk/ukpga/1995/25/contents>

³ Defra (2007) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland Volume 1* [online]. Available at: <https://www.gov.uk/government/publications/the-air-quality-strategy-for-england-scotland-wales-and-northern-ireland-volume-1>

⁴ Defra (2007) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland Volume 2* [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69337/pb12670-air-quality-strategy-vol2-070712.pdf

⁵ The National Archives (2021) *Environment Act 2021* [online]. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>

⁶ The National Archives (2000) *The Air Quality (England) Regulations 2000 - Statutory Instrument 2000 No.928* [online]. Available at: <https://www.legislation.gov.uk/uksi/2000/928/contents/made>

⁷ The National Archives (2002) *The Air Quality (England) (Amendment) Regulations 2002 - Statutory Instrument 2002 No.3043* [online]. Available at: <https://www.legislation.gov.uk/uksi/2002/3043/contents/made>

Legislation	Legislative context
	<i>made structures above or below ground; and where members of the public are regularly present."</i> The Air Quality Standards Regulations 2010⁸ (as amended⁹) outlines the air quality target values, long term objectives and legally binding limit values for concentrations of major air pollutants that impact public health in the UK. These standards are included in Table 2-2 below. For the protection of vegetation, critical target values and levels were also provided for ammonia and nitrogen dioxide, although these are not legally binding. The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020¹⁰ made amendments to the previous air quality regulations to address minor errors and to ensure they continue to operate effectively after the end of the implementation period.
Environment Act 2021	The Environment Act¹¹ passed into law in November 2021. This Act sets a legally binding duty on the Secretary of State to bring forward air quality targets into secondary legislation; with specific regard to the annual mean level of PM_{2.5} in ambient air. In March 2022 and in response to this duty, the UK government proposed a legally binding target to reduce PM_{2.5} concentrations across England to 10µg/m³ and achieve a 35% reduction of population exposure by 2040. Schedule 11 of the Environment Act 2021 also provides amendments to the Environment Act 1995 regarding the duty of the Secretary of State to report on air quality in England as well as the functions and duties of relevant public authorities including, but not limited to, the duty of a local authority to prepare an action plan for an Air Quality Management Area "...for the purpose of securing that air quality standards and objectives are achieved..." Under the Environment Act 2021, the Office for Environmental Protection was formed in order to perform the role of an objective and impartial environmental watchdog in the UK. Previously this role was held by the European Commission.
Environmental Targets (Fine Particulate Matter) (England) Regulations 2023	The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 ¹² legally enforced the PM _{2.5} targets proposed in 2022.

Table 2: Relevant air quality standards and objectives

Pollutant	Concentration (µg/m ³)	Measured as	Objective
Nitrogen dioxide (NO ₂)	40	Annual mean	Objective and limit value
	200	1 hour mean, not to be exceeded more than 18 times a year (equivalent to 99.79th percentile)	Objective and limit value
	40	Annual mean	Objective and limit value

⁸ The National Archives (2010) *The Air Quality Standards Regulations 2010 - Statutory Instrument 2010 No.1001* [online]. Available at: <https://www.legislation.gov.uk/ukSI/2010/1001/contents/made>

⁹ The National Archives (2016) *The Air Quality Standards (Amendment) Regulations 2016* [online]. Available at: <https://www.legislation.gov.uk/ukSI/2016/1184/made/data.pdf>

¹⁰ The National Archives (2020) *The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 - Statutory Instrument 2020 No.1313* [online]. Available at: <https://www.legislation.gov.uk/ukSI/2020/1313/contents/made>

¹¹ The National Archives (2021). *Environment Act 2021* [online]. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/data.pdf>

¹² The National Archives (2023) *The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023* [online]. Available at: <https://www.legislation.gov.uk/ukSI/2023/96/made/data.pdf>

Pollutant	Concentration (µg/m ³)	Measured as	Objective
Particulate matter less than 10 micrometres in diameter (PM ₁₀)	50	24 hour mean, not to be exceeded more than 35 times a year (equivalent to 90.4th percentile)	Objective and limit value
Particulate matter less than 2.5 micrometres in diameter (PM _{2.5})	20	Annual mean	Limit value
	12	Annual mean	National government interim target for 2028
	10	Annual mean	National government target for 2040

Relevant policy

Details of the relevant policy that has been considered throughout this assessment is provided in Table 3.

Table 3: Planning policy relevant to the assessment of air quality

Policy	Policy context
National planning policy	
Clean Air Strategy 2019	The Department for Environment, Food and Rural Affairs (Defra) published the Government's Clean Air Strategy¹³ in 2019. This sets out measures, which aim to reduce emissions from all sources of air pollution, making air healthier to breath, protecting nature and boosting the economy. The Strategy proposed goals to cut public exposure to airborne PM, in line with the recommendations made by the World Health Organisation (WHO). Furthermore, the Strategy confirmed that the Government will set legislation to "create a stronger and a more coherent framework for action to tackle air pollution. This will be underpinned by new England-wide powers to control major sources of air pollution, in line with the risk they pose to public health and the environment, plus new local powers to take action in areas with an air pollution problem. These will support the creation of Clean Air Zones to lower emissions from all sources of air pollution, backed up with clear enforcement mechanism." <i>New enforcement powers will also be given "at a national and local level, across all sectors of society."</i>
National Planning Policy Framework (NPPF) 2024	The Government's overall planning policies for England are described in the National Planning Policy Framework (NPPF)¹⁴. The Project aligns with the policies stated below and the core underpinning principle of the Framework which is the presumption in favour of sustainable development, defined as "... meeting the needs of the present without compromising the ability of future generations to meet their own needs". One of the three overarching objectives of the NPPF is that the planning system should "protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy." In relation to air quality, the following paragraphs in the document are relevant:

¹³ Department for Environment, Food and Rural Affairs (2019) *Clean Air Strategy 2019* [online]. Available at: <https://assets.publishing.service.gov.uk/media/5c3b9debe5274a70c19d905c/clean-air-strategy-2019.pdf>

¹⁴ Ministry of Housing, Communities & Local Government (2025). *National Planning Policy Framework* [online]. Available at: https://assets.publishing.service.gov.uk/media/67a610df6006e4154dc498a0/NPPF_December_2024.pdf

Policy	Policy context
	Paragraph 56, which states “<i>Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition</i>”; Paragraph 109 which relates to the need to consider transport related issues at the earliest stages of plan making and development proposals, so that “<i>...e) identifying and pursuing opportunities to promote walking, cycling and public transport use; f) identifying, assessing and taking into account the environmental impacts of traffic and transport infrastructure – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains.</i>”; Paragraph 110, which states “<i>...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...</i>”; Paragraph 187 which states “<i>Planning policies and decisions should contribute to and enhance the natural and local environment by: ...e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans...</i>”; Paragraph 198 which states “<i>Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development....</i>”; Paragraph 199 which states “<i>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.</i>”; and Paragraph 201 which states “<i>The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.</i>”
UK Air Quality Strategy 2023	The revised Air Quality Strategy 2023 ¹⁵ sets out the actions the government expects local authorities to take in support of achieving long term air quality goals, including the new PM _{2.5} targets. The strategy seeks to strengthen, simplify and update the legislative framework that applies at a local level, in order to help reduce local

¹⁵ Department for Environment Food and Rural Affairs (2023) *Air Quality Strategy: framework for local authority delivery* [online] Available at: <https://www.gov.uk/government/publications/the-air-quality-strategy-for-england/air-quality-strategy-framework-for-local-authority-delivery>

Policy	Policy context
	concentrations of air pollution. The predicted results from the dispersion modelling included in this assessment were assessed against the new PM _{2.5} targets.
Environmental Improvement Plan 2023	In January 2023, the UK government published its Environmental Improvement Plan ¹⁶ which constitutes the first review of the 25 Year Environment Plan as required under the Environment Act 2021. Of relevance to air quality within the document is the goal to achieve clean air in the UK by cutting air pollution overall through tackling key sources of emissions and specific hotspots and reducing ammonia emissions. The Plan also set the following related interim targets: an annual mean target of 12µg/m ³ for PM _{2.5} (to be met by the end of January 2028; and at least a 22% reduction in population exposure to PM _{2.5} by the end of January 2028.
Local planning policy	
Reading Borough Local Plan	The Reading Borough Local Plan¹⁷ was adopted in 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 the following policy 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 states: <i>“Development should have regard to the need to improve air quality and reduce the effects of poor air quality.</i> i) <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:</i> - <i>Whether the proposal, including when combined with the cumulative effect of other developments already permitted, would worsen air quality;</i> - <i>Whether the development is within, or accessed via, an Air Quality Management Area; and</i> - <i>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.</i> ii) <i>Where a development would introduce sensitive uses (such as residential, schools and nurseries, hospitals, care facilities) into, or intensity such uses within, an Air Quality Management Area, detrimental effects on that use would 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.</i>

¹⁶ HM Government (2023) *Environmental Improvement Plan 2023: First revision of the 25-year environment plan* [online]. Available at:

<https://assets.publishing.service.gov.uk/media/64a6d9c1c531eb000c64fffa/environmental-improvement-plan-2023.pdf>

¹⁷ Reading Borough Council (2019) *Reading Borough Local Plan* [online] Available at:

https://images.reading.gov.uk/2019/12/Local_Plan_Adopted_November_2019.pdf

Policy	Policy context
	iii) <i>Where required, planning obligations will be used to secure contributions to measures to tackle poor air quality or for air quality monitoring. "</i>

Technical guidance

Table 4 includes a summary of the relevant technical guidance used in the assessment of air quality.

Table 4: Technical guidance relevant to the assessment of air quality

Policy	Policy context
National Planning Practice Guidance (NPPG) 2019	This guidance ¹⁸ provides a number of guiding principles on how the planning process can take into account the impact of new development on air quality. This guidance was used to determine how much detail the air quality assessment needed to include for the Project, and how impacts on air quality can be mitigated. This guidance provides information on how air quality is taken into account by local authorities in both the wider planning context of Local Plans and neighbourhood planning, and in individual cases where air quality is a consideration in a planning decision.
Local Air Quality Management Review and Assessment Technical Guidance 2022 (LAQM.TG(22))	Defra has published technical guidance ¹⁹ for use by local authorities in their review and assessment work. This guidance, referred to in this document as LAQM.TG(22), has been used where appropriate in the air quality assessment, including for the determination of receptors and the model verification process.
Land-Use Planning and Development Control: Planning for Air Quality 2017	The Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have published guidance ²⁰ that offers comprehensive advice which was used in this air quality assessment to determine: when an air quality assessment may be required; what should be included in an assessment; how to determine the significance of any air quality impacts associated with a development; and the possible mitigation measures that may be implemented to minimise these impacts.
Guidance on assessment of dust from demolition and construction 2024	This document ²¹ published by the IAQM was produced to provide guidance to developers, consultants and environmental health practitioners on how to assess the impacts arising from construction activities and was used in this air quality assessment for the Construction Dust Assessment. The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance, PM ₁₀ impacts on public exposure and impact upon sensitive receptors) and to identify mitigation measures appropriate to the level of risk identified.
PM _{2.5} Targets: Interim Planning Guidance 2024	The interim guidance ²² published by Defra applies to future developments and those that were in pre-production by October 2024. The guidance will aid applicants and Planning Authorities in England to demonstrate that they have appropriately considered the PM _{2.5} targets set out in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2022 when making planning

¹⁸ Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government (2019) *Air Quality Guidance* [online] Available at: <https://www.gov.uk/guidance/air-quality--3>

¹⁹ Department for Environment Food and Rural Affairs (2022) *Local Air Quality Management Technical Guidance (TG22)* [online] Available at: <https://iaqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf>

²⁰ Environmental Protection UK and Institute of Air Quality Management (2017) *Land-Use Planning and Development Control: Planning For Air Quality* [online] Available at: <https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>

²¹ Institute of Air Quality Management (2024) *Guidance on the assessment of dust from demolition and construction version 2.2* [online] Available at: <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf>

²² Department for Environment Food and Rural Affairs (2024) *PM_{2.5} Targets: Interim Planning Guidance* [online] Available at: <https://uk-air.defra.gov.uk/pm25targets/planning>

Policy	Policy context
	applications and planning decisions. The new approach will move away from a requirement to assess solely whether a scheme is likely to lead to an exceedance of a legal limit and instead ensure that appropriate mitigation measures are implemented from the design stage, streamlining the process for planning and ensuring the minimum amount of pollution is emitted and that exposure is minimised.

3. Methodology

Introduction

The Proposed Development has the potential to cause air quality impacts during the construction and operational phases, as well as expose future occupants to elevated pollution levels. These factors were assessed in accordance with the following methodology.

Construction Phase Fugitive Dust Emissions

An assessment of the likely significant impacts on local air quality due to the generation and dispersion of dust and PM₁₀ during the construction phase has been undertaken with reference to: IAQM Construction Dust Guidance, the available information for this phase of the Proposed Development provided by the Client and Project Team; and professional judgement.

The IAQM Construction Dust Guidance assessment methodology assesses the risk of potential dust and PM₁₀ impacts from the following four sources: demolition; earthworks; general construction activities and trackout. It considers the nature and scale of activities undertaken for each source and the sensitivity of the area to an increase in dust and PM₁₀ levels to assign a level of risk. Risks are described in terms of there being a low, medium or high risk of dust impacts. Once the level of risk has been ascertained, then site specific mitigation proportionate to the level of risk is identified, and the significance of residual effects determined.

In addition to impacts on local air quality due to onsite construction activities, exhaust emissions from construction NRMM may have an impact on local air quality in the vicinity of the Site itself. A qualitative assessment of their impact on local air quality has been undertaken using professional judgement and by considering the following:

- The number and type of construction NRMM likely to be generated by this phase of the Proposed Development;
- The number and proximity of sensitive receptors to the Application Site; and
- The likely duration of the construction phase and the nature of the construction.

IAQM Construction Dust Assessment Methodology Details

Step 1 – Screening the Need for a Detailed Assessment

An assessment will normally be required where there are:

- Human receptors within 250m of the site boundary; and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s); and
- Ecological receptors within 50m of the site boundary; and/or 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s)

Where the need for a construction dust assessment is screened out, it can be concluded that the level of risk is 'negligible'.

Step 2A – Define the Potential Dust Emission Magnitude

The dust emission magnitude is based on the scale of the anticipated works and should be classified as Small, Medium, or Large.

The following are examples of how the potential dust emission magnitude for different activities can be defined. It should be noted that not all the criteria need to be met for a particular class. Other criteria may be used if justified in the assessment.

Table 5: Construction Dust - Magnitude of Emission

Dust Emissions Magnitude	Activity
Demolition	
Large	Total building volume >75,000 m ³ , Potentially dusty construction material (e.g., concrete), On-site crushing and screening, Demolition activities >12 m above ground level.
Medium	Total building volume 12,000 m ³ - 75,000 m ³ , Potentially dusty construction material, Demolition activities 6-12 m above ground level.
Low	Total building volume <12,000 m ³ , Construction material with low potential for dust release (e.g., metal cladding or timber), Demolition activities <6 m above ground.
Earthworks	
Large	Total site area >110,000 m ² , Potentially dusty soil type (e.g., clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, Formation of bunds >6 m in height.
Medium	Total site area 18,000 m ² – 110,000 m ² , Moderately dusty soil type (e.g., silt), 5-10 heavy earth moving vehicles active at any one time, Formation of bunds 3m - 6m in height.
Small	Total site area <18,000 m ² , Soil type with large grain size (e.g., sand), <5 heavy earth moving vehicles active at any one time, Formation of bunds <3 m in height.
Construction	
Large	Total building volume >75,000 m ³ , On site concrete batching, Sandblasting.
Medium	Total building volume 12,000 m ³ to 75,000 m ³ , Potentially dusty construction material (e.g., concrete), On site concrete batching.
Small	Total building volume less than 12,000 m ³ , Construction material with low potential for dust release (e.g., metal cladding or timber).
Trackout	
Large	>50 HDV (>3.5t) maximum outward movements (a one-way journey. i.e., from A to B, and excludes the return journey) in any one day, Potentially dusty surface material (e.g., high clay content), Unpaved road length >100m.
Medium	20-50 HDV (>3.5t) maximum outward movements (a one-way journey. i.e., from A to B, and excludes the return journey) in any one day, Moderately dusty surface material (e.g., high clay content), Unpaved road length 50m - 100m.
Small	<20 HDV (>3.5t) maximum outward movements (a one-way journey. i.e., from A to B, and excludes the return journey) in any one day, Surface material with a low potential for dust release, Unpaved road length <50m.

Step 2B – Define the Sensitivity of the Area

The sensitivity of the area takes account a number of factors including: the specific sensitivities of receptors in the area; the proximity and number of those receptors; in the case of PM₁₀, the local background concentrations; and site-specific factors, such as whether there are natural shelters to reduce the risk of wind-blown dust.

A number of attempts have been made to categorise receptors into high, medium and low sensitivity categories.

Table 6: Construction Dust - Examples of Factors Defining Sensitivity of an Area

Receptor Sensitivity	Examples		
	Dust	Health	Ecological
High	Users can reasonably expect enjoyment of a high level of amenity; or The appearance, aesthetics or value of their property would be diminished by soiling; and The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Indicative examples include dwellings, museums and other culturally important collections, medium- and long-term car parks and car showrooms.	Locations where members of the public are exposed over a time period relevant to the air quality objective for PM₁₀ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day) Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	Locations with an international or national designation and the designated features may be affected by dust soiling; or Locations where there is a community of a particular dust sensitive species such as vascular species included in the Red Data List For Great Britain Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or The appearance, aesthetics or value of their property could be diminished by soiling; or The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land; or Indicative examples include parks and places of work.	Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM₁₀ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; Locations with a national designation where the features may be affected by dust deposition.

Small	The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Indicative examples include parks and places of work.	Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM ₁₀ , as protection is covered by Health and Safety at Work legislation.	Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.
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The tables below show how the sensitivity of the area may be determined for dust soiling, human health and ecosystem impacts, respectively. These tables take into account a number of factors which may influence the sensitivity of the area.

Table 7: Construction Dust - Sensitivity of the Area to Dust Soiling Effects on People and Property

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

Table 8: Construction Dust - Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from the Source (m)				
			Less than 20	Less than 50	Less than 100	Less than 200	Less than 250
High	Greater than 32µg/m ³	More than 100	High	High	High	Medium	Low
		10 - 100	High	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	28 - 32µg/m ³	More than 100	High	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	24 - 28µg/m ³	More than 100	High	Medium	Low	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	Less than 24µg/m ³	More than 100	Medium	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Medium	Greater than 32µg/m ³	More than 10	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	28 - 32µg/m ³	More than 10	Medium	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	24 - 28µg/m ³	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	Less than 24µg/m ³	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Low	-	More than 1	Low	Low	Low	Low	Low

Table 9: Construction Dust - Sensitivity of the Area to Ecological Impacts

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

Step 2C – Define the Risk of Impacts

The dust emissions magnitude determined at Step 2A should be combined with the sensitivity of the area determined at Step 2B to determine the risk of impacts with no mitigation applied. The matrices in the tables below provide a method of assigning the level of risk for each activity. This should be used to determine the level of mitigation that must be applied. Mitigation is discussed in Step 3. For those cases where the risk category is ‘negligible’, no mitigation measures beyond those required by legislation will be required.

Table 10: Construction Dust - Dust Risk Category from Demolition Activities

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

Table 11: Construction Dust - Dust Risk Category from Earthworks, Construction and Trackout Activities

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

Step 3 – Site Specific Mitigation

Having determined the risk categories for each of the four activities, it is possible to determine the site-specific measures to be adopted. These measures will be related to whether the site is considered to be a low, medium or high risk site.

The IAQM guidance details the mitigation measures required for high, medium and low risk sites as determined in Step 2C.

Step 4 – Determine Significant Effects

Once the risk of dust impacts has been determined in Step 2C and the appropriate dust mitigation measures identified in Step 3, the final step is to determine whether there are significant effects arising from the construction stage. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect will normally be negligible.

Operation Phase

The Proposed Development has the potential to affect existing air quality because of road traffic exhaust emissions associated with vehicles travelling to and from the site, as well as expose future occupants to elevated pollution levels.

Potential Development Impacts

The Proposed Development have been screened against the IAQM indicative criteria for requiring an air quality assessment.

1. A change in Light-Duty Vehicle²³ (LDV) traffic flows on local roads with relevant receptors
 - more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA
 - more than 500 AADT elsewhere
2. A change in HDV²⁴ flows on local roads with relevant receptors
 - more than 25 AADT within or adjacent to an AQMA
 - more than 100 AADT elsewhere
3. A change in the alignment of roads by 5m or more and the road is within an AQMA
4. Introduction of a new junction or remove an existing junction near to relevant receptors
 - Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g., traffic lights, or roundabouts.
5. Introduce or change a bus station where bus flows will change by:
 - More than 25 AADT within or adjacent to an AQMA
 - More than 100 AADT elsewhere
6. Has an underground car park with an extraction system within 20 m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).
7. Has one or more substantial combustion processes, where there is a risk of impacts at relevant receptors. This includes combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping.

Future Exposure

Of the pollutants included in the AQS, concentrations of NO₂ and particulate matter (PM₁₀ and PM_{2.5}) have been considered in this assessment as road traffic is a major source of these pollutants and their concentrations tend to be close to, or in exceedance of, the objectives in urban locations.

Model Selection

For the predictions of impacts due to emissions arising from road traffic during the operation of the Proposed Development, the atmospheric dispersion modelling software (ADMS) ADMS-Roads has been used. This model uses detailed information regarding traffic flows on the local road network, surface roughness, and local meteorological conditions to predict pollutant concentrations at specific receptor locations, as determined by the user.

Meteorological data, such as wind speed and direction, is used by the model to determine pollutant transportation and levels of dilution by the wind. Meteorological data used in the model was obtained from the Meteorological Office observing station at Heathrow Airport for 2024. This station is considered to provide representative data for the assessment. **Figure 2** includes the 2024 wind rose which shows that the prevailing wind direction is from the south-west.

²³ Cars and small vans <3.5t gross vehicle weight

²⁴ Goods vehicles + buses >3.5t gross vehicle weight

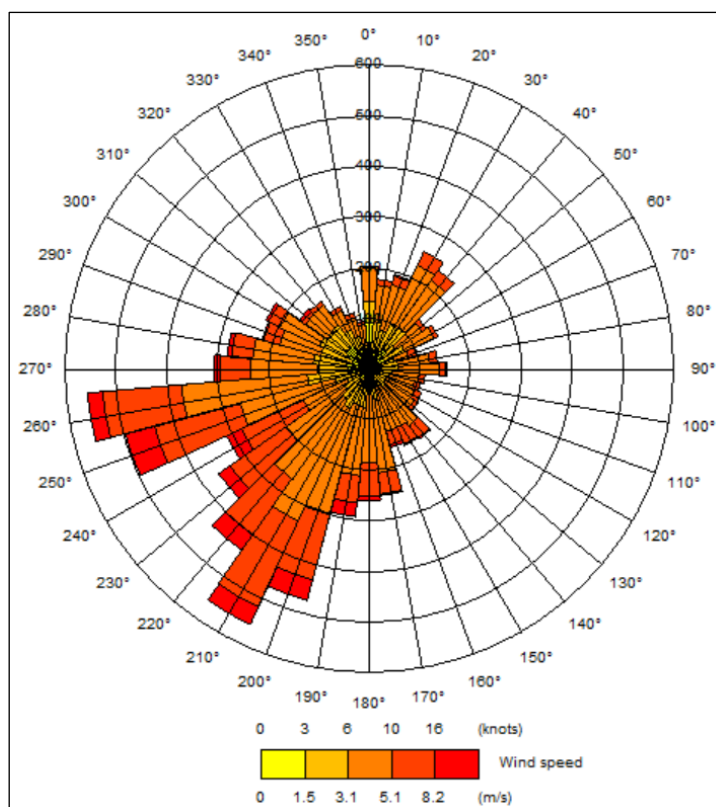


Figure 2: 2024 wind rose for Heathrow Airport

Traffic Data and Vehicle Emission Factors

Traffic data was obtained from publicly available data on the Department for Transport (DfT) website²⁵. Vehicles speeds were estimated using speed limits and Defra LAQM.TG(22) guidance. Vehicle emission factors for use in the assessment have been obtained using the Emissions Factor Toolkit (EFT) version 13.1 available on the Defra website. The EFT allows for the calculation of emission factors arising from road traffic for all years between 2018 and 2050. For the predictions of future year emissions, the toolkit takes into account factors such as anticipated advances in vehicle technology and changes in vehicle fleet composition, such that vehicle emissions are assumed to reduce over time.

To provide a conservative approach, 2024 traffic data and emission factors have been used in this assessment. Table 12 shows the DfT traffic data used in this assessment.

Table 12: DfT traffic data

DfT traffic count ID	2024 HGV	2024 all vehicles
6924	507	12,938

²⁵ Department for Transport (2025) *Road Traffic Statistics* [online]. Available at: [Map Road traffic statistics - Road traffic statistics](#)

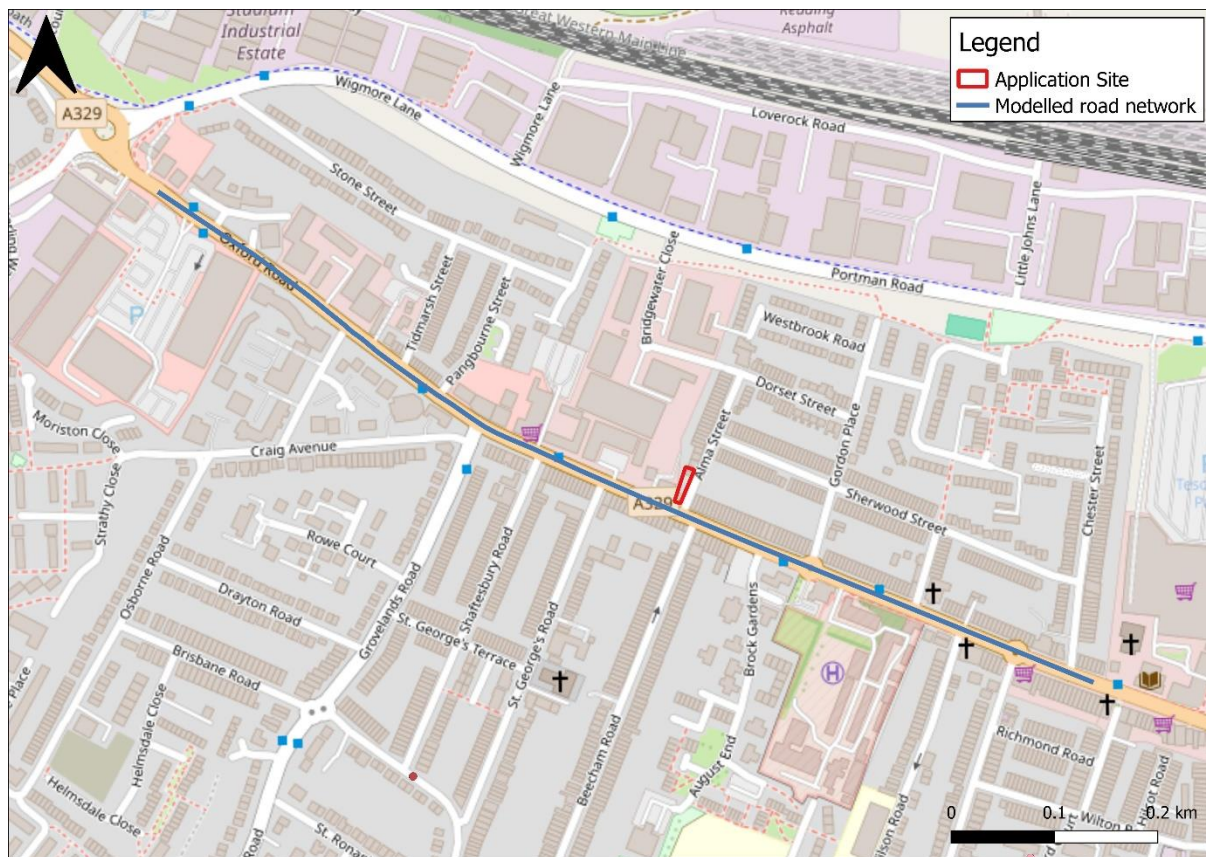


Figure 3: Modelled road network

Selection of Background Concentrations

Background annual mean concentrations of NO_x , NO_2 , PM_{10} and $\text{PM}_{2.5}$ for 2024 and 2025 have been taken from the national maps provided on the Defra website. The map data provide the background concentrations of pollutants at a grid resolution of 1x1km for the whole of the UK. The maps assume that background concentrations will improve (i.e. reduce) over time, in line with the predicted reduction in vehicle emissions and emissions from other sources. 2024 background concentrations were used for the verification model to align with the DfT 2024 traffic data and 2025 background concentrations were used for the future exposure results. It is expected that future concentrations will decline and therefore the results section in this assessment is a conservative approach.

It should be noted that the background maps present both the 'total' estimated background concentrations and the individual contributions from a range of emission sources. When detailed modelling of an individual sector is required as part of an air quality assessment, the respective contribution can be subtracted from the overall background estimate to avoid the potential for 'double counting'. To provide a conservative assessment, total estimated background concentrations were included as not all road links were included in the model.

Model verification and processing of results

The ADMS-Roads dispersion model has been widely validated for this type of assessment and is considered to be fit for purpose. Model validation undertaken by the software developer will not have included validation in the vicinity of the Proposed Development.

To determine the performance of the model at a local level, a comparison of modelled results with the results of monitoring carried out within the study was undertaken following the methodology specified in Chapter 7, Section 4 of LAQM.TG(22).

An evaluation of model performance has been undertaken to establish confidence in model results. LAQM.TG(22) identifies several statistical procedures that are appropriate to evaluate model performance and assess the uncertainty. The statistical parameters used in this assessment are:

- Root mean square error (RMSE);
- Fractional Bias (FB); and
- Correlation Coefficient (CC).

A brief explanation of each statistic is provided in Table 13 and further details can be found in LAQM.TG(22) Box A3.7.

Table 13: Model Performance Statistics

Statistical Parameter	Comments	Ideal Value
RMSE	RMSE is used to define the average error or uncertainty of the model. If the RMSE values are higher than 25% of the objective being assessed, it is recommended that the model inputs and verification should be revisited in order to make improvements. For example, if model predictions are of an annual mean NO ₂ objective of 40 µg/m ³ and the RMSE is 10 µg/m ³ or above, it is advised to revisit the model parameters and model verification. Ideally an RMSE within 10% of the air quality objective would be derived, which equates to 4µg/m ³ for the annual mean NO ₂ objective.	0.00
FB	It is used to identify if the model shows a systematic tendency to over or under predict. FB values vary between +2 and -2 and has an ideal value of zero. Negative values suggest a model over-prediction and positive values suggest a model under-prediction.	0.00
CC	It is used to measure the linear relationship between predicted and observed data. A value of zero means no relationship and a value of 1 means absolute relationship. This statistic can be particularly useful when comparing a large number of model and observed data points.	1.00

These parameters estimate how the model results agree or diverge from observations.

The model was run for 2024 to predict the road source contribution to the annual mean NO_x concentration at three diffusion tube sites. As the diffusion tube provides a measurement of NO₂ concentrations only, it was necessary to derive an estimate of monitored road NO_x concentration using Defra's NO_x to NO₂ conversion calculator. The data examined in the verification process are presented in Table 14.

Table 14: Data examined in model verification before adjustment

Monitoring site	2024 background NO ₂ (µg/m ³)	2024 monitored NO ₂ (µg/m ³)	2024 monitored road-NO _x (µg/m ³)	2024 modelled road-NO _x (µg/m ³)	Ratio monitored/ modelled road NO _x
RD067	9.4	19.8	22.8	3.3	6.9
RD032	9.0	30.7	52.66	5.1	10.3
RD031	9.0	28.9	47.5	3.9	12.2

An adjustment factor, determined by regression of 10.1370 was calculated and subsequently used to adjust model outputs. Table 15 reports a comparison of the modelled and monitored annual mean NO₂ concentrations, after adjusting the modelled concentrations.

Table 15: Comparison of adjusted modelled data and monitored data

Monitoring site	2024 background NO ₂ (µg/m ³)	2024 adjusted annual NO ₂ (µg/m ³)	2024 monitored annual mean NO ₂ (µg/m ³)	% (modelled-monitored)/monitored
RD067	9.4	24.1	19.8	22%
RD032	9.0	30.5	30.7	-1%
RD031	9.0	26.0	28.9	-10%

The model performance statistics show that after adjustment the residual uncertainty in the predictions of total annual mean NO₂ was less than 25% (RMSE of 3.0044).

In line with LAQM TG(22), statistical procedures (explained in Table 13) have been carried out to assess the uncertainties within the model, as shown in Table 16.

Table 16: Assessment of Model Uncertainty

Statistical parameter	Calculated value
RMSE	3.0044
FB	-0.01
CC	0.825

Impact Significance

The approach provided in the EPUK/IAQM guidance has been used within this assessment to assist in describing the air quality effects of additional emissions from traffic generated by the Proposed Development once operational as outline in Table 17.

Table 17: Impact descriptors for individual receptors

Long term average concentration at receptors in assessment year	% change in concentration relative to the AQS			
	1	2-5	6-10	>10
75% or less of AQS	Negligible	Negligible	Slight	Moderate
76-94% of AQS	Negligible	Slight	Moderate	Moderate
95-102% of AQS	Slight	Moderate	Moderate	Substantial
103-109% of AQS	Moderate	Moderate	Substantial	Substantial
110% or more of AQS	Moderate	Substantial	Substantial	Substantial

The matrix shown in Table 17 is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which makes it clearer which cell the impact falls within. It should be noted that changes of 0%, i.e., less than 0.5%, are described as **negligible**.

Following the prediction of impacts at discrete receptor locations, the EPUK/IAQM document provides guidance on determining the overall air quality impact significance of the operation of a development. The following factors are identified for consideration by the assessor:

- The existing and future air quality in the absence of the development;
- The extent of current and future population exposure to the impacts; and
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

The IAQM guidance states that an assessment must conclude the likely significance of the predicted impact. It should be noted that this is a binary judgement of either it is **significant**, or it is **not significant**.

The determination of significance relies on professional judgement, and reasoning should be provided as far as practicable. This has been considered throughout the assessment when defining predicted impacts. The IAQM guidance suggests the provision of details of the assessor's qualifications and experience.

4. Baseline

Existing air quality conditions in the vicinity of the Proposed Development site were identified to provide a baseline for the assessment. These are detailed in the following Sections.

Review and Assessment of Air Quality

Reading Borough Council has designated one AQMA as a consequence of their Review and Assessment work due to exceedances of the AQS objectives for annual mean NO₂ and 24-hour mean PM₁₀. The site lies within the AQMA.

Air Quality Monitoring

The Application Site is located in the Reading Borough Council. Within 1.0km of the Site, there are five passive monitoring sites, details of which are included in Table 18 and graphical location shown in Figure 4. Annual mean NO₂ results recorded in the vicinity of the Application Site taken from readily available information online are shown in Table 19. Exceedances of the relevant AQOs are shown in **bold**.

Table 18: Site Details – Monitoring locations within 0.5km of Site

Monitoring Site		X (m)	Y (m)	Site Type	Distance to relevant exposure (m)	Distance to kerb of nearest road (m)	Inlet height (m)
RD015	252 Oxford Road	470081	173517	Roadside DT	0	3.5	2.3
RD019	327 Oxford Road	470057	173489	Roadside DT	0	7.5	2.3
RD031	689 Oxford Road	468978	173895	Roadside DT	0	2.5	2.3
RD032	744 Oxford Road	468967	173935	Roadside DT	0	2.5	2.3
RD067	Constitution Road	468825	174012	Roadside DT	0	4	2.3
RD3	Oxford Road	468700	174126	Roadside A	9	6	1.5
Table notes: DT = Diffusion Tube A = Automatic							

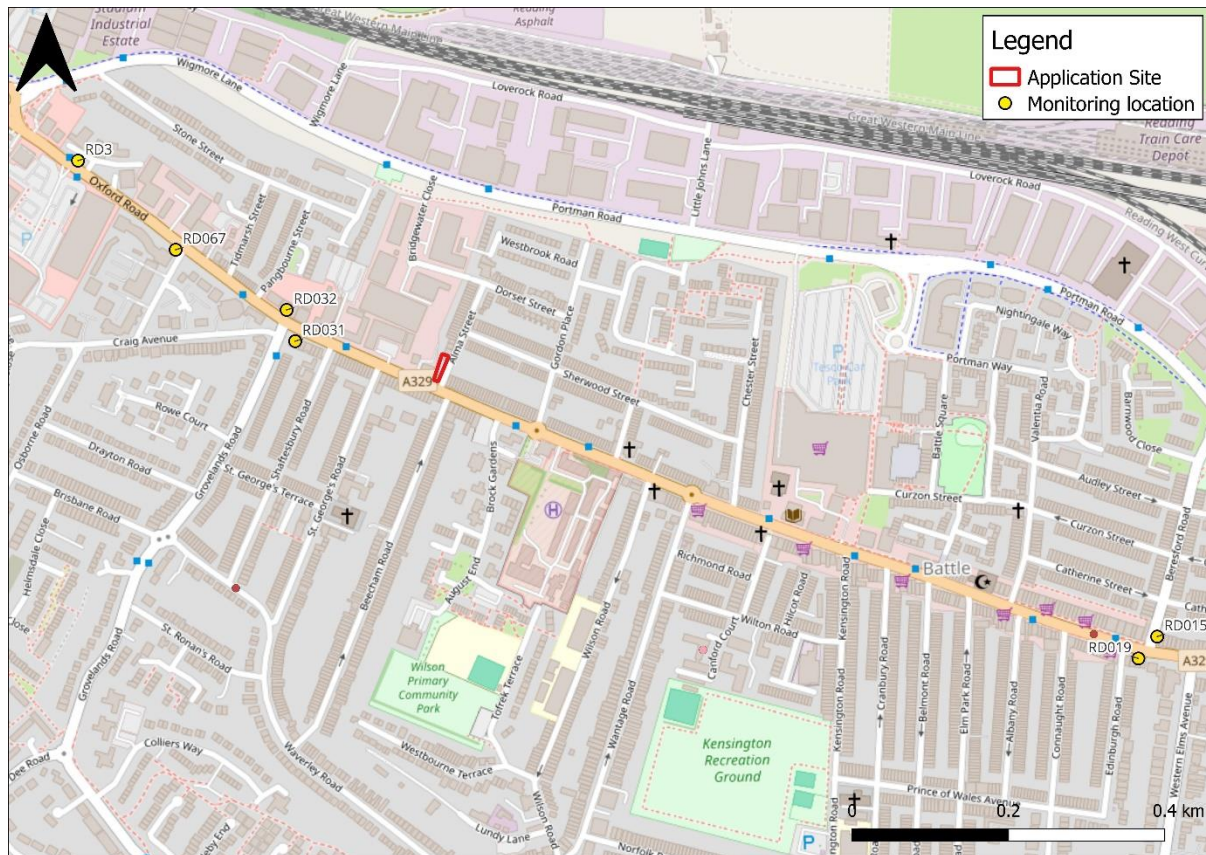


Figure 4: Monitored Sites

Table 19: Monitoring Results - NO₂

Monitoring Site		Monitored NO ₂ Concentration (µg/m ³)				
		2020	2021	2022	2023	2024
RD015	252 Oxford Road	23.3	27.5	26.0	24.4	24.3
RD019	327 Oxford Road	28.5	31.1	31.0	29.9	30.3
RD031	689 Oxford Road	28.8	28.7	30.9	27.9	28.9
RD032	744 Oxford Road	32.6	33.1	32.3	30.2	30.7
RD067	Constitution Road	-	-	-	-	19.8
RD3	Oxford Road	20.0	22.0	23.0	23.0	20.0

Table notes:
bold indicates an exceedance of the annual mean AQS of 40 µg/m³
bold and underlined>

As shown in Table 19, there are six monitoring sites within 1.0km of the Site. NO₂ concentrations were below the relevant AQO (40µg/m³) in 2023 at all of the monitoring locations. LAQM TG.22 states the likelihood of an exceedance of the hourly mean NO₂ AQS is greater if annual mean NO₂ concentrations are to be greater than 60 µg/m³. The data presented above show that concentrations at all locations were below this in 2024 and therefore exceedances of the 1-hour mean NO₂ objective are unlikely to occur.

Background Pollutant Concentrations

Background pollutant concentrations used in the assessment have been taken from the national maps provided on the Defra website²⁶, where background concentrations of those pollutants included within the AQS have been mapped at a grid resolution of 1 x 1 km for the whole of the UK. Estimated

²⁶ Department for Environment Food and Rural Affairs (2018). *Background Mapping data for local authorities* [online]. Available at: <https://uk-air.defra.gov.uk/data/laqm-background-home>

concentrations are available for all years between 2018 and 2030 using the 2018-based background maps and between 2021 and 2040 using the 2021-based background maps. The maps assume that background concentrations will improve (i.e., reduce) over time, in line with the predicted reduction in vehicle emissions and emissions from other sources.

The Application Site is located over one grid square. Table 20 summarises the background annual mean concentrations of NO₂, PM₁₀ and PM_{2.5} taken from the Defra maps, all are well below the relevant objectives.

Table 20: Background Pollutant Concentrations

Pollutant	Predicted Background Concentration (µg/m ³)			
	2025	2030	2035	2040
NO ₂	9.36	7.92	7.07	6.74
PM ₁₀	12.32	11.89	11.58	11.28
PM _{2.5}	7.68	7.29	6.99	6.69

As shown in Table 20, predicted background NO₂ and PM₁₀ concentrations are below the relevant AQOs at the Application Site in 2025 and expected to reduce in future years.

Sensitive Receptors

A sensitive receptor is defined as any location which may be affected by changes in air quality because of a development. These have been defined for dust and road vehicle exhaust emission impacts in the following Sections.

Table 21 shows the details of the modelled receptors for the future exposure assessment. The site plan was used to identify future sensitive human receptors at the facades of each of the dwelling locations closest to Oxford Road. Following LAQM.TG(22) guidance, ground floor receptors were modelled at a height of 1.5m to replicate standard breathing height and it is assumed pollutant concentrations will reduce with each storey and therefore have not been modelled. Pollutant concentrations will decrease further from the road so it is assumed that the receptors included in the table below would show a conservative assessment. Background concentrations included in Table 21 show the 2023 predicted concentrations from Defra (current year).

Table 21: Receptor location and background concentration

ID	X	Y	Z	Defra 2023 background concentration (µg/m ³)		
				NO ₂	PM ₁₀	PM _{2.5}
FR1 (east)	359310	173566	1.5	9.63	12.42	7.77
FR2 (west)	359378	173581	1.5	9.63	12.42	7.77

5. Assessment

Construction Phase Fugitive Dust Emissions

The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the following four different dust and PM₁₀ sources: demolition; earthworks; construction; and trackout.

Assessment of Potential Dust Emission Magnitude

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

Demolition

Table 22: Demolition Impact Magnitude

Category	Criteria	Evaluation
Large	Total volume of building to be demolished greater than 50,000m ³	No
	Potentially dusty material (e.g., concrete)	
	On-site crushing and screening	
	Demolition activities more than 20m above ground level	
Medium	Total volume of building to be demolished between 20,000m ³ and 50,000m ³	No
	Potentially dusty construction material	
	Demolition activities 10m to 20m above ground level	
Small	Total volume of building to be demolished less than 20,000m ³	Yes
	Construction material with low potential for dust release (e.g., metal cladding or timber)	
	Demolition activities less than 10m above ground	
	Demolition during wetter months	

The potential magnitude of impacts from demolition activities is estimated to be **small**. The total volume of building to be demolished will be less than 20,000m³ and there may be construction material with low potential for dust release.

Earthworks

Table 23: Earthworks Impact Magnitude

Category	Criteria	Evaluation
Large	Total site area greater than 10,000m ²	No
	Potentially dusty soil type (e.g., clay, which will be prone to suspension when dry due to small particle size)	
	More than 10 heavy earth moving vehicles active at any one time	
	Formation of bunds greater than 8m in height	
	Total material moved is greater than 100,000 tonnes	
Medium	Total site area 2,500m ² to 10,000m ²	Yes
	Moderately dusty soil type (e.g., silt)	
	5 to 10 heavy earth moving vehicles active at any one time	
	Formation of bunds 4m to 8m in height	
	Total material moved is between 20,000 tonnes and 100,000 tonnes	
Small	Total site area less than 2,500m ²	Yes
	Soil type with large grain size (e.g., sand)	
	Less than 5 heavy earth moving vehicles active at any one time	

Category	Criteria	Evaluation
	Formation of bunds less than 4m in height	
	Total material moved is less than 20,000 tonnes	
	Earthworks during wetter months	

The potential magnitude of impacts from earthworks activities is estimated to be **medium**. The total site area is less than 2,500m² and there will be less than 5 heavy earth moving vehicles active at any one time, however, there may be moderately dusty soil type.

Construction

Table 24: Construction Impact Magnitude

Category	Criteria	Evaluation
Large	Total building volume greater than 100,000m ³	No
	On site concrete batching	
	Sandblasting	
Medium	Total building volume 25,000m ³ to 100,000m ³	Yes
	Potentially dusty construction material (e.g., concrete)	
	On site concrete batching	
Small	Total building volume less than 25,000m ³	Yes
	Construction material with low potential for dust release (e.g., metal cladding or timber)	

The potential magnitude of impacts from construction activities is estimated to be **medium**. The total building volume will be less than 25,000m³ and the construction material used may be potentially dusty.

Trackout

Table 25: Trackout Impact Magnitude

Category	Criteria	Evaluation
Large	More than 50 HDV trips per day	No
	Potentially dusty surface material (e.g., high clay content)	
	Unpaved road length greater than 100m	
Medium	10 to 50 HDV trips per day	Yes
	Moderately dusty surface material (e.g., high clay content)	
	Unpaved road length 50m to 100m	
Small	Less than 10 HDV trips per day	Yes
	Surface material with low potential for dust release	
	Unpaved road length less than 50m	

The potential magnitude of impacts from trackout is estimated to be **medium**. Due to the size of the development, it is not expected that there will be more than 10 HDV trips per day, however there may be dusty surface material with a high clay content.

Assessment of Sensitivity of the Study Area

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

Receptors sensitive to potential dust impacts during demolition, earthworks and construction were identified from a desk top study of the area up to 250m from the Application Site boundary. These are summarised in Table 26.

Table 26: Demolition, Earthworks and Construction Dust Sensitive Receptors

Distance from Site Boundary (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Less than 20	1 to 10	0
Less than 50	1 to 10	0
Less than 100	10 to 100	-
Less than 250	10 to 100	-

Receptors sensitive to potential dust impacts from trackout were identified from a desk top study of the area up to 50m from the road network within 500m of the site access. These are summarised in Table 27.

Table 27: Trackout Dust Sensitive Receptors

Distance from Access Route (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Less than 20	1 to 10	0
Less than 50	10 to 100	0

There are no ecological receptors within 50m of the Application Site boundary or the access route within 500m of the site entrance. As such, ecological impacts have not been assessed further within this report.

Several additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in Table 28.

Table 28: Additional Area Sensitivity Factors to Potential Dust Impacts

Guidance	Comment
Whether there is any history of dust generating activities in the area	The desk top study did not indicate any dust generating activities in the local area
The likelihood of concurrent dust generating activity on nearby sites	A review of the planning portal did not indicate any additional development proposals likely to result in concurrent dust generation in the vicinity of the site
Pre-existing screening between the source and the receptors	There is no pre-existing screening between the site and surrounding receptors
Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place	As shown in Figure 2, the predominant wind bearing at the site is from the south west. As such, receptors to the northeast are most likely to be affected by dust releases
Conclusions drawn from local topography	There are no significant topographical constraints to dust dispersion
Duration of the potential impact, as a receptor may become more sensitive over time	Currently it is unclear as to the duration of the construction phase. However, it is possible that it will extend over one year
Any known specific receptor sensitivities which go beyond the classifications given in the document	No specific receptor sensitivities identified during the baseline assessment

Based on the criteria shown in Table 6 the sensitivity of the receiving environment to potential dust impacts was determined as **high**. This was because the identified receptors included residential

properties. It should be noted that all receptors were assumed to be of **high** sensitivity to provide a robust assessment.

The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria shown in Section 4, is shown in Table 29.

Table 29: Sensitivity of the Surrounding Area to Potential Dust Impacts

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

Risk of Impacts

A summary of the risk from each dust generating activity is provided in Table 30.

Table 30: Summary of Potential Unmitigated Dust Risks

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

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

Mitigation and Residual Effects

The IAQM guidance provides potential mitigation measures to reduce impacts because of fugitive dust emissions during the construction phase. These have been adapted for the Proposed Development as summarised in Table 31.

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

Table 31: Fugitive Dust Emission Mitigation Measures

Issue / Control Measure	Site Risk		
	Low	Medium	High
General			
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	-	Committed	
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	Committed		
Display the head or regional office contact information	Committed		
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. The DMP may include monitoring of dust deposition, dust flux, real-time PM ₁₀ continuous monitoring and/or visual inspections.	As required	Committed	

Issue / Control Measure	Site Risk		
	Low	Medium	High
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.	Committed		
Make the complaints log available to the Local Authority when asked	Committed		
Record any exceptional incidents that cause dust and/or air emissions, either on- or off site, and the action taken to resolve the situation in the logbook.	Committed		
Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the offsite transport/ deliveries which might be using the same strategic road network routes.	As required		Committed
Monitoring			
Undertake daily onsite and offsite 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 windowsills within 100 m of site boundary, with cleaning to be provided if necessary.	As required		Committed
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and inspect log available to the Local Authority when asked	Committed		
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.	Committed		
Agree dust deposition, dust flux, or real-time PM ₁₀ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least 3 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.	As required	Committed	
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.	Committed		
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	Committed		
Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period	As required	Committed	
Avoid site runoff of water or mud.	Committed		
Keep site fencing, barriers and scaffolding clean using wet methods.	As required	Committed	
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	As required	Committed	
Cover, seed, or fence stockpiles to prevent wind whipping	As required	Committed	
Operating Vehicle/Machinery and Sustainable Travel			
Ensure all vehicles switch off engines when stationary - no idling vehicles.	Committed		
Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable	Committed		

Issue / Control Measure	Site Risk		
	Low	Medium	High
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)	As required		Committed
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	-	Committed	
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)	-	As required	Committed
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	Committed		
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate	Committed		
Use enclosed chutes and conveyors and covered skips.	Committed		
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	Committed		
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.	As required	Committed	
Waste Management			
Avoid bonfires and burning of waste materials	Committed		
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).	As required		Committed
Ensure effective water suppression is used during demolition operations. Handheld 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.	Committed		
Avoid explosive blasting, using appropriate manual or mechanical alternatives	Committed		
Bag and remove any biological debris or damp down such material before demolition.	Committed		
Measures Specific to Earthworks			
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	-	As required	Committed
Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.	-	As required	Committed
Only remove the cover in small areas during work and not all at once.	-	As required	Committed
Measures Specific to Construction			
Avoid scabbling (roughening of concrete surfaces) if possible.	As required		Committed
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.	As required	Committed	

Issue / Control Measure	Site Risk		
	Low	Medium	High
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	-	As required	Committed
For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	-	As required	
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.	As required	Committed	
Avoid dry sweeping of large areas.	As required	Committed	
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	As required	Committed	
Inspect on site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	-	Committed	
Record all inspections of haul routes and any subsequent action in a site logbook.	As required	Committed	
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowzers and regularly cleaned.	-	Committed	
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	As required	Committed	
Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	-	Committed	
Access gates to be located at least 10 m from receptors where possible.	-	Committed	

Assuming the relevant mitigation measures outlined in Table 31 are implemented, the residual impacts from all dust generating activities are predicted to be **not significant**, in accordance with the IAQM guidance.

Operational Phase Road Vehicle Exhaust Emission Assessment

Future Impacts

Review of the proposed plans indicate:

1. There will not be a change in more than 500 LDV AADT flows on local roads with relevant receptors.
2. There will not be a change in more than 100 HDV AADT flows on local roads with relevant receptors.
3. There are no plans to change in the alignment of roads by 5m or more.
4. There are no plans to introduce a new junction or remove an existing junction near to relevant receptor.
5. There are no plans to introduce or change a bus station.
6. There will not be an underground car park with an extraction system within 20 m of a relevant receptor.
7. There will not be one or more substantial combustion processes, where there is a risk of impacts at relevant receptors.

In accordance with the IAQM indicative criteria an air quality assessment of operation phase road traffic emissions is not required, and impacts are considered **not significant**.

Future exposure

Annual mean NO₂ and PM₁₀ concentrations at the identified future sensitive human receptor locations using 2023 DfT traffic data and Defra background concentrations were estimated using dispersion modelling and shown in Table 32. It should be noted that the concentrations included in the table below were modelled at a height on 1.5m (human breathing height). It is assumed that pollutant concentrations would decrease with each floor and when further away from the road.

Table 32: Predicted annual mean NO₂, PM₁₀ and PM_{2.5} concentrations

Receptor ID	Total NO ₂ (µg/m ³)	Total PM ₁₀ (µg/m ³)	Total PM _{2.5} (µg/m ³)
FR1 (east)	27.48	19.05	11.35
FR2 (west)	27.96	19.27	11.46

Predicted annual mean NO₂ concentrations at the future sensitive human receptor locations were below respective AQOs of 40 µg/m³ when using 2024 traffic data and 2025 background concentrations. It is expected that background concentrations and emissions from road transport will reduce in future years and therefore predicted annual mean pollutant concentrations in the future will be lower. LAQM.TG(22) advises that exceedances of the hourly mean NO₂ AQO is unlikely to occur where annual mean concentrations are below 60µg/m³.

Predicted annual mean PM₁₀ and PM_{2.5} concentrations at the façades of the Proposed Development are all below the respective AQO. the Based on the assessment results, future occupant exposure to exceedances of the AQOs is therefore unlikely.

6. Conclusion

This report has been prepared to support the planning application at 640 Oxford Road, Reading, RG30 1EH.

The proposals have the potential to cause air quality impacts because of fugitive dust emissions during construction and road traffic exhaust emissions associated with vehicles travelling to and from the site during operation, as well as expose future occupants to any existing air quality issues. As such, an air quality assessment was required to determine baseline conditions and assess potential effects because of the scheme.

During the construction phase of the development there is the potential for air quality impacts because of fugitive dust emissions from the site. These were assessed in accordance with the IAQM methodology. Assuming good practice dust control measures are implemented, the residual significance of potential air quality impacts from dust generated by demolition, earthworks, construction and trackout was predicted to be **not significant**.

During the operational phase of the development there is the potential for air quality impacts because of traffic exhaust emissions associated with vehicles travelling to and from the site. These were assessed against the screening criteria provided within IAQM guidance. Due to the size and nature of the proposals, road vehicle exhaust emissions impacts were predicted to be **not significant**.

The proposed development has the potential to expose future users to elevated pollution levels in the vicinity of the site during operation. Local monitoring results indicate that future users are **unlikely** to be exposed to pollutant concentrations that exceed AQOs.

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