



AIR QUALITY ASSESSMENT

on behalf of

LIDL GREAT BRITAIN LTD

for

**LAND SOUTH OF WALLIS AVENUE,
ROCHDALE**

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Summary

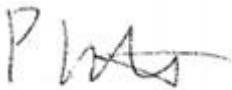
This air quality report has been prepared to accompany a planning application for a commercial development at Land South of Wallis Avenue, Rochdale. It assesses the potential changes in air quality due to the construction and operation of the proposed development and whether these potential changes would significantly alter air quality.

The assessment of dust soiling and human health impacts during the construction phase of the development results in the proposal of dust mitigation measures. The implementation of these will ensure that residual dust impacts during the construction phases are not significant.

Concentrations of NO₂ and PM₁₀ are likely to be below their respective short-term objectives at the proposed development site, which is therefore considered suitable for commercial use with regard to air quality. Concentrations of PM_{2.5} are expected to be below the annual mean target.

The proposed development is not expected to have a significant effect on local air quality.

There is, therefore, no reason for this application to be refused on the grounds of air quality.

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Signed		Signed	
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1 Introduction

- 1.1 Miller Goodall Ltd has been instructed to prepare an air quality assessment to accompany a planning application for a commercial development at Land South of Wallis Avenue, Rochdale. The site lies within the administrative boundary of Rochdale Borough Council (RBC).
- 1.2 The report provides an assessment of the potential air quality impacts associated with the construction and operational phases of the proposed development. Existing air quality at and around the development is reviewed, and the potential effect of the development on local air quality is assessed following Defra¹ and EPUK and IAQM guidance².
- 1.3 The main pollutants of health concern from road traffic exhaust releases are nitrogen dioxide (NO₂) and fine particulates, normally assessed as the fraction of airborne particles of mean aerodynamic diameter less than ten micrometres (PM₁₀) and 2.5 micrometres (PM_{2.5}) since these pollutants are most likely to approach their respective air quality objectives in proximity to major roads and congested areas. This assessment has therefore focused on the impact of the proposed development on concentrations of NO₂, PM₁₀ and PM_{2.5}.

2 Site Description

- 2.1 The site is located in east Rochdale, approximately 1 km southeast of the town centre and 1.2 km northwest of the M62. The land is currently vacant and occupied by overgrown scrub vegetation.
- 2.2 Wallis Avenue borders the site to the north, with dwellings located beyond. Michael Faraday Avenue borders the site to the east, with the JD Sports warehouse distribution centre located beyond. Sir Isaac Newton Way runs along the southern site boundary, with the sports grounds at Kingsway Park High School located beyond. Vacant land and the Hornet public house and restaurant, plus its car park, border the site to the west, with the Rochdale Bypass (A664) located beyond.
- 2.3 The site is not located in an Air Quality Management Area (AQMA). The nearest AQMA is 610 m to the southwest at the A664. The site location and AQMA are shown in **Appendix A**.

¹ Department for the Environment Food and Rural Affairs (2022). Local Air Quality Management Technical Guidance Document LAQM.TG(22)

² EPUK and IAQM (January 2017) Land Use Planning and Development Control: Planning for Air Quality (v1.2)

3 Proposed Development

3.1 The development comprises a Lidl supermarket, with associated car parking.

4 Policy Context

4.1 National Planning Policy Framework

4.1.1 The National Planning Policy Framework^[3] advises at Paragraph 199 that development should be compliant with relevant objectives and limit values, opportunities to improve air quality should be included particularly at the design stage, and that new development should be consistent with existing air quality areas of concern and the local air quality action plans. The key theme of the policy is that existing areas of poor air quality (for example AQMAs or Clean Air Zones) should be not significantly worsened by a development scheme.

4.2 Planning Practice Guidance

4.2.1 The Planning Practice Guidance (PPG)⁴, provides guidance on how planning can take account of the impact of new development on air quality. It provides advice on how assessments should be prepared, information sources to use, what impacts and issues should be predicted, and mitigation.

4.3 Air Quality Objectives

4.3.1 The standards and objectives relevant to the LAQM framework have been prescribed through the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations 2002; the Air Quality Standards Regulations 2010 set out the combined Daughter Directive limit values and interim targets for Member State compliance. This framework of air quality legislation was converted into domestic law through the European Union (Withdrawal) Act 2018^[5].

³ Ministry of Housing, Communities and Local Government, 2024. National Planning Policy Framework

⁴ Ministry of Housing, Communities and Local Government, Ministry of Housing, Communities & Local Government (2018 to 2021) and Department for Levelling Up, Housing and Communities, *Planning Practice Guidance - Air Quality* 2019 [Air quality - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/air-quality)

⁵ UK Parliament (2018): [http://www.legislation.gov.uk/ukpga/2018/16/contents/enacted](https://www.legislation.gov.uk/ukpga/2018/16/contents/enacted)

- 4.3.2 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 establish long term PM_{2.5} targets to be met by 2040. Defra has published an Interim Planning Guidance webpage to assist in applying the legislation in the context of planning decision-making processes⁶. The guide seeks to expand the decision-making process from a conclusion based on whether an exceedance does or does not occur, and instead seeks to encourage the developer to consider PM_{2.5} exposure reduction through good design and mitigation from the outset, and report on these actions taken.
- 4.3.3 The relevant air quality standards and objectives⁷ are presented in **Table 1**.

Table 1: Air Quality Strategy Objectives (England) for the Purposes of Local Air Quality Management

Pollutant	Air Quality Objective	
	Concentration	Measured As
Nitrogen dioxide (NO ₂)	200 µg/m ³	1-hour mean not to be exceeded more than 18 times per year
	40 µg/m ³	Annual mean
Particles (PM ₁₀)	50 µg/m ³	24-hour mean not to be exceeded more than 35 times per year
	40 µg/m ³	Annual mean
Particles (PM _{2.5})	20 µg/m ³	Annual mean (target)
	10 µg/m ³	Annual mean (target) (to be achieved by 2040)

- 4.3.4 Pollutant standards relate to ambient pollutant concentrations in air, set based on medical and scientific evidence of how each pollutant affects human health. Where an air quality objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as AQMAs and take action to work towards meeting the objectives. Following the designation of an AQMA,

⁶ Department for the Environment Food and Rural Affairs (2024). PM_{2.5} Targets: Interim Planning Guidance

⁷ UK Parliament (2020): <https://www.legislation.gov.uk/uksi/2020/1313/made>

local authorities are required to develop an Air Quality Action Plan (AQAP) to meet the objectives and improve local air quality.

- 4.3.5 Possible exceedances of air quality objectives are generally assessed in relation to those locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective.
- 4.3.6 As the development is for commercial use, the annual mean air quality objectives do not apply; however, the NO₂ one-hour mean short-term objective does still apply¹.

4.4 Places for Everyone Joint Development Plan

- 4.4.1 Greater Manchester Combined Authority (GMCA) has adopted the Places for Everyone (PfE) Joint Development Plan⁸. The intention behind this document is to establish a joint approach for several Greater Manchester local authorities, with respect to creating a long-term plan for jobs, new homes and sustainable growth. While the PfE sets out the strategy and policies to guide sustainable growth, it also allocates sites for development across Greater Manchester.
- 4.4.2 Policy JP-S5 Clean Air identifies actions related to air quality. The Policy identifies 11 items that range from new development (creating good designs, promoting electric vehicle charging, assessments and guidance, mitigation) to actions at the local authority level (implementing the clean air plan, controlling traffic levels at schools).

4.5 Greater Manchester Action Plan 2016–2021

- 4.5.1 The Greater Manchester Combined Authority (GMCA) Air Quality Action Plan 2016–2021^[9] provides information in respect of the actions planned by the Greater Manchester Authorities in relation to declared AQMAs. Action Plans are the mechanism by which the local authorities, in collaboration with national agencies and others, outline their plans for working towards achieving the air quality objectives through the powers available to them. In relation to managing new development, the action plan states that:

⁸ Greater Manchester Combined Authority, 2024. Places for Everyone Joint Development Plan 2022 to 2039

⁹ GMCA (2016) Greater Manchester Air Quality Action Plan 2016–2021

"Action 1.1

Greater Manchester (GM) councils to adopt the most recent IAQM Guidance on the Assessment of Dust from Demolition and Construction as current best practice to assess and mitigate emissions from construction sites. i. Where a key priority area is affected by a proposed scheme, a high level of mitigation control will be requested.

Action 1.2

GM local authorities will adopt the most recent IAQM/EPUK guidance for air quality assessment as current best practice, to help ensure that planning applications consider potential local air quality impacts and opportunities to improve air quality are realised. i. Where a Key Priority Area is significantly adversely affected by a proposed scheme, a high level of mitigation control will be requested. ii. The IAQM/EPUK guidance will also be used to screen and assess industrial sources, such as boilers or large stationary engines. GM local authorities to recommend mitigation controls in accordance with the most recent guidance and the other actions in this document for new developments that contribute to a deterioration of air quality in Air Quality Management Areas (AQMA). Where an air quality assessment is triggered, it should include a review of monitoring data. Where monitoring is not currently undertaken, it may be requested to inform the application or to confirm the effects."

4.5.2 Greater Manchester was identified in the Government's mandate to prepare a Clean Air Zone (CAZ). This was initially scheduled to be a charging CAZ, however, GMCA proposed an 'investment-led' CAZ, which was approved by Defra¹⁰.

4.5.3 At the time of writing, there has not been an update of the action plan past the 2021 date. It is still active and applies. The 2024 Annual Status Report (ASR) states: "*Defra further acknowledged that it is necessary to understand how successful the CAP [Clean Air Plan] measures are in addressing compliance at all locations and agreed to extend the requirement for a revised AQAP, provisionally, until June 2027, at which point they will reassess whether compliance has been achieved or whether a revised AQAP is needed*".

¹⁰ Department for Environment, Food and Rural Affairs, 2025. Available at: <https://www.gov.uk/government/news/government-backs-local-plans-for-clean-air-in-greater-manchester--2>

5 Methodology

5.1 Data Sources

5.1.1 The air quality assessment has been undertaken and prepared with reference to information from several sources, as detailed in **Table 2**.

Table 2: Key Information Sources

Data Source	Reference
Rochdale Borough Council (RBC) / Greater Manchester Combined Authority (GMCA)	GMCA (2025) <i>2024 Air Quality Annual Status Report for Greater Manchester</i>
	GMCA (2016) <i>Greater Manchester Air Quality Action Plan 2016–2021</i>
	GMCA Greater Manchester Clean Air website Home Clean Air Greater Manchester (cleanairgm.com)
	GMCA (2024) <i>Places for Everyone Joint Development Plan 2022 to 2039</i>
Institute of Air Quality Management (IAQM)	IAQM “Guidance on the assessment of dust from demolition and construction” v2.2 2024
Department for Environment Food and Rural Affairs (Defra)	Defra <i>Local Air Quality Management Technical Guidance TG(22)</i> , updated 2022
Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM)	EPUK and IAQM (January 2017) <i>Land Use Planning and Development Control: Planning for Air Quality (v1.2)</i>
Ministry of Housing, Communities & Local Government	Planning Practice Guidance: Air Quality, November 2019
	National Planning Policy Framework (NPPF), December 2024
Defra’s LAQM Support Tools	Local Air Quality Management 1 km x 1 km grid background pollutant maps NOx to NO ₂ Calculator
CORA IHT	Traffic Data

Data Source	Reference
Enviro Data Services	Meteorological data from Manchester Airport for the year 2024

5.2 Consultation

5.2.1 The proposed air quality assessment methodology was provided to the Environmental Health department of RBC¹¹ for their review. At the time of writing, no reply had been received to the consultation.

5.3 IAQM Construction Dust Assessment

5.3.1 The IAQM has produced guidance¹² on the assessment of air quality impacts arising from dust associated with construction and demolition activities, and provides a methodology by which to complete such assessments. The IAQM methodology provides a risk assessment structure to determine the likely impact of the development on nearby receptor locations and recommends mitigation measures that should be implemented to reduce any such impact. The methodology for the assessment is shown in **Appendix B**. The study area in relation to dust and the zones of interest used within the assessment (<20 m, 20 m – 50 m and 50 – 100 m from the site) are shown in **Appendix C**. The dust assessment informed the recommended mitigation outlined in **Appendix D**.

5.4 Road Traffic Emissions Assessment

Air Dispersion Model

- 5.4.1 The validated Atmospheric Dispersion Modelling System for Roads (ADMS-Roads Extra) v5.1.0.2 was used to assess the local air quality impact of development-generated vehicle exhaust emissions on concentrations of NO₂, PM₁₀ and PM_{2.5} at existing receptors located adjacent to the assessed road network.
- 5.4.2 A qualitative comparison to the short-term air quality objectives has been undertaken as future sensitive receptors at the site would not be exposed to the annual mean air quality objective.

¹¹ Email Miller Goodall Ltd. to RBC, 24th March 2026.

¹² Institution of Air Quality Management, 2024. Guidance on the assessment of dust from demolition and construction" v2.2

Assessment Scenarios

5.4.3 The assessment considered the following scenarios:

- Scenario 1: 2024 – base year and verification;
- Scenario 2: 2028 – opening year ‘without development’; and
- Scenario 3: 2028 – opening year ‘with development’.

Traffic Data

5.4.4 The spatial scope for the assessment focused on those routes affected by the proposed development. The traffic data used in the assessment and a map of the road network are provided in **Appendix E**. Details on the committed developments considered within the traffic data are also provided in **Appendix E**.

5.4.5 Vehicles within the study area have been modelled at posted speed limits, apart from the approach to junctions where queuing traffic sections are included in the model at 5 to 20 kph, where appropriate following Defra guidance.

5.4.6 LAQM.TG(22) recommends that temporal variations be considered within air quality modelling. Therefore, a 7-day profile based on the Department for Transport’s statistics was used within the model.

5.4.7 The development-related trips consist of three components: new trips (entirely new vehicle movements), diverted trips (existing vehicles altering from their nearby route to visit the site), and pass-by trips (vehicles already travelling on the surrounding network that briefly enter the site before continuing their original journey). For supermarkets, most development traffic typically falls into the pass-by category. These vehicles are already present on the local road network, so their movements are not considered as an additional emissions source. If the site access is directly onto the pass-by route, there is no change in emissions.

5.4.8 However, pass-by trips from Sir Isaac Newton Way are anticipated. Because the site access is located on Wallis Avenue, vehicles making these pass-by trips will need to leave Sir Isaac Newton Way and travel past the existing dwellings on Wallis Avenue. At present, Sir Isaac Newton Way is approximately 100 m from these properties. As a result, emissions from these pass-by vehicles must be considered as a new impact source, since without the development, these vehicles would not travel along Wallis Avenue. Wallis Avenue and Michael Faraday Avenue include new, diverted and pass-by trips in the with development scenario. All other routes include the new trips only, as the vehicles already exist on these wider passing routes.

Meteorological Data

- 5.4.9 Meteorological data for 2024 from the Manchester Airport recording station was used in the ADMS-Roads model. This is the most representative recording station for the development site.
- 5.4.10 The wind rose for 2024 from Manchester Airport recording station is provided in **Appendix E**. Dispersion values for the site and meteorological station have been used. The factors applied for surface roughness (m) and the minimum Monin Obukhov length (m) are outlined in **Appendix E**.

Sensitive Receptors

- 5.4.11 Eight existing sensitive receptor locations were selected based on their proximity to road links affected by the proposed development, where the potential effect of development-related traffic emissions on local air pollution would be most significant.
- 5.4.12 Predicted changes in NO₂, PM₁₀ and PM_{2.5} concentrations, as a result of development-generated traffic, were calculated at these locations. The ESR receptor locations are detailed in **Table 3** and shown in **Appendix A**.

Table 3: Existing Sensitive Receptor Locations

Receptor	Grid Ref	
ESR 1	391293	412348
ESR 2	391144	412550
ESR 3	390981	412158
ESR 4	390834	412103
ESR 5	390461	411979
ESR 6	390376	412029
ESR 7	390843	412069
ESR 8	391335	412336

Conversion of NO_x to NO₂

5.4.13 Oxides of nitrogen (NO_x) concentrations were predicted using the ADMS-Roads model. The modelled road contribution of NO_x at the identified receptor locations was then converted to NO₂ using the NO_x to NO₂ calculator (v9.1, 2024)¹³ following Defra guidance.

Emission Factors

5.4.14 Defra's Emission Factor Toolkit (EFT)¹⁴ (v13.1, 2025) was used within the ADMS-Roads model to predict emissions from road vehicles for all scenarios.

Background Concentrations

5.4.15 The ADMS model requires the derivation of background pollutant concentration data that are factored to the year of assessment, to which the contributions from the assessed roads are added.

5.4.16 There is one NO₂ background monitoring site administered by RBC in the vicinity of the development and selected sensitive receptors that is suitable for use. This is RO17, which is located approximately 260 m to the northwest of the site. Future year calculations of background concentrations were completed in accordance with LAQM.TG(22). The calculations and results of the background concentrations used are shown in **Appendix E**.

5.4.17 There is no background monitoring of PM₁₀ or PM_{2.5} carried out in proximity to the development. Therefore, background PM₁₀ and PM_{2.5} concentrations were obtained from the Defra LAQM support tools for the 1 km x 1 km grid squares covering the proposed development site and receptor locations for the years of assessment (2024 and 2028).

Model Verification

5.4.18 Model verification is the process of adjusting model outputs to improve the consistency of modelling results with respect to available monitored data.

5.4.19 Verification has been undertaken for NO₂. The verification procedure considers diffusion tubes RO22 and RO23, which are located within the study area. The locations of these air quality monitoring sites are shown in **Appendix A** and the results are provided in **Section 6.2**.

¹³ [Background maps. Tools. Local Air Quality Management Support – Defra, UK](#)

¹⁴ Department for Food, Environment and Rural Affairs, 2024. Available at: <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/>

5.4.20 The verification procedure and associated calculations are shown in **Appendix E**. A single verification factor has been derived and applied to all sensitive receptors assessed. All modelled road NO_x concentrations have been adjusted by a factor of 1.9422.

5.4.21 There is no PM₁₀ or PM_{2.5} monitoring undertaken within the study area; it was not possible to undertake verification for particulate matter concentrations.

Relevant Objectives

5.4.22 The annual mean and short-term objectives apply to the ESR.

5.4.23 The proposed development is commercial in nature and future sensitive receptors would not be relevant receptors in relation to annual mean air quality objectives due to the length of their exposure. Short-term objectives do, however, apply to future users of the development.

5.4.24 LAQM.TG(22) provides a qualitative screening approach to determine whether there is a risk of exceedance of the one-hour NO₂ air quality objective. If the ambient NO₂ annual mean concentration is above 60 µg/m³ there is a risk that the one-hour objective (200 µg/m³) may be exceeded. A qualitative comparison to this criterion for future site users has been included in the assessment.

Assessment Significance Criteria

5.4.25 Guidance is provided by EPUK and IAQM² on criteria for determining the significance of a development's impact on local air quality. **Table 4** details the impact descriptors used for individual receptors in relation to annual mean pollutant concentrations. The overall significance of impacts was determined using professional judgement. Changes of 0%, i.e. less than 0.5%, will be described as Negligible.

Table 4: Impact descriptors for individual receptors

Long term average Concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)*			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate

Long term average Concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)*			
	1	2-5	6-10	>10
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

*AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'

6 Baseline Air Quality

6.1 Local Air Quality

- 6.1.1 Baseline air quality at and around the site of the proposed development has been established by examining monitoring data produced by RBC (provided on the Greater Manchester Clean Air website¹⁵) and background concentration maps provided by Defra for the grid squares covering the proposed development.
- 6.1.2 The Greater Manchester AQMA has been declared based on the outputs of air dispersion modelling conducted in 2016. All locations across Greater Manchester that were predicted to be above an NO₂ annual mean of 35 µg/m³ were declared as part of the AQMA. The annual mean objective is 40 µg/m³, the selection of 35 µg/m³ as the threshold was selected to account for model uncertainty.
- 6.1.3 The site is not located in an AQMA. However, pockets of the GMCA AQMA have been declared on all roads leaving the site; these include the A664 to the north and southwest, and the M62 routes to the southeast. The site location and its relationship to the AQMA are shown in **Appendix A**. The AQMA was declared in 2016, on the basis of annual average levels of NO₂.

¹⁵ Greater Manchester Clean Air. Data Hub. Available at: <https://cleanairm.com/data-hub/>

6.2 Air Quality Monitoring

Nitrogen Dioxide (NO₂)

- 6.2.1 GMCA/RBC operate several diffusion tubes near the site.
- 6.2.2 RO17 is an urban background monitor, which is located approximately 260 m to the northwest of the site, and east of the A664. RO22 and RO23 are roadside monitors, located approximately 860 m to the southwest of the site at the roundabout junction of the A664 and Oldham Road (A671). RO15 and RO16 are located along the A-road network near the M62, respectively 1.6 km and 1.2 km to the southeast of the site.
- 6.2.3 The results from these diffusion tubes are shown in **Table 5** and the monitor locations are shown in **Appendix A**.

Table 5: Annual Mean NO₂ Concentrations Monitored by RBC within the Study Area

Site ID & Classification	Location		Annual Mean NO ₂ Concentrations (µg/m ³)				
			2020	2021	2022	2023	2024
RO17 (Urban Background)	391214	412609	18.50	17.63	24.47	17.30	14.50
RO15 (Roadside)	392976	411906	20.0	23.0	20.0	20.0	Discontinued
RO16 (Urban Background)	392542	411709	18.76	18.27	19.53	16.8	15.1
RO22 (Roadside)	390464	411976	31.50	32.68	32.17	30.20	26.50
RO23 (Roadside)	390377	412030	27.60	31.37	31.73	29.80	26.10
Annual mean NO ₂ air quality objective							40 µg/m ³

- 6.2.4 The monitoring results in **Table 5** indicate that annual mean concentrations of NO₂ were below the NO₂ annual mean objective at the identified monitoring sites during the period shown.
- 6.2.5 The results indicate that the short-term objective for NO₂ was unlikely to be exceeded at the identified monitoring sites as monitored annual mean concentrations were well below the indicative screening concentration of 60 µ/gm³ during the period shown.

Particulate Matter (PM₁₀ & PM_{2.5})

6.2.6 RBC does not undertake PM₁₀ or PM_{2.5} monitoring in the vicinity of the proposed development site, neither is there any nearby representative monitoring available. There are several automatic monitors positions in the GMCA administrative area. There have been no recorded exceedances of particulate matter in 2024.

6.3 Background Concentrations

6.3.1 NO₂ concentrations from RO17 are used for the base and opening year scenarios. The concentration is applied to verification and all ESR. Background concentrations of PM₁₀ and PM_{2.5} obtained from the 2021-based background concentration maps provided by Defra for the grid squares covering the proposed development and receptor locations¹⁶ are shown in **Table 6**.

Table 6: Background Pollutant Concentrations Obtained for the 1km x 1km Grid Squares Covering the Site and Receptor Locations

Grid Square	Pollutant	2024	2028
		(µg/m³)	(µg/m³)
390500, 411500 (RO22, ESR 5)	NO ₂	14.50	12.39
	PM ₁₀	12.16	11.95
	PM _{2.5}	7.07	6.86
390500, 312500 (RO23, ESRs 3 – 4, 6 – 7)	NO ₂	14.50	12.39
	PM ₁₀	12.44	12.25
	PM _{2.5}	7.28	7.07
391500, 412500 (RO17, ESRs 1 – 2 and 8)	NO ₂	14.50	12.39
	PM ₁₀	11.41	11.20
	PM _{2.5}	6.75	6.54

¹⁶ <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021>

7 Construction Dust Impact Assessment

7.1 Step 1 – Requirement for a Detailed Assessment

- 7.1.1 There are sensitive receptors located within 250m of the site boundary, therefore, a detailed assessment of the construction phase of the development has been undertaken. There are no ecological designations within 50m of the site boundary or 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s) which require assessment.

7.2 Step 2 – Assess the Risk of Dust Impacts

Step 2A Dust Emission Magnitude

- 7.2.1 The potential dust emission magnitude in relation to the development has been determined using the criteria detailed in **Table B1** in **Appendix B**. The scale and nature of works onsite were considered to determine the potential dust emission magnitude for earthwork activities, construction and trackout activities. No demolition is required at the development site.
- 7.2.2 Information to determine the classification has been estimated from the site plans, Google Earth and information provided by the Applicant. The dust emission magnitude is outlined in **Table 7**.

Table 7: Dust Emission Magnitudes for Each Activity

Activity	Dust Emission Magnitudes	Justification for Sensitivity Classification
Earthworks	Small	the site area is less than 18,000 m².
Construction	Medium	total building volume estimated to be constructed is between 12,000 to 75,000 m³.
Trackout	Medium	there are likely to be between 20 to 50 HDV outward movements in any one day

Step 2B Sensitivity of the Receptors to Dust Soiling and Health Effects

- 7.2.3 Dwellings are located within a distance of 20 m from earthworks and construction. The trackout route onto Sir Isaac Way passes commercial uses between 20 and 50 m from the road edges used by traffic associated with the site construction. In accordance with the criteria in **Table B2** in **Appendix B** and the IAQM guidance, the sensitivity of human receptors is **high** (dwellings) and **medium** (commercial).

Step 2B Sensitivity of the Area to Dust Soiling and Human Health Effects of PM₁₀

7.2.4 The sensitivity of the area for dust soiling and human health effects has been determined using the criteria detailed in **Table B3 and Table B4** respectively in **Appendix B**. The sensitivity of the area to dust soiling and human health for each activity is summarised in **Table 8**.

Table 8: Outcome of Defining the Sensitivity of the Area

Pollution	Activity	Sensitivity of the Surrounding Area	Justification for Sensitivity Classification
Dust Soiling	Earthworks	Medium	There are 1 – 10 highly sensitive receptors within 20 m of the site boundary.
	Construction	Medium	There are 1 – 10 highly sensitive receptors within 20 m of construction activity.
	Trackout	Low	There is more than 1 commercial medium sensitive receptor within 50 m of the trackout route, up to 200 m of the site exit.
Human Health	Earthworks	Low	There are 1 – 10 highly sensitive residential receptors within 20 m of the site boundary. Background PM ₁₀ pollutant concentrations are below 24 µg/m ³ .
	Construction	Low	There are 1 – 10 highly sensitive receptors within 20 m of construction activity. Background PM ₁₀ pollutant concentrations are below 24 µg/m ³ .
	Trackout	Low	There is more than 1 commercial medium sensitive receptor within 50 m of the trackout route, up to 200 m of the site exit. Background PM ₁₀ pollutant concentrations are below 24 µg/m ³ .

Step 2C Risk of Impacts

7.2.5 The dust emission magnitude and sensitivity of the area were combined and the risk of impacts have been determined using the criteria detailed in **Table B5 to Table B8** in **Appendix B**. A summary of the risks, before mitigation measures are applied, for dust soiling and human health are shown in **Table 9**.

Table 9: Risk of Dust Impacts

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

7.3 Step 3 – Site-Specific Mitigation

7.3.1 Step 3 of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to the site risk for each activity. Mitigation measures specific to construction and trackout are proposed based on the risk classifications in **Table 9**. There are no mitigation measures specific to earthworks because the risk is low. Recommended mitigation measures are shown in **Appendix D**.

7.3.2 The general mitigation measures (for site management, preparing and maintaining the site, operating vehicle/machinery, operations and waste management), are appropriate for a site with a 'medium risk' classification (in this instance the site is classified as "medium" risk due to construction)¹⁷.

7.4 Step 4 – Determine Significant Effects

7.4.1 The characteristics of the site and the surrounding area suggest that mitigation would not be impracticable or ineffective. With the implementation of the mitigation measures, therefore, the residual impacts from the construction are considered to be not significant when considered following IAQM guidance.

8 Road Traffic Assessment

8.1 Baseline Assessment

8.1.1 The ADMS-Roads model was used to estimate contributions of vehicle exhaust emissions to annual NO₂, PM₁₀ and PM_{2.5} concentrations for the '*baseline*' and '*without development*' scenarios considered in the assessment.

8.1.2 The 24-hour AADT flows used in the assessment are detailed in **Appendix E. Table 10** details the results of the baseline assessment.

¹⁷ For those mitigation measures that are general, the highest risk category should be applied. For example, if the site is medium risk for earthworks and construction, but a high risk for demolition and track-out, the general measures applicable to a high risk site should be applied.

Table 10: Predicted Baseline NO₂, PM₁₀ and PM_{2.5} Annual Mean Concentrations (µg/m³) at Existing Sensitive Receptor Locations

Receptor	Receptor Height above Ground Level (m)	Scenario 1: Base Year (2024)			Scenario 2: Without Development (2028)		
		NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
ESR 1	1.5	15.89	11.63	6.87	13.43	11.44	6.67
ESR 2	1.5	16.40	11.73	6.92	13.83	11.56	6.73
ESR 3	1.5	16.47	12.77	7.45	13.88	12.62	7.26
ESR 4	1.5	19.84	13.00	7.58	16.62	12.86	7.39
ESR 5	1.5	22.75	13.06	7.56	18.79	12.91	7.37
ESR 6	1.5	29.53	13.85	8.05	23.69	13.61	7.79
ESR 7	1.5	17.75	12.79	7.46	14.94	12.63	7.27
ESR 8	1.5	16.13	11.66	6.88	13.61	11.47	6.69
Annual Mean NO ₂ & PM ₁₀ Air Quality Objective						40 (µg/m ³)	
Annual Mean PM _{2.5} Target Level Objective						20 (µg/m ³)	

8.1.3 The baseline air quality assessment for the base year (2024) and opening year 'without development' (2028) scenarios indicate that concentrations of NO₂, and PM₁₀ are below the respective annual mean air quality objectives and the PM_{2.5} annual mean target at all sensitive receptors assessed.

8.2 Impact Assessment

Existing Sensitive Receptors

8.2.1 Predicted NO₂, PM₁₀ and PM_{2.5} concentrations for the opening year (2028) 'with development' scenario at eight ESR locations are detailed in **Table 11**, **Table 12** and **Table 13**. The predicted change in NO₂, PM₁₀ and PM_{2.5} concentrations at existing sensitive receptors between the 'without development' and 'with development' scenarios were compared to the significance criteria detailed in EPUK and IAQM guidance² and contained within **Table 4**.

Table 11: NO₂ Dispersion Modelling Results and Significance of Development for the Opening Year (2028) Scenario at Existing Receptor Locations

Receptor	Without Development µg/m ³	Concentration with Development µg/m ³	Impact µg/m ³	% of AQUAL with Development	% Change relative to AQUAL	Impact Descriptor
ESR 1	13.43	14.67	1.24	3.10%	36.68%	Negligible
ESR 2	13.83	13.86	0.03	0.07%	34.65%	Negligible
ESR 3	13.88	13.91	0.03	0.07%	34.78%	Negligible
ESR 4	16.62	16.67	0.05	0.13%	41.68%	Negligible
ESR 5	18.79	18.85	0.06	0.15%	47.13%	Negligible
ESR 6	23.69	23.7	0.01	0.02%	59.25%	Negligible
ESR 7	14.94	14.98	0.04	0.10%	37.45%	Negligible
ESR 8	13.61	14.64	1.03	2.58%	36.60%	Negligible
Annual Mean NO ₂ Air Quality Objective					40 (µg/m ³)	

Table 12: PM₁₀ Dispersion Modelling Results and Significance of Development for the Opening Year (2028) Scenario at Existing Receptor Locations

Receptor	Without Development µg/m ³	Concentration with Development µg/m ³	Impact µg/m ³	% of AQUAL with Development	% Change relative to AQUAL	Impact Descriptor
ESR 1	11.44	11.73	0.29	0.73%	29.32%	Negligible
ESR 2	11.56	11.57	0.01	0.02%	28.92%	Negligible
ESR 3	12.62	12.62	0.00	0.00%	31.56%	Negligible
ESR 4	12.86	12.87	0.01	0.02%	32.17%	Negligible
ESR 5	12.91	12.92	0.01	0.02%	32.31%	Negligible
ESR 6	13.61	13.61	0.00	0.00%	34.02%	Negligible
ESR 7	12.63	12.63	0.00	0.00%	31.58%	Negligible
ESR 8	11.47	11.69	0.22	0.55%	29.23%	Negligible
Annual Mean PM ₁₀ Air Quality Objective					40 (µg/m ³)	

Table 13: PM_{2.5} Dispersion Modelling Results and Significance of Development for the Opening Year (2028) Scenario at Existing Receptor Locations

Receptor	Without Development µg/m ³	Concentration with Development µg/m ³	Impact µg/m ³	% of AQAL with Development	% Change relative to AQAL	Impact Descriptor
ESR 1	6.67	6.82	0.15	0.75%	34.10%	Negligible
ESR 2	6.73	6.74	0.01	0.05%	33.68%	Negligible
ESR 3	7.26	7.27	0.01	0.05%	36.34%	Negligible
ESR 4	7.39	7.40	0.01	0.05%	36.98%	Negligible
ESR 5	7.37	7.38	0.01	0.05%	36.90%	Negligible
ESR 6	7.79	7.79	0.00	0.00%	38.96%	Negligible
ESR 7	7.27	7.27	0.00	0.00%	36.36%	Negligible
ESR 8	6.69	6.80	0.11	0.55%	34.00%	Negligible
Annual Mean PM_{2.5} Target Level Objective					20 (µg/m³)	

8.2.2 The results of the ADMS-Roads modelling assessment for 2028 indicate that annual mean concentrations of NO₂ and PM₁₀ would be below the respective annual objectives as well as the PM_{2.5} annual mean target in 2028, at all existing sensitive receptor locations within the study area, for both 'with' and 'without' the development.

8.2.3 Predicted annual mean concentrations of NO₂, PM₁₀ and PM_{2.5} are expected to have an increase of less than 3.1% at all existing sensitive receptors assessed. It is likely that concentrations predicted at individual receptor locations are also representative of worst-case exposure as they are close to the main junctions used by development traffic. The short term PM₁₀ objective is predicted to be met at the proposed receptor location with no exceedances of the daily mean objective of 50 µg/m³.

8.2.4 The proposed development is therefore predicted to have a **negligible** impact on concentrations of NO₂, PM₁₀ and PM_{2.5} in 2028.

Proposed Sensitive Receptors

- 8.2.5 LAQM.TG(22) provides a qualitative screening approach to determine whether there is a risk of exceedance of the one-hour NO₂ air quality objective. If the ambient NO₂ annual mean concentration is above 60 µg/m³ there is a risk that the one-hour objective (200 µg/m³) may be exceeded.
- 8.2.6 The concentration predictions at ESR 1 and ESR 8 are representative of the development site, given the proximity between the two. The predicted NO₂ concentration is well below 60 µg/m³ and, therefore, when considered in light of guidance in LAQM.TG(22), the 1-hour mean objective is unlikely to be exceeded.
- 8.2.7 The site is therefore considered suitable for commercial use with regard to air quality.

9 Mitigation

- 9.1 The effects of construction dust will be controlled by means of dust mitigation and management, as outlined by the selection of measures in **Appendix D**.
- 9.2 The development is expected to have an insignificant effect on local air quality. Based on the results of this assessment, no further mitigation in relation to the operational phase is deemed to be required.
- 9.3 Electric vehicle charging spaces will be provided in accordance with Building Regulations Approved Document S: Infrastructure for the charging of electric vehicles (2021 Edition). The scheme will include two electric vehicle charging points, and it will also include EV-ready cabling for future connections.

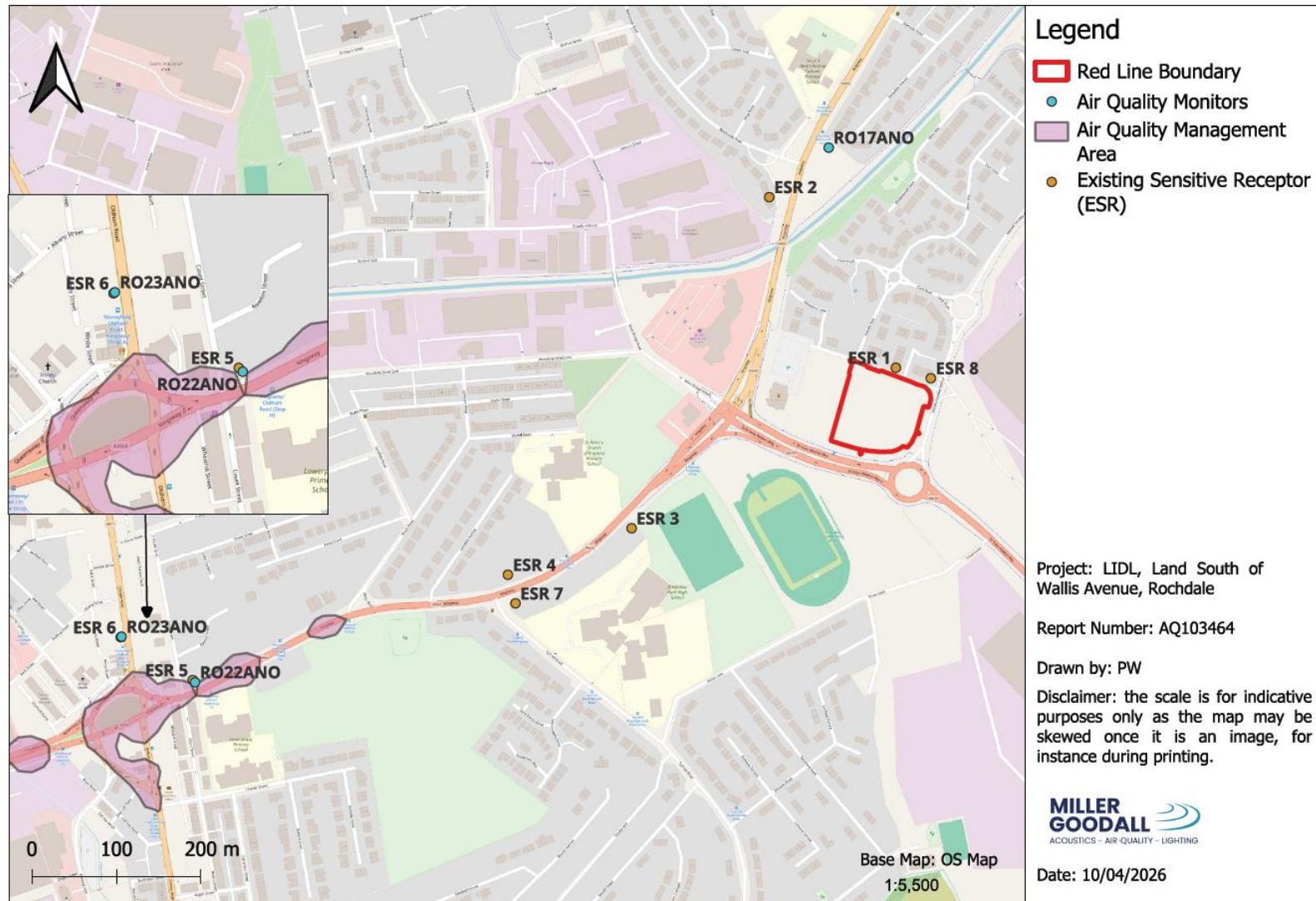
10 Summary of Impacts and Conclusion

- 10.1 This air quality report assesses the potential changes in air quality due to the construction and operation of the proposed development and whether these potential changes would significantly alter air quality.
- 10.2 The assessment of dust soiling and human health impacts during the construction phase of the development results in the proposal of dust mitigation measures. The implementation of these will ensure that residual dust impacts during the construction phase are not significant.

- 10.3 Concentrations of NO₂ and PM₁₀ are likely to be below their respective long and short-term objectives at the proposed development site, which is therefore considered suitable for commercial use with regard to air quality. Concentrations of PM_{2.5} are expected to be below the annual mean target.
- 10.4 The proposed development is not expected to have a significant effect on local air quality.
- 10.5 There is, therefore, no reason for this application to be refused on the grounds of air quality.

APPENDICES

Appendix A: Location of site, AQMA, RBC monitoring and receptors



Appendix B: IAQM Dust Risk Assessment Methodology

The following section outlines criteria developed by the IAQM for the assessment of air quality impacts arising from construction and demolition activities¹². The assessment procedure is divided into four steps and is summarised below:

Step 1: Screen the Need for a Detailed Assessment

An assessment will normally be required where there are human receptors within 250 m of the site boundary and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s). Ecological receptors within 50 m of the site boundary or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s), are also identified at this stage. An ecological receptor refers to any sensitive habitat affected by dust soiling. For locations with a statutory designation, such as a Site of Specific Scientific Interest (SSSI), Special Area of Conservation (SACs) and Special Protection Areas (SPAs), consideration should be given as to whether the particular site is sensitive to dust. Some non-statutory sites may also be considered if appropriate.

Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is 'negligible' and any effects will not be significant.

Step 2: Assess the Risk of Dust Impacts

In step two, a site is allocated to a risk category on the basis of the scale and nature of the works (Step 2A) and the sensitivity of the area to dust impacts (Step 2B). These two factors are combined in Step 2C to determine the risk of dust impacts before the implementation of mitigation measures. The assigned risk categories may be different for each of the construction activities outlined by the IAQM (construction, demolition, earthworks and trackout). A site can be divided into zones, for example on a large site where there are differing distances to the nearest receptors.

Step 2A: Define the Potential Dust Emission Magnitude

Dust emission magnitude is based on the scale of the anticipated works and is classified as Small, Medium or Large. The IAQM guidance recommends that the dust emission magnitude is determined separately for demolition, earthworks, construction and trackout. **Table B1** describes the potential dust emission class criteria for each outlined activity.

Table B1: Criteria Used in the Determination of Dust Emission Magnitude

Activity	Criteria used to Determine Dust Emission Magnitude		
	Small	Medium	Large
Demolition	Total building volume <12,000 m ³ , construction materials with low potential for dust release.	Total building volume 12,000 m ³ – 75,000 m ³ , potential dusty construction material.	Total building volume >75,000 m ³ , potentially dusty construction material.
Earthworks	Total site area <18,000 m ² , soil type with large grain	Total site area 18,000 – 110,000 m ² , moderately dusty soil type	Total site area >110,000 m ² , potentially dusty soil type
Construction	Total building volume <12,000 m ³ .	Total building volume 12,000 – 75,000 m ³ .	Total building volume >75,000 m ³ .
Trackout	<20 outward HDV trips in any one day. Unpaved road length <50 m.	20–50 outward HDV trips in any one day. Unpaved road length 50–100 m.	>50 outward HDV trips in any one day. Unpaved road length >100 m.

Step 2B: Define the Sensitivity of the Area

The sensitivity of the area takes into account the following factors:

- the specific sensitivities of receptors in the area;
- the proximity and number of receptors;
- the local background PM₁₀ concentration; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of windblown dust.

The criteria detailed in **Table B2** is used to determine the sensitivity of the receptor in relation to dust soiling, health effects and ecological effects.

Table B2: Criteria for Determining Sensitivity of Receptors

Sensitivity of Receptor	Criteria for Determining Sensitivity		
	Dust Soiling Effects	Health Effects of PM ₁₀	Ecological Sites
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms	Residential properties, hospitals, schools and residential care homes	International or national designation <i>and</i> the features may be affected by dust soiling; or locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain
Medium	Parks, places of work	Office and shop workers not occupationally exposed to PM ₁₀	Presence of an important plant species where dust sensitivity is uncertain or locations with a national designation with features that may be affected by dust deposition
Low	Playing fields, farmland, footpaths, short-term car parks and roads	Public footpaths, playing fields, parks and shopping streets	Local designation where features may be affected by dust deposition

Table B3 and **Table B4** are then used to define the sensitivity of the area to dust soiling and human health effects. **Table B5** is used to define the sensitivity of the area to ecological impacts. This should be derived for each of construction, demolition, earthworks and trackout.

Table B3: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from Source (m)*			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

*distances considered are to the dust source

Table B4: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Concentrations	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m ³	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m ³	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m ³	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m ³	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m ³	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32 µg/m ³	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 µg/m ³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m ³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low

Table B5: Sensitivity of the Area to Ecological Impacts^{a, b, c}

Receptor Sensitivity	Distance from Source (m) ^c	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

^a The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout and for each designated site. See STEP 2B, Box 8 and Box 9 of IAQM guidance.

^b Only the highest level of area sensitivity from the table needs to be considered.

^c For trackout, the distances should be measured from the side of the roads used by construction traffic. The impact declines with distance from the site.

The sensitivity of the area is then summarised.

Step 2C Define the Risks of Impacts

The dust emission magnitude from **Table B1** and sensitivity of the area and receptors from **Table B2**, **Table B3**, **Table B4** and **Table B5** are combined, and the risk of impacts from each activity (demolition, earthworks, construction and trackout) before mitigation is applied, is determined using the criteria detailed in **Table B6** to **Table B9**.

Table B6: Risk of Dust Impacts – Demolition

Potential Impact Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table B7: Risk of Dust Impacts – Earthworks

Potential Sensitivity of the Area	Impact	Dust Emission Magnitude		
		Large	Medium	Small
High		High Risk	Medium Risk	Low Risk
Medium		Medium Risk	Medium Risk	Low Risk
Low		Low Risk	Low Risk	Negligible

Table B8: Risk of Dust Impacts – Construction

Potential Sensitivity of the Area	Impact	Dust Emission Magnitude		
		Large	Medium	Small
High		High Risk	Medium Risk	Low Risk
Medium		Medium Risk	Medium Risk	Low Risk
Low		Low Risk	Low Risk	Negligible

Table B9: Risk of Dust Impacts – Trackout

Potential Sensitivity of the Area	Impact	Dust Emission Magnitude		
		Large	Medium	Small
High		High Risk	Medium Risk	Low Risk
Medium		Medium Risk	Medium Risk	Low Risk
Low		Low Risk	Low Risk	Negligible

Step 3 Determine Site Specific Mitigation

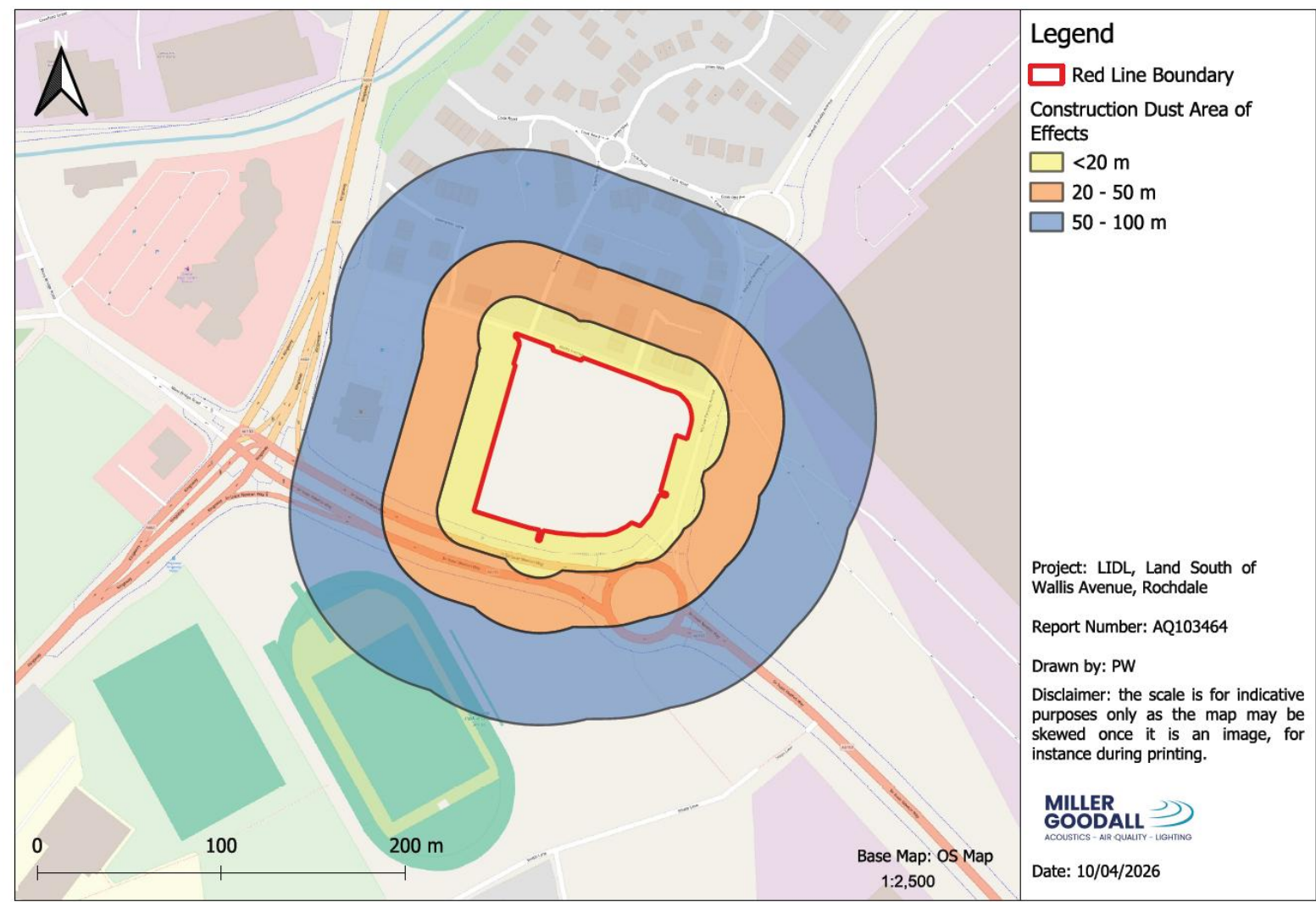
Step three of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to whether the site is a low, medium or high risk site.

Step 4 Determine Significance of Residual Effects

At step four the significance of residual effects is assessed. For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant'.

There may be cases where, for example, there is inadequate access to water for dust suppression to be effective, and even with other mitigation measures in place there may be a significant effect. Therefore, it is important to consider the specific characteristics of the site and the surrounding area to ensure that a conclusion of no significant effect is robust.

Appendix C: Construction Dust Area of Effects



Appendix D: IAQM Dust Assessment Mitigation

xx Highly Recommended

x Desirable

Measures relevant for earthworks, construction and trackout

Mitigation Measure	Medium Risk
Communications	
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	xx
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.	xx
Display the head or regional office contact information.	xx
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 PM ₁₀ continuous monitoring and/or visual inspections.	xx
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.	xx
Make the complaints log available to the local authority when asked.	xx
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.	xx
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.	x
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.	xx

Mitigation Measure	Medium Risk
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.	xx
Agree dust deposition, dust flux, or real-time PM ₁₀ 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.	xx
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.	xx
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	xx
Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	xx
Avoid site runoff of water or mud.	xx
Keep site fencing, barriers and scaffolding clean using wet methods.	xx
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.	xx
Cover, seed or fence stockpiles to prevent wind whipping.	xx
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.	xx
Ensure all vehicles switch off engines when stationary - no idling vehicles.	xx
Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.	xx
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).	x
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	x
Operations	

Mitigation Measure	Medium Risk
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.	xx
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	xx
Use enclosed chutes and conveyors and covered skips.	xx
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	xx
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.	xx
Waste management	
Avoid bonfires and burning of waste materials.	xx

Measures specific to construction

Mitigation Measure	Medium Risk
Avoid scabbling (roughening of concrete surfaces) if possible.	x
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.	xx
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.	x
For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	x

Measures specific to trackout

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

Appendix E: Assessment and Model Inputs

This appendix outlines the inputs used in the road traffic emissions assessment.

Background Concentration Calculation

The 2024 monitored concentration from RO17 is used in this study's base year and verification scenario. This concentration has been applied to all sensitive receptors.

The calculated background concentrations of NO₂ for the opening year (2028) have been determined using the following formula:

$$\text{Future Year Concentration} = \text{Base Year Concentration} \times \frac{\text{Defra Map Future Year Concentration}}{\text{DEFRA Map Base Year Concentration}}$$

The Defra data is sourced from the 2021-based background concentration maps¹³. **Table E1** shows the calculated 2028 background NO₂ concentration. The baseline monitored concentration and calculated concentration are applied to all sensitive receptors.

Table E1: Calculation of 2028 Background NO₂ Concentrations

Monitoring Site	Pollutant	2024 Monitored Background Concentration	Defra 2024 Concentration	Defra 2028 Concentration	Calculated 2028 Background Concentration
RO17	NO ₂	14.5	11.02	9.42	12.39

Traffic Data

The ADMS-Roads model requires the inclusion of detailed road traffic data for the routes to be affected by the proposed development.

Traffic data for the study area has been provided as 24-hour Annual Average Daily Traffic (AADT) and heavy-duty vehicle percentages (HGV%). No average speed traffic survey information was available, therefore, posted speed limits were utilised in the model. Areas of congestion, queuing and junction locations have been modelled at reduced speeds of 5 to 20 km/h.

No committed developments have been identified or included.

Traffic data has been sourced from two data resources. Data has been obtained from the CORA IHT surveys (Links 1 to 7, 11) and the Department for Transport (DfT) Traffic Counts website¹⁸ (Links 8 to 10). The links are shown in **Table E2**. The DfT links were included to allow model verification of RO22 and RO23 to proceed. There is no trip distribution beyond Link 7, as this is beyond the Transport Assessment study.

Links 1 – 2 and 6 – 10 include new development trips only, as pass-by traffic is already travelling on these roads and is an existing emission source. Links 3 – 5 and Link 11 include new, diverted and pass-by trips totals, because vehicles must leave Sir Isaac Newton Way and travel onto these roads to access the site access on Wallis Avenue. These diversions cause traffic to pass by dwellings on Wallis Avenue when they otherwise wouldn't have, since Sir Isaac Newton Way is over 100 m from the dwellings in the baseline scenario.

Following review of aerial imagery, LiDAR digital surface model and Street View© of the study area, it was concluded that additional modelling for street canyons and gradients above 2.5% ^[1] were not necessary.

The traffic data used in the assessment is detailed in **Table E2** and presented in **Figure E1**.

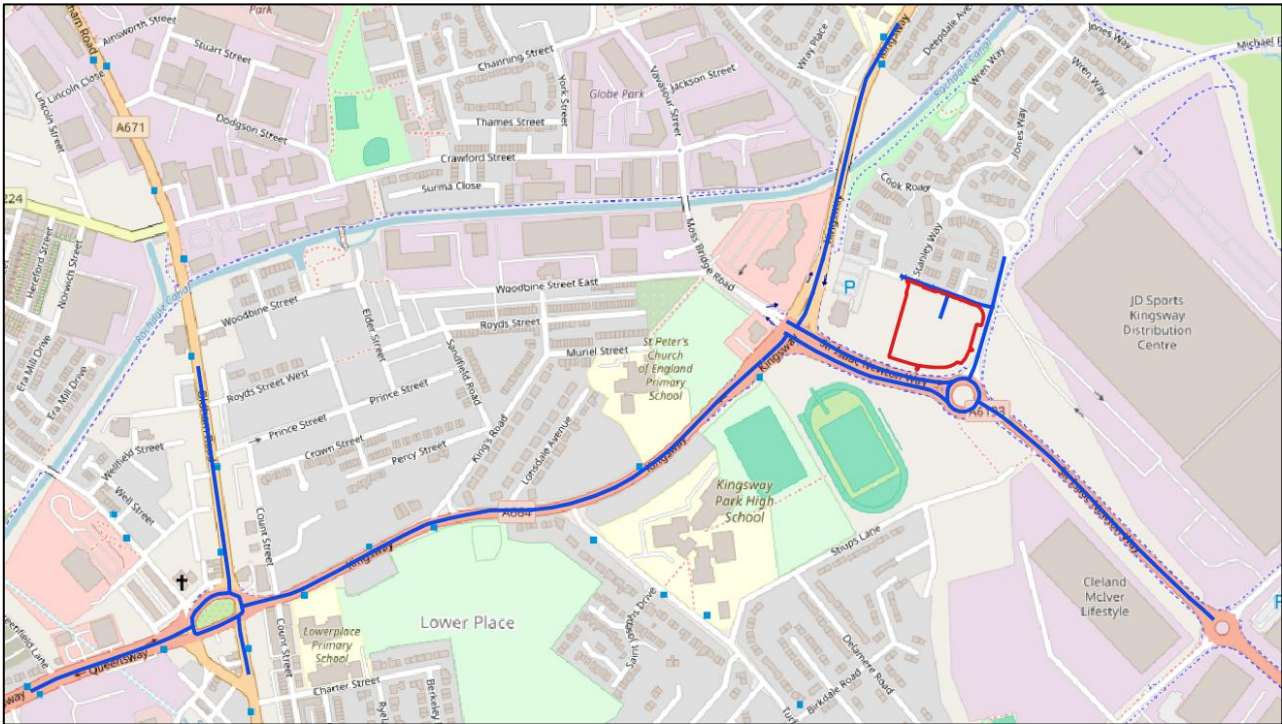
Table E2: Traffic Data used in the Assessment

Link Number	Road	Posted Speed Limit (km/h)	2024 Base Year		2028 Without Development		2028 With Development		Total Development AADT Change
			AADT LDV	AADT HDV	AADT LDV	AADT HDV	AADT LDV	AADT HDV	
1	Sir Isaac Newton Way (East of Faraday Ave)	64	11,883	237	14,331	286	15,299	290	972
2	Sir Isaac Newton Way (West of Faraday Ave)	48	12,081	216	14,570	261	15,320	261	750
3	Michael Faraday Avenue (South of Wallis Ave)	48	1,797	26	2,167	32	4,570	36	2,407

¹⁸ Department for Transport. Available at: <https://roadtraffic.dft.gov.uk/count-points#15/53.605801/-2.140508>

Link Number	Road	Posted Speed Limit (km/h)	2024 Base Year		2028 Without Development		2028 With Development		Total Development AADT Change
			AADT LDV	AADT HDV	AADT LDV	AADT HDV	AADT LDV	AADT HDV	
4	Wallis Avenue	48	590	0	712	0	3,115	4	2,407
5	Site Access (total)	48	0	0	0	0	2,403	4	2,407
6	Rochdale Bypass (North of Newton Way)	48	11,997	145	14,469	175	14,681	175	212
7	Rochdale Bypass (South of Newton Way)	48	10,789	142	13,011	172	13,221	172	210
8	Rochdale Bypass (West of Oldham Road)	48	23,838	631	24,920	660	24,920	660	0
9	Oldham Road (North of Bypass)	48	15,149	643	15,837	672	15,837	672	0
10	Oldham Road (South of Bypass)	48	15,149	643	15,837	672	15,837	672	0
11	Michael Faraday Avenue (North of Wallis Ave)	49	1,221	8	1,472	10	1,472	10	0
12	Roundabout 1 (Avg Links 1,2,3)	32	8,587	160	10,356	193	11,730	196	1,376
13	Roundabout 2 (Avg Links 7,8,9)	32	16,231	515	17,401	544	17,454	544	53

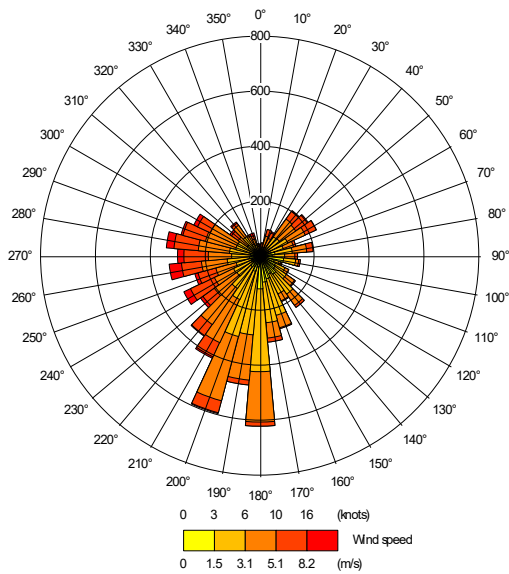
Figure E1: Spatial Model Scope



Meteorological Data

The air quality assessment includes the use of the 2024 Manchester Airport meteorological recording station. The recording station is located approximately 29.6 km to the southwest of the proposed development site and is considered to be the most representative of the site conditions in terms of altitude and distance. The 2024 wind rose is provided in **Figure E2**.

Figure E2: 2024 Wind Rose for Manchester Airport



Dispersion and Meteorological Site Characteristics

The air dispersion characteristics for the site and meteorological recording station differ, therefore, these have been adjusted accordingly within ADMS-Roads. **Table E3** details the adjustments made.

Table E3: Dispersion and Meteorological Site Characteristics

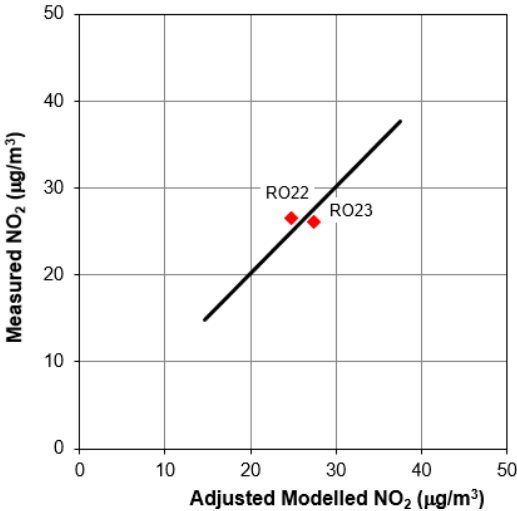
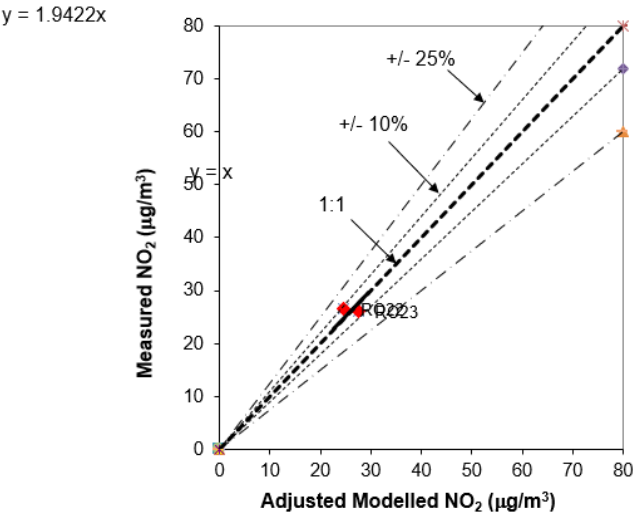
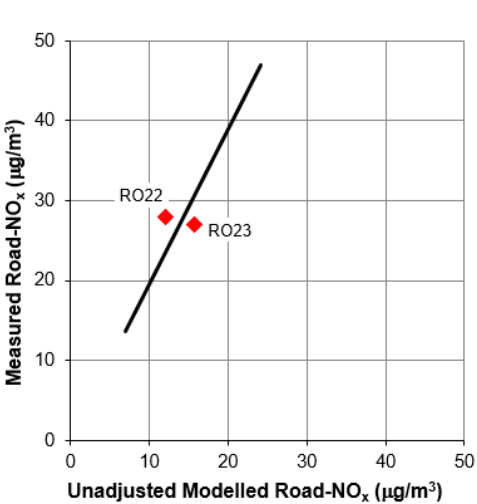
Parameter	Dispersion Site	Meteorological Site
Surface Roughness	0.5 m	0.2 m
Surface Albedo	0.23	0.23
Minimum Monin–Obukhov Length	30 m	30 m
Priestley–Taylor Parameter	1	1

Model Verification

Model verification has been completed for NO₂. There are no representative PM₁₀ or PM_{2.5} air quality monitors available for model verification. The verification procedure for the selected air quality monitors of this assessment is detailed in **Table E4**. The air quality monitor position can be seen on the drawing in **Appendix A**.

Table E4: NO₂ Model Verification Procedure

Monitor	2024 Monitored Total NO ₂	Monitored Road NO _x	2024 Background NO ₂	2024 Background NO _x	Monitored Road Contribution NO ₂ (total – background)	Modelled Road Contribution NO _x (excludes background)	Ratio of Monitored Road Contribution NO _x / Modelled Road Contribution NO _x	Adjustment Factor	Adjusted Road Contribution NO _x	Adjusted Modelled Total Nox (including background NO _x)	Modelled Total NO ₂ (based on empirical NO _x / NO ₂ relationship)	% Difference [(modelled – monitored) / monitored] x 100
RO22	26.50	27.98	14.50	19.07	12.00	12.04	2.3247	1.9422	23.38	42.45	24.69	-6.83
RO23	26.10	26.95	14.50	19.07	11.60	15.69	1.7172		30.48	49.55	27.46	5.21



Glossary of Terms

AADT Annual Average Daily Traffic flow

Air Quality Standard Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health and the environment

Air Quality Objective Pollutant Objectives incorporate future dates by which a standard is to be achieved, taking into account economic considerations, practicability and technical feasibility

Annual Mean A mean pollutant concentration value in air which is calculated on a yearly basis, yielding one annual mean per calendar year. In the UK air quality regulations, the annual mean for a particular substance at a particular location for a particular calendar year is:

- (a) in the case of lead, the mean of the daily levels for that year;
- (b) in the case of nitrogen dioxide, the mean of the hourly means for that year;
- (c) in the case of PM₁₀, the mean of the 24-hour means for that year.

Annoyance (Dust) Loss of amenity due to dust deposition or visible dust plumes, often related to people making complaints, but not necessarily sufficient to be a legal nuisance.

AQAP Air Quality Action Plan

AQMA Air Quality Management Area

AQO Air Quality Objective

AQS Air Quality Strategy for England, Scotland, Wales and Northern Ireland

Background Concentrations The term used to describe pollutant concentrations which exist in the ambient atmosphere, excluding local pollution sources such as roads and stacks

Construction Any activity involved with the provision of a new structure (or structures), its modification or refurbishment. A structure will include a residential dwelling, office building, retail outlet, road, etc.

Construction Impact Assessment An assessment of the impacts of demolition, earthworks, construction and trackout. In this Guidance, specifically the air quality impacts.

Defra Department for Environment, Food and Rural Affairs

Demolition Any activity involved with the removal of an existing structure (or structures). This may also be referred to as de-construction, specifically when a building is to be removed a small part at a time.

Deposited Dust that is no longer in the air and which has settled onto a surface. Deposited dust is also sometimes called amenity dust or nuisance dust, with the term nuisance applied in the general sense rather than the specific legal definition.

DMP Dust Management Plan; a document that describes the site-specific methods to be used to control dust emissions.

Dust Solid particles that are suspended in air, or have settled out onto a surface after having been suspended in air. The terms dust and particulate matter (PM) are often used interchangeably, although in some contexts one term tends to be used in preference to the other. In this guidance the term 'dust' has been used to include the particles that give rise to soiling, and to other human health and ecological effects. Note: this is different to the definition given in BS 6069, where dust refers to particles up to 75 µm in diameter.

Earthworks Covers the processes of soil-stripping, ground-levelling, excavation and landscaping.

Effects The consequences of the changes in airborne concentration and/or dust deposition for a receptor. These might manifest as annoyance due to soiling, increased morbidity or mortality due to exposure to PM₁₀ or PM_{2.5} or plant dieback due to reduced photosynthesis. The term 'significant effect' has a specific meaning in EIA regulations. The opposite is an insignificant effect. In the context of construction impacts any effect will usually be adverse, however, professional judgement is required to determine whether this adverse effect is significant based in the evidence presented.

EPUK Environmental Protection UK

HDV Heavy Duty Vehicle

IAQM Institute of Air Quality Management

Impacts The changes in airborne concentrations and/or dust deposition. A scheme can have an 'impact' on airborne dust without having any 'effects', for instance if there are no receptors to experience the impact.

LAQM Local Air Quality Management

LDV Light Duty Vehicle

Mg/m³ Microgrammes (of pollutant) per cubic metre of air. A measure of concentration in terms of mass per unit volume. A concentration of 1 µg/m³ means that one cubic metre of air contains one microgramme (millionth of a gramme) of pollutant

NO₂ Nitrogen Dioxide

NO_x A collective term used to represent the mixture of nitrogen oxides in the atmosphere, as nitric oxide (NO) and nitrogen dioxide (NO₂)

NPPF National Planning Policy Framework

Nuisance The term nuisance dust is often used in a general sense when describing amenity dust. However, this term also has specific meanings in environmental law:

Statutory nuisance, as defined in S79(1) of the Environmental Protection Act 1990 (as amended from time to time).

Private nuisance, arising from substantial interference with a person's enjoyment and use of his land.

Public nuisance, arising from an act or omission that obstructs, damages or inconveniences the right of the community.

Each of these applying in so far as the nuisance relates to the unacceptable effects of emissions. It is recognised that a significant loss of amenity may occur at lower levels of emission than would constitute a statutory nuisance.

Note: as nuisance has a specific meaning in environmental law, and to avoid confusion, it is recommended that the term is not used in a more general sense.

PM_{2.5} The fraction of particles with a mean aerodynamic diameter equal to, or less than, 2.5 µm. More strictly, particulate matter which passes through a size selective inlet as defined in the reference method for the sampling and measurement of PM_{2.5}, EN 14907, with a 50% efficiency cut-off at 2.5 µm aerodynamic diameter

PM₁₀ The fraction of particles with a mean aerodynamic diameter equal to, or less than, 10 µm. More strictly, particulate matter which passes through a size selective inlet as defined in the reference method for the sampling and measurement of PM₁₀, EN 12341, with a 50% efficiency cut-off at 10 µm aerodynamic diameter

Running Annual Mean A mean pollutant concentration value in air which is calculated on an hourly basis, yielding one running annual mean per hour. The running annual mean for a particular substance at a particular location for a particular hour is the mean of the hourly levels for that substance at that location for that hour and the preceding 8759 hours

Trackout The transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction/demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.

