

Air Quality Assessment

Land at Barnhill Street/Raby Street, Moss Side

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Executive Summary

Redmore Environmental Ltd was commissioned by MSV & Caddick Construction to undertake an Air Quality Assessment in support of a residential development on land at Barnhill Street/Raby Street, Moss Side.

An Air Quality Assessment was undertaken to:

- Assess potential impacts associated with fugitive dust emissions during the construction phase of the proposed development;
- Assess potential impacts associated with road transport emissions during the operational phase of the proposed development;
- Assess risk of future resident exposure to any existing air quality issues; and,
- Identify any requirement for relevant mitigation measures.

Potential construction phase air quality impacts from fugitive dust emissions were assessed as a result of demolition, earthworks, construction and trackout activities. It is considered that the use of the identified site-specific control measures would provide suitable mitigation for a development of this size and nature and reduce potential impacts to an acceptable level.

Potential impacts during the operational phase of the proposals may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the development. Additionally, future residents may be exposed to any existing air quality issues at the site. Dispersion modelling was therefore undertaken in order to predict pollutant concentrations at sensitive locations as a result of emissions from the highway network both with and without the development in place. Results were subsequently verified using local monitoring data.

Review of the dispersion modelling results indicated that air quality impacts as a result of traffic generated by the development were not predicted to be significant at any sensitive location in the vicinity of the site.

The results of the assessment also demonstrated that predicted pollution levels were below the relevant criteria across the development. As such, the site is considered suitable for the proposed use from an air quality perspective and mitigation is not required.

A number of mitigation measures were identified in line with the requirements of Manchester City

Council's 'Air Quality and Planning Technical Guidance' in order to reduce vehicle exhaust emissions associated with the proposals. It is considered these are appropriate for a development of this scale and nature and will further control impacts during the operational phase.

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

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1.0 INTRODUCTION

1.1 Instruction

- 1.1.1 Redmore Environmental Ltd was commissioned by MSV & Caddick Construction to undertake an Air Quality Assessment in support of a residential development on land at Barnhill Street/Raby Street, Moss Side.

1.2 Site Location and Context

- 1.2.1 The site is located on land at Barnhill Street/Raby Street, Moss Side, Manchester, at approximate National Grid Reference (NGR): 383862, 395781. The relevant Local Authority (LA) is Manchester City Council (MCC). Reference should be made to Figure 1 for a map of the site and surrounding area.
- 1.2.2 The proposals comprise demolition of the existing structures on site and subsequent construction of 212 residential dwellings across Blocks A to F, with associated access and landscaping works.

1.3 Assessment Scope

- 1.3.1 The proposals may have the potential to cause air quality impacts at sensitive locations. As such, an Air Quality Assessment was undertaken to:
- Assess potential impacts associated with fugitive dust emissions during the construction phase of the development;
 - Assess potential impacts associated with road transport emissions during the operational phase of the development;
 - Assess risk of future resident exposure to any existing air quality issues; and,
 - Identify the requirement for relevant mitigation measures.
- 1.3.2 This is detailed in the following report.

2.0 LEGISLATION AND POLICY

2.1 Legislation

2.1.1 The Air Quality Standards Regulations (2010) and subsequent amendments include Air Quality Limit Values (AQLVs) for the following pollutants:

- Nitrogen dioxide (NO₂);
- Sulphur dioxide;
- Lead;
- Particulate matter with an aerodynamic diameter of less than 10µm (PM₁₀);
- Particulate matter with an aerodynamic diameter of less than 2.5µm (PM_{2.5});
- Benzene; and,
- Carbon monoxide.

2.1.2 Air Quality Target Values were also provided for several additional pollutants. It should be noted that the AQLV for PM_{2.5} stated in the Air Quality Standards Regulations (2010) was amended in the Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020).

2.1.3 The Air Quality Strategy (AQS) was produced by the Department for Environment, Food and Rural Affairs (DEFRA) and published on 28th April 2023¹. The document contains standards, objectives and measures for improving ambient air quality, including a number of Air Quality Objectives (AQOs). These are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedences over a specified timescale. These are generally in line with the AQLVs, although the requirements for the determination of compliance vary.

2.1.4 The Environmental Improvement Plan 2023² was published in January 2023, providing long term and Interim Targets in order to reduce population exposure to PM_{2.5}. The Concentration Target for 2040 was subsequently adopted in the Environmental Targets (Fine Particulate Matter) (England) Regulations (2023).

¹ AQS: Framework for Local Authority Delivery, DEFRA, 2023.

² Environmental Improvement Plan 2023, DEFRA, 2023.

2.1.5 Table 1 presents the AQOs, Interim Target and Concentration Target for pollutants considered within this assessment.

Table 1 Air Quality Objectives/ Interim Target/ Concentration Target

Pollutant	Air Quality Objective/ Interim Target/ Concentration Target	
	Concentration ($\mu\text{g}/\text{m}^3$)	Averaging Period
NO ₂	40	Annual mean
	200	1-hour mean, not to be exceeded on more than 18 occasions per annum
PM ₁₀	40	Annual mean
	50	24-hour mean, not to be exceeded on more than 35 occasions per annum
PM _{2.5}	12 ^(a)	Annual mean
	10 ^(b)	Annual mean

Note: (a) Interim Target to be achieved by end of January 2028.

(b) Concentration Target to be achieved by 2040.

2.1.6 Table 2 summarises the advice provided in DEFRA guidance³ on where the AQOs for pollutants considered within this report apply.

Table 2 Examples of Where the Air Quality Objectives Apply

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed Building façades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access Hotels, unless people live there as their permanent residence Gardens of residential properties Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term

³ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
24-hour mean	All locations where the annual mean objective would apply, together with hotels Gardens of residential properties	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
1-hour mean	All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Kerbside sites where the public would not be expected to have regular access

2.2 Local Air Quality Management

- 2.2.1 LAs are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves comparing present and likely future pollutant concentrations against the AQOs. If it is predicted that levels at locations of relevant exposure, as summarised in Table 2, are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA). For each AQMA the LA is required to produce an Air Quality Action Plan (AQAP), the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

2.3 Dust

- 2.3.1 The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such as construction sites, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). The Act defines nuisance as:

"any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance."

2.3.2 Enforcement of the Act, in regard to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the LA is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

2.4 National Planning Policy

2.4.1 The revised National Planning Policy Framework⁴ (NPPF) was published in December 2024 and amended in February 2025. The document sets out the Government's planning policies for England and how these are expected to be applied.

2.4.2 The purpose of the planning system is to contribute to the achievement of sustainable development. In order to ensure this, the NPPF recognises three overarching objectives including the following of relevance to air quality:

"c) an environmental objective - to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

2.4.3 Chapter 15 of the NPPF details objectives in relation to conserving and enhancing the natural environment. It states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

[...]

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of

⁴ NPPF, Ministry of Housing, Communities and Local Government, 2024.

soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality [...]."

- 2.4.4 The NPPF specifically recognises air quality as part of delivering sustainable development and states that:

"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."

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

2.5 National Planning Practice Guidance

- 2.5.1 The National Planning Practice Guidance⁵ (NPPG) web-based resource was launched by the Department for Communities and Local Government to support the NPPF and make it more accessible. The air quality pages are summarised under the following headings:

1. What air quality considerations does planning need to address?
2. What is the role of plan-making with regard to air quality?
3. Are air quality concerns relevant to neighbourhood planning?
4. What information is available about air quality?
5. When could air quality considerations be relevant to the development management process?
6. What specific issues may need to be considered when assessing air quality impacts?

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

7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?

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

2.6 Regional Planning Policy

2.6.1 The Places for Everyone Plan (PfEP)⁶ was produced by the Greater Manchester Combined Authority (GMCA) and became part of the statutory development plan for MCC on 21st March 2024.

2.6.2 A review of the PfEP indicated the following policies of relevance to air quality that have been considered throughout this assessment:

"Policy JP:S5: Clean Air

A comprehensive range of measures will be taken to support improvements in air quality, focusing particularly on locations where people live, where children learn and play, where there are impacts on the green infrastructure network and where air quality targets are not being met, including:

1. Locating and designing development, and focusing transport investment, so as to reduce reliance on forms of transport that generate air pollution;
2. Determining planning applications having regard to the most recent development and planning control guidance published jointly by the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK), and the most recent IAQM Guidance on the Assessment of Dust from Demolition and Construction, or relevant successor guidance, including the requirement for developers to submit construction management plans as appropriate;
3. Requiring applications for developments that could have an adverse impact on air quality to submit relevant air pollution data so that adverse impacts on air

⁶ PfEP, GMCA, 2024.

quality can be fully assessed and development only permitted where they are acceptable and/or suitable mitigation can be provided;

4. Restricting developments that would generate significant point source pollution such as some types of industrial activity and energy generation;

5. Significantly expanding the existing commercial network of electric vehicle charging points, both for public and private use, including as part of new developments;

6. Implementing the Clean Air Plan and associated measures;

7. Facilitating the more sustainable distribution of goods within the urban area, including through accommodating urban consolidation centres and urban distribution centres that use ultra-low-emission vehicles, and local delivery facilities to reduce repeat delivery attempts;

8. Designing streets to avoid trapping air pollution at ground level, including through the appropriate location and scale of buildings and trees;

9. Controlling traffic and parking within and around schools, early years sites and other locations that are particularly sensitive to air quality;

10. Promoting actions that help remove pollutants from the air, such as enhancing the green infrastructure network and using innovative building materials that capture air pollutants; and,

11. Development should be located in areas that maximise the use of sustainable travel modes and be designed to minimise exposure to high levels of air pollution, particularly for vulnerable users."

"Policy JP-P1 Sustainable Places

We aim to become one of the most liveable city regions in the world, consisting of a series of beautiful, healthy and varied places, each having the following key attributes that all development, wherever appropriate, should be consistent with:

[...]

15. Comfortable and inviting, with indoor and outdoor environments:

A. Offering a high level of amenity that minimises exposure to pollution; and,

[...]."

2.6.3 The above policies were considered as necessary throughout the undertaking of the assessment.

2.7 Local Planning Policy

2.7.1 The Manchester Local Development Framework consists of a series of planning documents of which the Core Strategy Development Plan Document (DPD)⁷ is central. This was adopted by MCC on 11th July 2012.

2.7.2 Review of the Core Strategy DPD indicated the following policies of relevance to the assessment:

"Policy EN 16

Air Quality

The Council will seek to improve the air quality within Manchester, and particularly within Air Quality Management Areas, located along Manchester's principal traffic routes and at Manchester Airport. Developers will be expected to take measures to minimise and mitigate the local effect of emissions from traffic generated by the development, as well as emissions created by the use of the development itself, including from Combined Heat and Power and biomass plant.

When assessing the appropriateness of locations for new development the Council will consider the effects on air quality, alongside other plan objectives. This includes cumulative effects, particularly in Air Quality Management Areas."

⁷ Core Strategy DPD, MCC, 2012.

"Policy DM 1

Development Management

All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document:

[...]

Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise."

2.7.3 MCC has also produced the 'Air Quality & Planning Technical Guidance' Document⁸ which provides guidance on assessing the impact of proposed development on air quality.

2.7.4 The above policies and guidance were taken into consideration throughout the undertaking of the assessment.

2.8 Greater Manchester Clean Air Plan

2.8.1 The UK Government has instructed a number of LAs to take rapid action to reduce harmful roadside levels of NO₂ within their areas of jurisdiction in the quickest possible timeframe. The GMCA and Transport for Greater Manchester (TfGM) have collaborated to develop a Clean Air Plan (CAP) to ensure Greater Manchester achieves compliance with the relevant AQOs for NO₂ by 2026 at the latest. The initial CAP proposal included implementation of a Class C charging Clean Air Zone. The GMCA has subsequently updated the CAP proposals⁹ to comprise an investment-led, non-charging approach. This was approved by the UK Government on 23rd January 2025. The implications of the CAP were taken into account during the undertaking of this assessment.

⁸ Air Quality & Planning Technical Guidance, MCC, 2022.

⁹ Case for a New GM Clean Air Plan, GMCA and TfGM, 2022.

3.0 METHODOLOGY

3.1 Introduction

3.1.1 The proposed development has the potential to cause air quality impacts during the construction and operational phases, as well as expose future residents to elevated pollution levels. These factors have been assessed in accordance with the following methodology.

3.2 Construction Phase Assessment

3.2.1 There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the Institute of Air Quality Management (IAQM) document 'Guidance on the Assessment of Dust from Demolition and Construction V2.2'¹⁰.

3.2.2 Activities on the proposed construction site have been divided into four types to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and,
- Trackout.

3.2.3 The potential for dust emissions was assessed for each activity that is likely to take place and considered three separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and,
- The risk of health effects due to a significant increase in exposure to PM₁₀.

3.2.4 The assessment steps are detailed below.

¹⁰ Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

Step 1 - Screen the Need for an Assessment

- 3.2.5 Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 250m from the boundary or 50m from the construction vehicle route up to 250m from the site entrance, then the assessment proceeds to Step 2. Additionally, should ecological receptors be identified within 50m of the site or the construction vehicle route up to 250m from the site entrance, then the assessment also proceeds to Step 2.
- 3.2.6 Should sensitive receptors not be present within the relevant distances then **negligible** impacts would be expected and further assessment is not necessary.

Step 2 - Assess the Risk of Dust Impacts

- 3.2.7 Step 2 assesses the risk of potential dust impacts. A site is allocated a risk category based on two factors:
- The scale and nature of the works, which determines the magnitude of dust arising as: small, medium or large (Step 2A); and,
 - The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity (Step 2B).
- 3.2.8 The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied.
- 3.2.9 Step 2A defines the potential magnitude of dust emission during the construction phase. The relevant criteria are summarised in Table 3.

Table 3 Construction Dust - Magnitude of Emission

Magnitude	Activity	Criteria
Large	Demolition	• Total building volume greater than 75,000m³ • Potentially dusty construction material (e.g. concrete) • On site crushing and screening • Demolition activities greater than 12m above ground level

Magnitude	Activity	Criteria
	Earthworks	- Total site area greater than 110,000m² - 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 6m in height
	Construction	- Total building volume greater than 75,000m³ - On site concrete batching - Sandblasting
	Trackout	- More than 50 Heavy Duty Vehicle (HDV) trips per day - Potentially dusty surface material (e.g. high clay content) - Unpaved road length greater than 100m
Medium	Demolition	- Total building volume 12,000m³ to 75,000m³ - Potentially dusty construction material - Demolition activities 6m to 12m above ground level
	Earthworks	- Total site area 18,000m² to 110,000m² - Moderately dusty soil type (e.g. silt) 5 to 10 heavy earth moving vehicles active at any one time - Formation of bunds 3m to 6m in height
	Construction	- Total building volume 12,000m³ to 75,000m³ - Potentially dusty construction material (e.g. concrete) - On site concrete batching
	Trackout	20 to 50 HDV trips per day - Moderately dusty surface material (e.g. high clay content) - Unpaved road length 50m to 100m
Small	Demolition	- Total building volume less than 12,000m³ - Construction material with low potential for dust release (e.g. metal cladding or timber) - Demolition activities less than 6m above ground levels - Demolition during wetter months
	Earthworks	- Total site area less than 18,000m² - Soil type with large grain size (e.g. sand) - Less than 5 heavy earth moving vehicles active at any one time - Formation of bunds less than 3m in height

Magnitude	Activity	Criteria
	Construction	- Total building volume less than 12,000m³ - Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	- Less than 20 HDV trips per day - Surface material with low potential for dust release - Unpaved road length less than 50m

3.2.10 Step 2B defines the sensitivity of the area around the development to potential dust impacts. The sensitivities of specific receptors are shown in Table 4.

Table 4 Construction Dust - Sensitivities of Human and Ecological Receptors

Receptor Sensitivity	Examples	
	Human Receptors	Ecological Receptors
High	- Users expect high levels of amenity - High aesthetic or value property - People expected to be present continuously for extended periods of time - Locations where members of the public are exposed over a time period relevant to the AQO for PM₁₀, e.g. residential properties, hospitals, schools and residential care homes	Internationally or nationally designated site e.g. Special Area of Conservation
Medium	- Users would expect to enjoy a reasonable level of amenity - Aesthetics or value of their property could be diminished by soiling - 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 e.g. parks and places of work	Nationally designated site e.g. Sites of Special Scientific Interest
Low	- Enjoyment of amenity would not reasonably be expected - Property would not be expected to be diminished in appearance - Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, playing fields, shopping streets, farmland, short term car parks and roads	Locally designated site e.g. Local Nature Reserve

3.2.11 The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in Table 5.

Table 5 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

3.2.12 Table 6 outlines the criteria for determining the sensitivity of the area to human health impacts.

Table 6 Construction Dust - Sensitivity of the Area to Human Health Impacts

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

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

3.2.13 Table 7 outlines the criteria for determining the sensitivity of the area to ecological impacts.

Table 7 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

3.2.14 Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts.

3.2.15 Table 8 outlines the risk category from demolition activities.

Table 8 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

3.2.16 Table 9 outlines the risk category from earthworks, construction and trackout activities.

Table 9 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

3.2.17 Step 3 requires the identification of site-specific mitigation measures within the IAQM guidance¹¹ to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with **negligible** risk, mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

Step 4 - Determine Significance

3.2.18 Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step is to determine the significance of any residual impacts. For almost all construction activity, the aim should be to control effects through the use of

¹¹ Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be **not significant**.

3.2.19 The determination of significance relies on professional judgement and reasoning should be provided as far as practicable. The IAQM guidance suggests the provision of details of the assessor's qualifications and experience. These are provided in Appendix 2.

3.3 Operational Phase Assessment

3.3.1 The development has the potential to affect air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site, as well as expose future residents to any existing air quality issues. Potential impacts have therefore been defined by predicting pollutant concentrations at sensitive locations using dispersion modelling for the following scenarios:

- 2023 - Verification;
- Opening year Do-Minimum (DM) (predicted traffic flows in 2028 should the proposals not proceed); and,
- Opening year Do-Something (DS) (predicted traffic flows in 2028 should the proposals be completed).

3.3.2 Reference should be made to Appendix 1 for assessment input data and details of the verification process.

Potential Development Impacts

3.3.3 Locations sensitive to potential changes in off-site pollutant concentrations were identified within 200m of the highway network in accordance with the guidance provided within the Design Manual for Roads and Bridges (DMRB)¹² on the likely limits of pollutant dispersion from road sources. The criteria provided within DEFRA guidance¹³ on where the AQOs apply, as summarised in Table 2, was utilised to determine worst-case receptor positions in the vicinity of links likely to be affected by changes in traffic flows as a result of the development.

¹² LA 105: Air Quality, Highways England, 2019.

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

3.3.4 The significance of predicted air quality impacts was determined in accordance with the guidance provided within the IAQM document 'Land-Use Planning & Development Control: Planning for Air Quality'¹⁴. Using this methodology impacts were defined based on the interaction between the predicted pollutant concentration from the DS scenario and the magnitude of change between the DM and DS scenarios, as outlined in Table 10.

Table 10 Significance of Operational Phase Road Vehicle Exhaust Emission Impacts

Concentration at Receptor in Assessment Year	Predicted Concentration Change as Proportion of AQO/Interim Target (%)			
	1	2 - 5	6 - 10	> 10
75% or less of AQO/Interim Target	Negligible	Negligible	Slight	Moderate
76 - 94% of AQO/ Interim Target	Negligible	Slight	Moderate	Moderate
95 - 102% of AQO/ Interim Target	Slight	Moderate	Moderate	Substantial
103 - 109% of AQO/ Interim Target	Moderate	Moderate	Substantial	Substantial
110% or more of AQO/ Interim Target	Moderate	Substantial	Substantial	Substantial

3.3.5 The matrix shown in Table 10 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**.

3.3.6 Following the prediction of impacts at discrete receptor locations, the IAQM document¹⁵ 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.

¹⁴ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

¹⁵ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

- 3.3.7 The IAQM guidance states that an assessment must reach a conclusion on the likely significance of the predicted impact. Where the overall effect is **moderate** or **substantial**, the effect is likely to be considered **significant**, whilst if the impact is **slight** or **negligible**, the impact is likely to be considered **not significant**. It should be noted that this is a binary judgement of either it is **significant** or it is **not significant**.
- 3.3.8 The determination of significance relies on professional judgement and reasoning has been provided as far as practicable. The IAQM guidance¹⁶ suggests the provision of details of the assessor's qualifications and experience. These are provided in Appendix 2.

Potential Future Exposure

- 3.3.9 The proposals may have the potential to expose future residents to any existing air quality issues. In order to assess NO₂, PM₁₀ and PM_{2.5} concentrations across the development site, detailed dispersion modelling was undertaken. The results were subsequently compared with the relevant AQOs and Interim Target to determine any potential areas of exceedence and associated constraints to the proposed land use. Reference should be made to Appendix 1 for a full description of the assessment input data.

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

4.0 BASELINE

4.1 Introduction

- 4.1.1 Existing air quality conditions in the vicinity of the proposed development site were identified in order to provide a baseline for assessment. These are detailed in the following Sections.

4.2 Local Air Quality Management

- 4.2.1 As required by the Environment Act (1995), as amended by the Environment Act (2021), MCC has undertaken Review and Assessment of air quality within its area of jurisdiction. This process has indicated that annual mean concentrations of NO₂ are above the AQO within the city. As such, a number of roads within Manchester have been included within the GMCA AQMA. This is described as follows:

"This is the part of the Greater Manchester Combined Authority AQMA located within the Manchester City Council area."

- 4.2.2 The development is partly located within the AQMA. As such, there is the potential for the exposure of future residents to poor air quality and any emissions associated with the proposals to cause air quality effects within this sensitive location. This has therefore been considered within the assessment.
- 4.2.3 MCC has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs. As such, no further AQMA's have been designated.

4.3 Air Quality Monitoring

- 4.3.1 Monitoring of pollutant levels is undertaken by MCC throughout its area of jurisdiction. Data has also been collected by the GMCA to inform the CAP. Recent NO₂ concentrations recorded in the vicinity of the development, as provided in 'Greater Manchester LAQM and CAP NO₂ Diffusion Tube Results 2011-2023'¹⁷ and the 'GMCA 2023

¹⁷ Greater Manchester LAQM and CAP NO₂ Diffusion Tube Results 2011-2023, GMCA, 2024.

Air Quality Annual Status Report (ASR)¹⁸, are shown in Table 11. Exceedences of the AQO are shown in **bold**.

Table 11 Monitoring Results - Annual Mean NO₂

Monitoring Site	Monitored NO ₂ Concentration (µg/m ³)			
	2020	2021	2022	2023
Manchester Oxford Road	36	44	43	41
MA29ANO	39.0	44.8	49.8	49.6
MA77NO	26.9	30.8	33.1	31.6
MA82NO	34.1	40.7	42.6	41.4
MA83NO	34.1	40.7	42.6	41.4
MA84NO	34.1	40.7	42.6	41.4
MA97BNO	23.4	28.4	27.8	27.4
MA112BNO	-(a)	21.4	22.7	19.8
CAP_MANC_019	-(a)	-(a)	44.4	41.29
CAP_MANC_041	36.2	41.1	40.4	39.35
CAP_MANC_042	34.0	39.2	38.8	36.6
CAP_MANC_043	31.2	33.2	35.7	-(a)
CAP_MANC_044	43.7	52.2	33.6	-(a)
CAP_MANC_045	50.0	56.4	64.7	50.4
CAP_MANC_049	34.5	41.8	45.1	40.9
CAP_MANC_120	-(a)	-(a)	36.0	-(a)
CAP_MANC_121	-(a)	-(a)	38.6	37.3
CAP_MANC_122	-(a)	-(a)	39.4	37.9
CAP_MANC_155	-(a)	-(a)	33.5	-(a)
CAP_MANC_156	-(a)	-(a)	35.7	-(a)
CAP_MANC_171	-(a)	-(a)	26.6	-(a)

¹⁸

2023 Air Quality ASR, GMCA, 2024.

Monitoring Site	Monitored NO ₂ Concentration (µg/m ³)			
	2020	2021	2022	2023
CAP_MANC_183	-(a)	-(a)	54.4	54.1
CAP_MANC_184	-(a)	-(a)	41.1	39.5
CAP_MANC_185	-(a)	-(a)	49.7	48.5
CAP_MANC_186	-(a)	-(a)	42.4	43.0

Note: (a) Data not available.

4.3.2 As shown in Table 11, annual mean NO₂ concentrations were above the AQO of 40µg/m³ at 13 monitors in recent years. As the survey sites are located within an AQMA, elevated results would be expected. Levels were below the AQO at all remaining monitors in recent years. Reference should be made to Figure 3 for a map of the survey positions.

4.3.3 Recent PM₁₀ monitoring results recorded in the vicinity of the development are shown in Table 12.

Table 12 Monitoring Results - Annual Mean PM₁₀

Monitoring Site	Monitored PM ₁₀ Concentration (µg/m ³)			
	2020	2021	2022	2023
Manchester Oxford Road	18	18	18	18

4.3.4 As shown in Table 12, annual mean PM₁₀ concentrations were below the AQO of 40µg/m³ at the Manchester Oxford Road monitor in recent years.

4.3.5 Recent 24-hour mean PM₁₀ results recorded in the vicinity of the development are shown in Table 13.

Table 13 Monitoring Results - 24-Hour Mean PM₁₀

Monitoring Site	Number of Days with PM ₁₀ Concentrations Greater than 50µg/m ³			
	2020	2021	2022	2023
Manchester Oxford Road	5	2	8	4

4.3.6 As shown in Table 13, the number of days with PM₁₀ concentrations greater than 50µg/m³ was below the permitted number of 35 at the Manchester Oxford Road monitor in recent years.

4.3.7 It is noted that pollutant concentrations recorded during 2020 and 2021 were affected by changes to travel patterns associated with the COVID-19 pandemic. The results should therefore be viewed with caution. However, monitoring results for 2022 and beyond are now considered representative of post-pandemic conditions. This is supported by the IAQM¹⁹, who have adopted the following position:

"ambient air quality monitoring data for the year 2022 and beyond is generally considered to represent the current post-pandemic baseline."

4.3.8 MCC does not undertake PM_{2.5} monitoring within the vicinity of the site.

4.4 Background Pollutant Concentrations

4.4.1 Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK to assist LAs in their Review and Assessment of air quality. The proposed development site is located in grid square NGR: 383500, 395500. Data for this location was downloaded from the DEFRA website²⁰ for the purpose of the assessment and is summarised in Table 14.

Table 14 Background Pollutant Concentration Predictions

Pollutant	Predicted Background Pollutant Concentration (µg/m ³)		
	2023	2025	2028
NO ₂	17.55	16.27	14.56
PM ₁₀	13.25	13.16	12.99
PM _{2.5}	7.91	7.79	7.63

¹⁹ Use of 2020 and 2021 Monitoring Datasets - IAQM Position Statement V1.1, IAQM, 2023.

²⁰ <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021>.

- 4.4.2 As shown in Table 14, predicted background concentrations are below the relevant AQOs, Interim Target and Concentration Target at the development site.

4.5 **Sensitive Receptors**

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

Construction Phase Sensitive Receptors

- 4.5.2 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 development boundary. These are summarised in Table 15.

Table 15 Demolition, Earthworks and Construction Dust Sensitive Receptors

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

- 4.5.3 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 250m of the site access. These are summarised in Table 16.

Table 16 Trackout Dust Sensitive Receptors

Distance from Site Access Route (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Up to 20	More than 100	0
Up to 50	More than 100	0

4.5.4 There are no ecological receptors within 50m of the development boundary or the access route within 250m of the site entrance. As such, ecological impacts have not been assessed further within this report.

4.5.5 Based on the criteria shown in Table 4, the sensitivity of the receiving environment to potential dust impacts was determined as a **high**. This was because the identified receptors included residential properties.

Operational Phase Sensitive Receptors

4.5.6 Locations sensitive to potential operational phase road vehicle exhaust emission impacts, including positions within the GMCA AQMA, were identified from a desk-top study. These are summarised in Table 17.

Table 17 Operational Phase Road Vehicle Exhaust Emission Sensitive Receptor Locations

Receptor		NGR (m)		In AQMA?
		X	Y	
R1	The Wellington Medical Centre	383807.3	395895.6	Yes
R2	Express English College	383804.4	395832.8	Yes
R3	Residential - Salisbury Street	384212.8	395712.7	No
R4	Residential - Quinney Crescent	383736.1	395528.0	No
R5	Residential - Great Western Street	383835.6	395516.5	No
R6	Residential - Princess Street	383839.4	395641.9	Yes
R7	Residential - Great Western Street	383891.8	395518.7	No
R8	Residential - Moss Lane East	384453.0	395733.2	Yes
R9	Residential - Oxford Road	385053.7	395707.7	Yes
R10	Residential - Oxford Road	385106.2	395575.3	Yes
R11	Old St Mary's Reproductive Medicine	384957.6	396033.1	No
R12	Residential - Oxford Road	384423.6	396966.2	Yes
R13	Trinity High School	384311.1	396563.5	Yes
R14	University Dental Hospital of Manchester	384334.0	396572.0	Yes

Receptor		NGR (m)		In AQMA?
		X	Y	
R15	Residential - Leaf Street	383722.7	396869.0	Yes
R16	Residential - Rockdove Avenue	383649.4	397093.5	Yes
R17	Residential - Clarendon Street	383865.1	397057.0	Yes
R18	Residential - Garwood Street	383589.0	397147.9	Yes
R19	Residential - Newcastle Street	383883.1	397103.2	Yes
R20	Faculty of Business and Law	384095.9	397090.6	Yes
R21	Faculty of Science and Engineering	384170.6	397207.7	Yes
R22	Residential - River Street	383650.8	397265.5	Yes
R23	Residential - Little Peter Street	383606.2	397468.6	Yes
R24	Residential - Oxford Street	384230.2	397339.7	Yes

4.5.7 Reference should be made to Figure 4 for a map of road vehicle exhaust emission sensitive receptor locations and the AQMA extents.

5.0 CONSTRUCTION PHASE ASSESSMENT

5.1 Introduction

- 5.1.1 There is the potential for air quality impacts as a result of the construction of the proposed development. These are assessed in the following Sections.

5.2 Step 1 - Screen the Need for an Assessment

- 5.2.1 The undertaking of activities such as demolition, excavation, groundworks, cutting, construction 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 haul roads and highway surfaces.
- 5.2.2 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.
- 5.2.3 The desk-study undertaken to inform the baseline identified a number of sensitive receptors within 250m of the site boundary. As such, a detailed assessment of potential dust impacts was required.

5.3 Step 2a - Define the Potential Dust Emission Magnitude

Demolition

- 5.3.1 Demolition will be undertaken at the start of the construction phase and will involve clearance of the existing structures on site. It is estimated that the total building volume to be demolished will be less than 12,000m³. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from demolition is therefore **small**.

Earthworks

- 5.3.2 Earthworks will primarily involve excavating material, haulage, tipping and stockpiling, as well as site levelling and landscaping. The area of the proposed development site is less

than 18,000m². In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from earthworks is therefore **small**.

Construction

- 5.3.3 Due to the size of the development, the total building volume is estimated to be between 12,000m³ and 75,000m³. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from construction is therefore **medium**.

Trackout

- 5.3.4 Based on the site area, it is anticipated that the unpaved road length will be between 50m and 100m. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from trackout is therefore **medium**.

5.4 Step 2b - Define the Sensitivity of the Area

Dust Soiling

- 5.4.1 Table 15 shows that there are between 10 and 100 **high** sensitivity receptors within 20m of the site boundary. The sensitivity of the area with respect to dust soiling from demolition, earthworks and construction, as defined using the criteria summarised in Table 5, is therefore considered to be **high**.
- 5.4.2 Table 16 shows that there are more than 100 **high** sensitivity receptors within 20m of the road network within 250m of the site access. The sensitivity of the area with respect to dust soiling from trackout, as defined using the criteria summarised in Table 5, is therefore considered **high**.

Human Health

- 5.4.3 Table 14 shows the annual mean PM₁₀ background concentration at the site is 13.16µg/m³. As shown in Table 6, where the background annual mean PM₁₀ concentration is below 24µg/m³ and there are between 10 and 100 **high** sensitivity

receptors within 20m of the site boundary, the sensitivity of the area with respect to human health from demolition, earthworks and construction is considered to be **low**.

- 5.4.4 There are more than 100 **high** sensitivity receptors within 20m of the road network within 250m of the site access. The sensitivity of the area with respect to human health from trackout, as defined using the criteria summarised in Table 6, is therefore considered to be **medium**.

5.5 Step 2c - Define the Risk of Dust Impacts

- 5.5.1 The derived dust emission magnitude for each activity was combined with the sensitivity of the area to determine the risk of unmitigated impacts in line with the methodology set out in Table 8 and Table 9. A summary of the risk from each dust generating activity is provided in Table 18.

Table 18 Summary of Potential Unmitigated Dust Risks

Potential Impact	Activity	Step 2A - Dust Emission Magnitude	Step 2B - Sensitivity of the Area	Step 2C - Risk
Dust Soiling	Demolition	Small	High	Medium
	Earthworks	Small	High	Low
	Construction	Medium	High	Medium
	Trackout	Medium	High	Medium
Human Health	Demolition	Small	Low	Negligible
	Earthworks	Small	Low	Negligible
	Construction	Medium	Low	Low
	Trackout	Medium	Medium	Medium

- 5.5.2 As indicated in Table 18, the potential risk of dust soiling is **medium** from demolition, construction and trackout and **low** from earthworks. The potential risk of human health impacts is **medium** from trackout, **low** from construction and **negligible** from demolition and earthworks.

5.5.3 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 the majority of the construction phase.

5.6 **Step 3 - Site-specific Mitigation**

5.6.1 The IAQM guidance²¹ provides potential mitigation measures to reduce impacts as a result of fugitive dust emissions during the construction phase. These have been adapted for the development site as summarised in Table 19. 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 19 Fugitive Dust Emission Mitigation Measures

Issue	Control Measure
Communications	• Develop and implement a stakeholder communications plan that includes community engagement before work commences on site • Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary • Display the head or regional office contact information • Develop and implement a Dust Management Plan, which may include measures to control other emissions, approved by the LA
Site management	• Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken • Make the complaints log available to the LA upon request • Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book
Monitoring	• Carry out regular site inspections, record inspection results, and make an inspection log available to the LA upon request • Increase the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions

²¹ Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

Issue	Control Measure
Site preparation	• Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible • Erect solid screens or barriers around dusty activities or the site • Fully enclose site or specific operations where there is a high potential for dust production and they are active for an extensive period • Avoid site runoff of water or mud • Keep site fencing, barriers and scaffolding clean using wet methods • Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used • Cover, seed or fence stockpiles to prevent wind whipping
Operating vehicle/machinery and sustainable travel	• Ensure all vehicles switch off engines when stationary - no idling vehicles • Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable
Operations	• Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques • Ensure an adequate water supply on the site for effective dust suppression, using non-potable water where possible and appropriate • Use enclosed chutes and conveyors and covered skips • Minimise drop heights and use fine water sprays wherever appropriate • Ensure equipment is available to clean any dry spillages, and clean up spillages as soon as reasonably practicable using wet cleaning methods
Waste management	• Avoid bonfires or burning of waste materials
Demolition	• Ensure effective water suppression is used during demolition operations • Avoid explosive blasting, using appropriate manual or mechanical alternatives • Bag and remove any biological debris or damp down such material before demolition
Construction	• Avoid scabbing (roughening of concrete surfaces) if possible • 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 • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out
Trackout	• Use water-assisted dust sweeper on the access and local roads, to remove, as necessary, any material tracked out of the site • Avoid dry sweeping of large areas • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport

5.7 **Step 4 - Determine Significance**

- 5.7.1 Assuming the relevant mitigation measures outlined in Table 19 are implemented, the residual impacts from all dust generating activities is predicted to be **not significant**, in accordance with the IAQM guidance²².

²² Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

6.0 OPERATIONAL PHASE ASSESSMENT

6.1 Introduction

6.1.1 The development may have the potential to increase concentrations of NO₂, PM₁₀ and PM_{2.5} as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site during the operational phase. An assessment was therefore undertaken using dispersion modelling in order to quantify potential changes in pollutant concentrations at sensitive locations in the vicinity of the site, as well as consider potential exposure of future residents to AQO and Interim Target exceedences.

6.1.2 The assessment considered the following scenarios:

- 2023 - Verification;
- 2028 - DM; and,
- 2028 - DS.

6.1.3 The DM scenario (i.e. without development) included baseline traffic data, inclusive of anticipated growth, for the relevant assessment year. The DS scenario (i.e. with development) included baseline traffic data, inclusive of anticipated growth, in addition to predicted vehicle trips associated with the operation of the proposals.

6.1.4 Reference should be made to Appendix 1 for full assessment input details.

6.2 Potential Development Impacts

Predicted Concentrations

6.2.1 Annual mean NO₂ concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. These are summarised in Table 20.

Table 20 Predicted Annual Mean NO₂ Concentrations

Receptor		Predicted Annual Mean NO ₂ Concentration (µg/m ³)		
		DM	DS	Change
R1	The Wellington Medical Centre	26.52	26.59	0.08
R2	Express English College	24.16	24.20	0.04
R3	Residential - Salisbury Street	18.42	18.48	0.05
R4	Residential - Quinney Crescent	16.03	16.04	0.13
R5	Residential - Great Western Street	16.61	16.63	0.35
R6	Residential - Princess Street	19.84	19.87	0.27
R7	Residential - Great Western Street	16.04	16.07	0.07
R8	Residential - Moss Lane East	25.87	25.94	0.04
R9	Residential - Oxford Road	19.12	19.13	0.06
R10	Residential - Oxford Road	24.69	24.72	0.01
R11	Old St Mary's Reproductive Medicine	20.40	20.41	0.02
R12	Residential - Oxford Road	28.06	28.08	0.03
R13	Trinity High School	17.19	17.21	0.03
R14	University Dental Hospital of Manchester	20.07	20.10	0.07
R15	Residential - Leaf Street	18.52	18.53	0.01
R16	Residential - Rockdove Avenue	27.57	27.58	0.03
R17	Residential - Clarendon Street	23.31	23.31	0.01
R18	Residential - Garwood Street	27.97	27.98	0.02
R19	Residential - Newcastle Street	31.02	31.03	0.02
R20	Faculty of Business and Law	19.98	19.99	0.03
R21	Faculty of Science and Engineering	35.03	35.04	0.01
R22	Residential - River Street	24.81	24.83	0.01
R23	Residential - Little Peter Street	23.37	23.39	0.00
R24	Residential - Oxford Street	27.84	27.86	0.01

6.2.2 As indicated in Table 20, predicted annual mean NO₂ concentrations were below the AQO 40µg/m³ at all sensitive receptors in both scenarios.

6.2.3 Annual mean PM₁₀ concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. These are summarised in Table 21.

Table 21 Predicted Annual Mean PM₁₀ Concentrations

Receptor		Predicted Annual Mean PM ₁₀ Concentration (µg/m ³)		
		DM	DS	Change
R1	The Wellington Medical Centre	17.08	17.10	0.02
R2	Express English College	16.63	16.64	0.01
R3	Residential - Salisbury Street	15.32	15.34	0.01
R4	Residential - Quinney Crescent	14.79	14.80	0.00
R5	Residential - Great Western Street	14.89	14.89	0.00
R6	Residential - Princess Street	15.73	15.73	0.01
R7	Residential - Great Western Street	14.78	14.79	0.01
R8	Residential - Moss Lane East	16.78	16.80	0.02
R9	Residential - Oxford Road	15.34	15.34	0.00
R10	Residential - Oxford Road	16.53	16.53	0.01
R11	Old St Mary's Reproductive Medicine	15.54	15.54	0.00
R12	Residential - Oxford Road	17.29	17.29	0.01
R13	Trinity High School	15.05	15.05	0.00
R14	University Dental Hospital of Manchester	15.70	15.71	0.01
R15	Residential - Leaf Street	15.32	15.33	0.00
R16	Residential - Rockdove Avenue	17.11	17.11	0.00
R17	Residential - Clarendon Street	16.21	16.21	0.00
R18	Residential - Garwood Street	17.09	17.10	0.00
R19	Residential - Newcastle Street	17.89	17.90	0.00
R20	Faculty of Business and Law	15.52	15.52	0.00

Receptor		Predicted Annual Mean PM ₁₀ Concentration (µg/m ³)		
		DM	DS	Change
R21	Faculty of Science and Engineering	18.78	18.78	0.00
R22	Residential - River Street	16.67	16.68	0.01
R23	Residential - Little Peter Street	16.41	16.42	0.01
R24	Residential - Oxford Street	16.43	16.43	0.01

6.2.4 As indicated in Table 21, predicted annual mean PM₁₀ concentrations were below the AQO of 40µg/m³ at all sensitive receptors in both scenarios.

6.2.5 Annual mean PM_{2.5} concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. These are summarised in Table 22.

Table 22 Predicted Annual Mean PM_{2.5} Concentrations

Receptor		Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R1	The Wellington Medical Centre	9.87	9.88	0.01
R2	Express English College	9.63	9.63	0.01
R3	Residential - Salisbury Street	8.94	8.95	0.01
R4	Residential - Quinney Crescent	8.66	8.66	0.00
R5	Residential - Great Western Street	8.71	8.72	0.00
R6	Residential - Princess Street	9.16	9.16	0.00
R7	Residential - Great Western Street	8.66	8.66	0.00
R8	Residential - Moss Lane East	9.71	9.72	0.01
R9	Residential - Oxford Road	8.95	8.96	0.00
R10	Residential - Oxford Road	9.59	9.59	0.00
R11	Old St Mary's Reproductive Medicine	9.06	9.06	0.00
R12	Residential - Oxford Road	9.99	9.99	0.00
R13	Trinity High School	8.80	8.80	0.00

Receptor		Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R14	University Dental Hospital of Manchester	9.14	9.14	0.00
R15	Residential - Leaf Street	8.95	8.95	0.00
R16	Residential - Rockdove Avenue	9.93	9.94	0.00
R17	Residential - Clarendon Street	9.44	9.44	0.00
R18	Residential - Garwood Street	9.93	9.94	0.00
R19	Residential - Newcastle Street	10.37	10.37	0.00
R20	Faculty of Business and Law	9.06	9.06	0.00
R21	Faculty of Science and Engineering	10.85	10.85	0.00
R22	Residential - River Street	9.66	9.67	0.00
R23	Residential - Little Peter Street	9.52	9.52	0.00
R24	Residential - Oxford Street	9.57	9.57	0.00

6.2.6 As indicated in Table 22, predicted annual mean PM_{2.5} concentrations were below the Interim Target of 12µg/m³ at all sensitive receptors in both scenarios.

Predicted Impacts

6.2.7 Predicted impacts on annual mean NO₂ concentrations at the sensitive receptor locations are summarised in Table 23.

Table 23 Predicted Impacts - NO₂

Receptor		Predicted Annual Mean NO ₂ Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R1	The Wellington Medical Centre	Below 75% of AQO	0	Negligible
R2	Express English College	Below 75% of AQO	0	Negligible
R3	Residential - Salisbury Street	Below 75% of AQO	0	Negligible
R4	Residential - Quinney Crescent	Below 75% of AQO	0	Negligible

Receptor		Predicted Annual Mean NO ₂ Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R5	Residential - Great Western Street	Below 75% of AQO	0	Negligible
R6	Residential - Princess Street	Below 75% of AQO	0	Negligible
R7	Residential - Great Western Street	Below 75% of AQO	0	Negligible
R8	Residential - Moss Lane East	Below 75% of AQO	0	Negligible
R9	Residential - Oxford Road	Below 75% of AQO	0	Negligible
R10	Residential - Oxford Road	Below 75% of AQO	0	Negligible
R11	Old St Mary's Reproductive Medicine	Below 75% of AQO	0	Negligible
R12	Residential - Oxford Road	Below 75% of AQO	0	Negligible
R13	Trinity High School	Below 75% of AQO	0	Negligible
R14	University Dental Hospital of Manchester	Below 75% of AQO	0	Negligible
R15	Residential - Leaf Street	Below 75% of AQO	0	Negligible
R16	Residential - Rockdove Avenue	Below 75% of AQO	0	Negligible
R17	Residential - Clarendon Street	Below 75% of AQO	0	Negligible
R18	Residential - Garwood Street	Below 75% of AQO	0	Negligible
R19	Residential - Newcastle Street	76 - 94% of AQO	0	Negligible
R20	Faculty of Business and Law	Below 75% of AQO	0	Negligible
R21	Faculty of Science and Engineering	76 - 94% of AQO	0	Negligible
R22	Residential - River Street	Below 75% of AQO	0	Negligible
R23	Residential - Little Peter Street	Below 75% of AQO	0	Negligible
R24	Residential - Oxford Street	Below 75% of AQO	0	Negligible

6.2.8 As indicated in Table 23, impacts on annual mean NO₂ concentrations as a result of the proposed development were predicted to be **negligible** at all receptor locations.

6.2.9 Predicted impacts on annual mean PM₁₀ concentrations at the sensitive receptor locations are summarised in Table 24.

Table 24 Predicted Impacts - PM₁₀

Receptor		Predicted Annual Mean PM ₁₀ Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R1	The Wellington Medical Centre	Below 75% of AQO	0	Negligible
R2	Express English College	Below 75% of AQO	0	Negligible
R3	Residential - Salisbury Street	Below 75% of AQO	0	Negligible
R4	Residential - Quinney Crescent	Below 75% of AQO	0	Negligible
R5	Residential - Great Western Street	Below 75% of AQO	0	Negligible
R6	Residential - Princess Street	Below 75% of AQO	0	Negligible
R7	Residential - Great Western Street	Below 75% of AQO	0	Negligible
R8	Residential - Moss Lane East	Below 75% of AQO	0	Negligible
R9	Residential - Oxford Road	Below 75% of AQO	0	Negligible
R10	Residential - Oxford Road	Below 75% of AQO	0	Negligible
R11	Old St Mary's Reproductive Medicine	Below 75% of AQO	0	Negligible
R12	Residential - Oxford Road	Below 75% of AQO	0	Negligible
R13	Trinity High School	Below 75% of AQO	0	Negligible
R14	University Dental Hospital of Manchester	Below 75% of AQO	0	Negligible
R15	Residential - Leaf Street	Below 75% of AQO	0	Negligible
R16	Residential - Rockdove Avenue	Below 75% of AQO	0	Negligible
R17	Residential - Clarendon Street	Below 75% of AQO	0	Negligible
R18	Residential - Garwood Street	Below 75% of AQO	0	Negligible
R19	Residential - Newcastle Street	Below 75% of AQO	0	Negligible
R20	Faculty of Business and Law	Below 75% of AQO	0	Negligible
R21	Faculty of Science and Engineering	Below 75% of AQO	0	Negligible
R22	Residential - River Street	Below 75% of AQO	0	Negligible
R23	Residential - Little Peter Street	Below 75% of AQO	0	Negligible
R24	Residential - Oxford Street	Below 75% of AQO	0	Negligible

6.2.10 As indicated in Table 24, impacts on annual mean PM₁₀ concentrations as a result of the proposed development were predicted to be **negligible** at all receptor locations.

6.2.11 Predicted impacts on annual mean PM_{2.5} concentrations at the sensitive receptor locations are summarised in Table 25.

Table 25 Predicted Impacts - PM_{2.5}

Receptor		Predicted Annual Mean PM _{2.5} Concentration	Predicted Conc. Change as Proportion of Interim Target (%)	Impact Significance
R1	The Wellington Medical Centre	76 - 94% of Interim Target	0	Negligible
R2	Express English College	76 - 94% of Interim Target	0	Negligible
R3	Residential - Salisbury Street	Below 75% of Interim Target	0	Negligible
R4	Residential - Quinney Crescent	Below 75% of Interim Target	0	Negligible
R5	Residential - Great Western Street	Below 75% of Interim Target	0	Negligible
R6	Residential - Princess Street	76 - 94% of Interim Target	0	Negligible
R7	Residential - Great Western Street	Below 75% of Interim Target	0	Negligible
R8	Residential - Moss Lane East	76 - 94% of Interim Target	0	Negligible
R9	Residential - Oxford Road	Below 75% of Interim Target	0	Negligible
R10	Residential - Oxford Road	76 - 94% of Interim Target	0	Negligible
R11	Old St Mary's Reproductive Medicine	76 - 94% of Interim Target	0	Negligible
R12	Residential - Oxford Road	76 - 94% of Interim Target	0	Negligible
R13	Trinity High School	Below 75% of Interim Target	0	Negligible

Receptor		Predicted Annual Mean PM _{2.5} Concentration	Predicted Conc. Change as Proportion of Interim Target (%)	Impact Significance
R14	University Dental Hospital of Manchester	76 - 94% of Interim Target	0	Negligible
R15	Residential - Leaf Street	Below 75% of Interim Target	0	Negligible
R16	Residential - Rockdove Avenue	76 - 94% of Interim Target	0	Negligible
R17	Residential - Clarendon Street	76 - 94% of Interim Target	0	Negligible
R18	Residential - Garwood Street	76 - 94% of Interim Target	0	Negligible
R19	Residential - Newcastle Street	76 - 94% of Interim Target	0	Negligible
R20	Faculty of Business and Law	76 - 94% of Interim Target	0	Negligible
R21	Faculty of Science and Engineering	76 - 94% of Interim Target	0	Negligible
R22	Residential - River Street	76 - 94% of Interim Target	0	Negligible
R23	Residential - Little Peter Street	76 - 94% of Interim Target	0	Negligible
R24	Residential - Oxford Street	76 - 94% of Interim Target	0	Negligible

6.2.12 As indicated in Table 25, impacts on annual mean PM_{2.5} concentrations as a result of the proposed development were predicted to be **negligible** at all receptor locations.

6.3 Potential Future Exposure

6.3.1 The proposed development has the potential to cause the exposure of future residents to elevated pollution levels. Dispersion modelling was therefore undertaken with the inputs described in Appendix 1 to quantify air quality conditions at the site. Reference should be made to Figures 5 to 7 for graphical representations of annual mean NO₂, PM₁₀ and PM_{2.5} concentrations.

- 6.3.2 As shown in Figure 5, annual mean NO₂ concentrations were predicted to be below the AQO of 40µg/m³ across the site. The maximum level was 33.55µg/m³.
- 6.3.3 As shown in Figure 6, annual mean PM₁₀ concentrations were predicted to be below the AQO of 40µg/m³ across the site. The maximum level was 17.59µg/m³.
- 6.3.4 As shown in Figure 7, annual mean PM_{2.5} concentrations were predicted to be below the Interim Target of 12µg/m³ across the site. The maximum level was 10.19µg/m³.
- 6.3.5 Based on the assessment results, future residents are not predicted to be exposed to pollutant concentrations above the AQOs and Interim Target. As such, the site is considered suitable for the proposed use from an air quality perspective.

6.4 Interim Planning Guidance for PM_{2.5}

- 6.4.1 Interim Planning Guidance²³ on the consideration of the PM_{2.5} targets identified in the Environment Act (2021) in planning decisions has been produced by DEFRA. This requires evidence that the key sources of air pollution within a development have been identified and appropriate action to minimise emissions of PM_{2.5} and its precursors as far as is reasonably practicable be provided in support of planning applications. To assist the process, two questions and associated considerations are provided. These are summarised in Table 26, along with the development response.

²³ <https://uk-air.defra.gov.uk/pm25targets/planning>.

Table 26 Interim Planning Guidance Questions

Question	Response
How has exposure to PM_{2.5} been considered when selecting the development site? Factors to consider include: • Site proximity to people (particularly large populations and/or vulnerable groups, e.g. schools, hospitals, care homes, areas of deprivation) and the impact of the development on these • Site proximity to pollution sources and the impact of these on users of the development • Exposure and emissions during both construction and in-use	The site is located in a predominantly residential setting, approximately 4.6km south-east of the city centre. The surrounding area is densely populated and includes sensitive receptors such as The Wellington Medical Centre. However, as shown in Section 6.2, impacts associated with emissions from the development are predicted to be not significant The site is located adjacent to the A5103 Princess Road. However, as outlined in Section 6.3, PM_{2.5} concentrations across the development were predicted to be below the Interim Target of 12µg/m³ As outlined in Table 19, a number of mitigation measures will be used throughout the construction phase in order to reduce fugitive dust emissions as far as practicable. This will control potential exposure at off-site locations
What actions and/or mitigations have been considered to reduce PM_{2.5} exposure for development users and nearby receptors and to reduce emissions of PM_{2.5} and its precursors? Factors to consider include: • Site layout • The development's design • Technology used in the construction or installed for use in the development • Construction and future use of the development	Future residents are not anticipated to be exposed to elevated pollution concentrations, as previously discussed In order to reduce emissions of PM_{2.5} with associated impacts at nearby receptors, the following measures have also been included: • Provision of Electric Vehicle (EV) charging points to reduce reliance on diesel and petrol vehicles • Provision of secure cycle storage to encourage residents to use sustainable transport modes Further to the above, in order to reduce emissions during the construction phase, a number of mitigation measures will be used to minimise dust generation from associated activities

6.4.2 Based on the responses provided in Table 26 and the results of the assessment, as outlined in Sections 50 and 6.0, it is considered that the development has identified key sources of air pollution and taken appropriate action to minimise emissions of PM_{2.5}.

6.5 Overall Impact Significance

6.5.1 The overall significance of operational phase road traffic emission impacts was determined as **negligible**. This was based on the overall predicted impacts at discrete receptor locations and the considerations outlined previously. Further justification is provided in Table 27.

Table 27 Overall Impact Significance of Road Vehicle Exhaust Emission Impacts

Guidance	Comment
The existing and future air quality in the absence of the development	Predicted annual mean NO₂, PM₁₀ and PM_{2.5} concentrations were below the relevant AQOs and Interim Target at all locations in the DM and DS scenarios It is considered unlikely that future air quality conditions will change significantly in the absence of the development given the relatively established nature of the area
The extent of current and future population exposure to the impacts	The development is not predicted to affect the population exposed to exceedences of the AQOs or Interim Target
The influence and validity of any assumptions adopted when undertaking the prediction of impacts	The assessment assumed that vehicle exhaust emission rates and pollutant background concentrations will reduce in accordance with DEFRA predictions. This approach provides the most realistic prediction of pollution levels at sensitive receptors in future year scenarios and is supported by DEFRA and IAQM Due to the adopted assumptions it is considered the presented results are sufficiently robust for an assessment of this nature

6.5.2 The IAQM guidance²⁴ states that only if the impact is greater than **slight**, the effect is considered **significant**. As impacts were predicted to be **negligible**, overall effects are considered **not significant**, in accordance with the stated methodology.

²⁴ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

7.0 MITIGATION

7.1.1 A number of mitigation measures have been included within the development to encourage the use of sustainable transport modes, manage vehicle flow and reduce pollution around the site. These are in accordance with MCC's 'Air Quality and Planning Technical Guidance'²⁵, which is based upon the Good Practice Design Principles outlined in the IAQM document 'Land-Use Planning & Development Control: Planning for Air Quality'²⁶. Table 28 describes the good practice principles along with how each has been addressed with regards to the proposals.

Table 28 Good Practice Design Principles for Operational Phase Air Quality Impacts

Phase	Principle	Action
Design Phase	New developments should not contravene the Council's AQAP ²⁷ , or render any of the measures unworkable	It is confirmed that the proposals will not contravene MCC's AQAP, or render any of the measures unworkable
	Wherever possible, new developments should not create a new "street canyon", or a building configuration that inhibits effective pollution dispersion	The development will not create a new street canyon or a building configuration that inhibits effective dispersion
	Delivering sustainable development should be the key theme of any application	The proposals have been designed to encourage sustainable behaviours, such as active and public transport due to its proximity to public transport and amenities
Operational Phase	The provision of at least 1 EV "rapid charge" point per 10 residential dwellings and/or 1,000m ² of commercial floor space. Where on-site parking is provided for residential dwellings, EV charging points for each parking space should be made	EV charging will be included within the scheme

²⁵ Air Quality & Planning Technical Guidance, MCC, 2022.

²⁶ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

²⁷ Greater Manchester AQAP 2016-2021, GMCA, 2016.

Phase	Principle	Action
	Where development generates significant additional traffic, provision of a detailed Travel Plan (with provision to measure its implementation and effect) which sets out measures to encourage sustainable means of transport (public, cycling and walking) via subsidised or free-ticketing, improved links to bus stops, improved infrastructure and layouts to improve accessibility and safety	A Travel Plan can be requested by the LA if deemed applicable
	All gas-fired boilers to meet a minimum standard of <40mgNO_x/kWh. All gas-fired CHP plant to meet a minimum emissions standard of: • Spark ignition engine: 250mgNO_x/Nm³; • Compression ignition engine: 400mgNO_x/Nm³; • Gas turbine: 50mgNO_x/Nm³. A presumption should be to use natural gas-fired installations. Where biomass is proposed within an urban area it is to meet minimum emissions standards of: • Solid biomass boiler: 275mgNO_x/Nm³ and 25mgPM/Nm³	Any boilers to be included in the development will be provisioned in accordance with the relevant requirements

7.1.2 It is considered the above methods would further reduce potential impacts associated with the scheme. Specific mitigation suited to the proposals may be stipulated as a planning condition if deemed necessary by the LA.

8.0 CONCLUSION

- 8.1.1 Redmore Environmental Ltd was commissioned by MSV & Caddick Construction to undertake an Air Quality Assessment in support of a residential development on land at Barnhill Street/Raby Street, Moss Side.
- 8.1.2 The proposals have the potential to cause air quality impacts at sensitive locations during the construction and operational phases, as well as expose future residents to any existing air quality issues at the site. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions, consider location suitability for the proposed end-use and assess potential effects as a result of the scheme.
- 8.1.3 During the construction phase of the development there is the potential for air quality impacts as a result of fugitive dust emissions from the site. These were assessed in accordance with the IAQM methodology. Site-specific dust control measures were subsequently determined based on the identified risk ratings. Subject to implementation, potential air quality impacts from dust generated by demolition, earthworks, construction and trackout activities are predicted to be **not significant**.
- 8.1.4 The development has the potential to impact on existing air quality in the vicinity of the site and expose future residents to elevated pollution levels during operation. Dispersion modelling was therefore undertaken in order to predict pollutant concentrations at sensitive locations as a result of emissions from the highway network both with and without the development in place. Results were subsequently verified using local monitoring data.
- 8.1.5 Review of the dispersion modelling results indicated that impacts on annual mean NO₂, PM₁₀ and PM_{2.5} concentrations as a result of traffic generated by the development were predicted to be **negligible** at all receptor locations.
- 8.1.6 The results of the dispersion modelling assessment also indicated that predicted annual mean NO₂, PM₁₀ and PM_{2.5} concentrations were below the relevant AQOs and Interim Target across the development. The site is therefore considered suitable for the proposed use from an air quality perspective.

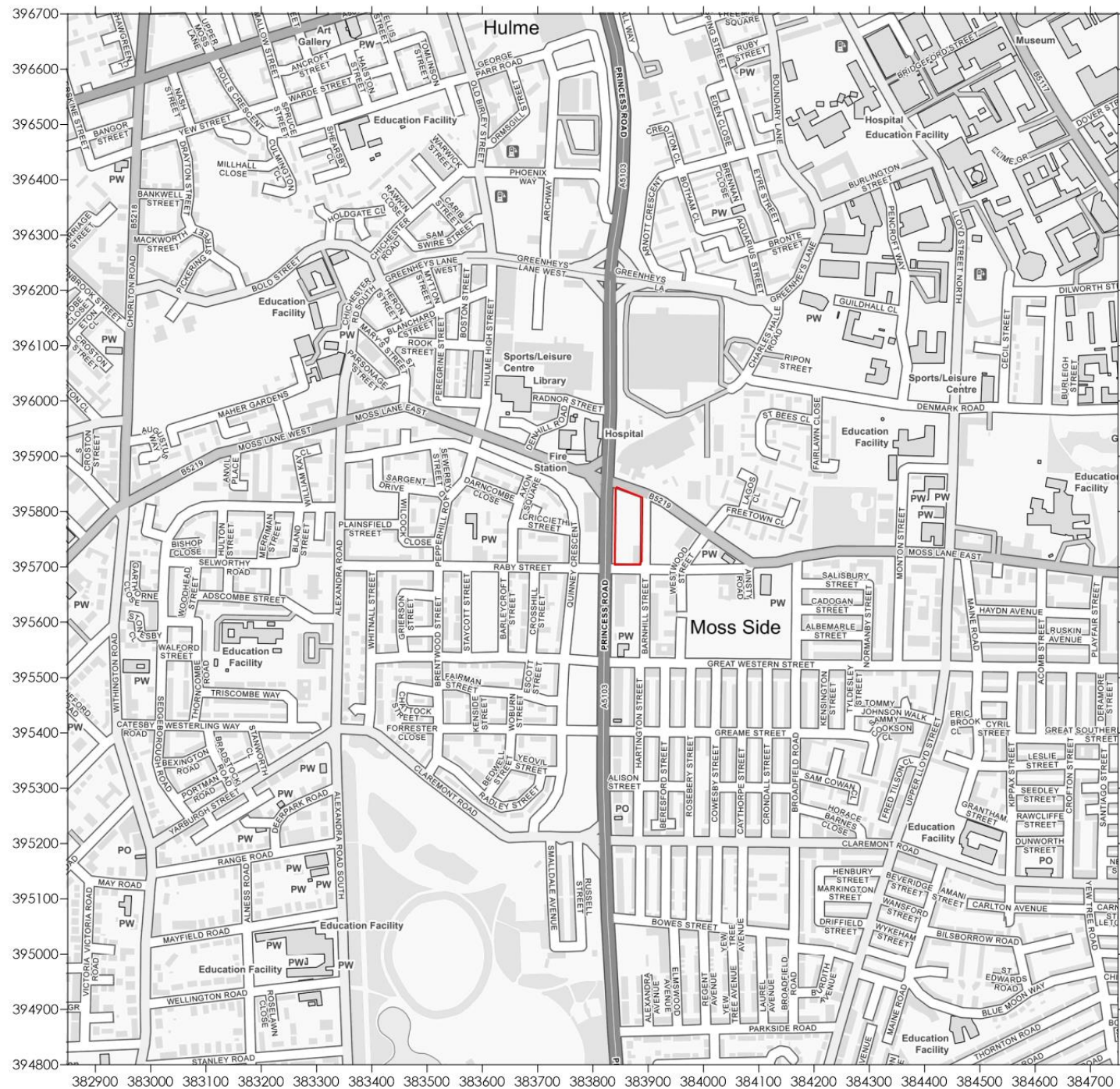
- 8.1.7 Following consideration of the relevant issues, residual impacts as a result of the operation of the development were considered to be **not significant**, in accordance with the IAQM guidance.
- 8.1.8 A number of mitigation measures were identified in line with the requirements of the MCC 'Air Quality and Planning Technical Guidance' in order to reduce vehicle exhaust emissions associated with the proposals. It is considered these are appropriate for a development of this scale and nature and will further control impacts during the operational phase.
- 8.1.9 Based on the assessment results, air quality factors are not considered a constraint to the development.

9.0 **ABBREVIATIONS**

AADT	Annual Average Daily Traffic
ADM	Atmospheric Dispersion Modelling
AQAP	Air Quality Action Plan
AQLV	Air Quality Limit Value
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Strategy
ASR	Annual Status Report
CAP	Clean Air Plan
CERC	Cambridge Environmental Research Consultants
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DM	Do-Minimum
DMRB	Design Manual for Roads and Bridges
DPD	Development Plan Document
DS	Do-Something
EB	Eastbound
EFT	Emissions Factor Toolkit
EV	Electric Vehicle
GMCA	Greater Manchester Combined Authority
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
LA	Local Authority
LAQM	Local Air Quality Management
MCC	Manchester City Council
NB	Northbound
NGR	National Grid Reference
NO ₂	Nitrogen dioxide
NO _x	Oxides of nitrogen
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance
PfEP	Places for Everyone Plan
PM ₁₀	Particulate matter with an aerodynamic diameter of less than 10µm
PM _{2.5}	Particulate matter with an aerodynamic diameter of less than 2.5µm

SB	Southbound
TfGM	Transport for Greater Manchester
WB	Westbound
Z0	Roughness length

Figures



Legend



Site Boundary

Title

Figure 1 - Site Location Plan

Project

Air Quality Assessment
Barnhill Street/Raby Street,
Moss Side

Project Reference

6780-3

Client

MSV & Caddick Construction

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Legend



Site Boundary



Monitor

Title

Figure 2 - Monitoring Locations

Project

Air Quality Assessment
Barnhill Street/Raby Street,
Moss Side

Project Reference

6780-3

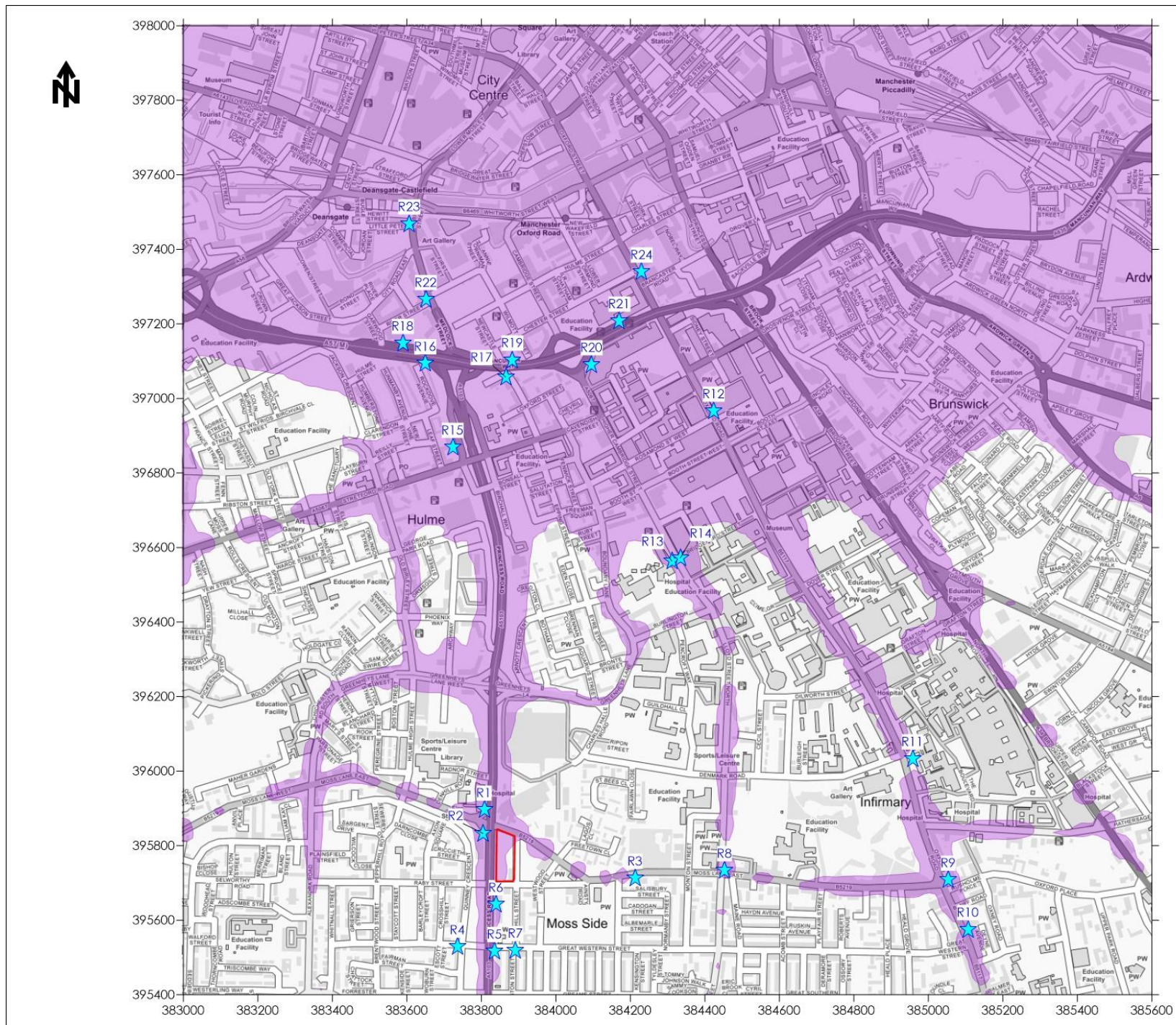
Client

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Legend



Site Boundary



Sensitive Receptor



AQMA

Title

Figure 3 - Road Vehicle Exhaust Emission Sensitive Receptors

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Air Quality Assessment
Barnhill Street/Raby Street,
Moss Side

Project Reference

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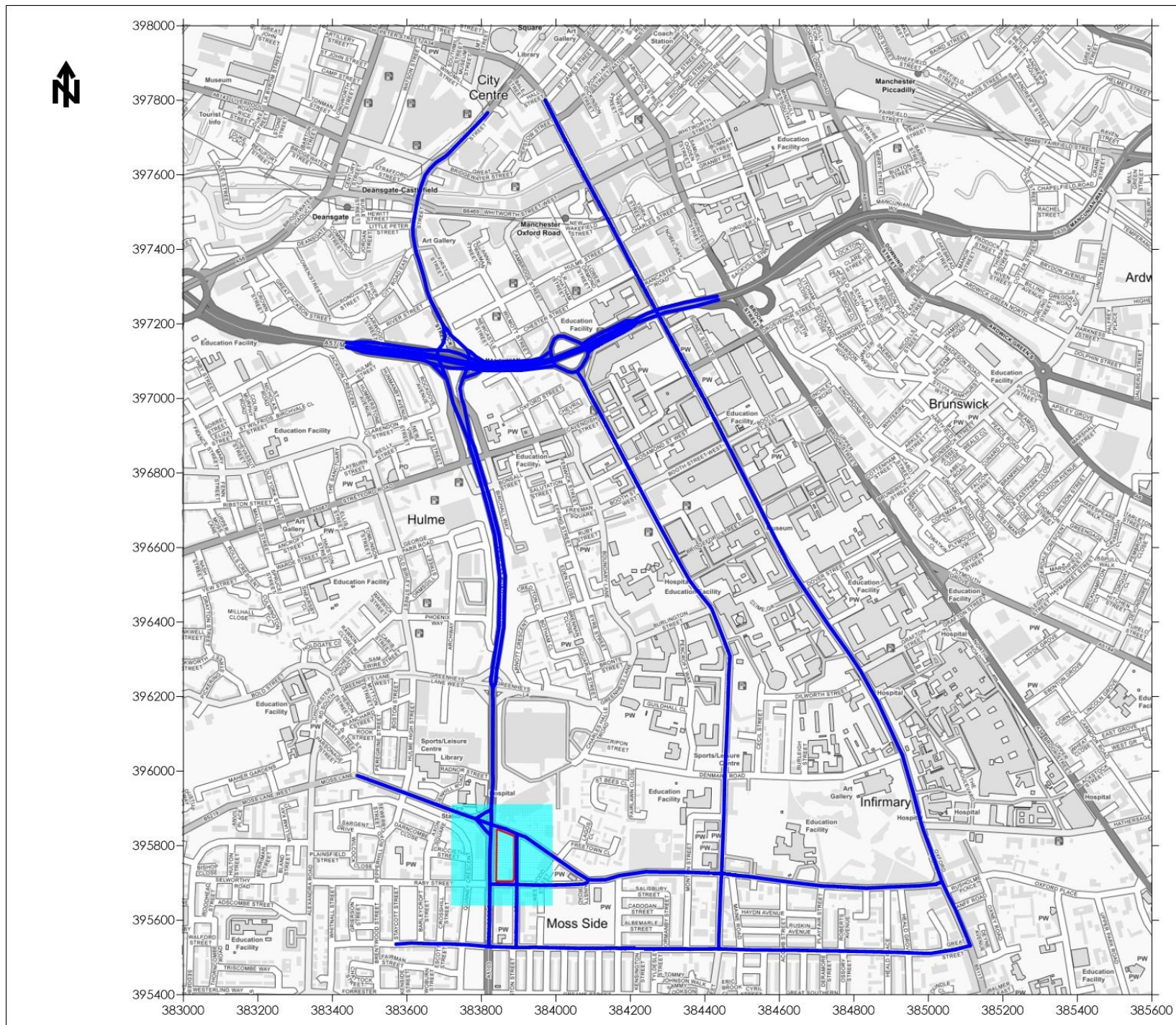


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Legend



Site Boundary



Road Link



Output Grid

Title

Figure 7 - ADMS-Roads Inputs

Project

Air Quality Assessment
Barnhill Street/Raby Street,
Moss Side

Project Reference

6780-3

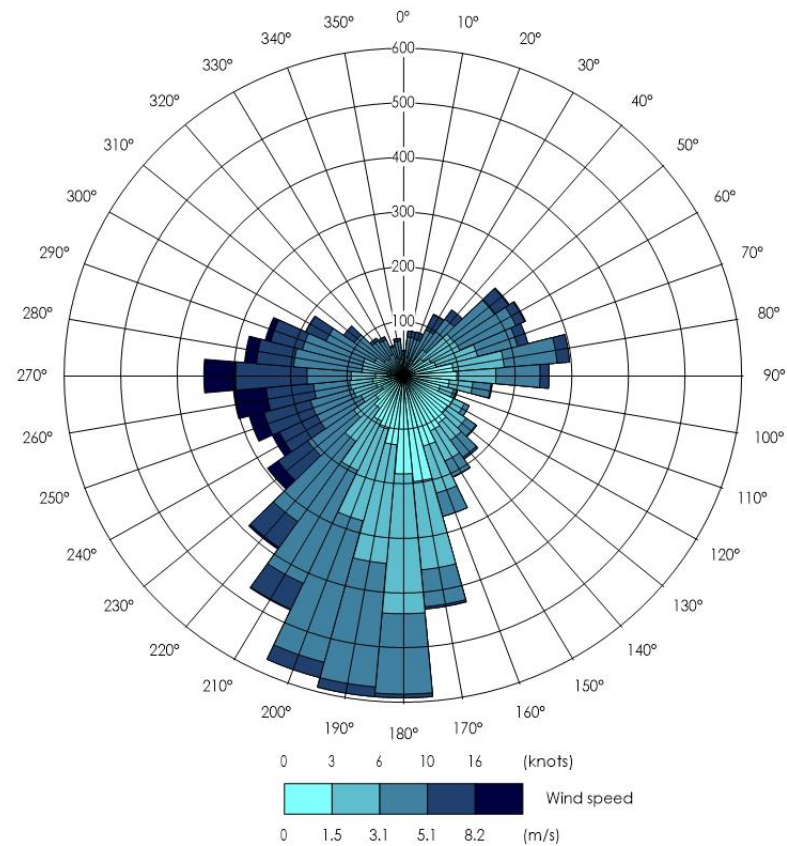
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Title

Figure 8 - Wind Rose of 2023
Manchester Airport Meteorological
Data

Project

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Appendix 1 - Assessment Input Data

Introduction

The proposals have the potential to cause air quality impacts as a result of exhaust emissions associated with vehicles travelling to and from the development, as well as expose future residents to any existing air quality issues at the site. In order to assess NO₂, PM₁₀ and PM_{2.5} concentrations at sensitive locations, detailed dispersion modelling was undertaken in accordance with the following methodology.

Dispersion Model

Dispersion modelling was undertaken in order to predict NO₂, PM₁₀ and PM_{2.5} concentrations across the site using the ADMS-Roads dispersion model (version 5.0.1.3). ADMS-Roads is developed by Cambridge Environmental Research Consultants (CERC) and is routinely used throughout the world for the prediction of pollutant dispersion from road sources. Modelling predictions from this software package are accepted within the UK by the Environment Agency and DEFRA.

The model requires input data that details the following parameters:

- Assessment area;
- Traffic flow data;
- Vehicle emission factors;
- Spatial co-ordinates of emissions;
- Street width;
- Meteorological data;
- Roughness length (z_0); and,
- Monin-Obukhov length.

Additional options can also be selected within the ADMS-Roads user interface in order to take account of site specific characteristics that may affect model outputs, such as canyons.

The relevant inputs are detailed in the following Sections.

Assessment Area

Ambient concentrations were predicted over the area NGR: 383720, 395640 to 383990, 395910. One Cartesian grid was included within the model to produce data suitable for contour plotting using the Surfer software package.

Reference should be made to Figure 7 for a graphical representation of the assessment grid extents.

Receptors potentially sensitive to changes in pollutant concentrations were included in the assessment as outlined in the main report text.

Traffic Flow Data

Baseline traffic data for use in the assessment, including 24-hour AADT (Annual Average Daily Traffic) flows and fleet composition as HDV proportion, was obtained from the Department for Transport (DfT)²⁸. The DfT web tool enables the user to view and download traffic flows on every link of the 'A' road and motorway network, as well as selected minor roads, in Great Britain for the years 1999 to 2024. It should be noted that the DfT web tool is referenced in DEFRA guidance²⁹ as being a suitable source of data for air quality assessments and it is therefore considered to provide a reasonable estimate of traffic flows in the vicinity of the site.

Baseline traffic data was converted to the opening year of the development utilising a factor obtained from TEMPro (version 8.0). This software package has been developed by the DfT to calculate future traffic growth throughout the UK.

The predicted number of daily traffic movements generated by the development was provided by Eddisons, the Transport Consultants for the project. These were added to each link to determine the DS scenario.

A summary of the traffic data used in the assessment is provided in Table A1.1. Road widths and vehicle speeds were estimated from aerial photography and UK highway design standards.

²⁸ <https://roadtraffic.dft.gov.uk/#6/55.254/-6.053/basemap-regions-countpoints>.

²⁹ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

Table A1.1 Traffic Data

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2023	2028 DM	2028 DS			
L1	Upper Mancunian Way, eastbound (EB)	26,779	28,206	28,206	4.82	8.5	80
L2	Upper Mancunian Way, EB, east of Cavendish Street	26,779	28,206	28,225	4.82	8.5	80
L3	Upper Mancunian Way, westbound (WB)	26,779	28,206	28,206	4.82	8.3	80
L4	Upper Mancunian Way, WB, east of Cavendish Street	26,779	28,206	28,225	4.82	8.3	80
L5	Mancunian Way Slip Road Off EB	12,080	12,724	12,757	2.35	5.7	65
L6	Mancunian Way Slip Road Off EB, adjacent to Garwood Street	12,080	12,724	12,757	2.35	6.9	30
L7	Mancunian Way Slip Road Off EB to Medlock Street	12,080	12,724	12,757	2.35	7.1	20
L8	A5103 Roundabout EB	30,916	32,564	32,597	1.63	8.3	20
L9	Lower Mancunian Way, EB, west of Roundabout	13,324	14,034	14,034	3.27	8.7	30
L10	Higher Cambridge Street Roundabout	12,034	12,676	12,694	3.10	11.1	25
L11	Mancunian Way Slip Road On, EB	13,324	14,034	14,053	3.27	6.5	25
L12	Mancunian Way Slip Road On, EB	13,324	14,034	14,053	3.27	6.5	25
L13	Mancunian Way Slip Road On, EB	13,324	14,034	14,053	3.27	6.5	25
L14	Mancunian Way Slip Road On WB	12,689	13,366	13,399	4.12	4.8	65
L15	A5103 Roundabout WB to Mancunian Way Slip Road On WB	6,345	6,683	6,683	4.12	4.0	30
L16	A5103, WB from Princess Road to Mancunian Way Slip Road On WB	6,345	6,683	6,716	4.12	4.0	30
L17	A5103 Roundabout WB	32,801	34,550	34,550	2.08	7.9	20
L18	A5103, WB to Roundabout	6,662	7,017	7,017	3.27	7.7	20
L19	Lower Mancunian Way, WB, west of Roundabout	13,324	14,034	14,034	3.27	9.8	30
L20	Mancunian Way Slip Road, Off, WB	13,324	14,034	14,053	3.27	6.1	25

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2023	2028 DM	2028 DS			
L21	Mancunian Way Slip Road, Off, WB	13,324	14,034	14,053	3.27	6.1	25
L22	Mancunian Way Slip Road, Off, WB	13,324	14,034	14,053	3.27	6.1	25
L23	Albion Street	17,835	18,786	18,851	3.55	14.5	30
L24	Medlock Street, north of River Street	23,602	24,860	24,925	2.08	18.1	30
L25	Medlock Street to River Street	23,602	24,860	24,925	2.08	12.8	25
L26	Medlock Street, south of River Street	25,389	26,742	26,807	1.91	13.9	30
L27	Medlock Street northbound (NB)	12,694	13,371	13,404	1.91	7.8	25
L28	A5103 NB to Medlock Street	7,400	7,794	7,827	2.37	7.1	20
L29	A5103 south of Roundabout, NB	7,400	7,794	7,827	2.37	6.9	20
L30	Princess Road, NB north of Stretford Road	22,200	23,383	23,449	2.37	7.4	65
L31	Medlock Street, southbound (SB)	12,694	13,371	13,404	1.91	7.1	25
L32	Medlock Street, SB to A5103 EB	6,347	6,685	6,685	1.91	4.4	20
L33	Medlock Street SB to A5103	6,347	6,685	6,751	1.91	9.0	20
L34	A5103 SB to Princess Road	11,100	11,692	11,757	2.37	8.6	20
L35	A5103, WB to Princess Road	6,662	7,017	7,017	3.27	7.7	20
L36	Princess Road, SB north of Stretford Road	22,200	23,383	23,449	2.37	6.7	65
L37	Oxford Street	5,729	6,034	6,091	43.58	9.9	30
L38	Oxford Street Approaching Whitworth Street Junction	5,729	6,034	6,091	43.58	9.9	20
L39	Oxford Street Exiting Whitworth Street Junction	5,729	6,034	6,091	43.58	9.9	20
L40	Oxford Street Between Whitworth Street and Charles Street	5,729	6,034	6,091	43.58	9.9	20
L41	Oxford Street Approaching Charles Street Junction	5,729	6,034	6,091	43.58	9.9	10
L42	Oxford Road Exiting Charles Street Junction	5,729	6,034	6,091	43.58	9.9	10

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2023	2028 DM	2028 DS			
L43	Oxford Road Between Charles Street and Mancunian Way	5,729	6,034	6,091	43.58	9.9	20
L44	Oxford Road between Mancunian Way and Grosvenor Street	5,729	6,034	6,091	43.58	12.5	20
L45	Higher Cambridge Street approach to roundabout	6,875	7,242	7,279	1.78	9.7	30
L46	Princess Road, NB south of Stretford Road	22,200	23,383	23,449	2.37	6.8	45
L47	Princess Road, SB south of Stretford Road	22,200	23,383	23,449	2.37	7.2	45
L48	Princess Road, NB approach at Greenheys Lane West	22,200	23,383	23,449	2.37	10.1	20
L49	Princess Road, SB approach at Greenheys Lane West	22,200	23,383	23,449	2.37	10.9	20
L50	Princess Road approach to Greenheys Lane West	37,103	39,856	40,096	3.24	25.5	20
L51	Princess Road south of Greenheys Lane West	37,103	39,856	40,096	3.24	17.8	45
L52	Princess Road approach to Moss Lane East from north	37,103	39,856	40,096	3.24	21.6	20
L53	Princess Road approach to Moss Lane East from south	36,121	38,801	38,801	3.19	21.2	20
L54	Princess Road approach to Raby Street from north	36,121	38,801	38,801	3.19	19.6	45
L55	Princess Road approach to Raby Street from south	36,303	38,996	39,080	3.09	21.25	45
L56	Princess Road approach to Great Western Street from north	36,303	38,996	39,080	3.09	22.4	20
L57	Barnhill Street between Moss Lane East and Raby Street	849	912	1,544	2.14	7.5	30
L58	Barnhill Street between Raby Street and Great Western Street	692	801	902	1.75	7.5	30
L59	Moss Lane East west of Princess Road	7,897	8,483	8,522	2.23	14.6	30
L60	Moss Lane East slip to Princess Road	1,974	2,121	2,131	2.23	4.8	20

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2023	2028 DM	2028 DS			
L61	Moss Lane East approach to Princess Road from west	3,949	4,242	4,261	2.23	14.6	20
L62	Moss Lane East slip off Princess Road	1,974	2,121	2,131	2.23	4.5	20
L63	Moss Lane East approach to Princess Road from east	15,073	16,191	16,747	1.81	10.0	20
L64	Moss Lane East between Barnhill Street and Raby Street	18,124	19,469	19,809	2.07	8.1	30
L65	Raby Street between Princess Road and Barnhill Street	121	130	214	0.00	7.4	20
L66	Raby Street between Barnhill Street and Moss Lane East	831	893	893	0.73	6.6	30
L67	Great Western Street west of Princess Road	1,456	1,564	1,571	2.92	7.2	30
L68	Great Western Street approach to Princess Road	3,372	3,623	3,723	2.52	8.5	20
L69	Great Western Street between Barnhill Street and Broadfield Road	3,372	3,623	3,723	2.52	7.7	30
L70	Great Western Street between Broadfield Road and Monton Street	3,372	3,623	3,723	2.52	6.7	30
L71	Great Western Street between Monton Street and Upper Llyod Street	3,372	3,623	3,723	2.52	8.4	20
L72	Great Western Street between Upper Llyod Street and Ossory Street	3,372	3,623	3,723	2.52	8.1	30
L73	Great Western Street between Ossory Street and Oxford Road	3,372	3,623	3,723	2.52	6.7	30
L74	Great Western Street approach to Oxford Road	3,372	3,623	3,723	2.52	6.9	20
L75	Moss Lane East between Raby Street and Upper Llyod Street	17,493	18,791	19,132	2.18	8.3	30
L76	Moss Lane East approach to Upper Llyod Street from west	17,493	18,791	19,132	2.18	7.9	20
L77	Moss Lane East approach to Upper Llyod Street from east	11,009	11,826	11,900	3.14	9.3	20

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2023	2028 DM	2028 DS			
L78	Moss Lane East between Upper Llyod Street and Oxford Road	11,009	11,826	11,900	3.14	7.8	30
L79	Moss Lane East approach to Oxford Road	11,009	11,826	11,900	3.14	9.6	20
L80	Upper Llyod Street between Great Western Street and Moss Lane East	7,910	8,496	8,526	3.53	7.0	25
L81	Upper Llyod Street approach to Moss Lane East from south	7,910	8,496	8,526	3.53	7.9	20
L82	Upper Llyod Street approach to Moss Lane East from north	9,189	9,871	9,939	1.85	7.0	20
L83	Upper Llyod Street between Moss Lane East and Denmark Road	9,189	9,871	9,939	1.85	7.1	30
L84	Llyod Street North between Denmark Road and Burlington Street	9,189	9,871	9,939	1.85	7.2	30
L85	Higher Cambridge Street between Burlington Street and Cavendish Street	9,189	9,871	9,939	1.85	10.5	30
L86	Oxford Road between Grosvenor Street and Booth Street West	18,528	19,018	19,075	13.28	10.8	30
L87	Oxford Road between Denmark Road and Hathersage Road	18,528	19,018	19,075	13.28	10.6	30
L88	Oxford Road between Hathersage Road and Moss Lane East	18,528	19,018	19,075	13.28	11.6	25
L89	Oxford Road between Moss Lane East and Great Western Street	18,528	19,018	19,075	13.28	11.5	30

Reference should be made to Figure 7 for a graphical representation of the road link locations.

Canyons

Where buildings or walls surround roads, pollutant dispersion patterns are altered which can lead to high pollutant concentrations. These street canyons can significantly influence air quality along a road and therefore it is important to take consideration of their effects when undertaking dispersion modelling.

The release of ADMS-Roads version 4.0.1.0 in December 2015 incorporated a number of new features including an advanced street canyon module, which have been retained in version 5.0.1.3. Advanced street canyon modelling allows a number of parameters to be included in the dispersion model in order to predict pollutant dispersion patterns which better reflect air flow within complex urban geometries.

Canyons have five principal effects on dispersion which can influence pollutant concentrations. These are:

- Pollutants are channelled along street canyons;
- Pollutants are dispersed across street canyons by circulating flow at road height;
- Pollutants are trapped in recirculation regions;
- Pollutants leave the canyon through gaps between buildings - as if there were no canyon; and,
- Pollutants leave the canyon from the canyon top.

The combined modelling of these effects will result in concentration patterns unique to each canyon. The parameters used in the assessment are outlined in Table A1.2. It should be noted that where buildings are only present on one side of the road, parameters were purposely included at 0m.

Table A1.2 Canyon Parameters

Link	Parameter (m)					
	Canyon Width to Left	Average Height of Buildings to Left	Building Length Left	Canyon Width to Right	Average Height of Buildings to Right	Building Length Right
L24	16.5	25.0	91.8	0.0	0.0	0.0
L26	0.0	0.0	0.0	13.2	15.0	47.8
L37	12.5	30.0	202.5	7.1	30.0	192.5
L38	12.3	20.0	15.7	7.3	35.0	15.7
L39	12.4	30.0	16.5	8.5	25.0	16.5
L40	12.0	30.0	85.5	9.0	9.0	69.5
L41	13.0	25.0	33.7	9.6	35.0	23.4

Link	Parameter (m)					
	Canyon Width to Left	Average Height of Buildings to Left	Building Length Left	Canyon Width to Right	Average Height of Buildings to Right	Building Length Right
L42	15.6	50.0	51.5	9.6	15.0	52.5
L43	15.6	50.0	104.8	10.8	17.0	111.8
L44	11.8	12.0	174.7	0.0	0.0	0.0
L55	16.7	16.0	95.7	0.0	0.0	0.0
L65	0.0	0.0	0.0	4.6	16.0	39.0
L68	0.0	0.0	0.0	7.9	13.0	15.4.0
L69	0.0	0.0	0.0	4.7	11.0	211.0
L70	8.9	9.0	147.0	10.9	8.0	144.0
L72	9.5	9.0	274.0	8.4	9.0	246.0
L86	10.0	16.0	95.0	15.5	15.0	111.0
L89	12.0	15.0	104.0	12.0	16.0	62.0

A choice of two modes is provided for use in the advanced canyon module. Standard mode assumes that each road is part of a continuous network of roads with similar canyon properties. Network mode analyses the road network to determine transport of pollutants between adjoining street canyons, allows for varying concentrations along the canyon and accounts for transport of pollutants out of the end of a canyon. Network mode is considered most accurate for detailed local analysis and as such was selected for use in the model.

Emission Factors

The emission factors were calculated using the relevant traffic flows and the Emission Factor Toolkit (EFT) (version 13.1). This has been produced by DEFRA and incorporates COPERT 5.8 vehicle emission factors.

Meteorological Data

Meteorological data used in the assessment was taken from Manchester Airport meteorological site over the period 1st January 2023 to 31st December 2023 (inclusive). Manchester Airport is

located at NGR: 381792, 384116, which is approximately 11.7km south of the scheme. It is anticipated that conditions would be reasonably similar over a distance of this magnitude. The data was therefore considered suitable for an assessment of this nature.

All meteorological records used in the assessment were provided by Atmospheric Dispersion Modelling (ADM) Ltd, which is an established distributor of data within the UK. Reference should be made to Figure 8 for a wind rose of the utilised meteorological data.

Roughness Length

The z_0 is a modelling parameter applied to allow consideration of surface height roughness elements. A z_0 of 1m was used to describe the modelling extents. This value is considered appropriate for the morphology of the area and is suggested within ADMS- Roads as being suitable for 'cities, woodlands'.

A z_0 of 0.2m was used to describe the meteorological site. This value is considered appropriate for the morphology of the area due to the large expanse of surrounding flat land use, such as runways and surrounding grassland, and is suggested within ADMS-Roads as being suitable for 'agricultural areas (min)'.

Monin-Obukhov Length

The Monin-Obukhov length provides a measure of the stability of the atmosphere. A minimum Monin-Obukhov length of 30m was used to describe both the modelling extents and the meteorological site. This is considered appropriate for the nature of both areas and is suggested within ADMS-Roads as being suitable for 'cities and large towns'.

Background Concentrations

Annual mean NO₂, PM₁₀ and PM_{2.5} background concentrations for use in the assessment were taken from the DEFRA mapping study for the grid square containing the site, as shown in Table 14.

NO_x to NO₂ Conversion

Predicted annual mean NO_x concentrations were converted to NO₂ concentrations using the spreadsheet (version 9.1) provided by DEFRA, which is the method detailed within DEFRA guidance³⁰.

Verification

The predicted results from a dispersion model may differ from measured concentrations for a large number of reasons, including:

- Estimates of background concentrations;
- Uncertainties in source activity data such as traffic flows and emission factors;
- Variations in meteorological conditions;
- Overall model limitations; and,
- Uncertainties associated with monitoring data, including locations.

Model verification is the process by which these and other uncertainties are investigated and where possible minimised. In reality, the differences between modelled and monitored results are likely to be a combination of all of these aspects.

For the purpose of the assessment, model verification was undertaken for 2023 using traffic data, meteorological data and monitoring results from this year.

MCC undertook monitoring of NO₂ concentrations at 11 locations within the vicinity of roads included in the model during 2023. The results were obtained and the road contributions to total NO_x concentrations calculated following the methodology contained within DEFRA guidance³¹. The monitored annual mean NO₂ concentrations and calculated road NO_x concentrations are summarised in Table A1.3.

³⁰ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

³¹ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

Table A1.3 NO_x Verification - Monitoring Results

Monitoring Location	Monitored NO ₂ Concentration (µg/m ³)	Calculated Road NO _x Concentration (µg/m ³)
Manchester Oxford Road	41.00	63.78
MA84NO	41.40	65.16
MA29ANO	49.60	96.16
CAP_MANC_042	36.66	49.54
CAP_MANC_121	37.29	51.54
CAP_MANC_122	37.95	53.63
CAP_MANC_184	39.48	58.65
CAP_MANC_019	41.00	64.78
CAP_MANC_186	43.01	70.85
CAP_MANC_185	48.46	91.53
CAP_MANC_183	54.13	115.44

The annual mean road NO_x concentrations predicted from the dispersion model and the road NO_x concentrations calculated from the monitoring results are summarised in Table A1.4.

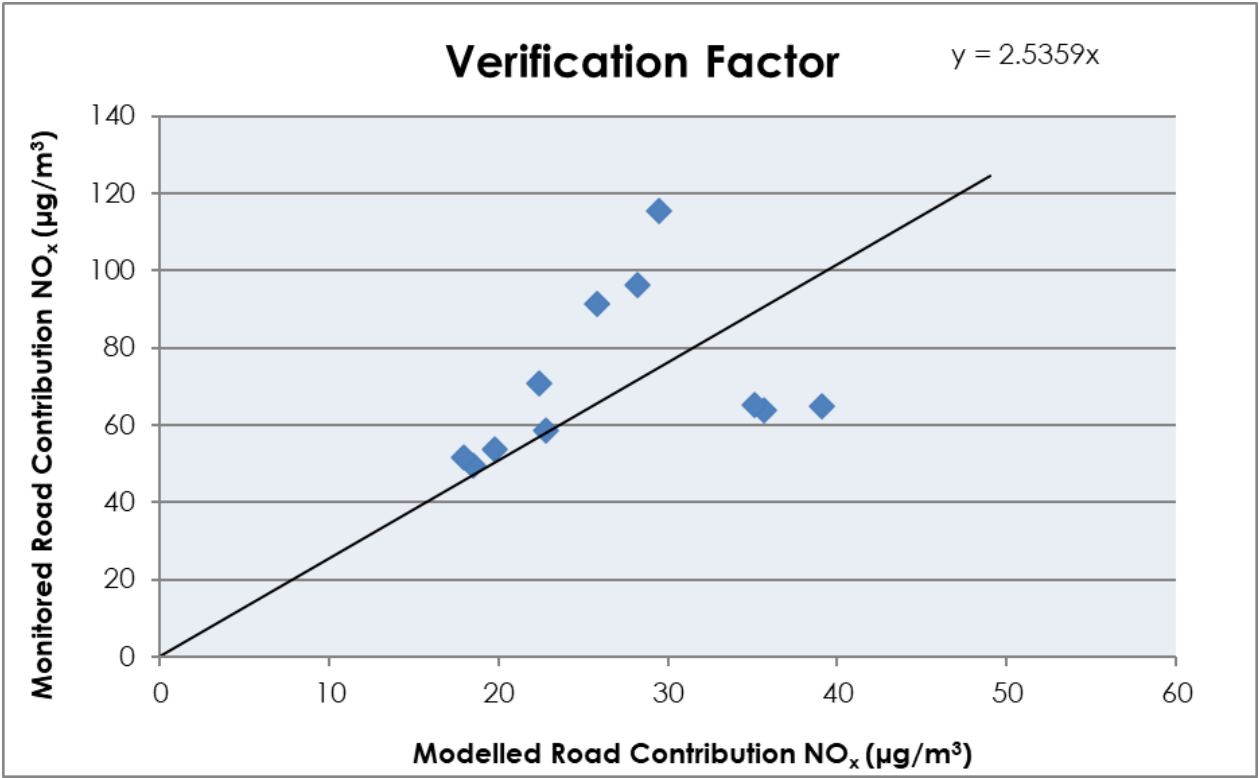
Table A1.4 NO_x Verification - Modelling Results

Monitoring Location	Calculated Road NO _x Concentration (µg/m ³)	Modelled Road NO _x Concentration (µg/m ³)
Manchester Oxford Road	63.78	35.66
MA84NO	65.16	35.15
MA29ANO	96.16	28.16
CAP_MANC_042	49.54	18.52
CAP_MANC_121	51.54	17.98
CAP_MANC_122	53.63	19.74
CAP_MANC_184	58.65	22.79
CAP_MANC_019	64.78	39.06
CAP_MANC_186	70.85	22.36

Monitoring Location	Calculated Road NO _x Concentration (µg/m ³)	Modelled Road NO _x Concentration (µg/m ³)
CAP_MANC_185	91.53	25.79
CAP_MANC_183	115.44	29.46

The monitored and modelled road NO_x concentrations were graphed and the equation of the trendline based on linear progression through zero calculated. This indicated that a verification factor 2.5359 was required to be applied to all road NO_x modelling results, as shown in Graph 1.

Graph 1 NO_x Verification Factor



MCC undertook monitoring of PM₁₀ concentrations at one location within the modelling extents during 2023. The monitored annual mean PM₁₀ concentration and modelled PM₁₀ concentration is shown in Table A1.5.

Table A1.5 PM₁₀ Verification - Modelling Result

Monitoring Location	Monitored PM ₁₀ Concentration (µg/m ³)	Modelled PM ₁₀ Concentration (µg/m ³)
Manchester Oxford Road	18.0	16.2

The monitored and modelled PM₁₀ concentrations were compared to calculate the associated ratio. This indicated a verification factor of 1.1145 was required to be applied to all PM₁₀ modelling results.

Monitoring of PM_{2.5} concentrations is not undertaken within the assessment extents. The PM₁₀ verification factor was therefore used to adjust model predictions of these species in lieu of more accurate data in accordance with DEFRA guidance³².

³² Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

Appendix 2 - Curricula Vitae

KEY EXPERIENCE:

Claire is a Director with specialist experience in the air quality sector

Her key capabilities include:

- Production and management of Air Quality, Dust and Odour Assessments for a wide range of clients from the residential, retail, commercial, leisure and industrial and infrastructure sectors.
- Detailed dispersion modelling of road vehicle and industrial emissions using ADMS-Roads, ADMS-6 and AERMOD. Studies have included impact assessment of ground level pollutant and odour concentrations and assessment of suitability of development sites for proposed end-use.
- Project management and co-ordination of Environmental Impact Assessments and scoping reports for developments throughout the UK.
- Assessment of fugitive dust impacts from a range of waste and industrial developments.
- Co-ordination and management of large-scale multi-disciplinary projects and submissions.
- Undertaken and overseeing pollutant monitoring campaigns.
- Provision of expert advice and attendance at DCO examination process.

SELECT PROJECTS SUMMARY:

Residential and Educational

Air Quality Assessments for a large number of proposed residential and educational developments across the UK. The assessments included consideration of construction phase dust emissions and mitigation was recommended to minimise fugitive dust emissions accordingly. The suitability of the sites for the proposed residential and educational uses was also assessed. The assessment utilised a range of assessment tools including relevant screening criteria, air dispersion modelling using ADMS-Roads, local air quality monitoring and Defra published assessment tools. Where required for sites in London, Air Quality Neutral assessments were also undertaken utilised the Greater London Authority guidance.

Air Quality Monitoring

Air Quality Assessments and overseeing air quality monitoring campaigns for a number of sites within Birmingham. Air dispersion modelling was undertaken and air quality monitoring utilising NO₂ diffusion tubes was carried out for use in verification of the dispersion model. Mitigation was recommended where appropriate to reduced the exposure of future uses of the sites to elevated pollutant concentrations.

Odour Assessments

Undertaken to support developments in the UK, including consideration of the impact of existing odour sources on proposed developments or to assess potential odour releases from proposed developments. A combination of field odour surveys and risk assessments were undertaken, with mitigation measures recommended where required.

Commercial and Retail

Foodstores across the UK - Air quality assessments for a number of proposed foodstores across the UK. Consideration was given to construction phase dust emissions and vehicle emissions generated by the foodstore operations. Relevant screening criteria and detailed air dispersion modelling were utilised in the assessment. Mitigation was recommended as required to minimise construction phase dust emissions.

Commercial development,

Workshop - Air quality assessment and input into the EIA for a proposed large scale commercial development near Workshop. Assessments of construction phase dust and operational phase road traffic emissions were undertaken and consideration was given to both human and ecological receptors.

Industrial and Infrastructure

Greater Manchester Waste PFI

Contract - Air Quality Assessments were undertaken as part of the Planning Applications and Environmental Permit applications for a number of proposed waste facilities in Greater Manchester.

Energy from Waste Development,

Scotland - Air Quality Assessment and coordination of the EIA and Environmental Permit Application for a proposed Energy from Waste development in Scotland. Considered industrial emissions from flue stacks as well as additional road traffic movements generated by the development

Strategic Rail Freight Interchange,

Hinckley - oversaw the Air Quality Assessment for the proposed Rail Freight Interchange and acted as expert witness as part of the Development Consent Order (DCO) examination process.

KEY EXPERIENCE:

Ceri is an Environmental Consultant with specialist experience in the air quality sector. Her key capabilities include:

- Production of Air Quality Assessments in accordance with Department for Environment, Food and Rural Affairs (DEFRA) methodologies for a range of residential, commercial and industrial sectors.
- Detailed dispersion modelling of road vehicle exhaust emissions using ADMS-Roads. Studies have included assessment of road traffic exhaust emissions on sensitive receptors and exposure of new residents to poor air quality.
- Advanced Canyon Modelling to evaluate the impact of altered urban topography on air quality in built up areas.
- Assessment of construction dust impacts from a range of development sizes.
- Definition of baseline air quality and identification of sensitive areas across the UK.
- Odour surveys to assess amenity and suitability of sites for potential future development for residential use.

SELECT PROJECTS SUMMARY:

Warren Street, Stockport

Air Quality Assessment in support of a residential-led development comprising 553 apartments and two commercial units located in an Air Quality Management Area (AQMA). The development had the potential to expose future occupants to poor air quality and cause impacts at sensitive locations. Detailed dispersion modelling and a construction dust assessment indicated air quality factors were not a constraint to the development.

Belgrave Gate, Leicester

Air Quality Assessment in support of the conversion of an existing building to provide three residential units on Belgrave Gate, Leicester. The scheme was located in an AQMA, alongside a bus station. As such, the development had potential to expose future residents to elevated pollution levels and adverse air quality effects. Results of detailed dispersion modelling utilising advanced canyons and a volume source to represent the bus station indicated air quality issues were not a constraint to planning consent for the development.

Kings Arms Hotel, Stansted

Odour Assessment in support of a Discharge of Condition application for a consented development on land to the rear of the Kings Arms Hotel, Stansted. The site was located in close proximity to several fast food restaurants which have the potential to cause odour emissions during normal operation. A mitigation scheme was therefore identified to protect future residents from loss of amenity. Subject to the inclusion of the specified mitigation, overall effects of odour were considered to be not significant at the development.

Manchester Road West, Little Hulton

Odour Assessment in support of construction of 152 residences on land off Manchester Road West, Little Hulton. The development was located in the vicinity of several waste management facilities which may form a source of odour emissions and cause loss of amenity for future residents. A two stage Odour Assessment was undertaken to assess baseline conditions across the site and consider the risk of reduced amenity. Results of the assessment indicated odour effects at the site did not represent a constraint to planning consent.

Gravel Pit Farm, Sand Hutton

Odour Assessment in support of the conversion of existing buildings into two residential dwellings on land at Gravel Pit Farm, Sand Hutton. The development was located in the vicinity of the Sand Hutton Anaerobic Digestion Plant, which may form a source of odour emissions and cause loss of amenity for future residents. Results of a two stage Odour Assessment indicated odour effects at the site were not significant. As such, odour was not considered to represent a constraint to planning consent.

A1 Trunk Road, Long Bennington

Odour Assessment in support of a residential development on land off the A1 Trunk Road, Long Bennington. The development was located in the vicinity of a maggot farm growing bait for fishermen. Results of a two stage Odour Assessment indicated that at the location of the proposed dwellings, impacts were not at a level considered to cause loss of amenity as a result of emissions. As such, odour was not considered to represent a constraint to planning consent.

KEY EXPERIENCE:

Emily is a Senior Environmental Consultant with specialist experience in the air quality sector. Her key capabilities include:

- Production of Air Quality Assessments in accordance with Department for Environment, Food and Rural Affairs (DEFRA) methodologies for a range of residential, commercial and industrial sectors.
- Detailed dispersion modelling of road vehicle exhaust emissions using ADMS-Roads. Studies have included assessment of road traffic exhaust emissions on sensitive receptors and exposure of new residents to poor air quality.
- Advanced canyon modelling to evaluate the impact of altered urban topography on air quality in built up areas.
- Assessment of construction dust impacts from a range of development sizes.
- Definition of baseline air quality and identification of sensitive areas across the UK.
- Production of air quality mitigation strategies specifically tailored to address issues at individual sites.
- Air quality monitoring at industrial sites to quantify pollutant concentrations
- Odour surveys to assess amenity and suitability of sites for potential future development for residential use.

SELECT PROJECTS SUMMARY:

Bowlers Yard, Manchester

Air Quality Assessment in support of an eleven storey residential development to provide circa 65 units on land known as Bowlers Yard, Manchester. The site was located in an Air Quality Management Area (AQMA) and concerns were raised regarding the exposure of future occupants to poor air quality due to road traffic emissions. Detailed dispersion modelling was undertaken using ADMS-roads to assess PM_{2.5}, PM₁₀ and NO₂ concentrations across the site. Results indicated that pollution levels were below the air quality objectives across the development.

Freemasons Arms Hotel, Heywood

Air Quality Assessment to support a residential-led development in an AQMA. Detailed dispersion modelling was undertaken with the inclusion of advanced canyon modelling to evaluate the impact of the urban topography within the locality on the dispersion of traffic related pollutants. Predicted concentrations of NO₂ were found to exceed air quality criteria at the building façade fronting Market Place at first floor level. As such, mitigation was specified for the affected units to ensure future residents would not be exposed to poor air quality.

Griffin Road, London

Air Quality Assessment in support of a residential development located in an AQMA. Detailed dispersion modelling was undertaken using ADMS-roads to assess PM₁₀ and NO₂ concentrations across the site. Results indicated that pollution levels were classified as APEC - A in accordance with the London Councils Air Quality and Planning Guidance.

High Street, Dudley

Odour Impact Assessment in support of a proposed residential-led development. Due to the location of the site, being above an existing hot food takeaway, odour surveys were required to assess the level of odour across the development. A risk assessment was also undertaken in accordance with the relevant odour guidance. An appropriate ventilation system was identified on the basis of the assessment results.

East Common Lane, Selby

Air Quality Assessment in support of an industrial development on land associated with Access 63 Business Park, East Common Lane Selby. Due to the size of the development it was possible that traffic generated from the scheme may cause negative impacts on sensitive receptors nearby. NO₂ and PM₁₀ concentrations were quantified at specific receptor points to ensure there would be no significant increases in pollution levels. Results revealed negligible impacts at all locations.

Wharton Road, Winsford

Air Quality Assessment in support of a residential development of circa 138 units on land off Wharton Road, Winsford. Using sensitive receptors, located in areas where increased road traffic may affect NO₂ concentrations, a comparison was made between overall concentrations with and without the development in place. Results revealed pollutant concentrations were below the relevant standards across the site and impacts associated with the development were not significant.