Air Quality Assessment

Hyde Road, Manchester

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Executive Summary

Redmore Environmental Limited was commissioned by Kellen Homes Limited and Jigsaw Homes North to undertake an Air Quality Assessment in support of a planning application for a residential development on land off Hyde Road, Manchester.

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 at the building façades. As such, the site is considered suitable for the proposed use from an air quality perspective and mitigation is not required.

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

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1.0 INTRODUCTION

1.1 Instruction

1.1.1 Redmore Environmental Limited was commissioned by Kellen Homes Limited and Jigsaw Homes North to undertake an Air Quality Assessment in support of a planning application for a residential development on land off Hyde Road, Manchester.

1.2 Site Location and Context

1.2.1 The site is located on land off Hyde Road, Manchester, M18 7BA, at approximate National Grid Reference (NGR): 387780, 396260. The 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 Buzz Bingo and subsequent erection of a residential development comprising 152 dwellings (Use Class C3a) together with landscaping, sustainable drainage features, pedestrian footways and highways, parking provision and other associated works.

1.3 Assessment Scope

1.3.1 The proposals 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 (NO_2);
- Sulphur dioxide;
- Lead;
- Particulate matter with an aerodynamic diameter of less than 10µm (PM_{10});
- 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 2023[1]. 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 2025[2] was published in December 2025, providing long term and Interim Targets in order to reduce population exposure to $PM_{2.5}$. The Concentration Target for 2040 was adopted in the Environmental Targets (Fine Particulate Matter) (England) Regulations (2023).

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

[2] Environmental Improvement Plan 2025, DEFRA, 2025.

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 (µg/m³)	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
$PM_{2.5}$	10(a)	Annual mean
	10(b)	Annual mean

Note: (a) Interim Target to be achieved by 2030.
(b) Concentration Target to be achieved by 2040.

2.1.6 Table 2 summarises the advice provided in DEFRA guidance[3] 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, 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 Framework[4] (NPPF) was published in December 2024 and updated 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, 2025.

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 Guidance[5] (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 nine Greater Manchester Combined Authorities (GMCAs) of Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan, and became part of the statutory development plan for each of the Councils 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 taken into consideration throughout the undertaking of the assessment.

2.7 Local Planning Policy

2.7.1 The Manchester Local Plan 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."
>
> "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:
>
> […]

[7] Core Strategy DPD, MCC, 2012.

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 It should be noted that MCC issued an addendum to the Core Strategy in 2024[8]. This confirms that the remaining text of Policy EN16 has been superseded by PfE Policy JP-S5, as referenced in Section 2.7.

2.7.4 MCC has also produced the 'Air Quality & Planning Technical Guidance'[9] document which provides guidance on assessing the impact of proposed development on air quality.

2.7.5 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 NO_2 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 NO_2 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 proposals[10] 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 Addendum to Manchester Core Strategy, MCC, 2024.

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

10 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'[11].

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 PM_{10}.

3.2.4 The assessment steps are detailed below.

[11] 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 75,000m^3 • 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 110,000m^2 • 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 75,000m^3 • 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 12,000m^3 to 75,000m^3 • Potentially dusty construction material • Demolition activities 6m to 12m above ground level
	Earthworks	• Total site area 18,000m^2 to 110,000m^2 • 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 12,000m^3 to 75,000m^3 • 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 12,000m^3 • 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 18,000m^2 • 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 12,000m^3 • 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 PM_{10}. 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/m³	More than 10	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
	28 - 32µg/m³	More than 10	Medium	Low	Low	Low
		1 - 10	Low	Low	Low	Low
	24 - 28µg/m³	More than 10	Low	Low	Low	Low
		1 -10	Low	Low	Low	Low
	Less than 24µg/m³	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 guidance[12] 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

[12] 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:

- 2024 - 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 National Highways guidance[13] on the likely limits of pollutant dispersion from road sources. The criteria provided within DEFRA guidance[14] 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.

[13] LA 105: Air Quality, National Highways, 2024.

[14] 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'[15]. 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/ Concentration Target (%)			
	1	2 - 5	6 - 10	> 10
75% or less of AQO/Concentration Target	Negligible	Negligible	Slight	Moderate
76 - 94% of AQO/ Concentration Target	Negligible	Slight	Moderate	Moderate
95 - 102% of AQO/ Concentration Target	Slight	Moderate	Moderate	Substantial
103 - 109% of AQO/ Concentration Target	Moderate	Moderate	Substantial	Substantial
110% or more of AQO/ Concentration 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 document[16] 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.

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

16 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 guidance[17] 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 have the potential to expose future residents to elevated pollution levels as a result of road vehicle exhaust emissions in the vicinity of the site. In order to assess NO_2, PM_{10} and $PM_{2.5}$ concentrations across the development, detailed dispersion modelling was undertaken. Reference should be made to Appendix 1 for a full description of the assessment input data.

3.3.10 The dispersion modelling results were compared against the relevant AQOs and Concentration Target in order to determine the potential for exposure of future residents to elevated pollutant concentrations and identify appropriate mitigation, if necessary.

[17] 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 NO_2 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 located within the AQMA. As such, there is the potential for vehicles travelling to and from the site to increase pollution levels in this sensitive area, as well as the exposure of future residents to poor air quality. This has been considered throughout 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 AQMAs 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 NO_2 concentrations recorded in the vicinity of the development, as provided in GMCA's '2024

Air Quality Annual Status Report (ASR)'[18] and 'CAP NO_2 diffusion tube monitoring results 2011-2024'[19] are shown in Table 11. Exceedences of the relevant AQO are shown in **bold**.

Table 11 Monitoring Results - NO_2

Monitoring Site		Monitored NO_2 Concentration (µg/m³)		
		2022	2023	2024
CAP_MANC_123	A6 Stockport RD	35.9	- (a)	- (a)
CAP_MANC_124	A6 Stockport Rd	**41.9**	**40.9**	37.7
MA73NO	Hyde Road	31.5	29.5	28.0
MA79NO	Victoria Terrace	25.4	23.9	- (b)
MA86ANO	Pottery Lane	27.5	28.3	- (b)
MA87ANO	Hyde Road/Pottery Ln	28.0	25.3	- (b)
MA88ANO	Hyde Rd/Clowes St	39.2	36.1	31.9
MA89ANO	Wenlock Way	25.6	24.6	- (b)

Note: (a) Monitor decommissioned in 2023.
(b) Monitor decommissioned in 2024.

4.3.2 As shown in Table 11, annual mean NO_2 concentrations were above the AQO of 40µg/m³ at CAP_MANC_124 in 2022 and 2023. As this monitor is at a roadside position within an AQMA, elevated results would be expected. Concentrations were below the AQO of 40µg/m³ at all remaining survey sites in recent years. Reference should be made to Figure 2 for a map of the survey positions.

4.3.3 MCC does not undertake PM_{10} or $PM_{2.5}$ 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:

[18] 2024 Air Quality ASR, GMCA, 2025.

[19] 2024 Greater Manchester LAQM and CAP NO_2 Diffusion Tube Results 2011-2024, GMCA, 2025.

387500, 396500. Data for this location was downloaded from the DEFRA website[20] for the purpose of the assessment and is summarised in Table 12.

Table 12 Background Pollutant Concentration Predictions

Pollutant	Predicted Background Pollutant Concentration (µg/m³)		
	2024	2026	2028
NO_2	15.97	14.82	13.60
PM_{10}	13.33	13.22	13.11
$PM_{2.5}$	7.84	7.72	7.60

4.4.2 As shown in Table 12, predicted background concentrations are below the relevant AQOs 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 13.

Table 13 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	More than 100	0
Up to 50	More than 100	0
Up to 100	More than 100	-

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

Distance from Site Boundary (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
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 14.

Table 14 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 Co-op Academy Belle Vue, Progress Schools- Gorton, HideOut Youth Zone and residential properties.

Operational Phase Sensitive Receptors

4.5.6 Locations sensitive to potential operational phase road vehicle exhaust emission impacts were identified from a desk-top study and are summarised in Table 15.

Table 15 Operational Phase Road Vehicle Exhaust Emission Sensitive Receptor Locations

Receptor		NGR (m)	
		X	Y
R1	Residential - Queensland Road	387906.4	396291.9
R2	Residential - Mount Road	388034.7	396085.0

Receptor		NGR (m)	
		X	Y
R3	Residential - Mount Road	388041.8	396061.6
R4	Residential - Mount Road	388026.9	396033.4
R5	Residential - Hyde Road	388217.5	396160.0
R6	Residential - Kirkmanshulme Lane	387510.1	396064.3
R7	Residential - Kirkmanshulme Lane	386975.4	395950.4
R8	Residential - Pottery Lane	386965.7	395972.6
R9	Residential - Pottery Lane	386935.9	395931.6
R10	Residential - Hyde Road	387046.3	396568.4
R11	Residential - Hyde Road	387006.9	396580.3
R12	Progress Schools - Gorton	387846.0	396297.7
R13	Co-op Academy Belle Vue	387624.5	396318.9
R14	Rodney House School	386955.7	395920.1

4.5.7 Reference should be made to Figure 3 for a map of road vehicle exhaust emission sensitive receptor locations.

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, concrete batching, 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 Buzz Bingo on the site. The total building volume to be demolished is between 12,000m^3 and 75,000m^3. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from demolition is therefore **medium**.

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 18,000m^2. 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 greater than 75,000m^3. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from construction is therefore **large**.

Trackout

5.3.4 Based on the site area, it is anticipated that the unpaved road length may be greater than 100m during certain stages of construction. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from trackout is therefore **large.**

5.4 Step 2b - Define the Sensitivity of the Area

Dust Soiling

5.4.1 Table 13 shows that there are more than 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 14 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 to be **high**.

Human Health

5.4.3 As shown in Table 12, the annual mean PM_{10} background concentration at the site is 13.22µg/m^3. As shown in Table 6, where the background annual mean PM_{10} concentration is below 24µg/m^3 and there are more than 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 **medium**.

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 16.

Table 16 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	Medium	High	Medium
	Earthworks	Small	High	Low
	Construction	Large	High	High
	Trackout	Large	High	High
Human Health	Demolition	Medium	Medium	Medium
	Earthworks	Small	Medium	Low
	Construction	Large	Medium	Medium
	Trackout	Large	Medium	Medium

5.5.6 As indicated in Table 16, the potential risk of dust soiling is **high** from construction and trackout, **medium** from demolition and **low** from earthworks. The potential risk of human health impacts is **medium** from demolition, construction and trackout and **low** from earthworks.

5.5.7 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 guidance[21] 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 17. 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 17 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 • Hold regular liaison meetings with other high risk construction sites within 250m of the site boundary, to ensure plans are coordinated and dust and particulate matter emissions are minimised
Monitoring	• Undertake daily on-site and off-site inspection to monitor dust, record inspection results, and make the log available to the LA upon request • 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 • Impose and implement a maximum speed limit of 15mph on surfaced and 10mph on unsurfaced haul roads • Produce a Construction Logistics Plan to manage the sustainable delivery of goods • Implement a Travel Plan that supports and encourages sustainable travel
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
Earthworks	• Re-vegetate earthworks and exposed areas/ soil stockpiles to stabilise surfaces as soon as practicable • Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable • Only remove the cover in small areas during work and not all at once

Issue	Control Measure
Construction	• Avoid scabbling (roughening of concrete surfaces) if possible • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out • 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
Trackout	• Use water-assisted dust sweeper(s) 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 the site are covered to prevent escape of materials during transport • Implement a wheel washing system, if required

5.7 Step 4 - Determine Significance

5.7.1 Assuming the relevant mitigation measures outlined in Table 17 are implemented, the residual impacts from all dust generating activities is predicted to be **not significant**, in accordance with the IAQM guidance[22].

[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 has the potential to increase concentrations of NO_2, PM_{10} 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 Concentration Target exceedences.

6.1.2 The assessment considered the following scenarios:

- 2024 - Verification;
- 2028 - DM; and,
- 2028 - DS.

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

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 NO_2 concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. These are summarised in Table 18.

Table 18 Predicted Annual Mean NO_2 Concentrations

Receptor		Predicted Annual Mean NO_2 Concentration (µg/m³)		
		DM	DS	Change
R1	Residential - Queensland Road	22.48	22.52	0.04
R2	Residential - Mount Road	18.98	19.02	0.04
R3	Residential - Mount Road	19.20	19.25	0.05
R4	Residential - Mount Road	17.11	17.14	0.03
R5	Residential - Hyde Road	19.53	19.56	0.03
R6	Residential - Kirkmanshulme Lane	18.33	18.37	0.04
R7	Residential - Kirkmanshulme Lane	20.05	20.10	0.05
R8	Residential - Pottery Lane	19.36	19.40	0.04
R9	Residential - Pottery Lane	17.47	17.50	0.03
R10	Residential - Hyde Road	23.95	24.03	0.08
R11	Residential - Hyde Road	20.95	21.00	0.05
R12	Progress Schools - Gorton	27.07	27.13	0.06
R13	Co-op Academy Belle Vue	17.21	17.22	0.01
R14	Rodney House School	16.79	16.81	0.02

6.2.2 As indicated in Table 18, predicted annual mean NO_2 concentrations were below the AQO of 40µg/m³ at all sensitive receptors in both scenarios.

6.2.3 Reference should be made to Figures 4 and 5 for graphical representations of annual mean NO_2 concentrations across the assessment area for the DM and DS scenarios, respectively.

6.2.4 Annual mean PM_{10} concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. These are summarised in Table 19.

Table 19 Predicted Annual Mean PM_{10} Concentrations

Receptor		Predicted Annual Mean PM_{10} Concentration (µg/m³)		
		DM	DS	Change
R1	Residential - Queensland Road	16.24	16.26	0.02
R2	Residential - Mount Road	15.06	15.09	0.03
R3	Residential - Mount Road	15.21	15.24	0.03
R4	Residential - Mount Road	14.04	14.06	0.01
R5	Residential - Hyde Road	15.34	15.36	0.01
R6	Residential - Kirkmanshulme Lane	14.59	14.61	0.02
R7	Residential - Kirkmanshulme Lane	15.24	15.26	0.03
R8	Residential - Pottery Lane	14.94	14.96	0.02
R9	Residential - Pottery Lane	14.07	14.08	0.01
R10	Residential - Hyde Road	17.17	17.21	0.04
R11	Residential - Hyde Road	15.69	15.72	0.02
R12	Progress Schools - Gorton	18.53	18.57	0.03
R13	Co-op Academy Belle Vue	14.07	14.08	0.01
R14	Rodney House School	13.75	13.76	0.01

6.2.5 As indicated in Table 19, predicted annual mean PM_{10} concentrations were below the AQO of 40µg/m³ at all sensitive receptors in both scenarios.

6.2.6 Reference should be made to Figures 6 and 7 for geographical representations of annual mean PM_{10} concentrations across the assessment area for the DM and DS scenarios, respectively.

6.2.7 Annual mean $PM_{2.5}$ 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 $PM_{2.5}$ Concentrations

Receptor		Predicted Annual Mean $PM_{2.5}$ Concentration (µg/m³)		
		DM	DS	Change
R1	Residential - Queensland Road	9.32	9.33	0.01
R2	Residential - Mount Road	8.70	8.71	0.01
R3	Residential - Mount Road	8.77	8.79	0.02
R4	Residential - Mount Road	8.16	8.16	0.01
R5	Residential - Hyde Road	8.85	8.85	0.01
R6	Residential - Kirkmanshulme Lane	8.44	8.45	0.01
R7	Residential - Kirkmanshulme Lane	8.78	8.80	0.01
R8	Residential - Pottery Lane	8.63	8.64	0.01
R9	Residential - Pottery Lane	8.17	8.18	0.01
R10	Residential - Hyde Road	9.80	9.82	0.02
R11	Residential - Hyde Road	9.03	9.04	0.01
R12	Progress Schools - Gorton	10.53	10.55	0.02
R13	Co-op Academy Belle Vue	8.17	8.18	0.00
R14	Rodney House School	8.00	8.01	0.00

6.2.8 As indicated in Table 20, predicted annual mean $PM_{2.5}$ concentrations were above the Concentration Target of 10µg/m³ at one location in both the DM and DS scenarios. It should be noted that there were no new exceedences in the DS scenario when compared to the DM.

6.2.9 Reference should be made to Figures 8 and 9 for geographical representations of annual mean $PM_{2.5}$ concentrations across the assessment area for the DM and DS scenarios, respectively.

Predicted Impacts

6.2.10 Predicted impacts on annual mean NO_2 concentrations at the sensitive receptor locations are summarised in Table 21.

Table 21 Predicted Impacts - NO_2

Receptor		Predicted Annual Mean NO_2 Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R1	Residential - Queensland Road	Below 75% of AQO	0	Negligible
R2	Residential - Mount Road	Below 75% of AQO	0	Negligible
R3	Residential - Mount Road	Below 75% of AQO	0	Negligible
R4	Residential - Mount Road	Below 75% of AQO	0	Negligible
R5	Residential - Hyde Road	Below 75% of AQO	0	Negligible
R6	Residential - Kirkmanshulme Lane	Below 75% of AQO	0	Negligible
R7	Residential - Kirkmanshulme Lane	Below 75% of AQO	0	Negligible
R8	Residential - Pottery Lane	Below 75% of AQO	0	Negligible
R9	Residential - Pottery Lane	Below 75% of AQO	0	Negligible
R10	Residential - Hyde Road	Below 75% of AQO	0	Negligible
R11	Residential - Hyde Road	Below 75% of AQO	0	Negligible
R12	Progress Schools - Gorton	Below 75% of AQO	0	Negligible
R13	Co-op Academy Belle Vue	Below 75% of AQO	0	Negligible
R14	Rodney House School	Below 75% of AQO	0	Negligible

6.2.11 As indicated in Table 21, impacts on annual mean NO_2 concentrations as a result of the proposed development were predicted to be **negligible** at all receptor locations.

6.2.12 Predicted impacts on annual mean PM_{10} concentrations at the sensitive receptor locations are summarised in Table 22.

Table 22 Predicted Impacts - PM_{10}

Receptor		Predicted Annual Mean PM_{10} Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R1	Residential - Queensland Road	Below 75% of AQO	0	Negligible

Receptor		Predicted Annual Mean PM_{10} Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R2	Residential - Mount Road	Below 75% of AQO	0	Negligible
R3	Residential - Mount Road	Below 75% of AQO	0	Negligible
R4	Residential - Mount Road	Below 75% of AQO	0	Negligible
R5	Residential - Hyde Road	Below 75% of AQO	0	Negligible
R6	Residential - Kirkmanshulme Lane	Below 75% of AQO	0	Negligible
R7	Residential - Kirkmanshulme Lane	Below 75% of AQO	0	Negligible
R8	Residential - Pottery Lane	Below 75% of AQO	0	Negligible
R9	Residential - Pottery Lane	Below 75% of AQO	0	Negligible
R10	Residential - Hyde Road	Below 75% of AQO	0	Negligible
R11	Residential - Hyde Road	Below 75% of AQO	0	Negligible
R12	Progress Schools - Gorton	Below 75% of AQO	0	Negligible
R13	Co-op Academy Belle Vue	Below 75% of AQO	0	Negligible
R14	Rodney House School	Below 75% of AQO	0	Negligible

6.2.13 As indicated in Table 22, impacts on annual mean PM_{10} concentrations as a result of the proposed development were predicted to be **negligible** at all receptor locations.

6.2.14 Predicted impacts on annual mean $PM_{2.5}$ concentrations at the sensitive receptor locations are summarised in Table 23.

Table 23 Predicted Impacts - $PM_{2.5}$

Receptor		Predicted Annual Mean $PM_{2.5}$ Concentration	Predicted Conc. Change as Proportion of Concentration Target (%)	Impact Significance
R1	Residential - Queensland Road	76 - 94% of Concentration Target	0	Negligible

Receptor		Predicted Annual Mean $PM_{2.5}$ Concentration	Predicted Conc. Change as Proportion of Concentration Target (%)	Impact Significance
R2	Residential - Mount Road	76 - 94% of Concentration Target	0	Negligible
R3	Residential - Mount Road	76 - 94% of Concentration Target	0	Negligible
R4	Residential - Mount Road	76 - 94% of Concentration Target	0	Negligible
R5	Residential - Hyde Road	76 - 94% of Concentration Target	0	Negligible
R6	Residential - Kirkmanshulme Lane	76 - 94% of Concentration Target	0	Negligible
R7	Residential - Kirkmanshulme Lane	76 - 94% of Concentration Target	0	Negligible
R8	Residential - Pottery Lane	76 - 94% of Concentration Target	0	Negligible
R9	Residential - Pottery Lane	76 - 94% of Concentration Target	0	Negligible
R10	Residential - Hyde Road	95 - 102% of Concentration Target	0	Negligible
R11	Residential - Hyde Road	76 - 94% of Concentration Target	0	Negligible
R12	Progress Schools - Gorton	103 - 109% of Concentration Target	0	Negligible
R13	Co-op Academy Belle Vue	76 - 94% of Concentration Target	0	Negligible
R14	Rodney House School	76 - 94% of Concentration Target	0	Negligible

6.2.15 As indicated in Table 23, 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 4 to 9 for graphical representations of annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations.

6.3.2 As shown in Figure 5, annual mean NO_2 concentrations were predicted to be below the AQO of 40µg/m³ at the building façades. The maximum level was 23.07µg/m³.

6.3.3 As shown in Figure 7, annual mean PM_{10} concentrations were predicted to be below the AQO of 40µg/m³ at the building façades. The maximum level was 16.69µg/m³.

6.3.4 As shown in Figure 9, annual mean $PM_{2.5}$ concentrations were predicted to be below the Concentration Target of 10µg/m³ at the building façades. The maximum level was 9.59µg/m³.

6.3.5 Based on the assessment results, future residents are not predicted to be exposed to pollutant concentrations above the AQOs and Concentration Target. As such, the site is considered suitable for the proposed use from an air quality perspective.

6.4 Overall Impact Significance

6.4.1 The overall impact of operational phase road traffic emission 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 24.

Table 24 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 NO_2 and PM_{10} concentrations were below the relevant AQOs at all locations in the DM and DS scenarios Predicted annual mean $PM_{2.5}$ concentrations were above the Concentration Target at one sensitive receptor and below at 13 locations in the DM and DS scenarios. There were no new exceedences in the DS when compared to the DM scenario The predicted concentrations are considered unlikely to change significantly in the absence of the proposals given the established nature of the area

Guidance	Comment
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 Concentration 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 predications. This approach provides the most realistic predication 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

6.4.2 The IAQM guidance[23] 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.

6.5 Interim Planning Guidance for $PM_{2.5}$

6.5.1 Interim Planning Guidance[24] 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 25, along with the development response.

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

24 https://uk-air.defra.gov.uk/pm25targets/planning.

Table 25 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 proposals are located in a predominantly residential area. Co-op Academy Belle Vue, Progress Schools - Gorton and HideOut Youth Zone are in the vicinity of the site. However, as outlined in Section 6.2, air quality impacts associated with the development are predicted to be **not significant** at the sensitive receptors The site is adjacent to the A57 Hyde Road. However, as shown in Section 6.3, predicted $PM_{2.5}$ concentrations were below the Concentration Target of 10µg/m^3 at the building façades As outlined in Table 17, 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	In order to reduce emissions of $PM_{2.5}$ with associated impacts at nearby receptors, the following measures have been included: • Provision of Electric Vehicle (EV) charging; • Provision of secure cycle storage to encourage the use of sustainable transport modes • Sustainable travel measures such as cycle and walking routes. Local bus services are also easy to access from the site, promoting sustainable transport • Implementation of a Travel Plan to further encourage 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

6.5.2 Based on the responses provided in Table 25 and the results of the assessment, as outlined in Sections 5.0, 6.2 and 6.3, it is considered that the development has identified key sources of air pollution and taken appropriate action to minimise emissions of $PM_{2.5}$.

7.0 CONCLUSION

7.1.1 Redmore Environmental Limited was commissioned by Kellen Homes Limited and Jigsaw Homes North to undertake an Air Quality Assessment in support of a planning application for a residential development on land off Hyde Road, Manchester.

7.1.2 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.

7.1.3 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**.

7.1.4 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.

7.1.5 Review of the dispersion modelling results indicated that impacts on annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations as a result of traffic generated by the development were predicted to be **negligible** at all receptors.

7.1.6 The results of the dispersion modelling assessment also indicated that predicted annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations were below the relevant AQOs and Concentration Target at the building façades. As such, the site is considered suitable for the proposed use from an air quality perspective.

7.1.7 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.

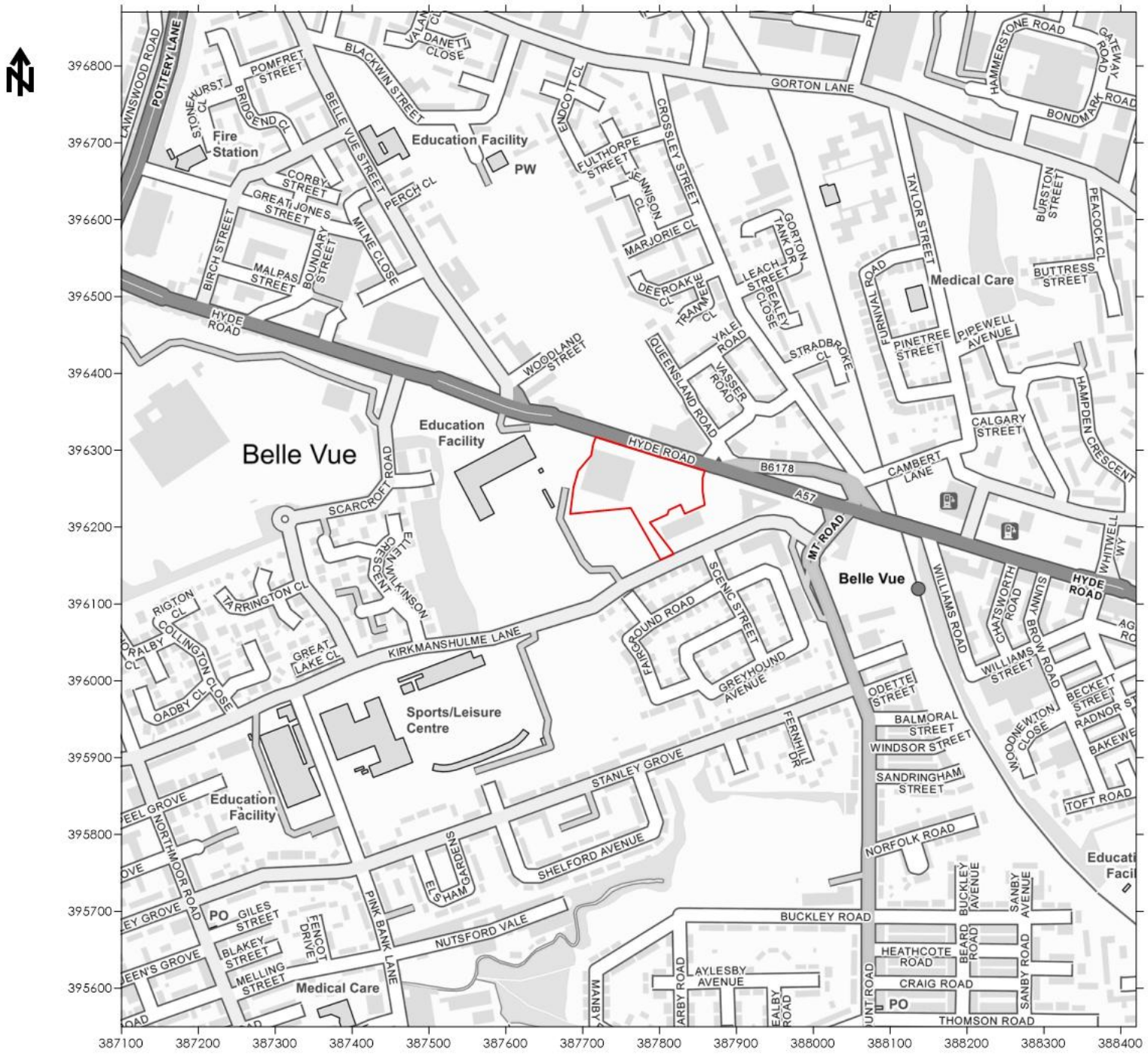
7.1.8 Based on the assessment results, air quality factors are not considered a constraint to the development.

8.0 ABBREVIATIONS

AADT	Annual Average Daily Traffic
ADM	Atmospheric Dispersion Modelling
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
DPD	Development Plan Document
DS	Do-Something
EB	Eastbound
EFT	Emission 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 Practice Guidance
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
PfEP	Places for Everyone Plan
SB	Southbound
SP	Slow Phase

TfGM	Transport for Greater Manchester
WB	Westbound
z_0	Roughness length

Figures



Legend

Site Boundary

Title
Figure 1 - Site Location Plan

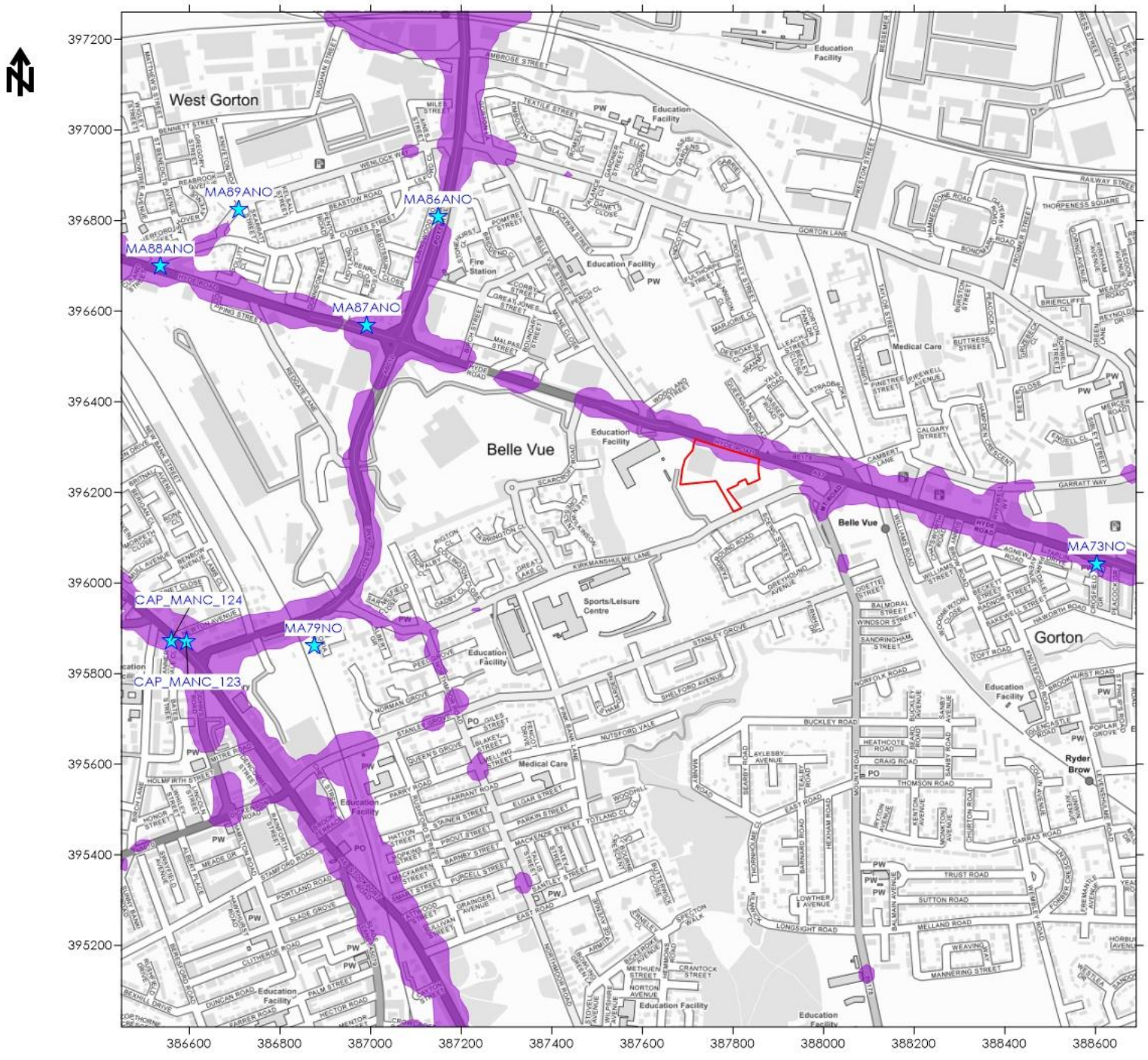
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Hyde Road, Manchester

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Legend

Site Boundary

Monitor

AQMA

Title
Figure 2 - Monitoring Locations and AQMA Extents

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Site Boundary

Receptor

AQMA

Title
Figure 3 - Road Vehicle Exhaust Emission Sensitive Receptor Locations and AQMA Extents

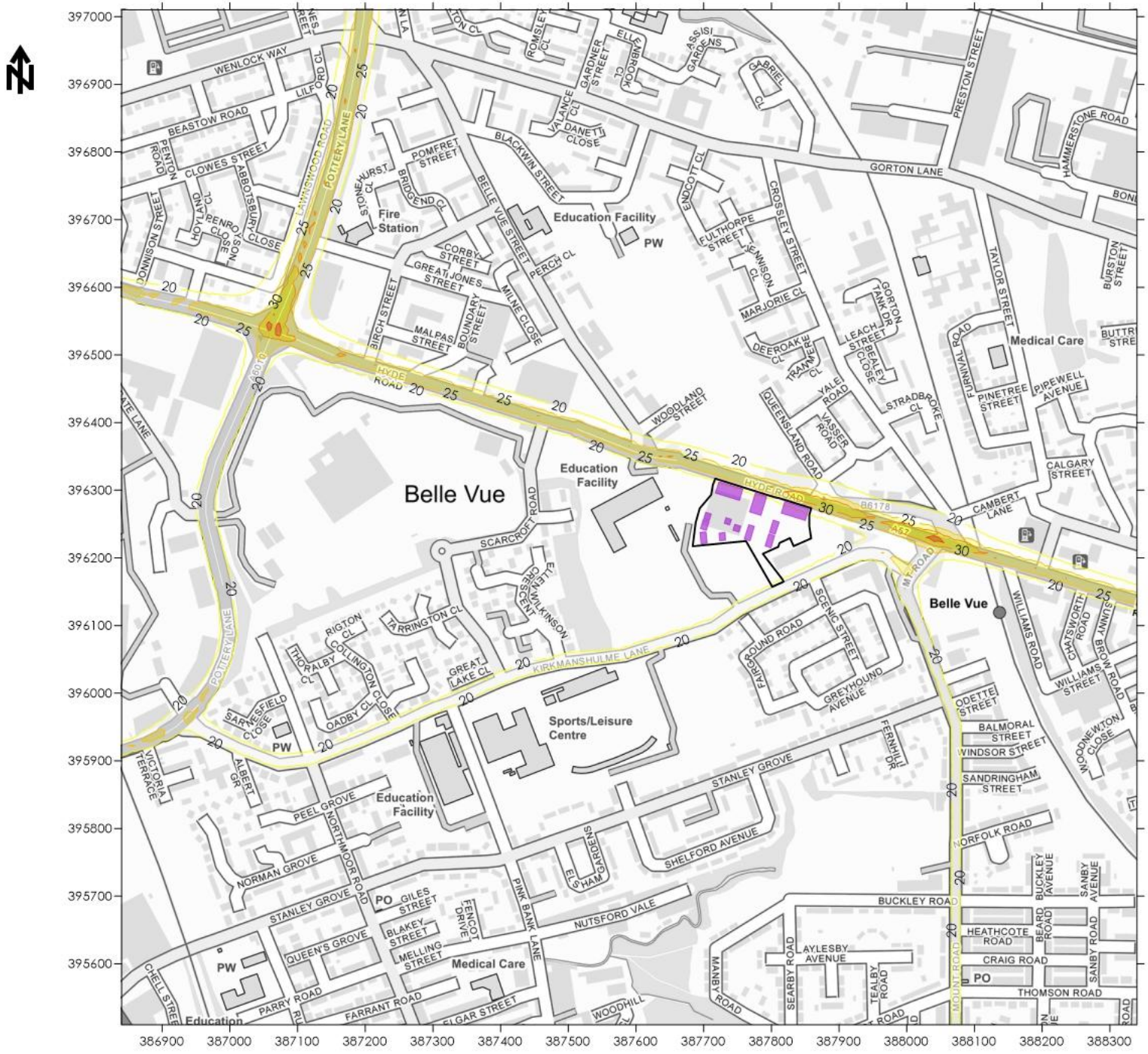
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Legend

Site Boundary

Annual Mean NO_2 Concentration ($\mu g/m^3$)

40
35
30
25
20

Building Facade

Title

Figure 4 - Predicted Annual Mean NO_2 Concentrations ($\mu g/m^3$) Do-Minimum

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Project Reference

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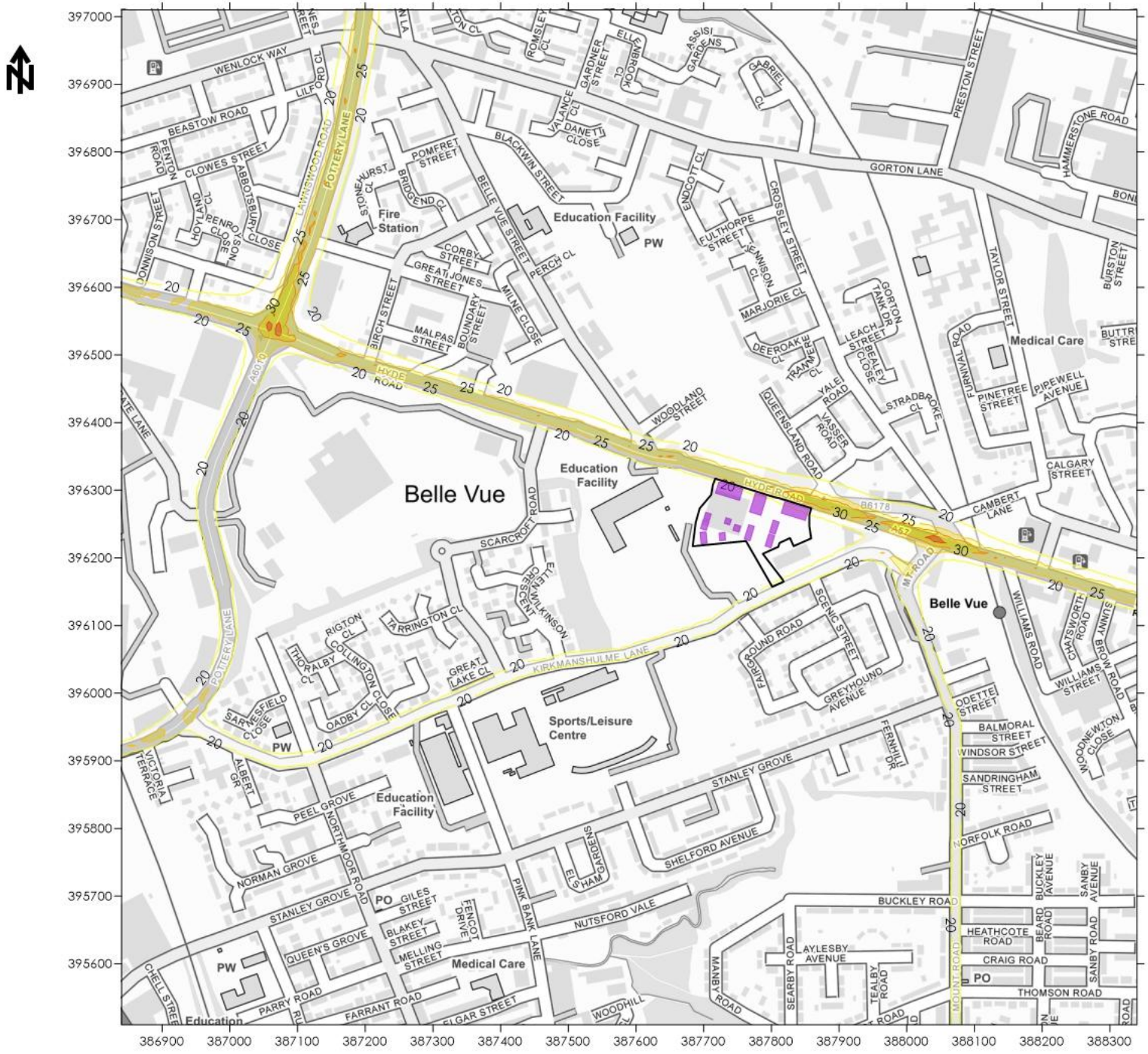
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Legend

Site Boundary

Annual Mean NO_2 Concentration ($\mu g/m^3$)

40
35
30
25
20

Building Facade

Title

Figure 5 - Predicted Annual Mean NO_2 Concentrations ($\mu g/m^3$) Do-Something

Project

Air Quality Assessment
Hyde Road, Manchester

Project Reference

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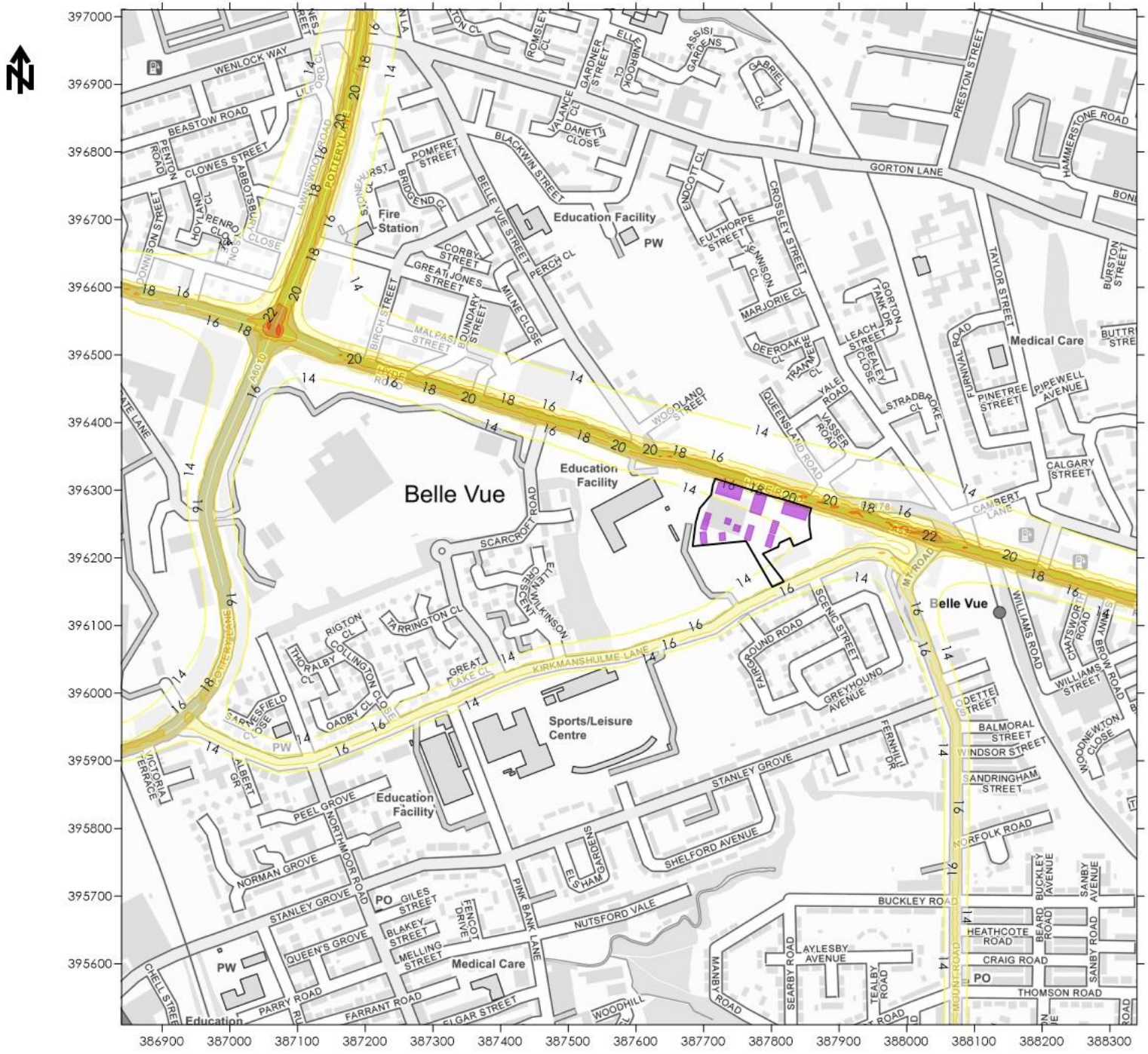
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Legend

Site Boundary

Annual Mean PM_{10} Concentration ($\mu g/m^3$)

26
24
22
20
18
16
14

Building Facade

Title

Figure 6 - Predicted Annual Mean PM_{10} Concentrations ($\mu g/m^3$) Do-Minimum

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Site Boundary

Annual Mean PM_{10} Concentration ($\mu g/m^3$)

26
24
22
20
18
16
14

Building Facade

Title

Figure 7 - Predicted Annual Mean PM_{10} Concentrations ($\mu g/m^3$) Do-Something

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Air Quality Assessment
Hyde Road, Manchester

Project Reference

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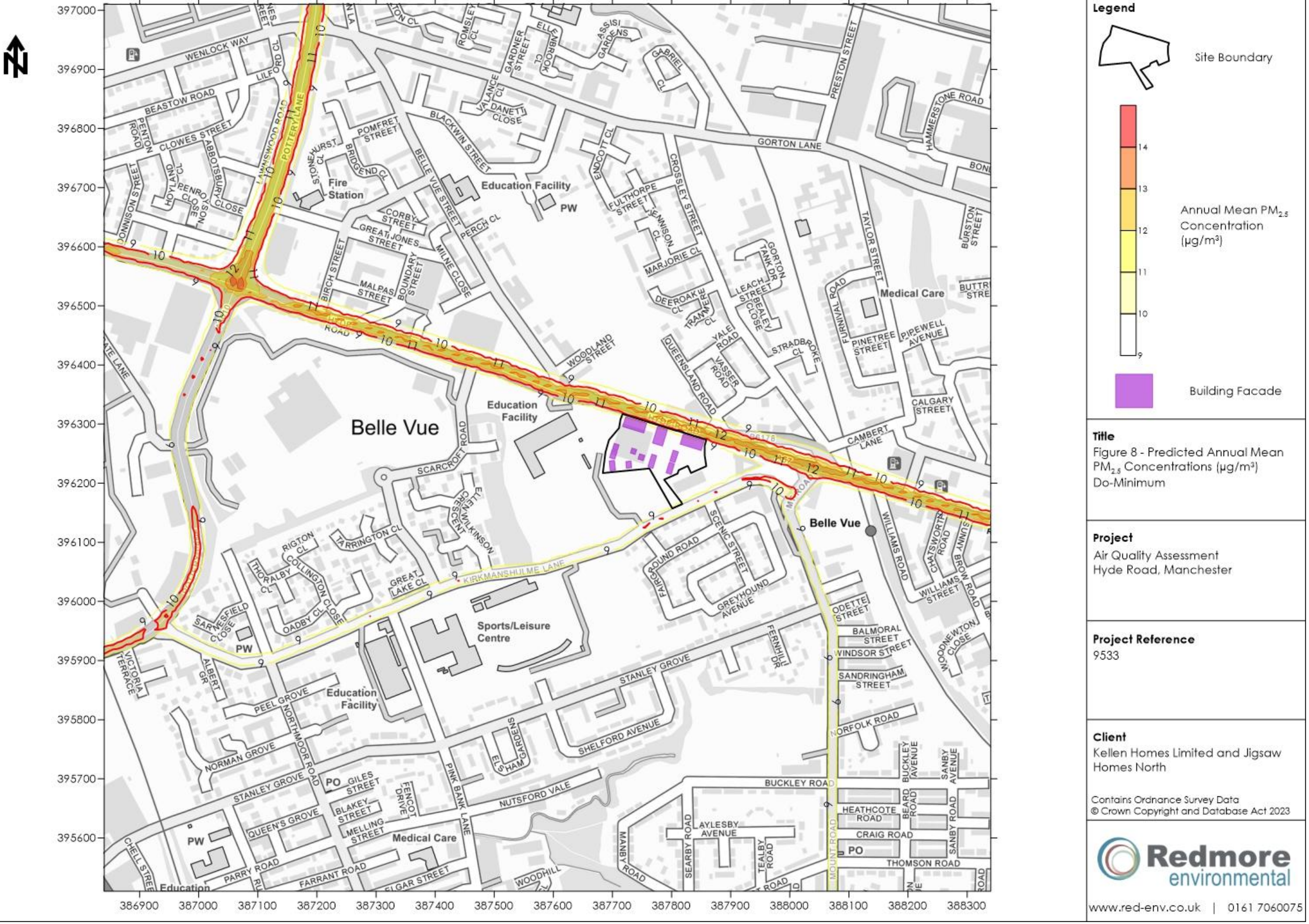
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Title

Figure 8 - Predicted Annual Mean $PM_{2.5}$ Concentrations (µg/m³) Do-Minimum

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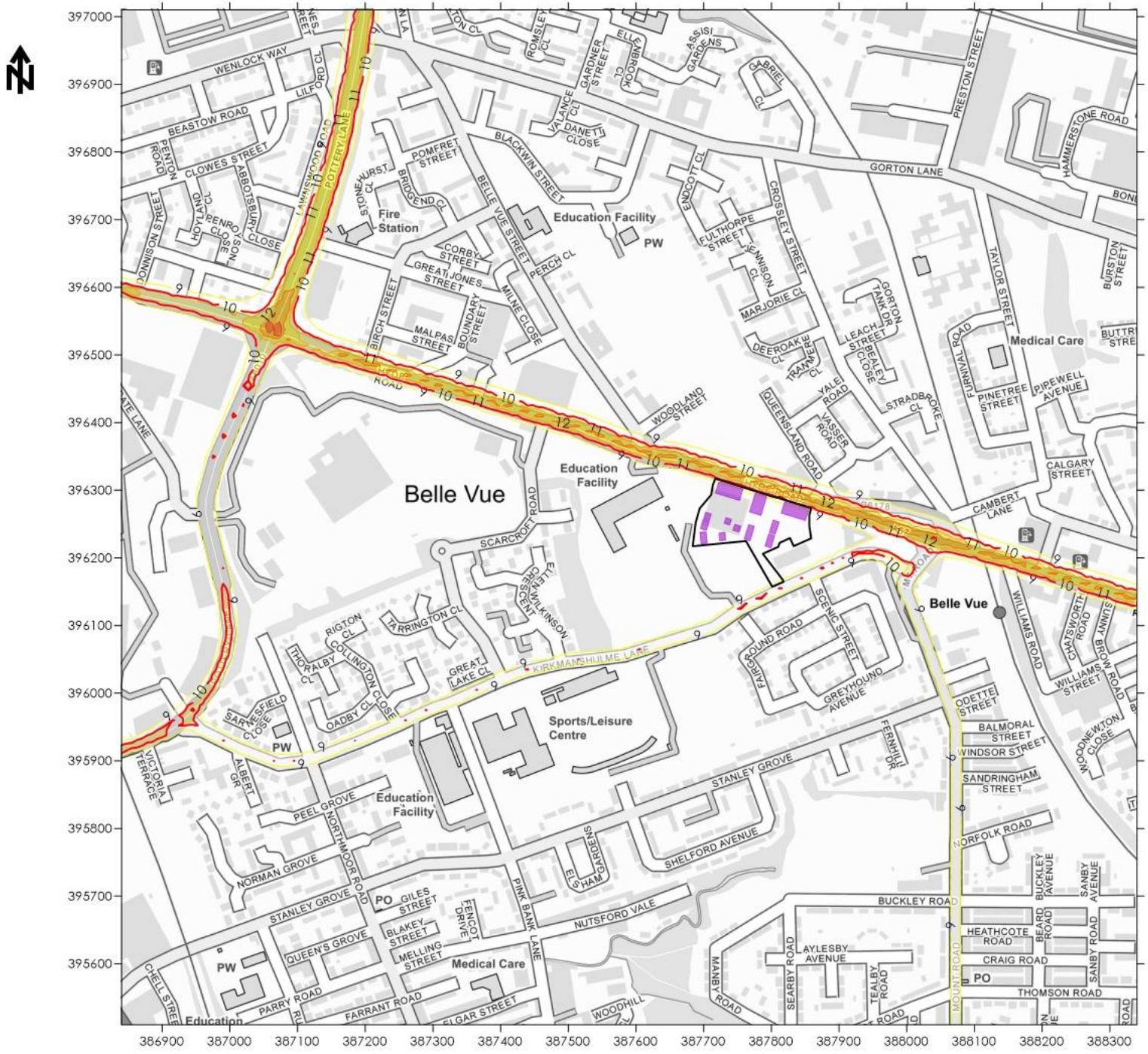
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Legend

Site Boundary

Annual Mean $PM_{2.5}$ Concentration ($\mu g/m^3$)

14
13
12
11
10
9

Building Facade

Title

Figure 9 - Predicted Annual Mean $PM_{2.5}$ Concentrations ($\mu g/m^3$) Do-Something

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Air Quality Assessment
Hyde Road, Manchester

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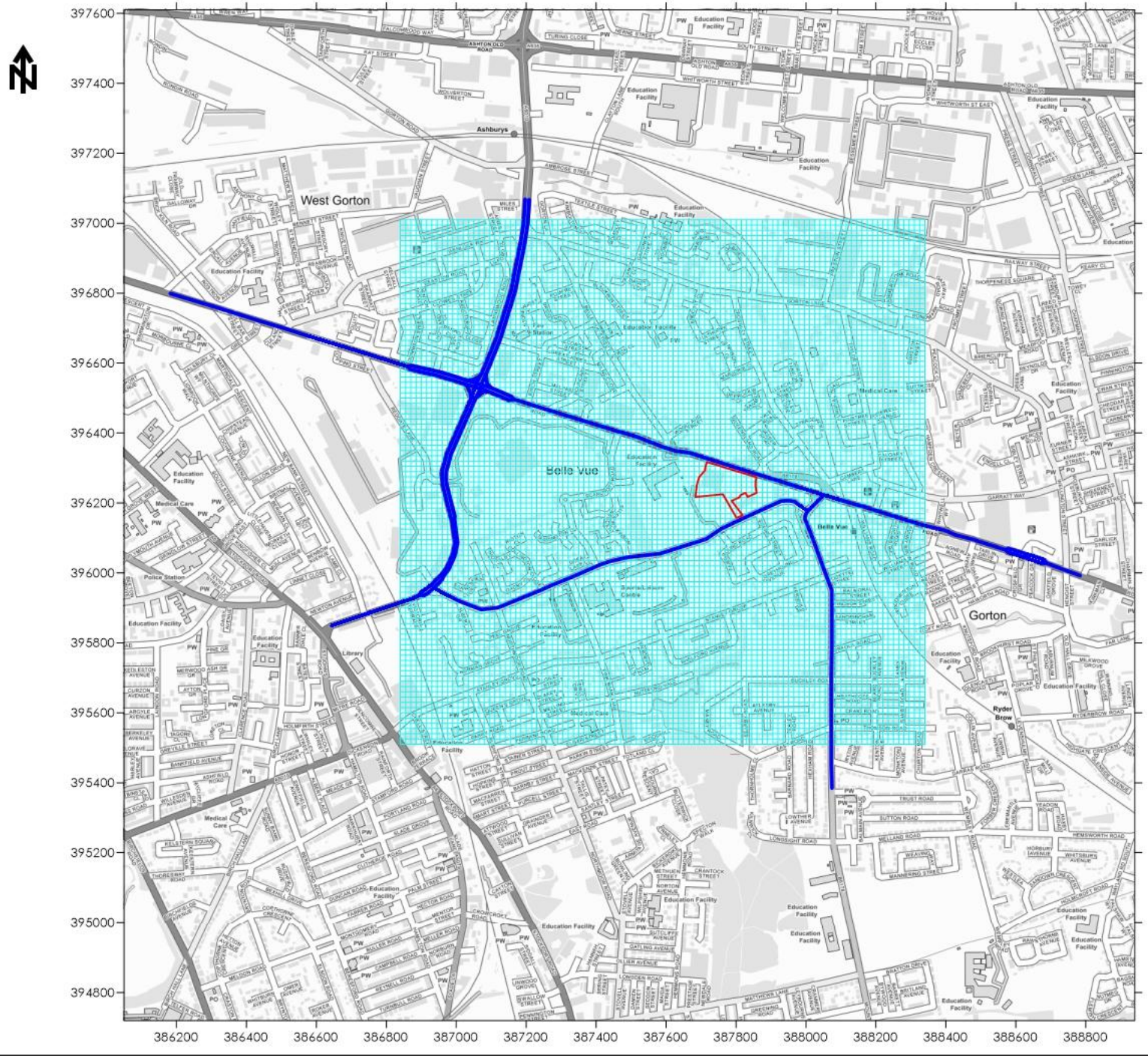
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Legend

Site Boundary

Road Link

Output Grid

Title
Figure 10 - ADMS-Roads Inputs

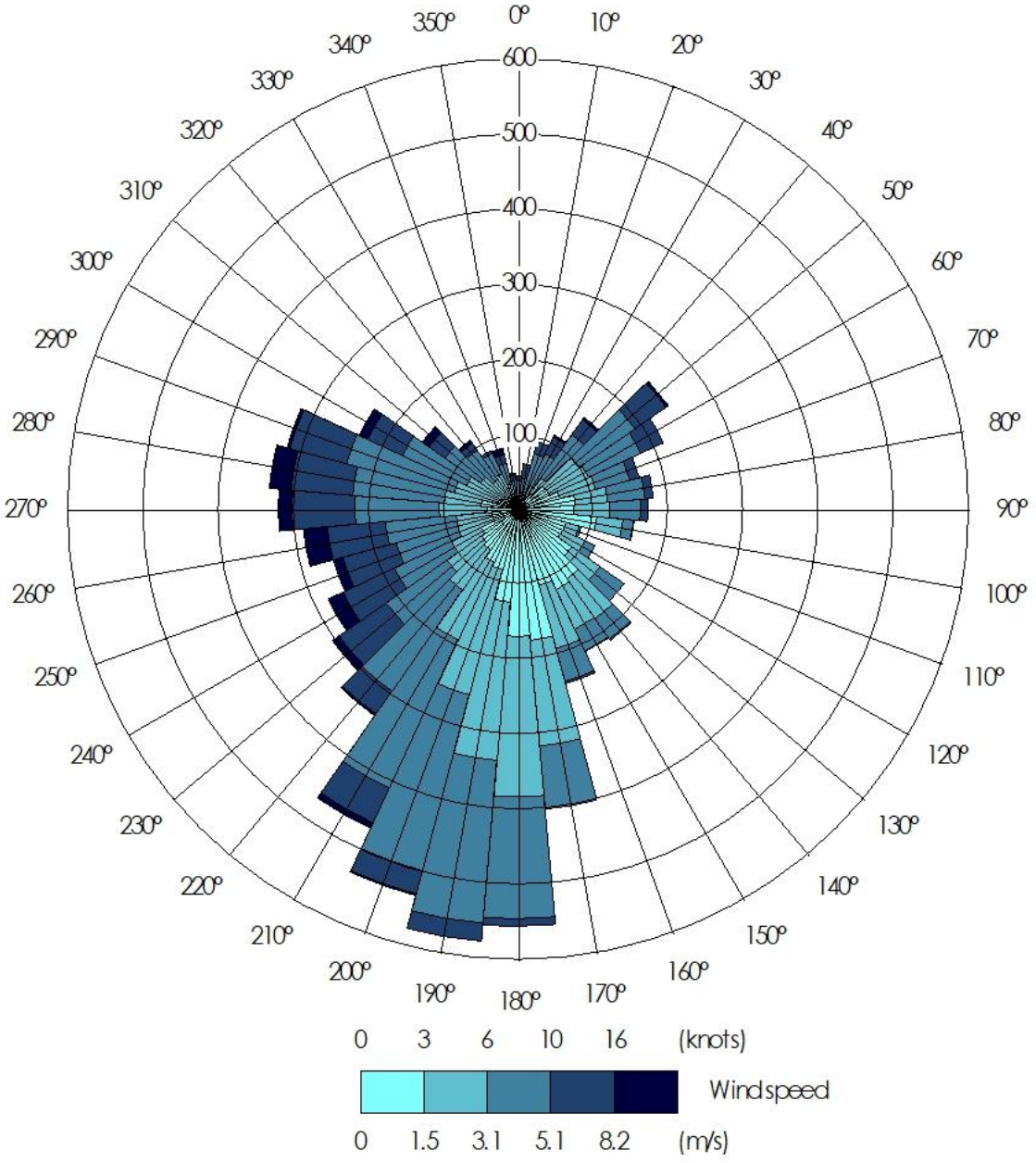
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Title
Figure 11 - Wind Rose of 2024 Manchester Airport Metrological Data

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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 NO_2, PM_{10} and $PM_{2.5}$ concentrations at sensitive locations, detailed dispersion modelling was undertaken in accordance with the following methodology.

Modelling was undertaken for 2024 to allow verification against recent monitoring results and 2028 to represent likely conditions in the opening year of the scheme.

Dispersion Model

Dispersion modelling was undertaken using the ADMS-Roads dispersion model (version 5.1.0.2). 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.

The relevant inputs are detailed in the following Sections.

Assessment Area

The assessment area was defined based on the location of the development and roads likely to impact pollutant levels across the site. Ambient concentrations were predicted over NGR:

386840, 395510 to 388340, 397010. One Cartesian grid was used within the model to produce data suitable for contour plotting using the Surfer software package.

It should be noted that although the grid only covered the proposed site, road links were extended in order to ensure the impact of all relevant vehicle emissions in the vicinity of the development were considered.

Reference should be made to Figure 10 for a graphical representation of the assessment grid extents.

Traffic Flow Data

Baseline traffic data for use in the assessment was taken from the Department for Transport (DfT)[25]. 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 guidance[26] 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.

The baseline traffic data was converted to the site opening year 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.

A summary of the traffic data used in the assessment is provided in Table A1.1.

Table A1.1 Traffic Data

Link		24-hour AADT flow			HDV Prop. of Fleet (%)
		2024 Verif.	2028 DM	2028 DS	
L1	Hyde Road, west of Clowes Street	20,629	21,467	21,617	3.89
L2	Hyde Road Eastbound (EB), west of Pottery Lane	10,439	10,863	10,938	3.90

25 https://roadtraffic.dft.gov.uk/#6/55.254/-11.107/basemap-regions-countpoints.

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

Link		24-hour AADT flow			HDV Prop. of Fleet (%)
		2024 Verif.	2028 DM	2028 DS	
L3	Hyde Road EB, approach to Lottery Lane NB, Slow Phase (SP)	2,610	2,716	2,791	3.90
L4	Hyde Road EB, east of Pottery Lane	13,458	8,147	8,222	3.90
L5	Hyde Road Westbound (WB), west of Pottery Lane	10,189	10,603	10,678	3.88
L6	Hyde Road WB, east of Pottery Lane, SP	14,023	14,592	14,667	4.88
L7	Hyde Road, east of Pottery Lane	27,482	28,598	28,748	5.11
L8	Hyde Road, junction with Glencastle Road, SP	27,482	28,598	28,748	5.11
L9	Hyde Road, between Glencastle Road and Mount Road	27,482	28,598	28,748	5.11
L10	Hyde Road, junction with Mount Road, SP	27,482	28,598	28,748	5.11
L11	Hyde Road, east of Mount Road	27,482	28,598	28,748	5.11
L12	Hyde Road EB, junction with Tesco petrol station, SP	13,458	14,004	14,079	5.35
L13	Hyde Road EB, junction with Tesco petrol Station	13,458	14,004	14,079	5.35
L14	Hyde Road WB, junction with Tesco petrol Station	14,023	14,592	14,667	4.88
L15	Hyde Road WB, junction with Tesco petrol Station, SP	14,023	14,592	14,667	4.88
L16	Hyde Road, east of Tesco Petrol Station	27,482	28,598	28,748	5.11
L17	Pottery Lane Northbound (NB), north of Hyde Road	15,311	15,933	16,008	2.42
L18	Pottery Lane Southbound (SB), north of Hyde Road	15,947	16,594	16,669	2.43
L19	Pottery Lane SB, north of Hyde Road, SP	15,947	16,594	16,669	2.43
L20	Pottery Lane NB, south of Hyde Road, SP	8,544	8,891	8,966	1.62
L21	Pottery Lane NB, south of Hyde Road	8,544	8,891	8,966	1.62
L22	Pottery Lane NB, junction with Kirkmanshulme Lane, SP	8,544	8,891	8,966	1.62
L23	Pottery Lane, south of Kirkmanshulme Lane	17,271	17,972	18,122	1.79

Link		24-hour AADT flow			HDV Prop. of Fleet (%)
		2024 Verif.	2028 DM	2028 DS	
L24	Hyde Road EB, west of Pottery Lane, SP	10,439	10,863	10,938	3.90
L25	Hyde Road, west of Tesco Petrol Station, SP	27,482	28,598	28,748	5.11
L26	Hyde Road, east of Tesco Petrol Station, SP	27,482	28,598	28,748	5.11
L27	Pottery Lane, south of Kirkmanshulme Lane, SP	17,271	17,972	18,122	1.79
L28	Pottery Lane SB, south of Kirkmanshulme Lane	8,727	9,081	9,156	1.97
L29	Pottery Lane SB, north of Kirkmanshulme Lane, SP	8,727	9,081	9,156	1.97
L30	Pottery Lane SB, north of Kirkmanshulme Lane	8,727	9,081	9,156	1.97
L31	Kirkmanshulme Lane, east of Pottery Lane, SP	12,565	13,075	13,225	2.03
L32	Kirkmanshulme Lane, west of site access	12,565	13,075	13,225	2.03
L33	Kirkmanshulme Lane, east of site access	12,565	13,075	13,225	2.03
L34	Kirkmanshulme Lane, west of Mount Road, SP	12,565	13,075	13,225	2.03
L35	Mount Road, SP	11,055	11,504	11,654	2.65
L36	Mount Road	11,055	11,504	11,654	2.65
L37	Pottery Lane SB, approach to Hyde Road EB, SP	3,987	4,149	4,299	2.43
L38	Pottery Lane NB, approach to Hyde Road WB, SP	2,136	2,223	2,373	1.62
L39	Hyde Road WB, approach to Pottery Lane SB, SP	3,506	3,648	3,798	4.88
L40	Hyde Road, junction with Clowes Street, SP	20,629	21,467	21,617	3.89
L41	Hyde Road, west of Pottery Lane	20,629	21,467	21,617	3.89

Reference should be made to Figure 10 for a graphical representation of the road link locations.

Road parameters for input into the model were based on the following:

- Road widths were estimated from aerial photography and UK highway design standards;
- Vehicle speeds were estimated as an average for the relevant road link over the course of a 24-hour period;

- Vehicle speeds were determined following review of speed limits within the study extents, as well as congestion data available from GoogleMaps;
- Vehicle speeds specific to slow phases were determined using the methodology outlined in the DEFRA guidance[27];
- Necessary adjustments to slow phase vehicle speeds were based upon congestion data available from GoogleMaps; and,
- The length for slow phases were derived using the approaching distance of 25m outlined in the DEFRA guidance[28], and adjusted accordingly based on aerial photography and congestion data available from GoogleMaps.

A summary of the link parameters is provided in Table A1.2.

Table A1.2 Road Parameters

Link		Road Width (m)	Average Vehicle Speed (km/h)
L1	Hyde Road, west of Clowes Street	7.9	45
L2	Hyde Road EB, west of Pottery Lane	7.0	45
L3	Hyde Road EB, approach to Lottery Lane NB, SP	5.0	20
L4	Hyde Road EB, east of Pottery Lane	7.2	30
L5	Hyde Road WB, west of Pottery Lane	7.5	30
L6	Hyde Road WB, east of Pottery Lane, SP	7.5	20
L7	Hyde Road, east of Pottery Lane	10.9	45
L8	Hyde Road, junction with Glencastle Road, SP	11.3	20
L9	Hyde Road, between Glencastle Road and Mount Road	12.3	45
L10	Hyde Road, junction with Mount Road, SP	12.6	20
L11	Hyde Road, east of Mount Road	10.9	45
L12	Hyde Road EB, junction with Tesco petrol station, SP	6.8	20
L13	Hyde Road EB, junction with Tesco petrol Station	6.8	30
L14	Hyde Road WB, junction with Tesco petrol Station	7.6	30

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

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

Link		Road Width (m)	Average Vehicle Speed (km/h)
L15	Hyde Road WB, junction with Tesco petrol Station, SP	7.6	20
L16	Hyde Road, east of Tesco Petrol Station	10.8	20
L17	Pottery Lane NB, north of Hyde Road	9.5	20
L18	Pottery Lane SB, north of Hyde Road	7.8	45
L19	Pottery Lane SB, north of Hyde Road, SP	8.3	20
L20	Pottery Lane NB, south of Hyde Road, SP	12.4	20
L21	Pottery Lane NB, south of Hyde Road	8.1	30
L22	Pottery Lane NB, junction with Kirkmanshulme Lane, SP	8.1	20
L23	Pottery Lane, south of Kirkmanshulme Lane	6.7	45
L24	Hyde Road EB, west of Pottery Lane, SP	7.2	20
L25	Hyde Road, west of Tesco Petrol Station, SP	16.1	20
L26	Hyde Road, east of Tesco Petrol Station, SP	11.2	20
L27	Pottery Lane, south of Kirkmanshulme Lane, SP	11.6	20
L28	Pottery Lane SB, south of Kirkmanshulme Lane	7.1	30
L29	Pottery Lane SB, north of Kirkmanshulme Lane, SP	7.1	20
L30	Pottery Lane SB, north of Kirkmanshulme Lane	7.4	45
L31	Kirkmanshulme Lane, east of Pottery Lane, SP	12.0	20
L32	Kirkmanshulme Lane, west of site access	8.5	30
L33	Kirkmanshulme Lane, east of site access	10.0	30
L34	Kirkmanshulme Lane, west of Mount Road, SP	9.6	20
L35	Mount Road, SP	22.6	20
L36	Mount Road	10.0	45
L37	Pottery Lane SB, approach to Hyde Road EB, SP	5.1	20
L38	Pottery Lane NB, approach to Hyde Road WB, SP	5.0	20
L39	Hyde Road WB, approach to Pottery Lane SB, SP	4.8	20
L40	Hyde Road, junction with Clowes Street, SP	7.9	20
L41	Hyde Road, west of Pottery Lane	7.9	45

Emission Factors

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

Meteorological Data

Meteorological data used in the assessment was taken from Manchester Airport meteorological station over the period 1st January 2024 to 31st December 2024 (inclusive). Manchester Airport is located at NGR: 381792, 384116, which is approximately 12.9km south-west of the development. 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 11 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 0.5m 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 'parkland, open suburbia'.

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 meteorological site and the modelling extents. 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 NO_2, PM_{10} and $PM_{2.5}$ background concentrations for use in this assessment were obtained from the DEFRA mapping study for the grid square containing the MA88ANO monitor, NGR: 386500, 396500. These are shown in Table A1.3.

Table A1.3 Background Pollution Concentrations - Modelling Extents

Pollutant	Predicted Background Pollutant Concentrations (µg/m^3)
NO_2	14.88
PM_{10}	12.86
$PM_{2.5}$	7.53

The annual mean NO_2 concentration was chosen to represent concentrations throughout the dispersion modelling extents without the contribution from road vehicles as it was higher than the DEFRA background for the grid square containing the site, as shown in Table 12. Background PM_{10} and $PM_{2.5}$ values were chosen to provide continuity throughout the assessment.

NO_x to NO_2 Conversion

Predicted annual mean NO_x concentrations were converted to NO_2 concentrations using the spreadsheet (version 9.1) provided by DEFRA, which is the method detailed within DEFRA guidance[29].

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.

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

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 2024 using traffic data, meteorological data and monitoring results from this year.

Monitoring of NO_2 concentrations was undertaken at two locations within the vicinity of the roads included in the dispersion model during 2024. The results were obtained and the road contributions to total NO_x concentrations calculated following the methodology contained within DEFRA guidance[30]. The monitored annual mean NO_2 concentrations and calculated road NO_x concentrations are summarised in Table A1.4.

Table A1.4 NO_x Verification - Monitoring Results

Monitoring Location		Monitored NO_2 Concentration (µg/m³)	Calculated Road NO_x Concentration (µg/m³)
MA73NO	Hyde Road	28.00	30.60
MA88ANO	Hyde Rd/Clowes St	31.90	41.15

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 A1.5.

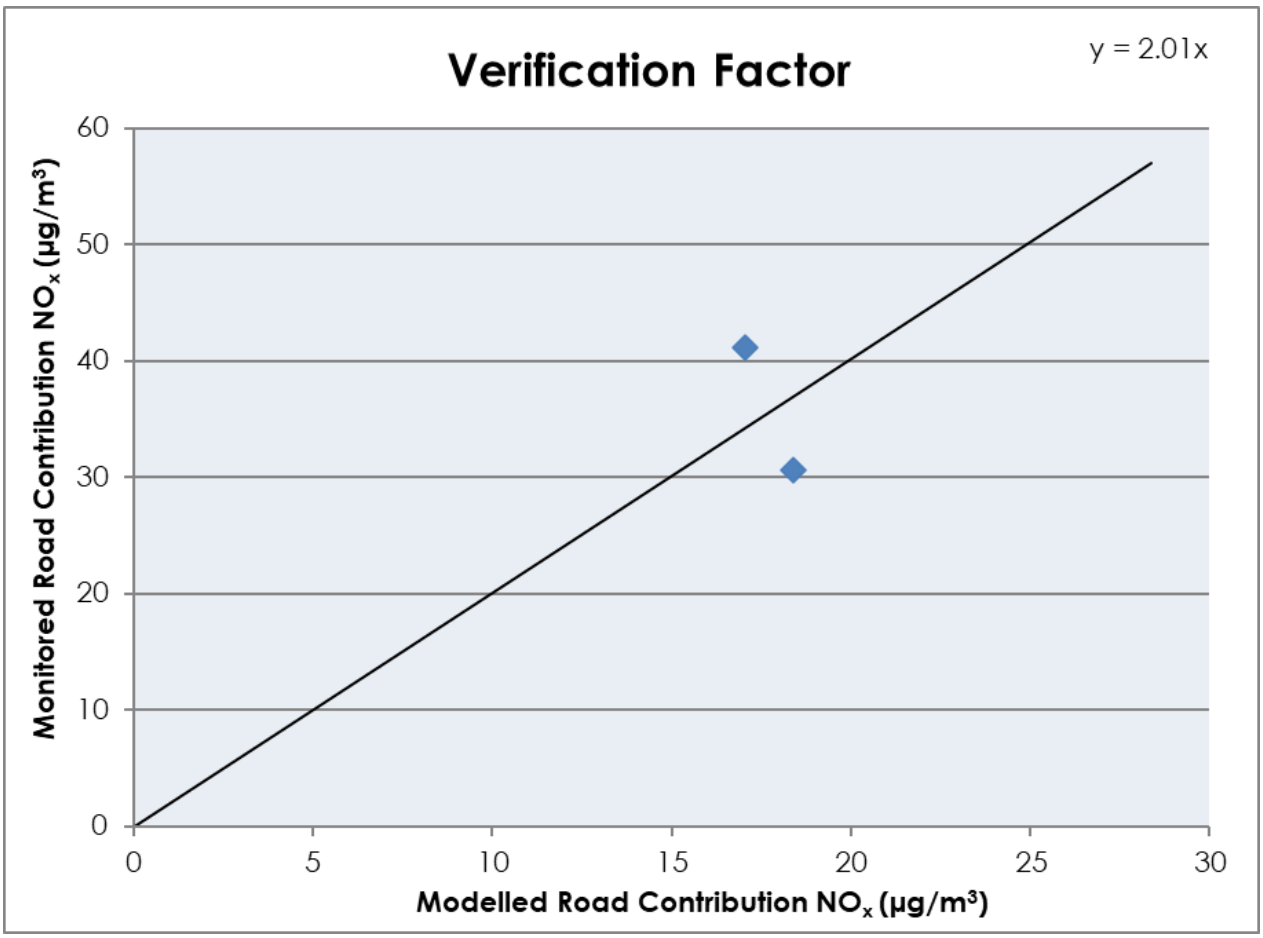
Table A1.5 NO_x Verification - Modelling Results

Monitoring Location		Calculated Road NO_x Concentration (µg/m³)	Modelled Road NO_x Concentration (µg/m³)
MA73NO	Hyde Road	30.60	18.39
MA88ANO	Hyde Rd/Clowes St	41.15	17.06

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 of 2.01 was required to be applied to all monitoring results, as shown in Graph 1.

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

Graph 1 NO_x Verification Factor



Monitoring of PM_{10} and $PM_{2.5}$ concentrations was not undertaken within the assessment extents. The NO_x verification factor was therefore used to adjust model predictions of these species in lieu of more accurate data in accordance with DEFRA guidance[31].

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

Appendix 2 - Curricula Vita

EMILY PEARS-RYDING

Director

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KEY EXPERIENCE:

Emily is a Director 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 and industrial emissions using ADMS-Roads and ADMS-6. 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 mineral extraction developments.
- Assessment of petrol stations to address benzene concentrations and their impact on adjacent developments.
- Production of air quality mitigation strategies specifically tailored to address issues at individual sites.
- Assessment of potential effects associated with network realignment schemes and highway developments.

SELECT PROJECTS SUMMARY:

Broad Street, Birmingham

Air Quality Assessment in support of a residential-led development on land at Broad Street, Birmingham. The proposals were located adjacent to a section of the Midland Metro Westside which runs along Broad Street. Consideration was made to the potential for re-alignment of the local road network as a result of the Metro to effect pollution levels at the development. The assessment indicated NO_2 concentrations exceeded air quality criteria from ground to third floor level as a result of road vehicle exhaust emissions. Mitigation was therefore specified for the affected units.

Home Farm, Forest Road, Warfield

Ecological Air Quality Assessment in support of a residential development. Natural England held concerns regarding potential impacts at sensitive ecological designations as a result of traffic exhaust emissions associated with the development. The predicted change in NO_x and ammonia concentrations and nitrogen and acid deposition was below the relevant criteria at all locations within the ecological designations. Impacts were therefore not considered to be significant.

Saltcoats Road, Stevenston

Air Quality Assessment in support of an educational campus and associated energy centre. Impacts associated with emissions from the proposed gas and biomass boilers were assessed through detailed dispersion modelling. This indicated impacts on annual mean NO_2 and PM_{10} concentrations were predicted to be not significant.

Blackthorn & Piddington

Environmental Impact Assessment in support of a railway embankment scheme on land at the Network Railway Embankment between Piddington and Blackthorn. Due to the extensive stabilisation works a Fugitive Dust Emissions Assessment was undertaken in addition to consideration of road vehicle exhaust emissions. Due to the location of the site in relation to nearby sensitive receptors, potential impacts associated with construction works were not considered to be significant.

Blackmoorfoot Road, Huddersfield

Air Quality in support of a residential-led development in close proximity to an operational minerals facility. Due to the presence of the Johnsons Wellfield Quarry to the south of the site a Fugitive Dust Emissions Assessment was undertaken to determine potential impacts. Dispersion modelling of road vehicle exhaust emissions was also undertaken in support of the scheme. Results indicated the overall significance of fugitive dust emissions from the quarry and air quality impacts associated with operation of the development itself were not significant.

Lockwood Bar, Huddersfield

Air Quality Assessment for the proposed highway realignment scheme along Lockwood Road, Huddersfield. Changes in pollution levels were considered at sensitive receptors as a result of variations to road geometry and associated redistribution of vehicle trips across the local area. Results of the dispersion modelling study indicated air quality impacts as a result of the scheme were not significant.

CHARLOTTE JONES

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KEY EXPERIENCE:

Charlotte is a Graduate 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 Neutral Assessments in accordance with The London Plan.
- Odour surveys and risk assessments to assess amenity and suitability of sites for potential future development for residential use.

SELECT PROJECTS SUMMARY:

Stretford Memorial Hospital, Stretford

Air Quality Assessment in support of the demolition of the former Stretford Memorial Hospital and construction of 29 residential dwellings alongside car parking and associated infrastructure. The site was located adjacent to an Air Quality Management Area (AQMA) therefore there was concern that there could be potential impacts due to vehicle movements as a result of the site within this sensitive area as well as exposure of future occupants to poor air quality due to traffic emissions. Results indicated that potential impacts were predicted to be not significant and the site was considered suitable for the proposed end use.

River Road, Barking

Air Quality Assessment and Air Quality Neutral Assessment in support of an industrial development to provide a temporary contractors yard. A Fugitive Dust Emissions Assessment was required to determine potential impacts of operational phase fugitive dust emissions. Dispersion modelling of road vehicle exhaust emissions was also undertaken in support of the scheme. The site was concluded to be Air Quality Neutral in accordance with the relevant guidance and the overall impacts of fugitive dust emissions and road vehicle exhaust emissions associated with the site were concluded to be not significant.

Crewe Road, Shavington

An Odour Assessment in support of a residential development with associated access, infrastructure and landscaping works. The development was located in the vicinity of a meat processing facility which may form a source of odour emissions and cause loss of amenity to 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.

Land North of Parklands, Waltham Abbey

Air Quality Assessment in support of a residential development comprising 400 dwellings, a local centre and public open space. Detailed dispersion modelling was undertaken to predict pollutant concentrations at sensitive locations as a result of emissions from the highway network both with and without the development in place. Review of the dispersion modelling results indicated that residual impacts due to the operation of the development were considered to be not significant.

Masshouse Lane, Birmingham

Air Quality Assessment in support of a mixed-use development to provide a new part-three, part-six storey building including ground and first floor retail space with a mix of residential dwellings from first to sixth floor, to provide 10 residential units. The site was located within an AQMA therefore there was concern that future occupants could be exposed to existing air quality conditions due to traffic emissions as well as potential impacts to sensitive receptors due to vehicle movements as a result of the proposals. Results revealed negligible impacts at all locations and that pollution levels were below the air quality objectives across the development.