

Air Quality Assessment
Crabtree Lane, Openshaw

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Executive Summary

Redmore Environmental Ltd was commissioned by MCI Developments Ltd to undertake an Air Quality Assessment in support of a planning application for a residential development on land off Crabtree Lane, Openshaw.

The proposals have the potential to cause air quality impacts as a result of fugitive dust emissions during construction and road traffic exhaust emissions associated with vehicles travelling to and from the site during operation. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions and assess potential effects as a result of the scheme.

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 good practice 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 site. Dispersion modelling was therefore undertaken in order to predict pollutant concentrations at sensitive locations as a result of emissions from the local 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 predicted air quality impacts as a result of traffic generated by the development were not significant at any sensitive location in the vicinity of the site.

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

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1.0 INTRODUCTION

1.1 Background

1.1.1 Redmore Environmental Ltd was commissioned by MCI Developments Ltd to undertake an Air Quality Assessment in support of a planning application for a residential development on land off Crabtree Lane, Openshaw.

1.1.2 The proposals have the potential to cause air quality impacts as a result of fugitive dust emissions during construction and road traffic exhaust emissions associated with vehicles travelling to and from the site during operation. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions and assess potential effects as a result of the scheme.

1.2 Site Location and Context

1.2.1 The site is located on land off Crabtree Lane, Openshaw, at approximate National Grid Reference (NGR): 388299, 397858. 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 buildings on site and subsequent construction of 115 residential units alongside associated landscaping and infrastructure.

1.2.3 The development has the potential to cause air quality impacts at sensitive locations. These may include fugitive dust emissions associated with construction works and road traffic exhaust emissions from vehicles travelling to and from the site during the operational phase. An Air Quality Assessment was therefore undertaken in order to determine baseline conditions and assess potential effects as a result of the proposals. This is detailed in the following report.

2.0 LEGISLATION AND POLICY

2.1 UK Legislation

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

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

2.1.2 Air Quality Target Values (AQTVs) have also been 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 in July 2007¹. 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 Table 1 presents the AQOs and AQLVs for pollutants considered within this assessment.

¹ The AQS for England, Scotland, Wales and Northern Ireland, DEFRA, 2007.

Table 1 Air Quality Objectives/Air Quality Limit Values

Pollutant	Air Quality Objective/Air Quality Limit Value	
	Concentration (µg/m ³)	Averaging Period
NO ₂	40	Annual mean
	200	1-hour mean, not to be exceeded on more than 18 occasions per annum
PM ₁₀	40	Annual mean
	50	24-hour mean, not to be exceeded on more than 35 occasions per annum
PM _{2.5}	25	Annual mean

2.1.5 The Environment Act (2021) was published 9th November 2021 and makes provision for the setting of lower PM_{2.5} targets. The final criteria will be included in legislation to be put before parliament by 31st October 2022. Prior to this time the AQLV outlined in Table 1 remains the adopted air quality standard within the UK.

2.1.6 Table 2 summarises the advice provided in DEFRA guidance² 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

² Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.

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 World Health Organisation Guidelines

2.2.1 The World Health Organisation (WHO) provides recommended limits for health-harmful concentrations of key air pollutants both outdoors and inside buildings and homes, based on global synthesis of scientific evidence. These are often utilised by national and international governing bodies when determining appropriate air quality standards for inclusion in relevant legislation. For example, the WHO guidelines were used to inform the AQLVs and AQTs stated within Directive 2008/50/EC, as transposed into UK legislation through the Air Quality Standards Regulations (2010). The most recent WHO air quality guidelines were published on 22nd September 2021.

2.2.2 The WHO guideline for annual mean PM_{2.5} concentrations were considered within the assessment. This is outlined in Table 3. At the request of Rebecca Twigg, Environmental Protection Officer at Manchester City Council (MCC)³, the previous WHO guideline has been considered in contrast to the most recent value.

³ Email correspondence with Rebecca Twigg, MCC, 2021.

Table 3 WHO Guideline

Pollutant	WHO Guideline	
	Concentration ($\mu\text{g}/\text{m}^3$)	Averaging Period
PM _{2.5}	10	Annual mean

2.2.3 It should be noted that the WHO values are guidelines only and there is no legislative or planning requirement to consider these criteria within the UK. As such, when determining the potential for air quality impacts at sensitive receptor locations, the assessment predictions were compared with the relevant AQOs and AQLVs stated within UK Legislation, rather than the WHO guideline levels.

2.3 Local Air Quality Management

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

2.4 Dust

2.4.1 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."

2.4.2 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.

2.5 National Planning Policy

2.5.1 The revised National Planning Policy Framework⁴ (NPPF) was published in July 2021 and sets out the Government's planning policies for England and how these are expected to be applied.

2.5.2 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."

2.5.3 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 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 [...]."

⁴ NPPF, Ministry of Housing, Communities and Local Government, 2021.

2.5.4 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."

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

2.6 National Planning Practice Guidance

2.6.1 The National Planning Practice Guidance⁵ (NPPG) web-based resource was launched by the Department for Communities and Local Government on 6th March 2014 and updated on 1st November 2019 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?
7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?

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

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

2.7 Local Planning Policy

2.7.1 The Manchester Local Development Framework consists of a series of planning documents of which the Core Strategy⁶ is central. This was adopted by MCC on 11th July 2012 and provides policies which guide the determination of planning applications within the city:

2.7.2 A review of the Core Strategy 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

⁶ Core Strategy, MCC, 2012.

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

[...]

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

- 2.7.3 The implications of the above policies were taken into consideration throughout the undertaking of the assessment.

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. These have been assessed in accordance with the following methodology, which was agreed with Rebecca Twigg, Environmental Protection Officer at MCC, on 5th October 2021.

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 V1.1'⁷.

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

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

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

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

3.2.4 The assessment steps are detailed below.

⁷ Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016.

Step 1

- 3.2.5 Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 350m from the boundary or 50m from the construction vehicle route up to 500m 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 500m 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

- 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 through the construction phase. The relevant criteria are summarised in Table 4.

Table 4 Construction Dust - Magnitude of Emission

Magnitude	Activity	Criteria
Large	Demolition	• Total volume of building to be demolished greater than 50,000m³ • Potentially dusty material (e.g. concrete) • On-site crushing and screening • Demolition activities more than 20m above ground level

Magnitude	Activity	Criteria
	Earthworks	- Total site area greater than 10,000m² - Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) - More than 10 heavy earth moving vehicles active at any one time - Formation of bunds greater than 8m in height - More than 100,000 tonnes of material moved
	Construction	- Total building volume greater than 100,000m³ - On site concrete batching - Sandblasting
	Trackout	- More than 50 Heavy Duty Vehicle (HDV) trips per day - Potentially dusty surface material (e.g. high clay content) - Unpaved road length greater than 100m
Medium	Demolition	- Total building volume between 20,000m³ and 50,000m³ - Potentially dusty construction material - Demolition activities 10m to 20m above ground level
	Earthworks	- Total site area 2,500m² to 10,000m² - Moderately dusty soil type (e.g. silt) 5 to 10 heavy earth moving vehicles active at any one time - Formation of bunds 4m to 8m in height - Total material moved 20,000 tonnes to 100,000 tonnes
	Construction	- Total building volume 25,000m³ to 100,000m³ - Potentially dusty construction material (e.g. concrete) - On site concrete batching
	Trackout	10 to 50 HDV trips per day - Moderately dusty surface material (e.g. high clay content) - Unpaved road length 50m to 100m
Small	Demolition	- Total volume of building to be demolished less than 20,000m³ - Construction material with low potential for dust release (e.g. metal cladding or timber) - Demolition activities less than 10m above ground and during wetter months

Magnitude	Activity	Criteria
	Earthworks	- Total site area less than 2,500m² - 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 4m in height - Total material moved less than 20,000 tonnes - Earthworks during wetter months
	Construction	- Total building volume less than 25,000m³ - Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	- Less than 10 HDV trips per day - Surface material with low potential for dust release - Unpaved road length less than 50m

3.2.19 Step 2B defines the sensitivity of the area around the development to potential dust impacts. The influencing factors are shown in Table 5.

Table 5 Construction Dust - Examples of Factors Defining Sensitivity of an Area

Receptor Sensitivity	Examples	
	Human Receptors	Ecological Receptors
High	- Users expect high levels of amenity - High aesthetic or value property - People expected to be present continuously for extended periods of time - Locations where members of the public are exposed over a time period relevant to the AQO for PM₁₀. e.g. residential properties, hospitals, schools and residential care homes	Internationally or nationally designated site e.g. Special Area of Conservation
Medium	- Users would expect to enjoy a reasonable level of amenity - Aesthetics or value of their property could be diminished by soiling - People or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land e.g. parks and places of work	Nationally designated site e.g. Sites of Special Scientific Interest

Receptor Sensitivity	Examples	
	Human Receptors	Ecological Receptors
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

3.2.20 The guidance also provides the following factors to consider when determining the sensitivity of an area to potential dust impacts:

- Any history of dust generating activities in the area;
- The likelihood of concurrent dust generating activity on nearby sites;
- Any pre-existing screening between the source and receptors;
- Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant the season during which works will take place;
- Any conclusions drawn from local topography;
- Duration of the potential impact, as a receptor may become more sensitive over time; and,
- Any known specific receptor sensitivities which go beyond the classifications given in the document.

3.2.21 These factors were considered in the undertaking of this assessment.

3.2.22 The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in Table 6.

Table 6 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 350
High	More than 100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		Less than 20	Less than 50	Less than 100	Less than 350
	1 - 10	Medium	Low	Low	Low
Medium	More than 1	Medium	Low	Low	Low
Low	More than 1	Low	Low	Low	Low

3.2.23 Table 7 outlines the criteria for determining the sensitivity of the area to human health impacts.

Table 7 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 200	Less than 350
High	Greater than 32µg/m ³	More than 100	High	High	High	Medium	Low
		10 - 100	High	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	28 - 32µg/m ³	More than 100	High	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	24 - 28µg/m ³	More than 100	High	Medium	Low	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	Less than 24µg/m ³	More than 100	Medium	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Medium	Greater than 32µg/m ³	More than 10	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low

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 200	Less than 350
	28 - 32µg/m ³	More than 10	Medium	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	24 - 28µg/m ³	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	Less than 24µg/m ³	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Low	-	1 or more	Low	Low	Low	Low	Low

3.2.24 Table 8 outlines the criteria for determining the sensitivity of the area to ecological impacts.

Table 8 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

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

3.2.26 Table 9 outlines the risk category from demolition activities.

Table 9 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	Low	Low	Negligible

3.2.27 Table 10 outlines the risk category from earthworks and construction activities.

Table 10 Construction Dust - Dust Risk Category from Earthworks and Construction Activities

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

3.2.28 Table 11 outlines the risk category from trackout activities.

Table 11 Construction Dust - Dust Risk Category from Trackout Activities

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

Step 3

3.2.29 Step 3 requires the identification of site specific mitigation measures within the IAQM guidance⁸ 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

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

3.2.31 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 existing air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site. Potential impacts have therefore been defined by predicting pollutant concentrations at sensitive locations using dispersion modelling for the following scenarios:

- 2019 - Verification;
- Opening year Do-Minimum (DM) (predicted traffic flows in 2024 should the proposals not proceed); and,
- Opening year Do-Something (DS) (predicted traffic flows in 2024 should the proposals be completed).

⁸ Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016.

- 3.3.2 Reference should be made to Appendix 1 for assessment input data and details of the verification process.
- 3.3.3 Locations sensitive to potential changes in off-site pollutant concentrations were identified within 200m of the highway network in accordance with the guidance provided within the Design Manual for Roads and Bridges (DMRB)⁹ on the likely limits of pollutant dispersion from road sources. The criteria provided within DEFRA guidance¹⁰ 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.
- 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'¹¹. 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 12.

Table 12 Significance of Operational Phase Road Vehicle Exhaust Emissions Impact

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

- 3.3.5 The matrix shown in Table 12 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**.

⁹ DMRB LA 105, Highways England, 2019.

¹⁰ Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.

¹¹ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

3.3.6 Following the prediction of impacts at discrete receptor locations, the IAQM document¹² 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.

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 guidance¹³ suggests the provision of details of the assessor's qualifications and experience. These are provided in Appendix 2.

¹² Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

¹³ 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), MCC has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual mean concentrations of NO₂ are above the AQO within the city. As such, a number of roads within Manchester have been included within the Greater Manchester Combined Authority (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 approximately 200m south-west of the AQMA. As such, there is the potential for exhaust emissions from vehicles travelling to and from the site to increase pollution levels in this sensitive area. This has been considered throughout the undertaking of the assessment.

- 4.2.3 The development is also located approximately 310m to the west of Tameside Metropolitan Borough Council's (TMBC's) administrative extents. TMBC has also undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual mean concentrations of NO₂ are above the AQO across the borough. As such, a number of roads within Tameside have been included within the GMCA AQMA, which is described as follows:

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

- 4.2.4 The development is located approximately 170m south-west of the AQMA. As such, there is the potential for exhaust emissions from vehicles travelling to and from the site to

increase pollution levels in this sensitive area. This has been considered throughout the undertaking of the assessment.

- 4.2.5 MCC and TMBC have 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 concentrations is undertaken by MCC and TMBC throughout their areas of jurisdiction. Recent results recorded in the vicinity of the development are shown in Table 13.

Table 13 Monitoring Results

Monitoring Site		Monitored NO ₂ Concentration (µg/m ³)		
		2018	2019	2020
MA28NO	Ashton Old Road	37.1	36.1	26.4
TA17NO	Manchester Road, Droylsden	31.1	34.1	26.6

- 4.3.2 As shown in Table 13, annual mean NO₂ concentrations were below the AQO at all monitors in recent years. Reference should be made to Figure 2 for a map of the survey positions.
- 4.3.3 It should be noted that pollutant concentrations during 2020 were lower than previous years due to a reduction in road traffic and associated emissions caused by the COVID-19 pandemic. The results should therefore be viewed with caution.
- 4.3.4 MCC and TMBC do not undertake PM₁₀ 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:

388500, 398500. Data for this location was downloaded from the DEFRA website¹⁴ for the purpose of the assessment and is summarised in Table 14.

Table 14 Background Pollutant Concentration Predictions

Pollutant	Predicted Background Pollutant Concentration (µg/m ³)		
	2019	2021	2024
NO ₂	18.08	16.65	15.09
PM ₁₀	12.40	12.02	11.70
PM _{2.5}	8.53	8.27	8.04

4.4.2 As shown in Table 14, predicted background NO₂, PM₁₀ and PM_{2.5} concentrations are below the relevant AQOs and AQLV at the development site. The annual mean PM_{2.5} concentration is also below the WHO guideline.

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 350m from the development boundary. These are summarised in Table 15.

Table 15 Demolition, Earthworks and Construction Dust Sensitive Receptors

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

¹⁴ <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>.

Distance from Site Boundary (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Up to 100	More than 100	-
Up to 350	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 500m of the site access. These are summarised in Table 16.

Table 16 Trackout Dust Sensitive Receptors

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

- 4.5.4 A number of additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in Table 17.

Table 17 Additional Area Dust Sensitivity Factors

Guidance	Comment
Whether there is any history of dust generating activities in the area	The baseline study indicated a number of industrial facilities are located within the vicinity of the site. As such, it is possible that there has been a history of dust generation in the local area
The likelihood of concurrent dust generating activity on nearby sites	A review of the planning portal did not indicate any additional development proposals likely to result in concurrent dust generation in the vicinity of the site
Pre-existing screening between the source and the receptors	Trees are located along the site boundary. These may act as a barrier between emission sources and receptors should they be retained during construction
Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place	As shown in Figure 3, the predominant wind bearing at the site is from the south. As such, receptors to the north of the development are most likely to be affected by dust releases
Conclusions drawn from local topography	There are no significant topographical constraints to dust dispersion

Guidance	Comment
Duration of the potential impact, as a receptor may become more sensitive over time	Currently it is unclear as to the duration of the construction phase. However, it is likely that it will extend over one year
Any known specific receptor sensitivities which go beyond the classifications given in the document	No specific receptor sensitivities identified during the baseline assessment

4.5.5 Based on the criteria shown in Table 5, the sensitivity of the receiving environment to potential dust impacts was determined as **high**. This was because the identified receptors included residential properties.

4.5.6 The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria shown in Section 3.2, is shown in Table 18.

Table 18 Sensitivity of the Surrounding Area to Potential Dust Impacts

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

Operational Phase Sensitive Receptors

4.5.7 Locations sensitive to potential operational phase road vehicle exhaust emission impacts were identified from a desk-top study and are summarised in Table 19. Receptor heights were selected based on the location of residential units to allow for less sensitive land uses, such as retail, at ground level.

Table 19 Operational Phase Road Vehicle Exhaust Emission Sensitive Receptor Locations

Receptor		NGR (m)		Height (m)
		X	Y	
R1	Residential - Louisa Street	388497.6	397920.1	1.5
R2	Residential - Louisa Street	388726.1	397502.2	1.5
R3	Residential - Louisa Street	388768.0	397386.0	4.0

Receptor		NGR (m)		Height (m)
		X	Y	
R4	Residential - Ashton Old Road	388777.5	397356.6	1.5
R5	Residential - Ashton Old Road	389362.4	397365.2	1.5
R6	Residential - Old Lane	388852.9	397518.2	1.5
R7	Residential - Wheler Street	389174.6	397701.5	1.5
R8	Residential - Edge Lane	389117.3	398048.0	1.5
R9	Residential - Ashton New Road	389077.5	398240.9	1.5
R10	Residential - Ashton New Road	389214.8	398222.3	1.5
R11	Residential - Ashton New Road	389536.2	398205.8	1.5
R12	Residential - Ashton New Road	389033.3	398316.8	1.5
R13	Residential - Ashton New Road	389018.6	398280.3	1.5
R14	Residential - Ashton Old Road	388210.7	397426.1	1.5
R15	Residential - Ashton Old Road	388361.1	397391.2	1.5
R16	Residential - Ashton New Road	388456.4	398403.1	1.5

4.5.8 Reference should be made to Figure 4 for a graphical representation of road vehicle exhaust emission sensitive receptor locations.

5.0 ASSESSMENT

5.1 Introduction

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

5.2 Construction Phase Assessment

Step 1

- 5.2.1 The undertaking of activities such as demolition, excavation, ground works, cutting, construction, concrete batching and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements both on-site and on the local road network also have the potential to result in the re-suspension of dust from 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 350m of the site boundary. As such, a detailed assessment of potential dust impacts was required.

Step 2

Demolition

- 5.2.4 Demolition will be undertaken at the start of the construction phase and will involve clearance of existing buildings on site. It is estimated that the building volume to be demolished is between 20,000m³ and 50,000m³. In accordance with the criteria outlined in Table 4, the magnitude of potential dust emissions from demolition is therefore **medium**.

5.2.5 Table 18 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 9, the development is considered to be a **medium** risk site for dust soiling as a result of demolition activities.

5.2.6 Table 18 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 9, the development is considered to be a **low** risk site for human health impacts as a result of demolition activities.

Earthworks

5.2.7 Earthworks will primarily involve excavating material, haulage, tipping and stockpiling, as well as site levelling and landscaping. The site area is greater than 10,000m². In accordance with the criteria outlined in Table 4, the magnitude of potential dust emissions from earthworks is therefore **large**.

5.2.8 Table 18 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 10, the development is considered to be a **high** risk site for dust soiling as a result of earthworks.

5.2.9 Table 18 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 10 the development is considered to be a **low** risk site for human health impacts as a result of earthworks.

Construction

5.2.10 The total building volume to be constructed is estimated to be between 25,000m³ and 100,000m³. In accordance with the criteria outlined in Table 4, the magnitude of potential dust emissions from construction is therefore **medium**.

5.2.11 Table 18 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 10, the development is considered to be a **medium** risk site for dust soiling as a result of construction activities.

5.2.12 Table 18 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 10, the development is considered to be a **low** risk site for human health impacts as a result of construction activities.

Trackout

5.2.13 Based on the site area and existing hard standing provision, it is anticipated that the unpaved road length is likely to be between 50m and 100m. In accordance with the criteria outlined in Table 4, the magnitude of potential dust emissions from trackout is therefore **medium**.

5.2.14 Table 18 indicates the sensitivity of the area to dust soiling effects to people and property is **high**. In accordance with the criteria outlined in Table 11, the development is considered to be a **medium** risk site for dust soiling as a result of trackout.

5.2.15 Table 18 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 11, the development is considered to be a **low** risk site for human health impacts as a result of trackout.

Summary of the Risk of Dust Effects

5.2.16 A summary of the risk from each dust generating activity is provided in Table 20.

Table 20 Summary of Potential Unmitigated Dust Risks

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

5.2.17 As indicated in Table 20, the potential risk of dust soiling is **high** from earthworks and **medium** from demolition, construction and trackout. The potential risk of human health impacts is **low** from demolition, earthworks, construction and trackout.

5.2.18 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.

Step 3

5.2.19 The IAQM guidance¹⁵ 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 21. These may be reviewed prior to the commencement of construction works and incorporated into a Construction Environmental Management Plan (CEMP) or similar if required by the LA.

Table 21 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. This may be the environment manager/engineer or the site manager • Display the head or regional office contact information • Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the LA
Site management	• Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken • Make the complaints log available to the LA upon request • Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book
Monitoring	• Carry out regular site inspections to monitor compliance with the DMP, 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

¹⁵ Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016.

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 boundary that are at least as high as any stockpiles on site - Fully enclose site or specific operations where there is a high potential for dust production and they are active for an extensive period - Avoid site runoff of water or mud - Keep site fencing 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 - Produce a Construction Logistics Plan to manage the sustainable delivery of goods
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	- Soft strip inside buildings before 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
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

Issue	Control Measure
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

Step 4

5.2.20 Assuming the relevant mitigation measures outlined in Table 21 are implemented, the residual impacts from all dust generating activities is predicted to be **not significant**, in accordance with the IAQM guidance¹⁶.

5.3 Operational Phase Assessment

5.3.1 Vehicle movements associated with the operation of the proposal will generate exhaust emissions on the local and regional road networks. 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.

5.3.2 The assessment included the following scenarios:

- 2019 - Verification;
- 2024 - DM; and,
- 2024 - DS.

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

¹⁶ Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016.

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

Predicted Concentrations

5.3.5 Annual mean NO₂ concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. These are summarised in Table 22.

Table 22 Predicted Annual Mean NO₂ Concentrations

Receptor		Predicted Annual Mean NO ₂ Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - Louisa Street	24.09	24.19	0.10
R2	Residential - Louisa Street	29.96	30.14	0.18
R3	Residential - Louisa Street	30.09	30.15	0.06
R4	Residential - Ashton Old Road	25.59	25.62	0.03
R5	Residential - Ashton Old Road	34.18	34.23	0.05
R6	Residential - Old Lane	28.22	28.26	0.04
R7	Residential - Wheler Street	24.85	24.87	0.02
R8	Residential - Edge Lane	25.80	25.82	0.02
R9	Residential - Ashton New Road	26.03	26.04	0.01
R10	Residential - Ashton New Road	24.14	24.15	0.01
R11	Residential - Ashton New Road	26.43	26.43	0.00
R12	Residential - Ashton New Road	26.61	26.63	0.02
R13	Residential - Ashton New Road	30.32	30.34	0.02
R14	Residential - Ashton Old Road	37.62	37.73	0.11
R15	Residential - Ashton Old Road	27.22	27.27	0.05
R16	Residential - Ashton New Road	27.19	27.20	0.01

5.3.6 As indicated in Table 22, predicted annual mean NO₂ concentrations were below the relevant AQO at all receptor locations in both scenarios. Reference should be made to Figures 5 and 6 for graphical representations of annual mean NO₂ concentrations for the DM and DS scenarios, respectively.

5.3.7 Annual mean PM₁₀ concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. These are summarised in Table 23.

Table 23 Predicted Annual Mean PM₁₀ Concentrations

Receptor		Predicted Annual Mean PM ₁₀ Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - Louisa Street	13.60	13.63	0.03
R2	Residential - Louisa Street	15.18	15.23	0.05
R3	Residential - Louisa Street	15.24	15.26	0.02
R4	Residential - Ashton Old Road	13.99	14.00	0.01
R5	Residential - Ashton Old Road	17.20	17.22	0.02
R6	Residential - Old Lane	14.74	14.76	0.01
R7	Residential - Wheler Street	13.81	13.81	0.01
R8	Residential - Edge Lane	14.23	14.23	0.01
R9	Residential - Ashton New Road	14.07	14.07	0.00
R10	Residential - Ashton New Road	13.58	13.58	0.00
R11	Residential - Ashton New Road	14.44	14.44	0.00
R12	Residential - Ashton New Road	14.18	14.18	0.01
R13	Residential - Ashton New Road	15.22	15.23	0.00
R14	Residential - Ashton Old Road	17.03	17.06	0.03
R15	Residential - Ashton Old Road	14.68	14.69	0.01
R16	Residential - Ashton New Road	14.68	14.68	0.00

5.3.8 As indicated in Table 23, predicted annual mean PM₁₀ concentrations were below the relevant AQO at all sensitive receptors in both the DM and DS scenarios. Reference should be made to Figures 7 and 8 for graphical representations of annual mean PM₁₀ concentrations for the DM and DS scenarios, respectively.

5.3.9 Annual mean PM_{2.5} concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. These are summarised in Table 24.

Table 24 Predicted Annual Mean PM_{2.5} Concentrations

Receptor		Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - Louisa Street	9.04	9.05	0.02
R2	Residential - Louisa Street	9.93	9.96	0.03
R3	Residential - Louisa Street	9.96	9.97	0.01
R4	Residential - Ashton Old Road	9.26	9.26	0.00
R5	Residential - Ashton Old Road	11.04	11.05	0.01
R6	Residential - Old Lane	9.68	9.69	0.01
R7	Residential - Wheler Street	9.15	9.16	0.00
R8	Residential - Edge Lane	9.38	9.39	0.00
R9	Residential - Ashton New Road	9.30	9.30	0.00
R10	Residential - Ashton New Road	9.03	9.03	0.00
R11	Residential - Ashton New Road	9.50	9.50	0.00
R12	Residential - Ashton New Road	9.37	9.37	0.00
R13	Residential - Ashton New Road	9.96	9.96	0.00
R14	Residential - Ashton Old Road	10.99	11.01	0.02
R15	Residential - Ashton Old Road	9.63	9.64	0.01
R16	Residential - Ashton New Road	9.64	9.64	0.00

5.3.10 As indicated in Table 24, predicted annual mean PM_{2.5} concentrations were below the AQLV at all sensitive receptors in both the DM and DS scenarios.

5.3.11 Predicted concentrations were above the WHO guideline level at two receptor locations in both the DM and DS scenarios. It should be noted that there were no additional predicted exceedences in the DS scenario when compared to the DM. Reference should be made to Figures 9 and 10 for graphical representations of annual mean PM_{2.5} concentrations for the DM and DS scenarios, respectively.

Predicted Impacts

5.3.12 Predicted impacts on annual mean NO₂ concentrations at the sensitive receptor locations are summarised in Table 25.

Table 25 Predicted Impacts - NO₂

Receptor		Predicted Annual Mean NO ₂ Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R1	Residential - Louisa Street	Below 75% of AQO	0	Negligible
R2	Residential - Louisa Street	76 - 94% of AQO	0	Negligible
R3	Residential - Louisa Street	76 - 94% of AQO	0	Negligible
R4	Residential - Ashton Old Road	Below 75% of AQO	0	Negligible
R5	Residential - Ashton Old Road	76 - 94% of AQO	0	Negligible
R6	Residential - Old Lane	Below 75% of AQO	0	Negligible
R7	Residential - Wheler Street	Below 75% of AQO	0	Negligible
R8	Residential - Edge Lane	Below 75% of AQO	0	Negligible
R9	Residential - Ashton New Road	Below 75% of AQO	0	Negligible
R10	Residential - Ashton New Road	Below 75% of AQO	0	Negligible
R11	Residential - Ashton New Road	Below 75% of AQO	0	Negligible
R12	Residential - Ashton New Road	Below 75% of AQO	0	Negligible
R13	Residential - Ashton New Road	76 - 94% of AQO	0	Negligible
R14	Residential - Ashton Old Road	95 - 102% of AQO	0	Negligible
R15	Residential - Ashton Old Road	Below 75% of AQO	0	Negligible
R16	Residential - Ashton New Road	Below 75% of AQO	0	Negligible

5.3.13 As indicated in Table 25, impacts on annual mean NO₂ concentrations as a result of the proposed development were predicted to be **negligible** at all receptor locations.

5.3.14 Predicted impacts on annual mean PM₁₀ concentrations at the sensitive receptor locations are summarised in Table 26.

Table 26 Predicted Impacts - PM₁₀

Receptor		Predicted Annual Mean PM ₁₀ Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R1	Residential - Louisa Street	Below 75% of AQO	0	Negligible
R2	Residential - Louisa Street	Below 75% of AQO	0	Negligible
R3	Residential - Louisa Street	Below 75% of AQO	0	Negligible
R4	Residential - Ashton Old Road	Below 75% of AQO	0	Negligible
R5	Residential - Ashton Old Road	Below 75% of AQO	0	Negligible
R6	Residential - Old Lane	Below 75% of AQO	0	Negligible
R7	Residential - Wheler Street	Below 75% of AQO	0	Negligible
R8	Residential - Edge Lane	Below 75% of AQO	0	Negligible
R9	Residential - Ashton New Road	Below 75% of AQO	0	Negligible
R10	Residential - Ashton New Road	Below 75% of AQO	0	Negligible
R11	Residential - Ashton New Road	Below 75% of AQO	0	Negligible
R12	Residential - Ashton New Road	Below 75% of AQO	0	Negligible
R13	Residential - Ashton New Road	Below 75% of AQO	0	Negligible
R14	Residential - Ashton Old Road	Below 75% of AQO	0	Negligible
R15	Residential - Ashton Old Road	Below 75% of AQO	0	Negligible
R16	Residential - Ashton New Road	Below 75% of AQO	0	Negligible

5.3.15 As indicated in Table 26, impacts on annual mean PM₁₀ concentrations as a result of the proposed development were predicted to be **negligible** at all receptor locations.

5.3.16 Predicted impacts on annual mean PM_{2.5} concentrations at the sensitive receptor locations are summarised in Table 27.

Table 27 Predicted Impacts - PM_{2.5}

Receptor		Predicted Annual Mean PM _{2.5} Concentration	Predicted Concentration Change as Proportion of AQLV (%)	Impact Significance
R1	Residential - Louisa Street	Below 75% of AQLV	0	Negligible
R2	Residential - Louisa Street	Below 75% of AQLV	0	Negligible
R3	Residential - Louisa Street	Below 75% of AQLV	0	Negligible
R4	Residential - Ashton Old Road	Below 75% of AQLV	0	Negligible
R5	Residential - Ashton Old Road	Below 75% of AQLV	0	Negligible
R6	Residential - Old Lane	Below 75% of AQLV	0	Negligible
R7	Residential - Wheler Street	Below 75% of AQLV	0	Negligible
R8	Residential - Edge Lane	Below 75% of AQLV	0	Negligible
R9	Residential - Ashton New Road	Below 75% of AQLV	0	Negligible
R10	Residential - Ashton New Road	Below 75% of AQLV	0	Negligible
R11	Residential - Ashton New Road	Below 75% of AQLV	0	Negligible
R12	Residential - Ashton New Road	Below 75% of AQLV	0	Negligible
R13	Residential - Ashton New Road	Below 75% of AQLV	0	Negligible
R14	Residential - Ashton Old Road	Below 75% of AQLV	0	Negligible
R15	Residential - Ashton Old Road	Below 75% of AQLV	0	Negligible
R16	Residential - Ashton New Road	Below 75% of AQLV	0	Negligible

5.3.17 As indicated in Table 27, impacts on annual mean PM_{2.5} concentrations as a result of the proposed development were predicted to be **negligible** at all receptor locations.

Mitigation

5.3.18 There are a number of mitigation options available to reduce or off-set potential air quality impacts. However, all techniques have financial implications and may therefore affect scheme viability. As such, they should only be included if necessary. As air quality impacts associated with the proposals were predicted to be **negligible**, further mitigation to control effects is not considered necessary. However, a number of additional measures

have been included within the scheme in accordance with the requirements of the IAQM document 'Land-Use Planning & Development Control: Planning for Air Quality'¹⁷ to encourage the use of sustainable transport modes, manage vehicle flow and reduce pollution around the site. Table 28 describes the good practice principles detailed in the IAQM guidance along with how each has been addressed with regards to the proposals.

Table 28 Good Practice Design Principles

Phase	Principle	Action
Design Phase	New developments should not contravene the Council's Air Quality Action Plan ¹⁸ , or render any of the measures unworkable	It is confirmed that the proposals will not contravene MCC's Air Quality Action Plan, or render any of the measures unworkable
	Wherever possible, new developments should not create a new "street canyon", or a building configuration that inhibits effective pollution dispersion	The proposals will not lead to the generation of a street canyon
	Delivering sustainable development should be the key theme of any application	The proposals have been designed to encourage sustainable behaviours, such as active and public transport, due to its close proximity to local bus routes and amenities
Operational Phase	The provision of at least 1 Electric Vehicle (EV) "rapid charge" point per 10 residential dwellings and/or 1,000m ² of commercial floor space. Where on-site parking is provided for residential dwellings, EV charging points for each parking space should be made	It is confirmed that each residential unit will be provided with an EV charging point
	Where development generates significant additional traffic, provision of a detailed Travel Plan (with provision to measure its implementation and effect) which sets out measures to encourage sustainable means of transport (public, cycling and walking) via subsidised or free-ticketing, improved links to bus stops, improved infrastructure and layouts to improve accessibility and safety	A Travel Plan, produced by Curtins, will be submitted with the planning application

¹⁷ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

¹⁸ Greater Manchester Air Quality Action Plan (GMAQAP) 2016-2021, GMCA, 2016.

Phase	Principle	Action
	All gas-fired boilers to meet a minimum standard of <40mgNO_x/kWh. All gas fired CHP plant to meet a minimum emissions standard of: • Spark ignition engine: 250mgNO_x/Nm³; • Compression ignition engine: 400mgNO_x/Nm³; • Gas turbine: 50mgNO_x/Nm³. A presumption should be to use natural gas-fired installations. Where biomass is proposed within an urban area it is to meet minimum emissions standards of • Solid biomass boiler: 275mgNO_x/Nm³ and 25mgPM/Nm³	Any boilers to be included in the development will be provisioned in accordance with the relevant requirements

Overall Impact Significance

5.3.19 The overall significance of operational phase road traffic emission impacts was determined as **negligible**. This was based on the overall predicted impacts at discrete receptor locations and the considerations outlined previously. Further justification is provided in Table 29.

Table 29 Overall Road Vehicle Exhaust Emissions Impact Significance

Guidance	Comment
The existing and future air quality in the absence of the development	Predicted annual mean NO ₂ , PM ₁₀ and PM _{2.5} concentrations were below the AQOs and AQLV at all sensitive receptors in the DM scenario. It is considered unlikely that future air quality conditions will change significantly in the absence of the development given the relatively established nature of the area
The extent of current and future population exposure to the impacts	The development is not predicted to affect the population exposed to exceedences of the AQOs or AQLV

Guidance	Comment
The influence and validity of any assumptions adopted when undertaking the prediction of impacts	The assessment assumed that background pollutant levels will not reduce in future years. This provides worst-case results when compared with DEFRA and Highways England methodologies Due to the adopted assumptions it is considered the presented results are sufficiently robust for an assessment of this nature

5.3.20 The IAQM guidance¹⁹ 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.

¹⁹ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

6.0 CONCLUSION

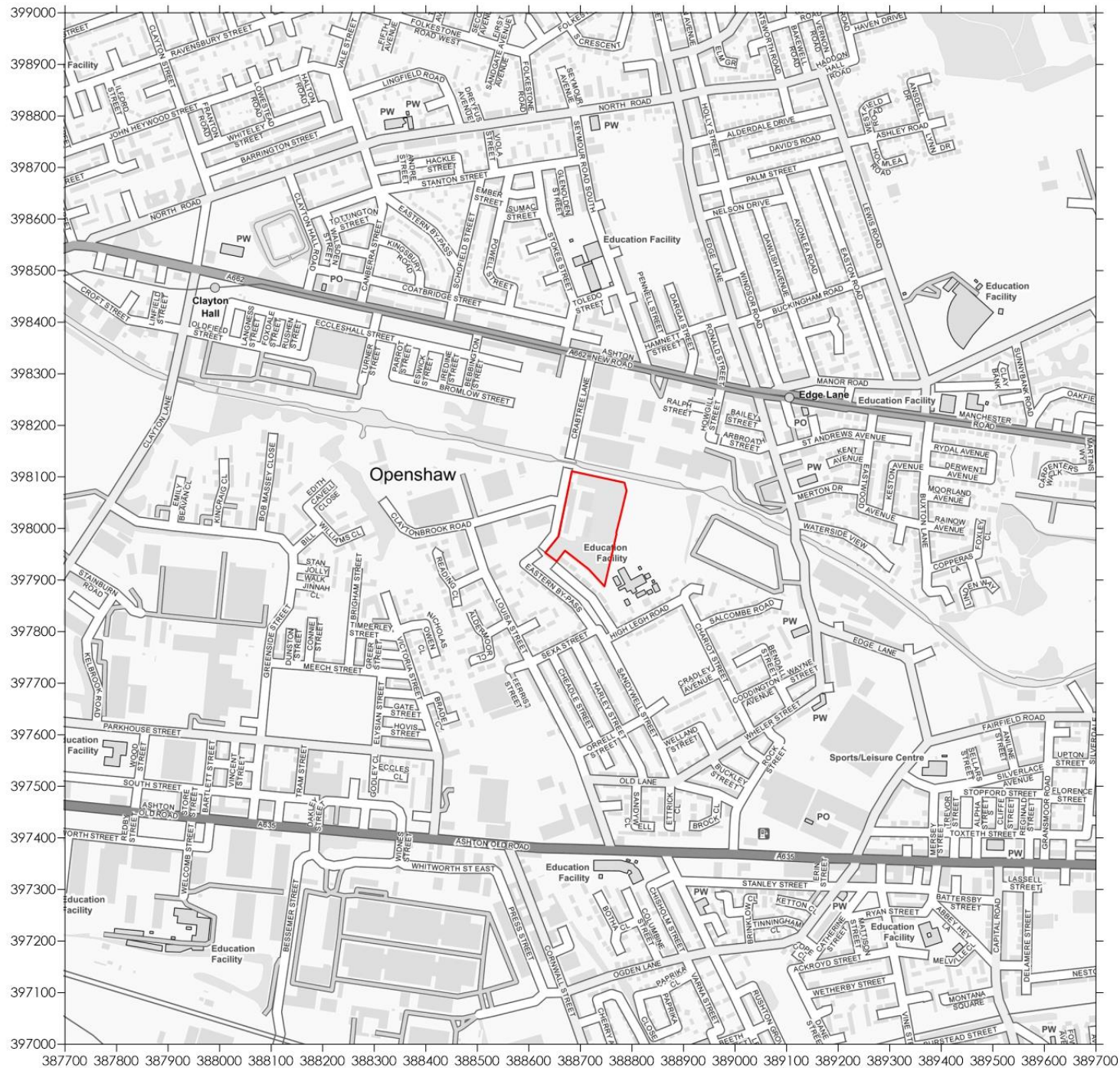
- 6.1.1 Redmore Environmental Ltd was commissioned by MCI Developments Ltd to undertake an Air Quality Assessment in support of a planning application for a residential development on land off Crabtree Lane, Openshaw.
- 6.1.2 The proposals have the potential to cause air quality impacts as a result of fugitive dust emissions during construction and road traffic exhaust emissions associated with vehicles travelling to and from the site during operation. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions and assess potential effects as a result of the scheme.
- 6.1.3 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. Assuming good practice dust control measures are implemented, the residual significance of potential air quality impacts from dust generated by demolition, earthworks, construction and trackout activities was predicted to be **not significant**.
- 6.1.4 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 site. Dispersion modelling was therefore undertaken in order to predict pollutant concentrations at sensitive locations as a result of emissions from the local highway network both with and without the development in place. Results were subsequently verified using local monitoring data.
- 6.1.5 Review of the dispersion modelling results indicated that impacts on annual mean NO₂, PM₁₀ and PM_{2.5} concentrations as a result of traffic generated by the development were predicted to be **negligible** at all sensitive receptor locations. Following consideration of the relevant issues, air quality impacts as a result of the operation of the development were considered to be **not significant**, in accordance with the IAQM guidance.
- 6.1.6 Based on the assessment results, air quality factors are not considered a constraint to the development.

7.0 **ABBREVIATIONS**

AADT	Annual Average Daily Traffic
ADM	Atmospheric Dispersion Modelling
AQAP	Air Quality Action Plan
AQLV	Air Quality Limit Value
AQMA	Air Quality Management Area
AQC	Air Quality Consultants
AQO	Air Quality Objective
AQS	Air Quality Strategy
CEMP	Construction Environmental Management Plan
CERC	Cambridge Environmental Research Consultants
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DM	Do-Minimum
DMP	Dust Management Plan
DMRB	Design Manual for Roads and Bridges
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
NGR	National Grid Reference
NO ₂	Nitrogen dioxide
NO _x	Oxides of nitrogen
NPPF	National Planning Policy Framework
NPPG	National Planning Policy 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
SP	Slow Phase
TMBC	Tameside Metropolitan Borough Council

WB	Westbound
WHO	World Health Organisation
Z ₀	Roughness length

Figures



Legend



Site Boundary

Title

Figure 1 - Site Location Plan

Project

Air Quality Assessment
Crabtree Lane, Openshaw

Project Reference

4780-1

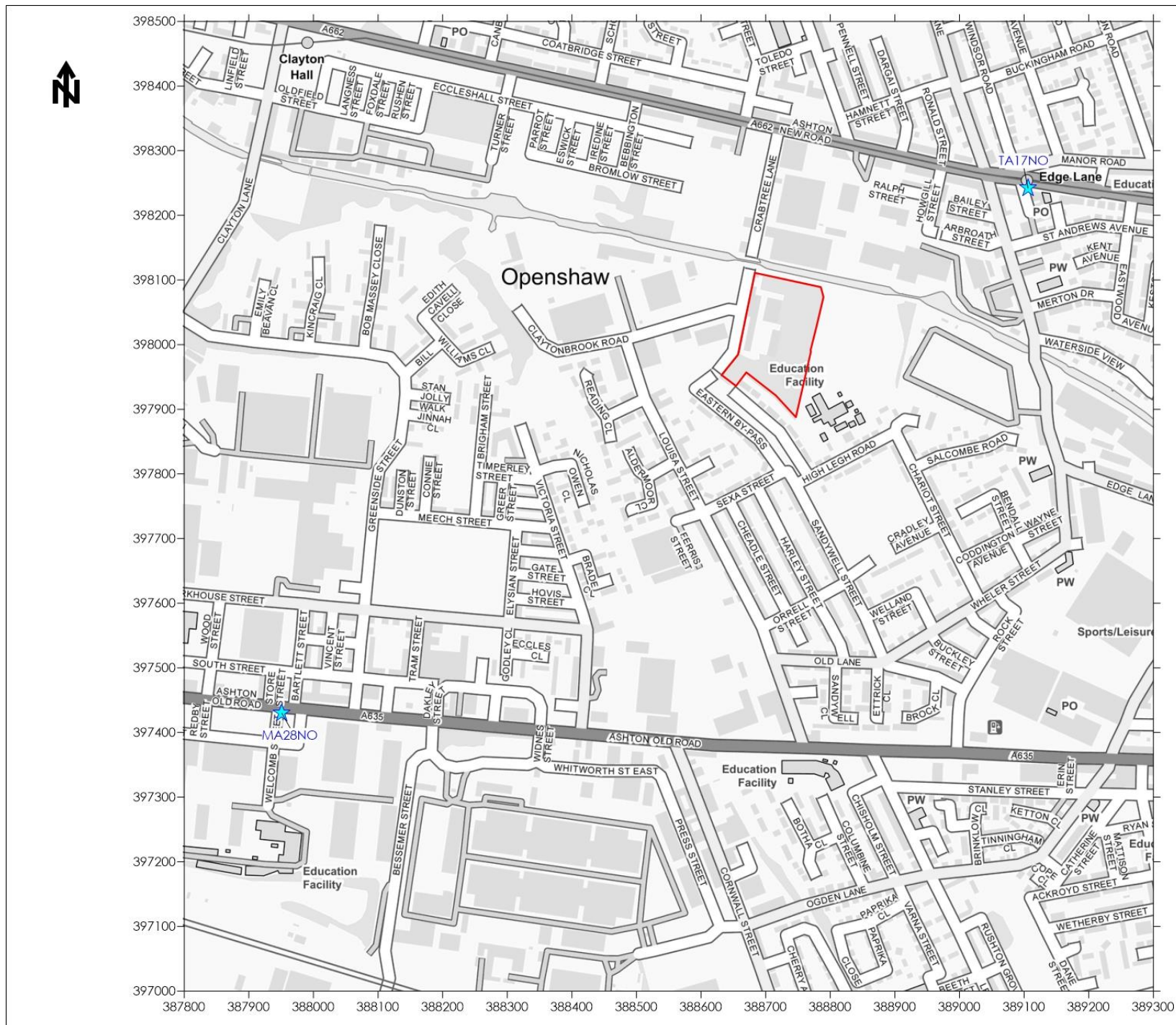
Client

MCI Developments Ltd

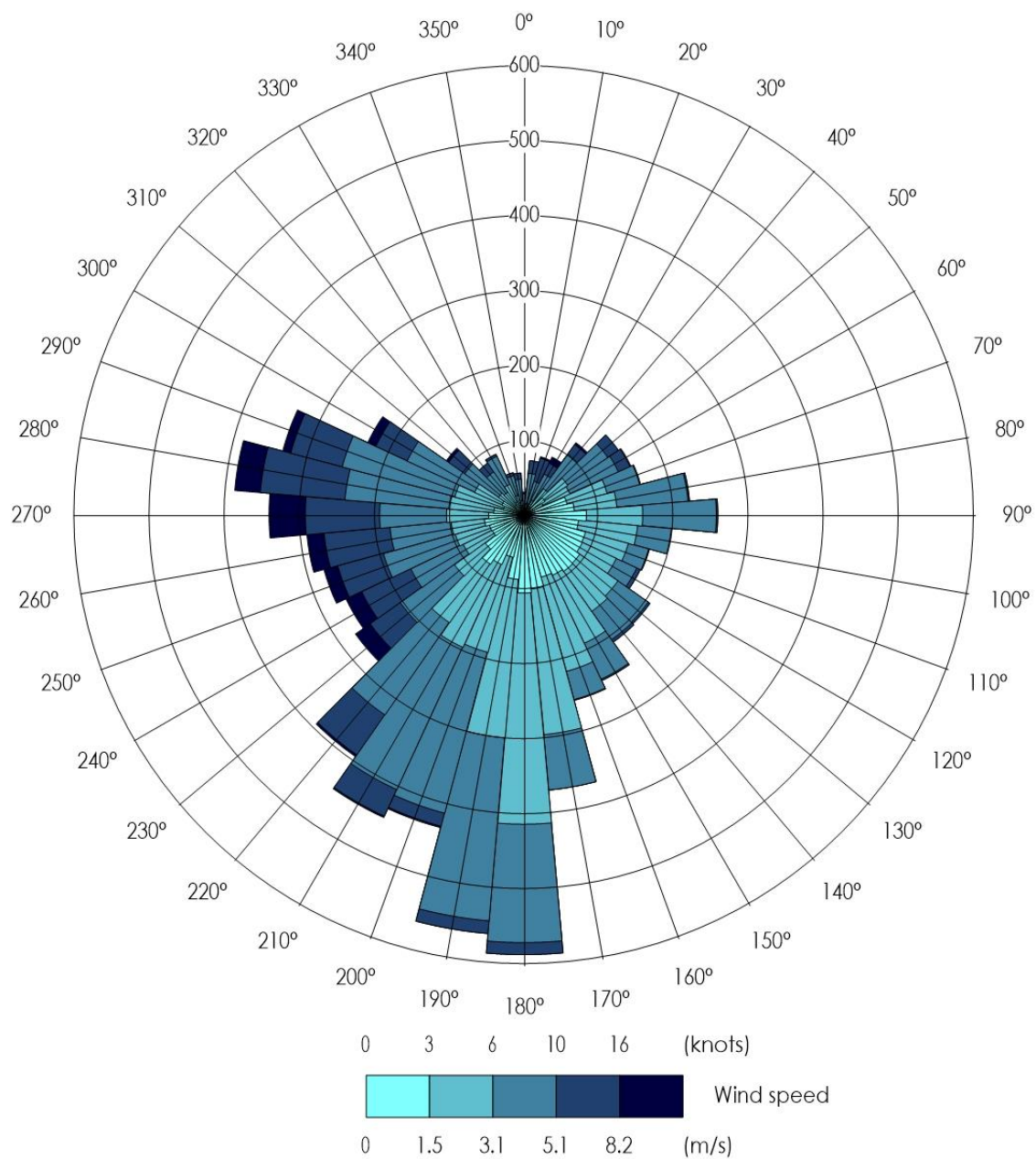
Contains Ordnance Survey Data
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Legend  Site Boundary  Monitor	
Title Figure 2 - Monitoring Locations	
Project Air Quality Assessment Crabtree Lane, Openshaw	
Project Reference 4780-1	
Client MCI Developments Ltd	
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Legend

Title

Figure 3 - Wind Rose of 2019
Manchester Airport Meteorological
Data

Project

Air Quality Assessment
Crabtree Lane, Openshaw

Project Reference

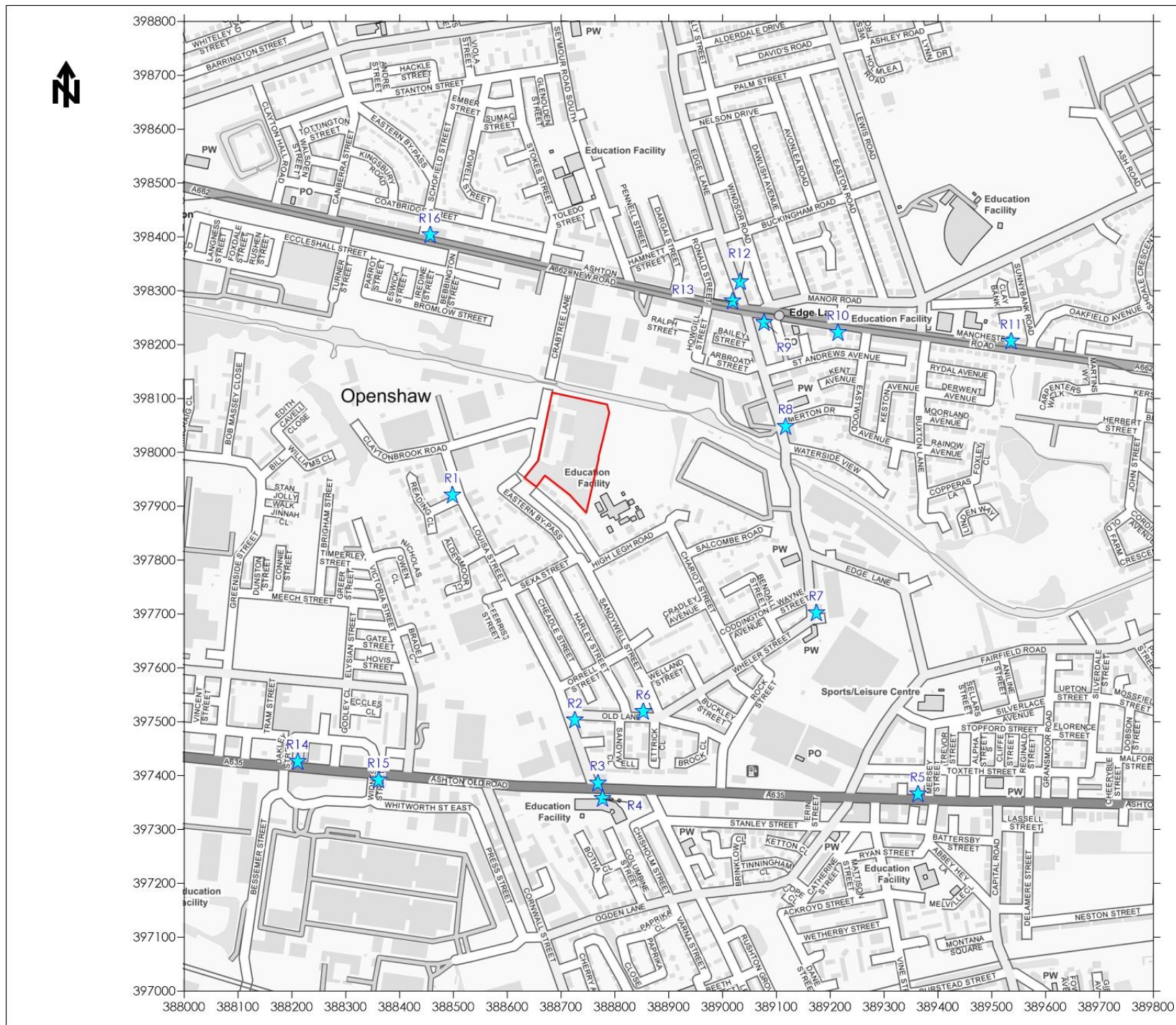
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Legend



Site Boundary



Sensitive Receptor

Title

Figure 4 - Road Vehicle Exhaust Emissions Sensitive Receptor Locations

Project

Air Quality Assessment
Crabtree Lane, Openshaw

Project Reference

4780-1

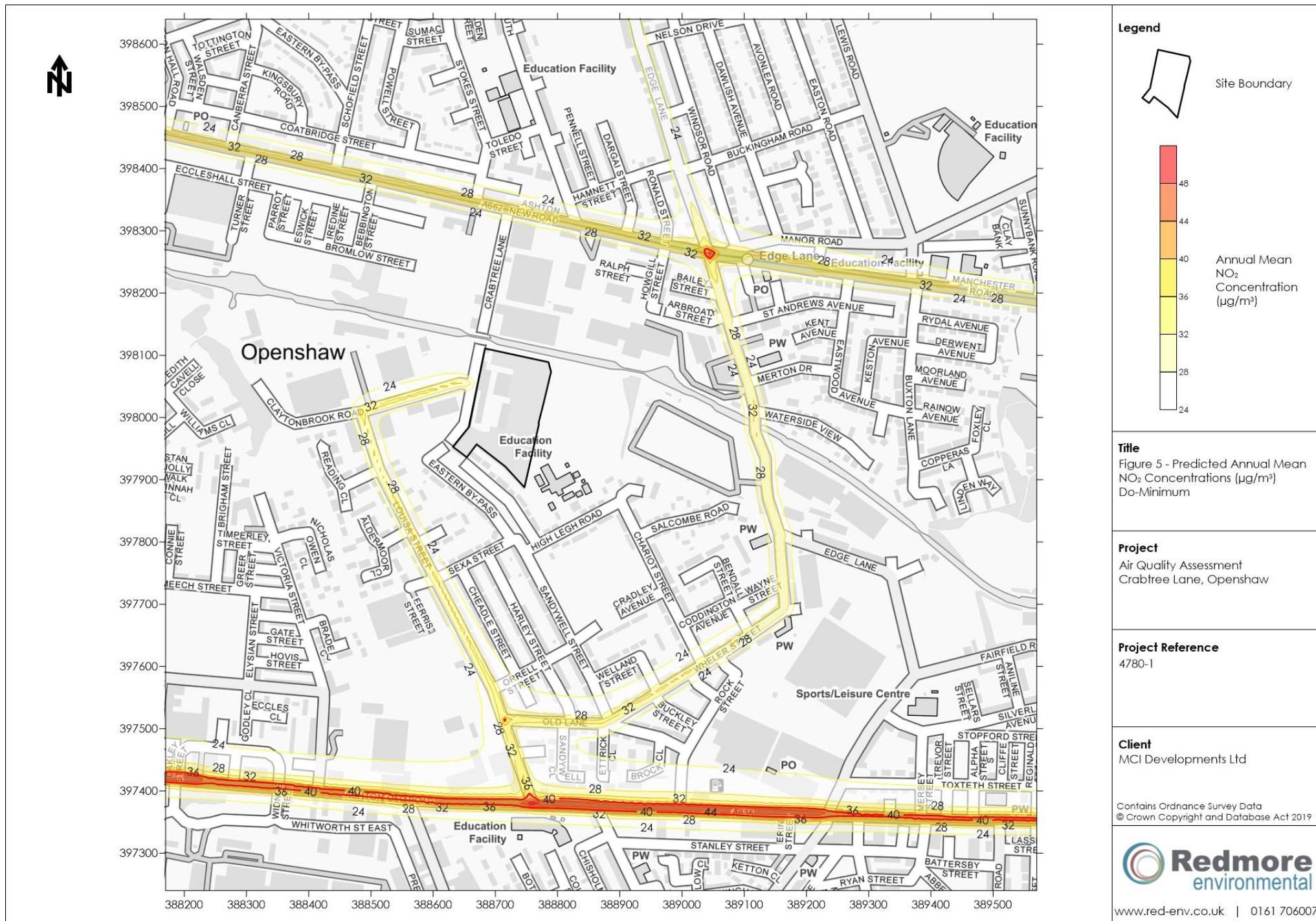
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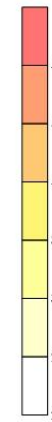




Legend



Site Boundary



Annual Mean
NO₂
Concentration
(µg/m³)

Title

Figure 6 - Predicted Annual Mean
NO₂ Concentrations (µg/m³)
Do-Something

Project

Air Quality Assessment
Crabtree Lane, Openshaw

Project Reference

4780-1

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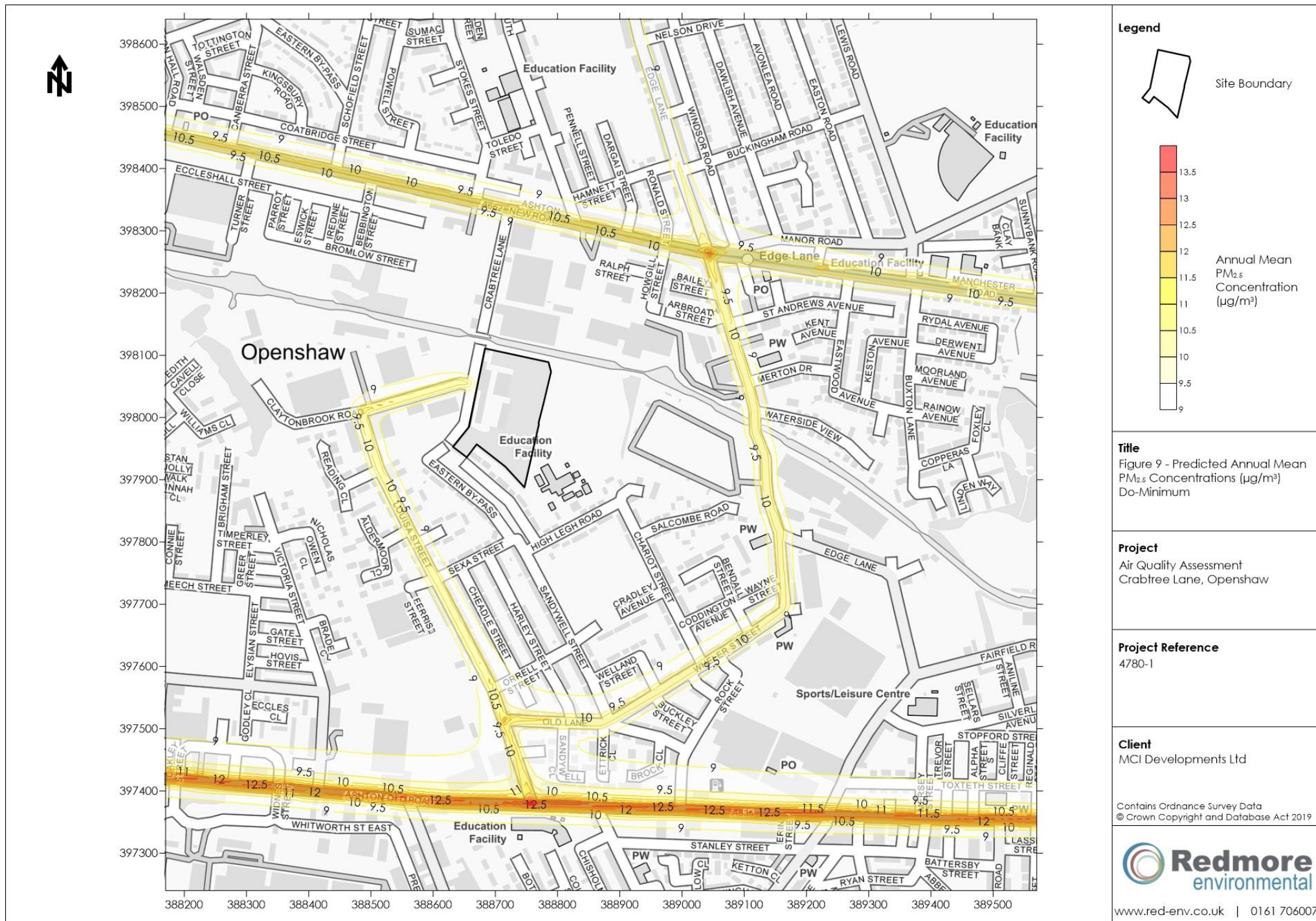
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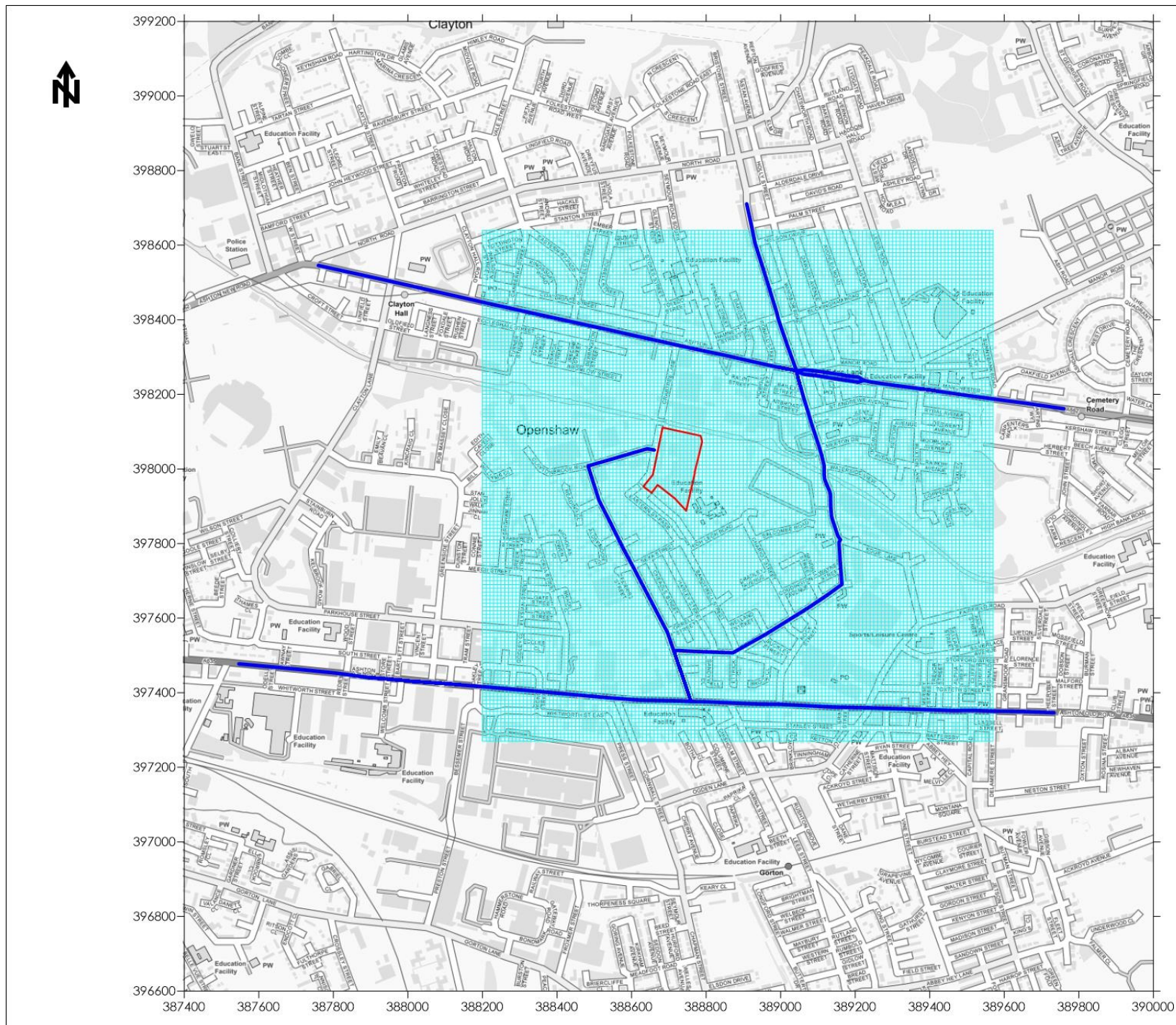
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Legend

-  Site Boundary
-  Road Link
-  Output Grid

Title

Figure 11 - ADMS-Roads Inputs

Project

Air Quality Assessment
Crabtree Lane, Openshaw

Project Reference

4780-1

Client

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Appendix 1 - Assessment Input Data

Introduction

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

Dispersion Model

Dispersion modelling was undertaken using the ADMS-Roads dispersion model (version 5.0.0.1). 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.

These inputs are detailed in the following Sections.

Assessment Area

Ambient concentrations were predicted over NGR: 388170, 397240 to 389570, 398640. One Cartesian grid was used within the model to produce data suitable for contour plotting using the Surfer software package.

Reference should be made to Figure 11 for a graphical representation of the assessment grid extents.

Traffic Flow Data

Baseline traffic data for use in the assessment, including 24-hour Annual Average Daily Traffic (AADT) flows and fleet composition as HDV proportion, was obtained from the Department for Transport (DfT)²⁰. 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 2020. It should be noted that the DfT web tool is referenced in DEFRA guidance²¹ 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.

Traffic data for Edge Lane was not available from the DfT. Flows for this link were therefore supplemented with information obtained from the Air Quality Assessment (reference: 3175)²² produced by Redmore Environmental Limited for a residential development on land off Fairfield Road, Droylsden, approximately 750m to the south-east of the site. As planning permission has been granted for this development, the report was considered to provide suitable data in lieu of other sources.

The baseline traffic data was converted to the site opening year utilising a factor obtained from TEMPro (version 7.2). This software package has been developed by the DfT to calculate future traffic growth throughout the UK.

Daily traffic movements generated as a result of the development and associated distribution were provided by Curtins, the Transport Consultants for the project. These were added to the relevant links to establish the DS flows.

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

²⁰ <https://roadtraffic.dft.gov.uk/#16/53.9024/-1.6338/basemap-countpoints>.

²¹ Local Air Quality Management (TG16) Technical Guidance, DEFRA, 2021.

²² Air Quality Assessment - Fairfield Road, Droylsden, Redmore Environmental Limited, 2020.

Table A1.1 Traffic Data

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		Verif.	2024 DM	2024 DS			
L1	Ashton New Road, west of Edge Lane	10,526	11,818	11,824	4.03	9.5	40
L2	Ashton New Road, Slow Phase (SP)	10,526	11,818	11,824	4.03	12.9	25
L3	Ashton New Road, Eastbound (EB)	5,367	5,805	5,809	4.06	7.5	30
L4	Ashton New Road, EB	5,367	5,805	5,809	4.06	9.5	20
L5	Ashton New Road, Westbound (WB)	5,159	5,580	5,584	4.01	10.0	25
L6	Ashton New Road, WB	5,159	5,580	5,584	4.01	10.7	15
L7	Manchester Road	10,526	11,386	11,394	4.03	13.3	30
L8	Manchester Road	10,526	11,386	11,394	4.03	12.3	25
L9	Manchester Road	10,526	11,386	11,394	4.03	11.9	40
L10	Edge Lane, SP	8,433	9,554	9,590	3.21	6.6	25
L11	Edge Lane	8,433	9,554	9,590	3.21	6.7	45
L12	Edge Lane, adjacent to Waterside View	8,433	9,554	9,590	3.21	6.4	35
L13	Edge Lane, north of Wheler Street	8,433	9,554	9,590	3.21	7.7	45
L14	Ashton Old Road	21,159	23,300	23,387	4.24	11.4	45
L15	Ashton Old Road, west of Fairfield Road	21,159	23,300	23,387	4.24	11.4	25
L16	Ashton Old Road, east of Louisa Street	21,159	23,300	23,387	4.24	11.4	25
L17	Ashton Old Road	21,159	23,300	23,466	4.24	11.4	40
L18	Ashton Old Road, adjacent to Dakley Street	21,159	23,300	23,466	4.24	11.8	20
L19	Ashton Old Road, adjacent to Greenside Street	21,159	23,300	23,466	4.24	11.6	40
L20	Ashton Old Road, west of Store Street	21,159	23,300	23,466	4.24	10.7	10
L21	Ashton Old Road, west of Redby Street	21,159	23,300	23,466	4.24	12.8	40
L22	Louisa Street	8,433	9,122	9,416	3.21	6.6	30
L23	Old Lane	8,433	9,122	9,375	3.21	6.5	25

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		Verif.	2024 DM	2024 DS			
L24	Wheler Street	8,433	9,122	9,163	3.21	8.8	30
L25	Edge Lane, north of New Ashton Road, SP	4,455	4,819	4,842	2.42	8.8	20
L26	Edge Lane, north of New Ashton Road	4,455	4,819	4,842	2.42	8.8	30

Reference should be made to Figure 11 for a graphical representation of the road link locations.

Emission Factors

The emission factors were calculated using the relevant traffic flows and the EFT (version 11.0). This has been produced by DEFRA and incorporates COPERT 5.3 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 2019 to 31st December 2019 (inclusive). Manchester Airport is located at NGR: 381792, 384116 which is approximately 15.5km 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 3 for a wind rose of 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 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 is considered appropriate for the morphology of the area 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 the modelling extents and meteorological site. This is considered appropriate for the nature of both areas and is suggested within ADMS-Roads as being suitable for 'cities and large towns'.

Background Concentrations

Annual mean NO₂, PM₁₀ and PM_{2.5} background concentrations for use in this assessment were obtained from the grid square containing the MA28NO - Ashton Old Road monitor, NGR: 387500, 397500. These are shown in Table A1.2.

Table A1.2 Background Concentrations - Modelling Extents

Pollutant	Predicted 2019 Background Pollutant Concentrations (µg/m ³)
NO ₂	20.49
PM ₁₀	12.61
PM _{2.5}	8.48

The values shown in Table A1.2 were chosen to represent concentrations throughout the dispersion modelling extents without the contribution from road vehicles as they were higher than the DEFRA background for the grid square containing the site, as shown in Table 14.

Background concentrations from 2019 were utilised throughout the assessment in preference to the development opening year. This provided a robust assessment and is likely to overestimate pollutant concentrations during the operation of the proposal.

NO_x to NO₂ Conversion

Predicted annual mean NO_x concentrations were converted to NO₂ concentrations using the spreadsheet (version 8.1) provided by DEFRA, which is the method detailed within DEFRA guidance²³.

Verification

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

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

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

For the purpose of the assessment, model verification was undertaken for 2019 using traffic data, meteorological data and monitoring results from this year. The choice of 2019 as the verification year aligns with the IAQM position statement 'Use of 2020 and 2021 Monitoring Datasets'²⁴, which states:

"If you are carrying out an air quality study that includes validation against monitoring data, use 2019 monitoring data as the last typical year."

Monitoring of NO₂ concentrations was undertaken at two locations within the modelling extents during 2019. Results were obtained and the road contributions to total NO_x concentrations calculated following the methodology contained within DEFRA guidance²⁵. The monitored

²³ Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.

²⁴ Use of 2020 and 2021 Monitoring Datasets, IAQM, 2021.

²⁵ Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.

annual mean NO₂ concentrations and calculated road NO_x concentrations are summarised in Table A1.3.

Table A1.3 Verification - Monitoring Results

Monitoring Location		Monitored NO ₂ Concentration (µg/m ³)	Calculated Road NO _x Concentration (µg/m ³)
MA28NO	Ashton Old Road	36.1	31.50
TA17NO	Manchester Road, Droylsden	34.1	27.21

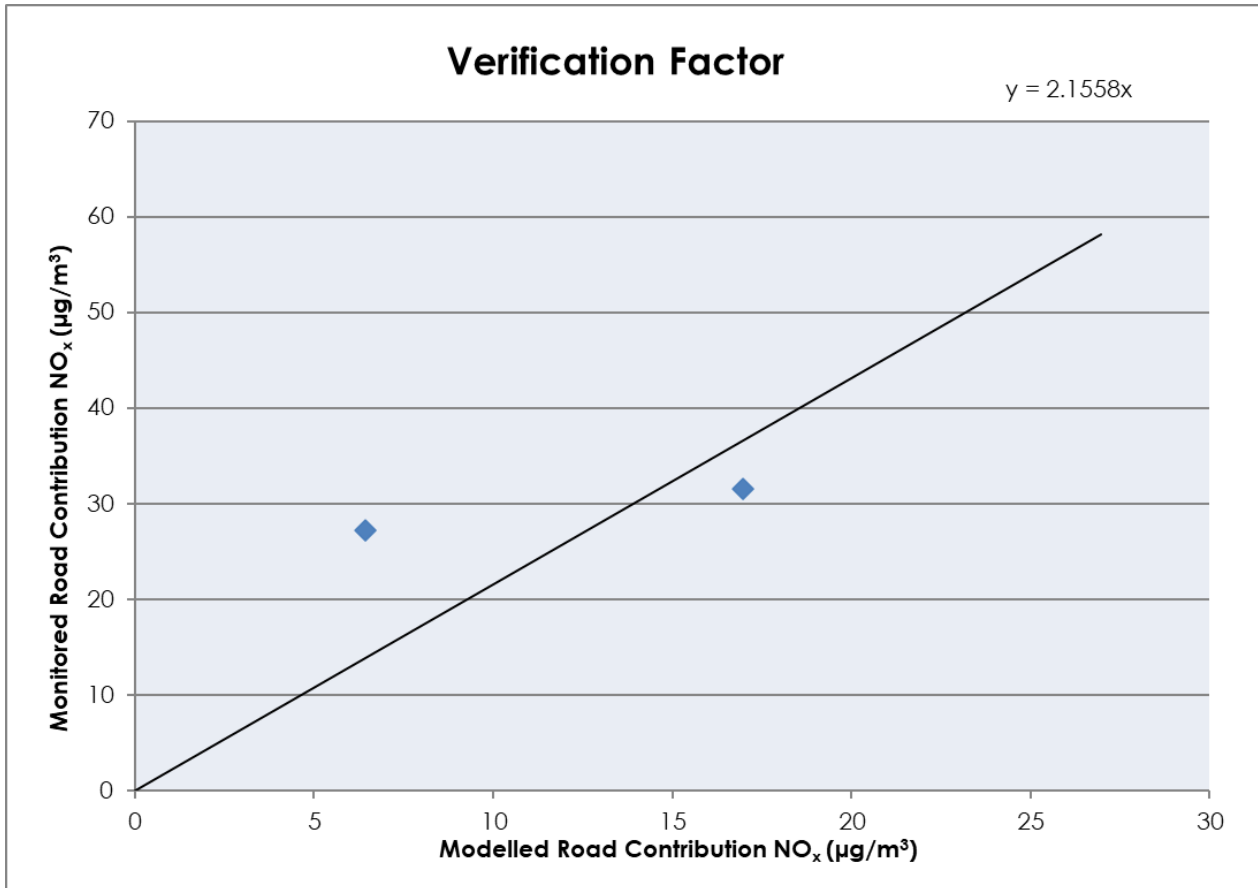
The annual mean road NO_x concentrations predicted from the dispersion model and the 2019 road NO_x concentrations calculated from the monitoring results are summarised in Table A1.4.

Table A1.4 Verification - Modelling Results

Monitoring Location		Calculated Road NO _x Concentration (µg/m ³)	Modelled Road NO _x Concentration (µg/m ³)
MA28NO	Ashton Old Road	31.50	16.96
TA17NO	Manchester Road, Droylsden	27.21	6.44

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 2.1558 was required to be applied to all NO_x modelling results, as shown in Graph 1.

Graph 1 NO_x Verification Factor



Monitoring of PM₁₀ and PM_{2.5} concentrations is 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 guidance²⁶.

²⁶ Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.

Date: 8th July 2022

Ref: 4780-1

Appendix 2 - Curricula Vitae

KEY EXPERIENCE:

Jethro is a Chartered Environmentalist and Director of Redmore Environmental with specialist experience in the air quality and odour sectors. His key capabilities include:

- Production and management of Air Quality, Dust and Odour Assessments for a wide-range of clients from the retail, residential, infrastructure, commercial and industrial sectors.
- Production and co-ordination of Environmental Permit applications for a variety of industrial sectors.
- Detailed dispersion modelling of road vehicle and industrial emissions using ADMS-Roads, ADMS-5, AERMOD-PRIME and BREEZE-ROADS. 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.
- Provision of expert witness services at Planning Inquiries.
- Design and project management of pollutant monitoring campaigns.
- Co-ordination and management of large-scale multi-disciplinary projects and submissions.
- Provision of expert advice to local government and international environmental bodies, as well as involvement in production of industry guidance.

SELECT PROJECTS SUMMARY:

Industrial

Shanks Waste Management - Odour Assessments of two waste management facilities to support Environmental Permit Applications.

Tatweer Petroleum - dispersion modelling of Bahrain oil field.

Doha South Sewage Treatment Works - AQA for works extension in Qatar.

IRIS Environmental Appraisal Report Reviews, Isle of Man Government - odour assessment reviews.

Lankem, Greater Manchester - Environmental Permit Application for chemical manufacturing plant.

Newport Docks Bulk Drying, Pelleting and CHP Facility - air quality EIA for gas CHP.

Springshades, Leicester - Environmental Permit Variation Application for textile manufacturing plant.

Valspar, Chester - Odour Assessment and production of Odour Management Plan for a paint manufacturing plant in response to neighbour complaints.

Agrivert - dispersion modelling of odour and CHP emissions from numerous AD plants.

James Cropper Paper Mill, Cumbria - air quality EIA, Environmental Permit Variation and Human Health Risk Assessment for new biomass boiler adjacent to SSSI.

Rigg Approach, Leyton - Air Quality Assessment in support of waste transfer site.

Lynchford Lane Waste Transfer Station - biomass facility energy recovery plant.

Barnes Wallis Heat and Power, Cobham - biomass facility adjacent to AQMA.

Residential

Wood St Mill, Bury - residential development adjacent to scrap metal yard.

Hyams Lane, Holbrook - Odour Assessment to support residential development adjacent to sewage works.

North Wharf Gardens, London - peer review of EIA undertaken for large residential development.

Loxford Road, Alford - Air Quality EIA for residential development, included consideration of impacts from associated package sewage works

Elephant and Castle Leisure Centre - baseline AQA for redevelopment.

Carr Lodge, Doncaster - EIA for large residential development.

Queensland Road, Highbury - residential scheme including CHP.

Bicester Ecotown - dispersion modelling of energy centre.

Castleford Growth Delivery Plan - baseline air quality constraints assessment for town redevelopment.

York St, Bury - residential development adjacent to AQMA.

Temple Point Leeds - residential development adjacent to M1.

Commercial and Retail

Etihad Stadium - Air Quality EIA for the extension to the capacity of the Etihad Stadium, Manchester.

Wakefield College - redevelopment of city centre campus in AQMA.

Manchester Airport Cargo Shed - commercial development.

Manchester Airport Apron Extension - EIA including aircraft emission modelling.

National Youth Theatre, Islington - redevelopment to provide new arts space and accommodation.

KEY EXPERIENCE:

Olly is a Senior Environmental Consultant with specialist experience in the air quality sector. His 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.
- Detailed dispersion modelling of industrial emission sources using ADMS-5. Studies have included assessment of pollutant concentrations and consideration of associated impacts.
- Assessment of construction dust impacts from a range of development sizes.
- Production of air quality mitigation strategies specifically tailored to address issues at individual sites.
- Definition of baseline air quality and identification of sensitive areas across the UK.
- Air quality monitoring at industrial sites to quantify pollutant concentrations.

SELECT PROJECTS SUMMARY:

Millharbour, Isle of Dogs

Air Quality Assessment for the development of residential units within an Air Quality Management Area (AQMA). Concerns were raised regarding the exposure of future occupants to poor air quality due to road traffic emissions. Detailed dispersion modelling was undertaken using ADMS-roads to assess PM₁₀ and NO₂ concentrations across the site. Results identified that pollution levels were below the air quality standards across the development.

Station Road, Howden

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

Honeycombe Beach, Bournemouth

Air Quality Assessment to determine air quality conditions within a covered car park serving a residential complex and evaluate the effectiveness of the existing ventilation system. Monitoring of pollutant concentrations over a three-month period at four locations at the site was undertaken. Internal concentrations of pollutants were below the relevant Work Exposure Limits (WELs) at all locations. As such, natural ventilation was considered to provide adequate control of internal air quality.

Matching Airport, Abbess Roding

Air Quality Assessment in support of a flexible generation facility. Dispersion modelling was undertaken to determine potential changes in pollution levels as a result of emissions from the installation and consider the potential impact at nearby sensitive receptor locations. Predicted concentrations of NO₂ were below the relevant air quality criteria at all locations of relevant exposure across all meteorological data sets modelled. The overall effects of the development were predicted to be not significant in accordance with the stated guidance.

High Road, Wood Green, London

Air Quality Assessment for a residential scheme located in an AQMA. Detailed dispersion modelling was undertaken at several heights reflective of residential units within the development. Results indicated that NO₂ and PM₁₀ concentrations were below air quality criteria across the development.

Anlaby Road, Hull

Air Quality Assessment for the development of a six storey hotel and associated infrastructure within an AQMA. Concerns were raised about the exposure of future occupants to elevated pollution concentrations during operation due to road traffic exhaust emissions. Detailed dispersion modelling was undertaken using ADMS-roads to assess PM₁₀ and NO₂ concentrations across the site. Results indicated that pollution levels were below the air quality standards across the development.

KEY EXPERIENCE:

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

- Production of Air Quality Assessments in accordance with Department for Environment, Food and Rural Affairs (DEFRA) methodologies for a range of residential, commercial and industrial sectors.
- Detailed dispersion modelling of road vehicle and industrial emissions using ADMS-Roads and ADMS-5. 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 NO₂ 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 NO₂ and PM₁₀ 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.