

ENVIRONMENT

Urban Splash Estates Limited
Old Mill Street
Manchester
Air Quality Assessment

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Air Quality Assessment

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EXECUTIVE SUMMARY

BWB Consulting Limited was appointed by Urban Splash Estates Limited to undertake an Air Quality Assessment for the proposed residential development at Old Mill Street, Manchester.

The Site is located within the administrative area of Manchester City Council. The Site is within the Manchester City Centre Air Quality Management Area which was designated by Manchester City Council for potential exceedances of the annual mean air quality objective for nitrogen dioxide.

A qualitative construction phase dust assessment was undertaken in accordance with Institute of Air Quality Management guidance and measures were recommended to minimise emissions during construction activities. With the implementation of these mitigation measures the impact of construction phase dust emissions was considered to be 'not significant' in accordance with Institute of Air Quality Management guidance.

The proposed development trip generation was screened using the Institute of Air Quality Management and Environmental Protection UK two stage screening process, to determine whether a detailed road traffic emissions impact assessment was required. The proposed development trip generation did not exceed the relevant screening criteria and therefore detailed dispersion modelling of development-generated road traffic was not undertaken. Consideration was also given to the Manchester City Council Air Quality and Planning Technical guidance.

Concentrations of NO₂, PM₁₀ and PM_{2.5} were also predicted across the proposed development Site and the suitability of the Site for the proposed residential use considered with regard to air quality. Pollutant concentrations were predicted to be below the current relevant air quality objectives and the Site was therefore considered suitable for the proposed use with regard to these objectives.

Based on the assessment results, the impact of the proposed development on local air quality was considered to be not significant, and therefore no further mitigation is required.

CONTENTS

EXECUTIVE SUMMARY	iii
1. INTRODUCTION.....	1-6
Site Setting	1-6
Proposed Development	1-6
2. LEGISLATION, PLANNING POLICY & GUIDANCE.....	2-8
National Legislation and Planning Policy	2-8
Local Planning Policy	2-8
Air Quality Assessment Guidance	2-9
3. METHODOLOGY	3-10
Consultation with Manchester City Council.....	3-10
Construction Phase Dust Assessment	3-10
Operational Phase Road Traffic Emissions – Screening Assessment.....	3-10
Operational Phase Road Traffic Emissions – Site Suitability Assessment	3-11
4. BASELINE CONDITIONS	4-15
Local Air Quality Management	4-15
Local Air Quality Monitoring	4-15
Background Pollutant Concentrations	4-17
5. CONSTRUCTION PHASE DUST ASSESSMENT.....	5-18
Step 1: Screen the Need for a Detailed Assessment.....	5-18
Step 2: Assess the Risk of Dust Impacts.....	5-18
Step 3: Site-Specific Mitigation.....	5-22
Step 4: Determine Significant Effects	5-25
6. OPERATIONAL PHASE ROAD TRAFFIC EMISSIONS SCREENING ASSESSMENT	6-26
7. OPERATIONAL PHASE ROAD TRAFFIC EMISSIONS SITE SUITABILITY ASSESSMENT	7-27
8. CONCLUSION	8-31

FIGURES

Figure 1.1: Site Location Plan

Figure 5.1: Construction Phase Dust Assessment Distance Buffers

Figure 7.1: Annual NO₂ Concentration (µg/m³) across the Site

Figure 7.2: Annual PM_{2.5} Concentration (µg/m³) across the Site

Figure 7.3: Annual PM₁₀ Concentration (µg/m³) across the Site

TABLES

Table 3.1: Air Quality Standards and Objectives (England)

Table 4.1: MCC NO ₂ Monitoring Data in 2018 – 2022
Table 4.2: MCC PM ₁₀ Monitoring Data in 2018 – 2022
Table 4.3: MCC PM _{2.5} Monitoring Data in 2018 – 2022
Table 4.4: Background Pollutant Concentrations used in the Assessment
Table 5.1: Dust Emission Magnitude Criteria and Definition
Table 5.2: Summary of Project Defined Dust Emissions Magnitudes
Table 5.3: Determination of the Sensitivity of the Area
Table 5.4: Summary Dust Risk Table to Define Site Specific Risk
Table 5.5: Mitigation Measures for a Medium Risk Site
Table 5.6: Mitigation Measures Specific to Earthworks, Construction and Trackout

APPENDICES

APPENDIX A: Glossary of Terms
APPENDIX B: Proposed Development Masterplan
APPENDIX C: Planning Policy and Legislation
APPENDIX D: Traffic Data Utilised in the Air Quality Assessment
APPENDIX E: Wind Rose
APPENDIX F: Model Verification

1. INTRODUCTION

- 1.1 BWB Consulting Limited (BWB) was instructed by Urban Splash Estates Limited (the Client) to undertake an air quality assessment for the residential development at Old Mill Street, Manchester ('the Site').
- 1.2 The assessment considers construction phase dust impacts and operational phase road traffic emissions. A qualitative construction phase dust assessment was undertaken in accordance with relevant guidance. An operational phase road traffic emissions screening assessment was undertaken to consider the requirement for a detailed assessment of additional vehicles generated by the proposed development. In addition, pollutant concentrations were predicted across the proposed development Site.
- 1.3 This report is necessarily technical in nature so to assist the reader a glossary of air quality terminology can be found in **Appendix A**.

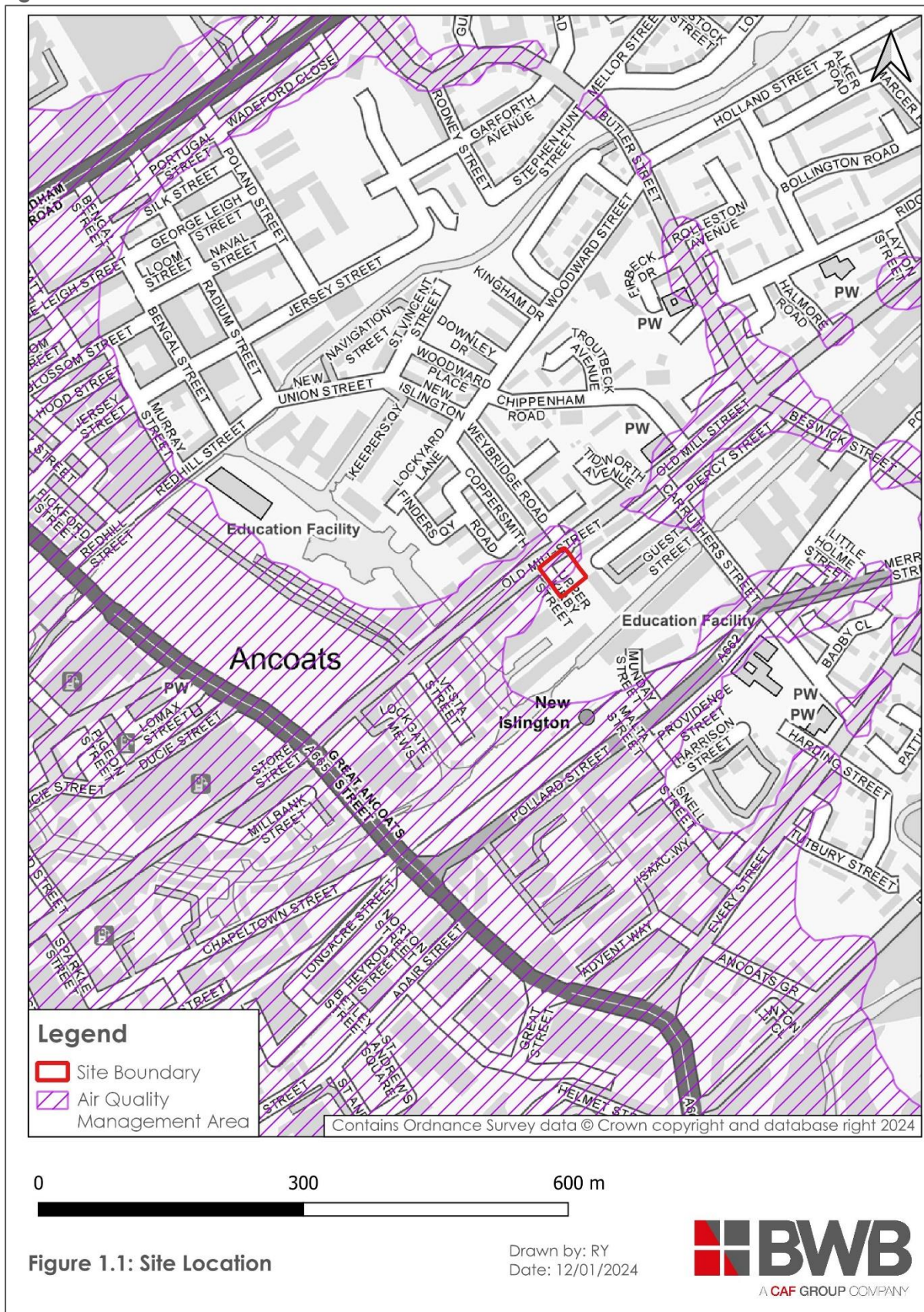
Site Setting

- 1.4 The Site is located on Old Mill Street, to the east of A665 Great Ancoats Street, and is within the administrative area of Manchester City Council (MCC).
- 1.5 **Figure 1.1** details the location of the proposed development. The Site currently comprises vacant land.
- 1.6 The Site is bound by Old Mill Street to the north, with residential units beyond. To the east lies residential dwellings and commercial properties off Piercy Street. To the south and west lie residential dwellings.
- 1.7 Principal air pollution sources in the vicinity of the Site are likely to comprise road traffic emissions. The Site is partially located within the Greater Manchester Air Quality Management Area (AQMA), declared by the Greater Manchester Combined Authority (GMCA) as part of the wider AQMA across Greater Manchester for potential exceedances of the annual mean nitrogen dioxide (NO₂) air quality objective. The location of the AQMA in relation to the Site is shown in **Figure 1.1**.

Proposed Development

- 1.8 The proposed development comprises a residential-led development to provide 40 no. residential units (Use Class C3) and ground floor commercial space (Use Class E), together with landscaping, parking, cycle parking, supporting infrastructure and associated works. The proposed development masterplan is detailed in **Appendix B**.

Figure 1.1: Site Location



2. LEGISLATION, PLANNING POLICY & GUIDANCE

National Legislation and Planning Policy

2.1 The following national legislation and planning policy is relevant to air quality and was considered in the undertaking of the assessment. A summary of the relevant national legislation and planning policy is provided in **Appendix C**:

- European Parliament, EU 2008 ambient Air Quality Directive (2008)¹;
- HMSO, Air Quality (England) Regulations (2000)²;
- HMSO, Environment Act (1995)³;
- HMSO, Environment Act (2021)⁴;
- HMSO, Air Quality (England) Regulations (2002)⁵;
- HMSO, Air Quality Standards Regulations (2010)⁶;
- Department for Environment, Air Quality Strategy (1997)⁷;
- Department for the Environment, Food and Rural Affairs, Air Quality Strategy (2007)⁸;
- Department for the Environment, Food and Rural Affairs, Air Quality Strategy (2023)⁹;
- Department for the Environment, Food and Rural Affairs, The Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020)¹⁰;
- HMSO, The Environmental Targets (Fine Particulate Matter) (England) Regulations (2023)¹¹;
- Ministry of Housing, Communities and Local Government, National Planning Policy Framework (NPPF) (2023)¹²; and
- Ministry for Housing, Communities and Local Government, Planning Practice Guidance (PPG) for air quality (2019)¹³.

Local Planning Policy

2.2 The following local planning policy was considered in the undertaking of the assessment and a summary is provided in **Appendix C**:

- Manchester's Local Development Framework, Core Strategy Development Plan Document (2012)¹⁴.

¹ European Parliament (2008) Council Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe

² HMSO (2000) Statutory Instrument 2000 No. 928, The Air Quality (England) Regulations 2000 (as amended), London: HMSO

³ HMSO (1995) The Environment Act 1995, London: TSO

⁴ HMSO (2021) The Environment Act 2021, London: TSO

⁵ HMSO (2002) Statutory Instruments 2002 No. 3043, The Air Quality (England) (Amendment) Regulations 2002, London: HMSO

⁶ HMSO (2010) Statutory Instruments 2010 No. 1001 Air Quality Standards Regulations 2010. London: HMSO

⁷ Department of the Environment (DoE) (1997) The UK National Air Quality Strategy, London: HMSO

⁸ Department of the Environment, Food and Rural Affairs (Defra) (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, London: HMSO

⁹ Department for the Environment, Food and Rural Affairs (Defra) (2023) Air Quality Strategy: Framework for Local Authority

¹⁰ Department of the Environment, Food and Rural Affairs (Defra) (2020) The Environment (Miscellaneous Amendments) (EU Exit) Regulations, London: HMSO

¹¹ HMSO (2023) Statutory Instruments 2023 No. 96 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023

¹² Ministry of Housing, Communities & Local Government (2023) National Planning Policy Framework, HMSO London

¹³ Ministry for Housing, Communities and Local Government (2019) Planning Practice Guidance Air Quality

¹⁴ Manchester City Council Core Strategy 2012-2027 (2012), Manchester, MCC

Air Quality Assessment Guidance

2.3 The following guidance was utilised in the air quality assessment:

- Defra, Local Air Quality Management Technical Guidance (LAQM.TG(22)) (2022)¹⁵;
- Institute of Air Quality Management, Guidance on the Assessment of Dust from Demolition and Construction (2014)¹⁶;
- Institute of Air Quality Management and Environmental Protection UK, Land-Use Planning and Development Control: Planning for Air Quality (2017)¹⁷; and
- Manchester City Council, Air Quality & Planning Technical Guidance (2022)¹⁸.

¹⁵ Defra (2022) Local Air Quality Management Technical Guidance LAQM.TG(22)

¹⁶ Institute of Air Quality Management (2014) Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management, London

¹⁷ Institute of Air Quality Management and Environmental Protection UK (2017) Land-Use Planning and Development Control: Planning for Air Quality

¹⁸ Manchester City Council (2022), Air Quality & Planning Technical Guidance

3. METHODOLOGY

Consultation with Manchester City Council

- 3.1 Consultation was undertaken with the Environmental Protection Department at MCC via email on 21st December 2023. A response was received on 22nd December 2023, confirming agreement of the proposed methodology. Details of the consultation relevant to this report are detailed below.
- Construction Phase - A construction phase dust assessment was undertaken and relevant measures to mitigate construction phase dust emissions were recommended. The assessment was undertaken in accordance with guidance provided by the Institute of Air Quality Management (IAQM)¹⁶.
 - Operational Phase – An operational phase road traffic emissions screening assessment was undertaken in accordance with IAQM and Environmental Protection UK (EPUK) guidance¹⁷. Consideration was also given to the MCC Guidance¹⁸. A Site suitability assessment was also undertaken to determine the suitability of the Site for its proposed residential use.
- 3.2 Full details of the methodology used in the assessment, as agreed with MCC, are provided below.

Construction Phase Dust Assessment

- 3.3 An assessment of the potential impacts arising from the construction of the proposed development was undertaken in accordance with IAQM Guidance¹⁶. The full assessment methodology is not reproduced within this report but a summary of the assessment steps are provided below:
- Step 1 – screen the requirement for a more detailed assessment. No assessment is required if there are no receptors within a certain distance of the works.
 - Step 2 – assess the risk of dust impacts separately for each of the four activities considered (demolition, earthworks, construction and trackout).
 - Step 2A – determine the potential dust emission magnitude for each of the four activities;
 - Step 2B – determine the sensitivity of the area;
 - Step 2C – determine the risk of dust impacts by combining the findings of steps 2A and 2B.
 - Step 3 – determine the site-specific mitigation for each of the four activities; and
 - Step 4 – examine the residual effects and determine significance.

Operational Phase Road Traffic Emissions – Screening Assessment

- 3.4 MCC states in its Air Quality & Planning Technical Guidance¹⁸ that they recommend the use of the IAQM/EPUK planning guidance¹⁷ when assessing the operational phase of development, and mitigation measures are recommended accordingly.

- 3.5 Guidance published by the IAQM and EPUK in 2017¹⁷ provides a two-stage approach to determine the level of assessment required in the consideration of the impact of development-generated road traffic emissions on local air quality.

Stage 1

- 3.6 The Stage 1 criteria requires that the assessment progress to Stage 2 if any of the following apply:
- The development comprises:
 - 10 or more residential units or a site area of more than 0.5ha; or
 - More than 1,000m² of floor space for all other uses or a site area greater than 1ha;
 - Coupled with any of the following:
 - The development has more than 10 parking spaces; or
 - The development will have a centralised energy facility or other centralised combustion process.

Note: Consideration should be given to the potential impacts of neighbouring sources on the site, even if an assessment of impacts of the development on the surrounding area is screened out.

Stage 2

- 3.7 The IAQM and EPUK guidance¹⁷ provides the following indicative criteria to determine whether a detailed road traffic emissions assessment is required for a proposed development.
- 3.8 The Stage 2 criteria relevant to the Proposed Development are:
- A change in Light Duty Vehicles (LDV) of more than 100 vehicles as a 24 hour Annual Average Daily Traffic (AADT) flow within an AQMA; and
 - A change in Heavy Duty Vehicles (HDV) of more than 25 vehicles as a 24 hour AADT flow within an AQMA.

Operational Phase Road Traffic Emissions – Site Suitability Assessment

Air Dispersion Modelling

- 3.9 The air dispersion model ADMS-Roads, version 5.0.1.3 was utilised in the assessment to predict concentrations of NO_x, PM₁₀ and PM_{2.5} at proposed receptor locations.
- 3.10 The assessment was undertaken in accordance with Defra LAQM.TG22¹⁵ and IAQM and EPUK guidance¹⁷.

Assessment Scenarios and Traffic Data

- 3.11 The following scenarios were considered in the air dispersion modelling:
- Scenario 1: 2022 Verification Year; and

- Scenario 2: 2026 Opening Year with development.
- 3.12 Traffic data were obtained from TTHC, the Transport Consultants for the project. 24-hour AADT and HDV proportions were provided for the following roads for use in the assessment:
- Great Ancoats Street; and
 - Old Mill Street.
- 3.13 Consideration was given to the speeds at which vehicles are likely to travel within the study area. Free-flowing traffic conditions were modelled at speed limits, with queuing sections on both Old Mill Street and Great Ancoats Street modelled in accordance with Defra guidance¹⁵.
- 3.14 Traffic data used in the air dispersion modelling are provided in **Appendix D**.

ADMS-Roads Model Inputs

- 3.15 The following model inputs were utilised in the assessment:
- Emission factors – emission factors were utilised from the Defra Emission Factor Toolkit¹⁹ (EFT), version 12, for the years of assessment (2022, 2024 and 2026).
 - Conversion of oxides of nitrogen – concentrations of NO_x were predicted using the ADMS-Roads dispersion model. These concentrations were converted to nitrogen dioxide (NO₂) using the Defra NO_x to NO₂ calculator²⁰, version 8.1.
 - Meteorological data – hourly sequential meteorological data for the verification year of assessment (2022) were obtained for the Manchester Airport recording station. This is considered to be the most representative recording station to the Site due to the proximity to the Site and setting within the Greater Manchester conurbation. The wind rose for 2022 is provided in **Appendix E**.
 - Surface roughness and Monin-Obukhov length (MO) – Site – a surface roughness of 1m and an MO length of 10m were utilised in the air dispersion model to represent conditions at the Site and within the Study area, indicative of its mixed urban and industrial setting within the Greater Manchester conurbation.
 - Surface roughness and Monin-Obukhov length (MO) – Meteorological Station – a surface roughness of 0.5m and an MO length of 30m were utilised in the air dispersion model to represent conditions at the meteorological station.
 - Background pollutant concentrations – background concentrations of NO₂, PM₁₀ and PM_{2.5} for the study area were obtained from the pollutant concentration maps²¹ provided by Defra as a 1km x 1km grid of the UK, for the years of assessment (2022, 2024 and 2026).
 - Model verification – model verification was undertaken using MCC monitoring data available for the study area. Full details of the verification procedure are provided in **Appendix F**.

¹⁹ Defra (2023) Emission Factor Toolkit [<https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>]

²⁰ Defra (2019) NO_x to NO₂ Calculator [<https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html#NOxNO2calc>]

²¹ Defra (2019) background pollutant concentration maps [<https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2019>]

- Calculation of short term PM₁₀ concentrations – the following calculation, as detailed in Defra guidance¹⁵, was utilised to calculate the number of exceedances of the 24-hour mean PM₁₀ air quality objective:

$$\text{Number of 24-Hour Mean Exceedance} = -18.5 + 0.00145 * \text{Annual Mean}^3 + (206 / \text{Annual Mean})$$

Receptor Locations

Proposed Receptor Locations

- 3.16 Pollutant concentrations were predicted across the Site to consider exposure of future residents of the proposed development to air quality. A cartesian grid from minimum X 385414 Y 398383 to maximum X 385566 Y 398504, modelled at a height of 1.5m to represent the average ground floor breathing height, was included to predict pollutant concentrations across the Site to consider its suitability for the proposed sensitive end use.

Limitations and Assumptions

- 3.17 There are uncertainties associated with both measured and predicted pollutant concentrations. The model (ADMS-Roads) used in this assessment relies on input data, which are also subject to uncertainty. The model itself simplifies complex physical systems into a range of algorithms. In addition, local micro-climatic conditions may affect the concentrations of pollutants that the ADMS-Roads model will not take into account.
- 3.18 The assessment is based on traffic data provided by Eddisons, the transport consultants for the project. As such any assumptions made by the transport consultants will also influence the air quality assessment.
- 3.19 In future year scenarios, uncertainty relates to the projection of vehicle emissions and, in particular the rate at which emissions per vehicle will improve over time. This assessment utilised the most recent version of the Defra EFT¹⁹ to provide the most up to date estimate of current and future emission projections.
- 3.20 To reduce the uncertainty associated with predicted concentrations, model verification was carried out following guidance set out in Defra guidance¹⁵. As the models were verified using local monitoring data and adjusted accordingly, there can be reasonable confidence in the predicted concentrations.
- 3.21 Consideration of committed local developments that may represent sensitive receptors to dust during the construction phase was undertaken through a review of the MCC planning portal. Any applications submitted following the review, or not present on the portal at the time of review, were not considered.

Assessment Criteria

- 3.22 Predicted pollutant concentrations were compared to the relevant air quality objectives for England⁷. The current relevant air quality standards and objectives are detailed in **Table 3.1**.

Table 3.1: Air Quality Standards and Objectives (England)

Pollutant	Averaging Period	Air Quality Objective ($\mu\text{g.m}^{-3}$)	Date to Achieve by
NO ₂	Annual Mean	40	31 December 2005
	1-hour mean not to be exceeded more than 18 times per year	200	31 December 2005
PM ₁₀	Annual Mean	40	31 December 2004
	24-hour mean not to be exceeded more than 35 times per year	50	31 December 2004
PM _{2.5}	Annual mean	20	1 January 2020
	<i>Annual mean interim target as detailed within the Environmental Improvement Plan²²</i>	12	<i>31 January 2028</i>
	Annual mean	10	31 December 2040

²² Defra (2023) Environmental Improvement Plan 2023, First revision of the 25 Year Environment Plan

4. BASELINE CONDITIONS

Local Air Quality Management

- 4.1 The Site is located within the Manchester AQMA, which was declared by GMCA for potential exceedances of the annual mean NO₂ air quality objective.

Local Air Quality Monitoring

Nitrogen Dioxide

- 4.2 MCC undertakes NO₂ monitoring within its administrative boundary, with the closest monitoring location to the Site being MA 71, approximately 300m to the south-west of Great Ancoats Street.
- 4.3 Bias adjusted NO₂ monitoring results, for the locations in the vicinity of the proposed development Site, are detailed in **Table 4.1**. At the time of assessment, 2020 and 2021 monitoring data was available and therefore were included in the review. The IAQM released a position statement²² in August 2021 with regard to 2020 and 2021 monitoring datasets. Due to the influence of the COVID-19 pandemic lockdown restrictions, 2020 and 2021 monitoring data are not considered representative of normal conditions. As the IAQM has not released a further position statement in relation to 2022 monitoring data, it is considered that 2022 monitoring data is considered latest year of representative data.

Table 4.1: MCC NO₂ Monitoring Data in 2016 – 2022

Location and Reference	Grid Reference		Site Monitoring Type	Distance from and direction to Site boundary	Monitored Annual Average Concentration (µg.m ⁻³)						
					2016	2017	2018	2019	2020	2021	2022
MA 71 – Great Ancoats Street	385161	398290	Roadside	330m South-west	51.2	50.4	46.1	45.3	31.4	34.2	34.4
MAN M4 – Great Ancoats Street	384995	398363	Roadside	470m West	*	*	*	54.1	34.5	40.8	51.2
MAN M5 – Great Ancoats Street	384980	398407	Roadside	480m West	*	*	*	*	38.9	42.9	38.5

*data not available

- 4.4 Monitored NO₂ concentrations exceeded the annual mean NO₂ objective at all reported locations between 2016 and 2022. MA 71 and MAN M5 concentrations were below the objective since 2022. Overall, a downward trend in NO₂ concentrations was observed. The reported monitoring locations are not considered representative of the Site conditions, due to their proximity to Great Ancoats Street which is a more highly trafficked road than Old Mill Street, which may result in elevated levels at these roadside measurement locations compared to the Site.

- 4.5 Monitoring locations MA71 and MANM5 were utilised in the model verification process. Monitoring location MANM4 was excluded from the model verification process as it is located within 1m of the kerb. In accordance with Defra guidance LAQM TG22¹⁴, kerbside sites are not typically utilised for a verification process.

Particulate Matter (PM₁₀)

- 4.6 MCC undertakes PM₁₀ monitoring within its administrative boundary, with the closest monitoring location to the site being MAN 3, approximately 1.1km to the west.

Table 4.2: MCC PM₁₀ Monitoring Data in 2016 – 2022

Location and Reference	Grid Reference		Site Monitoring Type	Distance from and direction to Site boundary	Monitored Annual Average Concentration (µg.m ⁻³)						
					2016	2017	2018	2019	2020	2021	2022
MAN 3 – Manchester Piccadilly	384310	398337	Urban Centre	1150m West	20	20	21	20	15	15	17
MAN 1 – Manchester Oxford Road	384233	397287	Kerbside	1670m South-west	27	27	30	26	18	18	18

- 4.7 Monitored PM₁₀ concentrations are below the current annual mean air quality objective for England for all years reported. MAN 3 is located within Piccadilly Gardens in Manchester city centre and is not, therefore, considered representative of Site conditions. MAN 1 is located adjacent to a major road and is also, therefore, not considered representative of Site conditions. -It is expected that concentrations at the Site are lower than those reported in **Table 4.2**.

Particulate Matter (PM_{2.5})

- 4.8 MCC undertakes PM_{2.5} monitoring within its administrative boundary, with the closest monitoring location to the site being MAN 3, approximately 1.1km to the West.

Table 4.3: MCC PM_{2.5} Monitoring Data in 2016 – 2022

Location and Reference	Grid Reference		Site Monitoring Type	Distance from and direction to Site boundary	Monitored Annual Average Concentration (µg.m ⁻³)						
					2016	2017	2018	2019	2020	2021	2022
MAN 3 – Manchester Piccadilly	384310	398337	Urban Centre	1150m West	10	8	11	12	8	9	10

- 4.9 Monitored PM_{2.5} concentrations are below the current annual mean air quality objective for England for all years reported. 2022 monitored PM_{2.5} concentrations are below the 2028 interim target of 12µg.m⁻³ and do not exceed the future 2040 objective of 10µg.m⁻³. MAN 3 is located within Piccadilly Gardens in Manchester city centre which experiences significant bus usage, and is not, therefore, considered representative of Site conditions. It is expected that concentrations at the Site are lower than those reported in **Table 4.3**.

Background Pollutant Concentrations

- 4.10 No background air quality monitoring is undertaken by MCC within the study area. Background pollutant concentrations were therefore obtained from the latest Defra background concentration maps²¹, which are provided for the UK as a 1km x 1km grid network. The latest maps are based on 2018 monitoring and meteorological data. Background concentrations of NO₂, PM₁₀ and PM_{2.5} were obtained for the grid squares covering the study area for the years of assessment (2022, 2024 and 2026). The background concentrations used in the assessment are detailed in **Table 4.4**.

Table 4.4: Background Pollutant Concentrations used in the Assessment

Pollutant	Grid Square	Monitoring Locations / Receptors	Concentration (µg.m ⁻³)		
			2022	2024	2026
NO ₂	384500, 397500	Site	24.7	23.1	21.8
PM ₁₀			13.8	13.6	13.4
PM _{2.5}			8.7	8.6	8.5
NO ₂	385500, 397500	Site	21.7	20.4	19.3
PM ₁₀			12.6	12.4	12.3
PM _{2.5}			8.2	8.1	8.0

- 4.11 Background concentrations of NO₂, PM₁₀ and PM_{2.5} are below the current relevant annual mean air quality objectives for England in 2023. Annual mean PM_{2.5} concentrations are also below the 2028 interim target of 12µg.m⁻³ and the future 2040 objective of 10µg.m⁻³.

5. CONSTRUCTION PHASE DUST ASSESSMENT

- 5.1 The construction phase of the proposed development will involve a number of activities which have the potential to impact on local air quality.
- 5.2 The location of sensitive receptors in relation to construction activities will affect the potential for such construction activities to cause dust soiling, nuisance and local air quality impacts. Meteorological conditions and the use of control measures will also contribute to the effects experienced.

Step 1: Screen the Need for a Detailed Assessment

- 5.3 Step 1 of the IAQM guidance¹⁶ involves a screening assessment to consider whether a more detailed construction phase dust assessment is required.
- 5.4 In accordance with the guidance, a detailed assessment is required if:
- Human receptors are located within 350m of the boundary of the site or 50m of routes used by construction vehicles on the public highways, up to 500m from the site entrances; or
 - Ecological receptors are located within 50m of the boundary of the site or 50m of routes used by construction vehicles on the public highways, up to 500m from the site entrances.
- 5.5 From a review of the Multi Agency Geographic Information for the Countryside (MAGIC) website²³, no ecological designations were identified within the above screening distance and therefore the impact on ecological designations was not considered further. However human receptors are located within the above screening distances, with the closest of these receptors located less than 5m away, off Old Mill Street. A construction phase assessment was therefore undertaken.

Step 2: Assess the Risk of Dust Impacts

Step 2A: Define the Potential Dust Emission Magnitude

- 5.6 The dust emission magnitudes for the construction activities were defined using the criteria detailed in the IAQM guidance¹⁶ as detailed in **Table 5.1**. Demolition is not proposed as part of the development and therefore was not considered further in the assessment.

²³ Defra, Multi Agency Geographic Information for the Countryside (MAGIC) [<http://magic.defra.gov.uk/>]

Table 5.1: Dust Emission Magnitude Criteria and Definition

Activity	IAQM Dust Emission Magnitude	IAQM Dust Emission Magnitude Criteria
Earthworks	Large	Total site area >10,000m ² , potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes.
	Medium	Total site area 2,500m ² – 10,000m ² , moderately dusty soil type (e.g. silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 4m - 8m in height, total material moved 20,000 tonnes – 100,000 tonnes.
	Small	Total site area <2,500m ² , soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4m in height, total material moved <20,000 tonnes, earthworks during wetter months.
Construction	Large	Total building volume >100,000m ³ , on site concrete batching, sandblasting.
	Medium	Total building volume 25,000m ³ – 100,000m ³ , potentially dusty construction material (e.g. concrete), on site concrete batching.
	Small	Total building volume <25,000m ³ , construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout	Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m.
	Medium	10 - 50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m.
	Small	<10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

5.7 The following dust emissions magnitudes were defined for the proposed development:

- Earthworks –the total site area is less than 2,500m², therefore, the earthworks dust emission magnitude is considered to be **Small**.
- Construction – As the total volume of the proposed development is expected fall between 25,000 and 100,000m³, the construction dust emission magnitude is considered **Medium**.
- Trackout – As precise details of construction traffic movements and routing was not known at the time of assessment, professional judgement was utilised to consider the dust emission magnitude for trackout. Due to the size and scale of development. the number of outward HDV movements per day is predicted to be less than 10, the trackout dust emission magnitude is considered to be **Small**. As such, a trackout distance of 50m from the Site access points was utilised in the assessment, in accordance with the IAQM guidance¹⁶.

5.8 A summary of the defined dust emissions magnitudes for the development are provided in **Table 5.2**.

Table 5.2: Summary of Project Defined Dust Emissions Magnitudes

Activity	Dust Emissions Magnitude
Earthworks	Small
Construction	Medium

Activity	Dust Emissions Magnitude
Trackout	Small

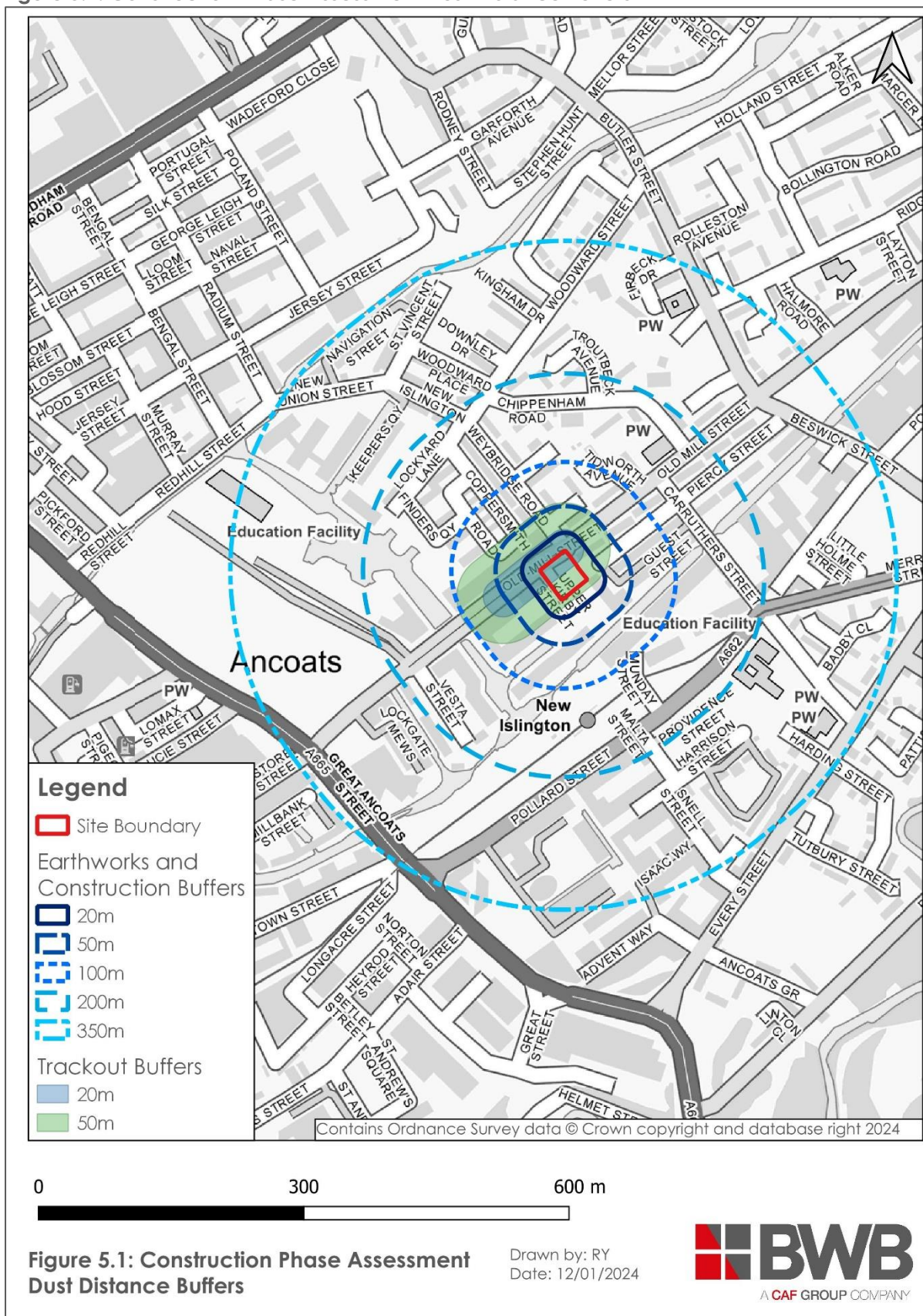
Step 2B: Define the Sensitivity of the Area

- 5.9 The assessment requires the determination of the sensitivity of the area for the purposes of dust soiling, human health and ecological impacts. The sensitivity of the study area takes into account the specific receptors in the vicinity of the Site, the proximity and number of those receptors, the local background concentration of PM₁₀ and site-specific factors. **Figure 5.1** was utilised to determine the number of receptors located within the distance bands provided in the IAQM guidance¹⁶ for determining receptor sensitivity.
- 5.10 The sensitivity of the area is defined below, in accordance with IAQM criteria¹⁶ and summarised in **Table 5.3**.
- Dust Soiling – There are 10 to 100 residential receptors located within 20m of the proposed Site boundary. There are also more than 100 highly sensitive residential receptors located within 50m of the proposed Site boundary. As such the sensitivity of the area to dust soiling is defined as '**High**'. In addition, there are more than 100 highly sensitive residential receptors located within 20m of roads used by construction vehicles up to 50m from the Site exit. As such, the sensitivity of the area to dust soiling for trackout is defined as '**High**'.
 - Human Health – There are 10 to 100 residential receptors located with 20m of the proposed site boundary. The annual mean PM₁₀ concentration is predicted to be below the 24 µg/m³, as stated in **Table 3.4**. As such, the sensitivity of the area to Human Health Impacts is defined as '**Low**'.

Table 5.3: Determination of the Sensitivity of the Area

Potential Impact	Sensitivity		
	Earthworks	Construction	Trackout
Dust Soiling	High	High	High
Human Health	Low	Low	Low

Figure 5.1: Construction Phase Assessment Dust Distance Buffers



Step 2C: Define the Risk of Impacts

- 5.11 The dust emission magnitude determined in Step 2A is then combined with the sensitivity of the area determined in Step 2B to define the risk of dust impacts with no mitigation applied. The results of this assessment are detailed in **Table 5.4**.

Table 5.4: Summary Dust Risk Table to Define Site Specific Risk

Activity	Step 2A: Dust Emission Magnitude	Step 2B: Sensitivity of the Area	Step 2C: Risk of Dust Impacts
<i>Dust Soiling Effects on People and Property</i>			
Earthworks	Small	High	Low Risk
Construction	Medium	High	Medium Risk
Trackout	Small	High	Low Risk
<i>Human Health Impacts</i>			
Earthworks	Small	Low	Negligible
Construction	Medium	Low	Low Risk
Trackout	Small	Low	Negligible

Step 3: Site-Specific Mitigation

- 5.12 The risk of dust impacts, defined in Step 2C of the assessment, is used to determine the mitigation measures required to minimise the emission of dust during construction phase activities. The IAQM guidance¹⁶ provides details of highly recommended and desirable mitigation measures which are commensurate with the risk of dust impacts defined in Step 2C for construction, earthworks and trackout activities. Where the mitigation measures are general in nature, the highest risk category was applied in accordance with the guidance¹⁶. The highest risk category identified was 'Medium Risk' and the recommended mitigation taken from the IAQM guidance¹⁶ is detailed in **Table 5.5** and **Table 5.6**.

Table 5.5: Mitigation Measures for a Medium Risk Site

Category	Mitigation Measures for a Medium Risk Site	
	Highly Recommended	Desirable
Communication	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	None
	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may	

Category	Mitigation Measures for a Medium Risk Site	
	Highly Recommended	Desirable
	be the environmental 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 Local Authority.	
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.	None
	Make the complaints log available to the local authority when asked.	
	Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.	
Monitoring	Carry out regular site inspections to monitor compliance with the DMP, record inspections results, and make an inspection log available to the local authority when asked.	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the site boundary, with cleaning to be provided as necessary.
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	
Preparing and maintaining the site	Plan the site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	None
	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 the site is active for an extended period.	
	Avoid site runoff of water or mud.	
	Keep site fencing, barriers and scaffolding clean using wet methods.	
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	

Category	Mitigation Measures for a Medium Risk Site	
	Highly Recommended	Desirable
	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.	Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).
	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	None
	Ensure an adequate water supply on site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	
	Use enclosed chutes and conveyors and covered skips.	
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	
	Ensure equipment is readily available on site to clean and dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	
Waste Management	Avoid bonfires and burning of waste materials.	None

Table 5.6: Mitigation Measures Specific to Earthworks, Construction and Trackout

Category	Mitigation Measures	
	Highly Recommended	Desirable
Earthworks (Low Risk Site)	None	None

Category	Mitigation Measures	
	Highly Recommended	Desirable
Construction (Medium Risk Site)	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	Avoid scabbling (roughening of concrete surfaces) if possible.
		Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
		For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.
Trackout (Low Risk Site)	None	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any materials tracked out of the site. This may require the sweeper being continuously in use.
		Avoid dry sweeping of large areas.
		Ensure vehicles entering and leaving the sites are covered to prevent escape of materials during transport.
		Record all inspections of haul routes and any subsequent action in a site log book.
		Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

Step 4: Determine Significant Effects

- 5.13 In accordance with IAQM guidance¹⁶, with the implementation of the mitigation measures detailed in Step 3, the residual impacts from the construction phase are considered to be 'not significant'.

6. OPERATIONAL PHASE ROAD TRAFFIC EMISSIONS SCREENING ASSESSMENT

- 6.1 In accordance with MCC guidance¹⁸, the trip generation for the proposed development was screened using IAQM and EPUK Stage 1 and Stage 2 criteria¹⁷ to determine whether a detailed air quality assessment was required.

Stage 1

- 6.2 The proposed development comprises more than 10 residential units, however the total proposed parking spaces does not meet the Stage 1B criterion of more than 10 parking spaces; it is therefore not required to proceed to Stage 2; however, the Stage 2 criteria is considered below for robustness.

Stage 2

- 6.3 The trip generation for the proposed development was provided by Eddisons, the Transport Consultants for the project.

- 6.4 The IAQM/EPUK¹⁷ guidance states:

"If none of the criteria are met, then there should be no requirement to carry out an air quality assessment for the impact of the development on the local area, and the impacts can be considered as having an insignificant effect".

- 6.5 The trip generation for the proposed development, based on an expanded car parking provision is 92 as a 24 hour AADT flow, all of which are LDVs. This was considered to be "extremely robust", as the scheme is providing reduced car parking provision. The predicted trip generation is below the threshold of 100 LDVs and 25 HDVs, as set out in the IAQM/EPUK Stage 2 criteria for development within an AQMA.

- 6.6 Therefore, in accordance with the IAQM and EPUK guidance¹⁷, it was considered that development-generated road traffic would not significantly influence local air quality and a detailed air quality impact assessment was not required.

7. OPERATIONAL PHASE ROAD TRAFFIC EMISSIONS SITE SUITABILITY ASSESSMENT

- 7.1 Concentrations of NO₂, PM₁₀ and PM_{2.5} were predicted across the proposed development Site for Scenario 2: 2026 Opening Year with development. Predicted pollutant concentrations are detailed in **Figures 7.1 – 7.3**.
- 7.2 The predicted NO₂, PM₁₀ and PM_{2.5} concentrations for Scenario 2: 2026 Opening Year with development, indicate that pollutant concentrations at the proposed residential development will be below the respective air quality objectives in 2026 with the development in place.
- 7.3 The modelled annual mean PM_{2.5} concentration across the Site is below the 2028 interim target of 12µg.m⁻³, and 2040 future objective of 10µg.m⁻³.
- 7.4 Based on the assessment results, the impact of the proposed development on local air quality is considered to be not significant.

Figure 7.1: Annual Mean NO₂ Concentration (µg.m⁻³) across the Site

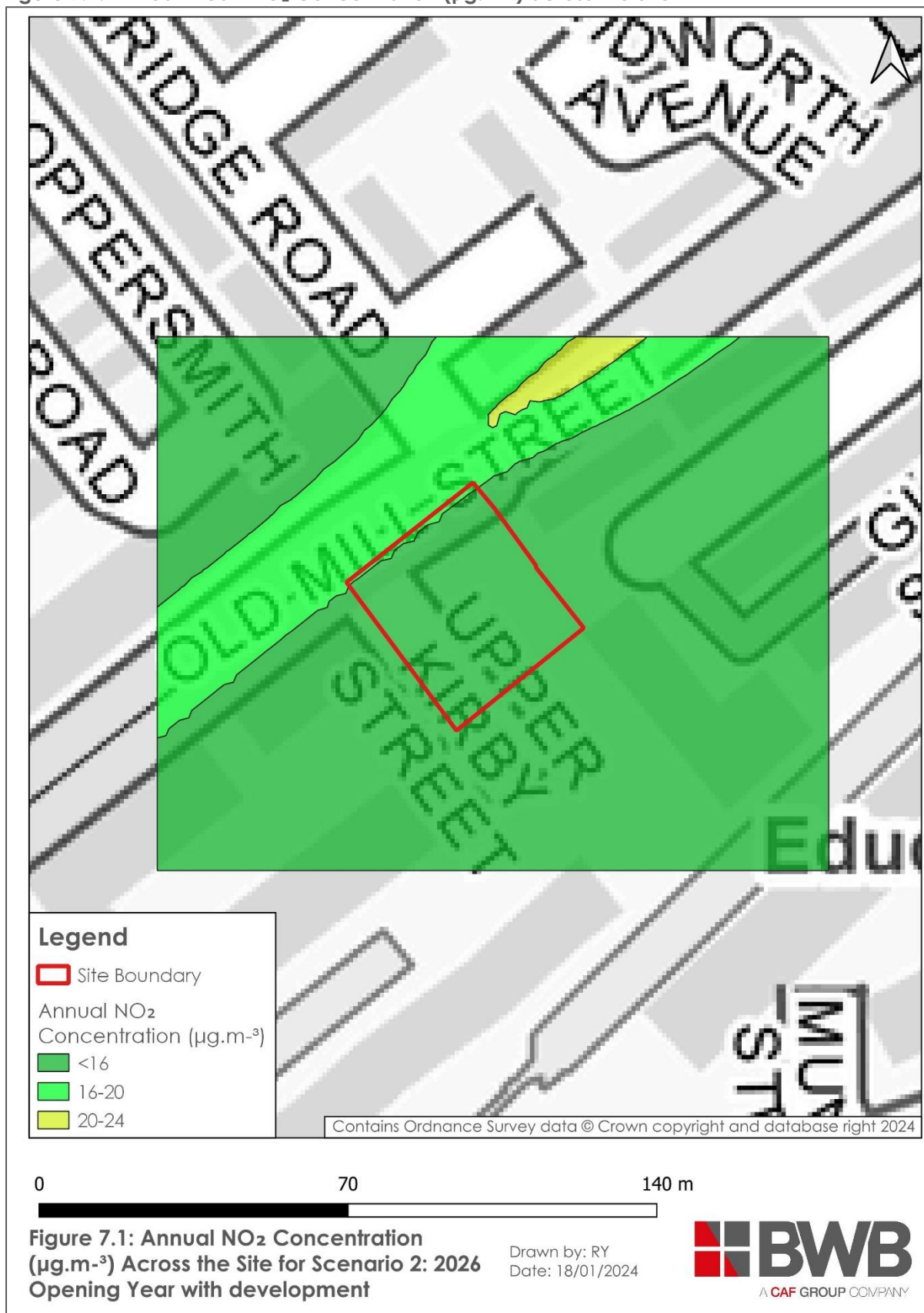
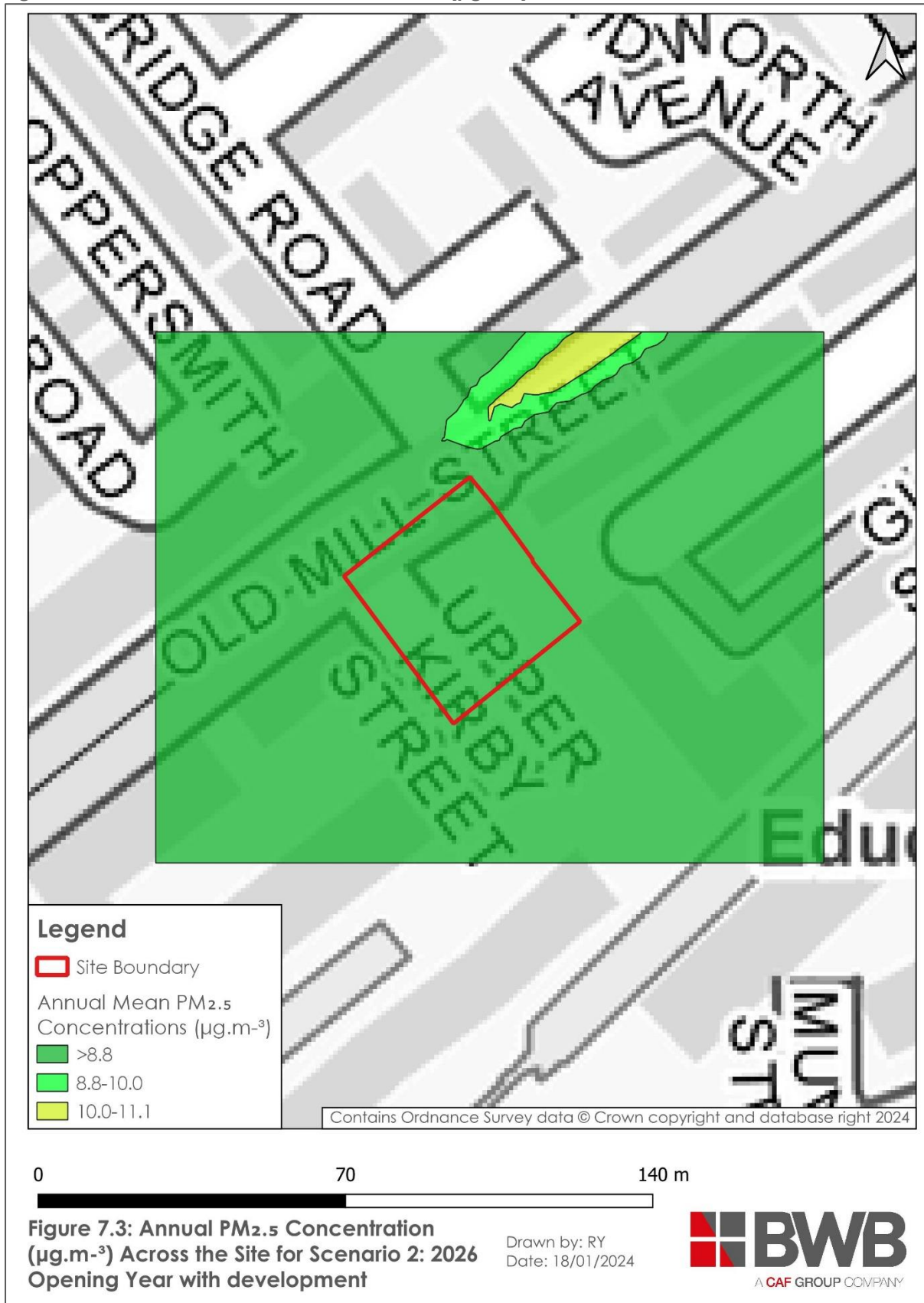


Figure 7.2: Annual Mean PM₁₀ Concentration ($\mu\text{g.m}^{-3}$) across the Site



Figure 7.3: Annual Mean PM_{2.5} Concentration ($\mu\text{g.m}^{-3}$) across the Site



8. CONCLUSION

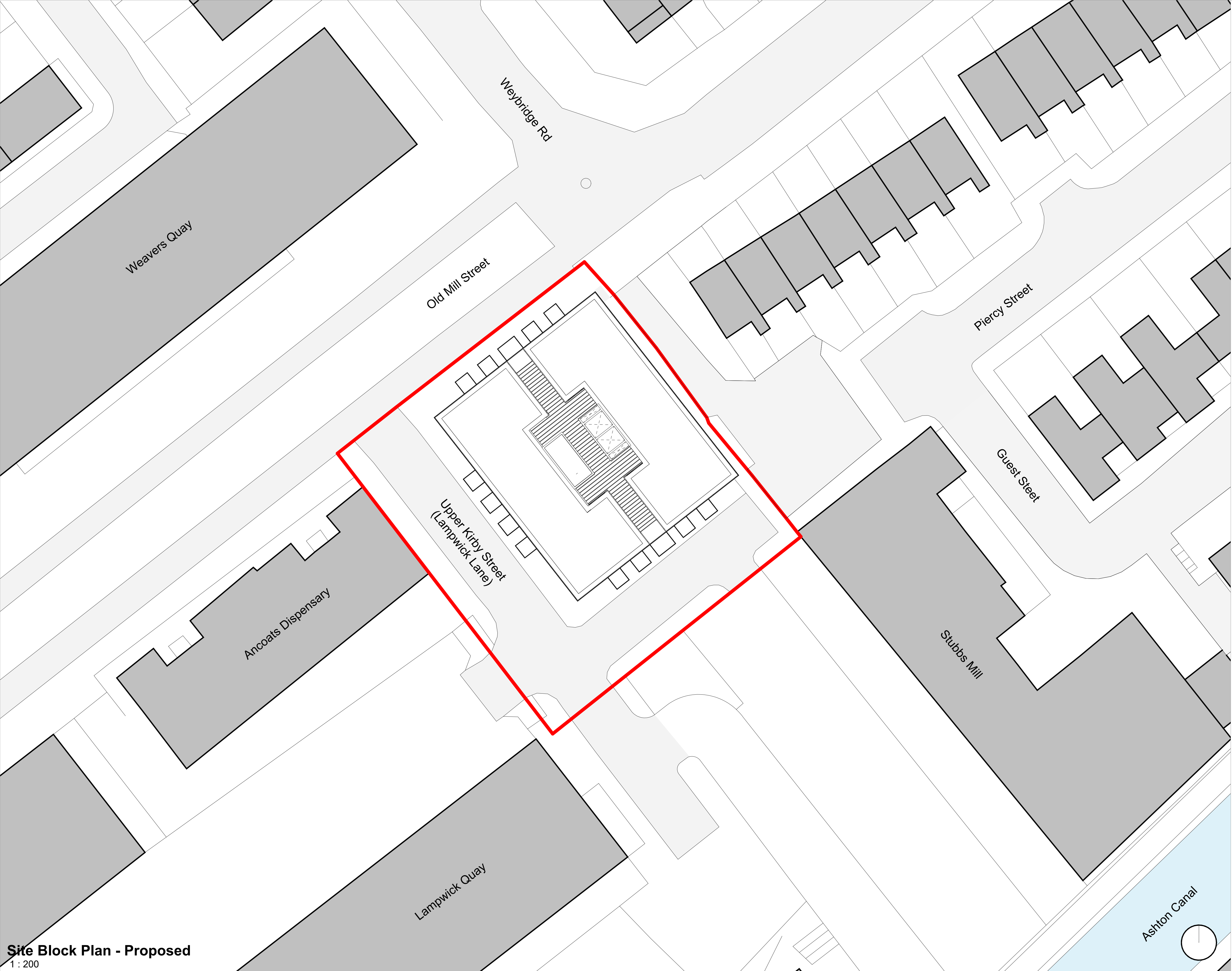
- 8.1 An air quality impact assessment was undertaken for the proposed residential development at Old Mill Street, Manchester.
- 8.2 A qualitative construction phase dust assessment was undertaken in accordance with Institute of Air Quality Management guidance and measures were recommended to minimise emissions during construction activities. With the implementation of these mitigation measures the impact of construction phase dust emissions was considered to be 'not significant' in accordance with Institute of Air Quality Management guidance¹⁶.
- 8.3 In accordance with Manchester City Council Air Quality and Planning Technical guidance¹⁸, the proposed development trip generation was screened using the Institute of Air Quality Management and Environmental Protection UK two stage screening process¹⁷, to determine whether a detailed road traffic emissions impact assessment was required. The proposed development trip generation did not exceed the relevant screening criteria and therefore detailed dispersion modelling of development-generated road traffic was not undertaken.
- 8.4 Pollutant concentrations were also predicted across the Site. Concentrations of NO₂, PM₁₀ and PM_{2.5} were all predicted to be below the relevant air quality objectives and therefore the Site was considered to be suitable for the proposed residential use with regard to air quality.
- 8.5 Based on the assessment results, the impact of the proposed development on local air quality was considered to be not significant, and therefore no further mitigation is required.

APPENDICES

APPENDIX A: GLOSSARY OF TERMS

Term	Definition
AADT	Annual Average Daily Traffic flow.
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between two years, which is useful for pollutants that have higher concentrations during the winter months.
AQAP	Air Quality Action Plan.
AQMA	Air Quality Management Area.
AQS	Air Quality Strategy.
Defra	Department for Environment, Food and Rural Affairs.
EPUK	Environmental Protection UK.
Exceedance	A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard.
HDV	Heavy Duty Vehicles (HGVs + buses and coaches)
HGV	Heavy Goods Vehicles.
IAQM	Institute of Air Quality Management.
LAQM	Local Air Quality Management.
LDV	Light Duty Vehicles (motorbikes, cars, vans and small trucks)
NO	Nitrogen monoxide, a.k.a. nitric oxide.
NO ₂	Nitrogen dioxide.
NO _x	Nitrogen oxides.
Percentile	The percentage of results below a given value.
PM ₁₀	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
PM _{2.5}	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres.
micrograms per cubic metre (µg.m ⁻³)	A measure of concentration in terms of mass per unit volume. A concentration of 1 µg.m ⁻³ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.

APPENDIX B: PROPOSED DEVELOPMENT MASTERPLAN



Site Block Plan - Proposed
1 : 200

Notes & Key

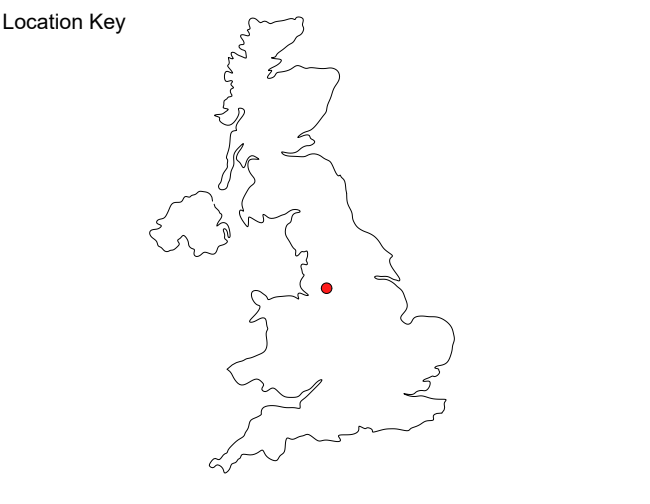
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Revisions			
Date	Rev	By	Description
24/10/23		JB	Planning Issue



DRAFT PLANNING

Project	GHA No.	
Old Mill Steet	2450	
Client		
Urban Splash		
Drawing Title		
Site Block Plan - Proposed		
Drawing No.	Revision	
2450-GHA-ZZ-ZZ-DR-A-(05)012		
Scale	Date	Checked
Scale - 1 : 200@A1	-	-
Glenn Howells Architects		
Birmingham	London	glennhowells.co.uk

APPENDIX C: PLANNING POLICY AND LEGISLATION

National Legislation and Planning Policy

The UK Air Quality Strategy

- C.1 European Union (EU) legislation forms the basis of air quality policy and legislation in the UK. The EU 2008 ambient Air Quality Directive¹ sets limits for ambient concentrations of air pollutants including nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}). The air quality standards and objectives are prescribed through the Air Quality (England) Regulations 2000², as amended, for the purpose of the Local Air Quality Management Framework. The Air Quality (England) Regulations were amended in 2002⁵ and again in 2010⁶, with miscellaneous amendments added in 2020¹⁰ following the UK exit from the EU. Additionally, an updated PM_{2.5} objective was published in 2023⁹ with an interim target to be achieved by 2028²³.
- C.2 The UK Government are required under the Environment Act 1995³ to produce a national Air Quality Strategy (AQS). The AQS was first published in 1997⁷ and most recently reviewed and updated in 2023⁹. The AQS provides an overview of the Government's ambient air quality policy and sets out the air quality standards and objectives to be achieved and measures to improve air quality.
- C.3 The Environment Act 2021⁴ was granted Royal Assent in November 2021 and contains amendments to Part IV of the Environment Act 1995³ with regard to the Local Air Quality Management regime. Under the Environment Act 2021⁴, the Secretary of State must lay a statement before Parliament setting out progress made in meeting air quality objectives and standard in England and steps taken towards achieving the standards. The Environment Act 2021⁴ also places responsibility on local authorities to co-operate with air quality partners in the preparation of Air Quality Action Plans and identification of measures which should be monitored within the Plan and dates by which they should be implemented.
- C.4 Part IV of the Environment Act³ requires local authorities in the UK to review local air quality within their administrative area and, if relevant air quality standards and objectives are likely to be exceeded, designate Air Quality Management Areas (AQMA). Following the designation of an AQMA, local authorities are required to publish an Air Quality Action Plan (AQAP) detailing measures to be taken to improve local air quality and work towards meeting the relevant air quality standards and objectives.

National Planning Policy Framework

- C.5 The National Planning Policy Framework (NPPF)¹² was amended in December 2023 and sets out the Government's planning policies for England and how these are expected to be applied.
- C.6 The NPPF¹² recognises air quality within Section 15: Conserving and enhancing the natural environment, and 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, taking into account relevant information such as river basin management plans;

[...]

Ground conditions and pollution

[...]

Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development.

[...]

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."

C.7 With regard to assessing cumulative effects the NPPF¹² states:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development.

[...]"

Planning Practice Guidance

- C.8 The Planning Practice Guidance (PPG) for air quality¹³ was updated in November 2019 and provides guiding principles on how the planning process can take account of the impacts of new development on air quality.
- C.9 The PPG¹³ sets out the following with regard to air quality and planning:
- *“What air quality considerations does planning need to address;*
 - *What is the role of plan-making with regard to air quality;*
 - *Air quality concerns relevant to neighbourhood planning;*
 - *What information is available about air quality;*
 - *When could air quality considerations be relevant to the development management process;*
 - *What specific issues may need to be considered when assessing air quality impacts;*
 - *How detailed does an air quality assessment need to be; and*
 - *How can an impact on air quality be mitigated”.*
- C.10 The PPG¹³ sets out the pollutants for which there are legally binding limits for concentrations and those which the UK also has national emissions reduction commitments.
- C.11 The PPG¹³ states that development plans may need to consider:
- *“what are the observed trends shown by recent air quality monitoring data and what would happen to these trends in light of proposed development and / or allocations;*
 - *the impact of point sources of air pollution (pollution that originates from one place);*
 - *the potential cumulative impact of a number of smaller developments on air quality as well as the effect of more substantial developments, including their implications for vehicle emissions;*
 - *ways in which new development could be made appropriate in locations where air quality is or is likely to be a concern, and not give rise to unacceptable risks from pollution. This could, for example, entail identifying measures for offsetting the impact on air quality arising from new development including supporting measures in an air quality action plan or low emissions strategy where applicable; and*
 - *opportunities to improve air quality or mitigate impacts, such as through traffic and travel management and green infrastructure provision and enhancement”.*
- C.12 The PPG¹³ also states what may be considered relevant to determining a planning application and these include whether a development would:
- *“Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield. This could be through the provision of electric vehicle charging*

infrastructure; altering the level of traffic congestion; significantly changing traffic volumes, vehicle speeds or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; could add to turnover in a large car park; or involve construction sites that would generate large Heavy Goods Vehicle flows over a period of a year or more;

- Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; biomass boilers or biomass-fuelled Combined Heat and Power plant; centralised boilers or plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area; or extraction systems (including chimneys) which require approval or permits under pollution control legislation;
- Expose people to harmful concentrations of air pollutants, including dust. This could be by building new homes, schools, workplaces or other development in places with poor air quality;
- Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations;
- Have a potential adverse effect on biodiversity, especially where it would affect sites designated for their biodiversity value".

C.13 The PPG¹³ provides guidance regarding what should be included within an air quality assessment. Examples of potential air quality mitigation measures are also provided.

Local Planning Policy

Manchester City Council, Local Development Framework Core Strategy Development Plan

C.14 The Local Development Framework Core Strategy¹⁴ was adopted by MCC in July 2012. The Core Strategy Development Plan sets out the spatial policies for the Local Development Framework until 2027. The following policies relate to air quality:

"Policy CC 5

Transport

[...]

Proposals will be supported that improve pedestrian safety, improve air quality and increase the scope for accessible public realm improvements.

[...]"

"Core 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 impact 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 impacts on air quality, alongside other plan objectives. This includes cumulative impacts, particularly in Air Quality Management Areas. [...]".

- C.15 The above policies were taken into consideration throughout the undertaking of the assessment.

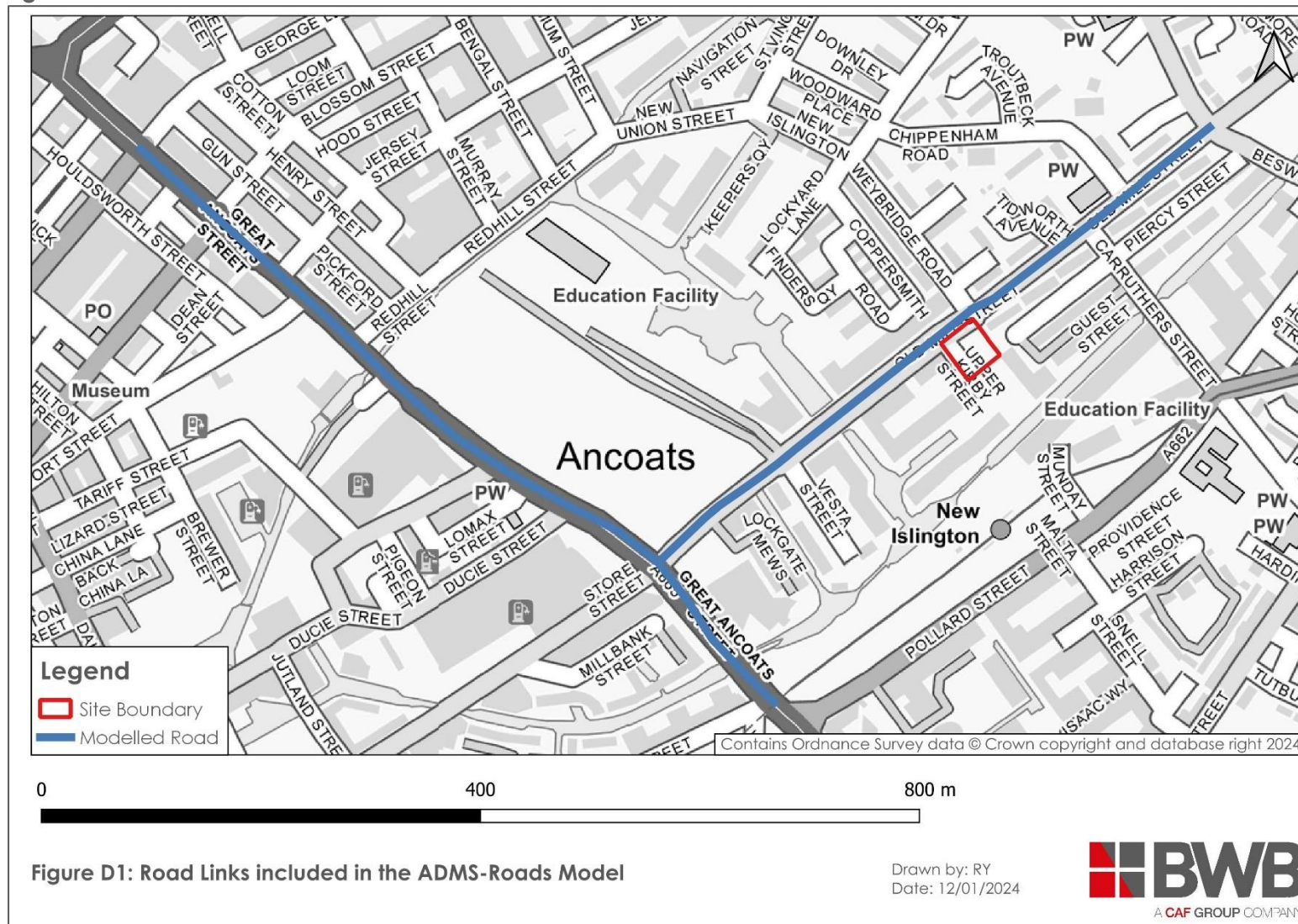
APPENDIX D: TRAFFIC DATA UTILISED IN THE AIR QUALITY ASSESSMENT

Table D1: Traffic Data Utilised in the Air Dispersion Modelling Assessment

Road Link	Speed	Scenario 1: 2022 Verification Year		Scenario 2: 2024 Base Year		Scenario 4: 2026 Opening Year With Development	
	Km.hr ⁻¹	24 hour AADT Total Flow	HDV Flow	24 hour AADT Total Flow	HDV Flow	24 hour AADT Total Flow	HDV Flow
Old Mill Street	48	4,692	161	4,778	164	4,985	168
Great Ancoats Road (North of Old Mill Street)	48	23,679	925	24,115	942	24,727	964
Great Ancoats Road (South of Old Mill Street)	48	31,753	848	32,337	864	33,146	884

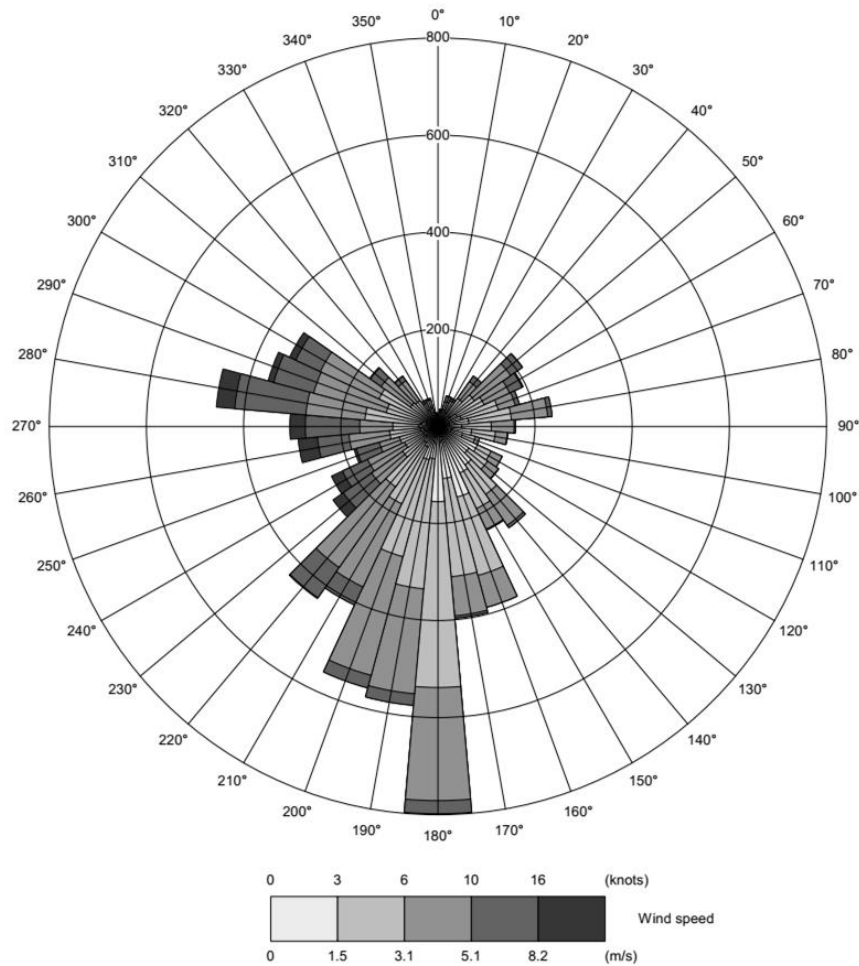
An illustration of the road links included in the ADMS-Roads model is provided in **Figure D1**.

Figure D1: Road Links Included in the ADMS-Roads Model



**APPENDIX E: WIND ROSE FOR 2022 FOR MANCHESTER AIRPORT METEOROLOGICAL RECORDING
STATION**

Meteorological data for 2022 Verification Year scenario for the Manchester Airport recording station was obtained for use in the air dispersion modelling assessment. The wind rose for 2022 is detailed below and illustrates a predominant wind direction from the south.



APPENDIX F: MODEL VERIFICATION

Whilst ADMS-Roads is widely validated for use in this type of assessment, model verification for the area around the Site will not have been included. To determine model performance at a local level, a comparison of modelled results with monitored results in the study area was done in accordance with the methodology provided by Defra¹⁴. This process of verification aims to minimise modelling uncertainty by correcting modelled results by an adjustment factor to give greater confidence to the results.

The model was run for Scenario 1: 2022 Verification Year to predict the 2022 annual mean road contributions of NO_x at the monitoring locations in the study area. The model NO_x outputs at this location were compared to the 2022 monitored concentrations to provide adjustment factors. **Table F1** presents the verification process for NO_x. **Figure F1** details the monitoring locations utilised in the model verification.

Monitoring locations MA71 and MANM5 were utilised in the model verification process. Monitoring location MANM4 was excluded from the model verification process as it is located within 1m of the kerb. In accordance with Defra guidance LAQM TG22¹⁴, kerbside sites are not considered suitable for use in the verification process.

No monitoring of PM₁₀ or PM_{2.5} is undertaken within the study area. Therefore the adjustment factor calculated during the NO_x verification process was utilised to adjust predicted concentrations of PM₁₀ and PM_{2.5}.

Table F1: NO_x Verification Process

Model Verification Steps	MA71	MANM5
2022 monitored total NO ₂ (µg.m ⁻³)	34.4	38.5
2022 background NO ₂ concentration (µg.m ⁻³)	20.9	26.3
Monitored road contribution NO _x (µg.m ⁻³)	27.1	25.0
Modelled road contribution NO _x (µg.m ⁻³)	14.1	13.9
Ratio of monitored road NO _x to modelled road NO _x	1.9	1.8
Adjustment factor for modelled road contribution NO_x	1.857	
Adjusted modelled road contribution NO _x (µg.m ⁻³)	26.2	25.9
Modelled total NO ₂ concentration (µg.m ⁻³)	28.1	33.3
Monitored total NO ₂ concentration (µg.m ⁻³)	34.4	38.5
% difference between modelled and monitored total NO ₂ concentration	-18.2	-13.6
RMSE % (should be less than 25% and ideally less than 10%)	14.5%	

* Road-NO_x component, determined from NO_x to NO₂ calculator

A road-NO_x factor of **1.857** was determined as the slope of the best fit line between the 'measured' road contribution and the model derived road contribution, forced through zero. This factor was then applied to the modelled road-NO_x concentration at each receptor, before conversion to NO₂ concentrations using the NO_x to NO₂ calculator provided by Defra¹⁴ and the adjusted NO₂ background concentration.

The RMSE calculated for the verification is within the 25% threshold in Defra guidance¹⁴.

Figure F1: Monitoring Locations Utilised in the ADMS-Roads Model Verification Process

