

AIR QUALITY ASSESSMENT

on behalf of

PORTWOOD DEVELOPMENTS LTD

for

87 ROCHDALE ROAD, MANCHESTER

REPORT DATE: 3RD SEPTEMBER 2021

REPORT NUMBER: 102623V2

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Summary

This air quality report has been prepared to accompany a planning application for a proposed residential development comprising 237 units and associated car park spaces at 87 Rochdale Road, Manchester. It assesses the potential changes in air quality due to the construction and operation of the proposed development and whether these potential changes would significantly alter air quality.

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

An underground car park for 29 car parking spaces is proposed in the northwestern part of the site. As the development traffic is below the IAQM threshold of 100 LDV and 25 HDV AADT, the vehicle emissions are considered to be not significant. The exhaust vent for the ventilation serving the underground car park is proposed on the ground floor in the top-centre of the building. Mitigation is recommended to ensure the vent will not be positioned near a future residents window. Consequently, emissions from the car park are expected to be not significant.

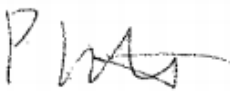
The development is set back from the main road network and includes ground-floor commercial uses nearest to the main pollution source (Rochdale Road). Future air quality at the proposed development site, and its effects on future residents, has been considered. Annual concentrations of NO₂, PM₁₀ and PM_{2.5} are predicted to be below the respective air quality objectives in the '*with development*' scenarios in 2024 (the opening year of the development) across the whole development.

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

Prepared By Philip Walton

Reviewed By Melody Horan

Signed



Signed



Date

3rd September 2021

Date

3rd September 2021

Record of changes

Version	Date	Change	Initials
1	26 th August 2021	First issue	PW
2	3rd September 2021	V2 – removal of CHP from report	PW

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1 Introduction

- 1.1 Miller Goodall Ltd has been instructed to prepare an air quality assessment to accompany a planning application for a proposed residential development at Rochdale Road, Manchester. The site lies within the administrative boundary of Manchester City Council (MCC).
- 1.2 The report provides an assessment of the potential air quality impacts associated with the construction and operational phases of the proposed development. The total vehicle generation is low, therefore impacts to existing sensitive receptors are screened out. The suitability of the site for the intended residential and commercial use is assessed across the building footprint and floors above the ground floor.
- 1.3 The main pollutants of health concern from road traffic exhaust releases are nitrogen dioxide (NO₂) and fine particulates, normally assessed as the fraction of airborne particles of mean aerodynamic diameter less than ten micrometres (PM₁₀) and 2.5 micrometres (PM_{2.5}) since these pollutants are most likely to approach their respective air quality objectives in proximity to major roads and in congested areas. This assessment has therefore focused on the impact of the proposed development on concentrations of NO₂, PM₁₀ and PM_{2.5}.

2 Site Description

- 2.1 The proposed development site is adjacent to Rochdale Road (A664), one of the main routes which provide an exit route from Manchester city centre. The site is located approximately 1.5 km to the north of the city centre.
- 2.2 The site currently operates as a car park and there is a car repair garage in the northeastern part of the site. A car park and brownfield land borders the site to the north. A car park and Rochdale Road borders the site to the east with further parking and commercial uses located beyond. Rochdale Road and commercial units border the site to the south, with car parking and commercial units beyond. Gould Street borders the site to the west with existing residential uses beyond.
- 2.3 The site is partially located within an Air Quality Management Area (AQMA). The site location and its relationship to the AQMA are shown in **Appendix A**.

3 Proposed Development

- 3.1 The proposed development includes commercial units on the ground floor and residential use for 237 residential units. The units would comprise townhouses and apartments, with the townhouses bordering Gould Street in the western part of the site. The proposals include a 12 storey tower (approximately 46 m height) that will sit in the central part of the site, with ground floor uses that contain a mix of residential, amenity, and commercial units along the southern boundary of the building. There is no residential occupation proposed on the ground floor closest to Rochdale Road. Photovoltaic panels are to be installed on the roof.
- 3.2 An underground car park for 29 car parking spaces is to be provided, with access from Gould Street. The townhouses would be set back from the roadside and are not positioned above or overlapping the car park ramp. The extraction vent for the car park would be on the northern façade of the apartment block building, bordering an existing car park. A discussion of the car park emissions has been included in this report.

- 3.3 The red line boundary for the proposed development is shown in **Appendix A**. The ground floor site plan (of the apartment block) and car park extraction vent location is shown in **Appendix B**.

4 Policy Context

4.1 Air Quality Objectives

- 4.1.1 The standards and objectives relevant to the LAQM framework have been prescribed through the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations 2002; the Air Quality Standards Regulations 2010 set out the combined Daughter Directive limit values and interim targets for Member State compliance.
- 4.1.2 The United Kingdom left the European Union on 31st January 2020 and is no longer a member state. However, the current framework of air quality legislation was converted into domestic law through the European Union (Withdrawal) Act 2018^[1].
- 4.1.3 The relevant air quality standards and objectives are presented in **Table 1**. Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health.

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

Pollutant	Air Quality Objective	
	Concentration	Measured As
Nitrogen dioxide (NO ₂)	200 µg/m ³	1-hour mean not to be exceeded more than 18 times per year
	40 µg/m ³	Annual mean
Particles (PM ₁₀)	50 µg/m ³	24-hour mean not to be exceeded more than 35 per year
	40 µg/m ³	Annual mean
Particles (PM _{2.5})	25 µg/m ³	Annual mean (target)

- 4.1.4 Where an air quality objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as Air Quality Management Areas (AQMA) and take action to work towards meeting the objectives. Following the designation of an AQMA, local authorities are required to develop an Air Quality Action Plan (AQAP) to work towards meeting the objectives and to improve air quality locally.

¹ UK Parliament (2018): <http://www.legislation.gov.uk/ukpga/2018/16/contents/enacted>

- 4.1.5 Possible exceedances of air quality objectives are generally assessed in relation to those locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective.

4.2 Greater Manchester Action Plan 2016-2021

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

“Action 1.1

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

Action 1.2

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

5 Methodology

5.1 Data Sources

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

Table 2: Key Information Sources

Data Source	Reference
Manchester City Council (MCC) / Greater Manchester Combined Authority (GMCA)	MCC / GMCA (2016) <i>Greater Manchester Air Quality Action Plan 2016-2021</i> MCC / GMCA (2019) <i>2018 Air Quality Annual Status Report for Greater Manchester</i>
Institute of Air Quality Management (IAQM)	IAQM (2014) <i>Assessment of Dust from Demolition and Construction (v1.1)</i>
Department for Environment Food and Rural Affairs (Defra)	Defra <i>Local Air Quality Management Technical Guidance TG(16)</i> , February 2018
Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM)	EPUK and IAQM (January 2017) <i>Land Use Planning and Development Control: Planning for Air Quality (v1.2)</i>
Ministry of Housing, Communities & Local Government	Planning Practice Guidance: Air Quality, November 2019 National Planning Policy Framework (NPPF), June 2019
Atmospheric Dispersion Modelling Ltd	Meteorological data from Manchester Airport for the year 2019
Defra's LAQM Support Tools	Local Air Quality Management 1 km x 1 km grid background pollutant maps NOx to NO ₂ Calculator
SK Transport Planning Ltd	Traffic Data
Jon Matthews Architects	Architecture Plans

5.2 Consultation

- 5.2.1 The proposed air quality assessment methodology was discussed and agreed with Ms Rebecca Twigg of MCC by emails exchanged between 2nd August 2021 to 4th August 2021^[2]. It was agreed that both a construction phase assessment and a detailed air quality assessment would be undertaken. The operational phase included information relating to the screening out of an assessment of air quality change to existing sensitive receptors (due to low vehicle generation) and the inclusion of a modelling assessment of site suitability.

² Email Miller Goodall Ltd. to MCC, 2nd August 2021.

5.2.2 Information relating to the underground car park and combined heat & power boiler (CHP) were also included to confirm that an appropriate assessment would be presented in the report (at the time of preparing the methodology, the full details of these two proposals were not available).

5.2.3 Ms Twigg confirmed by follow up email that no advance notification of the car park or boiler assessment methodology was required; their inclusion, discussion and appropriate assessment directly into the report is sufficient. Ms Twigg provided the following information in relation to electric vehicle charging:

“Please be aware that MCC’s Electric Vehicle Charging Best Practice Recommendations for residential developments are currently as follows:

On-site/allocated parking: 1 EV charge point (minimum 7kW) for each dwelling (parking space).*

Unallocated parking: minimum 20% EV (minimum 7kW) charge points, and cable routes for all other spaces.*

**Mode 3, 7kW (32A) single phase. British Standard BS EN 61851-1:2011 to be used (note this version is due to be replaced by BS EN 61851-1:2019 on 5 July 2022).”*

5.2.4 Following this initial consultation (August 2021), the Applicant has revised the design (September 2021) and is now no longer proposing the inclusion of a CHP at the development. Instead, photovoltaic panels are to be installed on the roof. The mention of CHP has been removed from this report revision (V2)

5.3 Construction Dust Assessment

5.3.1 The IAQM has produced guidance³ on the assessment of air quality impacts arising from dust associated with construction and demolition activities and provides a methodology by which to complete such assessments. The IAQM methodology provides a risk assessment structure to determine the likely impact of the development on nearby receptor locations and recommends mitigation measures that should be implemented to reduce any such impact. The methodology for the assessment is shown in **Appendix C**. The study area in relation to dust and the zones of interest used within the assessment (<20 m, 20 m – 50 m and 50 – 100 m from the site) are shown in **Appendix D**.

5.4 Road Traffic Emissions Assessment

Air Dispersion Model

5.4.1 The validated Atmospheric Dispersion Modelling System for Roads (ADMS-Roads) v5.0.0.1 was used to assess the suitability of the site for residential use, in terms of air quality. The assessment will focus on concentrations of NO₂, PM₁₀ and PM_{2.5}.

Assessment Scenarios

5.4.2 The assessment considered the following scenarios:

- Scenario 1: 2019 - base year;

³ IAQM “Assessment of dust from demolition and construction” v1.1 2014

- Scenario 2: 2024- opening year 'with development'.

5.4.3 A 'without development' scenario is not required as no existing sensitive receptors require assessment for an air quality change. Proposed sensitive receptors would not exist in the 'without development' scenario.

Traffic Data

5.4.4 The spatial scope for the assessment focused on those routes surrounding the proposed development. The roads modelled include:

- Rochdale Road (A664);
- Ring Road of Rochdale Road;
- Miller Street;
- Addington Street; and
- Swan Street.

5.4.5 Traffic flows have been sourced from the Department for Transport, Traffic Counts webpages⁴. A Tempro Growth Factor has been applied to the baseline flows to obtain traffic data for the 2024 scenario. The with development flows are included in the opening year scenario, the maximum light-duty vehicle (LDV) AADT is 57 from the proposed car park.

5.4.6 The traffic data used in the assessment is detailed in **Appendix E**. The road network considered in this study is shown visually in **Table E1** of **Appendix E**.

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

5.4.8 LAQM.TG (16) recommends temporal variations to be considered within air quality modelling. Therefore, a 7-day profile based on the Department for Transport's statistics was used within the model.

Meteorological Data

5.4.9 Meteorological data for 2019 from the Manchester Airport recording station was used in the ADMS-Roads model. This is the most representative recording station for the development site.

5.4.10 The wind rose for 2019 from the Manchester Airport recording station is provided in **Appendix E**. Dispersion values for the site and meteorological station have been used. The factors applied for surface roughness (m) and the minimum Monin-Obukhov length (m) are outlined in **Appendix E**.

Sensitive Receptors

5.4.11 The proposed development will generate less than 100 LDV and 25 HDV AADT. An assessment of air quality

⁴ [Map Road traffic statistics - Road traffic statistics \(dft.gov.uk\)](https://www.dft.gov.uk/road-traffic-statistics)

change at existing sensitive receptors is required if the proposals generate at or more than 100 LDV AADT inside an AQMA, in accordance with the criteria outlined in EPUK 2017 Guidance⁵. This criterion is not met; therefore, it can be concluded the air quality change to existing sensitive receptors would be not significant. An assessment of existing receptors is screened out.

5.4.12 Seven proposed sensitive receptor (PSR) locations have been selected across the development footprint where residential uses are proposed. NO₂, PM₁₀ and PM_{2.5} concentrations were calculated at these locations to determine whether future site users may be exposed to elevated pollutant levels.

5.4.13 PSRs were selected at worst-case positions closest to the main sources of pollution affecting the site, where a bedroom or living room space is proposed. PSR 1 is representative of a townhouse in the western part of the site. PSRs 2 to 7 are located within the high-rise building footprint. All PSR positions were selected from the AutoCAD layouts provided by the appointed architect, Jon Matthews Architects.

5.4.14 The PSR locations are presented in **Table 3** and shown in **Appendix A**.

Table 3: Proposed Sensitive Receptor Locations

Receptor	Grid Ref		Location in Development Footprint
PSR 1	384654	399126	W
PSR 2	384722	399119	S
PSR 3	384734	399127	S
PSR 4	384742	399132	S
PSR 5	384732	399175	NE
PSR 6	384730	399162	NE
PSR 7	384687	399140	Centre

5.4.15 A NO₂ contour plot of the ground floor (1.5 m) has also been produced to show how pollution would disperse in the site, and to provide a conclusion on the suitability for the proposed commercial uses.

Building Layout and Assessment

5.4.16 The apartment block includes a ground floor and 11 levels above. The ground floor includes commercial units in the southern part of the building footprint (the location of PSRs 2 to 4) and residential uses from Level 1 and above at this location. The townhouses (PSR 1) are located on the western boundary. PSRs 5, 6 and 7 include ground floor residential occupation.

5.4.17 The air quality assessment has considered air quality concentrations across the development site on the ground floor and the floors above. It is not possible to input all PSRs, for all 12 floors as ADMS-Roads has an upper limit on the number of receptors that can be included in the model. Therefore, the assessment has predicted air quality at PSRs 1 to 7 at the ground floor, Level 1, Level 2 and Level 3 as these heights are expected to show the highest concentrations.

⁵ EPUK (January 2017) Land Use Planning and Development Control: *Planning for Air Quality (v1.2)*

5.4.18 The elevation heights for each level were provided by the architect. The building heights applied to the ADMS-model are outlined in **Table 4**.

Table 4: Building Heights

Level	Height (m)	PSR Assessment
Ground Level (Level 0)	1.5	PSR 1, PSR 5 - 7
Level 1	6.5	PSR 1 - 7
Level 2	9.5	PSR 2 - 7
Level 3	12.5	PSR 2 - 7

Conversion of NO_x to NO₂

5.4.19 Oxides of nitrogen (NO_x) concentrations were predicted using the ADMS-Roads model. The modelled road contribution of NO_x at the identified receptor locations was then converted to NO₂ using the NO_x to NO₂ calculator (v8.1, 2020)⁶ following Defra guidance.

Emission Factors

5.4.20 Defra's Emission Factor Toolkit (EFT)⁷ (V10.1, 2020) was used within the ADMS-Roads model to predict emissions from road vehicles for all scenarios.

Background Concentrations

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

5.4.22 There are no background monitoring locations in the vicinity of the proposed development, therefore background NO_x, NO₂, PM₁₀ and PM_{2.5} concentrations were obtained from the Defra LAQM support tools for the 1 km x 1 km grid squares covering the proposed development site and verification location for the years of assessment (2019 and 2024).

Model Verification

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

5.4.24 Verification has been undertaken for NO₂. The verification procedure considers diffusion tube; MAN36 which is located on Rochdale Road to the north of the site. The air quality monitoring location and recent results for this monitor are discussed in the Baseline section of this report and shown visually in **Appendix A**.

⁶ [Background maps. Tools. Local Air Quality Management Support - Defra, UK](#)

⁷ [Emissions Factors Toolkit \(defra.gov.uk\)](#)

5.4.25 The verification procedure and associated calculations are shown in **Appendix E**. A single verification factor has been derived and applied to all sensitive receptors assessed. All modelled road NO_x concentrations have been adjusted by a factor of 2.1675.

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

Relevant Objectives

5.4.27 Pollutant concentrations have been compared to the relevant air quality objectives in The Air Quality Standards Regulations 2010.

5.4.28 Proposed residential uses are compared to the annual mean air quality objectives.

5.4.29 LAQM.TG(16) provides a qualitative screening approach to determine whether there is a risk of exceedance of the one-hour NO₂ air quality objective. If the ambient NO₂ annual mean concentration is above 60 µg/m³ there is a risk that the one-hour objective (200 µg/m³) may be exceeded. A qualitative comparison to this screening method has been undertaken for the commercial units.

Assessment Significance Criteria

5.4.30 Guidance is provided by EPUK and IAQM on criteria for determining the significance of a development's impact on local air quality⁸. **Table 5** details the impact descriptors used for individual receptors in relation to annual mean pollutant concentrations. The overall significance of impacts was determined using professional judgement.

Table 5: Impact descriptors for individual receptors

Long term average Concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)*			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

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

⁸ EPUK (January 2017) Land Use Planning and Development Control: *Planning for Air Quality (v1.2)*

6 Baseline Air Quality

6.1 Local Air Quality

- 6.1.1 Rochdale Road and its boundaries have been declared as an AQMA. The AQMA covers approximately two-thirds of the development site. The northern part of the site is not located within the AQMA. The site location and its relationship to the AQMA are shown in **Appendix A**.
- 6.1.2 Baseline air quality at the proposed development has been established by examining monitoring data produced by MCC (provided in the 2020 Annual Status Report) and background concentration maps provided by Defra for the grid squares covering the proposed development.

6.2 Air Quality Monitoring

Nitrogen Dioxide (NO₂)

- 6.2.1 MCC operates two non-automatic NO₂ diffusion tubes near the site. MAN36 is located approximately 750 m to the north of the site, but it is adjacent to Rochdale Road. MAN36 is, therefore, considered to be the most representative of the site conditions.
- 6.2.2 MCC also operate MAN88, which is located approximately 300 m to the southeast of the site. However, this monitor is positioned in a street canyon and will therefore experience elevated concentrations due to poorer dispersion. The development site is not affected by a street canyon. The data recorded at MAN88 is provided for reference.
- 6.2.3 The results from the diffusion tube are shown in **Table 6** and the monitor locations are shown in **Appendix A**.

Table 6: Annual Mean NO₂ Concentrations Monitored by MCC within the Study Area

Site ID	Location		Annual Mean NO ₂ Concentrations (µg/m ³)			
			2017	2018	2019	2020
MAN36 (roadside)	385205	399750	34.0	33.1	31.7	24.3
MAN88 (roadside)	384469	398981	57.9	46.8	45.2	30.1
Annual Mean NO ₂ air quality objective			40 µg/m ³			

- 6.2.4 The results indicate that the short-term objective for NO₂ is unlikely to be exceeded at the development site as monitored annual mean concentrations are well below the indicative screening concentration of 60 µg/m³.
- 6.2.5 NO₂ concentrations have improved at both MAN36 and MAN88 during the period shown.

Particulate Matter (PM₁₀ & PM_{2.5})

- 6.2.6 MCC does not undertake PM₁₀ or PM_{2.5} monitoring in the vicinity of the study area.

6.3 Background Concentrations

- 6.3.1 There are no background monitoring locations in the vicinity of the proposed development site or at receptor locations included in the air quality assessment
- 6.3.2 Background concentrations of NO₂, PM₁₀ and PM_{2.5} obtained from the background concentration maps provided by Defra for the grid squares covering the proposed development and receptor locations⁹ are shown in **Table 7**. The background concentrations at MAN36 (385500, 399500) were obtained for the verification procedure, as outlined in **Table E6** in **Appendix E**.

Table 7: Background Pollutant Concentrations Obtained for the 1km x 1km Grid Squares Covering the Site and Receptor Locations*

Grid Square	Pollutant	2019	2024
		(µg/m ³)	(µg/m ³)
384500, 399500 (site)	NO ₂	22.19	18.41
	PM ₁₀	12.53	11.81
	PM _{2.5}	8.21	7.70

* Background concentrations obtained from the latest 2018 based background maps

7 Construction Dust Impact Assessment

7.1 Step 1 – Requirement for a Detailed Assessment

- 7.1.1 There are sensitive receptors located within 350m of the site boundary, therefore, a detailed assessment of the construction phase of the development has been undertaken. There are no ecological designations within 50m of the site boundary or trackout routes which require assessment.

7.2 Step 2 – Assess the Risk of Dust Impacts

Step 2A Dust Emission Magnitude

- 7.2.1 The potential dust emission magnitude in relation to the development has been determined using the criteria detailed in **Table C1** in **Appendix C**. The scale and nature of works onsite were considered to determine the potential dust emission magnitude for demolition, earthwork activities, construction and trackout activities. Information to determine the classification has been estimated from the site plans, Google Earth and information provided by the Applicant. The dust emission magnitude is outlined in **Table 8**.

Table 8: Dust Emission Magnitudes for Each Activity

Activity	Dust Emission Magnitudes	Justification for Sensitivity Classification
Demolition	Small	The total building volume to be demolished is less than 20,000 m³
Earthworks	Large	the site area is >10,000 m²
Construction	Large	total building volume to be constructed is >100,000 m³

⁹ <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>

Trackout

Medium

- there are likely to be 10 to 50 HDV outward movements in any one day

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

- 7.2.2 Dwellings are located within a distance of 20 m from construction and earthworks and 20 m of road edges used by traffic associated with the site construction. In accordance with the criteria in **Table C2** in **Appendix C** and the IAQM guidance, the sensitivity of human receptors is **high**.
- 7.2.3 The demolition to be undertaken is located in the northeastern part of the development site, only commercial **medium** sensitivity receptors border the area where demolition is proposed.
- 7.2.4 The trackout route for construction vehicles is not known. Vehicles exiting the site southwards would travel past the most sensitive receptors. Therefore, this route has been assessed as the worst-case. The route southwards leads into the city centre, which may not be a desirable route during the construction phase.

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

- 7.2.5 The sensitivity of the area for dust soiling and human health effects has been determined using the criteria detailed in **Table C3** and **Table C4** respectively in **Appendix C**.
- 7.2.6 The sensitivity of the area to dust soiling and human health for each activity is summarised in **Table 9**.

Table 9: Outcome of Defining the Sensitivity of the Area

Pollution	Activity	Sensitivity of the Surrounding Area	Justification for Sensitivity Classification
Dust Soiling	Demolition	Medium	There is more than 1 medium sensitive commercial receptor within 20 m of the site boundary.
	Earthworks	High	There are 10 – 100 highly sensitive residential receptors within 20 m of the site boundary.
	Construction	High	There are 10 – 100 highly sensitive residential receptors within 20 m of the site boundary.
	Trackout	High	There are 10 – 100 highly sensitive residential receptors within 20 m of the trackout route, up to 500 m from the site exit.
Human Health	Demolition	Low	There is more than 1 medium sensitive commercial receptor within 20 m of the site boundary. Background pollutant concentrations are below 24 µg/m ³ .
	Earthworks	Low	There are 10 – 100 highly sensitive residential receptors within 20 m of the site boundary. Background pollutant concentrations are below 24 µg/m ³ .
	Construction	Low	There are 10 – 100 highly sensitive residential receptors within 20 m of the site boundary. Background pollutant concentrations are below 24 µg/m ³ .
	Trackout	Low	There are 10 – 100 highly sensitive residential receptors within 20 m of the trackout route. Background pollutant concentrations are below 24 µg/m ³ .

Step 2C Risk of Impacts

- 7.2.7 The dust emission magnitude and sensitivity of the area were combined and the risk of impacts was determined using the criteria detailed in **Table C5** to **Table C8** in **Appendix C**.
- 7.2.8 A summary of the risks, before mitigation measures are applied, for dust soiling and human health are shown in **Table 10**.

Table 10: Risk of Dust Impacts

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

7.3 Step 3 – Site-Specific Mitigation

- 7.3.1 Step 3 of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to the site risk for each activity. Mitigation measures specific to earthworks, construction and trackout are proposed based on the risk classifications in **Table 10**. Recommended mitigation measures are shown in **Appendix F**.
- 7.3.2 The general mitigation measures (for site management, preparing and maintaining the site, operating vehicle/machinery, operations and waste management), are appropriate for a site with a 'high risk' classification (in this instance the site is classified as "high" risk due to earthworks and construction)¹⁰.

7.4 Step 4 – Determine Significant Effects

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

8 Road Traffic Assessment

8.1 Baseline Assessment

- 8.1.1 The ADMS-Roads model was used to estimate contributions of vehicle exhaust emissions to annual NO₂ concentrations for the 2019 'baseline'. This was undertaken to obtain the relevant NO_x model verification adjustment factor (adjustment factor of 2.1675 applied to all sensitive receptors). The proposed sensitive receptors will not be present within the baseline scenario, therefore no sensitive receptors require assessment in the baseline scenario.

¹⁰ For those mitigation measures that are general, the highest risk category should be applied. For example, if the site is medium risk for earthworks and construction, but a high risk for demolition and track-out, the general measures applicable to a high risk site should be applied.

8.2 Site Suitability Assessment

Proposed Receptors

8.2.1 NO₂, PM₁₀, and PM_{2.5} concentrations have been predicted at seven proposed sensitive receptor locations. These sensitive receptors are located at various worst-case locations within the building footprint and up to Level 3 of the proposed development. PSR locations are shown in **Appendix A** and reference should be made to **Table 4** which outlines the building heights modelled.

8.2.2 The results of the air quality assessment are shown in **Table 11**.

Table 11: Air Quality Concentrations at Proposed Sensitive Receptors

Proposed Sensitive Receptor	2024 With Development – Pollutant Concentrations		
	NO ₂ Concentration with Development µg/m ³	PM ₁₀ Concentration with Development µg/m ³	PM _{2.5} Concentration with Development µg/m ³
PSR 1 – Ground Floor	21.98	12.10	7.86
PSR 1 – Level 01	21.42	12.05	7.83
PSR 2 – Level 01	21.66	12.18	7.91
PSR 2 – Level 02	20.58	12.03	7.82
PSR 2 – Level 03	19.92	11.95	7.78
PSR 3 – Level 01	21.54	12.19	7.91
PSR 3 – Level 02	20.45	12.03	7.82
PSR 3 – Level 03	19.82	11.94	7.77
PSR 4 – Level 01	21.49	12.19	7.91
PSR 4 – Level 02	20.37	12.03	7.82
PSR 4 – Level 03	19.76	11.94	7.77
PSR 5 – Ground Floor	21.03	12.12	7.87
PSR 5 – Level 01	20.59	12.06	7.84
PSR 5 – Level 02	20.20	12.01	7.81
PSR 5 – Level 03	19.83	11.96	7.78
PSR 6 – Ground Floor	21.35	12.16	7.90
PSR 6 – Level 01	20.78	12.08	7.85
PSR 6 – Level 02	20.30	12.02	7.81
PSR 6 – Level 03	19.87	11.96	7.78
PSR 7 – Ground Floor	21.55	12.12	7.87
PSR 7 – Level 01	21.04	12.06	7.84
PSR 7 – Level 02	20.58	12.01	7.81

PSR 7 – Level 03	20.13	11.96	7.78
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- 8.2.3 The air quality concentrations of NO₂ indicates that in 2024 pollutant concentrations across the building footprint (including the PSR 1 townhouse) and up to Level 3 would be below the annual mean air quality objectives.
- 8.2.4 Pollution reduces with height, as shown in **Table 11**. Above Level 3, pollutant concentrations would continue to decrease due to the increasing distance from the source (vehicle emissions) and the effects of dispersion. There are no elevated roads within the area surrounding the proposed development. Sensitive receptors above Level 3 are, therefore, also expected to be below the annual mean air quality objectives.
- 8.2.5 By the reasoning and justification outlined above, it is considered no mitigation is required to protect future occupants from adverse air quality. Air quality is considered to be not significant at future residential sensitive receptors at the development.
- 8.2.6 A 1.5 m NO₂ contour plot has been produced to show how pollution would disperse into the site. This is available in **Appendix G**. Particulate matter is of limited concern due to the low risk of exceeding the air quality objective, as shown in **Table 11**. Therefore, plots for PM₁₀ and PM_{2.5} have not been prepared.
- 8.2.7 Commercial ground floor uses are proposed at the southern boundary, closest to Rochdale Road (at the location of PSRs 2 to 4). As shown in the contour plot presented in **Appendix G**, the predicted NO₂ concentrations across the development site are well below 60 µg/m³ and therefore when considered in light of guidance in LAQM.TG (16), the 1-hour mean objective is unlikely to be exceeded. The proposed commercial uses are not predicted to be affected by poor air quality.

9 Underground Car Park

- 9.1 A 29-space underground car park space is proposed. The total vehicle generation for this car park is 57 LDV AADT; well below the requirement for a detailed assessment of air quality change, in accordance with EPUK 2017 Guidance⁸.
- 9.2 The underground car park will be served by an inlet and outlet extraction vent to provide clean air into the underground car park. Point source emissions have the potential to cause an impact in terms of air quality.
- 9.3 The extraction vent is to be positioned at the top-centre on the northern façade of the proposed apartment block. The extraction vent is to be positioned on the ground floor. There is no sensitive ground floor uses in this location.
- 9.4 There are no existing sensitive receptors to the north of the site, as this land is occupied by a car park. The impact on existing receptors is not significant.
- 9.5 The ground floor to first-floor height is 5 m (as identified in **Table 4**), and an additional 1.5 m to an actual window height. Consequently, a first-floor window may be up to 6.5 m from the ground. NO₂ concentrations at PSR 6 and 7 Level 01 (receptors representative of the northern façade) are well below the annual mean air quality objective, as identified in **Table 11**.
- 9.6 In accordance with the EPUK 2017 Guidance⁸, detailed modelling of underground car parks can be scoped out if there is less than 100 vehicle movements and the vent is over 20 m of a sensitive receptor.

- 9.7 The overall pollution emitted from the car park is not expected to be significant as the total movements are well below the recommended requirement for a detailed assessment. Due to the low number of vehicles and parking, it is also unlikely that constant use of the car park would occur, with the majority of movements expected in the peak periods; meaning the car park may not be an emission source for large portions of the day.
- 9.8 Due to the low vehicle numbers, distance to future sensitive receptor windows and the positioning proposed for the vent on the ground floor, the effect of extraction ventilation emissions from the underground car park is considered to be not significant. A detailed assessment has not been undertaken in regards to car park emissions. However, mitigation is still recommended regarding the positioning of the vent.

10 Mitigation

- 10.1 The air quality assessment has demonstrated that future sensitive receptors would not be exposed to adverse air quality at the footprint or any level of the development. No building treatment is required in terms of air quality.
- 10.2 The following mitigation is recommended:
- All individual gas boilers to meet a minimum standard of <40 mgNO_x/kWh;
 - The extraction vent for the underground must not be positioned near or directly below a future residential receptor window. The EPUK 2017 Guidance⁸ recommends a vent should not be positioned within 20 m of a relevant receptor, this should be achieved where possible; and
 - MCC recommends one electric vehicle charging unit (minimum 7 kW*) for each dwelling with a dedicated parking space. For unallocated parking, charging points (minimum 7 kW*) are to be provided for 20% of all parking spaces. Mode 3, 7kW (32A) single phase. British Standard BS EN 61851-1:2011 to be used (note this version is due to be replaced by [BS EN 61851-1:2019 on 5 July 2022](#)).

11 Summary of Impacts and Conclusion

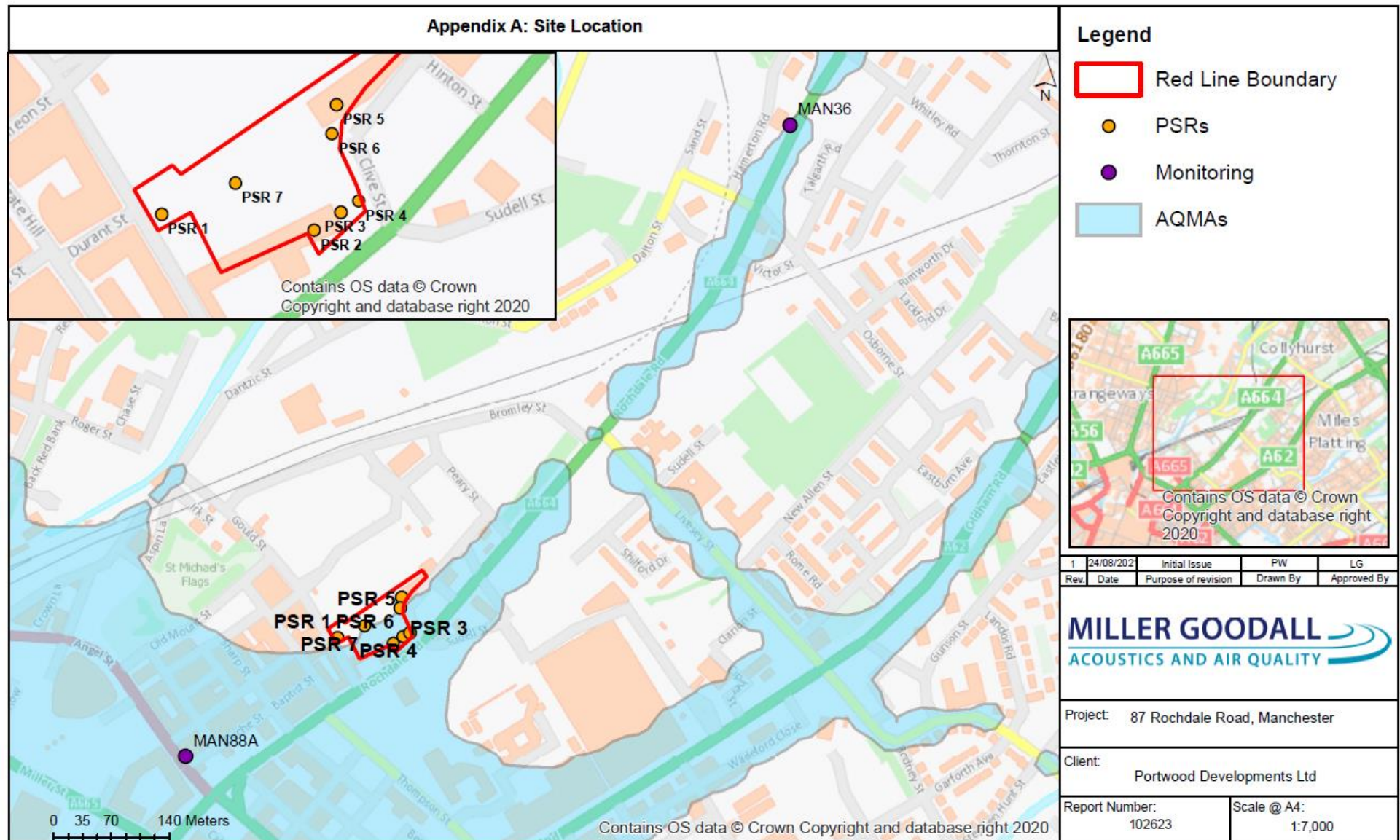
- 11.1 A road traffic emissions assessment has been undertaken to consider the suitability of the proposed development site for commercial and residential use as well as a simple assessment on the impact of vehicle exhaust emissions associated with the proposed development.
- 11.2 The assessment considered whether there is a risk of dust and fine particulate matter generation associated with the proposed development's construction phase. With the implementation of mitigation measures, the residual dust impacts during the construction phase are considered to be not significant when assessed following IAQM guidance.
- 11.3 Vehicular emission impacts have been assessed at selected proposed sensitive receptors using ADMS-Roads. Annual mean concentrations of NO₂, PM₁₀ and PM_{2.5} were predicted to be well below the respective air quality objectives for the '*with development*' scenario in 2024 at all modelled receptor locations, across the building footprint, on all floors. A 1.5 m NO₂ contour plot has been prepared which indicates that NO₂ concentrations across the development site are below the annual mean air quality objectives; also demonstrating that future commercial uses are suitable for use.

- 11.4 A 29-space underground car park is proposed with an extraction vent on the ground floor. The vent is not expected to significantly impact either existing or proposed sensitive receptors. With the implementation of the mitigation measures, the effects of this source are considered to be not significant in terms of air quality.
- 11.5 There is, therefore, no reason for this application to be refused on the grounds of air quality.

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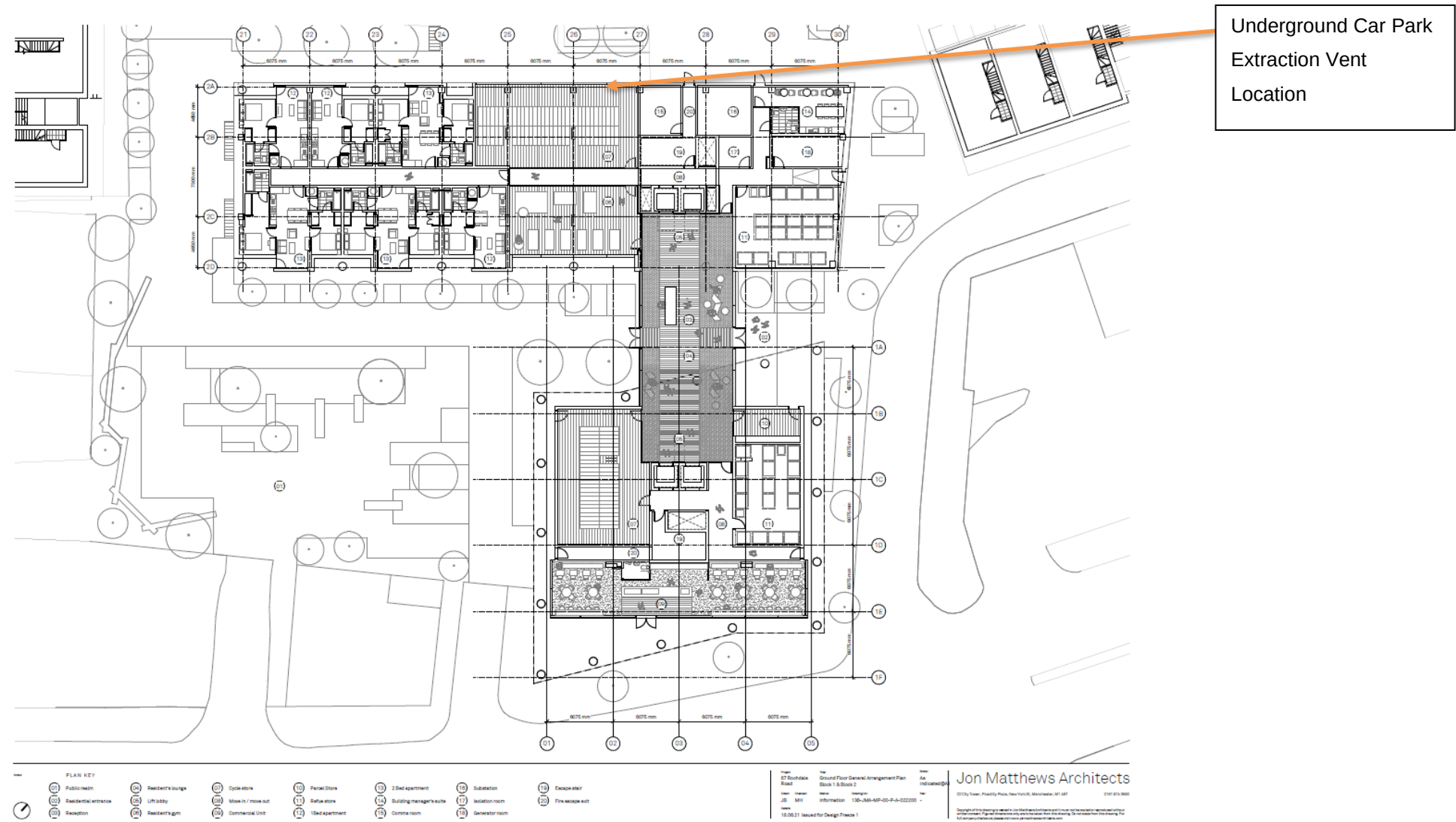
APPENDICES

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Appendix B: Site Layout – Ground Floor



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Appendix C: Dust Risk Assessment Methodology

The following section outlines criteria developed by the IAQM for the assessment of air quality impacts arising from construction and demolition activities⁶. The assessment procedure is divided into four steps and is summarised below:

Step 1: Screen the Need for a Detailed Assessment

An assessment will normally be required where there are human receptors within 350 m of the site boundary and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s). Ecological receptors within 50 m of the site boundary or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s), are also identified at this stage. An ecological receptor refers to any sensitive habitat affected by dust soiling. For locations with a statutory designation, such as a Site of Specific Scientific Interest (SSSI), Special Area of Conservation (SACs) and Special Protection Areas (SPAs), consideration should be given as to whether the particular site is sensitive to dust. Some non-statutory sites may also be considered if appropriate.

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

Step 2: Assess the Risk of Dust Impacts

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

Step 2A: Define the Potential Dust Emission Magnitude

Dust emission magnitude is based on the scale of the anticipated works and is classified as Small, Medium or Large. The IAQM guidance recommends that the dust emission magnitude is determined separately for demolition, earthworks, construction and trackout. **Table C1** describes the potential dust emission class criteria for each outlined activity.

Table C1: Criteria Used in the Determination of Dust Emission Magnitude

Activity	Criteria used to Determine Dust Emission Magnitude		
	Small	Medium	Large
Demolition	Total building volume <20,000 m ³ , construction materials with low potential for dust release.	Total building volume 20,000 m ³ – 50,000 m ³ , potential dusty construction material.	Total building volume >50,000 m ³ , potentially dusty construction material.
Earthworks	Total site area <2,500 m ² , soil type with large grain	Total site area 2,500 – 10,000 m ² , moderately dusty soil type	Total site area >10,000 m ² , potentially dusty soil type
Construction	Total building volume <25,000 m ³ .	Total building volume 25,000 – 100,000 m ³ .	Total building volume >100,000 m ³ .
Trackout	<10 outward HDV trips in any one day. Unpaved road length <50 m.	10-50 outward HDV trips in any one day. Unpaved road length 50-100 m.	>50 outward HDV trips in any one day. Unpaved road length >100 m.

Step 2B: Define the Sensitivity of the Area

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

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

The criteria detailed in **Table C2** is used to determine the sensitivity of the receptor in relation to dust soiling, health effects and ecological effects.

Table C2: Criteria for Determining Sensitivity of Receptors

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

Table C3 and **Table C4** are then used to define the sensitivity of the area to dust soiling and human health effects. This should be derived for each of construction, demolition, earthworks and trackout.

Table C3: Sensitivity of the Area to Dust Soiling Effects on People and Property.

Receptor Sensitivity	Number of Receptors	Distance from Source (m)*			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

*distances considered are to the dust source

Table C4: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Concentrations	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m ³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m ³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m ³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m ³	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m ³	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

The sensitivity of the area is then summarised.

Step 2C Define the Risks of Impacts

The dust emission magnitude from **Table C1** and sensitivity of the area and receptors from **Table C2**, **Table C3** and **Table C4** are combined, and the risk of impacts from each activity (demolition, earthworks, construction and trackout) before mitigation is applied, is determined using the criteria detailed in **Table C5** to **Table C8**.

Table C5: Risk of Dust Impacts - Demolition

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

Table C6: Risk of Dust Impacts- Earthworks

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

Table C7: Risk of Dust Impacts- Construction

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

Table C8: Risk of Dust Impacts- Trackout

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

Step 3 Determine Site Specific Mitigation

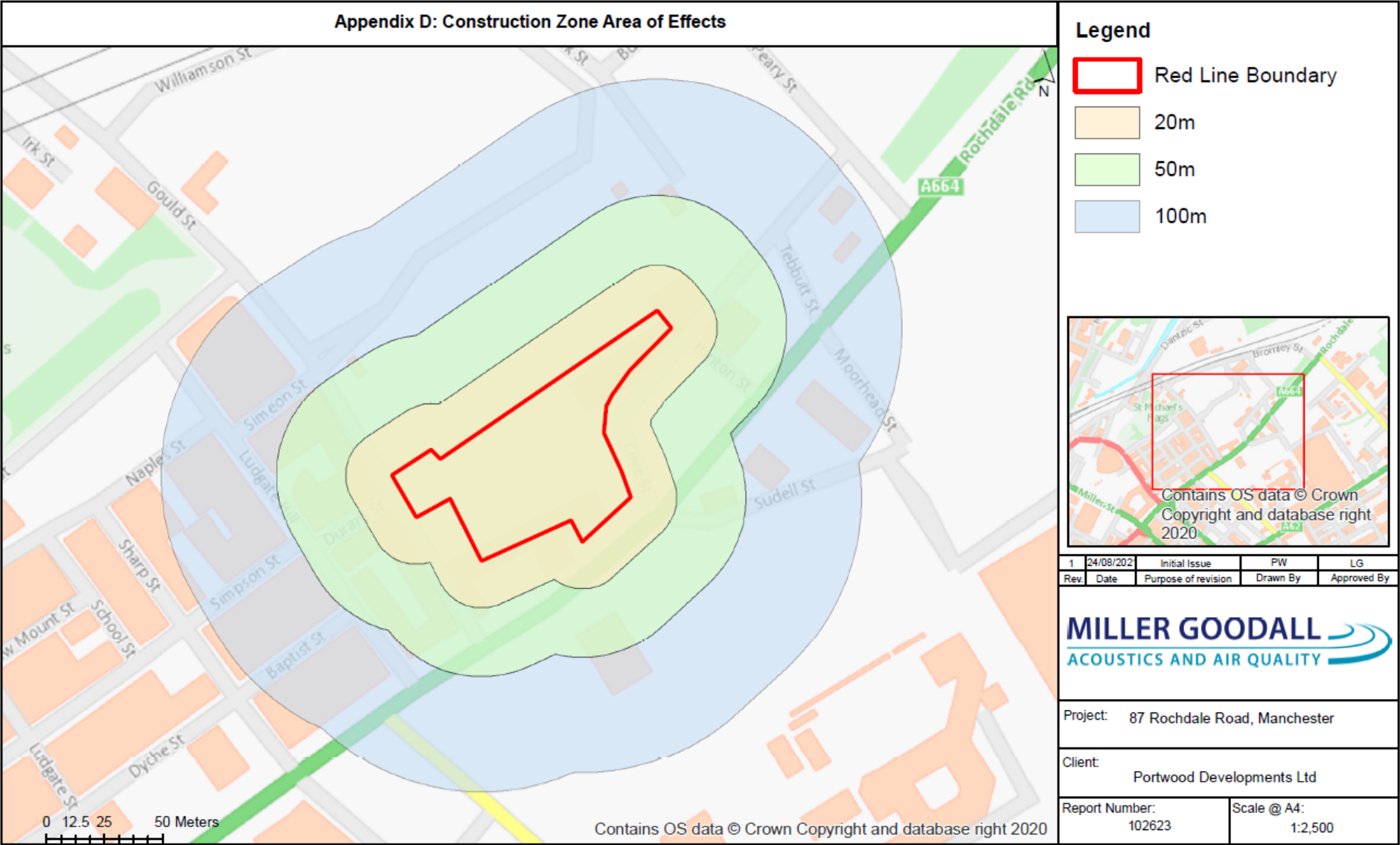
Step three of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to whether the site is a low, medium or high risk site.

Step 4 Determine Significance of Residual Effects

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

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

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Appendix E: Assessment and Model Inputs

Appendix E outlines the inputs used in the air quality assessment and incorporated into ADMS-Roads (V 5.0.0.1).

Traffic Data

The ADMS-Roads model requires the inclusion of detailed road traffic data for the routes to be affected by the proposed development. Traffic flow data has been obtained from the Department for Transport Traffic Counts website¹¹. A Tempro Growth Factor was applied to adjust the data to the 2024 opening year (adjustment factor, 1.0591). The Tempro adjustment and 'with flow' traffic data was provided by the appointed transport consultancy SK Transport Planning Ltd.

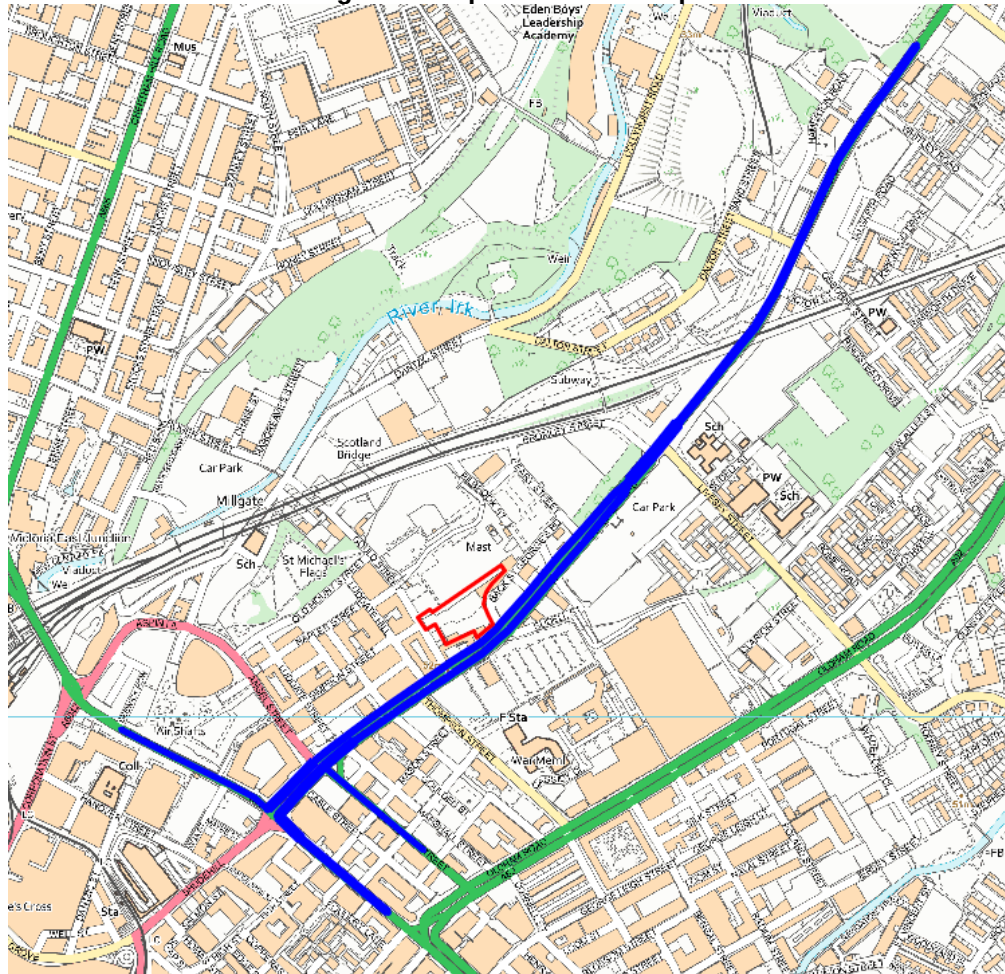
Traffic data has been provided as 24-hour Annual Average Daily Traffic (AADT) and heavy-duty vehicle percentages (HGV%). No average speed traffic survey information was available, therefore, posted speed limits have been utilised in the model, each road had a speed limit of 48 km/hr. Areas of congestion, queuing and junction locations have been modelled at reduced speeds of 5 to 20 km/h.

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

Table E3: Traffic Data used in the Assessment

Link Number	Road	2019 Base Year/Verification		2024 With Development		Total AADT Change
		AADT LDV	AADT HDV	AADT LDV	AADT HDV	24 hour AADT
1	Rochdale Road North (DfT 27447)	13,168	915	13,983	972	40
2	Rochdale Road South (DfT 75248)	9,369	1,241	9,950	1,318	31
3	Ring Road West of Rochdale Road Miller Street (DfT 83048)	15,475	348	16,397	369	8
4	Ring Road East of Rochdale Road Addington Street (DfT 75247)	13,509	332	14,315	352	8
5	Ring Road East of Rochdale Road Swan Street (DfT 75246)	16,114	413	17,073	438	7
7	Underground Car Park	-	-	57	0	57

¹¹ [Map Road traffic statistics - Road traffic statistics \(dft.gov.uk\)](https://www.dft.gov.uk/road-traffic-statistics)

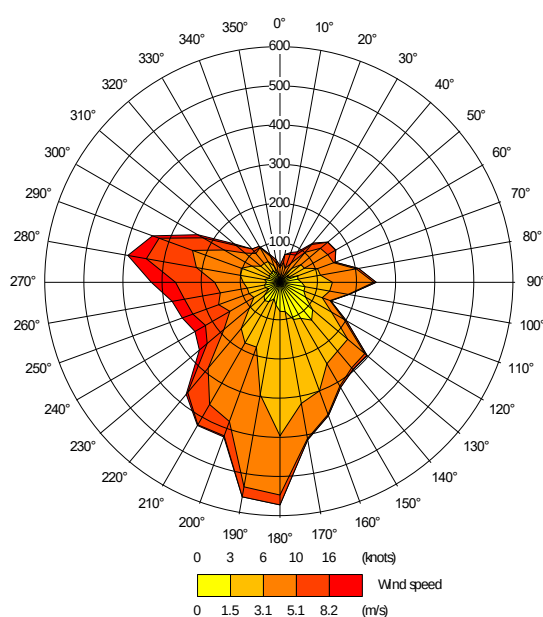
Figure E1: Spatial Model Scope

Meteorological Data

The air quality assessment includes the use of the 2019 Manchester Airport meteorological recording station. The meteorological data has been obtained from ADM Ltd.

The Manchester Airport recording station is located approximately 14.3 km to the southwest of the proposed development site and is considered to be the most representative of the site conditions in terms of altitude and distance.

The 2019 wind rose for Manchester Airport recording station is provided in Figure E2.

Figure E2: Wind Rose

Dispersion and Meteorological Site Characteristics

The air dispersion characteristics for the site and meteorological recording station differ, therefore, these have been adjusted accordingly within ADMS-Roads. **Table E4** details the adjustments made.

Table E4: Dispersion and Meteorological Site Characteristics

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

Modelled Grid

The modelled grid specification is outlined in **Table E5** and **Figure E3**

Table E5: Modelled Grid

Parameter	Unit
Grid reference (min, max)	X: 384642.31, 384783.83 Y: 399062.15, 399180.89
Grid Points	31 (X), 31 (Y)
Number of Points Modelled	961
Height	1.5 (m)

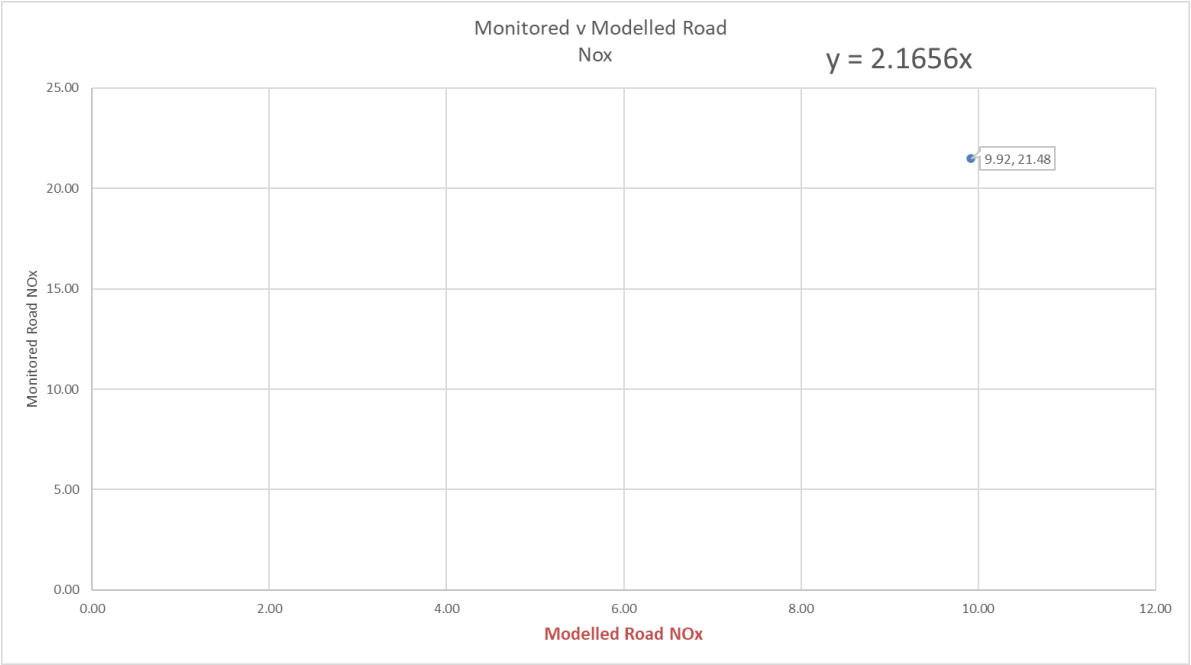
Figure E3: Modelled Grid



Model Verification

Table E6: NO₂ Model Verification Procedure

Monitor	Monitored Total NO ₂	Monitored Road NO _x	Background NO ₂	Background NO _x	Monitored Road Contribution NO ₂ (total - background)	Modelled Road Contribution NO _x (excludes background)	Ratio of Monitored Road Contribution NO _x / Modelled Road Contribution NO _x	Adjustment Factor	Adjusted Road Contribution NO _x	Adjusted Modelled Total Nox (including background NO _x)	Modelled Total NO ₂ (based on empirical NO _x / NO ₂ relationship)	% Difference [(modelled - monitored) / monitored] x 100
MAN36	31.70	21.48	20.83	30.34	10.87	9.92	2.1656	2.1656	21.48	51.82	31.70	0.00



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Appendix F: Dust Assessment Mitigation

xx Highly Recommended

x Desirable

Measures relevant for demolition, earthworks, construction and trackout.

Mitigation Measure	High Risk
Communications	
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	xx
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	xx
Display the head or regional office contact information.	xx
Develop and implement a Dust Management Plan (DMP).	xx
Site management	
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	xx
Make the complaints log available to the local authority when asked.	xx
Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.	xx
Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.	xx
Monitoring	
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary.	xx
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.	xx
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	xx
If requested by the Local Authority: Agree dust deposition, dust flux, or real-time PM ₁₀ continuous monitoring locations with the Local Authority; where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	xx
Preparing and maintaining the site	
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	xx

Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	xx
Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	xx
Avoid site runoff of water or mud.	xx
Keep site fencing, barriers and scaffolding clean using wet methods.	xx
Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	xx
Cover, seed or fence stockpiles to prevent wind whipping.	xx
Operating vehicle/machinery and sustainable travel	
Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.	xx
Ensure all vehicles switch off engines when stationary - no idling vehicles.	xx
Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.	xx
Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).	xx
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	xx
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	xx
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.	xx
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	xx
Use enclosed chutes and conveyors and covered skips.	xx
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	xx
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	xx
Waste management	
Avoid bonfires and burning of waste materials.	xx

Measures specific to demolition

Mitigation Measure	Low Risk
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	x
Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	xx
Avoid explosive blasting, using appropriate manual or mechanical alternatives.	xx
Bag and remove any biological debris or damp down such material before demolition.	xx

Measures specific to earthworks.

Mitigation Measure	High Risk
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	xx
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.	xx
Only remove the cover in small areas during work and not all at once.	xx

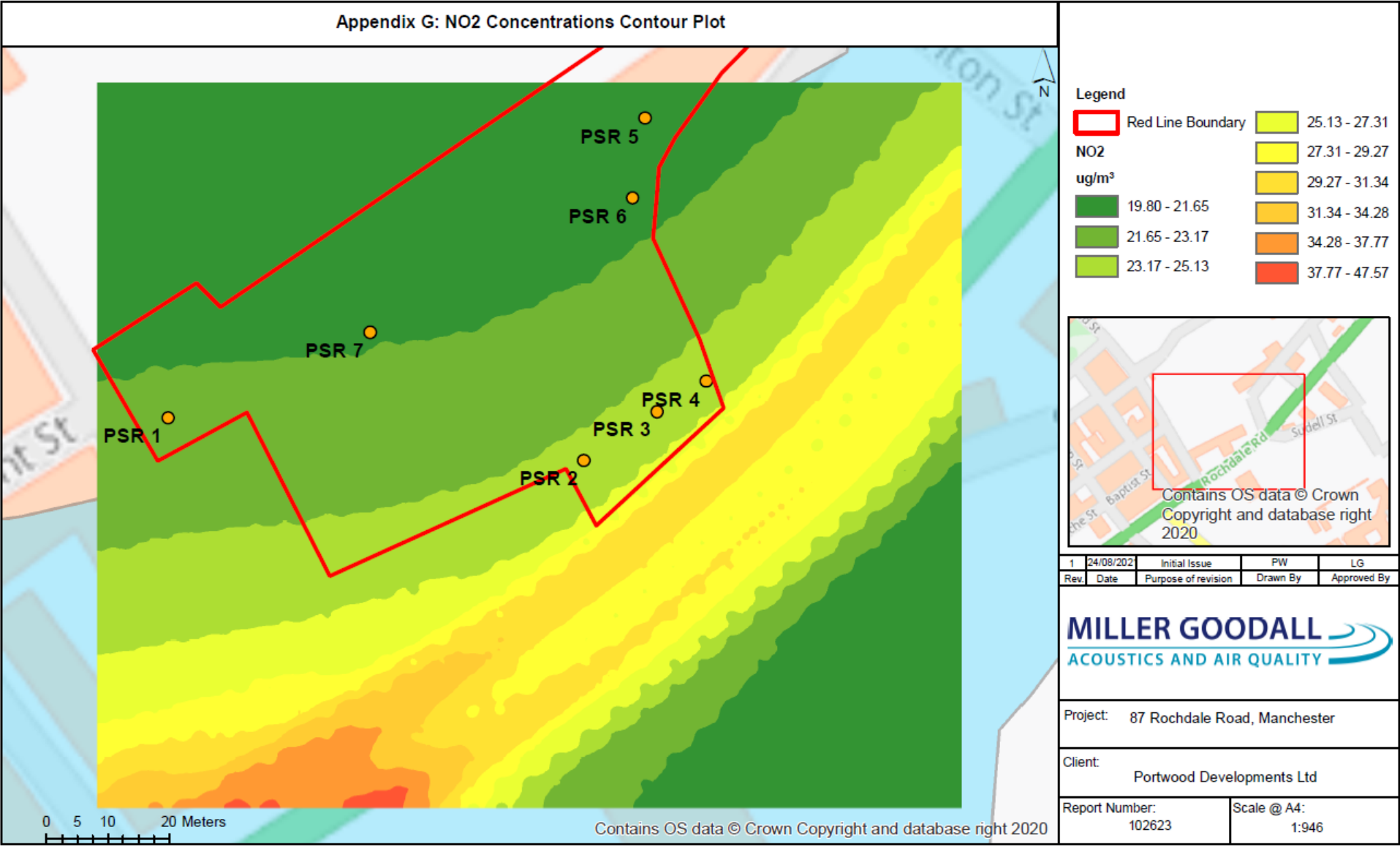
Measures specific to construction.

Mitigation Measure	High Risk
Avoid scabbling (roughening of concrete surfaces) if possible.	xx
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	xx
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	xx

Measures specific to trackout.

Mitigation Measure	Medium Risk
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Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	xx
Avoid dry sweeping of large areas.	xx
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	xx
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable	xx
Record all inspections of haul routes and any subsequent action in a site log book.	xx
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowzers and regularly cleaned.	xx
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	xx
Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	xx
Access gates to be located at least 10 m from receptors where possible.	xx



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Glossary of Terms

AADT Annual Average Daily Traffic flow

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

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

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

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

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

AQAP Air Quality Action Plan

AQEG Air Quality Expert Group

AQMA Air Quality Management Area

AQMP Air Quality Management Plan

AQO Air Quality Objective

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

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

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

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

Defra Department for Environment, Food and Rural Affairs

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

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

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

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

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

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

EPUK Environmental Protection UK

HDV Heavy Duty Vehicle

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

LAQM Local Air Quality Management

LDV Light Duty Vehicle

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

NO₂ Nitrogen Dioxide

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

NPPF National Planning Policy Framework

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

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

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

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

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

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

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

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

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

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

