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ACOUSTICS AND AIR QUALITY

AIR QUALITY ASSESSMENT

on behalf of

NUVU DEVELOPMENT LIMITED

for

EDGE LANE, OPENSHAW, M43 6BU

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Summary

This air quality report is submitted in support of a planning application for a proposed residential development of approximately 226 dwellings at Edge Lane, Openshaw, M43 6BU.

The assessment considered whether the proposed development could significantly change air quality during the construction phase. With the implementation of mitigation measures, the dust impacts from the construction are considered to be not significant when considered in accordance with IAQM guidance.

This report provides a review of existing air quality in proximity to the proposed development site. The potential local air quality impacts associated with traffic generated by the development are assessed at existing and proposed residential receptors within the study area using the detailed dispersion model ADMS-Roads. The suitability of the site for residential use in terms of air quality is also considered.

Annual and short-term concentrations of NO_2 and PM_{10} are predicted to be below the respective air quality objectives for both '*without development*' and '*with development*' scenarios in 2021 (the opening year of the development) at all identified receptor locations. An assessment in accordance with Environmental Protection UK and Institute of Air Quality Management guidance on air quality significance criteria has identified that the local air quality impact of emissions from traffic associated with the proposed development is predicted to be ***negligible***.

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

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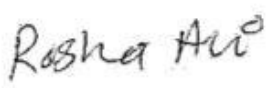
Signed		Signed	
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1 Introduction

1.1 This air quality report is submitted in support of a planning application fora residential development at Edge Lane, Openshaw, M43 6BU. The site lies within the administrative boundary of Manchester City Council (MCC).

1.2 The report provides a review of the existing air quality in proximity to the proposed development site and assesses the potential impact of the proposed development on local air quality, in accordance with Local Air Quality Management Technical Guidance[1].

1.3 Air pollution in urban areas is generally dominated by emissions from road vehicles. The quantity and composition of vehicle emissions are dependent on the type of fuel used, engine type, size and efficiency, vehicle speeds and the type of exhaust emissions abatement equipment employed.

1.4 The main pollutants of health concern from road traffic exhaust releases are nitrogen dioxide (NO_2) and fine particulates – normally assessed as the fraction of airborne particles of mean aerodynamic diameter less than ten micrometres (PM_{10}), 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 NO_2 and PM_{10}.

2 Site Description

2.1 The site is located approximately 5.2 km to the east of Manchester city centre. Currently, the site houses commercial units.

2.2 The site is placed in a mixed-use area, surrounded by commercial units and residential dwellings. Edge Lane runs along the northern site boundary, beyond which there are residential dwellings. Edge Lane and Fairfield Road run along the eastern site boundary. To the south of the site, there are car parking spaces associated with Lime Square Retail Park. Residential dwellings are located to the west of the site, beyond which is Wheler Street.

2.3 The site is located partially 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 development consists of 226 residential properties with associated parking.

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

[1] Department for the Environment Food and Rural Affairs (2018) '*Local Air Quality Management Technical Guidance Document LAQM.TG (16)*', London: Defra.

Standards Regulations 2010 set out the combined Daughter Directive limit values and interim targets for Member State compliance.

4.1.2 The current air quality standards and objectives (for the purpose of LAQM) 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. Pollutant objectives, however, incorporate target dates and averaging periods which take into account economic considerations, practicability and technical feasibility.

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

Pollutant	Air Quality Objective		To be Achieved by
	Concentration	Measured As*	
Nitrogen dioxide (NO_2)	200 µg/m^3	1-hour mean not to be exceeded more than 18 times per year	31/12/2005
	40 µg/m^3	Annual mean	31/12/2005
Particles (PM_{10})	50 µg/m^3	24-hour mean not to be exceeded more than 35 per year	31/12/2004
	40 µg/m^3	Annual mean	31/12/2004
Particles ($PM_{2.5}$)	25 µg/m^3	Annual mean (target)	2020
	15% cut in annual mean (urban background exposure)		2010-2020

Note:*how the objectives are to be measured is set out in the UK Air Quality (England) Regulations (2000).

4.1.3 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 (AQMAs) 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.

4.1.4 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 Local Planning Policy and Guidance

4.2.1 Policy EN 16 of Manchester's Local Development Framework Core Strategy states:

"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."

4.3 Greater Manchester Air Quality Action Plan 2016-2021

4.3.1 The Greater Manchester Combined Authority (GMCA) Air Quality Action Plan (AQAP) 2016-2021 provides guidance for all 10 GMCA local authorities on development plans and their relation to defined AQMAs. All 10 local authorities amongst other partners, such as transport, planning and health authorities, will work together to implement the AQAP and aim to meet air quality objectives.

4.3.2 To ensure consistency across the region impacts from emissions associated with construction sites including dust and particulates due to site preparation, demolition and construction, and exhaust emissions from non-road mobile machinery and generators or other static plant the Institute of Air Quality Management (2014) (IAQM) Guidance on the Assessment of Dust from Demolition and Construction will be adopted as guidance to be used by all Greater Manchester councils in order to properly assess potential impacts from construction activity and implement appropriate mitigation controls.

The IAQM states;

1.1 Greater Manchester 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

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 are 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 the requirement for 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 of the proposed development was undertaken with reference to information from a number of sources, as detailed in **Table 2**.

Table 2: Key Information Sources

Data Source	Reference
Greater Manchester Combined Authority (GMCA)	GMCA (2019) *2018 Air Quality Annual Status Report for Greater Manchester* GMCA (2016) *Greater Manchester Air Quality Action Plan 2016-2021*
Manchester City Council (MCC)	MCC (2012) *Manchester's Local Development Framework Core Strategy*
Department for Environment Food and Rural Affairs (Defra)	Defra (2018) *Local Air Quality Management Technical Guidance TG(16)*
Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM)	EPUK and IAQM (January 2017) *Land Use Planning and Development Control: Planning for Air Quality (v1.2)*
Defra's LAQM Support Tools	Local Air Quality Management 1 km x 1 km grid background pollutant maps
Institute of Air Quality Management (IAQM)	IAQM (2014) *Assessment of Dust from Demolition and Construction* (v1.1)
Croft Transport Planning & Design	Traffic Data
Atmospheric Dispersion Modelling Ltd	Meteorological data from Manchester Airport for the year 2018

5.2 Consultation

5.2.1 Consultation in respect of the scope of this assessment and the methodology to be used was undertaken with Sharon McAndrew of MCC. Rebecca Twigg of MCC confirmed that the proposed methodology was suitable[2]. It was agreed that both a construction phase assessment and an assessment of road traffic emissions across the site would be undertaken for the proposed development. The types of assessments to be undertaken,

[2] Email Miller Goodall Ltd. to Sharon McAndrew MCC) 12 November 209. Emails Rebecca Twigg (MCC) to Miller Goodall Ltd. on 14 November 2019.

meteorological data to be used, assessment roads, approach to verification and baseline data sources were also agreed and are detailed in the following sections.

5.3 Construction Dust Assessment

5.3.1 The IAQM provides guidance[3] on the assessment of air quality impacts arising from construction and demolition activities and has been used in this assessment. The IAQM methodology follows a risk assessment to determine the likely impact of the development on nearby receptor location during the construction phase and goes on to recommend mitigation measures which should be implemented to reduce any impact. The methodology for the assessment is shown in **Appendix B.** The study area in relation to construction dust and the buffer zones of <20 m, 20 m – 50 m and 50 – 100 m from the site are shown in **Appendix C**.

5.4 Road Traffic Emissions Assessment

Air Dispersion Model

5.4.1 The Atmospheric Dispersion Modelling System for Roads (ADMS-Roads) v4.1.1.0 was used to assess the local air quality impact of development-generated vehicle exhaust emissions, on concentrations of NO_2 and PM_{10}, at existing receptors located adjacent to the assessed road network, and to assess the suitability of the site for residential use.

5.4.2 The ADMS-Roads model is a comprehensive tool for investigating air pollution in relation to road networks. The model uses algorithms for the height-dependence of wind speed, turbulence and stability to produce improved predictions. It can predict long-term and short-term concentrations, as well as calculations of percentile concentrations.

5.4.3 The ADMS-Roads model has been comprehensively validated in a large number of studies by the software manufacturer CERC (Cambridge Environmental Research Consultants). This includes comparisons with data from the UK's Automatic Urban Network (AUN) and specific validation exercises using standard field, laboratory and numerical data sets. CERC is also involved in European programmes on model harmonisation, and their models have been compared favourably against other EU and US EPA systems. Further information in relation to this is available from the CERC web site at www.cerc.co.uk.

Assessment Scenarios

5.4.4 The assessment considered the following scenarios:

- Scenario 1: 2018 - base year;
- Scenario 2: 2021 - opening year 'without development'; and
- Scenario 3: 2021- opening year 'with development'.

Traffic Data

5.4.5 The spatial scope for the assessment focused on those routes affected by the proposed development. The study area, therefore, included the following road links:

[3] IAQM "Assessment of dust from demolition and construction" v1.1 2014

- Edge Lane;
- Fairfield Road;
- Rock Street;
- Ashton Old Road (A635);
- Ashton New Road (A662); and
- Manchester Road (A662)

5.4.6 The traffic data used in the assessment are detailed in **Appendix D**.

5.4.7 Vehicles within the study area were assumed to travel up to 48 kph on all roads apart from the approach to junctions where queuing traffic sections were included in the model at 5 kph where appropriate, in accordance with Defra guidance (Defra, 2016).

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

Meteorological Data

5.4.9 Meteorological data for 2018 from the Manchester Airport recording station was used in the ADMS-Roads model. This is the most representative recording station for the development site.

Model Verification

5.4.10 Model verification is the process of adjusting model outputs to improve the consistency of modelling results with respect to available monitored data. In this study, model uncertainty was minimised following Defra and EPUK guidance. The verification of the ADMS model output was achieved by modelling concentration of NO_2 at an existing monitoring location within the study area and comparing the modelled concentration with the measured concentration at diffusion tube Tameside 17, the location of which is shown in **Appendix A.**

Sensitive Receptors

5.4.11 Sensitive receptor locations were selected based on their proximity to road links affected by the proposed development, where the potential effect of development-related traffic emissions on local air pollution would be most significant. Onsite sensitive receptor locations were selected based on the proposed site layout. Selected receptors are shown in **Appendix E.**

Conversion of NOx to NO_2

5.4.12 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 NO_2 using the NO_x to NO_2 calculator (v7.1, 2019)[4] in accordance with Defra guidance[1].

[4] http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html#NOxNO2calc

Emission Factors

5.4.13 DEFRA's Emission Factor Toolkit (EFT), which is used within the ADMS model to predict emissions from road vehicles, was updated in May 2019 to version V9.0 and has been used within all scenarios.

Background Concentrations

5.5 There is one NO_2 background monitoring location within the study area, MAN14, located approximately 2 km north-west of the site. The 2018 monitored NO_2 results have been used within the following formula to calculate the 2018 monitored background NO_X concentration for use within the model:

$$2018\ Monitored\ NOx = 2018\ Monitored\ NO2\ \frac{Defra\ 2018\ NOx}{Defra\ 2018\ NO2}$$

5.6 The Defra background maps also have been used to calculate the opening year concentrations of NO_X and NO_2 from the 2018 monitored data using the following formula:

$$Opening\ year\ NO2 = 2018\ monitored\ NO2\ \times \frac{opening\ year\ Defra\ NO2}{2018\ Defra\ NO2}$$

$$Opening\ year\ NOx = \ 2018\ monitored\ NOx\ \times \frac{opening\ year\ Defra\ NOx}{2018\ Defra\ NOx}$$

Assessment Significance Criteria

5.6.1 Guidance is provided by EPUK and IAQM on criteria for determining the significance of a developments impact on local air quality[5]. **Table 3** 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 3: 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

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

*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)'

6 Baseline Air Quality

6.1 Local Air Quality Management

6.1.1 The first AQMA in MCC was declared in 2001 for exceedances of the annual mean air quality objectives for NO_2 and PM_{10}. Following further work, it was re-defined in 2007 for exceedances of the annual mean NO_2 only and further refinements occurred in 2016. The current AQMA covers the main routes in and out of Manchester city centre, including parts of Fairfield Road, Ashton Old Road (A635) and Manchester Road (A662). The AQMA in relation to the development site is shown in **Appendix A.**

6.1.2 MCC has published a series of air quality Review and Assessment documents in accordance with the local air quality management (LAQM) process. Since 2012 the Greater Manchester Combined Authority (GMCA) has published joint reports for its ten constituent authorities, including MCC. The 2019 Air Quality Annual Status Report concluded that long term trends show an improvement across Greater Manchester, however, there are areas that still remain above the annual air quality objective for NO_2.

6.2 Air Quality Monitoring

Nitrogen Dioxide (NO_2)

6.2.1 MCC has automatic monitoring sites within its area. The closest automatic monitoring stations, MAN1 and MAN3, are located over 4.8 km from the site. Due to the distance of the MCC automatic monitoring stations, they are not representative of site conditions. The development is in close proximity to Tameside Metropolitan Borough Council (TMBC). The closest TMBC automatic monitoring station is approximately 5 km south-east of the development site. Therefore, it is not representative of the conditions at the proposed development.

6.2.2 There are three diffusion tubes located within 2 km of the proposed development. MCC undertake diffusion tube has two monitoring sites within the study area. TMBC also undertake NO_2 diffusion tube monitoring and have one diffusion tube within the study area. The results from the diffusion tubes are shown in **Table 4**; the locations of the tubes are shown in **Appendix A**.

Table 4: Annual Mean NO_2 Concentrations Monitored by the LA within the Study Area

Site ID	Location		Annual Mean NO_2 Concentrations (µg/m^3)		
			2016	2017	2018
MAN 14 (Urban Background)	387656	399016	23.3	22.4	18.6
MAN 28 (Urban Traffic)	387951	397430	**41.0**	38.9	37.1
Tameside 17 (Urban Traffic)	393700	398792	36.2	36.4	31.1
Annual Mean NO_2 air quality objective				40 µg/m^3	

6.2.3 The monitoring results in **Table 4** indicate that annual mean concentrations of NO_2 have been below to the NO_2 annual mean objective at these monitoring locations since 2016, except at MAN 28 in 2016.

6.2.4 The results indicate that the short-term objective for NO_2 is unlikely to be exceeded at the monitoring sites, annual mean concentrations are less than 60 µgm^3 [1].

Particulate Matter (PM_{10})

6.2.5 MCC undertakes monitoring of PM_{10} using monitoring station MAN1. However, as discussed above, MAN1 is not representative of the site condition.

6.3 Background Concentrations

6.3.1 There is one NO_2 background monitoring location, MAN14, within the vicinity of the proposed development and there are no PM_{10} background monitoring locations within the study area. Results from Man 14 are shown in **Table 4** above. Background concentrations of NO_2 and PM_{10} were also obtained from the background concentration maps provided by Defra for the grid squares covering the proposed development[6]. These are shown in **Table 5** below.

Table 5: Background Pollutant Concentrations Obtained for the 1km x 1km Grid Squares Covering the Site and Receptor Locations*

Grid Square	Pollutant	2018 (µg/m^3)	2021 (µg/m^3)
389500,397500 (Site location)	NO_2	19.44	17.10
	NO_x	28.74	24.67
	PM_{10}	11.88	11.52
387500, 399500 (MAN 14)	NO_2	19.99	17.69
	NO_x	29.91	25.81
	PM_{10}	11.53	11.23

Background concentrations obtained from the latest 2017 based background maps

6.4 **Table 5** shows that NO_2 background concentrations predicted by Defra are higher than actual concentrations monitored at MAN 14 for 2018**.**

7 Construction Dust Impact Assessment

7.1 Step 1 – The Need for a Detailed Assessment

7.1.1 The site boundary is within 350 m of human receptors. In addition, there are human receptors within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance. Therefore, a detailed assessment of the construction phase of the development was undertaken. The detailed assessment has not addressed ecological receptors.

[6] http://uk-air.defra.gov.uk/data/laqm-

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 1 in Appendix B**:

- Demolition: The total building volume to be demolished is >50,000 m^3. The dust emission magnitude for demolition is, therefore, considered to be **large**.
- Earthworks: The total site area is >10,000 m^2. The dust emission magnitude for earthworks is, therefore, considered to be **large**.
- Construction: The total building volume to be constructed is >100.000 m^3. The dust emission magnitude for construction is, therefore, considered to be **large**.
- Trackout: It is conservatively assumed that there are likely to be >50 HDV outward movements in any one day. The dust emission magnitude for trackout is, therefore, considered to be **large**.

7.2.2 The scale and nature of works onsite were considered to determine the potential dust emission magnitude for demolition, earthworks and trackout activities as outlined in **Table 6**.

Table 6: Dust Emission Magnitudes for Each Activity

Activity	Dust Emission Magnitudes	Justification
Demolition	Large	• Total building volume to be demolished is >50,000 m^3
Earthworks	Large	• The site area is 10,000 m^2
Construction	Large	• Total building volume to be constructed is >100,000 m^3
Trackout	Large	• There are likely to be >50 HDV outward movements in any one day

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

7.2.3 Human receptors are located in residential houses adjacent to the site within a distance of 20 m from construction, demolition and earthworks and 20 m of road edges used by traffic associated with the site construction. In accordance with the criteria in **Table 2 in Appendix B** and the IAQM guidance, the sensitivity of human receptors to the effects of dust soiling and health effects from construction, demolition, earthwork activities, and from trackout is therefore likely to be **high**.

Step 2B Sensitivity of the Area to Dust Soiling

7.2.4 The sensitivity of the area to dust soiling effects has been determined using the criteria detailed in **Table 3 in Appendix B:**

- Demolition - sensitivity is considered to be **high** as demolition activities take place within 20 m of 10-100 highly sensitivity receptors;
- Earthworks - sensitivity is considered to be **high** as earthworks activities take place 20 m of 10-100 highly sensitivity receptors;
- Construction - sensitivity is considered to be **high** as construction activities take place20xm of 10-100 highly sensitivity receptors; and

- Trackout activities – sensitivity is considered to be **high** as there are >100 highly sensitivity receptors within 20 m of roads which relevant vehicles are likely to use that are up to 500 m from the site.

Step 2B Sensitivity of People to the Health Effects of PM_{10}

7.2.5 The background PM_{10} concentrations for 2018 and 2021 are shown in **Table 5**. Therefore, local levels of PM_{10} are likely to be <24 µg/m^3, during the construction phase.

7.2.6 Using this information and **Table 4 in Appendix B**, the sensitivity of human receptors to health impacts from dust and PM_{10} for each activity were defined as:

- Demolition - sensitivity is considered to be **low** as demolition activities take place within 20 m of 10-100 highly sensitivity receptors and the background PM_{10} concentration is predicted to be <24 µg/m^3;
- Earthworks - sensitivity is considered to be **low** as earthworks activities take place within 20 m of 10-100 highly sensitivity receptors and the background PM_{10} concentration is predicted to be <24 µg/m^3;
- Construction - sensitivity is considered to be **low** as construction activities take place 20 m of 10-100 highly sensitivity receptors and the background PM_{10} concentration is predicted to be <24 µg/m^3; and
- Trackout activities – sensitivity is considered to be **medium** as there are >100 highly sensitivity receptors within 20 m of roads which relevant vehicles are likely to use that are up to 500 m from the site, and the background PM_{10} concentration is predicted to be <24 µg/m^3.

7.2.7 The sensitivity of the area to dust soiling and human health in each activity is summarised in **Table 7**.

Table 7: Outcome of Defining the Sensitivity of the Area

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

Step 2C Risk of Impacts

7.2.8 The dust emission magnitude and sensitivity of the area were combined and the risk of impacts determined using the criteria detailed in **Table 5 to Table 8 in Appendix B.**

- Demolition – is considered to be **high** risk for dust soiling and **medium** risk for human health;
- Earthworks – is considered to be **high** risk for dust soiling and **low** risk for human health;
- Construction – is considered to be **high** risk for dust soiling and **low** risk for human health; and
- Trackout activities – is considered to be **high** risk for dust soiling and **medium** risk for human health;

7.2.9 A summary of the risks, before mitigation measures are applied, for dust soiling and human health are shown in **Table 8**.

Table 8: Risk of Dust Impacts

Potential Impact	Dust Risk			
	Demolition	Earthworks	Construction	Trackout

Dust Soiling	High	High	High	High
Human Health	Medium	Low	Low	Medium

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. Good practice mitigation measures highly recommended for the proposed development taken from the IAQM guidance are detailed below.

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 demolition, earthworks, construction and trackout)[7]. Mitigation measures specific to earthworks, construction and trackout are proposed based on the risk classifications in **Table 8**.

7.3.3 Recommended mitigation measures are shown in **Appendix F.**

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 above mitigation measures, therefore, the residual impacts from the construction are considered to be not significant, in accordance with IAQM guidance.

8 Road Traffic Assessment

8.1 Existing Receptor Locations

8.1.1 Existing sensitive receptor locations were identified within the study area for consideration in the assessment. Predicted changes in NO_2 and PM_{10} concentrations, as a result of development-generated traffic, were calculated at these locations. The sensitive receptor locations are detailed in **Table 9** and **Appendix E**.

Table 9: Sensitive Receptor Locations

Receptor	Grid Ref	
R1	389051	397545
R2	389291	397461
R3	389135	397230
R4	389536	397619
R5	389021	398279

[7] 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 Proposed Receptor Locations

8.2.1 One proposed residential receptor location was considered within the development site. NO_2 and PM_{10} concentrations were calculated at these locations to determine whether future site users may be exposed to elevated pollutant levels. The receptor location was chosen as a worst-case scenario due to being in the closest proximity to the main road within the development.

8.2.2 The proposed sensitive receptor locations are presented in **Table 10** and **Appendix E**.

Table 10: **Proposed Sensitive Receptor Locations**

Receptor	Grid Ref	
R6	389184	397789

8.3 Model Verification

8.3.1 Monitoring is undertaken by TMBC at one monitoring site, Tameside 17 within the study area, the location is shown in **Appendix A**. Concentrations of NO_2 at this site was predicted using ADMS for use in the verification process as detailed in **Table 11**.

8.3.2 All modelled road NO_x concentrations were adjusted by a factor of 1.9 **(Table 11)**.

8.3.3 There is no PM_{10} monitoring undertaken within the study area, therefore it was not possible to undertake verification of PM_{10} concentrations.

Table 11: NO_2 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
Tameside17	31.1	25.19	18.6	27.83	12.5	13.1	1.9	1.90	24.95	52.8	31.0	-0.4

8.4 Baseline Assessment

8.4.1 The ADMS model was used to estimate contributions of vehicle exhaust emissions to annual NO_2 and PM_{10} concentrations for the '*baseline*' and '*without development'* scenarios considered in the assessment.

8.4.2 The 24-hour AADT flows used in the assessment for *'without development'* scenarios are detailed in **Appendix D. Table 12** details the results of the baseline assessment.

Table 12: Predicted Baseline NO_2 and PM_{10} Annual Mean Concentrations (µg/m^3) at Sensitive Receptor Locations

Receptor	Receptor Height above Ground Level (m)	Scenario 1: Base Year (2018)		Scenario 2: Without Development (2021)	
		NO_2 (µg/m^3)	PM_{10} (µg/m^3)	NO_2 (µg/m^3)	PM_{10} (µg/m^3)
R1	1.50	23.78	12.24	20.76	11.90
R2	1.50	26.70	12.43	23.60	12.12
R3	1.50	27.90	12.63	24.43	12.32
R4	1.50	23.04	12.27	20.25	11.94
R5	1.50	33.70	12.51	29.72	12.19
Annual Mean NO_2 & PM_{10} Air Quality Objective				**40 (µg/m^3)**	

8.4.3 The baseline air quality assessment for the base year (2018) and opening year *'without development' (*2021) scenarios show that concentrations of NO_2 and PM_{10} are below the respective annual mean air quality objectives of 40 µg/m^3 at all receptors for all '*without development'* scenarios.

8.4.4 In accordance with Defra guidance[1], it may be assumed that exceedences of the 1-hour mean objective for NO_2 are unlikely as the predicted annual mean concentrations are less than 60 µg/m^3. The short term PM_{10} objective is predicted to be met at all identified receptor locations with no exceedences of the daily mean objective of 50 µg/m^3.

8.5 Impact Assessment

Existing Receptors

8.5.1 Predicted NO_2 and PM_{10} concentrations for the opening year (2021) *'with development'* scenario are detailed in **Table 13**. Predicted concentrations for the *'without development'* scenario and the predicted change in NO_2, and PM_{10} concentrations, as a result of the proposed development, are also shown for comparison purposes.

8.5.2 Changes in predicted pollutant concentrations between the without development scenario and the with development scenario were compared to the significance criteria detailed in EPUK and IAQM guidance[5] and contained within **Table 3** above.

Table 13: Dispersion Modelling Results and Significance of Development for the Opening Year (2021) Scenario at Existing Receptor Locations

Receptor name	Difference in opening year without and with development	Annual average NO_2 ($\mu g/m^3$)	Significance	Annual average PM_{10} ($\mu g/m^3$)	Significance
R1	Without Development	20.76	Negligible	11.90	Negligible
	With Development	20.78		11.90	
	% Change relative to AQAL & (Impact)	0.05(+0.02)		0.01(+0)	
	% of AQAL with Development	52		30	
R2	Without Development	23.60	Negligible	12.12	Negligible
	With Development	23.66		12.12	
	% Change relative to AQAL & (Impact)	0.15(+0.06)		0.02(+0.01)	
	% of AQAL with Development	59		30	
R3	Without Development	24.43	Negligible	12.32	Negligible
	With Development	24.56		12.33	
	% Change relative to AQAL & (Impact)	0.32(+0.13)		0.03(+0.01)	
	% of AQAL with Development	61		31	
R4	Without Development	20.25	Negligible	11.94	Negligible
	With Development	20.29		11.95	
	% Change relative to AQAL & (Impact)	0.1(+0.04)		0.01(+0)	
	% of AQAL with Development	51		30	
R5	Without Development	29.72	Negligible	12.19	Negligible
	With Development	29.74		12.19	
	% Change relative to AQAL & (Impact)	0.05(+0.02)		0(+0)	
	% of AQAL with Development	74		30	
AQAL: Annual Mean NO_2 & PM_{10} Air Quality Objective ($\mu g/m^3$)				**40**	

8.5.3 All receptors are expected to have an increase of less than 0.13 $\mu g/m^3$ for both NO_2 and PM_{10}.

8.5.4 The results of the ADMS modelling assessment for 2021 indicate that annual mean concentrations of NO_2 and PM_{10} would be below the respective annual objectives in 2021, at all existing sensitive receptor locations within the study area, both '*with*' and '*without*' the development.

8.5.5 In accordance with Defra guidance[1], it may be assumed that exceedances of the 1-hour mean objective for NO_2 are unlikely as the predicted annual mean concentrations are less than 60 $\mu g/m^3$. The 24 hours PM_{10} objective of 50 $\mu g/m^3$ is predicted to be met at all modelled locations.

8.5.6 Predicted annual mean NO_2 and PM_{10} concentrations in the '*with development'* scenario are all 74 % or less of the AQAL. It is likely that concentrations predicted at individual receptor locations are also worst-case scenario as they have been chosen due to being close to the main junctions used by the development. The proposed development is therefore predicted to have a ***negligible*** impact on concentrations of NO_2 and PM_{10} in 2021.

Proposed Receptors

8.5.7 Predicted NO_2 and PM_{10} concentrations for the assessment years (2021) '*with development*' scenario at proposed receptor locations are detailed in **Table 14.**

Table 14: Predicted Annual Mean Pollutant Concentrations for 2021 at Proposed Receptor Locations

Receptor	Receptor Height above Ground Level (m)	Annual Average Concentration (µg/m^3)	
		NO_2	PM_{10}
R6	1.5	19.12	11.80
Annual Mean NO_2 & PM_{10} Air Quality Objective (µg/m^3)			**40 µg/m^3**

8.5.8 The results of the dispersion modelling assessment indicate that annual mean concentrations of NO_2 and PM_{10} would be below the respective objectives in 2021 at proposed residential receptors once the development is operational.

8.5.9 All predicted NO_2 concentrations are well below 60 µg/m^3 and therefore, in accordance with the guidance in LAQM.TG (16), the 1-hour mean objective is unlikely to be exceeded. The short term PM_{10} objective is predicted to be met at all proposed receptor locations with no exceedances of the daily mean objective of 50 µg/m^3.

8.5.10 Concentrations of NO_2 and PM_{10} are predicted to be well below the respective annual mean and short term objectives in 2021 at proposed residential receptors, the site is therefore considered suitable for residential use with regards to air quality.

9 Mitigation

9.1.1 The detailed air dispersion modelling undertaken indicates that vehicle exhaust emissions associated with traffic generated by the development will have a negligible impact on local air quality at all receptor locations. Annual mean concentrations of NO_2 and PM_{10} are predicted to be below the respective objectives in 2021 at proposed residential receptors. No specific mitigation is therefore proposed.

9.2 However, the Greater Manchester Air Quality Action Plan requires all the developments within MCC to meet the IAQM/EUPUK Guidance in relation to mitigation of their impacts on local air quality. Therefore, an electric vehicle (EV) charging point is recommended for each allocated parking space. The client has agreed to include electric vehicles (EV) charging points, for each allocated parking space and 10% of unallocated parking spaces.

9.3 In relation to combustion plant, the client has agreed that any gas-fired boilers/CHP/biomass plant will meet IAQM/EPUK minimum standards.

10 Summary of Impacts and Conclusion

10.1 A road traffic emissions assessment was undertaken to consider the impact of vehicle exhaust emissions associated with the proposed residential development, on identified receptor locations within the study area.

10.2 The assessment considered whether the proposed development could significantly change air quality during the construction phase. With the implementation of mitigation measures the dust impacts from the construction are considered to be not significant when considered in accordance with IAQM guidance.

10.3 Annual concentrations of NO_2 and PM_{10} were predicted to be well below the respective air quality objectives for both '*without development*' and '*with development*' scenarios in 2021 at all modelled receptor locations. Predicted annual mean NO_2 and PM_{10} concentrations in the 'with development' scenario are all 74% or less of the AQAL.

10.4 No exceedance of the short term 1 hour NO_2 and 24 hour PM_{10} air quality objectives were predicted at sensitive receptor locations.

10.5 In accordance with EPUK and IAQM guidance on air quality significance criteria, the local air quality impact of emissions from traffic associated with the proposed development on the road network surrounding the site is predicted to be ***negligible***.

10.6 The suitability of the site for residential receptors with regards to air quality was also considered. The results of the dispersion modelling assessment indicate that annual mean and short term concentrations of NO_2 and PM_{10} would be below the respective objectives in 2021 at proposed residential receptors with the development in place.

10.7 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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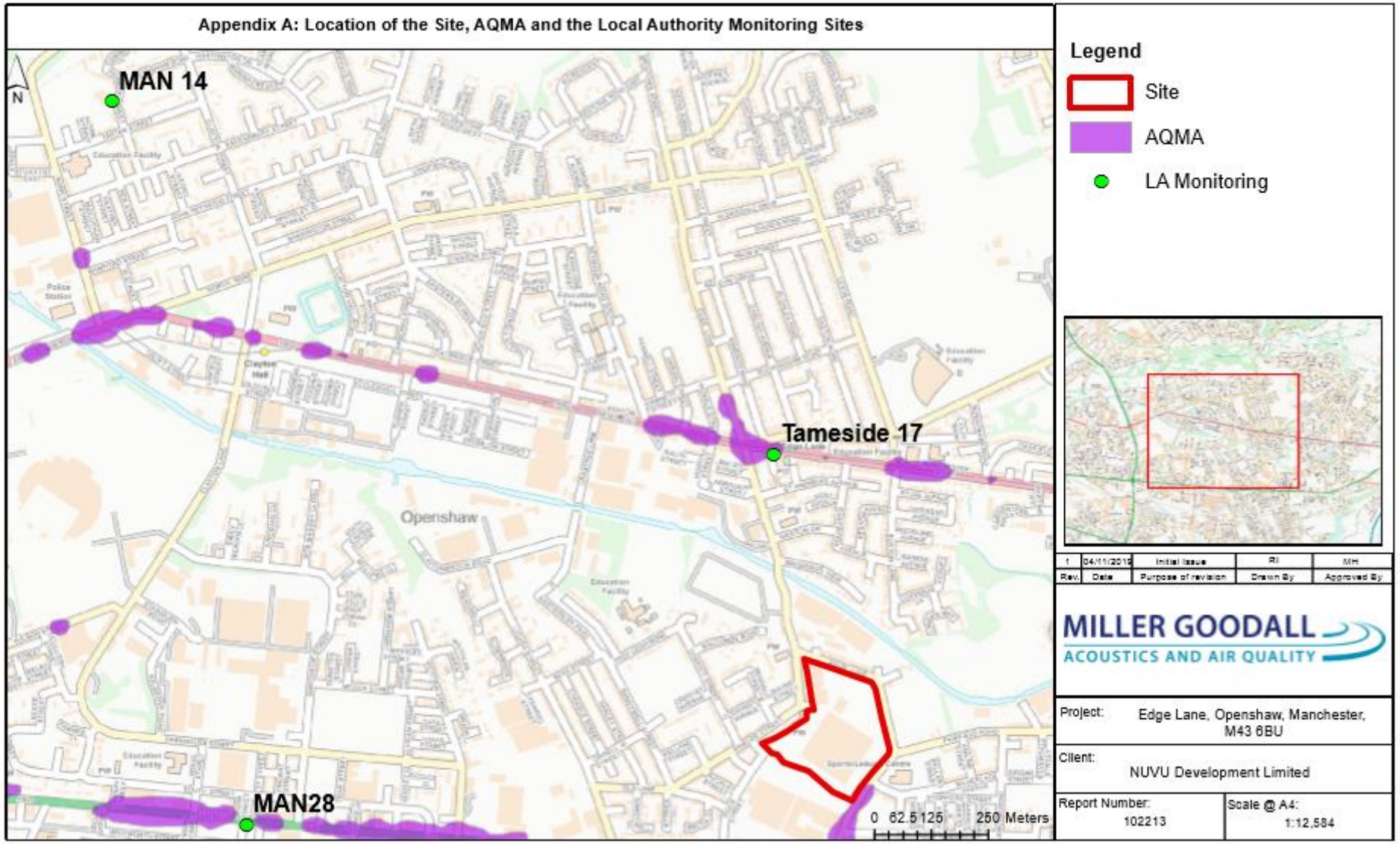
Appendix A: Location of the Site, AQMA and the Local Authority Monitoring Sites
MAN 14
Tameside 17
MAN28
Openshaw
N
0 62.5 125 250 Meters
Legend
Site
AQMA
LA Monitoring
1 04/11/2019 Initial Issue RI MH
Rev. Date Purpose of revision Drawn By Approved By
MILLER GOODALL
ACOUSTICS AND AIR QUALITY
Project: Edge Lane, Openshaw, Manchester, M43 6BU
Client: NUVU Development Limited
Report Number: 102213
Scale @ A4: 1:12,584

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Appendix B: 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 activities[8]. 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 1** describes the potential dust emission class criteria for each outlined activity.

Table 1: 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.

[8] IAQM "Assessment of dust from demolition and construction" 2014

Activity	Criteria used to Determine Dust Emission Magnitude		
	Small	Medium	Large
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 PM_{10} 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 2** is used to determine the sensitivity of the receptor in relation to dust soiling, health effects and ecological effects.

Table 2: 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 *and* 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 3 and **Table 4** 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 3: 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

Receptor Sensitivity	Number of Receptors	Distance from Source (m)*			
		<20	<50	<100	<350
	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 4: 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-	>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-	>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 1** and sensitivity of the area and receptors from **Table 2**, **Table 3** and **Table 4** 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 5** to **Table 8.**

Table 5: 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 6: 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 7: 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 8: 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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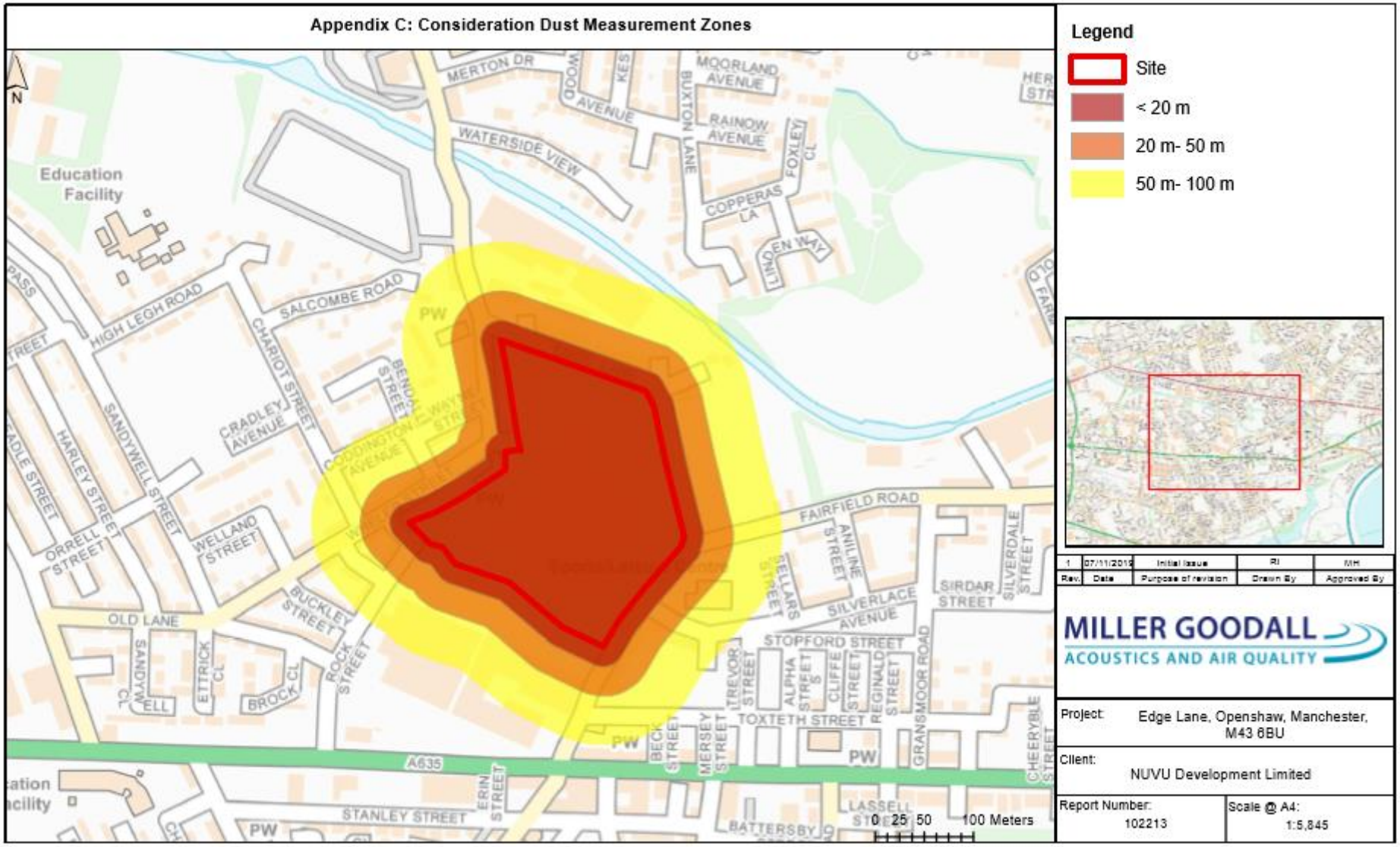
Appendix C: Consideration Dust Measurement Zones



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Appendix D: Traffic Data used in the Air Quality Assessment

Link Number	Road	2018 Base Year/Verification		2021 Base Year		2021 With Development	
		AADT LDV	AADT HDV	AADT LDV	AADT HDV	AADT LDV	AADT HDV
1	Edge Lane (North)	5,482	335	6,087	371	6,131	371
2	Edge Lane (South)	5,441	468	6,042	520	6,100	520
3	Fairfield Road (East)	6,728	556	7,471	617	7,589	617
4	Fairfield Road (South)	9,270	434	10,293	481	10,511	481
5	Rock Street	2,972	224	3,300	249	3,300	249
6	A635 Ashton Old Road (West)	20,015	2,194	22,224	2,437	22,757	2,437
7	A662 Ashton New Road (West)	10,016	421	11,191	492	11,205	492
8	A662 Ashton New Road (East)	10,016	421	11,191	492	11,205	492
9	A635 Ashton Old Road (East)	20,082	892	24,970	1,266	25,042	1,266

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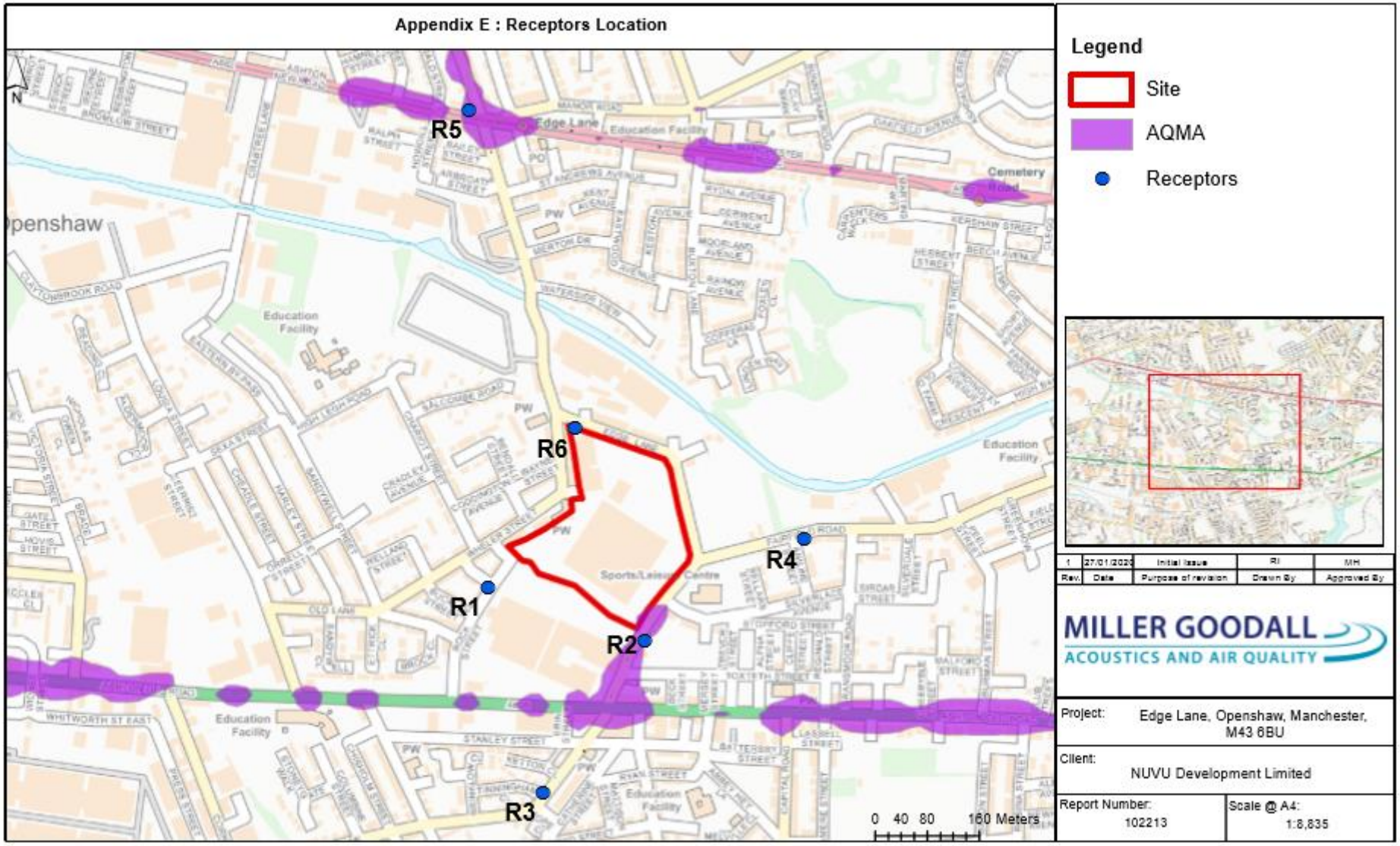
Appendix E : Receptors Location



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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 actives 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	High 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).	xx
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	High Risk
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 bowsers 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 PM_{10}, 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

CO Carbon monoxide

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.

DMRB Design Manual for Roads and Bridges

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 morality due to exposure to PM_{10} 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.

EPAQS Expert Panel on Air Quality Standards

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

LDF Local Development Framework

LDV Light Duty Vehicle

Mg/m^3 Microgrammes (of pollutant) per cubic metre of air. 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 microgramme (millionth of a gramme) of pollutant

NO_2 Nitrogen Dioxide

NOx A collective term used to represent the mixture of nitrogen oxides in the atmosphere, as nitric oxide (NO) and nitrogen dioxide (NO_2)

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 us of his land.

Public nuisance, arising from and 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

PM_{10} 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 PM_{10}, EN 12341, with a 50% efficiency cut-off at 10 µm aerodynamic diameter

RSS Regional Spatial Strategy

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.


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