

AIR QUALITY ASSESSMENT

on behalf of

NADA ARCHITECTS LTD

for

169A KINGSWAY, MANCHESTER, M19 2ND

REPORT DATE: 8TH DECEMBER 2021

REPORT NUMBER: 102721

Miller Goodall Ltd
Ground Floor
Ashworth House
Deakins Business Park
Blackburn Road
Egerton
Bolton
Lancashire
BL7 9RP

Tel: 01204 596166

www.millergoodall.co.uk

Company registration number 5201673



Summary

This air quality report has been prepared to accompany a planning application for a proposed residential development at 169A Kingsway, Manchester, M19 2ND. It assesses the potential changes in air quality due to the operation of the proposed development and whether these potential changes would significantly alter air quality.

Concentrations of NO₂ and PM₁₀ are likely to be below their respective long and short-term objectives at the proposed development site which is therefore considered suitable for residential use with regards to air quality. Concentrations of PM_{2.5} are expected to be below the annual mean target.

The proposed development is not expected to have a significant impact on local air quality.

Therefore, Condition 6 can be discharged.

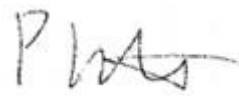
Prepared By Melody Horan

Reviewed By Philip Walton

Signed



Signed



Date

8th December 2021

Date

8th December 2021

Record of changes

Version	Date	Change	Initials
1	8th December 2021	First issue	MH

Contents

Summary	1
Contents	0
1 Introduction.....	1
2 Site Description	1
3 Proposed Development	2
4 Policy Context	2
4.1 Air Quality Objectives	2
4.2 Greater Manchester Action Plan 2016-2021	3
5 Methodology	4
5.1 Data Sources	4
5.2 Simple Air Quality Assessment	4
6 Baseline Air Quality	5
6.1 Local Air Quality	5
6.2 Air Quality Monitoring	5
6.3 Transport for Greater Manchester Air Quality Model.....	6
6.4 Background Concentrations	6
7 Effect of Air Quality on the Proposed Development.....	7
8 Impact of the Proposed Development on Existing Air Quality	7
9 Mitigation.....	7
10 Summary of Impacts and Conclusion	8
APPENDICES	9
Glossary of Terms.....	13

1 Introduction

1.1 Miller Goodall Ltd has been instructed to prepare an air quality assessment for the discharge of Condition 6 from the planning application ref:130116/FO/2021. The development is for residential use and is located at 169A Kingsway, Manchester, M19 2ND. The site lies within the administrative boundary of Manchester City Council (MCC).

1.2 Condition 6 states:

"6) a) Prior to commencement of the development mitigation measures to safeguard local air quality shall be submitted to and approved in writing by the City Council as local planning authority.

b) Prior to occupation of the development any agreed mitigation measures shall be implemented and verified as such in writing by the City Council as local planning authority and shall remain in situ whilst the use or development is in operation.

Reason: To secure a reduction in air pollution from traffic or other sources in order to protect existing and future residents from air pollution, pursuant to Policies EN16, SP1 and DM1 in the Manchester Core Strategy."

1.3 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 following Local Air Quality Management Technical Guidance¹ and EPUK and IAQM guidance².

1.4 The report provides an assessment of the potential air quality impacts associated with the operational phase of the proposed development. The potential air quality changes at existing sensitive receptors adjacent to the site and roads subject to increased vehicle generation from the development are assessed. The suitability of the site for the intended use is also assessed.

1.5 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 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 site is located approximately 4.9 km to the southeast of Manchester city centre. The development site is located on the corner of Kingsway and Grangethorpe Drive.

2.2 Directly to the north and south of the proposed development, there are commercial premises. There is a residential dwelling approximately 20 m south of the site. There is also a residential property directly east of the

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

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

proposed development site, located on Burnside Drive. Kingsway runs along the western site boundary. The site location is shown in **Appendix A**.

3 Proposed Development

- 3.1 The proposed development consists of the conversion of the second floor to an additional 1 bed flat with an associated rear dormer extension. There are no parking spaces associated with the development. The development will have gas central heating.

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 2018³.
- 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)

³ UK Parliament (2018): <http://www.legislation.gov.uk/ukpga/2018/16/contents/enacted>

- 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.
- 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 2016-2021⁴ 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 (AQMA). 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.”

- 4.3 In January 2019, the joint GMCA & AQMA executive board met for the Greater Manchester Clean Air Plan: Update January 2019. Within the document, it states that Greater Manchester has signed up to become a World Health Organisation (WHO) ‘BreatheLife’ city, with the associated aim of achieving WHO air quality targets by 2030.
- 4.4 The WHO air quality targets refer to the 2005 air quality guidelines (AQG), not the 2021 AQG. For NO₂ concentrations the WHO 2005 AQG is 40 µg/m³, for PM₁₀ it is 20 µg/m³ and for PM_{2.5} it is 10 µg/m³. It should be noted that the WHO AQGs are not legal requirements.

⁴ GMCA (2016) Greater Manchester Air Quality Action Plan 2016-2021

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
	GMCA (2016) <i>Greater Manchester Air Quality Action Plan 2016-2021</i>
Greater Manchester Combined Authority (GMCA)	GMCA (2019) <i>Joint Greater Manchester Combined Authority & AQMA Executive Board Meeting</i>
	GMCA (2021) <i>2020 Air Quality Annual Status Report</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), July 2021
Defra's LAQM Support Tools	Local Air Quality Management 1 km x 1 km grid background pollutant maps

5.2 Simple Air Quality Assessment

- 5.2.1 A simple assessment of air quality in terms of the impact of the development and suitability of the site, which relies on already published information, has been completed using sources such as the Local Authority's monitoring network and the Defra LAQM support tools.

6 Baseline Air Quality

6.1 Local Air Quality

- 6.1.1 Baseline air quality at the proposed development has been established by examining monitoring data produced by GMCA (provided in the GMCA (2021) 2020 Annual Status Report)⁵ and background concentration maps provided by Defra for the grid squares covering the proposed development.
- 6.1.2 The site is located adjacent to an AQMA. The site location and its relationship to the AQMA are shown in **Appendix A**. The AQMA was declared in 2016, on the basis of annual average levels of NO₂⁵.

6.2 Air Quality Monitoring

Nitrogen Dioxide (NO₂)

- 6.2.1 There are three automatic monitoring stations within MCC, all of which monitor NO₂⁵. However, none of these monitoring stations are located in areas that are representative of conditions at the proposed development site.
- 6.2.2 MCC also monitors NO₂ with diffusion tubes. There is one diffusion tube, MAN81, within 1 km of the proposed development site. MAN81 is an urban background site and is located approximately 800 m northeast of the proposed development site. There is a diffusion tube, MAN74, located on Kingsway. However, MAN74 is approximately 3.3 km southwest of the proposed development site.
- 6.2.3 The results from the diffusion tubes are shown in **Table 3** and the monitor locations are shown in **Appendix A**. Monitoring data has been obtained from the GMCA (2021) 2020 Annual Status Report⁵.

Table 3: Annual Mean NO₂ Concentrations Monitored by MCC within the Study Area

Site ID	Location		Annual Mean NO ₂ Concentrations (µg/m ³)				
			2016	2017	2018	2019	2020
MAN74 (roadside)	385400	390095	38.0	37.1	35.7	33.6	23.3
MAN81 (urban background)	386589	394083	25.9	25.2	21.8	23.1	16.6
Annual Mean NO ₂ air quality objective					40 µg/m ³		

- 6.2.4 The monitoring results in **Table 3** indicate that annual mean concentrations of NO₂ were below the NO₂ annual mean objective at the identified monitoring sites during the period shown.
- 6.2.5 The results indicate that the short-term objective for NO₂ was unlikely to be exceeded at the identified monitoring sites as monitored annual mean concentrations were well below the indicative screening concentration of 60 µg/m³ during the period shown.

⁵ GMCA (2021) 2020 Air Quality Annual Status Report

Particulate Matter (PM_{10} & $PM_{2.5}$)

- 6.2.6 MCC does undertake PM_{10} and $PM_{2.5}$ monitoring at automatic monitoring stations⁵. However, as discussed, there are no automatic monitoring stations representative of conditions at the proposed development site.
- 6.2.7 Between 2016 – 2020, the annual mean PM_{10} concentrations were below the annual mean objective at all three MCC automatic monitoring stations⁵.
- 6.2.8 One automatic monitoring station, Manchester Piccadilly, records $PM_{2.5}$. Between 2016 – 2020, the annual mean $PM_{2.5}$ concentrations were below the annual mean target at Manchester Piccadilly⁵.

6.3 Transport for Greater Manchester Air Quality Model

- 6.3.1 In 2014, Transport for Greater Manchester (TfGM) conducted air pollution dispersion modelling for the Combined Authority members which was used to determine the location and extent of the AQMA. The model shows the predicted concentrations of NO_2 in 2016 at locations across the Greater Manchester area at a height of 0 m. The GMCA AQMA was declared where the model predicted annual average NO_2 concentrations above $35 \mu g/m^3$ ⁴.
- 6.3.2 As the proposed development site is not within the AQMA, the TfGM 2016 modelling predicted that the development site would be exposed to NO_2 concentrations below $35 \mu g/m^3$ ⁴.

6.4 Background Concentrations

- 6.4.1 There is one NO_2 background monitoring location within the study area, MAN81. The results from MAN81 are shown in **Table 3** and its location is shown in **Appendix A**. There are no representative PM_{10} nor $PM_{2.5}$ background monitoring sites.
- 6.4.2 Background concentrations of NO_2 , PM_{10} and $PM_{2.5}$ obtained from the background concentration maps provided by Defra for the grid squares covering the proposed development and receptor locations⁶ are shown in **Table 4**.

Table 4: Background Pollutant Concentrations Obtained for the 1km x 1km Grid Squares Covering the Site*

Grid Square	Pollutant	2019
		($\mu g/m^3$)
386500, 393500	NO_2	17.87
	PM_{10}	12.96
	$PM_{2.5}$	8.92

* Background concentrations obtained from the latest 2018 based background maps

⁶ <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>

7 Effect of Air Quality on the Proposed Development

- 7.1 The background concentrations in **Table 3** and **Table 4** show that background concentrations of NO₂ and PM₁₀ are well below health-based air quality objectives of 40 µg/m³ for both pollutants as well as below the PM_{2.5} annual mean target. Additionally, the concentrations for the three pollutants are below the WHO AQGs. However, the site is likely experiencing higher concentrations due to its proximity to the road network.
- 7.2 MAN74 is located on Kingsway. However, it is located approximately 3.3 km southwest of the proposed development site and approximately 30 m from a GMCA AQMA pocket. MAN74 shows that air quality has been improving along Kingsway since 2016.
- 7.3 As the development site is not located within the AQMA, the TfGM model predicted that the development site would be exposed to NO₂ concentrations below 35 µg/m³⁴ at a height of 0 m. As shown in **Table 3**, monitored NO₂ concentrations at MAN74 and MAN81 have improved since 2016. Therefore, it is expected that air quality has also improved at the development site since 2016.
- 7.4 Concentrations from primary pollutants, such as NO₂, decrease as the distance from the source increases, due to the dispersion of pollutants. The proposed residential unit within the proposed development will be located on the second floor of the existing building. Therefore, at this height, the residential unit is expected to be exposed to concentrations lower than those at the ground floor level. As the monitored concentrations at MAN74 have been below the annual mean objective since 2016 and the TfGM modelling predicts the development site to be exposed to concentrations below 35 µg/m³⁴, the proposed residential unit will likely be exposed to concentrations below the annual mean objective.
- 7.5 The evidence from existing information sources is that the residential units within the proposed development site are likely to experience levels of NO₂ and PM₁₀ below the annual mean and short-term objectives for the pollutants and below the PM_{2.5} target.

8 Impact of the Proposed Development on Existing Air Quality

- 8.1 As discussed above, the development does not have any associated parking spaces. Therefore, traffic associated with the proposed development is not expected to have a significant impact on local air quality².
- 8.2 All gas-fired boilers will meet a minimum standard of <40 mgNO_x/kWh².

9 Mitigation

- 9.1 Mitigation is not required to safeguard existing residents from air pollution, as the development is not expected to have a significant impact on local air quality². There are no car parking spaces so electric vehicle charging points cannot be installed. The development site is well situated in terms of amenities as well as public transport. The heating system meets the standards within IAQM guidance.
- 9.2 Mitigation is not required to safeguard future users of the development site, as the commercial area is expected to be exposed to air pollutants below the short-term NO₂ and PM₁₀ objectives and the residential units are

expected to be exposed to air pollutants below the annual mean and short-term NO₂ and PM₁₀ objectives as well as below the PM_{2.5} target.

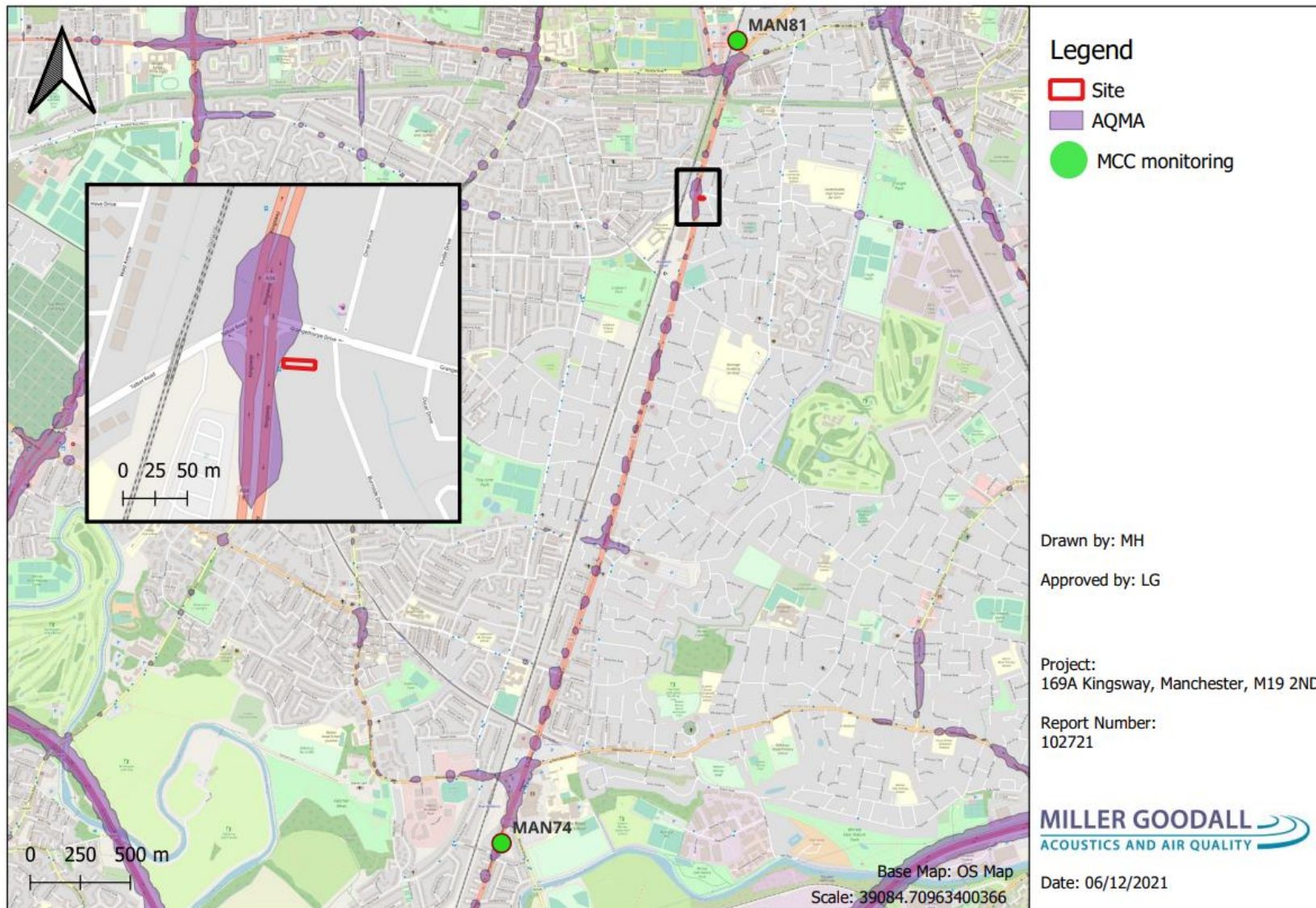
10 Summary of Impacts and Conclusion

- 10.1 This air quality report 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.
- 10.2 Concentrations of NO₂ and PM₁₀ are likely to be below their respective long and short-term objectives at the proposed development site which is therefore considered suitable for residential/ commercial use with regards to air quality. Concentrations of PM_{2.5} are expected to be below the annual mean target.
- 10.3 The proposed development is not expected to have a significant impact on local air quality.
- 10.4 Therefore, Condition 6 can be discharged.

APPENDICES

This page is left blank intentionally

Appendix A: Location of site, AQMA and MCC monitoring



This page is left blank intentionally

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.

