

MILLER GOODALL
ACOUSTICS AND AIR QUALITY

AIR QUALITY ASSESSMENT

on behalf of

URBANIZE HOMES LTD

for

TATTON PUBLIC HOUSE, BOAT LANE, NORTHENDEN M22 4FR

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Summary

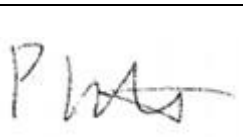
This air quality report has been prepared to accompany a planning application for a discharge of planning application for a residential development at Tatton Public House, Boat Lane, Northenden M22 4FR. It assesses the potential changes in air quality due to the construction and operation of the proposed development and whether these potential changes would significantly alter air quality.

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

Concentrations of NO_2 and PM_{10} 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.

The information and mitigation presented in this report is considered sufficient to meet the requirements to discharge planning condition 23 of Planning Reference 125635/FO/2019.

Prepared By	Philip Walton	Reviewed By	Lesley Goodall
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Date	27th July 2022	Date	27th July 2022

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1 Introduction

1.1 Miller Goodall Ltd has been instructed to prepare an air quality assessment to accompany an application for the discharge of a planning condition for a residential development at Tatton Public House, Boat Lane, Northenden M22 4FR. 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 following Local Air Quality Management Technical Guidance[1] and EPUK and IAQM guidance[2].

1.3 The proposals received planning approval on 10th December 2019 (Planning Reference 125635/FO/2019). Planning Condition 23 of the permission requires the submission of an air quality assessment.

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}) 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 NO_2, PM_{10} and $PM_{2.5}$.

2 Site Description

2.1 The site is located approximately 7 km to the south of Manchester city centre on Boat Lane. The site is occupied by the building of the former Tatton Public House and grounds.

2.2 The River Mersey borders the site to the north, with woodland and the M60 located beyond. Woodland borders the site to the east with a caravan park and the elevated M60 located beyond. Existing residential dwellings border the site to the south. Boat Lane borders the site to the west, with existing residential dwellings located beyond.

2.3 The proposed development is not located in an Air Quality Management Area (AQMA). The site location is shown in **Appendix A**.

3 Proposed Development

3.1 The development comprises the conversion of the Tatton Public House to create 7 residential apartments and a further 21 new apartments to the rear following the partial demolition of existing extensions.

3.2 20% of the parking provisions will be installed with electric vehicle charging points.

[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)

4 Policy Context

4.1 Air Quality Objectives

4.1.1 The standards and objectives relevant to the LAQM framework have been prescribed through the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations 2002; the Air Quality Standards Regulations 2010 set out the combined Daughter Directive limit values and interim targets for Member State compliance.

4.1.2 The United Kingdom left the European Union on 31st January 2020 and is no longer a member state. However, the current framework of air quality legislation was converted into domestic law through the European Union (Withdrawal) Act 2018[3].

4.1.3 The relevant air quality standards and objectives are presented in **Table 1**. Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health.

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

Pollutant	Air Quality Objective	
	Concentration	Measured As
Nitrogen dioxide (NO_2)	200 µg/m^3	1-hour mean not to be exceeded more than 18 times per year
	40 µg/m^3	Annual mean
Particles (PM_{10})	50 µg/m^3	24-hour mean not to be exceeded more than 35 per year
	40 µg/m^3	Annual mean
Particles ($PM_{2.5}$)	25 µg/m^3	Annual mean (target)

4.1.4 Where an air quality objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as Air Quality Management Areas (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.

4.1.5 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.

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

4.2 Manchester City Council - Air Quality & Planning Technical Guidance

4.2.1 MCC has published Air Quality & Planning Technical Guidance[4] to assist developers with air quality matters. The Guidance provides a summary of local air quality, the department overseeing air quality matters, local policy, but broadly for air quality it considers three overarching topics:

- Construction & demolition – assessment of dust and particulate matter emissions. The Guidance refers to assessment using the Institute of Air Quality Management 'Guidance on the assessment of dust from demolition and construction' 2014. Concerning Non-Road Mobile Machinery (NRMM) emissions, the Guidance specifies "*MCC recommends that NRMM used on the site of any major development within Manchester city centre for the purpose of construction or demolition works should meet Stage IV of EU directive 97/68/EC, and Stage IIIA as a minimum*."
- Development Planning – assessment of air quality change to existing residents and predictions of air quality concentrations for future receptors. The Guidance refers to an assessment using the Environmental Protection UK 'Land-use Planning & Development Control: Planning for Air Quality' 2017.
- Electric vehicle charging – MCC encourages the adoption of electric vehicle charging for developments. Best practice is outlined in Appendix IV of the Guidance. MCC recommend 1 charging point per residential unit with any parking space and for all spaces of commercial use with any parking spaces. The Guidance continues and specifies the capacities and electric requirements.

4.2.2 The MCC Guidance also specifies guidance for chimney stacks, however, it is not relevant to this assessment. All of the bullet points and referenced guidance are considered in this report.

4.3 Greater Manchester Action Plan 2016-2021

4.3.1 The Greater Manchester Combined Authority (GMCA) Air Quality Action Plan 2016-2021 [5] 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

[4] Manchester City Council, 2022. Air Quality & Planning Technical Guidance

[5] GMCA (2016) Greater Manchester Air Quality Action Plan 2016-2021

recommend mitigation controls in accordance with the most recent guidance and the other actions in this document for new developments that contribute to a deterioration of air quality in Air Quality Management Areas (AQMAs). Where an air quality assessment is triggered, it should include a review of monitoring data. Where monitoring is not currently undertaken, it may be requested to inform the application or to confirm the effects."

4.4 Greater Manchester Clean Air Plan

4.4.1 GMCA is required to integrate a Clean Air Zone (CAZ) to improve air quality in the shortest time possible (required per previous legal cases brought against the UK Government). Until recently, this was proposed to be a charging CAZ, however, a revision has now been entered for agreement to provide an investment-led CAZ.

4.4.2 The Greater Manchester Air Quality Administration Committee has submitted the 'GM Clean Air Plan – July 2022 update', as a draft document, to the Secretary of State on the 1st of July 2022. This document aims to achieve compliance with NO_2 concentrations, below the air quality objectives, by 2024. Miller Goodall assume a Air Quality Action Plan update (2022 onward) is subject to the conclusions of these submissions.

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
Greater Manchester Combined Authority (GMCA)	GMCA (2016) *Greater Manchester Air Quality Action Plan 2016-2021* GMCA Clean Air Greater Manchester (website) GMCA (2021) *2021 Air Quality Annual Status Report*
Manchester City Council	MCC *(2022) Air Quality & Planning Technical Guidance*
Institute of Air Quality Management (IAQM)	IAQM (2014) *Assessment of Dust from Demolition and Construction* (v1.1)
Department for Environment Food and Rural Affairs (Defra)	Defra *Local Air Quality Management Technical Guidance TG(16), updated 2021*
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)*
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 NOx to NO_2 Calculator
SK Transport Planning Ltd	Traffic Data

5.2 Consultation

5.2.1 MCC has specified that there is no need to consult directly if the air quality assessment meets all of the necessary requirements of the MCC Guidance[6].

5.2.2 The development's trip generation meets the criteria for a simple assessment, as the total vehicle generation will be below 500 light-duty (LDV) Annual Average Daily Traffic (AADT) outside an AQMA, and 100 LDV AADT within an AQMA. The MCC Guidance[6] specifies that if these criteria are not met, then a simple assessment is sufficient. These criteria are also specified in the EPUK 2017 Guidance[2].

5.2.3 A simple assessment examines the potential for adverse air quality effects to existing and proposed sensitive receptors. This utilises a qualitative discussion methodology.

5.2.4 Consultation has not been taken per MCC's recommendations. The air quality assessment has been prepared in accordance with all requirements of the MCC Guidance[6]. Mitigation is also specified per the MCC Guidance[6].

5.3 IAQM Construction Dust Assessment

5.3.1 The IAQM has produced guidance[7] on the assessment of air quality impacts arising from dust associated with construction and demolition activities and provides a methodology by which to complete such assessments. The IAQM methodology provides a risk assessment structure to determine the likely impact of the development on nearby receptor locations and recommends mitigation measures that should be implemented to reduce any such impact. The methodology for the assessment is shown in **Appendix B**. The study area in relation to dust and the zones of interest used within the assessment (<20 m, 20 m – 50 m and 50 – 100 m from the site) are shown in **Appendix C**. The dust assessment informed the recommended mitigation outlined in **Appendix D**.

5.4 Simple Air Quality Assessment

5.4.1 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] Manchester City Council *(2022) Air Quality & Planning Technical Guidance*

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

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 MCC (provided in the 2021 Annual Status Report and Clean Air Greater Manchester webpages) and background concentration maps provided by Defra for the grid squares covering the proposed development.

6.1.2 NO_2 is the only pollutant for which Manchester currently exceeds legal limits. MCC designated the city centre and main arterial routes as an AQMA in 2001 due to the likelihood of annual average concentrations of NO_2 exceeding national air quality objectives. There have been subsequent revisions to the AQMA, and its extent was most recently refined in 2016 and consolidated into the Greater Manchester (GM) AQMA. The site is not located in the AQMA, but there are pockets of AQMA nearby. The site location and its relationship to the AQMA is shown in **Appendix A**.

6.2 Air Quality Monitoring

Nitrogen Dioxide (NO_2)

6.2.1 MCC does not operate any air quality monitors in the vicinity of the site. The nearest monitor is the non-automatic monitor 'MAN93', which is located approximately 830 m to the south west of the site. This monitor is located at the B5167 (Palatine Road), which is a major route leading to the A5103; which travels to the M60. It is, therefore, the primary route for vehicles leaving the area and is subject to congestion where the monitor is positioned.

6.2.2 There is no air quality monitoring near the M60, however, MCC does operate a non-automatic monitor near the M56 motorway. This monitor is approximately 46 m from the carriageway. The development site is located approximately 130 m from the M60. Pollution reduces with distance from the source due to dispersion of the pollution into the airflow.

6.2.3 The results from the diffusion tube are shown in **Table 3** and the monitor locations are shown in **Appendix A**.

Table 3: Annual Mean NO_2 Concentrations Monitored by MCC within the Study Area

Site ID	Location		Annual Mean NO_2 Concentrations ($\mu g/m^3$)				
			2017	2018	2019	2020	2021
MAN93 (Roadside)	382419	390010	-	-	42.9	29.4	33.8
MAN94 (Roadside)	382083	388414	-	-	32.1	25.2	26
Annual Mean NO_2 air quality objective			40 $\mu g/m^3$				

6.2.4 The monitoring results in **Table 3** indicate that annual mean concentrations of NO_2 were above the objective at MAN93 pre Covid-19 pandemic. However, there has now been two continuous years of below objective concentrations; 2020 and 2021. 2020 concentrations are atypical, because of the effect of the pandemic on road traffic flows and cannot be interpreted as a long-term indicator of levels of NO_2. 2021 levels are also likely to be depressed due to the pandemic.

6.2.5 The monitor located near the M56 shows NO_2 concentrations below the NO_2 annual mean objective but these are not representative of the site or conditions on the M60.

6.2.6 Based on these results and the drop off in NO_2 concentrations with distance from source, it is unlikely that the proposed development is experiencing NO_2 concentrations above the air quality objectives, due to its position approximately 130 m from the M60, and it being located in a residential area.

6.2.7 The results indicate that the short-term objective for NO_2 was unlikely to be exceeded at the identified monitoring sites as monitored annual mean concentrations were well below the indicative screening concentration of 60 µ/gm^3 during the period shown.

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

6.2.8 MCC does not undertake PM_{10} or $PM_{2.5}$ monitoring in the vicinity of the proposed development site, neither is there any nearby representative monitoring available. In the wider Greater Manchester region, there has been no exceedances of the annual mean air quality objectives for these two pollutants.

6.3 Background Concentrations

6.3.1 There are no background monitoring locations in the vicinity of the proposed development site or at receptor locations included in the air quality assessment

6.3.2 Background concentrations of 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 locations[8] are shown in **Table 4**.

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

Grid Square	Pollutant	2022 (µg/m^3)
383500, 390500	NO_2	17.03
	PM_{10}	11.62
	$PM_{2.5}$	7.71

** Background concentrations obtained from the latest 2018 based background maps*

7 Construction Dust Impact Assessment

7.1 Step 1 – Requirement for a Detailed Assessment

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

[8] http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

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 B1** in **Appendix B**. The scale and nature of works onsite were considered to determine the potential dust emission magnitude for demolition, earthwork activities, construction and trackout activities.

7.2.2 Information to determine the classification has been estimated from the site plans, Google Earth and information provided by the Applicant. The dust emission magnitude is outlined in **Table 5.**

Table 5: Dust Emission Magnitudes for Each Activity

Activity	Dust Emission Magnitudes	Justification for Sensitivity Classification
Demolition	Small	• The total building volume to be demolished is less than 20,000 m^3
Earthworks	Medium	• the site area is 2,500 m^2 – 10,000 m^2
Construction	Small	• total building volume to be constructed is <25,000 m^3
Trackout	Small	• there are likely to be <10 HDV outward movements in any one day

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

7.2.3 Dwellings are located 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 B2** in **Appendix B** and the IAQM guidance, the sensitivity of human receptors is **high**.

Step 2B Sensitivity of the Area to Dust Soiling and Human Health Effects of PM_{10}

7.2.4 The sensitivity of the area for dust soiling and human health effects has been determined using the criteria detailed in **Table B3 and Table B4** respectively in **Appendix B.**

7.2.5 The sensitivity of the area to dust soiling and human health for each activity is summarised in **Table 6**.

Table 6: Outcome of Defining the Sensitivity of the Area

Pollution	Activity	Sensitivity of the Surrounding Area	Justification for Sensitivity Classification
Dust Soiling	Demolition	Medium	There are 1 – 10 highly sensitive residential receptors within 20 m of where demolition will occur.
	Earthworks	Medium	There are 1 – 10 highly sensitive residential receptors within 20 m of the site boundary
	Construction	Medium	There are 1 – 10 highly sensitive residential receptors within 20 m of the site boundary
	Trackout	Medium	There are 1 – 10 highly sensitive residential receptors within 20 m of the trackout route, up to 200 m from the site exit
Human Health	Demolition	Low	There are 1 – 10 highly sensitive residential receptors within 20 m of where demolition will occur. Background pollutant concentrations are below 24 µg/m^3
	Earthworks	Low	There are 1 – 10 highly sensitive residential receptors within 20 m of the site boundary. Background pollutant concentrations are below 24 µg/m^3
	Construction	Low	There are 1 – 10 highly sensitive residential receptors within 20 m of the site boundary. Background pollutant concentrations are below 24 µg/m^3
	Trackout	Low	There are 1 – 10 highly sensitive residential receptors within 20 m of the trackout route. Background pollutant concentrations are below 24 µg/m^3

Step 2C Risk of Impacts

7.2.6 The dust emission magnitude and sensitivity of the area were combined and the risk of impacts have been determined using the criteria detailed in **Table B5** to **Table B8** in **Appendix B.**

7.2.7 A summary of the risks, before mitigation measures are applied, for dust soiling and human health are shown in **Table 7**.

Table 7: Risk of Dust Impacts

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

7.3 Step 3 – Site-Specific Mitigation

7.3.1 Step 3 of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to the site risk for each activity. Mitigation measures specific to earthworks, construction and trackout are proposed based on the risk classifications in **Table 7**. Recommended mitigation measures are shown in **Appendix D.**

7.3.2 The planning decision notice includes the requirement to prepare a Construction Management Plan (Condition 17). The summary of this condition includes some requirements for dust mitigation measures. It is assumed the original planning submission did not include an IAQM Construction Risk assessment. The mitigation concluded from this risk assessment and outlined in Appendix D should be incorporated into the future Construction Management Plan.

7.3.3 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 'medium risk' classification (in this instance the site is classified as "medium" risk due to earthworks)[9].

7.4 Step 4 – Determine Significant Effects

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

8 Effect of Air Quality on the Proposed Development

8.1 The background concentrations in **Table 4** indicate that background concentrations of NO_2, PM_{10} and $PM_{2.5}$ are well below health-based air quality objectives of 40 µg/m^3 for both pollutants. However, the site is likely experiencing higher concentrations due to its proximity to the road network.

8.2 The proposed development is located approximately 130 m from the nearest main pollutant source; the M60. Pollution reduces with distance from the source due to dispersion of the pollution into the airflow. The area surrounding the development comprises of minor roads and a residential area, which are not expected to be heavily polluted.

8.3 A review of the nearby local air quality monitoring data has been undertaken to understand pollution levels in the area to determine whether there is a risk of adverse air quality to future users of this development. These present a mixed picture due to their monitoring locations and the monitoring record caused by the Covid-19 pandemic.

8.4 Transport for Greater Manchester (TfGM) has produced contour plots from the initial modelling exercise taken for the AQMA declaration. These NO_2 contour maps have been reviewed. This screenshot presents the modelled results, at a height of 0 m, from the 2016 modelling study that was used as part of the declaration of the Greater Manchester AQMA. The screenshot is shown in **Appendix E**.

8.5 The NO_2 concentrations in the development footprint are below the air quality objective. Reviewing the screenshot, NO_2 annual mean concentrations are approximately 29 µg/m^3 across the development footprint. These is considered to be reasonable given the urban environment and the proximity of the motorway to the east.

8.6 The evidence from existing information sources is that the proposed development site is likely to experience levels of NO_2, and PM_{10} below the annual mean and short-term objectives and $PM_{2.5}$ concentrations below the annual mean target.

[9] 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.

9 Impact of the Proposed Development on Existing Air Quality

9.1 As discussed above, the development is located outside an AQMA and is expected to introduce a total increase of 84 Annual Average Daily Traffic (AADT). The EPUK 2017 Guidance provides screening criteria for when an assessment of air quality change may be required[2]. These criteria are also replicated in the MCC Guidance[4].

9.2 If the total development flows are below 500 light-duty vehicle (LDV) AADT outside an AQMA, or 100 LDV AADT within an AQMA, then there is not expected to be a significant risk of air quality change. Traffic generation below these criteria can be concluded as not significant.

9.3 The total traffic flow from the development will be well below the EPUK 2017 Guidance criteria. Air quality changes to existing sensitive receptors can be concluded as not significant.

10 Mitigation

10.1 The development is expected to have a not significant effect on local air quality. No additional mitigation beyond the best practice measures outlined in the MCC Guidance are deemed to be necessary.

10.2 Appendix IV of the MCC Guidance outlines the recommendations for electric vehicle charging. 20% of the parking provisions will be installed with electric vehicle charging points.

11 Summary of Impacts and Conclusion

11.1 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. The assessment has been prepared in accordance with Manchester City Council's Air Quality & Planning Technical Guidance.

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

11.3 Concentrations of NO_2 and PM_{10} 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.

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

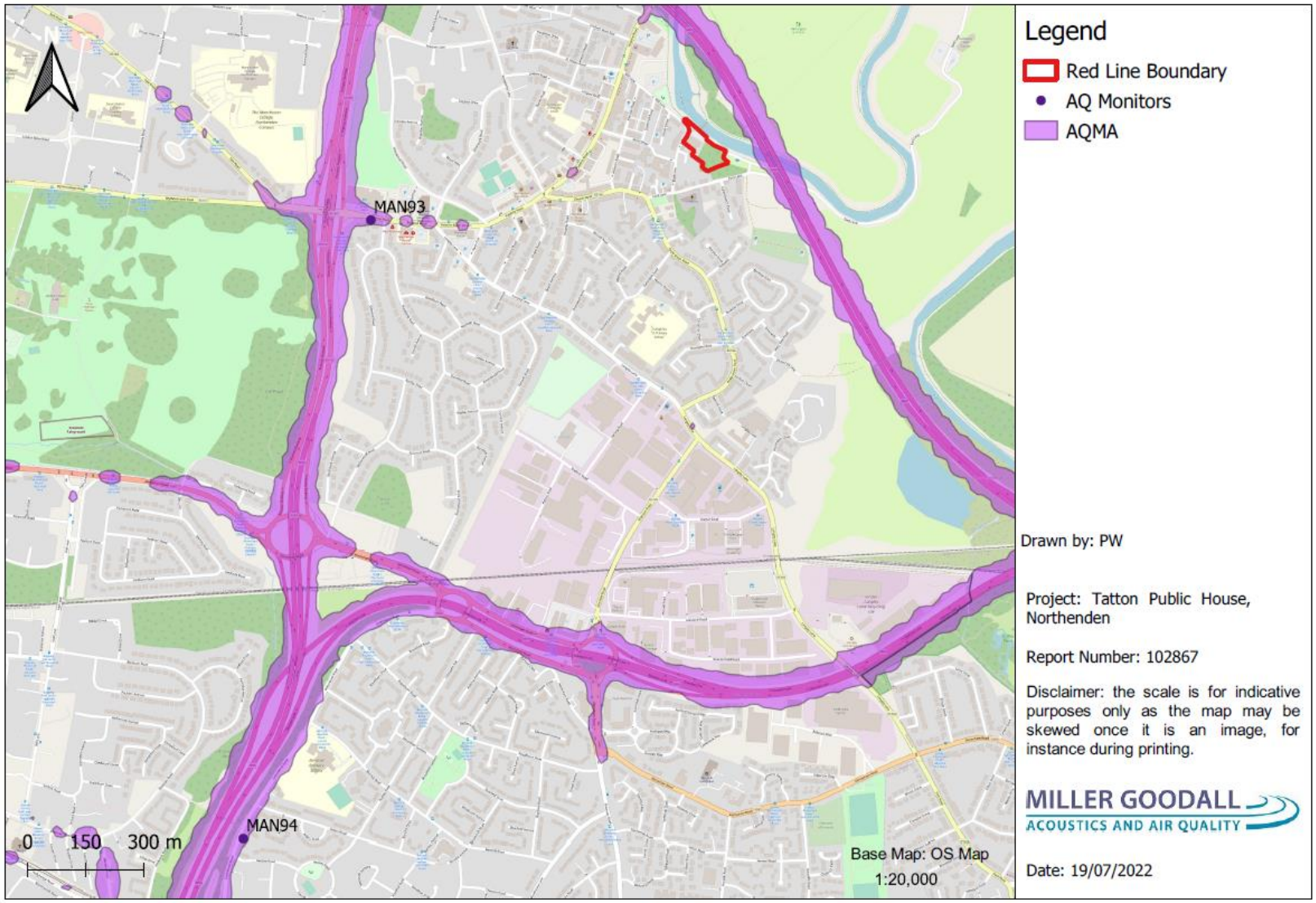
11.5 The information and mitigation presented in this report is considered sufficient to meet the requirements to discharge planning condition 23 of Planning Reference 125635/FO/2019.

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APPENDICES

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Appendix A: Location of site and AQMA



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Appendix B: IAQM 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[7]. 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 B1** describes the potential dust emission class criteria for each outlined activity.

Table B1: Criteria Used in the Determination of Dust Emission Magnitude

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

Step 2B: Define the Sensitivity of the Area

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

- the specific sensitivities of receptors in the area;
- the proximity and number of receptors;
- the local background 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 B2** is used to determine the sensitivity of the receptor in relation to dust soiling, health effects and ecological effects.

Table B2: 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 B3 and **Table B4** 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 B3: Sensitivity of the Area to Dust Soiling Effects on People and Property.

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

*distances considered are to the dust source

Table B4: 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/m³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m³	>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/m³	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m³	>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 B1** and sensitivity of the area and receptors from **Table B2**, **Table B3** and **Table B4** 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 B5** to **Table B8.**

Table B5: 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 B6: 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 B7: 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 B8: 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.

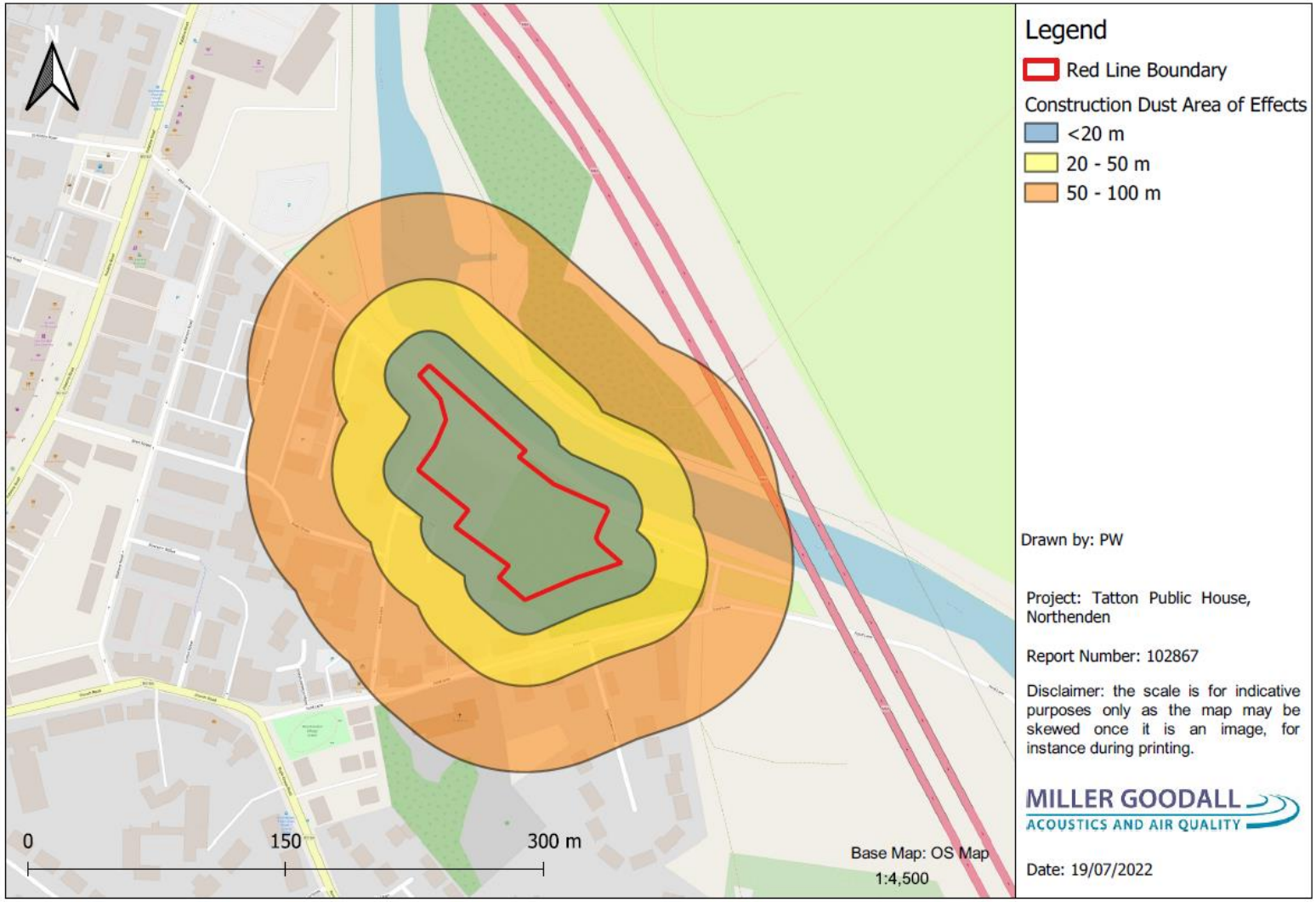
Step 4 Determine Significance of Residual Effects

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: Construction Dust Area of Effects



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Appendix D: IAQM Dust Assessment Mitigation

xx Highly Recommended **x Desirable**

Measures relevant for demolition, earthworks, construction and trackout

Mitigation Measure	Medium 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
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.	x
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).	x
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).	x
Operations	
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	xx
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	xx
Use enclosed chutes and conveyors and covered skips.	xx
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	xx
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	xx
Waste management	
Avoid bonfires and burning of waste materials.	xx

Measures specific to demolition

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

Bag and remove any biological debris or damp down such material before demolition.	xx

Measures specific to earthworks

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

Measures specific to construction

Mitigation Measure	Low Risk
Avoid scabbling (roughening of concrete surfaces) if possible.	x
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.	x

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Appendix E: 2016 NO_2 Contour Plot – Transport for Greater Manchester



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

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 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.

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/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

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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