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THE BROUGHTON CHARITABLE TRUST

AIR QUALITY ASSESSMENT

27-29 MIDDLETON ROAD, MANCHESTER M8 5DT

Client: The Broughton Charitable Trust

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1 INTRODUCTION

1.1.1 By instruction from The Broughton Charitable Trust, NoiseAir Limited was commissioned to undertake an Air Quality Assessment (AQA) in support of a Proposed Development at 27-29 Middleton Road, Manchester M8 5DT, herein referred to as 'the Site'.

1.1.2 The proposals comprise the erection of a two-storey building with a basement to form a synagogue (Use Class F.1), following the demolition of the existing building. The Proposed Development also includes associated parking and landscaping within the Site.

1.1.3 The Site is partially located within the Manchester Air Quality Management Area (AQMA), which was declared in 2001 and amended in 2017 due to measured exceedances of the annual mean nitrogen dioxide (NO_2) objective and the 24-hour mean particulate matter (PM_{10}) objective. This AQMA forms part of the Greater Manchester Combined Authority (GMCA) AQMA within the Manchester City Council (MCC) area.

1.1.4 Limitations of this report are outlined in **Appendix A**.

1.2 Site Location and Context

1.2.1 The Site is located at 27-29 Middleton Road, Manchester M8 5DT, at approximate National Grid Reference (NGR): 383589, 402358. **Figure 1** details the location of the Site.

1.2.2 The Site is located in an area where air quality is mainly influenced by road traffic emissions along the local road network, and as such elevated pollutant concentrations may be experienced at and around this location. The Proposed Development may also lead to adverse impacts at nearby sensitive receptors, as a result of fugitive dust emissions during construction and road vehicle exhaust emissions during operation. An AQA is therefore required to assess the potential impacts of the Proposed Development and to evaluate future occupant exposure, in accordance with the requirements of The National Planning Policy Framework (NPPF). This AQA will consider NO_2 and particulate matter (PM_{10} and $PM_{2.5}$) around and at the Site.

1.2.3 The main potential sources of air pollution were identified as emissions from road transport using the local and regional road network. There are no significant combustion sources identified within the immediate vicinity of the Site that will influence the local air quality.

1.2.4 The Site lies within the administrative area of MCC and is located in a predominantly residential area to the north of Manchester city centre. The Site is therefore surrounded by

residential properties on all sides, with the principal nearby source of air pollution being Middleton Road, which fronts the Site to the east.

1.2.5 The report presents the findings of an assessment of the potential air quality impacts of the Proposed Development during both the construction and operational phases. For both phases, the significance of potential impacts are identified, and measures that should be employed to minimise these are described.

2 LEGISLATION AND POLICY

2.1 Air Quality Legislation and Policy

2.1.1 A summary of the relevant air quality legislation and policy is provided below.

UK Air Quality Strategy

2.1.2 The government's policy on air quality within England is set out in the Air Quality Strategy for England (AQS), with the latest framework published in 2023[1].

2.1.3 The AQS provides a framework for reducing air pollution in England with the aim of meeting the requirements of European Union Legislation and fulfils the statutory requirement of the Environment Act 1995 as amended by the Environment Act 2021, to publish an Air Quality Strategy setting out air quality standards, objectives, and measures for improving ambient air quality every five years. The AQS sets Air Quality Objectives (AQOs) for seven key pollutants to protect health, vegetation, and ecosystems. These are benzene (C_6H_6), 1,3 butadiene (C_4H_6), carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), particulate matter (PM_{10}) and sulphur dioxide (SO_2).

2.1.4 The air quality standards are levels recommended by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organization (WHO) with regards to current scientific knowledge and the effects of each pollutant on health and the environment.

2.1.5 The AQOs are medium-term policy-based targets set by the Government, which take into account economic efficiency, practicability, technical feasibility and timescale. Some objectives are equal to EPAQS recommended standards or WHO guideline limits, whereas other involve a margin of tolerance, i.e. a limited number of permitted exceedances of standards over a given period.

2.1.6 $PM_{2.5}$ is not currently part of the Local Air Quality Management framework and therefore does not have any associated AQOs. The AQS, however, recognises this, and has set 2 new legally binding $PM_{2.5}$ targets, each with an interim target:

- 10 µg/m^3 annual mean concentration $PM_{2.5}$ nationwide by 2040, with an interim target of 12 µg/m^3 by January 2028; and
- 35% reduction in average population exposure by 2040, with an interim target of a 22% reduction by January 2028, both compared to a 2018 baseline.

[1] Department for Environment, Food and Rural Affairs (Defra, 2023) Policy paper Air quality strategy: framework for local authority delivery.

2.1.7 **Table 1** presents the AQOs/interim target for pollutants considered within this assessment.

Table 1: National Air Quality Objectives and Interim Target for the Protection of Human Health

Pollutant	Applies to	Air Quality Objective/Interim Target	Measured As
NO_2	UK	40µg/m^3	Annual mean
	UK	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
PM_{10}	UK (except Scotland)	40µg/m^3	Annual mean
	UK (except Scotland)	50µg/m^3 not to be exceeded more than 35 times a year	24-hour mean
$PM_{2.5}$	UK (except Scotland)	Interim target of 12µg/m by 2028 Target of 22% reduction in population exposure by 2028 compared to 2018	Annual mean

2.1.8 For the pollutants considered in this assessment, there are both long-term (annual mean) and short-term standards. In the case of NO_2, the short-term standard is for a 1-hour averaging period, whereas for PM_{10} it is a 24-hour averaging period. These periods reflect the varying impacts on health of differing exposures to pollutants, for example temporary exposure on the pavement adjacent to a busy road compared with the exposure of residential properties adjacent to a road.

Air Quality Regulations (2016)

2.1.9 Many of the objectives in the AQS have been made statutory in England with the Air Quality (England) Regulations 2000[2] and the Air Quality (England) (Amendment) Regulations 2002[3] for the purpose of Local Air Quality Management (LAQM).

2.1.10 These Regulations require that likely exceedances of the AQS objectives are assessed in relation to:

> *"[…] the quality of air at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present […]"*

2.1.11 The Air Quality Standards (Amendment) Regulations 2016[4] amends the Air Quality Standards Regulations 2010 that transpose the European Union Ambient Air Quality Directive (2008/50/EC) into law in England. This Directive sets legally binding limit values for concentrations in outdoor air of major air pollutants that impact public health such as PM_{10}, $PM_{2.5}$ and NO_2. The limit values for NO_2 and PM_{10} are the same concentration levels as the

[2] The Air Quality (England) Regulations 2000 – Statutory Instrument 2000 No.928.
[3] The Air Quality (England) (Amendment) Regulations 2002 – Statutory Instrument 2002 No.3043.
[4] The Air Quality Standards (Amendment) Regulations 2016 - Statutory Instrument 2016 No. 1184.

relevant AQS objectives and the limit value for $PM_{2.5}$ is a concentration of 12µg/m^3 to be achieved by 2028.

Environmental Protection Act 1990 – Control of Dust and Particles Associated with Construction

2.1.12 Section 79 of the Environmental Protection Act 1990[5] gives the following definitions of statutory nuisance relevant to dust and particles:

> *"Any dust, steam, smell or other effluvia arising from industrial, trade or business premises or smoke, fumes or gases emitted from premises so as to be prejudicial to health or a nuisance;" and*
>
> *"Any accumulation or deposit which is prejudicial to health or a nuisance."*

2.1.13 Following this, Section 80 states that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses.

2.1.14 There are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist. Nuisance is a subjective concept, and its perception is highly dependent upon the existing conditions and the change which has occurred.

Environment Act 1995

2.1.15 Under Part IV of the Environment Act 1995[6], local authorities must review and document local air quality within their area by way of staged appraisals and respond accordingly, with the aim of meeting the air quality objectives defined in the Regulations. Where the objectives are not likely to be achieved, an authority is required to designate an AQMA. For each AQMA the local authority is required to draw up an Air Quality Action Plan (AQAP) to secure improvements in air quality and show how it intends to work towards achieving air quality standards in the future.

[5] Environmental Protection Act. London 1990. HMSO.
[6] Environment Act 1995. London HMSO.

Clean Air Strategy (2019)

2.1.16 In 2019, the UK government released its Clean Air Strategy 2019[7], part of its 25 Year Environment Plan[8]. The Strategy sets out the comprehensive action that is considered to be required from across all parts of government and society.

2.1.17 The primary focus of air quality management has primarily related to NO_2, and its principal source in the UK, road traffic. The 2019 Strategy aims to broaden the focus to other areas, including actions on clean growth, and emissions from domestic wood burning stoves, industry and agriculture.

2.2 National Planning Policy

2.2.1 A summary of the national and local planning policy relevant to the Proposed Development and air quality is provided below.

National Planning Policy Framework (2024)

2.2.2 The Government's overall planning policies for England are described in the National Planning Policy Framework[9], published in 2024 and most recently amended in February 2025. The core underpinning principle of the Framework is the presumption in favour of sustainable development, defined as:

> *"[…] meeting the needs of the present without compromising the ability of future generations to meet their own needs."*

2.2.3 The NPFF states that to achieve sustainable development in the planning system, three overarching objectives are required, which are interdependent from one another, and must be pursued in mutually supportive ways:

> *"a) **an economic objective** – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;*
>
> *b) **a social objective** – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed, beautiful and*

[7] Department for Environment, Food and Rural Affairs (2019) Clean Air Strategy 2019.
[8] Department for Environment Food and Rural Affairs (Defra) (2018) A Green Future: Our 25 Year Plan to Improve the Environment.
[9] Ministry of Housing, Communities & Local Government (2024) National Planning Policy Framework.

safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

*c) **an environmental objective** – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."*

2.2.4 In relation to air quality, the following is relevant:

*"**9. Promoting sustainable transport***

Transport issues should be considered from the earliest stages of plan-making and development proposals, using a vision-led approach to identify transport solutions that deliver well-designed, sustainable and popular places. This should involve:

a) making transport considerations an important part of early engagement with local communities;

b) ensuring patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places;

c) understanding and addressing the potential impacts of development on transport networks;

d) realising opportunities from existing or proposed transport infrastructure, and changing transport technology and usage – for example in relation to the scale, location or density of development that can be accommodated;

e) identifying and pursuing opportunities to promote walking, cycling and public transport use; and

f) identifying, assessing and taking into account the environmental impacts of traffic and transport infrastructure – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains.

The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making."; and

*"**15. Conserving and enhancing the natural environment***

Planning policies and decisions should contribute to and enhance the natural and local environment by:

[…]

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.

[…]

Ground conditions and pollution

[…]

Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.

[…]

The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities."

2.2.5 The AQA has been undertaken in accordance with the NPPF.

2.3 Local Planning Policy

New Local Plan

2.3.1 The previous Manchester Local Plan was adopted in 2012. The current review was delayed while the Greater Manchester Places for Everyone plan was adopted, into which the Manchester Plan must align. A draft of the updated Local Plan[10] is currently available, while comments from the consultation stage are being addressed. The final version is expected to be released in summer 2026.

2.3.2 The updated Local Plan sets out how the city will meet the need for new development over the next 15 years. It identifies where new development will take place, which green spaces and other environmental assets will be protected or enhanced, and how transport and other infrastructure will be improved.

2.3.3 An overview of this document identified the following policy of relevance to air quality and the Proposed Development:

> *"**Policy EN 7***
> *Air Quality*
> *The Council will seek to improve the air quality within Manchester, taking account of policy JP S5 in Places for Everyone; and statutory Air Quality Management Areas within the City. 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."*

The Places for Everyone Plan

2.3.4 The Places for Everyone Plan[11] was adopted in March 2024. It is the Council's plan for sustainable growth in the nine boroughs, it:

- sets out how they should develop for the years 2022 - 2039;
- provides the strategic framework for local plans;

[10] Manchester City Council (2025) Draft Manchester Local Plan. Regulation 18 Consultation.
[11] Greater Manchester Combined Authority (2024) Places for Everyone Joint Development Plan 2022 to 2039.

- sets specific requirements to be taken forward in local plans in terms of housing, offices, and industry and warehousing, and the main areas in which this will be focused;
- sets out policies to inform the preparation and determination of planning applications;
- identifies the important environmental assets which will be protected and enhanced;
- allocates sites for employment and housing outside of the urban area;
- supports the delivery of key infrastructure, such as transport and utilities;
- defines a new Green Belt boundary for the nine boroughs.

2.3.5 An overview of this document identified the following policies of relevance to air quality and the Proposed Development:

> *"**Policy JP-S5: Clean Air***
> *A comprehensive range of measures will be taken to support improvements in air quality, focusing particularly on locations where people live, where children learn and play, where there are impacts on the green infrastructure network and where air quality targets are not being met, including:*
>
> 1. *Locating and designing development, and focusing transport investment, so as to reduce reliance on forms of transport that generate air pollution;*
> 2. *Determining planning applications having regard to the most recent development and planning control guidance published jointly by the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK), and the most recent IAQM Guidance on the Assessment of Dust from Demolition and Construction, or relevant successor guidance, including the requirement for developers to submit construction management plans as appropriate;*
> 3. *Requiring applications for developments that could have an adverse impact on air quality to submit relevant air pollution data so that adverse impacts on air quality can be fully assessed and development only permitted where they are acceptable and/or suitable mitigation can be provided;*
> 4. *Restricting developments that would generate significant point source pollution such as some types of industrial activity and energy generation;*
> 5. *Significantly expanding the existing commercial network of electric vehicle charging points, both for public and private use, including as part of new developments;*
> 6. *Implementing the Clean Air Plan and associated measures;*
> 7. *Facilitating the more sustainable distribution of goods within the urban area, including through accommodating urban consolidation centres and urban*

distribution centres that use ultra-low-emission vehicles, and local delivery facilities to reduce repeat delivery attempts;

8. *Designing streets to avoid trapping air pollution at ground level, including through the appropriate location and scale of buildings and trees;*
9. *Controlling traffic and parking within and around schools, early years sites and other locations that are particularly sensitive to air quality;*
10. *Promoting actions that help remove pollutants from the air, such as enhancing the green infrastructure network and using innovative building materials that capture air pollutants; and*
11. *Development should be located in areas that maximise the use of sustainable travel modes and be designed to minimise exposure to high levels of air pollution, particularly for vulnerable users."*

Air Quality Action Plan

2.3.6 The primary objectives of this Air Quality Action Plan[12] are to improve air quality across Greater Manchester and to embed low-emission behaviours into the culture of our organisations and lifestyles by 2025, whilst supporting the UK Government in meeting all EU thresholds for key air pollutants at the earliest date to reduce ill-health in Greater Manchester.

2.4 National Planning Guidance

2.4.1 A summary of the publications referred to in undertaking this assessment is provided overleaf.

Land-Use Planning and Development Control: Planning for Air Quality (2017)

2.4.2 Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have published guidance[13] that offers comprehensive advice on when an air quality assessment may be required; what should be included in an assessment; how to determine the significance of any air quality impacts associated with a development; and, the possible mitigation measures that may be implemented to minimise these impacts.

[12] Greater Manchester Combined Authority (2021) Air Quality Action Plan 2016-2021.
[13] Environmental Protection UK and Institute of Air Quality Management (Version 1.2 Updated January 2017) Land Use Planning and Development Control: Planning for Air Quality.

National Planning Practice Guidance – Air Quality (2019)

2.4.3 This guidance[14] provides a number of guiding principles on how the planning process can take into account the impact of new development on air quality, it explains how much detail air quality assessments need to include for proposed developments, and how impacts on air quality can be mitigated. It also provides information on how air quality is taken into account by local authorities in both the wider planning context of Local Plans and neighbourhood planning, and in individual cases where air quality is a consideration in a planning decision.

Local Air Quality Management Review and Assessment Technical Guidance (2022)

2.4.4 The Department for Environment, Food and Rural Affairs (Defra) has published technical guidance for use by local authorities in their review and assessment work. This guidance, referred to in this document as LAQM.TG22[15], has been used where appropriate in the assessment presented herein.

Guidance on the Assessment of Dust from Demolition and Construction (2024)

2.4.5 This document[16] published by the IAQM was produced to provide guidance to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance, PM_{10} impacts on public exposure and impact upon sensitive ecological receptors) and to identify mitigation measures appropriate to the level of risk identified.

[14] Department of Communities and Local Government (DCLG) (Updated November 2019) National Planning Practice Guidance.
[15] Department for Environment, Food and Rural Affairs (Defra) (2022) Part IV The Environment Act 1995 as amended by the Environment Act 2021 Environment (Northern Ireland) Order 2002 Part III, Local Air Quality Management Technical Guidance LAQM.TG22.
[16] Institute of Air Quality Management (2024) Guidance on the Assessment of Dust from Demolition and Construction Version 2.2.

3 SCOPE AND METHODOLOGY

3.1 Scope

3.1.1 The scope of the assessment has been determined in the following way:

- A review of the plans of the Proposed Development;
- Desktop study to confirm the locations of nearby existing receptors that may be sensitive to changes in local air quality; and
- Review of MCC's latest available Air Quality Annual Status Report[17] (ASR) and air quality data surrounding the Site including data from Defra[18].

3.1.2 The scope of the assessment includes consideration of the potential impact on local air quality resulting from:

- Dust and particle matter generated by on-site activities during the construction phase;
- Increases in pollutant concentrations as a result of exhaust emissions arising from construction traffic and plant; and
- Increases in pollutant concentrations as a result of exhaust emissions arising from traffic generated by the Proposed Development once operational.

3.2 Construction Phase Assessment

3.2.1 Dust comprises particles typically in the size range of 1-75 micrometres (μm) in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials. The larger dust particles fall out of the atmosphere quickly after initial release and therefore tend to be deposited in close proximity to the source of emission. Dust, therefore, is unlikely to cause long term or wide-spread changes to air quality. However, it's deposition on property and cars can cause 'soiling' and discolouration. This may result in complaints of nuisance through amenity loss or perceived damage caused, which is usually temporary.

3.2.2 The smaller particles of dust are known as particulate matter, with less than 10 μm in aerodynamic diameter (PM_{10}) representing only a small proportion of total dust released; this includes a finer fraction, known as $PM_{2.5}$ (with an aerodynamic diameter less than 2.5 μm). As these particles are at the smaller end of the size range of dust particles, they remain suspended in the atmosphere for a longer period of time than the larger dust particles. $PM_{2.5}$ can therefore be transported by wind over a wider area. PM_{10} and $PM_{2.5}$ are small enough to

[17] GMCA (2025) 2024 Air Quality Annual Status Report (ASR) June 2025.
[18] Department for Environment, Food and Rural Affairs (Defra) Local Air Quality Management (LAQM) Support Pages.

enter the lungs during breathing, which in sensitive members of the public could have a potential impact on health. However, it is worth noting that, according to the IAQM guidance, the majority of fugitive particulate emissions arising from construction sites are expected to relate to the coarser fractions (i.e. $PM_{2.5-10}$) with just 10-15% expected to comprise $PM_{2.5}$. The IAQM guidance therefore focusses on PM_{10} for the purposes of assessment.

3.2.3 An assessment of the likely significant impacts on local air quality due to the generation and dispersion of dust and PM_{10} during the construction phase has been undertaken using: the relevant assessment methodology published by the IAQM; the available information for this phase of the Proposed Development provided by the Client and/or Project Team; and supported by the professional judgement of the NoiseAir team.

3.2.4 The IAQM methodology assesses the risk of potential dust and PM_{10} impacts from the following four sources: demolition, earthworks, construction and trackout. It takes into account the nature and scale of the activities undertaken for each source and the sensitivity of the area to an increase in PM_{10} levels to assign a level of risk. Risks are described in terms of there being a low, medium or high risk of dust impacts. Once the level of risk has been identified, and the significance of residual effects determined. A summary of the IAQM assessment methodology is provided in **Appendix C**.

3.2.5 In addition to the impacts on local air quality due to on-site construction activities, exhaust emissions from construction vehicles and plant may have an impact on local air quality adjacent to the routes used by these vehicles to access the application Site and in the vicinity of the application Site itself. As information on the number of vehicles and plant associated with the construction phase was not available at the time of writing, a qualitative assessment of their impact on local air quality has been undertaken using professional judgement and considering the following:

- The number and type of construction traffic and plant likely to be generated by this phase of the Proposed Development;
- The number and proximity of sensitive receptors to the application Site and along the likely routes to be used by construction vehicles; and
- The likely duration of the construction phase and the nature of the construction activities undertaken.

3.3 Operational Phase Assessment

Impacts of the Local Area on the Development

3.3.1 The Proposed Development has the potential to expose future users to existing air quality issues. In accordance with the EPUK and IAQM guidance, there may be a requirement to carry out an air quality assessment for the impacts of the local area's emissions on the Proposed Development itself.

3.3.2 As the Proposed Development includes land use sensitive to short-term pollutant concentrations, impacts of the local area on the Proposed Development have been determined by reviewing:

- **AQMA designations**: A review of any AQMA designations has been undertaken to determine if the Site itself falls within an AQMA, or if there are any within proximity to the Site;
- **Background concentrations**: Background pollutant data has been taken from the national maps provided on the Defra[19] website, where background concentrations of those pollutants included within the AQS have been mapped at a grid resolution of 1x1 km for the whole of the UK. Estimated background concentrations all available for all years between 2021 and 2040. The maps assume that background concentrations will improve (i.e., reduce) overtime, in line with the predicted reduction in vehicle emissions, and emissions from other sources; and,
- **Local Air Quality Monitoring (LAQM)**: Monitoring data published in the latest available MCC ASR (2025) has been reviewed by to establish baseline air quality conditions in the vicinity of the Site.

Impacts of the Development on the Local Area

3.3.3 The Proposed Development has the potential to expose future users to any existing air quality issues.

3.3.4 The EPUK and IAQM guidance sets out two stages for determining when an assessment of potential impacts on the local area is likely to be necessary. The Stage 1 criteria for an air quality assessment is presented below:

A. If any of the following apply:

- 10 or more residential units or a site area of more than 0.5ha; or

[19] Department for Environment, Food and Rural Affairs (Defra) Background Mapping data for local authorities 2021.

- More than 1,000 m^2 of floor space for all other uses or a site area greater than 1ha.

B. Coupled with any of the following:

- The development has more than 10 parking spaces; or,
- The development will have a centralised energy facility or other centralised combustion process.

3.3.5 Should these criteria not be met, then the EPUK and IAQM guidance considers air quality impacts associated with a scheme to be negligible and no further assessment is required. Should the criteria be met or exceeded, proceed to Stage 2. Stage 2 of the EPUK and IAQM guidance document states the following criteria to help establish when an AQA is likely to be considered necessary:

- Proposals that will cause a change in Light Duty Vehicle (LDV) flows of more than 100 AADT within or adjacent to an AQMA or more than 500 elsewhere.
- Proposals that will cause a change in HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 elsewhere.
- Proposals that would realign roads within an AQMA by more than 5 m;
- Proposals that will introduce new junctions or remove existing junctions near relevant receptors.
- Proposals that will introduce or change a bus station or change flows of buses by more than 25 AADT within an AQMA or more than 100 AADT elsewhere.
- Proposals which will include an underground car park with extraction system which will be within 20 m of a relevant receptor and have more than 100 movements per day.
- Proposals which include either a centralised plant using biofuel, a combustion plant with single or thermal input >300 KWh or a standby emergency generator associated with a centralised energy centre; and,
- Proposals which include combustion processes of any size.

3.3.6 Should these criteria not be met, then the EPUK and IAQM guidance documents consider air quality impacts associated with a scheme to be not significant and no further assessment being required.

3.3.7 Should screening of the traffic data indicate that any of the above criteria are met, then potential impacts at sensitive receptor locations can be assessed by calculating the predicted change in pollutant concentrations as a result of the Proposed Development.

3.3.8 The significance of predicted impacts can then be determined in accordance with the methodology outlined in the EPUK and IAQM guidance.

4 BASELINE

4.1 Introduction

4.1.1 Existing air quality conditions in the vicinity of the Site were identified in order to provide a baseline for assessment. These are detailed in the following Sections.

4.2 Local Air Quality Management

4.2.1 As required by the Environment Act (1995), GMCA has undertaken review and assessment of air quality within their area of jurisdiction. The Manchester AQMA was declared in 2001 and amended in 2017 due to measured exceedances of the annual mean NO_2 objective. The amended GMCA AQMA includes the portion of the area within the MCC boundary, which is referred to as the Manchester AQMA.

4.2.2 The Site is partially located within the Manchester AQMA.

4.3 Air Quality Monitoring

4.3.1 Monitoring of pollutant concentrations is undertaken by GMCA throughout their area of jurisdiction. According to the recent ASR, during 2024, GMCA undertook automatic (continuous) monitoring at four sites and non-automatic (passive) monitoring of NO_2 at 27 sites within Manchester's district.

4.3.2 Local annual mean NO_2 concentrations are presented in **Table 2**. Exceedances are shown in **bold**.

Table 2: Annual Mean NO_2 Monitoring Results

Monitoring Site	Distance to Kerb of Nearest Road (m)	Distance to Site (m)	In AQMA?	Monitored NO_2 Concentration ($\mu g/m^3$)		
				2022	2023	2024
MA100BNO/ Middleton Road (DT Roadside)	2.0	52	Yes, Manchester AQMA	33.0	30.6	27.2
SA86NO/ Bury Old Road (DT Kerbside)	0.5	615	No	**45.2**	**43.2**	38.9
BUR2/ Bury Prestwich (Automatic Roadside)	2.5	2,100	Yes, Bury AQMA	30.0	28.1	26.7

DT= Diffusion Tube
Rounded to one decimal point

4.3.3 The surroundings of the Site include monitoring locations in neighbouring districts, such as Bury and Sandwell.

4.3.4 As shown in **Table 2**, recorded local annual mean NO_2 concentrations have remained below the AQO of 40 µg/m^3 during 2024.

4.3.5 Furthermore, the latest ASR (2025) noted that the short-term NO_2 objective (1-hour mean of 200 µg/m^3, not to be exceeded more than 18 times per year) was also met, with no exceedances recorded at the automatic monitor BUR2 since at least 2020.

4.3.6 Regarding particulate matter, GMCA monitored PM_{10} at three sites and $PM_{2.5}$ at two sites within Manchester's district in 2024. The closest available monitoring of particulate matter is the automatic monitor BUR2 in Bury district, which has recorded PM_{10} concentrations since 2021.

4.3.7 Annual mean PM_{10} concentrations measured at the automatic roadside location are presented in **Table 3**.

Table 3: Annual Mean PM_{10} Monitoring Results

Monitoring Site ID	Distance to Kerb of Nearest Road (m)	Distance to Site (m)	In AQMA?	2022	2023	2024
				Monitored PM_{10} Concentration (µg/m^3)		
BUR2/ Bury Prestwich (Automatic Roadside)	2.5	2,100.0	Yes, Bury AQMA	19.0	17.3	16.3
				Number of PM_{10} 24-Hour Means > 50µg/m^3		
				6	2	1
Rounded to one decimal point						

4.3.8 As shown in **Table 3**, recorded annual mean PM_{10} concentrations have remained well below the AQO of 40 µg/m^3 since at least 2022. Additionally, the short-term PM_{10} objective (24-hour mean of 50 µg/m^3, not to be exceeded more than 35 times per year) has been met at BUR2 since at least 2022, with only one to six exceedances recorded per year.

4.4 Background Pollutant Concentrations

4.4.1 Predictions of background pollutant concentrations on a 1 km-by-1 km basis have been produced by DEFRA for the entire of the UK to assist local authorities in their review and assessment of air quality. The Site is located within grid square 383500, 402500. Data for this location is summarised below in **Table 4**.

Table 4: Predicted Background Pollutant Concentrations						
OS Grid Reference (X, Y; m)	**Predicted Background Pollutant Concentration (µg/m^3)**					
	2024			**2026**		
	NO_2	**PM_{10}**	**$PM_{2.5}$**	**NO_2**	**PM_{10}**	$PM_{2.5}$
383500, 402500	14.8	11.8	8.0	13.9	11.7	7.9
Rounded to one decimal point						

4.4.2 As shown in **Table 4**, predicted background NO_2, PM_{10} and $PM_{2.5}$ concentrations are well below the relevant AQOs and interim target across the assessment extents in 2024, the latest year for which monitoring data is available, and 2026, the earliest possible opening year.

5 ASSESSMENT

5.1 Introduction

5.1.1 There is the potential for air quality impacts as a result of the construction and operation of the Proposed Development. These are assessed in the following sections.

5.2 Construction Phase Assessment

5.2.1 Construction activities that have the potential to generate and/ or re-suspend dust and PM_{10} sources include:

- Site clearance and preparation including demolition activities;
- Preparation of temporary access/ egress to the Site and haulage routes;
- Earthworks;
- Materials handling, storage, stockpiling, spillage and disposal;
- Movement of vehicles and construction traffic within the Site (including excavators and dumper trucks);
- Use of crushing and screening equipment/ plant;
- Exhaust emissions from plant, especially when used at the extremes of their capacity and during mechanical breakdown;
- Construction of buildings, roads and areas of hard standing alongside fabrication processes;
- Internal and external finishing and refurbishment;
- Trackout, whereby earth is carried from the Site on vehicle tyres, deposited on roads and may later become suspended in the air as a result of vehicle movements; and
- Site landscaping after completion.

5.2.2 Most of the releases are likely to occur during the 'working week'. However, for some potential release sources (e.g., exposed soil produced from significant earthworks activities) in the absence of dust control mitigation measures, dust generation has the potential to occur 24 hours per day over the period during which such activities are to take place.

Assessment of Potential Dust Emission Magnitude

5.2.3 The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the following four different dust and PM_{10} sources:

- Demolition;
- Earthworks;
- Construction; and
- Trackout.

5.2.4 The findings of the assessment are set out below.

Demolition

5.2.5 The total building volume to be demolished is less than 12,000 m^3; however, there will be potentially dusty construction material such as concrete. Therefore, the potential dust emission magnitude from demolition activities is considered to be **medium**.

Earthworks

5.2.6 The total site area is less than 18,000 m^3. The potential dust emission magnitude from earthworks activities is considered to be **small**.

Construction

5.2.7 The total building volume to be constructed is less than 12,000 m^3, nonetheless, potentially dusty construction material, such as concrete, will be present. As such, the potential dust emission magnitude from construction activities is considered to be **medium**.

Trackout

5.2.8 Information on the number of HDVs associated with this phase of the Proposed Development is currently unavailable; therefore, professional judgement has been used. It is assumed that, given the size and type of development, there will likely be fewer than 20 HDV outward movements in any one day. Resultantly, the potential dust emission magnitude from trackout activities is considered to be **small**.

5.2.9 **Table 5** provides a summary of the potential dust emission magnitude determined for each construction activity considered.

Table 5: Potential Dust Emission Magnitude	
Activity	**Dust Emission Magnitude**
Demolition	Medium
Earthworks	Small
Construction Activities	Medium
Trackout	Small

Assessment of Sensitivity of the Study Area

5.2.10 The prevailing wind direction is predominantly from the southwest. Therefore, receptors located to the northeast of the Site are more likely to be affected by dust and particulate matter emitted and re- suspended during the construction phase.

5.2.11 Under lower wind speed conditions, it is likely that the majority of dust would be deposited in the area immediately surrounding the source. Receptors northeast of the Site are expected to be affected the most as a result of the prevailing wind direction.

5.2.12 There are no ecological receptors within 50 m of the Site boundary or access route, or within 250 m of the Site entrance as identified using Multi Agency Geographic Information for the Countryside (MAGIC) website[20]. The closest ecological receptor is the Blackley Forest Local Nature Reserve, located approximately 930 m northeast of the Site. As such, ecological impacts have not been assessed further within this report.

5.2.13 Taking the above into account and following the IAQM assessment methodology, the sensitivity of the area to changes in dust and PM_{10} has been derived for each of the construction activities considered. The results are shown in **Table 6**.

Table 6: Sensitivity of the Study Area to Dust Soiling Effects				
Potential Impact	**Sensitivity of the Surrounding Area**			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Dust Soiling	Medium	Medium	Medium	High
Human Health	Low	Low	Low	Low

Risk of Impacts

5.2.14 The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. **Table 7** below provides a summary of the risk of dust impacts for the Proposed Development. The risk category identified for each construction activity has been used to determine the level of mitigation required.

[20] Department for Environment, Food and Rural Affairs (Defra), Multi-Agency Geographic Information for the Countryside (MAGIC).

Table 7: Summary Dust Risk Table Defining Site Specific Mitigation				
Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Low	Medium	Low
Human Health	Low	Negligible	Low	Negligible

Construction Vehicles and Plant

5.2.15 The greatest impact on air quality is emissions from vehicles and plant associated with the construction phase, and these impacts will be in the areas immediately adjacent to the Site access road. Construction traffic will access the Site via Middleton Road and Moxley Road, which bound the Site.

5.2.16 Final details of the exact plant and equipment likely to be used on-site will be determined by the appointed contractor. The number of plant and their location within the Site are likely to be variable over the construction.

5.2.17 Based on the current local air quality in the area, the proximity of sensitive receptors to the roads likely to be used by construction vehicles, and the likely numbers of construction vehicles and plant that will be used, the impacts are considered to being **negligible** in accordance with the assessment significance criteria.

5.3 Operational Phase Assessment

Impacts of the Local Area on the Development

5.3.1 The Proposed Development includes land use sensitive to short-term pollutant concentrations. Therefore, existing conditions at the Site are considered in the following Sections to assess its suitability for the proposed use.

AQMA Designation

5.3.2 The Site is partially located within the Manchester AQMA.

Local Monitoring Results

5.3.3 The surroundings of the Site include monitoring locations in neighbouring districts, such as Bury and Sandwell.

5.3.4 As shown in **Table 2**, local monitoring sites recorded annual mean NO_2 concentrations below 60 µg/m^3 since at least 2022. If the annual mean is below 60 µg/m^3, it is considered likely that the 1-hour mean objective is met.

5.3.5 Furthermore, the latest ASR (2025) noted that the short-term NO_2 objective (1-hour mean of 200 µg/m^3, not to be exceeded more than 18 times per year) was also met, with no exceedances recorded at the automatic monitor BUR2 since at least 2020.

5.3.6 The closest available monitoring of particulate matter is the automatic monitor BUR2 in Bury district, which has recorded PM_{10} concentrations since 2021. As shown in **Table 3**, recorded annual mean PM_{10} concentrations at this roadside monitor have remained well below the AQO of 40 µg/m^3 since at least 2022. If the annual mean PM_{10} concentration is below 32 µg/m^3, it suggests that the short-term AQO (daily mean of 50 µg/m^3 not being exceeded more than 35 times per year) is also likely to be met.

5.3.7 Additionally, the latest ASR (2025) noted that the short-term PM_{10} objective has been met at BUR2 since at least 2022, with only one to six exceedances recorded per year.

5.3.8 Based on the above, pollutant concentrations at the Site are anticipated to remain below the relevant AQOs.

Background Pollutant Concentration Predictions

5.3.9 As shown in **Table 4**, background pollutant concentrations for the grid square containing the Site are predicted to be below the annual mean AQOs for NO_2 and PM_{10} in 2023 (baseline year), 2026, the earliest possible opening year, and future years, as Defra predicts a gradual year on year decline in background pollutant concentrations.

5.3.10 Based on the predicted background concentrations, exceedances of the relevant AQOs are considered unlikely at the Site.

Potential Development Impacts

5.3.11 Any vehicle movements associated with the Proposed Development will generate exhaust emissions on the local and regional road networks.

5.3.12 The proposals comprise the erection of a two-storey building to form a synagogue (Class F.1). The proposed floor areas are 228.5 m^2 for the basement and 161.4 m^2 for the ground floor. The parking layout will remain as currently approved, with no provision for additional parking spaces.

5.3.13 Heating will be provided by a commercial gas boiler; however, the final model and specification are not yet known. As the total floor area of the Class F.1 building does not exceed 1,000 m^2, the Proposed Development does not meet the Stage 1 assessment criteria.

5.3.14 Consequently, according to EPUK and IAQM guidance, air quality impacts associated with the scheme are considered to be **negligible** and, therefore, no further assessment is deemed necessary.

6 MITIGATION AND RESIDUAL EFFECTS

6.1 Construction Phase

6.1.1 Based on the construction phase assessment results, mitigation will be required for this phase. As the Site poses a maximum of medium risk for dust impacts, the **IAQM's highly recommended mitigation measures for a medium risk site** are presented below:

Communications:

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- 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.
- Display the head or regional office contact information.
- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.

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.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.

Monitoring

- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
- 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.

- 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.

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.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating/Vehicle Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary – no idling vehicles.
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.

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.
- Ensure an adequate water supply on the site for effective dust /particle matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires or burning of waste materials.

6.1.2 The highly recommended mitigation measures specific to each phase from the IAQM are presented below:

Demolition

- 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.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

Construction

- 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.

6.1.3 Detailed mitigation measures to control construction traffic should be discussed with the Local Authority to establish the most suitable access and haul routes for the Site traffic. The most effective mitigation will be achieved by ensuring that construction traffic does not pass along sensitive roads (i.e. congested roads, residential roads or unsuitable junctions for large vehicles) where possible. Construction vehicles should be kept clean through the use of wheel washers and sheeted when on public highways. Timing of large-scale vehicle movements to avoid peak hours on the local road network would also be of benefit.

Residual Effect

6.1.4 During the construction phase, the residual effect of dust and PM_{10} generated by construction activities following the application of the mitigation measures described above and good Site practice is considered to be **not significant**.

6.1.5 In addition, the residual effect of emissions to air from construction vehicles and plant on local air quality is considered to be **not significant**.

6.2 Operational Phase

6.2.1 The impact of the operational phase of the Proposed Development has been found to be **not significant**, in accordance with the EPUK and IAQM guidance, therefore, no mitigation measures are required.

Residual Effect

6.2.2 During the operational phase, the residual effect of emissions to air from vehicles associated with the Proposed Development is considered to be **not significant.**

7 SUMMARY AND CONCLUSIONS

7.1.1 NoiseAir Limited was commissioned to undertake an AQA in support of a Proposed Development at 27-29 Middleton Road, Manchester M8 5DT.

7.1.2 A qualitative assessment of the potential impacts on local air quality from construction activities has been carried out for this phase of the Proposed Development using the IAQM methodology. This identified that there is a maximum of **medium risk** of dust soiling impacts and a maximum of **low risk** of increases in particulate matter concentrations due to unmitigated construction activities for human health. However, through good site practice and the implementation of highly recommended mitigation measures, the effect of dust and particulate matter releases would be significantly reduced. The residual effects of dust and particulate matter generated by construction activities on air quality are, therefore, considered to be **not significant**.

7.1.3 A desk top study on the potential for future users of the Proposed Development has been undertaken. The potential for exposure of future users to exceedances of the relevant short-term AQOs was assessed based on local monitoring results, predicted background concentrations, proximity to pollution sources, and AQMA designations. This indicated that concentrations of NO_2 and PM_{10} are likely to be below the relevant AQOs at the Site. The residual effect on future users of the Proposed Development is considered to be **not significant**.

7.1.4 In accordance with the IAQM and EPUK guidance, the Proposed Development is expected to result in a **negligible** air quality impact at nearby existing receptors. The residual effect of the Proposed Development is considered to be **not significant**.

7.1.5 Based on the assessment results, it is considered that the Proposed Development complies with national and local air quality policy and that air quality issues are not a constraint to planning consent. As such, the Site is suitable for the proposed use from an air quality perspective.

FIGURES

Figure 1 Site Location

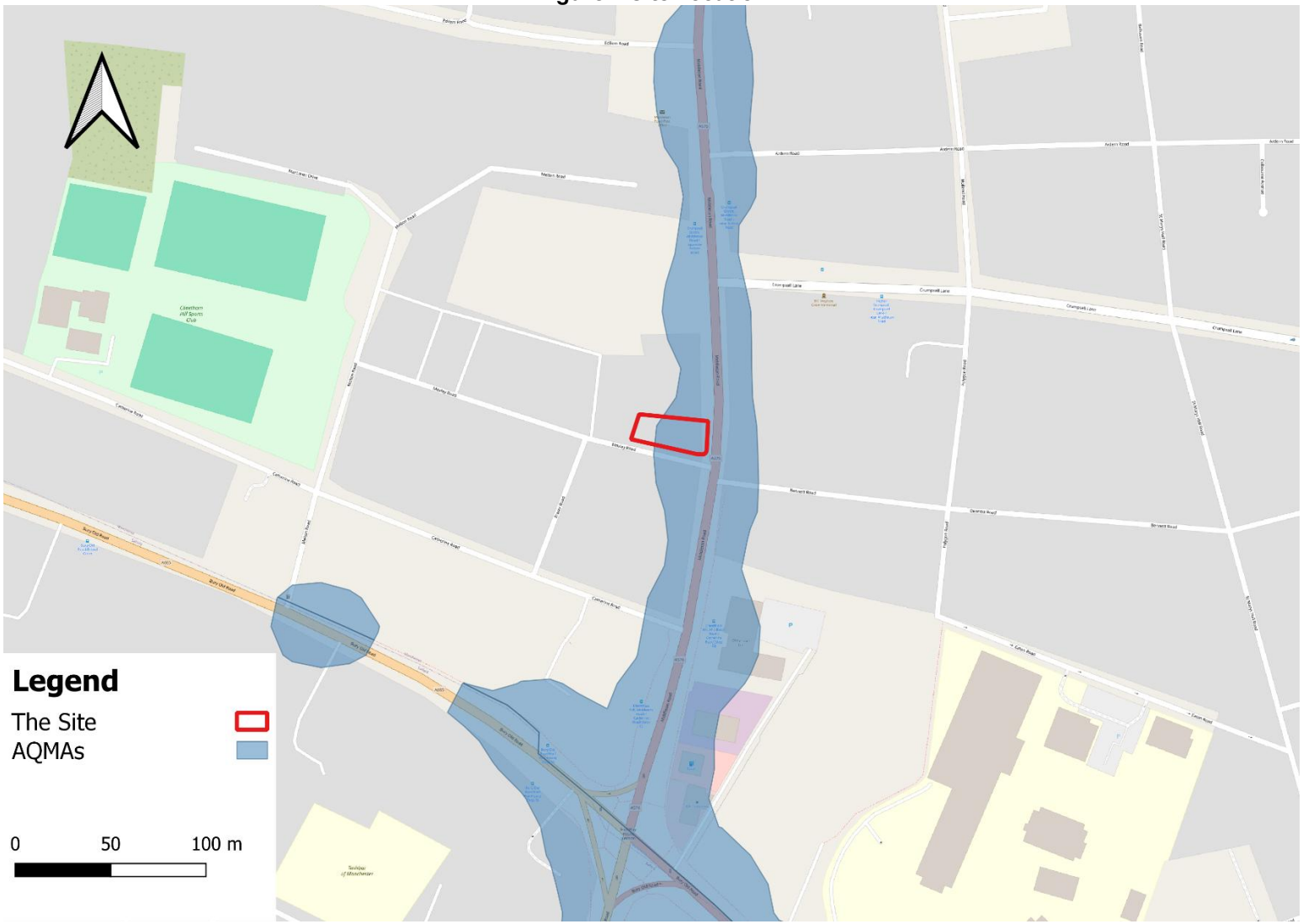


Figure 2 Monitoring Sites



APPENDIX A – REPORT LIMITATIONS

This Report is presented to The Broughton Charitable Trust and may not be used or relied on by any other person or by the Client in relation to any other matters not covered specifically by the scope of this report.

Notwithstanding anything to the contrary contained in the report, NoiseAir Limited is obliged to exercise reasonable skill, care, and diligence in the performance of the services required by The Broughton Charitable Trust and NoiseAir shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence, and this report shall be read and construed accordingly.

This report has been prepared by NoiseAir Limited. No individual is personally liable in connection with the preparation of this report. By receiving this report and acting on it, the Client or any other person accepts that no individual is personally liable whether in contract, tort, for breach of statutory duty or otherwise.

The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from who it has been requested and that such information is accurate. Information obtained by NoiseAir Limited has not been independently verified by NoiseAir Limited unless otherwise stated in the report and should be treated accordingly.

Where assessments of works or costs identified in this report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

Where/ if estimates and projects are made within this report, are made based on reasonable assumptions as of the date of this report, such statements however by their very nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. NoiseAir Limited specifically does not guarantee or warrant any estimates or projects contained in this report.

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APPENDIX B – GLOSSARY

Table B1: Glossary	
AADT Annual Average Daily Traffic	A daily total traffic flow (24hrs), expressed as mean daily floor across all 365 days of the year.
Adjustment	Application of a correction factor to modelled results to account for uncertainties in the model.
Accuracy	A measure of how well a set of data fits the true value.
Air quality objective	Policy targets generally expressed as a maximum ambient concentration to be achieved, either without exception or with the permitted number of exceedances within a specific time scale (see also air quality standard).
Ambient air	Outdoor air in the troposphere, excluding workplace air.
Annual mean	the average (mean) of the concentrations measured for each pollutant for one year.
AQMA	Air Quality Management Area.
AQO	Air Quality Objective.
AURN	Automatic Urban and Rural (air quality) Network, managed by contractors on behalf of Defra.
Conservative	Trending to over predict the impact rather than under predict.
Data Capture	The percentage of all the possible measurements forgiven periods that were validly measured.
Defra	Department for Environment, Food and Rural Affairs.

DfT	Department for Transport.
EFT	Emission Factor Toolkit.
Emission rate	The quantity of a pollutant released from a source over a given period of time.
EPUK	Environmental Protection (UK).
Exceedance	A period of time where the concentration of a pollutant is greater than the appropriate air quality standard.
HDV/HGV	Heavy Duty Vehicle/ Heavy Goods Vehicle.
IAQM	Institute of Air Quality Management.
LAQM	Local Air Quality Management.
Model adjustment	Following model verification, the process by which modelled results are amended. This corrects for systematic error.
NO_2	Nitrogen dioxide.
NO_X	Nitrogen oxides.
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres.

Road link	A length of road which is considered to have the same flow of traffic along it. Usually, a link is the road from one junction to the next.
µg/m^3 micrograms per cubic metre	A measure of concentration in terms of mass per unit volume. A concentration of 1 µg/m^3 means that one cubic metre of air contains one microgram (millionth of a gram) of a pollutant.

APPENDIX C – IAQM CONSTRUCTION DUST ASSESSMENT METHODOLOGY

IAQM Construction Dust Assessment Methodology

Step 1 – Screening the Need for a Detailed Assessment

An assessment will normally be required where there is a 'human receptor' within:

- 250 m of the boundary of the site; and/ or
- 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

A detailed assessment of effects on 'ecological receptors' will be required where an 'ecological receptor' is within:

- 50 m of the boundary of the site; and/ or
- 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

For specific (high risk) schemes the planning authority may require dust assessment despite the proposed site falling outside the distances above.

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

Step 2a – Define the Potential Dust Emission Magnitude

The dust emission magnitude is based on the scale of the anticipated works and should be classified as small, medium, or large. The following are examples of how the potential dust emission magnitude for different activities can be defined.

Note that in each case, not all criteria need to be met; other criteria may be used if justified within the assessment. Where relevant, multiple screening assessments may be completed for different development phases, or even sub-phases where demolition may be brief or there is a very short period of intense activity.

Table C1: Construction Dust - Magnitude of Emission		
Magnitude	**Activity**	**Criteria**
Large	Demolition	- Total volume of building to be demolished greater than 75,000 m^3. - Potentially dusty construction material (e.g., concrete). - On-site crushing and screening. - Demolition activities more than 12 m above ground level.

Table C1: Construction Dust - Magnitude of Emission		
Magnitude	**Activity**	**Criteria**
	Earthworks	- Total site area greater than 110,000 m^2. - Potentially dusty soil type (e.g., clay, which will be prone to suspension when dry due to small particle size). - More than 10 heavy earth moving vehicles active at any one time. - Formation of bunds greater than 6 m in height.
	Construction	- Total building volume greater than 75,000 m^3. - On site concrete batching. - Sandblasting.
	Trackout	- More than 50 HDV outward movements in any one day. - Potentially dusty surface material (e.g., high clay content). - Unpaved road length greater than 100 m.
Medium	Demolition	- Total volume of building to be demolished between 12,000 m^3 and 75,000 m^3. - Potentially dusty construction material. - Demolition activities between 6 m and 12 m above ground level.
	Earthworks	- Total site area between 18,000 m^2 and 110,000 m^2. - Moderately dusty soil type (e.g., silt). - Between 5 and 10 heavy earth moving vehicles active at any one time. - Formation of bunds between 3 m and 6 m in height.
	Construction	- Total building volume between 12,000 m^3 and 75,000 m^3. - Potentially dusty construction material (e.g., concrete). - On site concrete batching.
	Trackout	- Between 20 and 50 HDV outward movements in any one day. - Moderately dusty surface material (e.g., high clay content). - Unpaved road length between 50 m and 100 m.

Table C1: Construction Dust - Magnitude of Emission		
Magnitude	**Activity**	**Criteria**
Small	Demolition	- Total volume of building to be demolished less than 12,000 m^3. - Construction material with low potential for dust release (e.g., metal cladding or timber). - Demolition activities less than 6 m above ground. - Demolition activities during wetter months.
	Earthworks	- Total site area less than 18,000 m^2. - Soil type with large grain size (e.g., sand). - Less than 5 heavy earth moving vehicles active at any one time. - Formation of bunds less than 3 m in height.
	Construction	- Total building volume less than 12,000 m^3. - Construction material with low potential for dust release (e.g., metal cladding or timber).
	Trackout	- Less than 20 HDV outward movements in any one day. - Surface material with low potential for dust release. - Unpaved road length less than 50 m.

Step 2b – Define the Sensitivity of the Area

The tables below present the IAQM assessment methodology to determine the sensitivity of the area to dust soiling, human health and ecosystem impacts respectively. The IAQM guidance provides guidance to define the sensitivity of individual receptors, which is then used to determine the overall sensitivity of the study area.

Table C2: Sensitivity of the Area to Dust Soiling Effects on People and Property					
Receptor Sensitivity	**Number of Receptors**	**Distance from the Source (m)**			
		<20	**<50**	**<100**	**<250**
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

Table C3: Sensitivity of the Area to Human Health Impacts						
Receptor Sensitivity	**Annual Mean PM_{10} Concentrations ($\mu g/m^3$)**	**Number of Receptors**	**Distance from the Source (m)**			
			<20	**<50**	**<100**	**<250**
High	>32	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low

Table C4: Sensitivity of the Area to Ecological Impacts		
Receptor Sensitivity	**Distance from the Source (m)**	
	<20	**<50**
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Step 2c – Define the Risk of Impacts

The dust emission magnitude determined in Step 2A should be combined with the sensitivity of the area determined in Step 2B to assess the risk of impacts without mitigation measures. For those cases where the risk category is 'negligible' no mitigation measures beyond those required by legislation will be required.

Table C5: Risk of Dust Impacts			
Sensitivity of Surrounding	**Dust Emission Magnitude**		
	Large	**Medium**	**Small**
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk

Table C5: Risk of Dust Impacts			
Sensitivity of Surrounding	**Dust Emission Magnitude**		
	Large	**Medium**	**Small**
Low	Medium Risk	Low Risk	Negligible
Earthworks and Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Step 3 – Site-Specific Mitigation

Having determined the risk categories for each dust-generating activity, it is possible to identify the site-specific measures to be adopted. These measures will depend on whether the site is considered low, medium, or high risk. The IAQM guidance details the mitigation measures required for low, medium, and high-risk sites, as determined in Step 2C.

Step 4 – Determine Significant Effects

Once the risk of dust impacts has been determined in Step 2C and the appropriate mitigation measures identified in Step 3, the final step is to determine whether significant effects may arise during the construction phase. 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 achievable; hence, the residual effect will generally be not significant.

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