

Air Quality Assessment

Brotherton House

Muse Places and Wythenshawe

Community Housing Group Limited

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Executive Summary

Hilson Moran has been instructed by Muse and Wythenshawe Community Housing Group Limited to undertake an Air Quality Assessment (AQA) in support of the Proposed Development at Brotherton House.

The Proposed Development comprises *“Erection of extra care apartments (Use Class C2), older living apartments, and dwellinghouses (Use Class C3), car and cycle parking, landscaping and other associated works following demolition of existing buildings”*.

The report presents the findings of the air quality assessment, which addresses the potential air quality impacts during both the construction and operational stages of the Proposed Development. The assessment has been undertaken in line with the relevant policy and guidance, and where necessary outlines the required mitigation measures to minimise impacts.

A qualitative assessment of construction phase impacts has been carried out. There is a Low to Negligible risk of dust soiling during demolition, earthworks and construction, and trackout activities. With regards to fugitive PM₁₀ emissions during the construction phase the risk is classified as Low to Negligible for demolition, earthworks, construction and trackout activities. Through good site practice and the implementation of suitable mitigation measures, the impact of dust and PM₁₀ releases will be minimised. The residual effect of the construction phase on air quality is therefore not significant.

As the road traffic generated by the Proposed Development does not breach the threshold detailed in IAQM and EPUK Air Quality Planning guidance, detailed dispersion modelling was scoped out of the assessment.

A trend analysis has been undertaken for NO₂, PM₁₀ and PM_{2.5} to assess the site feasibility. The measured NO₂, PM₁₀ and PM_{2.5} data indicates compliance with the relevant AQS objectives. The trend analysis undertaken for NO₂ and PM₁₀ data indicate a statistically significant downward trend at specified monitoring locations, at varying significances. The trend analysis for PM_{2.5} data indicated no statistical significance based on limited monitoring data however a downward trend was observed throughout the whole monitoring period.

Based on the above findings, it is reasonable to expect that future pollution concentrations should continue to decrease with the implementation of local air quality initiatives and plans and therefore it is concluded that site specific mitigation to protect existing and future users of the Proposed Development from poor air quality is not required.

The residual effect is not significant.

Overall, with the recommended mitigation measures in place (construction phase only), the proposals would be compliant with legislation and policy.

1. Introduction

Hilson Moran have been commissioned by Muse and Wythenshawe Community Housing Group Limited to undertake an Air Quality Assessment (AQA) to consider the potential air quality impacts arising from the Proposed Development at Brotherton House, Cornfield Drive, Wythenshawe, Manchester, M22 9QX; referred to as Brotherton House.

The Proposed Development is located in the administrative area of Manchester City Council (MCC) and is hereafter referred to as the 'Proposed Development' or 'Application Site'. The location of the Application Site is illustrated in **Figure 1-1**.

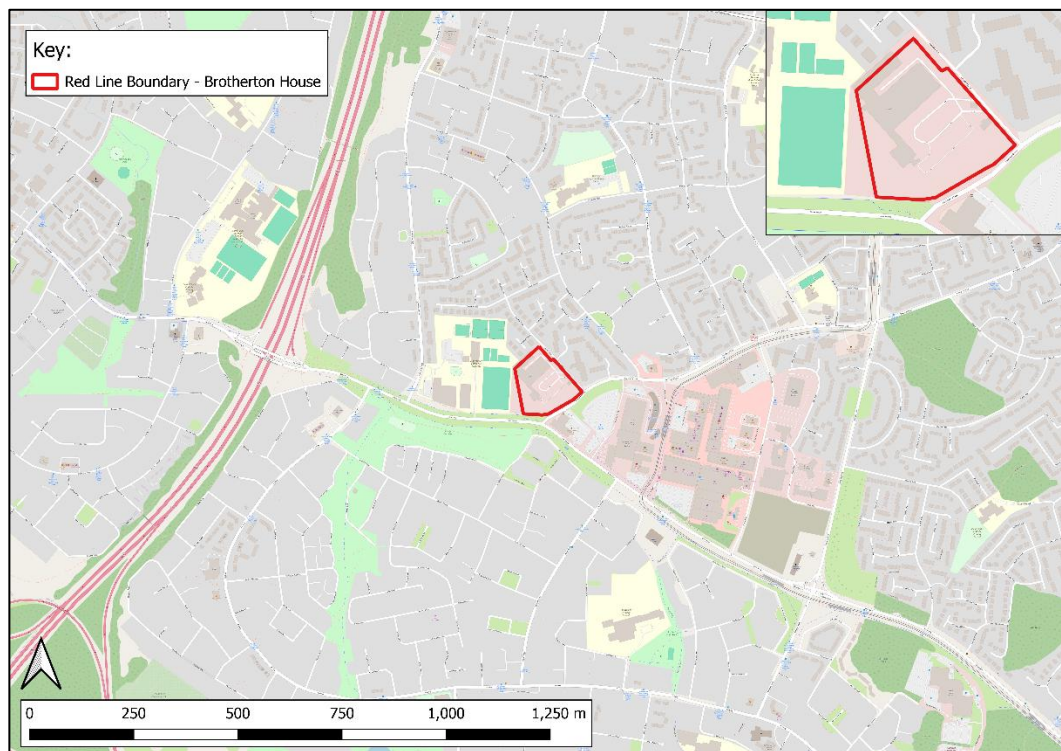


Figure 1-1 Site Boundary (Contains Ordnance Survey Data © Crown copyright database 2025)

1.1. Proposed Development

The Proposed Development comprises “Erection of extra care apartments (Use Class C2), older living apartments, and dwellinghouses (Use Class C3), car and cycle parking, landscaping and other associated works following demolition of existing buildings”.

1.2. Potential Impacts

This report presents the findings of the AQA for both the operational and construction phases. During the construction phase, activities on the Application

Site could give rise to dust, which, if transported beyond the site boundary, could have an adverse effect on local air quality and cause a statutory 'nuisance'. During the operational phase, emissions generated have the potential to affect local pollution levels, both within and surrounding the Application Site. For both phases the impacts are identified and the mitigation measures that should be implemented to minimise the impact are described.

A glossary of terms is provided in **Appendix A**.

1.3. Disclaimer

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2. Legislative and Policy Context

This report has been prepared with due regard and consideration to applicable legislation and national and local planning policy.

2.1. Legislation

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

2.1.1. Air Quality Strategy for England, Scotland, Wales and Northern Ireland

The Government's policy on air quality within the UK is set out in the Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Irelandⁱ, most recently updated in 2023. The AQS sets out a framework for reducing hazards to health from air pollution and ensuring that the European Union and International agreements are met in the UK.

The AQS covers the following air pollutants: ammonia (NH₃), benzene (C₆H₆), 1,3 butadiene (C₄H₆), carbon monoxide (CO), lead (Pb), oxides of nitrogen (NO_x) (including nitrogen dioxide (NO₂)), particulate matter (PM₁₀ and PM_{2.5}), sulphur dioxide (SO₂), ozone (O₃) and polycyclic aromatic hydrocarbons (PAHs).

The AQS sets standards and objectives for the listed pollutants for the protection of human health, vegetation and ecosystems. The standards are based on recommendations by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO) based on current understanding and scientific knowledge about the effects of air pollution on health and the environment. The air quality objectives are policy based targets set by the UK Government that are often expressed as maximum concentrations not to be exceeded either without exception or with a limited number of exceedances within a specified timescale.

For the pollutants considered in this assessment, there are both a long-term (e.g., annual mean) and short-term (e.g., one hour mean) standard. In the case of NO₂, the short-term standard is for a 1-hour averaging period (no more than 18 exceedances of 200 µg/m³ per year), whereas for PM₁₀ it is a 24-hour averaging period (no more than 35 exceedances of 50 µg/m³ per year). The variation in time period reflects the varying impacts on health of differing exposures to pollutants.

In the 2023 update to the targets an annual mean PM_{2.5} target of 10 µg/m³ to be achieved by 2040 and an average population exposure reduction of 35% in 2040 compared to a 2018 baseline.

2.1.2. Air Quality Standards Regulations

The air quality objectives in the AQS are statutory in England with the Air Quality (England) Regulations 2000ⁱⁱ and the Air Quality (England) (Amendment) Regulations 2002ⁱⁱⁱ for the purpose of Local Air Quality Management (LAQM).

The Regulations require likely exceedances of the AQS objectives to be 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...’

The Air Quality Standards (Amendment) Regulations 2016^{iv} transpose the European Union Ambient Air Quality Directive (2008/50/EC) into law in England, with the Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 ensuring continuation of the transposition of the Directive. This Directive sets legally binding limit values for concentrations in outdoor air of major air pollutants that impact public health such as NO₂, PM₁₀ and PM_{2.5}. The limit values for NO₂ and PM₁₀ are the same concentration levels as the relevant AQS objectives and the limit value for PM_{2.5} is a concentration of 20 µg/m³. The relevant air quality objectives are presented in **Table 2-1**.

Table 2-1 Air Quality Objectives for Relevant Pollutants

Pollutant	Concentration	Measured as
NO ₂	200 µg/m ³	1-hour mean, not to be exceeded more than 18 times a year (99.79 %ile)
	40 µg/m ³	Annual mean
PM ₁₀	50 µg/m ³	24-hour mean, not to be exceeded more than 35 times a year (90.41 %ile)
	40 µg/m ³	Annual mean
PM _{2.5}	20 µg/m ³	Annual mean

2.1.3. Environment Act 1995

Part IV of the Environment Act 1995^v requires local authorities to periodically review and assess the quality of air within their administrative area. The reviews have to consider both the air quality at the time of review and likely future air quality during the ‘relevant period’ and whether any air quality objectives prescribed in regulations are being achieved or are likely to be achieved in the future. Where the objectives are not likely to be achieved, an authority is required to designate an Air Quality Management Area (AQMA). For each designated

AQMA the local authority is required to produce an Air Quality Action Plan (AQAP) that works to ensure compliance with the objectives by implementing a number of air quality improvement measures.

2.1.4. Environment Act 2021

Schedule 11 in Part VI of the Environment Act 2021^{vi} sets out the amendments made from the Environment Act 1995. The principles remain consistent in that the Environment Act 2021 requires local authorities to periodically review and assess the quality of air within their administrative area. Where the objectives are not likely to be achieved, an authority is required to designate an AQMA. For each designated AQMA the local authority is required to produce an Air Quality Action Plan (AQAP) that works to ensure compliance with the objectives by implementing a number of air quality improvements measures.

2.1.5. Environmental Protection Act 1990

Section 79 of the Environmental Protection Act 1990 (as amended)^{vii} makes provision for the identification and control of statutory nuisances. The Act identifies statutory nuisance, in relation to air quality, as:

- ‘Any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance’; and,
- ‘Any accumulation or deposit which is prejudicial to health or a nuisance’.

As a result, the level at which a nuisance occurs is highly variable and dependent on perception, with effects influenced by existing conditions and the degree of change that has occurred.

Where a statutory nuisance has been demonstrated the local authority must serve an abatement notice, non-compliance with which would constitute a legal offence. The abatement notice may prevent or restrict occurrence or re-occurrence of the nuisance or the local authority may, itself, undertake action to abate the nuisance and recover any associated expenses.

2.1.6. WHO Guidelines

Table 2-2 states the World Health Organisation (WHO) Air Quality Guidelines for NO₂, PM₁₀ and PM_{2.5}. Whilst these guidelines are not targeted in the UK there is a push to meet the guidelines and be more stringent with air quality control.

Table 2-2 WHO Air Quality Guidelines

Pollutant	Concentration	Measured as
NO ₂	25 µg/m ³	24-hour mean, not to be exceeded more than 3-4 times a year (99.79 %ile)
	200 µg/m ³	1 hour mean, not to be exceeded more than 3-4 times a year (99.79 %ile)
	10 µg/m ³	Annual mean
PM ₁₀	45 µg/m ³	24-hour mean, not to be exceeded more than 35 times a year (90.41 %ile) for UK, not to exceeded more than 3 to 4 times a year (99 th %ile) under WHO
	15 µg/m ³	Annual mean
PM _{2.5}	15 µg/m ³	24-hour mean, not to exceeded more than 3 to 4 times a year (99 th %ile)
	5 µg/m ³	Annual mean

2.2. Planning Policy

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

2.2.1. National

2.2.1.1. National Planning Policy Framework

The National Planning Policy Framework (NPPF)^{viii} sets out policies, which apply to the preparation of local plans and to development management decisions. This framework sets out the Government's economic, environmental and social planning policies for England. Taken together, these policies articulate the Government's vision of sustainable development, which should be interpreted and applied locally to meet local aspirations.

The NPPF sets out the Government's planning policies on the conservation and enhancement of the natural environment, with the following paragraphs relating to air quality:

- *Paragraph 8c, which states '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;

- *Paragraph 56, which states ‘Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition;*
- *Paragraph 110, which states ‘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’;*
- *Paragraph 187e, which states ‘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’;*
- *Paragraph 199, which states ‘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.’; and,*
- *Paragraph 201, which states ‘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.'

2.2.1.2. Clean Air Strategy

The Clean Air Strategy^{ix} sets out a wide range of actions by which the UK Government will seek to reduce pollutant emissions and improve air quality. Actions are targeted at four main sources of emissions: Transport, Domestic, Farming and Industry. At this stage, there is no straightforward way to take account of the expected future benefits to air quality within this assessment.

2.2.1.3. Reducing Emissions from Road Transport: Road to Zero Strategy

The Office for Low Emission Vehicles (OLEV) and DfT published a Policy Paper^x in July 2018 outlining how the government will support the transition to zero tailpipe emission road transport and reduce tailpipe emissions from conventional vehicles during the transition. This paper affirms the Government's pledge to end the sale of new conventional petrol and diesel cars and vans by 2040, and states that the Government expects the majority of new cars and vans sold to be 100% zero tailpipe emission and all new cars and vans to have significant zero tailpipe emission capability by this year, and that by 2050 almost every car and van should have zero tailpipe emissions. It states that the Government wants to see at least 50%, and as many as 70%, of new car sales, and up to 40% of new van sales, being ultra-low emission by 2030.

The paper sets out a number of measures by which Government will support this transition but is clear that Government expects this transition to be industry and consumer led. The Government has since announced that the phase-out date for the sale of new petrol and diesel cars and vans will be brought forward to 2030 and that all new cars and vans must be fully zero emission at the tailpipe from 2035. If these ambitions are realised then road traffic-related nitrogen oxide (NO_x) emissions can be expected to reduce significantly over the coming decades, likely beyond the scale of reductions forecast in the tools utilised in carrying out this air quality assessment.

2.2.1.4. National Air Quality Plan

Defra has produced an Air Quality Plan to tackle roadside NO₂ concentrations in the UK^{xi}; a supplement to the 2017 Plan^{xii} was published in October 2018 and sets out the steps Government is taking in relation to a further 33 local authorities where shorter-term exceedances of the limit value were identified. Alongside a package of national measures, the 2017 Plan and the 2018 Supplement require those identified English Local Authorities (or the Greater London Authority (GLA)

in the case of London Authorities) to produce local action plans and/or feasibility studies. These plans and feasibility studies must have regard to measures to achieve the statutory limit values within the shortest possible time, which may include the implementation of a Clean Air Zone (CAZ).

There is currently no straightforward way to take account of the effects of the 2017 Plan or 2018 Supplement in this assessment; however, consideration has been given to whether there is currently, or is likely to be in the future, a limit value exceedance in the vicinity of the Proposed Development. This assessment has principally been carried out in relation to the air quality objectives, rather than the EU limit values that are the focus of the Air Quality Plan.

2.2.2. Regional Policy

2.2.2.1. Greater Manchester Clean Air Plan

This document^{xiii} sets out a strategy to tackle roadside air pollution, particularly nitrogen dioxide (NO₂) in compliance with legal limits. The plan adopts an investment-led approach which aims to reduce emissions through investment in cleaner buses, taxis and targeted traffic measures, without the need for a Clean Air Zone. Action has been taken to upgrade buses as part of the Bee Network improvements, with further funding aiming to support moving Greater Manchester's black cab fleet to cleaner vehicles.

2.2.2.2. Greater Manchester Air Quality Action Plan 2016 – 2021

The Greater Manchester Air Quality Action Plan^{xiv} (AQAP), produced most recently in 2016 by Transport for Greater Manchester (TfGM) and the Greater Manchester (GM) authorities, describes what MCC will do to improve air quality and has been produced to address elevated NO₂ concentrations, following the declaration of an air quality management area (AQMA) in Manchester's district.

The AQAP provides policies and interventions for GM councils to adopt, which encompass:

- Development Management and Planning Regulation;
- Freight & Heavy Goods Vehicles;
- Buses;
- Cycling;
- Travel Choices;
- Cars; and
- Information & Resources.

2.2.3. Local Policy

2.2.3.1. Manchester Local Plan – Core Strategy

The Manchester Local Plan^{xv} guides development within Manchester. It was previously known as the Local Development Framework. The Core Strategy is the key document in the Local Plan. It sets out the long-term strategic policies for the future development of Manchester and was adopted in 2012. The main policy of note relating air quality is Policy EN 16: Air Quality. This states that:

“The Council will seek to improve the air quality within Manchester, and particularly within Air Quality Management Areas, located along Manchester’s principal traffic routes and at Manchester Airport. Developers will be expected to take measures to minimise and mitigate the local impact of emissions from traffic generated by the development, as well as emissions created by the use of the development itself, including from Combined Heat and Power and biomass plant.

When assessing the appropriateness of locations for new development the Council will consider the impacts on air quality, alongside other plan objectives. This includes cumulative impacts, particularly in Air Quality Management Areas.”

2.2.3.2. Manchester Local Plan – Places for Everyone Joint Development Plan (2024).

Adopted in 2024, this document is a strategic spatial plan as part of the Manchester Local plan, for sustainable growth in the nine boroughs of Greater Manchester for the years 2022 – 2039. The main policy of note relating to air quality is JP-S5: Clean Air. This policy states: *“a comprehensive range of measures will be taken to support improvements in air quality, 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 effect 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.”*

2.3. Guidance

A summary of the publications referred to in undertaking the air quality assessment is provided below.

2.3.1. National Planning Practice Guidance

The NPPF is supported by Planning Practice Guidance^{xvi}, which outlines how the planning process can address potential air quality impacts associated with new development. It provides guidance on the level of detail required, how impacts can be mitigated and provides information on how local authorities may take air quality as a specific consideration in a planning decision.

2.3.2. Local Air Quality Management Review and Assessment Technical Guidance

The Department for Environment, Food and Rural Affairs (Defra) has published technical guidance for use by local authorities. This technical guidance, identified as LAQM.TG(22)^{xvii}, is for used by local authorities for their review and assessment work and has been applied where appropriate to this assessment.

2.3.3. Land-Use Planning and Development Control: Planning for Air Quality

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have published guidance^{xviii}, which offers advice as to when an air quality assessment may or may not be required. The guidance document details what should be included within an assessment, how to determine the significance of impacts and the likely mitigation measures required to minimise the impacts.

2.3.4. Guidance on the Assessment of Dust from Demolition and Construction

This document^{xix}, published by the IAQM, provides guidance on how to assess the impact of construction activities on air quality associated with new developments. The methodology prescribed within the document allows the impacts to be categorised based on risk (with reference to dust and PM₁₀ on sensitive human and ecological receptors) and, where applicable, identify mitigation measures associated to the risk classification determined.

2.3.5. Manchester City Council – Air Quality & Planning Technical Guidance

This document^{xx} aims to provide guidance relating to air quality in a planning context, to encourage best practice and mitigation of impacts. It collates and outlines the expectations of current guidance detailed above.

3. Assessment Methodology

3.1. Scope of the Assessment

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

- Consultation with the Environmental Health Officer (EHO) at MCC to agree the scope of the assessment and the methodology to be applied;
- Review of the air quality data for the area surrounding the Application Site, including from MCC^{xxii} and Defra^{xxi};
- Desk study to confirm the locations of nearby existing receptors that may be sensitive to changes in local air quality, and a review of the masterplan for the Proposed Development to establish the location of new sensitive receptors; and,
- Review of the traffic data provided by the project transport consultants (Curtins).

It is understood that the proposals do not incorporate onsite combustion plant such as Combined Heat and Power (CHP) Units, boilers, or generators for the provision of heating and hot water – this is to be provided via all-electric approach – heating for the Site will be provided by electric panel heaters, domestic hot water will be provided by individual air source heat pumps (ASHPs).

3.2. Construction Phase

Assessment of the risk of impact associated with the generation of dust during the construction phase of the Proposed Development and determination of subsequent mitigation measures necessary has been undertaken following IAQM guidelines.

The assessment is based on a series of steps: screening the requirement for a detailed assessment, classification of the likely magnitude of dust emissions; characterisation of the area of influence and establishment of its sensitivity to dust; and establishment of the overall risk of impact. The risk of impact from dust emissions from the Proposed Development considers effects on human health, nuisance as a result of dust soiling and ecological receptors from four main activities: demolition; earthworks; construction; and trackout. The potential for dust emissions from each activity should be considered, unless any of them are not relevant to the Proposed Development.

3.2.1. Identification of Receptors

The guidelines identify appropriate screening criteria for the identification of potential receptors, based on a conservative approach and in consideration of the exponential decline in both airborne concentrations and the rate of deposition

with distance. A detailed assessment of the impact of dust from construction sites will be required where:

- A 'human receptor' is located within 250m of the boundary of the Site or within 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the Site entrance;
- An 'ecological receptor' is located within 50m of the boundary of the Site or within 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the Site entrance.

3.2.2. Establishing Risk

The magnitude of dust emissions for each activity is classified as small, medium or large depending upon the scale of the works proposed, materials involved, and level of activity required. The IAQM guidelines provide examples of how the magnitude of emission can be defined, which are identified in **Table 3-1**. The Proposed Development is unlikely to satisfy all criteria within the examples, therefore professional judgement and site-specific information are used to identify appropriate emission magnitude.

Table 3-1 Dust Emission Magnitude (Source: IAQM Guidance, v2.2 Updated January 2024)

Activity	Small	Medium	Large
Demolition	Total building volume <12,000m ³ Construction material with low potential for dust release (e.g. metal cladding or timber) Demolition activities <6m above ground level Demolition during wetter months	Total building volume 12,000 – 75,000m ³ Potentially dusty construction material Demolition activities 6-12m above ground level	Total building volume >75,000m ³ Potentially dusty construction material (e.g. concrete) On-site crushing and screening Demolition activities >12m above ground level
Earthworks	Total site area <18,000m ² Soil type with large grain size (e.g. sand)	Total site area 18,500 – 110,000m ² Moderately dusty soil type (e.g. silt) 5 – 10 heavy earth moving vehicles	Total site area >110,000m ² Potentially dusty soil type (e.g. clay)

Activity	Small	Medium	Large
	<5 heavy earth moving vehicles active at any one time Formation of bunds <4m in height	active at any one time Formation of bunds 3 – 6m in height	>10 heavy earth moving vehicles at any one time Formation of bunds >6m in height
Construction	Total building volume <12,000m³ Construction material with low potential for dust (e.g. metal cladding or timber)	Total building volume 12,000 – 75,000m³ Potentially dusty construction material (e.g. concrete) On-site concrete batching	Total building volume >75,000m³ On-site concrete batching, sandblasting.
Trackout	<20 HDV (>3.5t) outward movements* in any one day[#] Surface material with low potential for dust release Unpaved road length <50m	20 – 50 HDV (>3.5t) outward movements* in any one day[#] Moderately dusty surface material (e.g. high clay content) Unpaved road length 50 – 100m	>50 HDV (>3.5t) outward movements* in any one day[#] Potentially dusty surface material (e.g. high clay content) Unpaved road length >100m
* A vehicle movement is a one way journey, i.e. from A to B, and excludes the return journey. # HDV movements during a construction project vary over its lifetime, and the number of movements is the maximum not the average.			

Consideration is given to the likely sensitivity of the area to the impacts of dust, establishing a sensitivity of low, medium or high for dust soiling, human health and ecological receptors. The sensitivity of the area considers a number of factors, including the specific sensitivities of receptors in the area, the proximity and number of those receptors, local baseline conditions such as background concentrations and site specific factors.

The first step in identifying the sensitivity of the area is to establish the sensitivity of the receptor, based on the presence or level of activity associated with the area influenced by the Proposed Development. Professional judgement and site-specific information are used to assign an appropriate level of receptor sensitivity using the principles outlined in **Table 3-2**. Following this, the sensitivity of the area can be established from **Table 3-3** to **Table 3-5** based on the sensitivity of the receptor, number of receptors (in the case of human health and dust soiling) and the distance from source.

Table 3-2 Receptor Sensitivity Definitions (Source: IAQM Guidance, v2.2 Updated January 2024)

Activity	Low	Medium	High
Dust Soiling	Enjoyment of amenity would not reasonably be expected; There is property that would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; Transient exposure, where people or property is only expected to be present for limited periods of time as part of the normal pattern of use; Indicative examples including playing fields, farmland, footpaths, short-term car parks and roads.	Users would expect to enjoy a reasonable level of amenity, but not reasonably at same level as in their home; The appearance, aesthetics or value of property could be diminished by soiling; Indicative examples include parks and places of work.	Users can reasonably expect enjoyment of a high level of amenity; The appearance, aesthetics or value of property would be diminished by soiling, and continuous or regularly extended periods of presence expected during normal pattern of land use; Indicative examples include dwellings, museum and other culturally important collections, medium and long-term car parks and car showrooms.

Activity	Low	Medium	High
Human Health	Locations where human exposure is transient; Indicative examples include public footpaths, playing fields, parks and shopping streets.	Locations where the people exposed are workers[#], and exposure is over a time period relevant to the air quality objective for PM₁₀[*]; Indicative examples include office and shop workers, but not those occupationally exposed to dust.	Locations where members of the public are exposed over a period of time relevant to the air quality objective for PM₁₀[*]; Indicative examples include residential properties, hospitals, schools and residential care homes.
Ecological	Locations with a location designation where the features may be affected by dust deposition, e.g. Local Nature Reserve.	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; Locations with a national designation where the features may be affected by dust deposition, e.g. Site of Special Scientific Interest.	Locations with an international or national designation and the designated features may be affected by dust soiling, e.g. Special Area of Conservation with acid heathland; Location where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List for Great Britain.
* In the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day, following Defra guidance.			

Activity	Low	Medium	High
# Workers are considered to be less sensitive than the general public as a whole because the most sensitive to the effects of air pollution, such as young children, are not normally workers.			

Table 3-3 Sensitivity of the Area to Dust Soiling Effects on People and Property
(Source: IAQM Guidance, v2.2 Updated January 2024)

Receptor Sensitivity	Number of Receptors	Distance from Source			
		<20m	<50m	<100m	<350m
High	>100	High	High	Low	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 3-4 Sensitivity of the Area to Human Health Impacts (Source: IAQM Guidance, v2.2 Updated January 2024)

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

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

Table 3-5 Sensitivity of the Area to Ecological Impacts (Source: IAQM Guidance, v2.2 Updated January 2024)

Receptor Sensitivity	Distance from Source	
	<20m	<50m
High	High	Medium
Medium	Medium	Low
Low	Low	Low

3.2.3. Establishing Significance

The risk of dust related impacts from the Proposed Development is established from the sensitivity of the area and the likely dust emission magnitude. The risk should be established, on the worst-case area sensitivity and in the absence of mitigation, for each of the construction related activities (demolition, earthworks, construction and trackout) following the matrix in **Table 3-6**.

Table 3-6 Risk of Dust Impacts from Each Activity (Source: IAQM Guidance, v2.2 Updated January 2024)

Sensitivity of Area	Activity	Dust Emission Magnitude		
		Large	Medium	Small
High	Demolition	High Risk	Medium Risk	Medium Risk
	Earthworks	High Risk	Medium Risk	Low Risk
	Construction	High Risk	Medium Risk	Low Risk
	Trackout	High Risk	Medium Risk	Low Risk
Medium	Demolition	High Risk	Medium Risk	Low Risk

Sensitivity of Area	Activity	Dust Emission Magnitude		
		Large	Medium	Small
	Earthworks	Medium Risk	Medium Risk	Low Risk
	Construction	Medium Risk	Medium Risk	Low Risk
	Trackout	Medium Risk	Low Risk	Negligible
Low	Demolition	Medium Risk	Low Risk	Negligible
	Earthworks	Low Risk	Low Risk	Negligible
	Construction	Low Risk	Low Risk	Negligible
	Trackout	Low Risk	Low Risk	Negligible

The IAQM guidelines identify a range of mitigation measures intended to reduce the emission and effects of dust from construction sites and identify their likely applicability to a development based on the level of impact risk attributed. Consideration is given to these in the development of mitigation measures, with the significance of the residual effect based on professional judgement.

3.3. Operational Phase

3.3.1. Road Traffic Emissions

Road traffic is the main source of local pollution with respect to NO₂, PM₁₀ and PM_{2.5}. Following consultation with the Transport Consultant (Curtins), it has been confirmed that emissions from the development-generated road traffic do not exceed the thresholds detailed in the IAQM & EPUK Air Quality Guidance (+/- 500 Annual Average Daily Traffic (AADT) for LGV outside an AQMA and or +/-100 AADT for LGV's in or adjacent to an AQMA; See Table 3.7).

Following consultation with the transport consultant (Curtins), it is understood that the uplift of development generated traffic for the Proposed Development is 86 vehicles per day.

Whilst a detailed assessment of development generated traffic has been scoped out, a site suitability assessment to consider the existing air quality in the vicinity of the Proposed Development will be undertaken using local monitoring data from GMCA.

3.3.2. Point Sources

Following consultation with the project M&E engineers (Tace) it is understood that there is no onsite combustion plant proposed for the provision of heating and hot water, with an all-electric approach being adopted through electric panel heaters and hot water heat pumps respectively.

3.4. Significance Criteria

The EPUK and IAQM provide guidance for establishing the significance of air quality impacts arising as a result of the Proposed Development. The magnitude of impact on individual receptors is dependent upon the long-term average pollutant concentrations at the receptor in the assessment year and the percentage change relative to the Air Quality Assessment Level (AQAL), as identified in **Table 3-7**.

Table 3-7 Impact Descriptors

Long Term Average Concentration at Receptor in Assessment Year	Percentage Change in Concentration to AQAL*			
	1	2 – 5	6 – 10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 – 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 – 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 – 109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial
* Where the % change is <0.5%, the change is described as ‘Negligible’ regardless of concentration.				

The guidelines do not, however, provide a set method for establishing the significance of impact. Whilst the establishment of the impact magnitude on individual receptors can be identified as negligible, slight, moderate or substantial, the significance of the overall effect is dependent on a number of factors. Therefore, professional judgement will be applied to determine the likely significance of effects, with the following factors considered:

- The existing and future air quality in the absence of the development, notably whether the Air Quality Objectives are likely to be met or the scale of exceedances in the long-term and short-term concentrations;
- The extent of current and future population exposure to the impacts, notably the number of properties and/or people present and the scale of impact (e.g., whether the majority of the local population is subject to substantial or slight magnitude impacts);
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts, such as establishing a worst-case scenario for sensitive receptors.

3.5. Sensitive Receptors

Defra provides guidance on locations where the air quality objectives should apply and **Table 3-8** and professional judgement have been used to select receptors where likely significant exposure to pollutant concentrations may occur.

Table 3-8 *Examples of where the Air Quality Neutral Objectives may or may not apply*

Averaging Period	Objectives Should Apply	Objectives Should Generally Not Apply
Annual Mean	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes etc.	Building facades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other locations where public exposure is expected to be short term.
24-hour Mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other locations where public exposure is expected to be short term.
1-hour Mean	All locations where the annual mean and 24 -hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might	Kerbside sites where the public would not be expected to have regular access.

Averaging Period	Objectives Should Apply	Objectives Should Generally Not Apply
	reasonably expected to spend one hour or longer.	
15-minute Mean	All locations where members of the public might reasonably be exposed for a period of 15 minutes or longer.	-

3.6. Limitations and Assumptions

Professional judgement has been used in the completion of the construction phase dust assessment for the Proposed Development.

It is assumed that the information provided by the transport consultants (Curtins) and M&E engineers (Tace) is accurate.

Hilson Moran consider the assumptions made in the assessment to be reasonable and robust.

4. Baseline Conditions

4.1. Local Air Quality Monitoring

The Greater Manchester Combined Authority (GMCA) have declared an Air Quality Management Area (AQMA) encompassing the airport, arterial routes and district centres across the ten local districts of Manchester. An AQMA was originally declared in 2001 and more recently revised in 2016 for exceedances of NO₂. Subsequent reviews including the latest GMCA Annual Status Report^{xxii} (ASR), consider the AQMA to continue to be appropriate in both extent and declared pollutants. The extent of the AQMA within the context of the Proposed Development is shown in **Figure 4-1**.

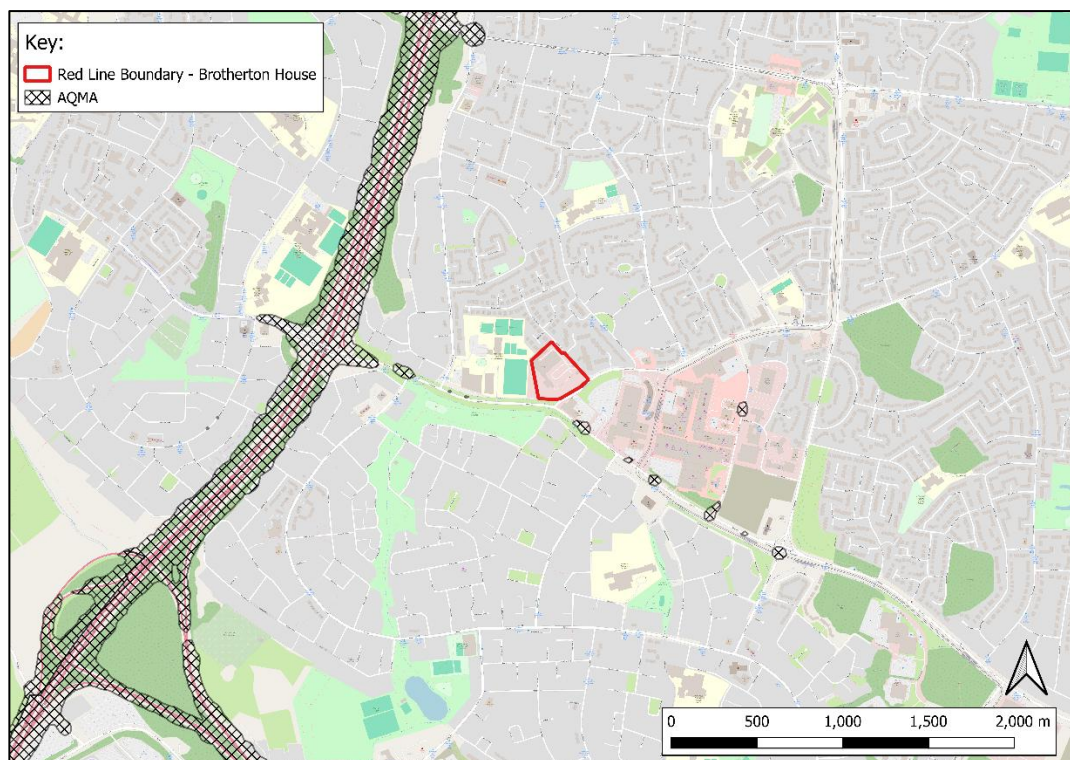


Figure 4-1 Extent of the AQMA in the Vicinity of the Application Site (Contains Ordnance Survey Data © Crown copyright database 2025)

4.1.1. Defra Background Concentration

The Defra background concentrations for NO₂, PM₁₀ and PM_{2.5} for the 1x1km grid square (382500, 387500) in which the Proposed Development is located are presented in Table 4-1 below.

Table 4-1 Defra Background Concentrations ($\mu\text{g}/\text{m}^3$)

Grid Square	Pollutant	2025	2030
382500, 387500	NO ₂	12.74	10.45
	PM ₁₀	11.75	11.46
	PM _{2.5}	7.08	6.79
* Bold indicates an exceedance of the relevant AQS objective.			

The Defra background concentrations for NO₂, PM₁₀ and PM_{2.5} in 2025 are all below the relevant Air Quality Standards (AQS) objectives — 40 $\mu\text{g}/\text{m}^3$ for NO₂ and PM₁₀, and 20 $\mu\text{g}/\text{m}^3$ for PM_{2.5}.

4.1.2. Local Air Quality Monitoring Data

GMCA operates joint Air Quality monitoring within Greater Manchester (GM) as part of obligations to the Environment Act 1995, which includes 24 continuous monitoring stations and passive diffusion tube monitoring at 342 locations, and further 270 diffusion tube monitoring as part of the Greater Manchester Clean Air Plan.

The latest monitoring report for GM, published in 2025, identified that long-term trends show an improvement in air quality year on year. A summary of the monitoring sites most representative of the Application Site are detailed below and illustrated on **Figure 4-2**. In the vicinity of the Site, monitors for the following districts have been identified: Manchester City Council (MCC), Stockport Metropolitan Borough Council (SMBC) and Trafford Metropolitan Borough Council (TMBC).

It should be noted that monitoring data collected in 2020 and 2021 should be treated with caution as significant reductions in air pollution levels occurred as a result of COVID-19 during national lockdowns leading to reductions in road traffic, thus so not accurately represent current air quality levels.

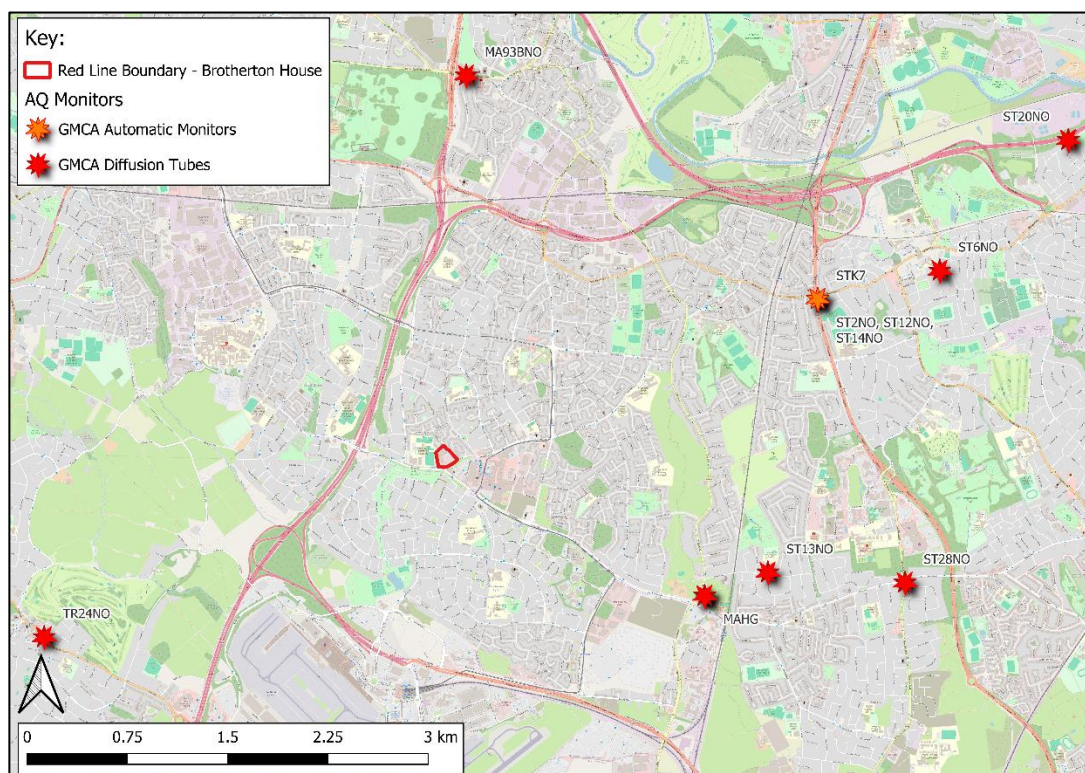


Figure 4-2 Monitoring Locations (Contains Ordnance Survey Data © Crown copyright database right 2025)

4.1.2.1. Nitrogen Dioxide

The annual mean NO₂ concentrations and the number of exceedances of the 1-hour NO₂ objective at automatic monitoring sites within the vicinity of the Site are presented in Table 4-2 and Table 4-3, respectively.

The annual mean NO₂ concentrations were compliant with the relevant AQS objective (40 µg/m³) at both automatic monitoring locations and all diffusion tube locations in the vicinity of the Site.

The WHO air quality guideline for annual mean NO₂ concentrations (10µg/m³) were exceeded at both automatic monitoring locations.

Both automatic monitors were compliant with the hourly NO₂ objective (>200µg/m³ no more than 18 times per calendar year).

Table 4-2 GMCA Continuous Monitoring Results – Annual Mean NO₂

Site ID	X, Y	Type	Annual Mean (µg/m ³)				
			2020*	2021*	2022	2023	2024
MAHG	384202, 386121	S	14	16	15	14.7	14.2

Site ID	X, Y	Type	Annual Mean ($\mu\text{g}/\text{m}^3$)				
			2020*	2021*	2022	2023	2024
STK7	385047, 388339	R	26	28	29	25.6	24.9
Bold indicates an exceedance of the AQS objective. UB = Urban Background, K – Kerbside, R = Roadside, I = Industrial, S = Suburban *Concentrations are unlikely to be a true representation of reality due to traffic reduction as a result of COVID-19.							

Table 4-3 GMCA Continuous Monitoring Results – 1-Hour Mean NO_2

Site ID	X, Y	Type	1 Hour Mean ($\mu\text{g}/\text{m}^3$) Number > 200 $\mu\text{g}/\text{m}^3$				
			2020*	2021*	2022	2023	2024
MAHG	384202, 386121	S	0	0	0	0	0
STK7	385047, 388339	R	0	0	0	0	0
Bold indicates an exceedance of the AQS objective. UB = Urban Background, K – Kerbside, R = Roadside, I = Industrial, S = Suburban *Concentrations are unlikely to be a true representation of reality due to traffic reduction as a result of COVID-19.							

Table 4-4 presents the annual mean NO_2 concentrations at the diffusion tube monitoring sites in the vicinity of the Application Site.

The annual mean NO_2 concentrations were compliant with the relevant AQS objective (40 $\mu\text{g}/\text{m}^3$) at all diffusion tube locations.

The WHO air quality guideline for annual mean NO_2 concentrations (10 $\mu\text{g}/\text{m}^3$) was exceeded at all diffusion tube locations.

Table 4-4 GMCA Diffusion Tube Monitoring Results – NO_2

Site ID	X, Y	Type	Annual Mean ($\mu\text{g}/\text{m}^3$)				
			2020*	2021*	2022	2023	2024
MA93BNO	382419, 390010	R	29.4	33.8	34.0	31.0	30.4

Site ID	X, Y	Type	Annual Mean (µg/m ³)				
			2020*	2021*	2022	2023	2024
TR24NO	379263, 385812	UB	15.6	19.8	19.1	18.5	17.5
ST2NO, ST12NO, ST14NO	385047, 388339	R	26.1	28.4	29.6	27.1	24.7
ST6NO	385960, 388552	UB	11.9	9.7	12.9	12.0	12.4
ST13NO	384675, 386295	UB	11.6	13.6	13.3	12.5	12.2
ST20NO	386921, 389528	UB	29.6	32.2	30.2	30.7	29.2
ST28NO	385700, 386219	R	25.7	30.3	30.3	27.6	25.9
Bold indicates an exceedance of the AQS objective. UB = Urban Background, K – Kerbside, R = Roadside, I = Industrial, S = Suburban *Concentrations are unlikely to be a true representation of reality due to traffic reduction related to COVID-19.							

4.1.2.2. Particulate Matter

PM₁₀

The annual mean PM₁₀ concentrations and the number of exceedances of the 24-hour PM₁₀ objective are presented in Table 4-5 and Table 4-6.

The annual mean PM₁₀ objective (40 µg/m³) was met at both automatic monitoring locations between 2020 to 2024.

The WHO air quality guideline for annual mean PM₁₀ (15 µg/m³) was met at both automatic monitoring locations in 2024.

Table 4-5 GMCA Continuous Monitoring Results – Annual Mean PM₁₀

Site ID	X, Y	Type	Annual Mean (µg/m ³)				
			2020*	2021*	2022	2023	2024
MAHG	384202, 386121	S	11.9	12	13	10.8	10.7

Site ID	X, Y	Type	Annual Mean ($\mu\text{g}/\text{m}^3$)				
			2020*	2021*	2022	2023	2024
STK7	385047, 388339	R	15	16	16	13.5	12.3
Bold indicates an exceedance of the AQS objective. UB = Urban Background, K – Kerbside, R = Roadside, I = Industrial, S = Suburban *Concentrations are unlikely to be a true representation of reality due to traffic reduction as a result of COVID-19.							

The 24 hour mean objective for PM_{10} ($>50 \mu\text{g}/\text{m}^3$ over the permitted 35 days per year) was met at both automatic monitoring locations from 2020 to 2024.

The WHO air quality guideline for 24 hour mean PM_{10} ($45 \mu\text{g}/\text{m}^3$) was met at both monitoring locations in 2024.

Table 4-6 GMCA Continuous Monitoring Results – Daily Mean PM_{10}

Site ID	X, Y	Type	Number of exceedance of the 24-hour mean ($\mu\text{g}/\text{m}^3$) $> 50 \mu\text{g}/\text{m}^3$ (no more than 35 times per annum)				
			2020*	2021*	2022	2023	2024
MAHG	384202, 386121	S	-	-	1	0	0
STK7	385047, 388339	R	0	1	1	0	0
Bold indicates an exceedance of the AQS objective. UB = Urban Background, K – Kerbside, R = Roadside, I = Industrial, S = Suburban *Concentrations are unlikely to be a true representation of reality due to traffic reduction as a result of COVID-19.							

$\text{PM}_{2.5}$

The annual mean $\text{PM}_{2.5}$ concentrations are presented in Table 4-7.

$\text{PM}_{2.5}$ monitoring is carried out at one automatic monitoring location in the vicinity of the Site. The annual mean $\text{PM}_{2.5}$ objective ($20 \mu\text{g}/\text{m}^3$) was met throughout the monitoring period between 2020 and 2024.

The WHO air quality guideline for annual mean $\text{PM}_{2.5}$ ($5 \mu\text{g}/\text{m}^3$) was exceeded at this monitoring location between 2020 and 2024.

Table 4-7 GMCA Continuous Monitoring Results – Annual Mean PM₁₀

Site ID	X, Y	Type	Annual Mean (µg/m ³)				
			2020*	2021*	2022	2023	2024
MAHG	384202, 386121	S	-	6.3	7	6.4	6.5
Bold indicates an exceedance of the AQS objective. UB = Urban Background, K – Kerbside, R = Roadside, I = Industrial, S = Suburban *Concentrations are unlikely to be a true representation of reality due to traffic reduction as a result of COVID-19.							

5. Effects Appraisal and Site Suitability

5.1. Construction Phase

5.1.1. Assessment of Dust Emission Magnitude

The likely magnitude of dust emissions from the Approved Development for the four main activities has been assessed, as identified in Table 5-1.

Table 5-1 Predicted Magnitude of Dust Emissions from Approved Development

Activity	Magnitude	Justification
Demolition	Medium	The total building volume is estimated to be between 12,000m ³ – 75,000m ³ of potentially dusty construction material, with demolition activities occurring 6-12m above ground level. As such, the magnitude has been classified as Medium.
Earthworks	Small	The total site area is <18,000 ² . It is estimated that there will be <5 heavy earth-moving vehicles active at any one time, and formation of bunds <3m in height. As such, the magnitude has been classified as Small.
Construction	Medium	The total building volume is estimated to be between 12,000m ³ – 75,000m ³ with potentially dusty construction material. As such, the magnitude has been classified as Medium.
Trackout	Small	It is estimated that there will be <20 HGV outward movements in any one day and an unpaved road length <50m. As such, the magnitude has been classified as Small.

5.1.2. Sensitivity of the Local Area

A wind rose for Manchester, provided in **Appendix B**, indicate that the prevailing wind direction is predominantly from the southwest. Therefore, existing receptors that are located to the northeast are most likely to fall within the area of influence from dust emissions generated by the construction phase at the site.

The majority of dust generated by the construction stage is likely to be deposited in close proximity to the source (within 250m) – **Figure 5-1** indicates the construction zone of influence.

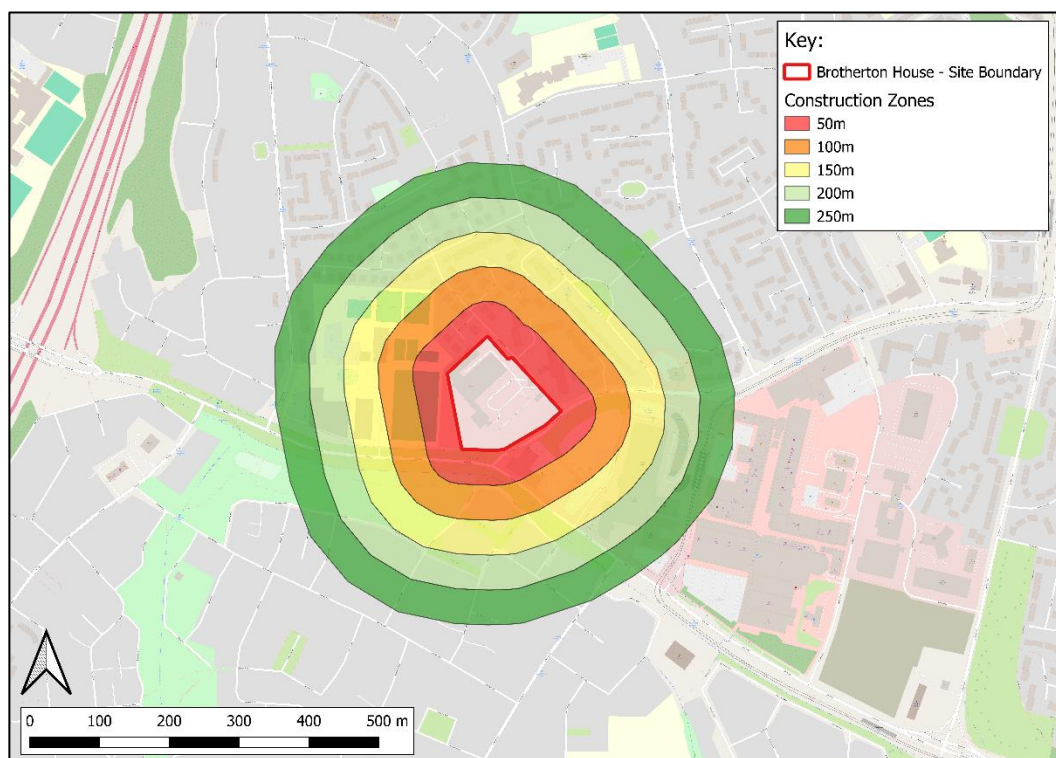


Figure 5-1 Zone of Construction Influence (Contains Ordnance Survey Data © Crown copyright database right 2025)

The majority of existing buildings surrounding the Application Site are commercial and residential in nature which are classified as medium to high sensitivity receptors. It is estimated that within 250m of the Site Boundary, there are >100 high sensitivity receptors to dust soiling effects. There is also a school (Manchester Enterprise Academy) directly eastern to the Site, within ~150m, also considered a high sensitivity receptor.

There are no ecological receptors located within 50m of the Application Site, or within 50m of the likely construction traffic route up to 250m from the site boundary, and therefore consideration of these receptors has been scoped out.

The 2025 PM₁₀ concentration for the Application Site taken from the Defra background maps is 11.75 µg/m³, which is well below the annual mean AQS objective.

5.1.3. Receptor Sensitivity

The sensitivity of the area to each of the previously identified impact types associated with the Application Site are identified in Table 5-2.

Table 5-2 Sensitivity of Receptors to Dust Emission Effects

Impact Type	Sensitivity of Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low	Low	Low	Low
Human Health	Low	Low	Low	Low
Ecological	N/A	N/A	N/A	N/A

5.1.4. Risk of Impact

To determine the risk of impacts prior to the implementation of mitigation the dust emission magnitude and the sensitivity of the area have been combined. Table 5-3 below summaries the potential risk of impacts during the construction phase.

Table 5-3 Potential Risk During the Construction Phase

Impact Type	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low	Negligible	Low	Negligible
Human Health	Low	Negligible	Low	Negligible
Ecological	N/A	N/A	N/A	N/A

The risk of dust related impacts from the Proposed Development on existing receptors in the vicinity of the Application Site is Low to Negligible without the implementation of mitigation.

The risk of dust related impacts on human health during the construction phase is Low to Negligible without the implementation of mitigation.

The risk of Ecological impacts has been scoped out as there are no ecologically sensitive sites in the vicinity of the Application Site.

5.1.5. Construction Road Traffic & Non-Road Mobile Machinery (NRMM)

The greatest impact on air quality due to construction traffic and NRMM is likely to be along roads in the vicinity of the Application Site. It is likely that construction traffic will enter the Application Site via Poundswick Way onto Cornfield Drive.

It is likely that the volume of construction traffic will be low compared to the existing traffic flows. 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, the impacts are therefore considered to be slight adverse without the implementation of mitigation.

5.1.6. Cumulative Construction Impacts

Although the Proposed Development has already been identified as posing Low to Negligible risk in relation to dust soiling and a Low to Negligible risk in relation to human health, the significance of effects in the absence of mitigation is likely to be greater when considered in the context of other construction sites. As a result, there is potential for greater exposure of the population to effects and/or prolonged exposure to impacts of nearby developments. Subsequently the impact is, conservatively, considered to be moderate adverse without the implementation of mitigation. The following additional mitigation measures are therefore proposed to avoid detrimental cumulative construction impacts:

- Hold regular liaison meetings with other high risk construction sites within 250m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes;
- Where there is potential for significant effects upon a receptor, consideration should be given to the timing of activities, and where possible activities with potential to generate significant dust emissions should not be undertaken at the same time;
- Additional monitoring requirements as a result of concurrent activities should be identified in the liaison meetings, and reviewed in subsequent meetings to understand if further mitigation measures are necessary.

5.2. Operational Phase

5.2.1. Trend Analysis

Trend analysis has been undertaken for annual mean monitoring data for NO₂, PM₁₀ and PM_{2.5} using the Mann-Kendall Test and Sen's Slope Estimates for the Trend of Annual Data (version 1.0) available from the Finnish Meteorological Institute^{xxiii}.

There are four tested significance levels, and the following symbols are used to signify the level of significance:

- *** if trend at $\alpha = 0.001$ level of significance (*i.e.*, 99.9%);
- ** if trend at $\alpha = 0.01$ level of significance (*i.e.*, 99%);
- * if trend at $\alpha = 0.05$ level of significance (*i.e.*, 95%); and,

- + if trend at $\alpha = 0.1$ level of significance (*i.e.*, 90%).

The annual mean data utilised is presented in Tables 4.2, 4.4, 4.5 and 4.7 (2020-2024). Annual mean data from previous years (2014-2019) for these monitoring locations were also utilised from earlier ASR reports^{xxiv}. Monitoring data collected in 2020 and 2021 have been excluded due to the impact that COVID-19 had on concentrations during these years.

5.2.1.1. Annual Mean NO₂

The trend analysis undertaken for annual mean NO₂ based on the monitoring data identified in Tables 4.2 and 4.4 indicates that whilst pollution concentrations are lower year on year the outcome the trends offer different levels of significance dependent on the monitoring location.

At STK7 and ST20NO a significant downward trend was recorded (at a 0.01 significance level or 99% confidence interval) in annual mean NO₂ concentrations between 2016-2024.

At MAHG, TR24NO, ST2NO, ST6NO, and ST13NO, a significant downward trend was recorded (at a 0.05 significance level or 95% confidence interval) in annual mean NO₂ concentrations between 2016-2024.

At MA93BNO a significant downward trend was recorded (at a 0.1 significance level or 90% confidence interval), in annual mean NO₂ concentrations between 2019-2024.

5.2.1.2. Annual Mean PM₁₀

The trend analysis undertaken for annual mean PM₁₀ based on the monitoring data identified in Table 4.5 indicates that there is a significant downward trend at monitoring location MAHG at a 0.1 significance level or 90% confidence interval between 2016-2024.

All measured data is well below the AQS objective for PM₁₀ of 40 µg/m³ in all years monitored.

5.2.1.3. Annual Mean PM_{2.5}

PM_{2.5} is measured at one location: MAHG. The trend analysis undertaken for annual mean PM_{2.5} based on the monitoring data identified in Table 4.7 indicated no statistical significance, which is attributed to the limited monitoring data available for PM_{2.5} (4 years of monitoring after excluding COVID-19 years). A downward trend is observed throughout the monitoring period.

All measured data is well below the AQS objective for PM_{2.5} of 20µg/m³ in all years monitored.

6. Mitigation & Monitoring

6.1. Construction

The IAQM guidelines provide an indication of the mitigation measures that would be appropriate for inclusion within the Proposed Development, based on the level of risk of dust related impacts identified for each of the activities. Consequently, the following mitigation measures should be incorporated into the Proposed Development and delivered through the implementation of a Construction Environment Management Plan (CEMP).

Mitigation measures that are generic to each of the activities, and therefore should be implemented for the duration of the construction related works where applicable are identified in Table 6-1, whilst activity specific mitigation measures are identified in Table 6-2.

Table 6-1 *Mitigation to be implemented during the Construction Phase*

Development Element	Mitigation Measure
Communication	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.
Planning	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 measures recommended in this table. 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 emissions, either on- or off- site, and the action taken to resolve the situation in the log book.

Development Element	Mitigation Measure
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 100m of the site boundary, with cleaning provided if necessary. 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 PM₁₀ 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 active for an extensive period. Avoid site run-off 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.

Development Element	Mitigation Measure
Operating Vehicle/ Vehicle Movements	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. 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).
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, <i>e.g.</i> suitable local exhaust ventilation systems. Ensure an adequate water supply on the site for effective dust/particulate 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 and burning of waste materials.

Table 6-2 Activity Specific Mitigation Measures to be implemented during the Construction Phase

Development Element	Mitigation Measure
Demolition	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust). 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 dam down such material before demolition.
Construction	Avoid scabbling (roughening of concrete surfaces) if possible. 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.
Trackout	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. Avoid dry sweeping of large areas. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. Record all inspections of haul routes and any subsequent action in a site log book. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

6.1.1. Residual Effects

The residual effects of dust and PM₁₀ generated by construction activities following the application of the mitigation measures described above and good site practice is not significant.

The residual effects of emissions to air from construction vehicles and NRMM on local air quality is not significant following the implementation of the recommended mitigation measures.

6.2. Operational Phase

6.2.1. Mitigation

The measured NO₂, PM₁₀ and PM_{2.5} data indicates compliance with the relevant AQS objectives. The trend analysis undertaken for NO₂ and PM₁₀ data indicate a statistically significant downward trend at specified monitoring locations, at varying significances. The trend analysis for PM_{2.5} data indicated no statistical significance based on limited monitoring data however a downward trend was observed throughout the whole monitoring period.

Based upon the above findings, it is reasonable to expect that future pollution concentrations should continue to decrease with the implementation of local air quality initiatives and plans, therefore mitigation is not required.

6.2.2. Residual Effects

The overall residual effect for the operational phase is not significant.

7. Conclusion

A qualitative assessment of construction phase impacts has been carried out. There is a Low to Negligible risk of dust soiling during demolition, earthworks and construction, and trackout activities. With regards to fugitive PM₁₀ emissions during the construction phase the risk is classified as Low to Negligible for demolition, earthworks, construction and trackout activities.

Through good site practice and the implementation of suitable mitigation measures, the impact of dust and PM₁₀ releases will be minimised. The residual effect of the construction phase on air quality is therefore not significant.

A quantitative road traffic assessment of the operational phase has been scoped out as the development-generated trips do not breach the modelling threshold set out by IAQM/EPUK.

A trend analysis has been undertaken for NO₂, PM₁₀ and PM_{2.5} to assess the site feasibility. The measured NO₂, PM₁₀ and PM_{2.5} data indicates compliance with the relevant AQS objectives. The trend analysis undertaken for NO₂ and PM₁₀ data indicate a statistically significant downward trend at specified monitoring locations, at varying significances. The trend analysis for PM_{2.5} data indicated no statistical significance based on limited monitoring data however a downward trend was observed throughout the whole monitoring period.

Based on the above findings, it is reasonable to expect that future pollution concentrations should continue to decrease with the implementation of local air quality initiatives and plans and therefore it is concluded that site specific mitigation to protect existing and future users of the Proposed Development from poor air quality is not required.

The residual effect is not significant.

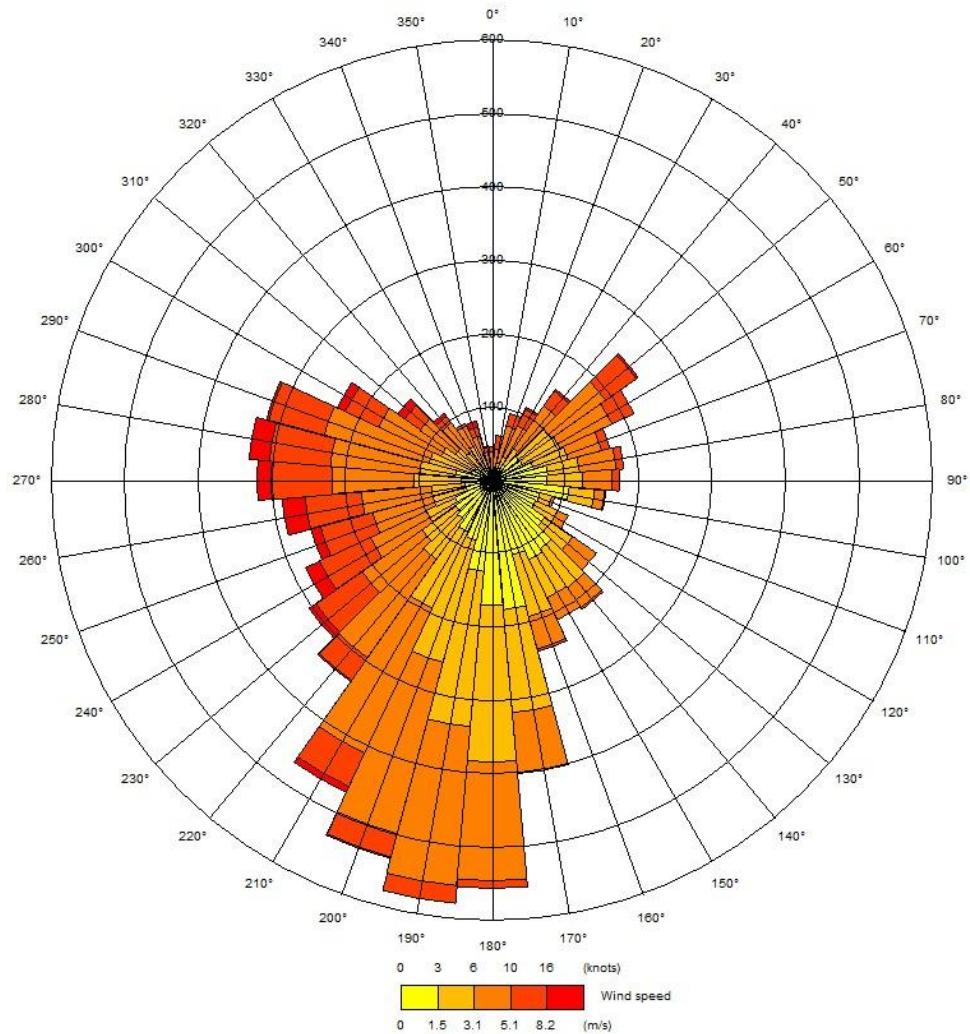
Overall, with the recommended mitigation measure in place (construction phase only), the proposals would be compliant with legislation and policy.

Appendix A – Glossary

Term	Definition
AADT Annual Average Daily Traffic	A daily total traffic flow (24 hrs), expressed as a mean daily flow across all 365 days of the year.
Air Quality Objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air Quality Standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective)
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
Conservative	Tending to over-predict the impact rather than under-predict.
Data Capture	The percentage of all the possible measurements for a given period that were validly measured.
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport.
Dust	Dust comprises particles typically in the size range 1-75 micrometres (µm) in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials.
Exceedance	A period of time where the concentrations of a pollutant is greater than the appropriate air quality standard.
HDV/HGV	Heavy Duty Vehicle/Heavy Goods Vehicle
LAQM	Local Air Quality Management
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxides
PM ₁₀	Particulate matter with an aerodynamic diameter of less than 10 micrometres (µm)

Term	Definition
PM _{2.5}	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres (µm)
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 HDV's transfer dust and dirt onto the road having travelled over muddy ground on site.

Appendix B – Manchester 2024 Wind Rose



References

- ⁱ Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007).
- ⁱⁱ The Air Quality (England) Regulations 2000 – Statutory Instrument 2000 No. 928.
- ⁱⁱⁱ The Air Quality (England) (Amendment) Regulations 2002 – Statutory Instrument 2002 No. 3043.
- ^{iv} The Air Quality Standards (Amendment) Regulations 2016 – Statutory Instrument 2016 No. 1184.
- ^v The Environment Act 1995.
- ^{vi} The Environment Act 2021.
- ^{vii} The Environmental Protection Act 1990.
- ^{viii} Ministry of House Communities and Local Government (December 2024). National Planning Policy Framework
- ^{ix} Defra (2019) Clean Air Strategy 2019, Defra.
- ^x DfT (2018) The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy.
- ^{xi} Defra (2017) Air quality plan for nitrogen dioxide (NO₂) in the UK.
- ^{xii} Defra (2018) Supplement to the UK plan for tackling roadside nitrogen dioxide concentrations.
- ^{xiii} Greater Manchester Combined Authority Clean Air Plan (2018).
- ^{xiv} Greater Manchester Air Quality Action Plan 2016-2021.
- ^{xv} Manchester's Local Development Framework – Core Strategy Development Plan (July 2012).
- ^{xvi} National Planning Practice Guidance (February 2024).
- ^{xvii} Local Air Quality Management Review and Assessment Technical Guidance (LAQM. TG22) (August 2022).
- ^{xviii} IAQM. Land-Use Planning and Development Control: Planning for Air Quality (v1.2) (2017).
- ^{xix} IAQM. Guidance on the Assessment of Dust from Demolition and Construction. (v2.2) (2024).
- ^{xx} Manchester City Council. Air Quality & Planning Technical Guidance. August 2022.
- ^{xxi} Defra Background Maps. Available at: <https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>.
- ^{xxii} Greater Manchester Combined Authority. 2024 Air Quality Annual Status Report (ASR). 2025.
- ^{xxiii} Mann-Kendall Test and Sen's Slope Estimates for the Trend of Annual Data (2002). Available at: <https://en.ilmatietaenlaitos.fi/makesens>.
- ^{xxiv} Greater Manchester Combined Authority. 2016 Air Quality Annual Status Report (ASR). 2017.



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