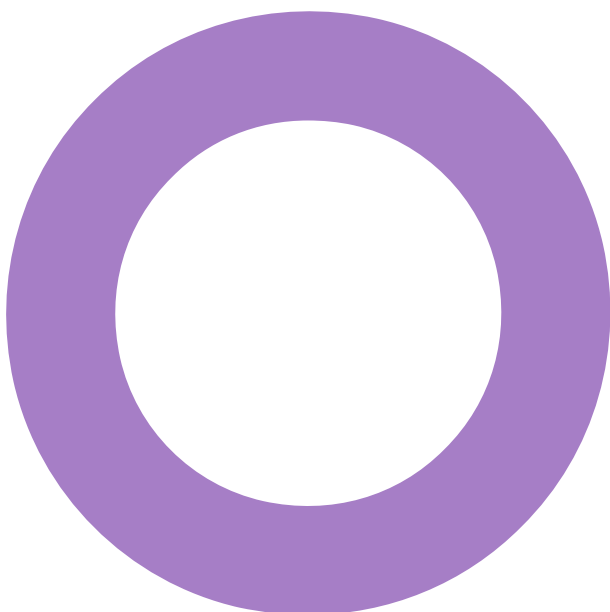


Phoenix Ironworks. Manchester. Manchester Life Development Company 3 Limited.

AIR QUALITY
AIR QUALITY ASSESSMENT

REVISION 01 – 14 JUNE 2023



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	28/03/2023	First Draft	RH	CE	KW
01	14/06/2023	First Issue	BC	JJ	CE

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Project number: 34/22075

Document reference: REP-3422075-BC-5A-20230614-Phoenix Ironworks Manchester-AQA-Rev01.docx

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Executive Summary.

Hoare Lea have been commissioned by Manchester Life Development Company 3 Limited to undertake an air quality assessment to support the planning application for the proposed residential-led development at Phoenix Ironworks, Ancoats, Manchester M4 6BD (the 'Application Site').

The proposals comprise the development of land bounded by Naval Street to the north, Poland Street to the east, Jersey Street to the south and Radium Street to the west to deliver a residential development (Use Class C3), with ground floor commercial space (Use Class E), within a building of varied height, ranging from five storeys to ten storeys, cycle provision, hard and soft landscaping, access and servicing and other associated works (hereafter referred to as the 'Proposed Development'). As the proposals are for residential use with balconies proposed on all façades, the annual mean, 1-hour mean and 24-hour mean air quality objectives (AQO) for nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}) apply.

The baseline assessment shows the Application Site is approximately 160 m south east at the closest point of the Manchester City Council (MCC) Air Quality Management Area (AQMA) declared for exceedances of the annual mean NO₂ Air Quality Objectives (AQO). NO₂ concentrations recorded at automatic monitoring stations and passive diffusion tube monitoring locations have exceeded the NO₂ annual mean AQO between 2015 and 2019. PM₁₀ and PM_{2.5} concentrations at the nearest automatic monitor that records these pollutants have been in compliance with the annual mean and 24-hour mean AQO in the last five years. Defra predicted background concentrations at the Application Site are below the relevant AQOs for all pollutants in the earliest anticipated opening year of the Proposed Development.

The Proposed Development will include four disabled car parking bays and one loading bay on site with parking provision for residents at the nearby Ancoats Mobility Hub (consent ref: 130627/FO/2021) where 70 spaces will be allocated. The combined allocation representing 29% parking provision for the scheme. Additionally, 256 cycle spaces will be allocated at the Ancoats Mobility Hub for use by residents. The Proposed Development is expected to result in an overall decrease in vehicle trips when compared to the existing use. Therefore, the potential impact of the additional road traffic on local air quality is not significant and a detailed assessment is not required.

It has been confirmed by Buro Happold, the appointed Engineers for the project that the Proposed Development will meet its energy demand via an all-electric approach using zero-emission technologies for heating, hot water and cooking requirements, supplemented by a roof top photovoltaic (PV) array. A back-up generator is proposed and will be tested for maintenance purposes for fewer than 18 operational hours per year, which falls below the short-term AQOs. As a result, there will be no on-site combustion under normal operation and no significant air quality issues from the energy strategy.

The impacts of demolition and construction work on dust soiling and ambient fine particulate matter concentrations have been assessed. This identified that there is a high risk of dust soiling impacts and a medium risk of increases in particulate matter concentrations due to construction activities. The risk of dust causing a loss of local amenity and increased exposure to fine particulate matter concentrations has been used to identify appropriate mitigation measures. Provided these are implemented and included within a dust management plan, the residual impacts are considered to be not significant.

The site suitability assessment indicates no likely exceedances of the relevant AQOs for NO₂, PM₁₀ and PM_{2.5} at the Application Site. The Application Site is set back more than 160 m from major roads and concentrations are likely to lower with increasing distance from any major roads. Defra predicted background concentrations are predicted to be in compliance with the relevant AQOs in 2027, the anticipated opening year of the Proposed Development. In addition, the Defra NO₂ fall off with distance calculator indicates concentrations in locations set back more than 50m from the A665 Great Ancoats Street are in compliance with the annual mean NO₂ AQO. As such, the Application Site is considered suitable for the Proposed Development without the inclusion of mitigation measures.

Based on the assessment results, the Application Site is considered suitable for the Proposed Development without the inclusion of mitigation and air quality should not be considered as a constraint to planning. It is

considered that the Development conforms with the National Planning Policy Framework (NPPF) and the Manchester City Council Core Strategy Development Plan.

1. Introduction.

Hoare Lea have been commissioned by Manchester Life Development Company 3 Limited to undertake an Air Quality Assessment to support the planning application for the proposed residential-led development at Phoenix Ironworks, Ancoats, Manchester M4 6BD (hereafter referred to as the 'Application Site').

1.1 Proposed Development.

The proposals comprise the development of land bounded by Naval Street to the north, Poland Street to the east, Jersey Street to the south and Radium Street to the west to deliver a residential development (Use Class C3), with ground floor commercial space (Use Class E), within a building of varied height, ranging from five storeys to ten storeys, cycle provision, hard and soft landscaping, access and servicing and other associated works, (hereafter referred to as the 'Proposed Development').

As part of the proposals, there is no on-site parking provision for residents. The Proposed Development will include four disabled car parking bays and one loading bay on site with parking provision for residents at the nearby Ancoats Mobility Hub (consent ref: 130627/FO/2021), located approximately 100 m north of the Application Site, where 70 spaces will be allocated. The combined allocation representing 29% parking provision for the scheme. Additionally, 256 cycle spaces will be allocated for use by residents at the Ancoats Mobility Hub.

It has been confirmed by Buro Happold, the appointed Engineers for the project that the Proposed Development will meet its energy demand via an all-electric approach using zero-emission technologies for heating, hot water and cooking requirements, supplemented by a roof top photovoltaic (PV) array. A back-up generator is proposed and will be tested for maintenance purposes for fewer than 18 operational hours per year. As a result, there will be no on-site combustion under normal operation and no significant air quality issues from the energy strategy.

Additionally, the ventilation for the Proposed Development will utilise Mechanical Ventilation and Heat Recovery (MHVR) units located in each room, with openable windows to allow for purge ventilation and to mitigate overheating risk. Further MHVR units are to be utilised within the ground floor commercial areas and the occupied landlord areas.

1.2 Application Site Description and Location.

The Application Site is located within Manchester City Council (MCC) administrative area at the approximate National Grid Reference (NGR): [X 385150, Y 398780].

The Application Site is bound by Naval Street alongside multiple industrial units to the north. To the east of the Application Site is Poland Street followed by both industrial units and an existing car park. West of the Application Site is Radium Street and a mixture of both existing commercial units and residential units. To the south of the Site is Jersey Street accompanied by a combination of workplace and residential properties.

The Application Site currently comprises existing hardstanding, car parking and warehouses only.

A visual representation of the Application Site boundary is displayed in Figure 1.



Figure 1: Visual Representation of the Application Site Boundary. Contains OS Data © Crown Copyright and Database rights 2023.

1.3 Scope of Assessment.

An email detailing the proposed methodology for the Air Quality Assessment was provided to MCC on the 17th January 2023. The methodology was approved by the MCC on the 20th January 2023. A copy of the correspondence with MCC has been included in Appendix 1.

A summary of the scope of the assessment includes:

- A review of relevant legislation, policy and guidance documents;
- Determination of baseline scenario, using MCC monitoring data and Department for Environment, Food and Rural Affairs (Defra) predicted background concentrations;
- Assessment of potential air quality impacts during the construction phase;
- Assessment of Site Suitability for the proposed residential-led use;
- Assessment of potential air quality impacts during the operational phase; and
- Identification of required mitigation measures.

2. Legislation, Policy and Guidance Documents.

2.1 Air Quality Strategy and Local Air Quality Management.

The Environment Act 1995 (Part IV)¹ requires the Secretary of State to publish an air quality strategy and local authorities to review and assess the quality of air within their boundaries. The latter has become known as Local Air Quality Management (LAQM).

The Air Quality Strategy² provides the policy framework for local air quality management and assessment in the UK. It sets out air quality standards and objectives for key air pollutants. These standards and objectives are designed to protect human health and the environment. The Strategy also sets out how the different sectors of industry, transport and local government, can contribute to achieving these air quality objectives.

Local authorities are required to identify whether the objectives have been, or will be, achieved at relevant locations. If the objectives are not achieved, the authority must declare an Air Quality Management Area (AQMA) and should prepare an Air Quality Action Plan (AQAP) within 12 months. The action plan must identify appropriate measures and policies that can be introduced to help achieve the objective(s).

The air quality objectives set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations 2000³, and the Air Quality (England) (Amendment) Regulations 2002⁴.

The objectives for nitrogen dioxide (NO₂) and fine particulate matter (PM₁₀ and PM_{2.5}) are given in Table 1. The AQOs for NO₂, PM₁₀ and PM_{2.5} were to have been achieved by 2005, 2004 and 2020 respectively and continue to apply in all future years thereafter. These targets are accompanied by the long term (10 µg/m³ by 2040) and interim (12 µg/m³ by 31st January 2028) PM_{2.5} targets outlined in the Environmental Improvement Plan 2023⁵.

Table 1: Air Quality Objectives for NO₂, PM₁₀ and PM_{2.5}

Pollutant	Time Period	Objective
Nitrogen Dioxide (NO ₂)	1-hour Mean	200 µg/m ³ Not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m ³
Fine Particulate Matter (PM ₁₀) [†]	24-hour Mean	50 µg/m ³ Not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m ³
Fine Particulate Matter (PM _{2.5}) ^{†*}	Annual Mean	20 µg/m ³

Notes:

[†]Measured gravimetrically.

The objectives apply at locations where members of the public are likely to be regularly present and exposed over the averaging period of the objective. Examples of where the annual mean objectives should apply are provided in LAQM.TG22⁶ and include building facades of residential properties, schools, hospitals. The annual mean objectives are not relevant for the building facades of offices or other places of work where members of the public do not have regular access, nor kerbsides nor gardens.

The 24-hour objective for PM₁₀ is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties and at hotels.

The 1-hour objective for NO₂ also applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations, pavements of busy shopping streets, car parks and bus stations which are not fully enclosed. The 1-hour objective does not apply at kerbside sites where the public do not have regular access.

2.2 EU Limit Values.

The European Union has also set limit values for NO₂, PM₁₀ and PM_{2.5}; these are legally binding and have been implemented into English legislation by The Air Quality Standards Regulations 2010⁷ and The Air Quality Standards (Amendment) Regulations 2016⁸.

The limit values for NO₂, PM₁₀ and PM_{2.5} are the same as the English objectives (given in Table 1), but applied from 2010 for NO₂, 2005 for PM₁₀ and 2015 for PM_{2.5}. The limit values apply at all locations (apart from where the public does not have access, where health and safety at work provisions apply and on the road carriageway).

2.3 WHO Guidelines Values.

The WHO has produced air quality guidelines⁹ to offer global guidance on thresholds and limits for key air pollutants that pose health risks. The 2005 WHO guidelines have been set out in Table 2 for NO₂, PM₁₀ and PM_{2.5} concentrations. MCC refer to the 2005 WHO guidelines within the MCC Quality & Planning Technical Guidance³⁰. The WHO also released revised air quality guidelines in September 2021¹⁰. The revised annual mean thresholds for NO₂, PM₁₀ and PM_{2.5} are 10 µg/m³, 15 µg/m³ and 5 µg/m³ respectively. However, the revised guidelines are yet to be included in policies and carried into effect.

Table 2: 2005 WHO guidelines for NO₂, PM₁₀ and PM_{2.5}

Pollutant	Time Period	Objective
NO ₂	1-hour Mean	200 µg/m ³ 1-hour mean
	Annual Mean	40 µg/m ³ annual mean
PM ₁₀	Annual Mean	20 µg/m ³
PM _{2.5}	Annual Mean	10 µg/m ³

2.4 The Environment Act.

The Environment Act 2021¹¹ acts as the UK's new framework of environmental protection and came into force on 1st April 2022. With regard to air quality, the Environment Act establishes a legally binding duty on government to bring forward at least two new air quality targets in secondary legislation by 31st October 2022. Target objectives¹² under consideration for air quality include:

- Reducing the annual mean level of fine particulate matter (PM_{2.5}) in ambient air (as required by Clause 2 of the Environment Act); and
- Reducing population exposure to PM_{2.5}.

2.5 Building Regulations.

The Building Regulations help to ensure that new buildings, conversions, renovations and extensions (domestic or commercial) are going to be safe, healthy and high performing. Detailed regulations cover specific topics including structural integrity, fire protection, accessibility, energy performance, acoustic performance, protection against falls, electrical and gas safety. Part F of the Building Regulations (2021)¹³ provides guidance on indoor air quality and the pollutant concentrations that must not be exceeded in buildings for use as either dwellings or non-dwellings.

2.6 General Nuisance Legislation.

Part III of the Environmental Protection Act (EPA) 1990 (as amended) contains the main legislation on Statutory Nuisance and allows local authorities and individuals to take action to prevent a statutory nuisance. Section 79 of the EPA defines, amongst other things, smoke, fumes, dust and smells emitted from industrial, trade or business premises so as to be prejudicial to health or a nuisance, as a potential Statutory Nuisance.

Fractions of dust greater than 10 µm in diameter (i.e. greater than PM₁₀) typically relate to nuisance effects as opposed to potential health effects and therefore are not covered within the Air Quality Strategy. In legislation there are currently no numerical limits in terms of what level of dust deposition constitutes a nuisance.

2.7 UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations.

The UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations¹⁴ was published in 2017. This sets out roles and responsibilities and measures for bringing NO₂ levels within the mandatory limit values in the shortest possible time. Under the UK Plan, local authorities with roadside concentrations of NO₂ forecast by the Defra as exceeding legal limits are identified; MCC has been identified as one of these local authorities and as a result a Clean Air Zone (CAZ) was planned to be implemented in 2022. However, this was cancelled in February 2022 due to significant changes in local air quality and economic issues since the coronavirus pandemic^{15,16}.

2.8 Clean Air Strategy.

The Clean Air Strategy (CAS)¹⁷, published in 2019, sets out the Government's proposals aimed at delivering cleaner air in England, and also indicates how devolved administrations intend to make emissions reductions. It sets out the comprehensive action that is required from across all parts of government and society to deliver clean air.

2.9 Planning Policy.

2.9.1 National Planning Policy Framework.

The National Planning Policy Framework (NPPF) 2021¹⁸ sets out planning policy for England. It includes advice on when air quality should be a material consideration in development control decisions. Relevant sections are set out below:

Paragraph 55: *"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 104: *"Transport issues should be considered from the earliest stages of plan-making and development proposals, so that: a) the potential impacts of development on transport networks can be addressed; b) opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated; c) opportunities to promote walking, cycling and public transport use are identified and pursued; d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and e) patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places."*

Paragraph 105: *"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 174: *"Planning policies and decisions should contribute to and enhance the natural and local environment by: 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."*

Paragraph 185: *"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development."*

Paragraph 186: *“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.”*

Paragraph 188: *“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.”*

The NPPF is supported by Planning Practice Guidance (PPG)¹⁹.

The PPG states that:

Paragraph 001 (Reference ID: 32-001-20191101): *“Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance relevant Limit Values. It is important that the potential impact of new development on air quality is taken into account in planning where the national assessment indicates that relevant limits have been exceeded or are near the limit or where the need for emissions reductions has been identified.”*

Paragraph 002 (Reference ID: 32-002-20191101): *“Plans may need to consider ways in which the development could be made appropriate in locations where air quality is or is likely to be a concern, and not give rise to unacceptable risks from pollution. This could, for example entail identifying measures for offsetting the impact on air quality arising from new development including supporting measures in an air quality action plan or low emissions strategy where applicable.”*

Paragraph 005 (Reference ID: 32-005-20191101): *“Whether air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and / or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity.”*

The PPG also sets out the information that may be required in an air quality assessment, stating that:

Paragraph 007 (Reference ID: 32-007-20191101): *“Assessments need to be proportional to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific. The scope and content of supporting information is best discussed and agreed between the local planning authority and applicant before it is commissioned.”*

It also provides guidance on options for mitigating air quality impacts, and makes clear that:

Paragraph 008 (Reference ID: 32-008-20191101): *“Mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact.”*

2.10 Local Policy.

2.10.1 Manchester City Council Core Strategy Development Plan.

The Manchester Core Strategy Development Plan²⁰ was adopted in 2012 and covers the years 2012 to 2027. This document outlines the vision of the MCC for Manchester until the year 2027 alongside the planning policies used to deliver that vision. Policies relevant to air quality are given below:

Policy EN16 Air Quality

“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 developments the Council will consider the impacts on air quality, alongside other plan objectives. This includes cumulative impacts, particularly in Air Quality Management Areas”.

Policy CC 5 Transport

“The Transport Strategy for Manchester City Centre will be delivered to ensure that transport is managed in a way which supports the projected growth of the City Centre.

[...]

Proposals will be supported that improve pedestrian safety, improve air quality and increase the scope of accessible public realm improvements.”

Policy EN 7 Energy Infrastructure Opportunities

“There will be a general presumption in favour of low and zero carbon decentralised energy schemes, subject to the following considerations:

[...]

- The cumulative impact of energy schemes will be taken into account when considering applications, to include modelled impacts on air quality and landscape character, with reference to Policy EN16 Air Quality.

[...]”

Policy DM1 Development Management

“All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document:

[...]

– Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise.

[...]”

2.10.2 Manchester Citywide Unitary Development Policies – Environmental Improvement and Protection.

The Application Site is located within Area ‘25’ of MCC’s City Centre Small Area Policies Map²¹. Within this area, Part 1 of the Extant Unitary Development Policies (UDP) – Environmental Improvement and Protection²² applies. This policy aims to encourage high-quality development within the city centre to enhance the City’s environment. Whilst this policy does not specifically mention air quality, it highlights the Council’s efforts to improve the environment through improved traffic routing schemes and increased “green” areas between city developments.

2.10.3 Local Air Quality Management in Manchester.

An AQMA was declared in Greater Manchester in 2016 for exceedances of the annual mean NO₂ AQO. The AQMA covers the 10 districts of Greater Manchester, including arterial routes, district centres, and the airport. Consequently, an Air Quality Action Plan²³ was published in 2016 to set out actions and measures to bring about an improvement in air quality, to benefit the health of the population. The current Air Quality Action Plan expired in 2021, however it has not yet been replaced so it will be considered for the purpose of this assessment. The proposed actions cover three main themes:

- Reduce Traffic - for instance by encouraging modal shift from private vehicle use to public transport, cycling and walking.
- Increasing Efficiency - of traffic movement by reducing congestion and stop-start travel to achieve a smoother emission profile and overall lower emissions, which may be particularly significant at peak hours.
- Improve Fleet - by incentivising the replacement of older, more polluting vehicles with newer, smaller, cleaner, lower-emissions vehicles.

Alongside the Air Quality Action Plan, the Greater Manchester Low Emission Strategy²⁴ presents a long-term approach to carbon emissions and air quality in the period up to 2040. The key aims of the strategy are to:

- Support the UK Government in meeting all EU thresholds for key pollutants at the earliest date;
- Contribute to reducing Greater Manchester's carbon footprint, in line with the Greater Manchester Climate Change Strategy; and
- Reduce air pollution as a contributor to ill-health in Greater Manchester.

A Clean Air Zone (CAZ) covering Greater Manchester, for which an outline business case²⁵ was submitted in March 2019, and planned to launch in 2022 to target the most polluting commercial vehicles including older Heavy Duty Vehicles (HDVs), buses, coaches, taxis and private hire vehicles. However, it was decided on 30th May 2022 that this will no longer go ahead due to significant changes in local air quality and economic issues since the COVID-19 pandemic²⁶.

Furthermore, Transport for Greater Manchester established the Greater Manchester Electric Vehicle (GMEV) Network in 2013. The network offers free electric vehicle charging for a nominal annual fee to help the mass adoption of electric vehicles across the region, playing a central role in improving air quality.

2.10.4 Transport Strategy for Manchester City Centre 2040.

The Transport Strategy for Manchester City Centre²⁷ adopted in March 2021 sets out the strategy for Manchester to create a well-connected, zero-carbon centre offering residents, workers and visitors a place to live. The Transport Strategy aims to promote residential and commercial developments within the city alongside 'greener' means of transportation.

2.11 Assessment Guidance.

The primary guidance documents consulted in undertaking this assessment are detailed below.

2.11.1 Defra Local Air Quality Management Technical Guidance.

Defra Local Air Quality Management Technical Guidance (LAQM.TG(22))⁶ was published for use by local authorities in their LAQM review and assessment work. The document provides key guidance in aspects of air quality assessment, including screening, use of monitoring data, and use of background data that are applicable to all air quality assessments.

2.11.2 EPUK and IAQM 'Air Quality Guidance for Planning'.

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have published guidance²⁸ to help ensure that air quality is properly accounted for in the development control process. It clarifies when an air quality assessment should be undertaken, what it should contain, and how impacts should be described and assessed including guidelines for assessing the significance of impacts.

2.11.3 IAQM 'Construction and Demolition Dust Guidance'.

Guidance on the assessment of dust from demolition and construction has been published by the IAQM²⁹. The guidance provides a methodology to determine the dust emission magnitude and provides a series of matrices to determine the risk magnitude of potential dust sources associated with construction activities. This allows for the identification of appropriate mitigation measures that are defined within further IAQM guidance.

2.11.4 Manchester City Council Air Quality & Planning Technical Guidance.

This technical guidance was published in February 2022³⁰ to inform applicants, developers and air quality consultants of the 'Our Manchester Strategy 2016-2025'. It sets out the relevant local policies and acknowledges the City's current AQMA situation, breaches of AQOs and ambitions to reduce PM_{2.5} concentrations to below the 2005 WHO guidelines by 2030. The guidance also provides best practice recommendations for electric vehicle charging infrastructure.

3. Assessment Methodology.

3.1 Consultation.

The approach to the assessment, as described in Section 1.3, was provided to the MCC for review on the 17th January 2023. A response was received from the MCC on the 20th of January 2023 approving the methodology. A copy of the correspondence has been included in Appendix 1.

3.2 Existing Air Quality in the Study Area.

A baseline air quality review was undertaken to determine the existing air quality in the vicinity of the Application Site. This desk-top study was undertaken using the following sources:

- Air quality data for MCC, including a review of the Greater Manchester Combined Authority (GMCA) air quality reports and local monitoring data;
- The UK Pollutant Release and Transfer Register³¹;
- Background pollution maps taken from Defra's Local Air Quality Management (LAQM) website³²;
- Pollution Inventory from the Environment Agency³³; and
- Ordnance Survey data and aerial photography from Google Maps.

3.3 Construction Phase Impacts.

3.3.1 Construction Dust Assessment.

The assessment of construction dust impacts has been undertaken in line with the IAQM methodology. Activities on the proposed construction site have been divided into four types to reflect their different potential impacts. These are:

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

The risk of dust emissions was assessed for each activity with respect to:

- Potential loss of amenity due to dust soiling;
- The risk of health effects due to a significant increase in exposure to PM₁₀; and
- The risk of ecological impacts due to a significant increase in exposure to PM₁₀.

The first stage of the assessment involves screening to determine whether there are any sensitive receptors within the threshold distances defined by the IAQM guidance²⁹. A detailed assessment of the impact of dust from construction sites will be required where:

- A 'human receptor' is located within 350 m of the boundary of the Application Site or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the Application Site entrance; and
- An 'ecological receptor' is located within 50 m of the boundary of the Application Site or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the Application Site entrance.

The magnitude of dust emission for each activity is determined on the basis of the guidance, indicative thresholds, information available relating to the project and expert judgement. The risk of dust effects arising is based upon the relationship between the dust emission magnitude and the sensitivity of the area. The risk of impact is then used to determine the mitigation requirements.

Descriptors for magnitude of impact and impact significance used in this assessment of construction phase dust are given in the guidance²⁹ available online.

3.3.2 Construction Traffic.

3.3.2.1 Construction Traffic Emissions Screening

A screening assessment has been undertaken with reference to the following EPUK and IAQM guidance indicative criteria²⁸:

- a change of LDV flows of more than 100 AADT (within an AQMA); and/or
- a change of HDV flows of more than 25 AADT (within an AQMA).

3.3.2.2 NRMM Emissions Screening

Non-Road Mobile Machinery (NRMM) refers to mobile machines, transportable industrial equipment or vehicles which are fitted with an internal combustion engine and not intended for transporting goods or passengers on roads. NRMM emissions have been screened following the guidance in Defra's LAQM.TG(22)⁶.

3.4 Operational Phase Impacts.

3.4.1 Road Traffic Impacts.

The screening assessment has been undertaken with reference to the following documents:

- Defra's LAQM.TG(22)⁶; and
- EPUK and IAQM guidance²⁸ indicative criteria, i.e.:
 - a change of LDV flows of more than 100 AADT (within an AQMA); and/or
 - a change of HDV flows of more than 25 AADT (within an AQMA).

Where these criteria are exceeded, a detailed assessment is required, although the guidance advises that "the criteria provided are precautionary and should be treated as indicative", and "it may be appropriate to amend them on the basis of professional judgement".

Where impacts can be screened out there is no need to progress to a more detailed assessment.

3.4.2 Site Suitability Assessment.

A qualitative 'site suitability' assessment has been undertaken to consider the exposure of future occupants, introduced by the Proposed Development, to current air quality. As the Proposed Development is for residential use with balconies proposed along all façades, the long term and short term NO₂, PM₁₀ and PM_{2.5} AQOs apply. Site suitability will be assessed qualitatively using the following information:

- Nearby MCC monitoring data³⁴ at MA71NO roadside passive diffusion tube located along the A665 Great Ancoats Street;
- Defra predicted background concentrations for the grid square containing the Application Site³²; and
- Defra NO₂ fall off with distance calculator³⁶.

3.5 Assessment of Significance.

3.5.1 Construction Phase Impacts.

The IAQM guidance²⁹ on the assessment of dust from demolition and construction states that the primary aim of the risk assessment is to identify site specific mitigation that, once implemented, should ensure that there will be no significant effect. Therefore, the assessment has been used to determine an appropriate level of mitigation for the construction phase.

The determination of which mitigation measures are recommended include elements of professional judgement and the professional experience of the consultants preparing this report is set out in Appendix 2.

3.5.2 Operational Phase Impacts.

The EPUK and IAQM guidance²⁸ has been used to assess the potential for significant impacts as a result of vehicle emissions from traffic associated with the Proposed Development. The focus of the guidance is to assess traffic emission impacts and advises on how to describe the air quality impacts and their significance.

3.5.3 Site Suitability.

To determine the significance of predicted air quality impacts based upon a Site Suitability assessment, the EPUK and IAQM guidance²⁸ states:

“Where the air quality is such that an air quality objective at the building façade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means.”

“As a member of the WHO Climate and Clean Air Coalition, and UN Environment-led ‘Breathe Life’ cities network, the GMCA including MCC has pledged to achieve the 2005 WHO air quality guideline for PM_{2.5} of 10 µg/m³ (micrograms per cubic metre) by 2030.”

As such, the WHO PM_{2.5} guideline will be taken into consideration when determining Site Suitability.

4. Baseline Environment.

This section sets out the available information on air quality in the vicinity of the Application Site.

4.1 Site Setting.

The Application Site is located within MCC area of administration at approximate NGR: X 385150, Y 398780.

The Application Site is bound by Naval Street alongside multiple industrial units to the north. To the east of the Application Site is Poland Street followed by both industrial units and an existing car park. West of the Application Site is Radium Street and a mixture of both existing commercial units and residential units. To the south of the Site is Jersey Street accompanied by a combination of workplace and residential properties.

The Application Site currently comprises existing hardstanding, car parking and warehouses only.

4.2 Local Air Quality Management Review and Assessment.

GMCA have declared an AQMA for exceedances of the annual mean NO₂ AQO which covers Manchester City Centre, the area around Manchester Airport and the main arterial traffic routes into the city. The Application Site is not within this designated AQMA and is approximately 160 m south east of the closest section of the AQMA covering A62 Oldham Street. Figure 2 shows the location of the Application Site in relation to the nearby GMCA AQMA.

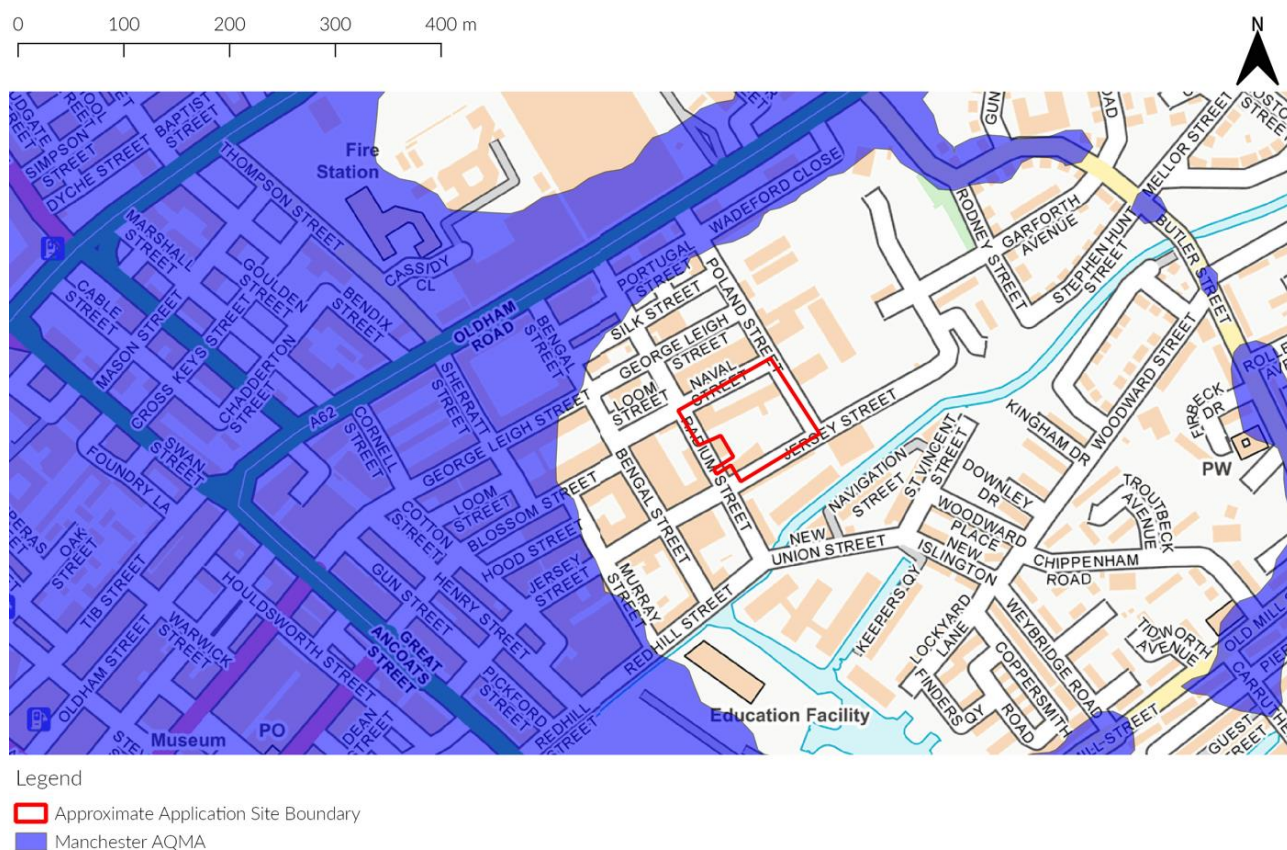


Figure 2: Location of the GMCA AQMA in the context of the Application Site Boundary. Contains OS Data Crown Copyright and Database Rights 2023.

The most recent GMCA ASR (2021)²⁴ states that there has been a gradual improvement in air quality throughout the area. There is currently one AQMA in the MCC area which covers the City Centre along with many of the larger roads throughout and around the City which was declared in 2016 due to exceedances of the annual mean NO₂ concentration AQO. The Application Site is located adjacent to the GMCA AQMA.

Exceedances of the annual mean NO₂ AQO were still recorded at some of the nearby monitoring locations during 2019, but the 1-hour mean NO₂ concentration AQO was met. Similarly, the respective AQOs for PM₁₀ and PM_{2.5} have not recorded any exceedances between 2015 and 2020. PM_{2.5} concentrations have exceeded the 2005 WHO Guidelines of 10 µg/m³ at one automatic monitoring locations within the vicinity of the site.

Additionally, based on the available 2020 monitoring data from the most recent GCMA ASR, released in 2021 during the COVID-19 pandemic, there has been a decrease in pollutant concentrations across monitoring locations within MCC. The reduction in pollutant concentrations during 2020 is directly attributable to reduced traffic levels as a result of Government implemented lockdowns. As such, the pollutant concentrations recorded at monitoring stations in 2020 are not considered to be representative of “normal” air quality conditions. Whilst it is expected that as a result of the COVID-19 pandemic that behaviours will change in the future, the impact of this on air quality long-term is currently unknown and therefore the use of 2020 data has been omitted from this assessment however has been shown in the baseline assessment for information purposes.

4.3 Local Air Quality Monitoring.

There are 20 automatic monitoring stations within the GMCA area, with three operated by MCC. The closest automatic monitoring station is “Manchester Piccadilly” with Site ID: MAN3, located approximately 0.9 km south west of the Application Site and classed as an Urban Centre. This automatic monitoring station is also a part of the UK Automatic and Rural Network (AURN), which is a countrywide network of air quality monitoring stations operated on behalf of Defra. Monitoring data for AURN sites is available from the UK Air Information Resource website (UK-AIR). The second closest automatic monitoring station is “Manchester Oxford Road” with Site ID: MAN1, located approximately 1.7 km south west from the Application Site and classed as kerbside.

Recent monitoring data from the last five years of representative monitoring data for the two automatic monitoring stations within 2 km of the Application Site is detailed in Table 3 and a visual representation of the locations of both automatic monitoring stations with respect to the Application Site is shown in Figure 3.

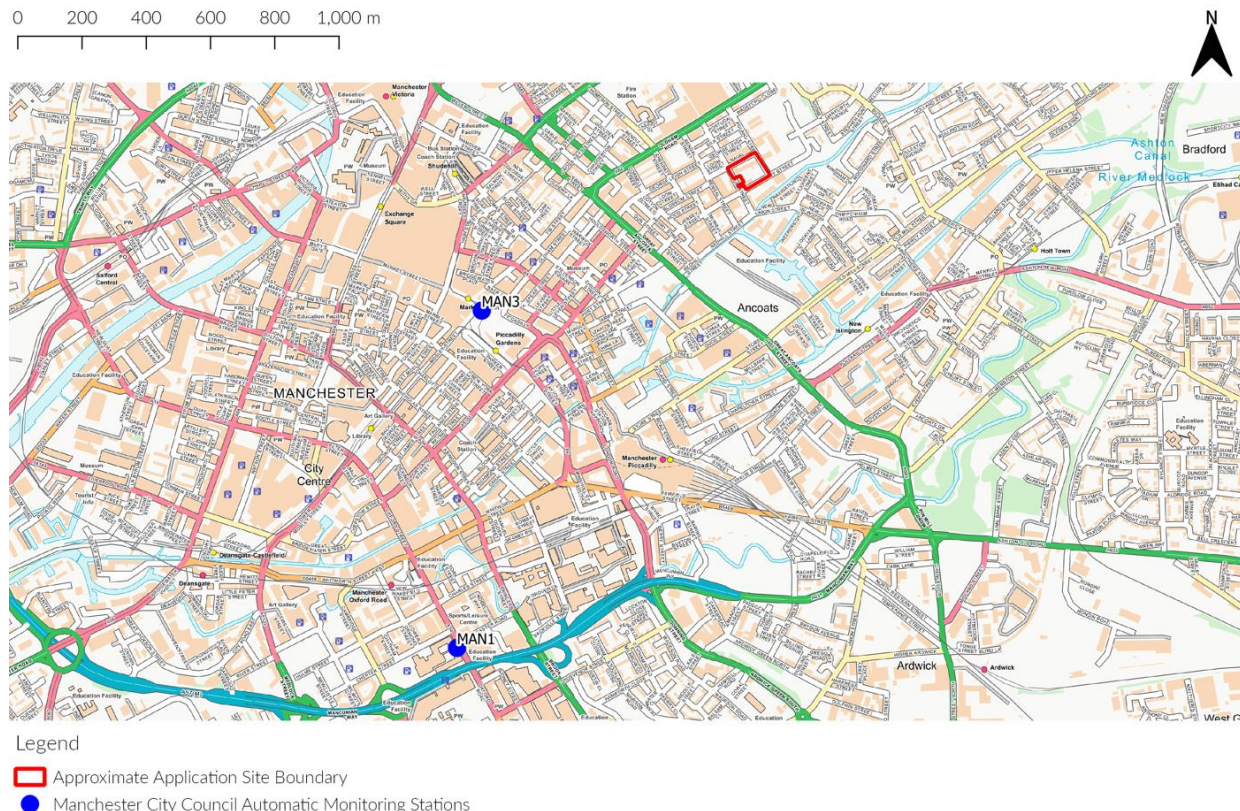


Figure 3: Automatic Monitoring Stations within 2 km of the Application Site. Contains OS Data © Crown Copyright and Database rights 2023.

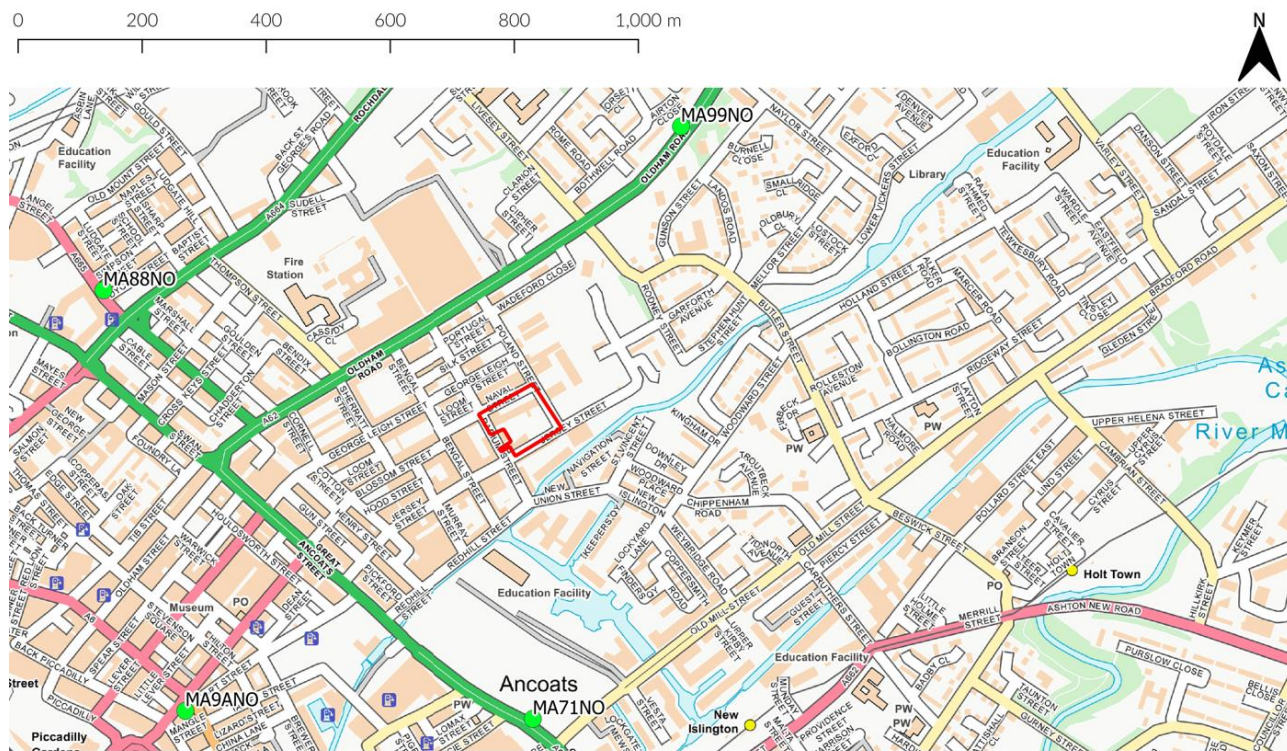
Table 3: Automatic Monitoring Stations Monitoring Data

Monitoring site and distance (m) from site boundary (approx.)	Air Quality Objective	2015	2016	2017	2018	2019	2020
NO₂							
MAN3, Urban Centre – Manchester Piccadilly (0.9 km)	Annual mean (µg/m ³)	39	40	36	35	36	27
	Number of hours with concentrations >200 µg/m ³	1	0	1	0	0	0
MAN1, Kerbside – Manchester Oxford Road (1.7 km)	Annual mean (µg/m ³)	66	66	65	62	59	36
	Number of hours with concentrations >200 µg/m ³	60	90	6	2	1	0
PM₁₀							
MAN3, Urban Centre – Manchester Piccadilly (0.9 km)	Annual mean (µg/m ³)	20	20	20	21	20	15
	Number of days with concentrations > 50 µg/m ³	3	3	3	2	7	1
MAN1, Kerbside – Manchester Oxford Road (1.7 km)	Annual mean (µg/m ³)	28	27	27	30	26	15
	Number of days with concentrations > 50 µg/m ³	25	16	15	15	18	5
PM_{2.5}							
MAN3, Urban Centre – Manchester Piccadilly (0.9 km)	Annual mean (µg/m ³)	10	10	8	11	12	8
Note: Exceedances of the relevant AQO are shown in bold .							

As shown in Table 3, the data at the closest automatic monitoring location, Site ID: MAN3, has been in compliance with both the annual mean and 1-hour mean NO₂ AQOs from 2015 to 2020. Similarly, it has not recorded any exceedances for both the PM₁₀ or PM_{2.5} AQOs from 2015 to 2020. However, as per the MCC Air Quality & Planning Technical Guidance³⁰, the WHO PM_{2.5} guidelines must be considered. Recorded concentrations of PM_{2.5} at Manchester Piccadilly have exceeded the WHO guideline of 10 µg/m³ in the years 2018 and 2019.

At the other automatic monitoring station, Site ID: MAN1, recorded NO₂ concentrations have consistently exceeded the annual mean AQO from 2015 to 2019. The 1-hour mean NO₂ AQO was exceeded in the years 2015 and 2016, however no exceedances were recorded from 2017 to 2019. Monitored PM₁₀ concentrations at this automatic monitoring station have been in compliance with their respective AQOs.

MCC operates 38 passive diffusion tubes to monitor NO₂ concentrations. A review of the most recent monitoring data available indicated that there are four passive diffusion tube monitoring locations within the vicinity of the Application Site. Recent monitoring results are shown in Table 4 and the passive diffusion tube monitoring locations are illustrated in Figure 4.



Legend

- Approximate Application Site Boundary
- Passive Diffusion Tube Monitoring Locations within the vicinity of the Application Site

Figure 4: Passive Diffusion Tube Monitoring Locations within the vicinity of the Application Site. Contains OS Data © Crown Copyright and Database rights 2023.

Table 4 details the monitoring results for all passive diffusion tube monitoring locations within the vicinity of the Application Site for the most recent years available.

Table 4: Passive Diffusion Tube Monitoring Location Monitoring Data

Site ID	Site Type	Distance (km) from Application Site (approx.)	Recorded Annual Mean NO ₂ Concentration (µg/m ³)					
			2015	2016	2017	2018	2019	2020
MA71NO	Roadside	0.4	45.9	51.2	50.4	46.1	45.3	31.4
MA88NO	Kerbside	0.7	41.2	57.8	57.9	46.8	45.2	30.1
MA9ANO	Kerbside	0.7	55.9	51.9	51.1	45.8	44.9	32.5
MA99NO	Roadside	0.5	-	-	-	-	-	26.9

NOTE: Exceedances of the annual mean AQO are highlighted in **bold**

As shown in Table 4 above, exceedances of the annual mean NO₂ AQO have been recorded at three of the four passive diffusion tube monitoring locations in 2019, the most recent year of representative monitoring data. This includes the closest passive diffusion tube monitoring location, MA71NO, located 0.4 km south west of the Application Site. MA71NO exceeded the annual mean AQO every year from 2015 to 2019. Regression analysis was conducted on the passive diffusion tube monitoring locations within the vicinity of the Application Site having five years of representative monitoring data between 2015 and 2019. The regression analysis indicated that NO₂ concentrations recorded at nearby monitoring locations over the last five years have been reducing at a

statistically significant rate of 1.5 µg/m³ per year on average, indicating an improvement in air quality around the vicinity of the Application Site.

Furthermore, as outlined in LAQM.TG(22)⁶, an annual mean NO₂ concentration of 60 µg/m³ or above is often used to indicate a possible exceedance of the 1-hour mean NO₂ AQO. There has been no recorded exceedance of the 60 µg/m³ threshold from monitored NO₂ concentrations at any of the passive diffusion tube monitoring location within the vicinity of the Application Site from the most recent five years of representative monitoring data. As such, exceedance of the 1-hour mean NO₂ AQO is unlikely.

4.4 Industrial Pollution.

A desk-based review of potential industrial sources using the Environment Agency Pollution Inventory³³ did not identify any significant industrial or waste management sources of air pollution within 2.5 km of the Application Site boundary that could impact local air quality within the vicinity of the Application Site.

4.5 Defra Predicted Background Concentrations.

The Defra predicted background concentrations have been obtained from the national maps published by Defra³². These estimated concentrations are produced on a 1 km by 1 km grid basis for the whole of the UK. The Application Site falls into grid square X 385500 Y 398500 and the predicted concentrations for this grid square for NO₂, PM₁₀ and PM_{2.5} are provided in Table 5 for 2019, the most recent year with representative monitoring data, for 2023, the current year and for 2027 the confirmed opening year for the Proposed Development.

Table 5: Defra Predicted Background Concentrations

Year	Defra Predicted Background Concentration (µg/m ³)		
	NO ₂	PM ₁₀	PM _{2.5}
2019	24.4	14.8	9.7
2023	20.3	11.9	7.9
2027	18.4	11.7	7.7

As shown in Table 5, Defra predicted background concentrations are below the relevant AQOs for the pollutants NO₂, PM₁₀ and PM_{2.5} in the following years of interest: 2019, 2023 and 2027. Additionally, as per the MCC Air Quality & Planning Technical Guidance³⁰, the WHO PM_{2.5} guidelines must be considered and Defra Backgrounds concentrations of PM_{2.5} are below the WHO guideline of 10 µg/m³ in the years of interest: 2019, 2023 and 2027.

4.6 Summary of Background Data.

The baseline assessment has shown that the Application Site is not located within the GMCA AQMA and is approximately 160 m south east at the closest point.

The baseline assessment has shown that annual mean NO₂ concentrations recorded within the vicinity of the Application Site have exceeded or been close to exceeding the AQO in 2019. However, the 1-hour mean NO₂ concentrations have complied with the AQO. Similarly, PM₁₀ and PM_{2.5} concentrations have been in compliance with their respective AQOs at both automatic monitoring stations that record it, but annual mean PM_{2.5} exceeded the WHO guidelines at the Manchester Piccadilly automatic monitoring station in 2018 and 2019. However it should be noted that MAN3 is classified as an 'Urban Centre' location, which is not representative of the conditions at the Application Site, which is located approximately 0.9km to the north of MAN3.

Defra predicted background concentrations are expected to be below the annual mean AQOs and WHO guidelines for all considered pollutants at the Application Site in 2027, the confirmed opening year for the Proposed Development.

There are no industrial or waste management sources of air pollution within 2.5 km of the Application Site that could impact local air quality in the vicinity of the Application Site based on a review of the Environment Agency Pollution Inventory³³.

5. Construction Phase Assessment.

The potential for air quality impacts during the construction of the Proposed Development are assessed in this section.

5.1 Construction Phase Dust Assessment.

The risk of dust impacts is based on the potential dust emissions magnitude and the sensitivity of the area. These two factors are then combined to determine the risk of dust impacts with no mitigation applied. In the absence of any site-specific information, a higher risk category has been applied to represent a worst-case scenario.

5.1.1 Assessment Screening.

There are 'human receptors' within 350 m of the Application Site but no designated habitat sites within 50 m of the Application Site boundary or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the Application Site entrance.

The closest ecological receptor to the Application Site is "Clayton Vale," a Local Nature Reserve (LNR), located 2.4 km east from the Application Site.

Therefore, an assessment of construction dust on ecological receptors can be screened out from this assessment but an assessment of construction dust at human receptors is required.

5.1.2 Potential Dust Emission Magnitude.

The potential magnitude of dust emissions from demolition, earthworks, construction and trackout have been assessed, as identified in Table 6.

Table 6: Predicted Magnitude of Dust Emissions

Activity	Magnitude	Justification
Demolition	Small	The Application Site currently comprises of a small number of low rise brick warehouses, which will be demolished prior to construction of the Proposed Development, alongside an area of undeveloped hardstanding. Based on the site layout plans* provided by Callison RTKL, the appointed Architects for the project, it is likely that the demolition volume will be less than 25,000m ³ . Therefore, in line with IAQM guidance, the magnitude of dust emissions from demolition is anticipated to be small.
Earthworks	Medium	The Application Site currently comprises hardstanding however, the new building and structure require new foundations to be excavated. Furthermore, earthworks will be required following the demolition of the existing low-rise warehouse. The total Application Site area has been confirmed by Manchester Life Development Company 3 Limited, the client, to be 0.68 ha (6,800 m ²) from the most recent standards statement* for the Proposed Development. The soil type at the Application Site has been classed as loamy and clayey which is a potentially dusty soil type based on analysis using the application Soilscape ³⁵ . Therefore, in line with IAQM guidance, the magnitude of dust emissions from earthworks is anticipated to be medium.
Construction	Large	The proposals are for a 9-storey building comprising of up to 256 residential units and commercial floorspace at ground level. The exact construction volumes for the Application Site are not currently available, but estimates taken from the most recent building plans* show that the total volume will be greater than 100,000 m ³ . It is expected that concrete will be used as a construction material which has a high potential for dust generation. Therefore, in line with IAQM guidance, the magnitude of dust emissions from construction is anticipated to be large.
Trackout	Medium	Outward movements of HDVs associated with the Proposed Development has not been confirmed at time of writing however the proposals are likely to result in less than 10

Activity	Magnitude	Justification
		outward HDV movements in any one day. As the Application Site is predominantly hardstanding. The unpaved road length required will likely be between 50 m and 100 m in length. The soil type at the Application Site has been previously classed as loamy and clayey using the application Soilscape ³⁵ which is a potentially dusty soil type. Therefore, in line with IAQM guidance, the magnitude of dust emissions from construction is anticipated to be small.
*Phoenix Ironworks – Standards Statement RIBA Stage2_120922		

5.1.3 Sensitivity of the Study Area

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

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- In the case of PM₁₀, the local background concentration; and
- Site-specific factors, such as whether there are natural shelters, such as trees or other vegetation, to reduce the risk of wind-blown dust.

The sensitivity of the area and the factors considered are detailed in Table 7 and the construction dust band criteria (350 m, 100 m, 50 m and 20 m) are displayed in Figure 5.

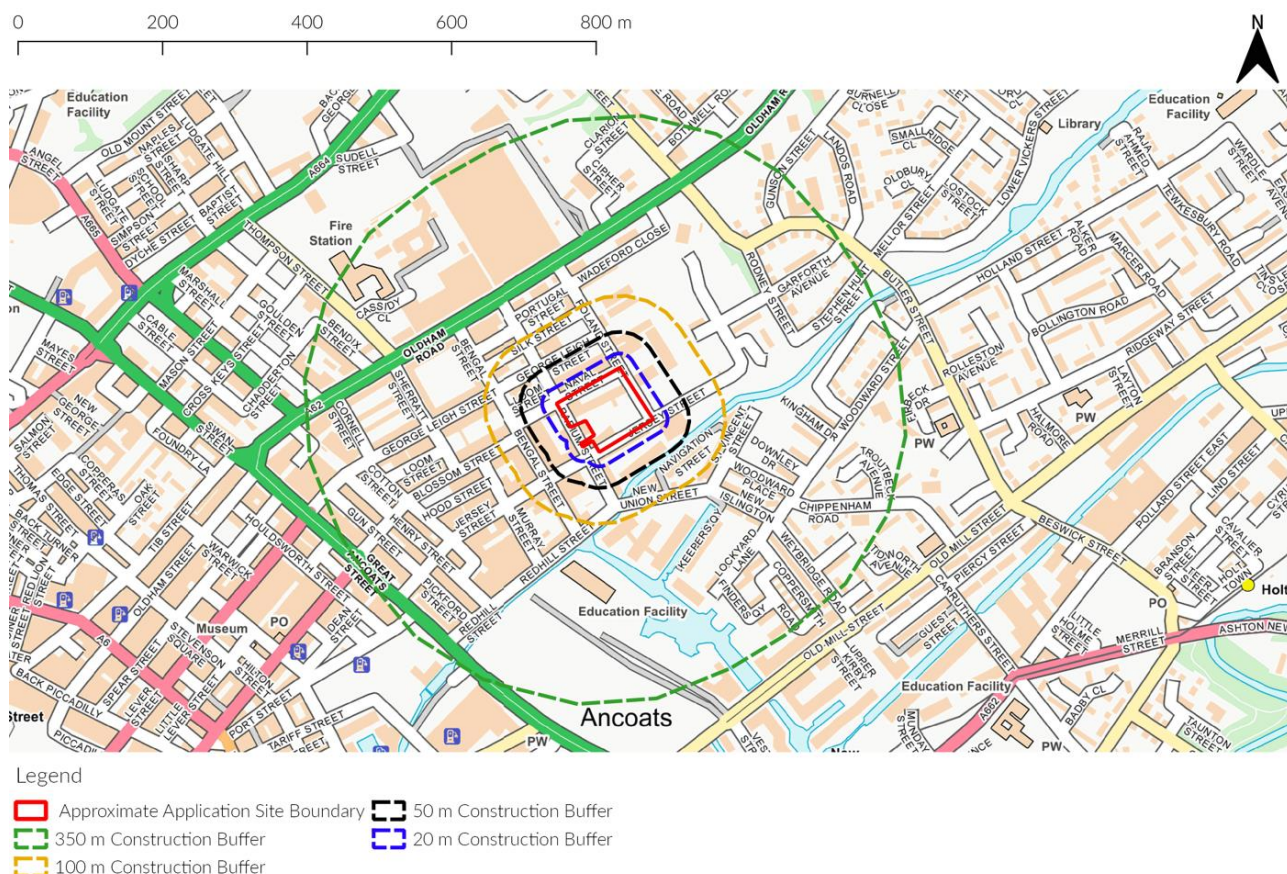


Figure 5: Construction Dust Band Criteria (350 m, 100 m, 50 m, 20 m) with respect to the Application Site. Contains OS Data © Crown Copyright and Database rights 2023.

Table 7: Sensitivity of the Area

Sensitivity Type	Factors	Sensitivity of Area	
		On – Site Activity	Trackout
Dust Soiling	There are greater than 100 existing residential properties within 50 m of the Application Site boundary which are considered to be high sensitivity receptors. Consented residential developments, Eliza Yard and Jersey Wharf are to be located within 20 m respectively from the Application Site boundary adding the potential for greater than 100 future residential properties during the construction of the Proposed Development. Therefore, the sensitivity of the area surrounding the Application Site has been classified as high sensitivity with regards to dust soiling for on-site activity. For trackout, there are greater than 100 high sensitivity receptors, such as residential apartments, along Jersey Street and Poland Street within 50 m of the routes likely to be used by construction traffic up to 200 m from the Application Site. Therefore, the sensitivity of the area surrounding the Application Site has been classified as high with respect to dust soiling for trackout.	High	High
Human Health	The Defra predicted background PM₁₀ concentration for the 1 km by 1 km grid square in which the Application Site is located is below the annual mean PM₁₀ concentration of 24 µg/m³ in the years 2019, 2023 and 2027 (the confirmed opening year for the Proposed Development) as provided in Table 4. There are greater than 100 existing residential properties within 50 m of the Application Site boundary which are considered to be high sensitivity receptors. There is the potential for greater than 100 future residential receptors within 20 m of the Application Site boundary, which are considered to be high sensitivity receptors, during the construction of the Proposed Development based on the progress of the consented Eliza Yard and Jersey Wharf residential developments. Therefore, the sensitivity of the area surrounding the Application Site has been classified as medium sensitivity with regards to human health impacts for on-site activity. For trackout there are between 10 to 100 medium sensitivity receptors such as places of work and shops along Jersey Street, Radium Street and Poland Street within 20 m of routes likely to be used by construction traffic up to 200 m from the Application Site where people could be exposed to PM₁₀ for eight hours or more in one day. However, it is likely that the nearby consented Eliza Yard and Jersey Wharf developments completed prior to the construction of the Proposed Development and as such, there is the potential for greater than 100 highly sensitive receptors to be located within 50 m of the routes to be used by construction traffic. Therefore, the sensitivity of the area surrounding the Application Site has been classified as medium with respect to human health for trackout.	Medium	Medium

5.1.4 Risk of Dust Impacts.

The outcomes of the assessments of potential magnitude of dust emissions and the sensitivity of the area are combined to determine the risk of impact. This risk is then used to inform the selection of appropriate mitigation. Table 8 details the risk of dust impacts for demolition, earthworks, construction and trackout activities.

Table 8: Summary of Potential Unmitigated Dust Risks

Potential Impact	Sensitivity – On-site Activity	Sensitivity - Trackout	Demolition	Earthworks	Construction	Trackout
Magnitude			Small	Medium	Large	Medium
Dust Soiling Impacts	High	High	Medium Risk	Medium Risk	High Risk	Medium Risk
Human Health Impacts	Medium	Medium	Low Risk	Medium Risk	Medium Risk	Low Risk

5.2 Construction Phase – Vehicular Pollutants.

The Application Site is located within close proximity to the Manchester AQMA and therefore the lower screening criterion (i.e. 100 LDV and 25 HDV) would apply.

Information on traffic movements anticipated during construction works was unavailable for the completion of the Air Quality Assessment. However, the Proposed Development quantum is not anticipated to result in a significant increase in movements above the EPUK and IAQM criterion. The duration of movements will be short-term in nature and are not considered further within the context of this assessment. Therefore, in accordance with the criterion presented within EPUK and IAQM guidance, additional road vehicle trips during the construction phase of the Proposed Development “can be considered to have insignificant effects” on air quality.

5.3 Construction Phase – Non-Road Mobile Machinery.

Exhaust emissions of NO_x and fine particulate matter (PM₁₀ and PM_{2.5}) from Non-Road Mobile Machinery (NRMM), associated with construction sites, may have a significant effect on local air quality. Typically, NRMM is and, therefore there is a potential for NRMM emissions to adversely affect local air quality as a result of the Proposed Development.

LAQM.TG(22)⁶ guidance states that, with the application of suitable control measures and site management, exhaust emissions from on-site NRMM are “unlikely to make a significant impact on local air quality. In the vast majority of cases they will not need to be quantitatively assessed”.

6. Operational Phase Assessment.

The potential for air quality impacts during the operational phase of the Proposed Development are assessed in this section.

6.1 Road Traffic Emissions Screening Assessment.

Initial road traffic data associated with the Proposed Development has been provided by Curtins, the appointed Transport Consultants for the project. It has been confirmed by Curtins that the Proposed Development will include four disabled car parking bays and one loading bay on site with parking provision for residents at the nearby Ancoats Mobility Hub (consent ref: 130627/FO/2021) where 70 spaces will be allocated. The combined allocation representing 29% parking provision for the scheme. As such, the impacts from road traffic emissions associated with the Proposed Development have been considered within the consented Ancoats Mobility Hub planning application (ref: 130627/FO/2021) and do not need to be considered as part of this application. In addition, the Mobility Hub includes an associated Delivery Hub which will minimise delivery traffic to the Application Site.

The Proposed Development does not include any on-site parking provision for residents. As part of the proposals four disabled car parking spaces and one loading bays for servicing and deliveries is to be included. The majority of trips associated with the Proposed Development are likely to be taxis and deliveries which would be minimal and occasional in nature. As such the Proposed Development does not exceed the indicative criteria set out in the EPUK and IAQM guidance²⁸ of a change of more than 100 LDV AADT or 25 HDV AADT (within an AQMA) and therefore no further assessment is required.

Furthermore, the northern part of the Application Site comprises a car park associated which will be removed as part of the Proposed Development. Therefore, there will be an overall net decrease in vehicle trips associated with the Proposed Development when compared to the existing use.

In accordance with the EPUK and IAQM guidance²⁸, the impacts on air quality from operational phase traffic generation are considered to be not significant.

6.2 Site Suitability.

This section presents a review of MCC monitoring data in the vicinity of the Application Site, for the purpose of identifying the suitability of the Application Site for residential-led use and identify any requirements for potential mitigation to be embedded into the Proposed Developments design.

As presented in section 2 in line with LAQM.TG(22)⁶, the annual mean AQO applies to the Proposed Development due to its proposed residential-led use and in line with Part F of the Building Regulations (2021)¹³. As such, this section considers the predicted annual mean pollutant concentrations at the Application Site.

6.2.1 NO₂ Concentrations.

A review of the annual mean NO₂ concentrations monitored within 1 km of the Application Site has been completed as part of the baseline review with recent monitoring results, presented in Table 4.

At the closest automatic monitoring station, Site ID: MAN3 to the Application Site there has been no exceedance of the annual mean NO₂ AQO in the last five years of representative monitoring data. MA71NO, a roadside passive diffusion tube is located approximately 430 m south of the Application Site along the A665 Great Ancoats Street, the ring road around Manchester city centre and within the GMCA AQMA where higher NO₂ concentrations are expected. Annual mean NO₂ concentrations at this passive diffusion tube monitoring location have exceeded the AQO in the last five years of available and representative monitoring data, between 2015 and 2019. The Application Site is set back approximately 340 m from the A665 and approximately 160 m from the A62 Oldham Road, which is the closest major road to the Application Site. As such, annual mean NO₂ concentrations at the Application Site are likely to be significantly lower than those recorded at MA71NO, as NO₂ concentrations will decrease with increasing distance from road.

Defra have produced an NO₂ fall off with distance calculator which estimates the annual mean NO₂ concentrations at a distance from a road using measurements made at a different distance from the same road³⁶.

2019 monitored concentrations at MA71NO have been used to predict the annual mean NO₂ concentration and fall of with distance for a location set back from the road as this is the most recent year with available and representative monitoring data.

Table 9 provides the inputs and predicted concentration at a location set back from the A665 Great Ancoats Street. It must be noted the fall off with distance calculator can only be used for predicted the concentration at a receptor up to 50 m from the kerb as at this distance, it is considered that pollutant levels approach background levels.

Table 9: Defra NO₂ Fall of With Distance Calculator

Measurement Distance from Kerb (m)	Receptor Distance from Kerb* (m)	2019 NO ₂ Defra Background Concentration (µg/m ³)	Monitored Annual Mean NO ₂ Concentration (µg/m ³)	NO ₂ Fall of With Distance Calculator Predicted Concentration (µg/m ³)
3.3	50	24.4	45.3	30.2
Notes *the receptor must be within 50m of the kerb				

Results of the NO₂ fall off with distance calculator presented in Table 9 show the predicted annual mean NO₂ concentration at 50 m from the kerb of the A665 is below the annual mean NO₂ AQO.

The Application Site is set back approximately 340 m from the A665 and approximately 245 m from the A62. Based on this, it is likely that concentrations at the Application Site will be less than those predicted at 50 m from the kerb and would likely be nearer to background levels. The roads within the vicinity of the Application Site and around Ancoats are minor roads with significantly lower road traffic flows along them.

As shown in Table 5 the Defra predicted background NO₂ concentration at the Application Site are below the annual mean NO₂ AQO in the following years of interest; 2019, 2023 and 2027 (the Proposed Development opening year).

Therefore, NO₂ concentrations in the vicinity of the Proposed Development are considered to be below the annual mean NO₂ AQO (in line with Part F of the Building Regulations (2021)¹³) and the Application Site is considered suitable for the proposed residential-led use without the need for additional mitigation measures.

6.2.2 PM₁₀ and PM_{2.5} Concentrations.

A review of the annual mean PM₁₀ and PM_{2.5} concentrations monitored within 1 km of the Application Site has been completed as part of the baseline review with recent monitoring results, presented in Table 4.

At the two automatic monitoring stations shown within Table 3 there has been no exceedance of the annual mean AQOs for PM₁₀ or PM_{2.5} within the last five years of representative monitoring data. Recorded concentrations of PM_{2.5} at Manchester Piccadilly have exceeded the WHO guideline of 10 µg/m³ in the years 2018 and 2019. However it should be noted that MAN3 is classified as an 'Urban Centre' location, which is not representative of the conditions at the Application Site, which is located approximately 0.9km to the north of MAN3.

As shown in Table 5 the Defra predicted background concentration for both PM₁₀ and PM_{2.5} concentrations at the Application Site are below the annual mean AQOs in the following years; 2019, 2023 and 2027. Additionally Defra predicted background concentration for PM_{2.5} at the Application Site are below the 2005 WHO guidelines of 10 µg/m³ outlined within the MCC Air Quality & Planning Technical Guidance³⁰.

Therefore, both PM₁₀ and PM_{2.5} concentrations in the vicinity of the Application Site are considered to be below their respective annual mean AQOs (in line with Part F of the Building Regulations (2021)¹³) and the Application Site is considered suitable for the proposed residential-led use without the need for additional mitigation measures.

6.2.3 Significance of Air Quality Impacts.

To determine the significance of predicted air quality impacts based upon a Site Suitability assessment, such as that undertaken as part of this assessment, the EPUK and IAQM guidance²⁸ states:

“Where the air quality is such that an air quality objective at the building façade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means.”

With regards to the Proposed Development, the unmitigated impact significance associated with the Proposed Development has been predicted in accordance with the stated assessment methodology. The following factors have been considered when providing justification:

- The Proposed Development will not introduce any new receptor into an area of exceedance of the annual mean NO₂ AQO based upon a review of NO₂ monitoring data and Defra predicted background concentrations within the vicinity of the Application Site;
- The Proposed Development will not introduce any new receptor exposure into an area of exceedance of the annual mean PM₁₀ AQO based upon a review of PM₁₀ monitoring data and Defra predicted background concentrations within the vicinity of the Application Site; and
- The Proposed Development will not introduce any new receptor exposure into an area of exceedance of the annual mean PM_{2.5} AQO or 2005 WHO Guidelines based upon a review of PM_{2.5} monitoring data and Defra predicted background concentrations within the vicinity of the Application Site.

As no exceedances of the considered AQO are predicted, mitigation measures are not required for the operational phase of the Proposed Development. As such, the overall effect is considered to be ‘not significant’.

7. Mitigation.

7.1 Construction Phase.

To mitigate the potential impacts during the construction phase it is recommended that mitigation measures as detailed in the IAQM guidance are implemented. These mitigation measures have been carefully selected for the Proposed Development and are based upon the dust risk categories outlined in the guidance²⁹.

It is recommended that the local authority approve a Dust Management Plan (DMP) prior to works commencing on site, and that this is implemented using an appropriately worded planning condition. Table 10 below details the measures that should be incorporated in the DMP. For general mitigation measures, which excludes those specifically targeted towards demolition, earthworks, construction and trackout (which are given towards the end of the table), high risk measures have been applied as these represent the highest risk category determined in Table 8. This approach is consistent with the IAQM guidance.

Table 10: Mitigation Measures

Issue	Mitigation Measure
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.
Dust Management Plan	Develop and implement a Dust Management Plan (DMP), which may include measures to control emissions, approved by the Local Authority. 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.
	Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.
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 check of surfaces such as street furniture, cars, window sills within 100 m of the site boundary, with cleaning to be 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 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 is a large site, before work on a phase commences.

Issue	Mitigation Measure
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 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 cover as described below.
	Cover, seed or fence stockpiles to prevent wind whipping.
Operating vehicles/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.
	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 applicable).
	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car-sharing)
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/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
	Use enclosed chutes and conveyors and covered skips.
	Minimize 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.
Demolition	Soft strip inside building before demolition.
	Ensure effective water suppression is used during demolition activities.
	Avoid explosive blasting, using appropriate manual or mechanical alternatives.
	Bag and remove any biological debris before demolition.
Earthworks	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.

Issue	Mitigation Measure
	Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
	Only remove the cover in small areas during work and not all at once.
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.
	Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
	For smaller supplies of fine powder materials, ensure bags are sealed after use and stored appropriately to prevent dust.
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 in continuous use.
	Avoid dry sweeping of large areas.
	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
	Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
	Record all inspections of haul routes and any subsequent action in a site log book.
	Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
	Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
	Access gates to be located at least 10 m from receptors where possible.

Potential dust effects during the construction phase are considered to be both temporary and short-term in nature. The impacts are determined to be 'temporary' as they will only potentially occur throughout the construction phase and 'short term' because these will only arise at particular times when certain activities and meteorological conditions combine to create the predicted level. Notwithstanding this, with the application of the above dust control and mitigation measures, it is considered that residual effect at all receptors will be 'not significant' in accordance with the IAQM guidance.

7.1.1 Construction Phase Road Traffic Emissions.

The need for further assessment of the potential air quality impacts associated with construction phase road traffic emissions, principally HDV movements, have been screened out as they are considered to have an insignificant effect on air quality and mitigation measures are not required.

7.1.2 Construction Phase NRMM Emissions.

In accordance with Part 4 of the IAQM guidance²⁹, all NRMM would need to adhere to the emissions standards for NO₂ and PM₁₀ set out for NRMM. It is therefore considered the likely effects of construction plant on local air quality would be insignificant.

7.2 Operational Phase.

7.2.1 Road Traffic Emissions.

Potential air quality impacts associated with operational phase development trips have been screened out from further assessment as 'the impacts [on air quality from operational phase movements] can be considered to have insignificant effects' in accordance with the EPUK and IAQM Guidance²⁸. Therefore, further mitigation measures are not considered to be required.

7.2.2 Baseline Site Suitability Review.

A review of MCC monitoring data in consideration of the Application Site, and mapped concentrations by Defra in the vicinity of the Application Site and the Defra NO₂ fall off with distance calculator indicated indicates no likely exceedance of the annual and 1-hour mean NO₂ or the annual, 24-hour mean PM₁₀ and annual mean PM_{2.5} air quality objectives. Additionally, there are no anticipated exceedances of the 2005 WHO Guidelines for PM_{2.5} as in line with the MCC Air Quality & Planning Technical Guidance³⁰.

As such the Application Site is considered suitable for the proposed end use without the requirement for mitigation.

8. Summary and Conclusions.

This report details the potential air quality impacts associated with the construction and operation of a proposed residential-led development at Phoenix Ironworks, Ancoats, Manchester M4 6BD (the 'Application Site').

The findings of the assessment are as follows:

- A qualitative assessment of the potential dust impacts during the construction of the Proposed Development has been undertaken. Through good practice and implementation of appropriate mitigation measures, it is expected that the release of dust would be effectively controlled and mitigated, with resulting impacts considered to be 'not significant.' All dust impacts are considered to be temporary and short-term in nature.
- Parking provision for the Proposed Development will be made available at the nearby consented Mobility Hub (ref: 130627/FO/2021) with only four disabled bays and one loading bays proposed at the Application Site. The results of the operational phase traffic screening assessment indicate that the Proposed Development will result in an overall reduction in vehicle trips when compared to the existing use. As such, air quality impacts are predicted to be insignificant, and no further assessment is required.
- It has been confirmed by Buro Happold, the appointed Engineers for the project that the Proposed Development will meet its energy demand via an all-electric approach using zero-emission technologies for heating, hot water and cooking requirements, supplemented by a roof top photovoltaic (PV) array. A back-up generator is proposed and will be tested for maintenance purposes for fewer than 18 operational hours per year, which falls below the short-term AQOs. As a result, there will be no on-site combustion under normal operation and no significant air quality issues from the energy strategy.
- A baseline site suitability review has been undertaken to assess the suitability of the Application Site for the proposed residential use. Based on monitored concentrations and Defra predicted background concentrations of NO₂, PM₁₀ and PM_{2.5}, both the short-term and long-term AQOs are not predicted to be exceeded at the Application Site. Therefore, the Application Site is considered suitable for the Proposed Development and mitigation measures such as filtration are not required.

Based on the information above, it is considered that air quality should not be viewed as a constraint to planning and the Proposed Development conforms to the principles of the NPPF and the MCC Core Strategy Development Plan.

9. Glossary of Terms.

AADT	Annual Average Daily Traffic
AQMA	Air Quality Management Area
AQO	Air Quality Objective
ASR	Annual Status Report
ASHP	Air Source Heat Pump
AURN	Automatic Urban and Rural Network
Defra	Department for Environment, Food and Rural Affairs
DMP	Dust Management Plan
EPUK	Environmental Protection UK
HDV	Heavy Duty Vehicles (> 3.5 tonnes gross vehicle weight)
GMCA	Greater Manchester Combined Authority
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LDV	Light Duty Vehicles ($\leq$ 3.5 tonnes gross vehicle weight)
$\mu\text{g}/\text{m}^3$	Micrograms per cubic metre
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides (taken to be $\text{NO}_2 + \text{NO}$)
NPPF	National Planning Policy Framework
NRMM	Non-Road Mobile Machinery
MCC	Manchester City Council
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides.
PM_{10}	Particulate matter with an aerodynamic diameter less than 10 micrometres
$\text{PM}_{2.5}$	Particulate matter with an aerodynamic diameter less than 2.5 micrometres
PPG	Planning Practice Guidance
SPG	Supplementary Planning Guidance
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal.
Trackout	The process involving the transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction / demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.

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Appendix 1 - EHO Consultation.

From: Laura Miller <laura.miller@manchester.gov.uk>
Sent: 20 January 2023 09:58
To: Harrison, Rachael
Subject: Re: Air Quality Methodology Approval - Phoenix Ironworks

Follow Up Flag: Follow up
Flag Status: Completed

You don't often get email from laura.miller@manchester.gov.uk. [Learn why this is important](#)

Good morning Rachael,

I have read through your proposals for an Air Quality Assessment and they seem acceptable to me.

Notwithstanding the outcome of the assessment best practice principles from the IAQM will still need to be applied (i.e. charging points).

Kind Regards

Laura

Laura Miller (MRes, MA, BSc(Hons))

Please note that due to working compressed hours Wednesdays are a non-working day for me, I will respond to your email when I return to the office

Environmental Protection Officer
Environmental Protection Section
Environmental Health
Neighbourhoods Directorate
Manchester City Council

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website: www.manchester.gov.uk
Telephone: 0161 234 1742
Internal: 31742

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Please consider the environment before printing an e-mail

From: Harrison, Rachael <RachaelHarrison@hoarelea.com>
Sent: 17 January 2023 10:59
To: EnvH Licensing <envh.licensing@manchester.gov.uk>
Subject: Air Quality Methodology Approval - Phoenix Ironworks

You don't often get email from rachaelharrison@hoarelea.com. [Learn why this is important](#)

To whom it may concern,

Hope you are well.

Hoare Lea have been instructed to undertake an air quality assessment for a residential led development at Phoenix Ironworks, Ancoats, Manchester. See below site boundary for reference.

The Proposed Development will consist of up to 254 residential units, ground floor commercial floorspace, ancillary amenity space and cycle parking provision within a 5 to 10 story building.



Hoare Lea propose to undertake the assessment using the following methodology:

- A baseline assessment will be undertaken using data from the Greater Manchester Combined Authority's most recent Annual Status Report (June 2021).
- Defra's predicted background pollution maps will be used to establish background concentrations in the area.
- The proposals are to form a 'car free' development with no on-site parking provision for residents. There will be No.4 disabled bays and No.1 loading bays included. Parking provision for the units will be made available at the nearby consented Mobility Hub (MCC planning ref: 130827/FO/2021) and therefore an assessment of operational phase impacts associated with road traffic emissions will be screened out.
- At this stage, the proposed energy strategy for the Proposed Development is for an all-electric approach with no on-site emissions associated with this plant. As such, an assessment of the impact of emissions from the Proposed Development's energy plant has been scoped out in line with the EPUK/IAQM document 'Land-Use Planning & Development Control: Planning for Air Quality' January 2017.
- We propose to assess the suitability of the site qualitatively (without modelling) due to the location of the Application Site being set back approximately 250m from the nearest main road (A62 Oldham Road). It is therefore likely that pollutant concentrations will be nearer to background levels. NO₂, PM₁₀ and PM_{2.5} concentrations will be determined using:

- Defra predicted background concentrations for the proposed opening year of the Proposed Development
- Monitored pollutant concentrations at MAN3 Piccadilly Gardens, an Urban Centre monitoring location
- Monitored NO₂ concentrations at MA71NO.
- Defra NO₂ fall of with distance calculator using monitored NO₂ concentrations at MA71NO
- The assessment will consider impacts during the construction phase of the development, using the IAQM 'Guidance on the Assessment of Dust from Demolition and Construction' 2014.
- The assessment will be undertaken in line with the EPUK and IAQM document 'Land-Use Planning & Development Control: Planning for Air Quality' January 2017.
- Consider the proposed development in line with MCC Air Quality & Planning Technical Guidance, August 2022

I would be grateful if you could please confirm your acceptance of the proposed methodology and provide me with any comments you may have.

Please do not hesitate to contact me if you would like to discuss anything further.

Kind Regards,

Rachael Harrison
Air Quality Consultant

Appendix 2 - Professional Experience.

Kathryn Woolley (Hoare Lea), BSc (Hons), AMIEnvSc, MIAQM

Kathryn is a Senior Associate of the Air Quality team with Hoare Lea. She is an Associate Member of the Institution of Environmental Sciences and a Full Member of the Institute of Air Quality Management.

She has a diverse portfolio of experience and has worked on a range of projects from initial site feasibility, through planning and development to construction and operation. Kathryn's expertise covers planning, and air quality, specifically in relation to residential developments, industrial fixed installations such as district heating networks. Kathryn has completed over 60 EIA in the past 9 years throughout the UK and abroad including; St Johns Masterplan in Manchester (residential led), Leicester City Football club training facility north of Leicester (sports use), 1-5 Grosvenor Place, Westminster (mixed use residential, retail and hotel site), and Chestnut Avenue in Eastleigh (residential and community use).

Christelle Escoffier (Hoare Lea) MsEng, Msc, PhD MIES MIAQM

Christelle Escoffier is a Senior Associate and Technical Lead for air quality group with Hoare Lea. She is a Full Member of the Institution of Environmental Sciences and the Institute of Air Quality Management. She graduated with a Master in Science Diploma from Paris VI University, France and holds a Doctor of Philosophy degree in Physical Oceanography, Meteorology and Environment, from the same University.

In her twenty-two years of professional experience, she has managed and delivered air quality services for a wide range of industries in the United Kingdom (UK), the United States of America (USA) and the Middle East. Her portfolio of experience comprehends projects for diverse sectors from road transport, planning and development, wastewater and waste, oil and gas to power (energy centres, landfill gas plant, power reserve facilities, gas-fired and oil-fired combustion turbine stations). Christelle has in-depth knowledge of atmospheric dispersion models. She has delivered dispersion modelling training courses to government agencies, academic, industrial and commercial professionals worldwide since 2005.

Josh Jones (Hoare Lea), Msc (Hons)

Josh is a Senior Air Quality Consultant with Hoare Lea. He has over 6 years' experience in the Air Quality field. His role includes the production and project management of air quality assessments, including monitoring and detailed dispersion modelling of dust, odour, roads and industrial emissions, in support of both planning and permit applications for a wide variety of clients across a range of sectors, including residential, industrial, energy and healthcare. He also has detailed knowledge of the LAQM process, the EIA process, co-ordination of multi-disciplinary environmental impact assessment work in support of planning applications and dispersion modelling studies.

Rachael Harrison (Hoare Lea) BSc(Hons) AMIEnvSc, AMIAQM

Rachael is an Air Quality Consultant with Hoare Lea. She is an Associate Member of both the Institution of Environmental Sciences and Institute of Air Quality Management. Rachael has experience in managing Air Quality and Odour Assessments for a wide range of UK and international clients covering sectors including; residential, commercial, energy and industrial operations. With experience in quantitative and qualitative atmospheric assessments, complex dispersion modelling, air pollutant monitoring surveys for rail, road transport and energy projects. Rachael's interests lie in the health implications attributed to poor air quality.

Bhajan Chatha (Hoare Lea), MEng (Hons), AMIEnvSc, AMIAQM

Bhajan is a Graduate Air Quality Consultant with Hoare Lea. He is a MEng Chemical Engineering Graduate from the University of Aberdeen. During his MEng, Bhajan developed his understanding of air pollution, environmental impacts and toxicology throughout multiple modules. He also studied air pollutants, air pollution control equipment, air pollution monitoring and dispersion modelling during his degree. Within air quality, Bhajan's interests lie in air pollution control equipment and human health impacts.

Bhajan has worked on projects across multiple sectors including residential, commercial and industrial sectors. He has experience preparing air quality screening reports, environmental impact assessments, and indoor air quality plans.



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