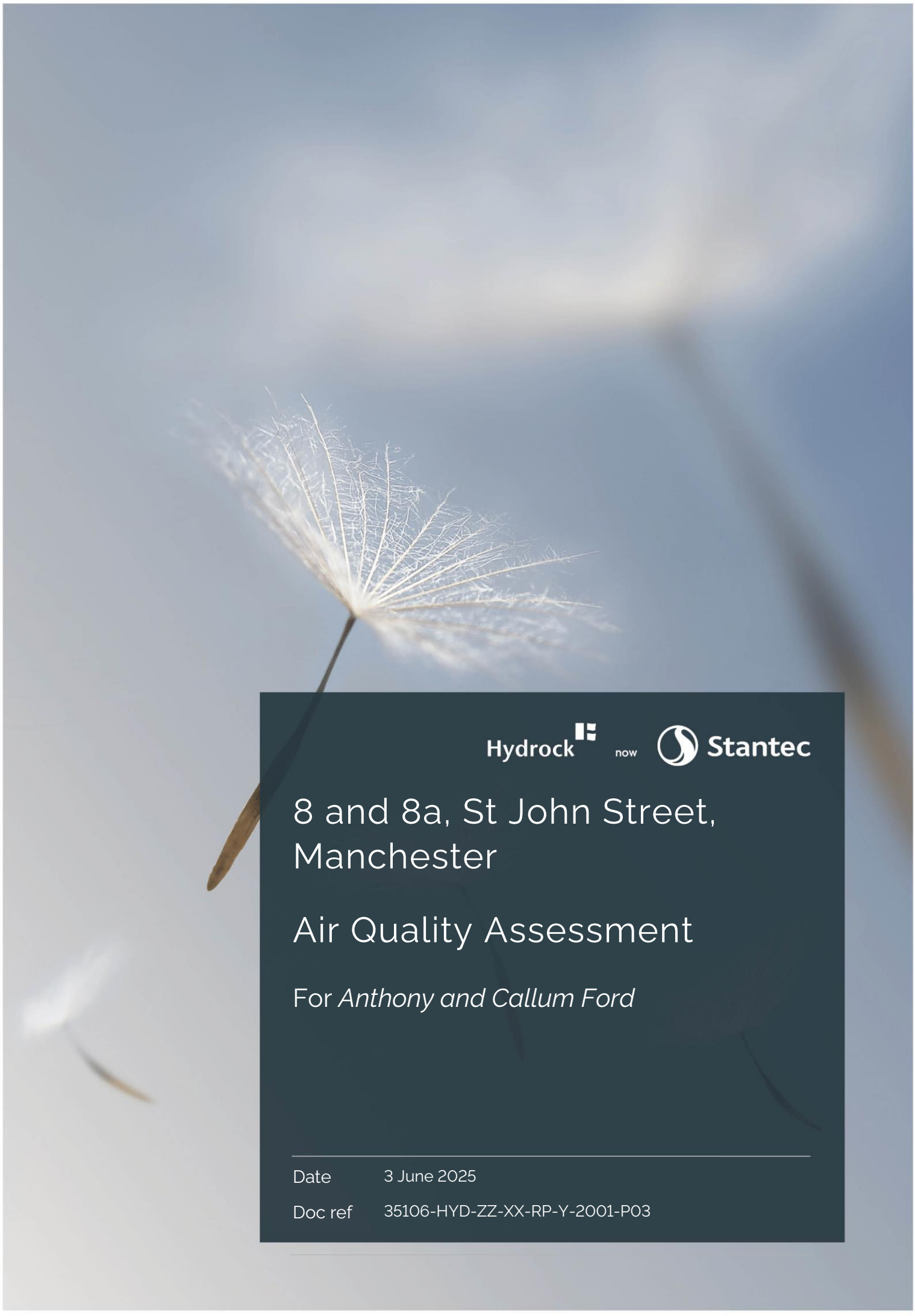

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8 and 8a, St John Street, Manchester

Air Quality Assessment

For *Anthony and Callum Ford*

Date	3 June 2025
Doc ref	35106-HYD-ZZ-XX-RP-Y-2001-P03

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Appendices

Appendix A *Windrose*

Appendix B *Construction Dust Mitigation*

1. Introduction

Hydrock have been commissioned by Anthony and Callum Ford(the 'Applicant') to prepare an Air Quality Assessment (AQA) to support the full planning application for a residential development (the 'Proposed Development') known as 8 and 8a St John Street (the 'Site'). The Site is within the administrative boundary of Manchester City Council (MCC) and is centred on the approximate National Grid Reference (NGR); x383450, y397930, as shown in Figure 1.

The Site was previously granted planning permission in 2020 under MCC planning reference: 127944/FO/2020. However, due to time elapsed, the AQA has been updated to ensure that conclusions are still valid.

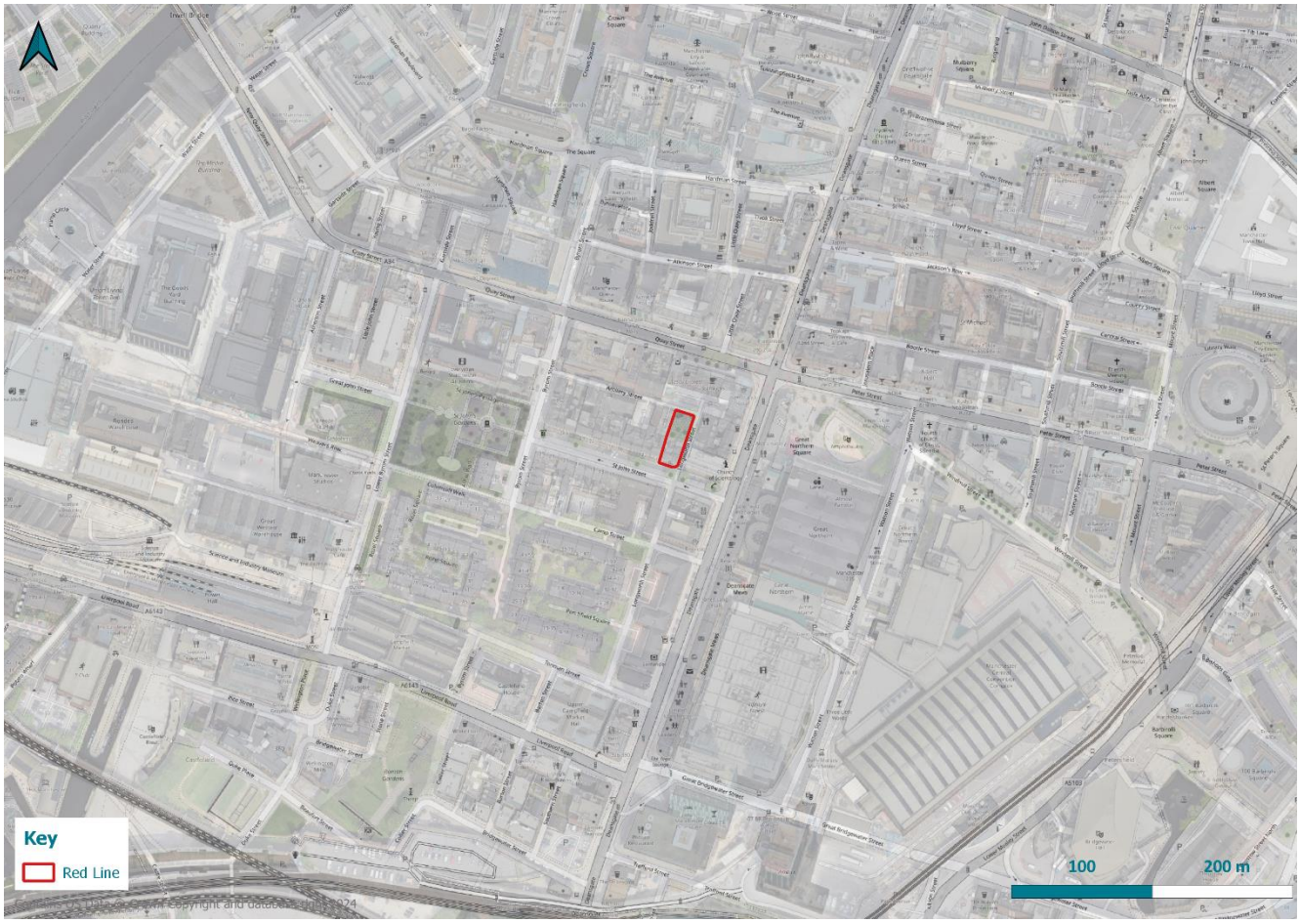

Figure 1: Site Location

The Site is located in the centre of Manchester. The closest main road links to the Site are Deansgate, located approximately 40m east of the Site and Quay Street, approximately 40m north.

The Site currently comprises two offices, with the immediate locale predominantly characterised by office and residential use. The wider locale is characterised by commercial, restaurant, retail and leisure use , particularly along Deansgate and Quay Street.

1.1 Proposed Development

The Proposed Development will comprise:

"The change of use of 8/8A St Johns from offices (B1) to residential accommodation comprising of two four-bed dwellings (C3) including the demolition of existing outriggers and the erection of a replacement rear extension; and the erection of a new four-bed residential dwelling (C3) at the rear of the existing property."

The proposed Site Plan[1] in shown below in Figure 2.

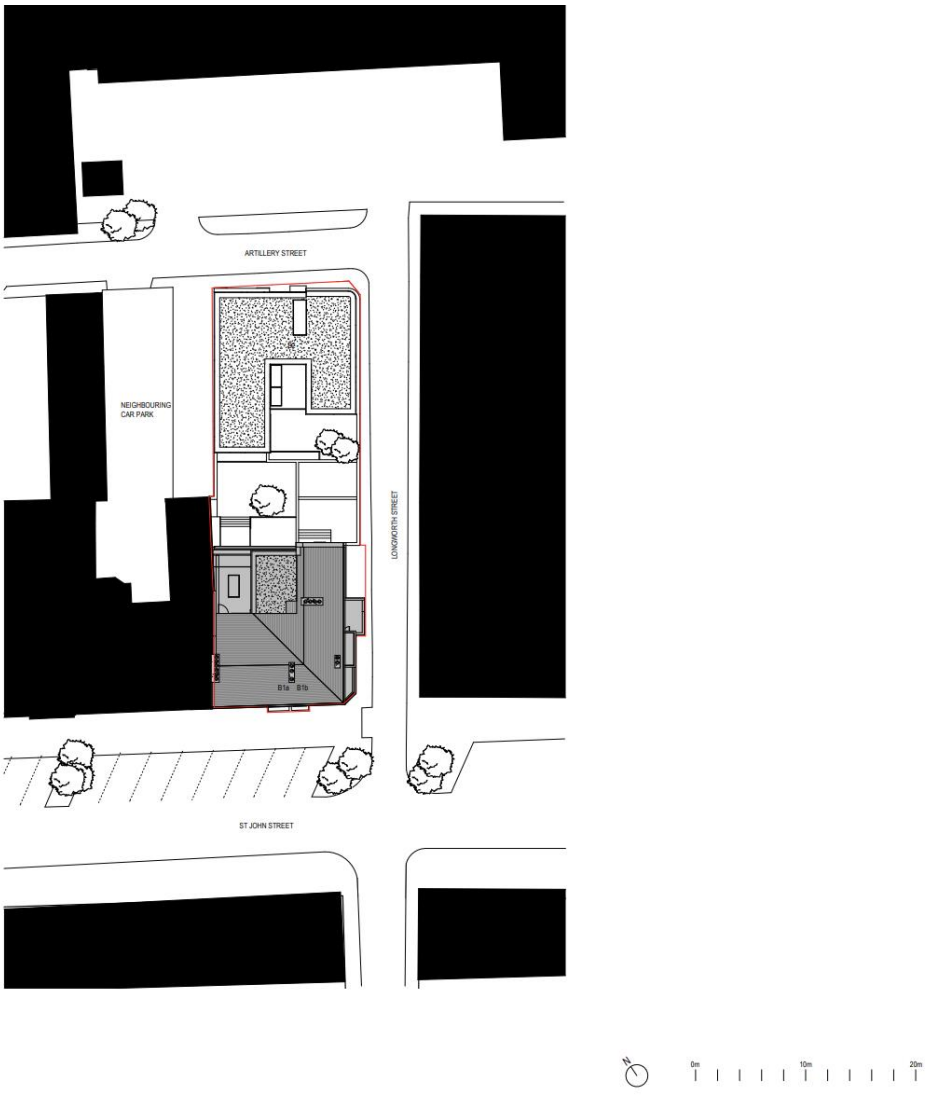

Figure 2: Ground Floor Proposed Site Plan

1.2 Purpose of Air Quality Assessment

The purpose of this assessment is to provide:

- Review of baseline air quality to assess the risk of exceedance of Air Quality Assessment Levels (AQALs) at the Site and surrounding area;

1 Proposed Site Plan, Tim Groom Architects, Drawing No, 1084-TGA-ZZ-ZZ-DR-A-95201, dated 06/01/2025

- Construction phase assessment to conclude on the requirements for mitigation to reduce the risk of impacts to negligible during this phase;
- Consideration of potential impacts during the operational phase, both in terms of vehicle and plant emissions; and,
- An assessment of the risk of exposure of future users of the Site to poor air quality and provide mitigation, where necessary.

2. Relevant Legislation and Policy

2.1 Air Quality Regulations and Objectives

There are two sets of air quality legislation which include ambient air quality thresholds for the protection of public health that apply in England, these include legally binding limit values originally set by the European Union (EU) Directive 2008/50/EC[2] on ambient air quality and cleaner air for Europe; and regulations implementing national air quality objectives as set out in the 2023 Air Quality Strategy for England (AQS)[3] which local authorities are required to work towards achieving. In Northern Ireland and Scotland, the AQS (Volume 1)[4] remains in force.

The EU (Withdrawal Agreement) Act 2020 sets out arrangement for implementing air quality limit values that are included in the EU Directive on ambient air quality and cleaner air for Europe (2008/50/EC) included in the following:

- Air Quality Regulations (SI 2010 No.1001)[5] and amended (SI 2016 No.1184)[6];
- The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (SI 2019 74)[7];
- The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (SI 2020 1313)[8] amend the Air Quality Regulations (SI 2010 No.1001) to account for EU withdrawal; and
- The AQS objectives are implemented in the Air Quality (England) Regulations 2000 (SI 2000/928)[9] and Air Quality (England) (Amendment) Regulations 2002 (SI 2002/3043)[10].

The 2023 AQS sets out the government's policies and framework for improving air quality in England with the aim of meeting the requirements of above legislation The AQS also outlines the Limit Values, Target Values, Standards, Objectives, Critical Levels and Exposure Reduction Targets for the protection of human health and the environment (collectively termed AQALs throughout this report). The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023[11] also brought forward a new target level for $PM_{2.5}$. Those relevant to this assessment is provided below, in Table 1:

Table 1: National AQALs

Pollutant	Averaging Period	AQALs	
NO_2	1 Hour Mean	200µg/m^3	Not to be exceeded more than 18 times in a year.
	Annual Mean	40µg/m^3	
PM_{10}	24 Hour Mean	50µg/m^3	Not to be exceeded more than 35 times in a year.

2 Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe Available at: https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32008L0050

3 Defra. "The Air Quality Strategy for England, Scotland, Wales and Northern Ireland". Available at: https://www.gov.uk/government/publications/the-air-quality-strategy-for-england

4 The air quality strategy for England, Scotland, Wales and Northern Ireland: Volume 1, Available at: https://www.gov.uk/government/publications/the-air-quality-strategy-for-england-scotland-wales-and-northern-ireland-volume-1

5 The National Archives. "The Air Quality Standards Regulations 2010". Available at: http://www.legislation.gov.uk/uksi/2010/1001/contents/made

6 The National Archives (2016). "The Air Quality Standards (Amendment) Regulations 2016". Available at: https://www.legislation.gov.uk/uksi/2016/1184/contents/made

7 The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (legislation.gov.uk). Available at: https://www.legislation.gov.uk/uksi/2019/74/contents/made

8 The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (legislation.gov.uk). Available at: https://www.legislation.gov.uk/uksi/2020/1313/contents/made

9 The National Archives. "The Air Quality (England) Regulations 2000". Available at: http://www.legislation.gov.uk/uksi/2000/928/contents/made

10 The National Archives. "The Air Quality (England) (Amended) Regulations 2002". Available at: http://www.legislation.gov.uk/uksi/2002/3043/contents

11 https://www.legislation.gov.uk/uksi/2023/96/contents/made

Pollutant	Averaging Period	AQALs	
	Annual Mean	40µg/m^3	
	Annual Mean	20µg/m^3	
$PM_{2.5}$	Annual Mean Concentration Target (AMCT)	10µg/m^3	To be met across England by 2040
	-	Population Exposure Reduction Target ('exposure target')	35% reduction in population exposure by 2040 (compared to a base year of 2018).

With reference to the Annual Mean Concentration Target (AMCT) for $PM_{2.5}$, it should be noted that that the date for compliance is 2040. The applicable $PM_{2.5}$ AQAL for the purposes of this assessment is therefore the current AQAL of 20µg/m^3.

Defra's Local Air Quality Management Technical Guidance 2022 (LAQM.TG(22))[12] provides guidance on where the above AQAL's should apply. This is summarised below, in Table 2.

Table 2: Summary of where AQALs should apply

Averaging Period	Objectives should apply at:	Objectives should generally NOT apply at:
Annual Mean	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes etc.	Building facades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to other locations at the building façade) or any other location where public exposure is expected to be short term.
24 Hour Mean and 8 Hour Mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties	Kerbside sites (as opposed to other locations at the building façade) or any other location where public exposure is expected to be short term.

12 Defra, "LAQM Technical Guidance (TG22)" (Department for Food, Environment and Rural Affairs (Defra), August 2022), https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf

Averaging Period	Objectives should apply at:	Objectives should generally NOT apply at:
1 Hour Mean	All locations where the annual Mean and: 24 and 8-hour mean objectives apply. Kerbside site (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railways stations etc. which are not fully enclosed, where members of the public might be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably expect to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.
15 Minute Mean	All locations where member of the public might reasonably be exposed for a period of 15 minutes	

2.2 Local Air Quality Management

Obligations under the Environment Act 2021[13] (which provides an amendment to the Environment Act 1995[14]) requires local authorities to review and assess air quality in their administrative boundaries. Where AQALs are predicted to be exceeded, the local authority must declare an Air Quality Management Area (AQMA) at sensitive receptor locations and formulate an Air Quality Action Plan (AQAP) to reduce pollution concentrations to values below AQALs.

MCC's declared AQMAs and AQAP are discussed in Section 4.1.

2.3 National Planning Policy Framework

The National Planning Policy Framework (NPPF)[15] sets out the Government's planning policy for England. It requires planning decisions for any new development to prevent new and existing development from contributing to, or being put at risk from, unacceptable levels of air pollution (paragraph 187). It also states that planning decisions should sustain and contribute towards compliance with relevant limit values or national objectives for air pollutants, taking into account the presence of AQMAs and Clean Air Zones (CAZ)s (paragraph 199), and the cumulative impacts from other sites (paragraph 198).

13 https://bills.parliament.uk/bills/2593/publications

14 Environment Agency, "Environment Act 1995" (The Environment Agency, 2002),http://www.legislation.gov.uk/ukpga/1995/25/contents.

15 Department for Levelling Up, Housing & Communities. National Planning Policy Framework (December, 2024). [online] Available: https://assets.publishing.service.gov.uk/media/675abd214cbda57cacd3476e/NPPF-December-2024.pdf

Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. Furthermore, planning decisions should ensure that any new development in AQMAs and CAZs is consistent with the local air quality action plan.

Also, to help reduce congestion and emissions, to improve air quality and public health, significant development should be focused on locations which are / can be made sustainable through limiting the need to travel (paragraph 110).

2.4 Planning Practice Guidance

Reference ID 32 (Air Quality) of the National Planning Practice Guidance (NPPG)[16], which was updated in November 2019, provides guiding principles on how planning can take account of the impact of new development on air quality. The NPPG summarises the importance of air quality in planning and the key legislation relating to it.

2.5 Local Planning Policy

The Manchester Local Plan guides development within Manchester. The Core Strategy[17] was adopted on 11th July 2012 and is the key document in the Manchester Local Plan. It sets out the long-term strategic policies for future development in Manchester. Within the Core Strategy Policy EN16 relates to air quality as follows:

> *"The Council will seek to improve the air quality within Manchester, and particularly within Air Quality Management Areas, located along Manchester's principal traffic routes and at Manchester Airport. Developers will be expected to take measures to minimise and mitigate the local impact of emissions from traffic generated by the development, as well as emissions created by the use of the development itself, including from Combined Heat and Power and biomass plant.*
>
> *When assessing the appropriateness of locations for new development the Council will consider the impacts on air quality, alongside other plan objectives. This includes cumulative impacts, particularly in Air Quality Management Areas"*

The Core Strategy goes further in stating that:

> *"Whilst this policy seeks to improve air quality within Manchester's AQMA it also applies across the District in order to assist air quality across Manchester remaining at acceptable levels. It should be noted that other policies within the Core Strategy will guide the location of development in order to reduce the need for private transport and encourage the use of decentralised and renewable energy and green infrastructure to reduce both emissions and their impact still further."*

Policy DM 1 'Development Management' also includes a reference to air quality, stating that:

> *"all development should have regard to effects on amenity, including air quality".*

The GMCA adopted their Places for Everyone Plan[18] on 21st March 2024. Places for Everyone is a long-term plan of nine Greater Manchester districts for jobs, new homes, and sustainable growth up to 2039. The following policy relates to air quality:

16 Ministry of Housing, Communities & Local Government, "Reference ID (32) Air Quality" (Ministry of Housing, Communities & Local Government, 2023), https://www.gov.uk/guidance/air-quality--3.

17 Manchester City Council, "Manchester's Local Development Framework, Core Strategy Development Plan Document, July 2012, Core Strategy | Manchester City Council

18 https://www.greatermanchester-ca.gov.uk/media/9578/places-for-everyone-joint-development-plan-document.pdf

"Policy JP-S5

Clean Air

A comprehensive range of measures will be taken to support improvements in air quality, focusing particularly on locations where people live, where children learn and play, where there are impacts on the green infrastructure network and where air quality targets are not being met, including:

1. Locating and designing development, and focusing transport investment, so as to reduce reliance on forms of transport that generate air pollution;

2. Determining planning applications in accordance with the most recent development and planning control guidance published jointly by the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK), and the most recent IAQM Guidance on the Assessment of Dust from Demolition and Construction, or relevant successor guidance, including the requirement for developers to submit construction management plans as appropriate;

3. Requiring applications for developments that could have an adverse impact on air quality to submit relevant air pollution data so that adverse impacts on air quality can be fully assessed and development only permitted where they are acceptable and/or suitable mitigation can be provided;

4. Restricting and carefully regulating developments that would generate significant point source pollution such as some types of industrial activity and energy generation;

5. Significantly expanding the network of electric vehicle charging points, both for public and private use, including as part of new developments;

6. Implementing the Clean Air Plan and associated measures;

7. Facilitating the more sustainable distribution of goods within the urban area, including through accommodating urban consolidation centres and urban distribution centres that use ultra-low-emission vehicles, and local delivery facilities to reduce repeat delivery attempts;

8. Designing streets to avoid trapping air pollution at ground level, including through the appropriate location and scale of buildings and trees;

9. Controlling traffic and parking within and around schools, early years sites and other locations that are particularly sensitive to air quality;

10. Promoting actions that help remove pollutants from the air, such as enhancing the green infrastructure network and using innovative building materials that capture air pollutants; and

11. Development should be located in areas that maximise the use of sustainable travel modes and be designed to minimise exposure to high levels of air pollution, particularly for vulnerable users."

3. Methodology

3.1 Consultation

Full details of the AQA approach were sent to MCC Environmental Health Officer (EHO) on 31st May 2024. The following response was received which included comments on the previous AQA undertaken for the Site in 2020:

> *"I have copied the previous comments below, in case they were not passed to you by the planning officer:*
>
> ***I have reviewed the Hydrock air quality report dated 1st September 2020 and can accept the content. It has been recommended that no mitigation measures are required to protect future users of the site. Has any targeted air quality monitoring taken place for N0x, PM 10 and PM 2.5 or has the data been gathered from existing data sources? Was any site monitoring considered as part of the assessment?***
>
> ***In order to comply with the acoustic criteria windows will need to be closed and ventilation and cooling will require mechanical supply. Clean air intake should be considered.***
>
> ***Mitigation measures have been recommended with regard to fugitive dust emissions during the construction phase. These can be found in appendix 1 and should be included in the contractors construction management plan***
>
> ***We will also need confirmation if there are any dedicated car parking spaces proposed as part of the development as these will require an EV charge point.***
>
> *Whilst your proposals look reasonable for the updated report the points above should also be considered too.*
>
> *Notwithstanding the outcome of the assessment best practice principles from the IAQM will still need to be applied (i.e. charging points)"*

Based on the above, the comments made for the original AQA (MCC planning reference: 127944/FO/2020) in 2020 have been addressed and included within this updated AQA.

The agreed scope of works is detailed below.

3.2 Guidance

The following guidance has been used to undertake this Air Quality Assessment:

- Defra's LAQM.TG(22)[12];
- Environmental Protection UK (EPUK) & IAQM Land-use Planning & Development Control: Planning for Air Quality[19]; and,
- The IAQM's guidance on assessing impacts from construction[20]; and
- MCC's Air Quality & Planning Technical Guidance[21].

19 EPUK & IAQM, "Land-Use Planning & Development Control: Planning for Air Quality" (Institute for Air Quality Management (IAQM), January 2017), http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf.

20 IAQM, "Assessment of Dust from Demolition and Construction, Version 2.2" ((Institute of Air Quality Management (IAQM) January 2024), https://iaqm.co.uk/guidance/.

21 Manchester City Council, Air Quality & Planning Technical Guidance, August 2022, https://www.manchester.gov.uk/downloads/download/5199/information_for_developers.

3.3 Baseline Air Quality

The baseline air quality conditions in the vicinity of the Site have been established through the compilation and review of the following sources. The baseline assessment can be found in Section 4.

- Data from the National Atmospheric Emissions Inventory (NAEI)[22], Environment Agency (EA)[23] and Defra's Pollutant Release and Transfer Register (PRTR) data[24];
- Defra's modelled background concentrations of AQS pollutants (UK-AIR)[25]. These estimates are produced using detailed modelling tools and are available as concentrations at central 1km^2 National Grid square locations across the UK. Mapped background concentrations have been obtained based upon the 2018 base year Defra update (August 2020 publication);
- Defra's predicted roadside concentrations of NO_2 produced from their pollution climate mapping (PCM)[26] model;
- Multi Agency Geographic Information for the Countryside (MAGIC)[27], which incorporates Natural England's interactive maps and;
- MCC's latest available air quality monitoring data, derived from the latest available air quality annual status report published in 2023[28]. 2023 data for the automatic monitoring locations has been sourced from Clean Air for Greater Manchester website[29].

3.4 Construction Phase Assessment

3.4.1 Dust Risk Assessment

The construction dust risk assessment is provided in Section 5 and has been undertaken in line with IAQM guidance[20]. This considers the risk of impacts during the construction phase in terms of nuisance dust, human health (PM_{10} exposure) and ecological impacts.

With regard to ecological receptors, risk assessment should be taken where high-sensitivity receptors are located within 50m of a Site boundary, or within 50m of any routes used by construction vehicles on the public highway, up to 250m from the Site entrance. The MAGIC website[27] has been reviewed to identify whether any statutory ecological sensitive receptors present in the area. *No receptors were identified within 50m of the Site boundary or expected Trackout route and therefore no further consideration of ecological receptors is required.*

Sensitive receptors were identified within 250m of the Site boundary. Based on the IAQM guidance residential dwellings, museums, car parks and car show room are indicative examples of high sensitivity receptors in relation to both dust soiling and health effects of PM_{10}. Indicative examples of medium sensitivity receptors include places of work, such as offices.

The IAQM guidance states that the potential dust emission magnitude from Demolition, Earthworks, Construction and Trackout should all be assessed individually. In addition, the sensitivity of the area to adverse dust impacts should also be defined.

22 National Atmospheric Emissions Inventory, UK Emissions Interactive Map (beis.gov.uk).

23 https://data.gov.uk/dataset/cfd94301-a2f2-48a2-9915-e477ca6d8b7e/pollution-inventory

24 UK Pollutant Release and Transfer Register (PRTR) https://prtr.defra.gov.uk/map-search

25 UK-AIR, "Background Mapping Data for Local Authorities - 2018," n.d., https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018.

26 https://uk-air.defra.gov.uk/data/gis-mapping/

27 https://magic.defra.gov.uk/MagicMap.aspx

28 Greater Manchester Combined Authority, 2023 Air Quality Annual Status Report (ASR), In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management, June 2023.

29 https://cleanairgm.com/data-hub/

The overall significance of the risk of adverse impacts during the construction phase can then be defined using the 'risk of impacts matrix' for each stage of the construction phase described above.

3.4.2 Construction Traffic Emissions

The IAQM guidance states that from experience of assessing exhaust emissions from site traffic, it is unlikely that any significant adverse impacts on local air quality would be caused and in the vast majority of cases, quantitative assessment is not needed. As such, short term effects of construction traffic emissions have not been assessed, as they are also likely to be well below the EPUK & IAQM traffic criteria outlined in Table 3.

3.5 Operational Phase Assessment

3.5.1 Scope of Impact Assessment

The scope of assessment has been determined against the EPUK and IAQM's two stage checklist criteria[19] which is also stated within the MCC Air Quality & Planning Technical Guidance[21]. The Proposed Development meets the Stage 1 Criteria for requiring an AQA and accordingly, has been considered against the relevant Stage 2 checklist criteria shown in Table 3 which identifies whether a detailed assessment of potential air quality impacts is required.

Stage 2 includes some criteria which are not directly relevant to the Proposed Development, such as those related to the realignment of roads within an AQMA, introduction of a new bus station, new road junctions and underground car parks. These have been excluded from this assessment and only relevant screening criteria have been included. The relevant checklist criteria shown in Table 3 identifies whether a detailed assessment of potential air quality impacts is required.

Table 3: EPUK & IAQM Assessment Criteria

Criteria	The Development Will:	Indicative Criteria to Proceed to a Detailed AQA:
1	Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV - cars and small vans <3.5t gross vehicle weight)	A change of LDV flows of: » more than 100 AADT within or adjacent to an AQMA » more than 500 AADT elsewhere
2	Cause a significant change in Heavy Duty (HDV) flows on local roads with relevant receptors (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: » more than 25 AADT within or adjacent to an AQMA » more than 100 AADT elsewhere.

Criteria	The Development Will:	Indicative Criteria to Proceed to a Detailed AQA:
3	Have one of more substantial combustion processes, where there is a risk of impacts at relevant receptors. NB. This includes combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping.	Typically, any combustion plant where the single or combined NOx emission rate is less than 5mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent stack in a location and at a height that provides adequate dispersion. In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situation where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emissions rates. Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable.

As the Site is located within the Greater Manchester Combined Authority (GMCA) AQMA the more stringent criteria from Table 3 apply. SK Transport Planning Ltd, have confirmed the Proposed Development is anticipated to generate vehicle trips below the threshold once dispersed and therefore detailed assessment of air quality impacts from generated traffic is not required, this has been agreed with the EHO at MCC. Further detail on trip generation can be found in Section 6.1.

However, due to the introduction of high sensitivity receptors into an AQMA, a qualitative exposure assessment has been undertaken, which was agreed with the EHO at MCC. This can be found in Section 6.2.

The Energy Report[30] for the Proposed Development highlights that Air Source Heat Pumps (ASHP), Solar Power Heating and utilising a high thermal mass structure are all options that would be suitable for the Site. Options such as biomass boilers, generators and Combined Heat and Power (CHP) plant have all be dismissed as not suitable. Therefore, the Site will not utilise combustion as part of its design and no further assessment is required.

Based on the above, it is considered that a qualitative assessment is suitable for the operational phase of the Proposed Development.

30 St John Street, Energy Statement, 3257-17.0-MEH-Energy Report, prepared by Zerum and issued 26.08.2020

4. Baseline Air Quality Conditions

4.1 Local Air Quality Management

The Greater Manchester AQMA has been declared by the GMCA of which MCC is one of the included Local Authorities. The Greater Manchester AQMA has been declared for exceedances of the annual mean NO_2 AQAL and covers "*An Area covering the 10 districts of Greater Manchester, including arterial routes, district centres, and airport*." The Proposed Development is located within the AQMA.

The GMCA have an AQAP[31] to help reduce pollutants within this designated area. Actions include, promoting sustainable transport including buses, cycling and increased Electric Vehicle charging provision. In addition to providing resources to help raise awareness and educate.

4.2 Clean Air Zone

The Proposed Development is located within the proposed Greater Manchester CAZ which is currently 'in review'. The Greater Manchester Air Quality Administration Committee are currently deciding whether to approve the Mayor of Greater Manchester proposals for an investment-led Clean Air Plan.

In relation to the GM Air Quality Plan, there are 'at-risk' and 'over the legal limit' road links in the vicinity of the Site including Great Bridgewater Street, a section of Deansgate and Quay Street[32], therefore the Proposed Development should ensure that compliance is not delayed as a result of emissions from additional traffic flows.

4.3 Local Emission Sources

The main source of air pollution in the surrounding Site locale is considered to be emissions from vehicles using the local road network, predominantly Deansgate to the east and Quay Street to the north. There are also minor roads, St John Street to the south and Byrom Street to the west.

A review of the NAEI[22], EA[23] and Defra's PRTR[24] data indicates that there are no major industrial pollution sources in the immediate vicinity of the Site that will influence local air quality.

4.4 UK-AIR Background Concentrations

Background pollutant concentrations for 2022 (the base year) and 2024 (the assessment year) are displayed in Table 4.

Table 4: Defra Mapped Background Concentrations

Grid Square (x,y)	Pollutant	AQAL (µg/m³)	Annual Mean Concentration (µg/m³)	
			2022	2024
383500, 397500	NO_2	40	22.8	21.3
	PM_{10}	40	12.9	12.7
	$PM_{2.5}$	20	8.3	8.1

31 GREATER MANCHESTER AIR QUALITY ACTION PLAN 2016–2021, https://www.bing.com/search?q=GMCA+air+quality+action+plan&FORM=AWRE

32 GM Clean Air Plan Map | MappingGM, https://mappinggm.org.uk/clean-air-plan/#os_maps_light/10/53.5069/-2.3201

The data show that annual mean background concentrations of NO_2, PM_{10} and $PM_{2.5}$ at the grid squares within which the Site is located are below the AQALs in all years.

Concentrations of all pollutants are predicted to decline incrementally each year. These reductions are principally due to the forecast effect of the roll out of cleaner vehicles and strategies to reduce emissions across all sectors.

4.5 Pollution Climate Mapping

Defra's PCM model provides estimates of roadside concentrations of annual mean NO_2, which are used in reporting compliance with limit values. The model provides projected roadside concentrations of pollutants, for the years 2018-2030 inclusive, based on a 2018 base year.

All main road links, excluding Great Bridgewater Street, surrounding the Site have been included as PCM model links as illustrated in Figure 3. The 2022 roadside annual mean NO_2 concentrations are projected to be between 22.8 µg/m^3 and 28.2µg/m^3 and therefore comply with annual mean AQAL. Roadside concentrations are predicted to decline incrementally year on year.

Figure 3: Defra Modelled PCM Roadside Annual Mean NO_2 Concentrations for 2022

4.6 Air Quality Monitoring Data

MCC monitor air quality at key locations across the City through a network of automatic (continuous) and non-automatic sites (passive diffusion tubes). The latest Annual Status Report[28] states that the monitoring network within Manchester consisted of 4 automatic monitors and 40 passive sites.

Salford City Council (SCC) also monitor at key locations across the City. The latest Annual Status Report[28] states that the monitoring network within Salford consisted of 3 automatic monitors and 49 passive sites.

4.6.1 Automatic Monitoring

Two of MCC's automatic monitoring stations and 1 of SCC automatic monitoring stations are situated within 1km of the Proposed Development.

Salford automatic monitor 'SAL001 – Regent Road' (x382579, y397716) is located approximately 900m west of the Proposed Development at a 'roadside' location. This monitor also only began monitoring on 7th September 2023 and therefore insufficient data is available. As such, this monitor has not been considered further.

The automatic monitors MAN09 (x383556, y398292) and MAN3 (x384310, y398337) are shown on Figure 4 and recent results are shown in Table 5. It should be noted that MAN09 only began monitoring on 25th September 2022 and therefore only 2023 data is available.

Table 5 – Automatic Monitoring Results

Monitor	Pollutant	AQAL	AQAL (µg/m³)	Concentration (µg/m³)				
				2019	2020	2021	2022	2023
MAN09 Bridge Street (Roadside)	NO_2	Annual Mean	40	-	-	-	-	**54**
		1-hour Mean	200 (A)	-	-	-	-	10(B)
MAN3 Manchester Piccadilly (Urban Centre/ Background)	NO_2	Annual Mean	40	36	27	30	29	-
		1-hour Mean	200 (A)	0	0	0	0	-
	PM_{10}	Annual Mean	40	20	15	15	17	-
		24-Hour Mean	50 (C)	7	1	2	4	-
	$PM_{2.5}$	Annual Mean	20	12	8	9	10	-

Notes:

(A) 200µg/m³ not to be exceeded more than 18 times/year.
(B) Number of exceedences.
(C) 50µg/m³ not to be exceeded more than 35 times/year

The data in Table 5 shows there have been exceedances of the NO_2 annual mean AQAL at automatic monitor MAN09, located on Bridge Street. 2023 is the first full year of data available and therefore, no trends in monitors concentrations can be determined at this time. The automatic monitor is situated at a 'roadside' located within the AQMA, along a main road and therefore, concentrations are expected to be higher.

There have been no exceedances of the NO_2 annual mean AQAL at automatic monitor MAN3, located at an 'urban centre/background' location. However, concentrations are higher than the UK-AIR urban background concentrations, which suggests some influence of road traffic at this location.

Concentrations at all monitoring locations are less than 60µg/m^3 and therefore in accordance with LAQM.TG22, exceedances of the short-term NO_2 AQAL are considered unlikely.

There are no exceedances of the annual mean PM_{10} or $PM_{2.5}$ AQAL at MAN3. PM is not monitored at MAN09.

2020 and 2021 data should be treated with caution due to the impacts of the COVID-19 pandemic and 'lockdowns' on local traffic flows.

4.6.2 Passive Monitoring

Monitoring locations within close proximity to the Site are shown in Figure 4 and the data presented in Table 6.

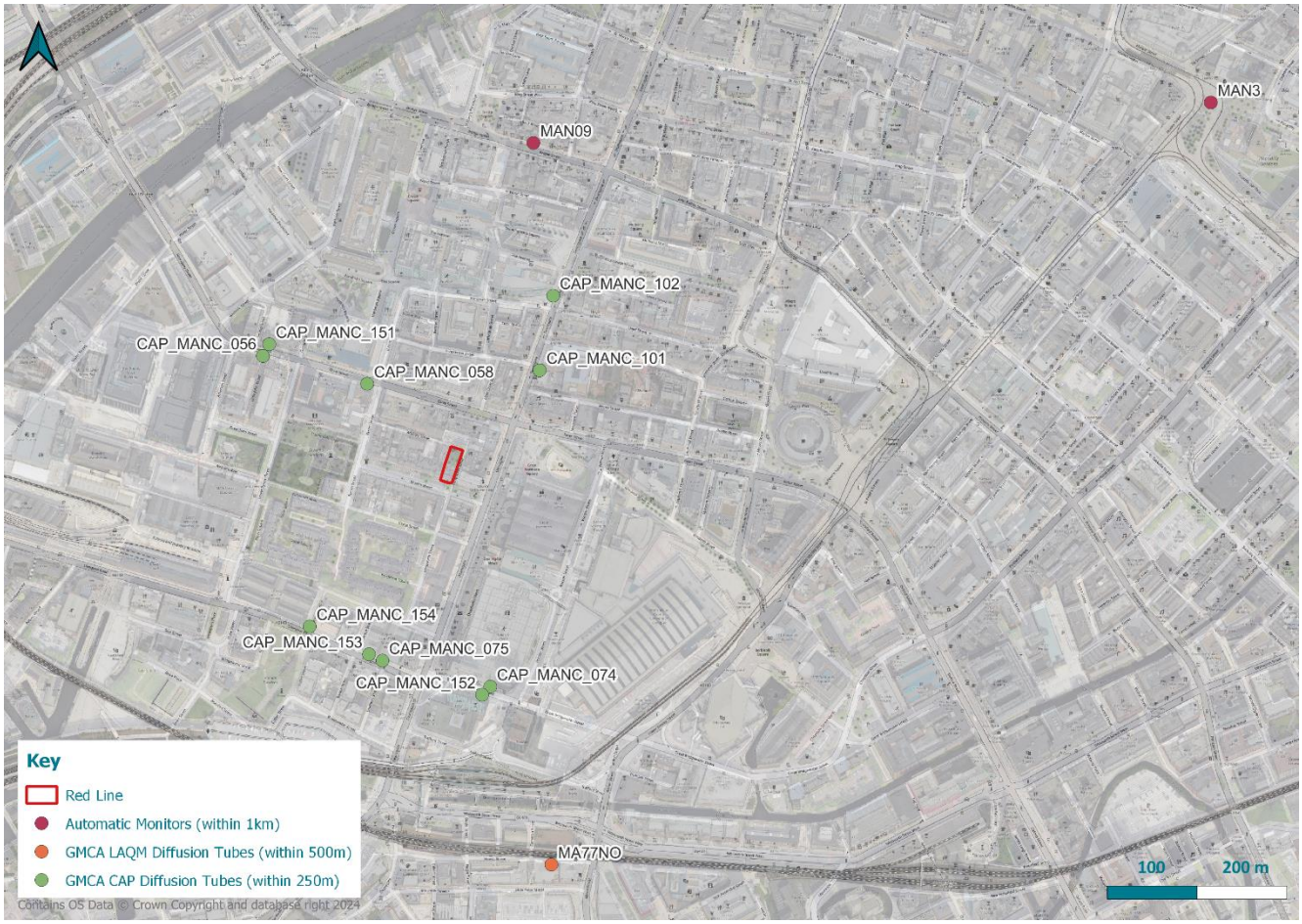

Figure 4: Local Authority Monitoring

Table 6: Passive Diffusion Tube Monitoring Concentrations

Site ID	Site Type	X (m)	Y (m)	Distance from Site (m)	Annual Mean NO_2 Concentration (µg/m^3)				
					2018	2019	2020	2021	2022
LAQM Monitoring									

Site ID	Site Type	X (m)	Y (m)	Distance from Site (m)	Annual Mean NO_2 Concentration ($\mu g/m^3$)				
					2018	2019	2020	2021	2022
MA77NO – Hewitt Street	Urban Background	383576	397489	350 N	**41.0**	**43.7**	26.9	30.8	33.1
CAP Monitoring									
CAP_MANC_056	Roadside	383255	398055	233 NW	-	**43.1**	26.5	29.8	31.0
CAP_MANC_058	Roadside	383371	398024	115 NW	-	**53.1**	27.8	31.7	31.8
CAP_MANC_074	Roadside	383508	397687	235 SE	-	**49.4**	28.1	32.3	**40.0**
CAP_MANC_075	Roadside	383388	397716	207 S	-	**50.9**	25.7	31.5	33.2
CAP_MANC_101	Roadside	383563	398039	125 N	-	-	28.8	32.5	38.1
CAP_MANC_102	Roadside	383578	398122	200 N	-	53.5	29.6	32.3	34.6
CAP_MANC_151	Roadside	383262	398068	230 NW	-	-	-	-	34.2
CAP_MANC_152	Roadside	383499	397678	240 S	-	-	-	-	39.4
CAP_MANC_153	Roadside	383373	397723	210 S	-	-	-	-	32.0
CAP_MANC_154	Roadside	383307	397754	220 S	-	-	-	-	30.6

Notes:

Exceedances of the annual mean AQAL are shown in **BOLD**.

All results taken from the 2023 ASR and Clean Air Manchester website, including level of accuracy and number of decimal places

There are no LAQM monitoring locations within the immediate vicinity of the Proposed Development. Location MA77NO is the closest LAQM monitoring location to the Site, classified as 'urban background'. Pre-pandemic concentrations show exceedances of the relevant annual mean AQAL at this location. However, results have declined since 2019. MAN77NO is located within 45m of the A5013 and within close proximity to the railway line between Manchester Piccadilly and Manchester Deansgate. This section of railway is listed within LAQM.TG(22) as a 'Rail Lines with a Heavy Traffic of Diesel Passenger Trains'. As such, it is considered that NO_2 concentrations could be influenced by this section of railway.

The data in Table 6 shows there have been exceedances of the NO_2 annual mean AQAL at CAP monitoring sites close to the Site during 2019 and 2022. The highest recorded concentration of NO_2 was monitored by

CAP location 075 which is situated along Liverpool Road, to the south of the Proposed Development. Concentrations at this monitoring location have since declined and remained below the AQAL.

CAP monitoring location 74 is the only Site which monitored an exceedance of the AQAL in 2022. CAP monitoring locations 101 and 152 also monitored within 10% of the AQAL in 2022. All three locations are located along main roads within Manchester, within the AQMA and therefore high concentrations are to be expected.

There were no recorded exceedances of an annual mean greater than 60µg/m^3, which indicates that an exceedance of the 1-hour mean objective is unlikely at these sites.

2020 and 2021 concentrations should be treated with caution as they would have been impacted by the COVID-19 pandemic and the associated decrease in traffic levels during lockdown periods in the UK.

5. Construction Phase Assessment

5.1 Overview

The construction phase of the Proposed Development will involve a number of activities that will release polluting emissions to air. Predominantly, these will be emissions of dust. As such, a qualitative construction dust risk assessment has been carried out in accordance with IAQM guidance[20]. Where detailed information was unknown, the dust emission magnitude has been estimated based on professional judgement.

Construction activities typically include:

- material export and import;
- temporary stockpiling of materials;
- groundwork for foundations and services;
- construction of buildings;
- landscaping works; and
- vehicle movements (with the potential to track-out material from site).

5.2 Potential Dust Emission Magnitude

5.2.1 Demolition

The proposals comprise a change of use of 8/8A St Johns from offices to residential accommodation including the demolition of existing outriggers. This volume to be demolished is estimated to be within the IAQM 'small category (<12,000m^3). The material to be demolished is potentially dusty.

Based on the above, the potential dust emission magnitude for earthworks is considered to be '**Small**'.

5.2.2 Earthworks

Earthworks will primarily involve excavating material, haulage, tipping and stockpiling. This may also involve levelling the Site and landscaping.

The total area of the Site (including all areas inside the red-line boundary) is estimated to be c. 530m^2 and therefore within the IAQM 'small; category, <18,000m^2.

The underlying soil texture is loamy[33] which has a medium potential for dust release due to the soil texture partly being comprised of small particles.

Based on the above, the potential dust emission magnitude for earthworks is considered to be '**Small**'.

5.2.3 Construction

The key issues when determining the potential dust emission magnitude during the construction phase include the size of the building(s)/infrastructure, method of construction, construction materials, and duration of build.

The proposals comprise the change of use from office to residential and the erection of one additional 4-bed dwelling. Therefore, an estimation of the total volume of buildings to be constructed is considered to be <12,000m^3.

33 Cranfield University, "Cranfield Soil and Agrifood Institute," n.d., http://www.landis.org.uk/soilscapes/.

It is not envisaged that concrete batching and sandblasting would be undertaken onsite.

Based on the above, the potential dust emission magnitude for construction is considered to be '**Small**'.

5.2.4 Trackout

The risk of impacts occurring during Trackout is predominantly dependent on the number of vehicles accessing the Site on a daily basis. However, vehicle size, speed and the duration of activities are also factors which are used to determine the risk of impacts.

It is expected that there would be <20 HDV outwards movements from the Site each day. No unpaved surfaces over 50m would be utilised as site traffic would be routed along the existing road network.

Based on the above, the potential dust emission magnitude during Trackout is considered to be '**Small**'.

5.2.5 Summary

Table 7 below shows a summary of the potential dust emission magnitudes from each activity, during each Phase.

Table 7: Dust Emission Magnitude Summary

Activity	Dust Emission Magnitude
Demolition	Small
Earthworks	Small
Construction	Small
Trackout	Small

5.3 Sensitivity of Area

The prevailing wind direction for the closest regionally representative meteorological measurement station to the Site, at Manchester Meteorological Station, is shown for 2023 in Appendix A. The wind rose shows that the prevailing winds are from the south.

Figure 5 shows the construction phase distance buffers (20m, 50m, 100m and 250m) around the Site boundary, as well as identified high and medium sensitivity receptor locations within these buffers.

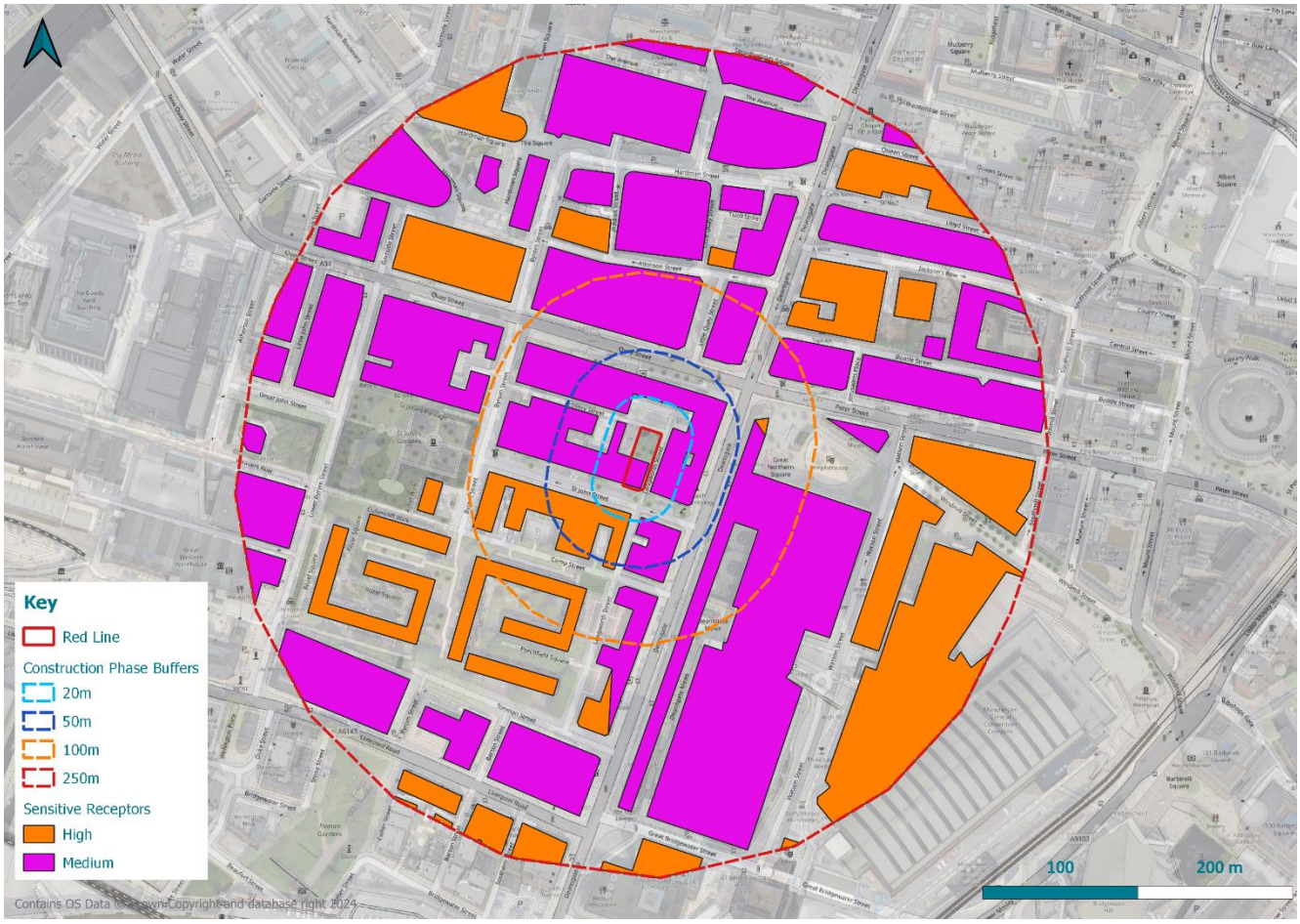

Figure 5: Construction Phase Receptors

5.3.1 Dust Soiling Impacts

Figure 5 illustrates there are considered to be >1 medium sensitivity human receptors within 20m of the Site boundary associated with offices and commercial/leisure spaces, in addition to between 1 – 10 high sensitivity receptors, located off St John Street As such, the overall sensitivity of the surrounding area to nuisance dust soiling effects during, Demolition, Earthworks and Construction, according to IAQM guidance, is defined as '**Medium'**.

With regard to Trackout, the sensitivity for sites is assessed where receptors are located within 50m from Trackout routes up to 250m from the Site. All potential Trackout routes have been taken into account. As a worst case there are between 1-10 high-sensitivity receptors within 20m of potential Trackout routes from the Site and as such, the sensitivity to dust soiling impacts from Trackout is defined as '**Medium**'.

5.3.2 Human Health Impacts

Defra mapped background predictions (Table 4) show that annual mean concentrations of PM_{10} are not likely to exceed 24µg/m^3 in the vicinity of the Site based on 2022 estimates. Similarly, 2022 monitored concentrations at the MAN3 automatic monitor were 10µg/m^3. As such, the annual mean PM_{10} concentrations likely to remain below 24µg/m^3. According to IAQM guidance, where PM_{10} concentrations are <24µg/m^3 and there are less than 100 high sensitivity receptors and medium sensitivity receptors within 20m of construction works, the overall sensitivity of the surrounding area to human health impacts is defined as '**Low**' for Demolition, Earthworks, Construction and Trackout.

5.3.3 *Summary of Area Sensitivity*

The sensitivity of the surrounding area for the potential impacts discussed above is summarised in Table 8 below.

Table 8: Sensitivity of Local Area

Potential Impact	Sensitivity of Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium	Medium
Human Health	Low	Low	Low	Low

5.4 Risk of Impacts

Using the methodology prescribed in the IAQM guidance, the overall risk of impacts can be defined by combining the sensitivity of the area with the potential dust emission magnitude of each stage of the demolition and construction phase as described above.

Table 9 provides a summary of the construction dust risk assessment. Overall, the development is considered to be **Low Risk** for nuisance dust soiling effects and a **Negligible Risk** for PM_{10} health effects.

Table 9: Risk of Adverse Impacts During Construction Phase

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

6. Operational Phase Assessment

6.1 Trip Generation

The Proposed Development is for a total of three 4-bed dwellings. The new dwelling and the larger dwelling within the existing build will each have a single car parking space, totalling two parking spaces.

The Transport Consultants for the scheme, SK Transport Planning Ltd, provided the trip generation for the Proposed Development. This is shown in Table 10 below.

Table 10: Trip Generation (AADT)

	Total (AADT)
LDVs	13
Other Goods Vehicles (OGVs)	**2**
Total Trips	**15**

As shown in the Table above, the trips are well below the EPUK & IAQM threshold for within an AQMA and therefore impacts associated with the Proposed Development can be considered negligible and effects 'not significant'.

6.2 Exposure of Future Occupants

Traffic data obtained from the Department for Transport (DfT) matrix provides the following baseline (2022) flows for the roads closest to the Proposed Development:

- Deansgate (DfT count point 7950)[34] – 9,328 AADT;
- Quay Street (DfT count point 93146)[35] – 8,260 AADT; and
- Liverpool Road (DfT count point 7922)[36] – 2, 514 AADT.

Based on Defra guidance[37] a road is considered to be 'busy' (between 10,000 – 30,000 AADT). Roads with less than 10,000 AADT are considered to be 'main' roads. The Defra guidance also states that where a site meets the following criteria, they can be reasonably defined as being in an urban background location, away from adverse impacts associated with emissions from road sources:

- 50m from any major source of NO_2 (e.g., multi-storey car parks);
- 30m from any 'very busy' road (>30,000 vehicles per day);
- 20m from a 'busy' road (10,000 – 30,000 vehicles per day);
- 10m from any 'main' road; and
- 5m from locations where vehicles may stop with their engines idling.

Based on the above, the Proposed Development is located greater than 20m from both Deansgate and Quay Street and greater than 10m from Liverpool Road. As such, in line with guidance it can be considered as an urban background location. It is therefore considered that concentrations at the Site would be comparable

34 https://roadtraffic.dft.gov.uk/manualcountpoints/7950

35 https://roadtraffic.dft.gov.uk/manualcountpoints/93146

36 https://roadtraffic.dft.gov.uk/manualcountpoints/7922

37 Defra's AEA 'Diffusion Tube for Ambient NO2 Monitoring: Practical Guidance' 2008

to the urban background monitoring location MAN 3. Concentrations during 2022 (29µg/m^3) were below the annual mean NO_2 AQAL.

Based upon the data above and the information presented within Section 4, it is considered that a detailed site suitability assessment is not required as future occupants are unlikely to be exposed to poor air quality. This approach has been agreed with the EHO at MCC.

7. Mitigation Measures

7.1 Construction Phase

The qualitative construction dust risk assessment shows that the works are **Low Risk** for adverse impacts during both the demolition phase and construction phase, in the absence of mitigation.

To effectively reduce the risk of impacts to Negligible, appropriate mitigation measures should be adopted. The IAQM's highly recommended mitigation measures for Low-Risk sites are provided at Appendix B of this report. Implementing these measures, such as within the Demolition Method Statement (DMP) and Construction Environment Management Plan (CEMP), should effectively reduce the risk of impacts to negligible during the construction phase.

7.2 Operational Phase

7.2.1 MCC AQ Planning Guidance – Best Practice

MCC Air Quality Planning Guidance[21] provides best practice measures for Electric Vehicle charging points. With regards to residential dwellings MCC recommend the following:

Residential: On-site/allocated parking: 1 EV charge point for each dwelling, if parking is provided.

MCC guidance also recommends good practice principles for design and operation. Measures include, but are not limited to:

- EV charge point;
- Travel Plan; and
- Contributions to cycle and walking infrastructure.

7.2.2 Travel Plan Measures

Measures detailed within the associated Travel Plan, such as encouraging sustainable transport and promoting car sharing, will also help to reduce potential air quality impacts.

8. Discussion and Conclusion

Hydrock were commissioned by Anthony and Callum Fordto prepare an AQA to support the planning application for the change of use from offices to residential, including the demolition of existing buildings and the erection of a new residential dwelling at the rear of the existing property at 8 and 8a St John Street, Manchester.

A qualitative construction dust risk assessment has been undertaken in line with IAQM guidance[20] for the Construction Phase. Through good practice and implementation of appropriate mitigation measures outlined, it is expected that the release of dust would be effectively controlled and mitigated, with resulting effects considered to be 'not significant'. All dust impacts are considered to be temporary and short-term in nature.

Modelled UK-AIR background concentrations, Defra PCM roadside concentrations, and local air quality monitoring data have been used to establish baseline air quality at the Site and surrounding locale. Predicted background concentrations of NO_2, PM_{10} and $PM_{2.5}$ at the Site and surrounding locale are all below the relevant AQALs. Local air quality monitoring has shown exceedances of the annual mean AQAL for NO_2 in recent years, along major roads.

By following screening criteria provided in EPUK & IAQM guidance the need for detailed assessment of potential operational phase impacts has been scoped out of this assessment, as vehicle traffic movements and the energy strategy associated with the Proposed Development are not expected to trigger the indicative criteria for further assessment, As such, it is not anticipated that any significant adverse impacts on local air quality will occur and the Proposed Development is considered to be compliant with the NPPF and relevant local planning guidance.

A simple exposure assessment has been undertaken to ensure that location of the Proposed Development is suitable for residential use. Based on the data reviewed, the Proposed Development is not expected to introduce receptors into an area of poor air quality.

From the evidence presented, and by following the guidance provided herein, the Proposed Development will comply with all relevant air quality policy. As such, air quality should not pose any significant obstacles to the planning process.

Appendix A Windrose

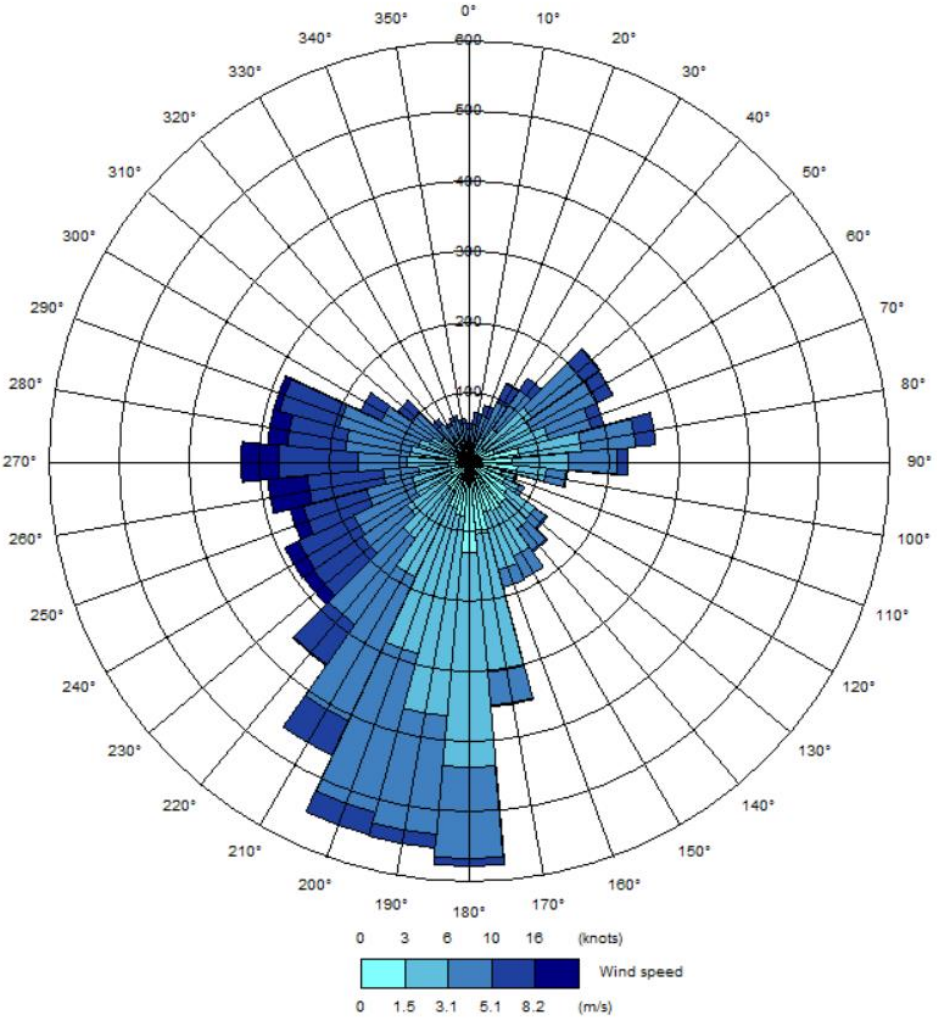

Figure 6: Wind rose Manchester Airport (2023)

Appendix B Construction Dust Mitigation

In order to mitigate the worst-case dust impacts the following general mitigation measures are highly recommended by the IAQM for Low Risk construction sites. Highly recommended mitigation measures applicable specifically to Demolition, Earthworks, Construction and Trackout are provided based on the respective risk of adverse impact.

Communications

- 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.

Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.

Monitoring

- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Avoid site runoff of water or mud.

Operating Vehicle / Machinery and Sustainable Travel

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

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.

- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

Waste Management

- No bonfires and burning of waste materials.

Measures Specific to Demolition (Low Risk)

- Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

Measures Specific to Earthworks (Low Risk)

There are no Highly Recommended measures for Low Risk Sites.

Measures Specific to Construction (Low Risk)

There are no Highly Recommended measures for Low Risk Sites.

Measures Specific to Trackout (Low Risk)

There are no Highly Recommended measures for Low Risk Sites.