

Hydrock

Viadux Phase 2

Air Quality Assessment

For Salboy Ltd

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1. Introduction

Hydrock have been commissioned by Salboy Ltd (the 'Applicant') to prepare an Air Quality Assessment (AQA) to support the full planning application and listed building consent for the residential led development (the 'Proposed Development') known as Viadux Phase 2 (the 'Site'). The Site is within the administrative boundary of Manchester City Council (MCC) and is centred on the National Grid Reference (NGR); x383575, y397625, as shown in Figure 1.

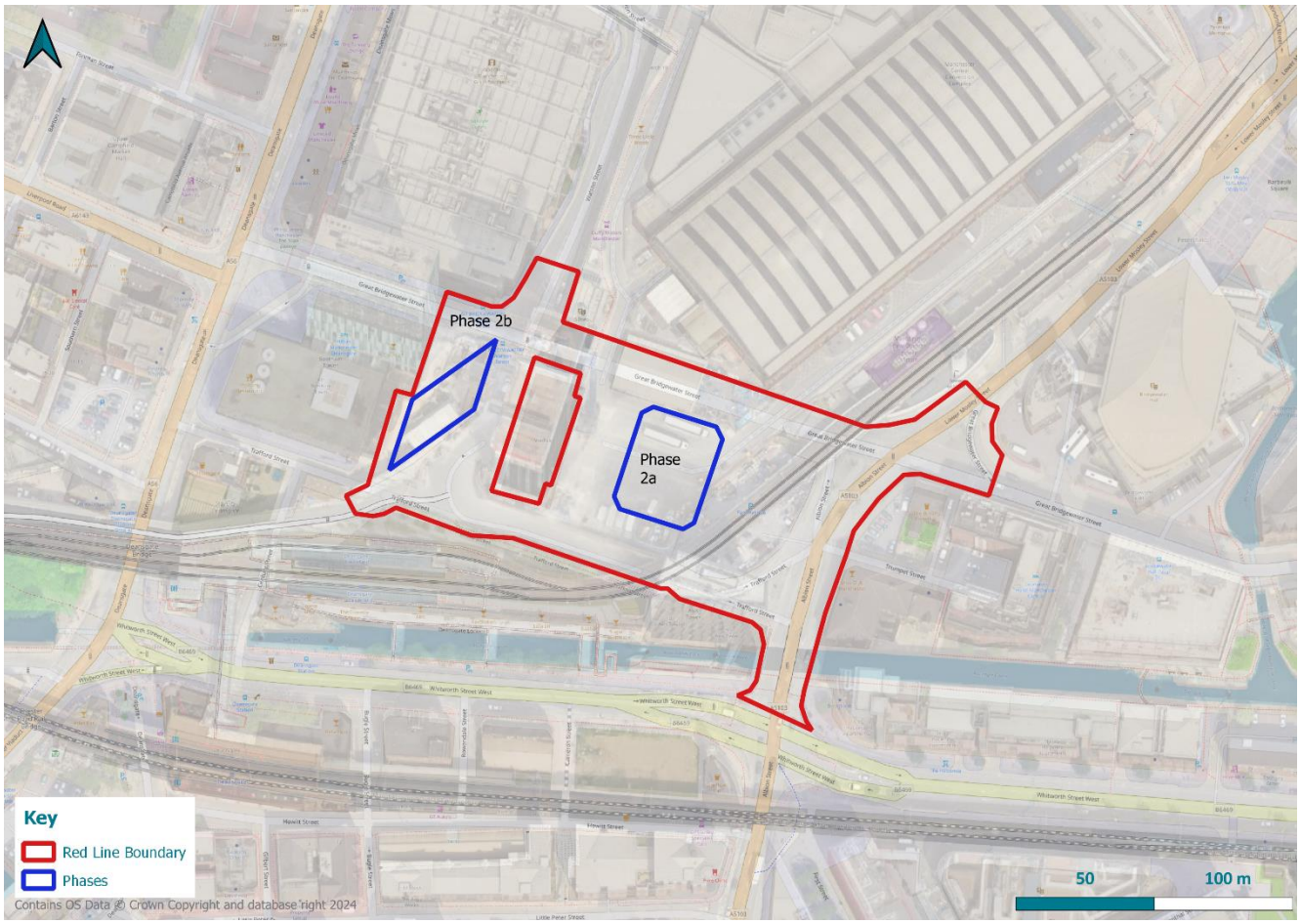


Figure 1: Site Location

The Site is located in the centre of Manchester. The closest road links to the Site are Great Bridgewater Street to the north, Whitworth Street West to the south, Albion Street to the east and Deansgate to the west. The Site is existing brownfield land located at the former Bauer Millet site. Viadux Phase 1 is located to the west of Phase 2a.

Viadux Phase 1 (MCC planning reference: 115871/FO/2017) was approved on 6th April 2017 and construction works started 28th October 2020. The building topped out in November 2023. Phase 1 comprises a residential-led high-rise development. It sits to the west of Viadux Phase 2a.

1.1 Proposed Development

The Proposed Development will comprise the redevelopment of Albion Street and Great Bridgewater Street, Manchester to provide:

> *"Plot A: a hotel with residential apartments above.*
>
> *Plot B: affordable homes.*

Together with these principal uses, the Proposed Development comprises residential amenities; secure cycle parking; public realm improvements and new green landscaping; and associated works to the public highway.

Plot 2a is located immediately east of the recently completed Phase 1 building, on land partially comprising the grade II listed Castlefield Viaduct. This plot will deliver a 76-storey mixed use tower comprising a hotel (Use Class C1) with associated bar and restaurant and residential units above comprising 1, 2 and 3 bed, and penthouse apartments (Use Class C3) with associated residential amenity spaces. Secure cycle spaces, serving this and the Phase 1 building, are provided at the ground floor level. At viaduct level, a redesigned service yard for the conference centre is enclosed by a new podium structure with residents' external amenity space above. A section of the Great Bridgewater Street bridge (deck) is removed to bring light into the street below.

Plot 2b, located at the western-most section of the Site between the viaduct and Beetham Tower, consists of a 23- storey residential building accommodating affordable 1-, 2- and 3-bed apartments (Use Class C3), secure cycle parking spaces, flexible commercial units (Use Class E) opening onto the viaduct, and public realm enhancements on Great Bridgewater Street."

It is understood that the Proposed Development will be defined as 'car free' as no parking spaces are proposed.

The Proposals form part of the wider regeneration of the Great Northern, Manchester Central and Castlefield Quay Strategic Regeneration Framework (SRF).

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;
- 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.

2. Relevant Legislation

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[1] 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)[2] which local authorities are required to work towards achieving. In Northern Ireland and Scotland, the AQS (Volume 1)[3] 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)[4] and amended (SI 2016 No.1184)[5];
- The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (SI 2019 74)[6];
- The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (SI 2020 1313)[7] 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)[8] and Air Quality (England) (Amendment) Regulations 2002 (SI 2002/3043)[9].

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[10] 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.
	Annual Mean	40µg/m^3	

1 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

2 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

3 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

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

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

6 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

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

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

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

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

Pollutant	Averaging Period	AQALs	
$PM_{2.5}$	Annual Mean	20µg/m^3	
	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))[11] 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.

11 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[12] (which provides an amendment to the Environment Act 1995[13]) 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)[14] 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 174). 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 186), and the cumulative impacts from other sites (paragraph 185).

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.

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

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

14 Department for Levelling Up, Communities and Housing, "National Planning Policy Framework," December 2023, https://www.gov.uk/guidance/national-planning-policy-framework

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 105).

2.4 Planning Practice Guidance

Reference ID 32 (Air Quality) of the National Planning Practice Guidance (NPPG)[15], which was updated in November 2023, 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[16] 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".*

15 Department for Levelling Up, Housing and Communities, "Reference ID (32) Air Quality" (Ministry of Housing, Communities & Local Government, 2023), https://www.gov.uk/government/collections/planning-practice-guidance.

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

3. Methodology

3.1 Consultation

Full details of the AQA approach were sent to MCC Environmental Health Officer in January 2024. The following response was received:

> *"I have read your email and the proposals are acceptable."*

Full details of the communication are shown in Appendix A.

3.2 Guidance

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

- Defra's LAQM.TG(22)[11];
- Environmental Protection UK (EPUK) & IAQM Land-use Planning & Development Control: Planning for Air Quality[17]; and,
- The IAQM's guidance on assessing impacts from construction[18]; and
- MCC's Air Quality & Planning Technical Guidance[19].

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)[20], Environment Agency (EA)[21] and Defra's Pollutant Release and Transfer Register (PRTR) data[22];
- Defra's modelled background concentrations of AQS pollutants (UK-AIR)[23]. 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)[24] model;
- Multi Agency Geographic Information for the Countryside (MAGIC)[25], 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[26] and Clean Air Data Hub[27]

17 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.

18 IAQM, "Guidance on the Assessment of Dust from Demolition and Construction" (Institute of Air Quality Management (IAQM)), January 2024 version 2.2), https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf.

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

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

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

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

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

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

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

26 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.

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

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[18]. 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 500m from the Site entrance. The MAGIC website[25] 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.

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[18] 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.

The Transport Assessment states the following with regards to construction phase traffic:

> *"It is difficult to be specific about the volume of vehicles arriving on site as this does vary by day and the nature of construction activity occurring. Based on other city centre schemes, it is assumed that at the busiest period we might expect up to 6 Articulated HGVS per day. During the concrete frame construction, we might expect up to 100 Concrete Mixers a day although this tends to occur once every 4 days. It is considered that the volume of HGV traffic on a typical day will be around 50 vehicles a day. The number of contractor vans arriving on site is assumed to be limited as there is no parking on site and so this would relate to specific requirements/deliveries being made. If vehicles park in other car parks in the area then they are assumed to fall under the normal committed approvals of the car park."*

Based on the above and the short-term effects of construction traffic emissions, it is considered that no further assessment is required within the Air Quality Chapter.

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[17] which is also stated within the MCC Air Quality & Planning Technical Guidance[19]. 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.
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. SLR Consulting, have confirmed the Proposed Development is anticipated to generate vehicle trips below the threshold of relevant exposure 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.

Additionally, a qualitative exposure assessment has also been agreed with the EHO at MCC, this can be found in Section 6.2.

The proposed energy strategy for the Proposed Development is an all-electric system. As such, no combustion is proposed as part of the Proposed Development 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.

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 AMQA.

The GMCA have an AQAP[28] to help reduce pollutants within this designated area. Actions include, promoting sustainable transport including buses, cycling and increased Electric Vehicle charging provision. In additional 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 and a section of Deansgate[29], 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 Great Bridgewater Street to the north, Whitworth Street West to the south, Albion Street to the east and Deansgate to the west.

There are a number of railway lines in proximity to the Site, which have been screened against Defra's LAQM.TG(22) for potential air quality impacts. The Manchester Piccadilly to Manchester Deansgate line is listed in Defra's table of 'Rail Lines with a Heavy Traffic of Diesel Passenger Trains'. However, the closest point of the track to the Site is approximately 80m south, which is well beyond the 30m screening distance. In addition, lines closer to the track are understood to be associated with the Manchester Metrolink, which is electrified. Therefore, railway emissions are not considered to be a significant source of local pollution and do not require further assessment.

A review of the NAEI[20], EA[21] and Defra's PRTR[22] 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 2019 (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)	
			2019	2024
383500, 397500	NO_2	40	26.1	21.3
	PM_{10}	40	13.5	12.7

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

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

Grid Square (x,y)	Pollutant	AQAL (µg/m³)	Annual Mean Concentration (µg/m³)	
			2019	2024
	$PM_{2.5}$	20	8.7	8.1

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 Gret Bridgewater Street, surrounding the Site have been included as PCM model links as illustrated in Figure 2. The 2019 roadside annual mean NO_2 concentrations are projected to be between 26.1 µg/m³ and 33.0µg/m³ and therefore comply with annual mean AQAL. Roadside concentrations are predicted to decline incrementally year on year.

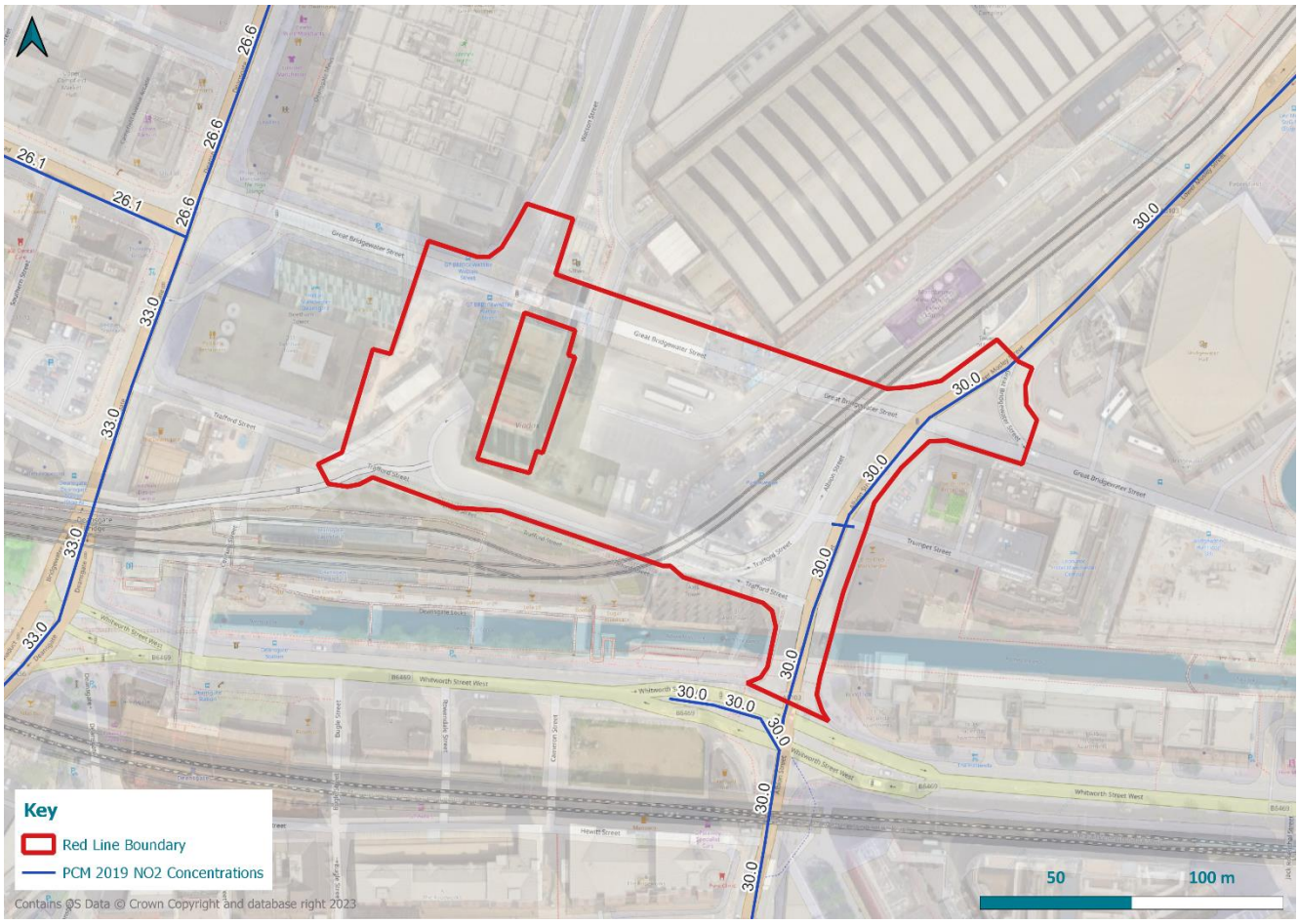


Figure 2: Defra Modelled PCM Roadside Annual Mean NO_2 Concentrations for 2019

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[26] states that the monitoring network within Manchester consisted of 4 automatic monitors and 40 passive sites. 2023 data is available from the GM Clean Air Data Hub[27] and Defra AURN website[30].

4.6.1 Automatic Monitoring

Three of MCC's automatic monitoring stations are considered representative of the Proposed Development.

Automatic Monitor 'MAN09' Bridge Street, Manchester (x383556, y398292) is situated approximately 650m north-west of the Site. However, this monitoring location only began monitoring on 25th September 2022 and therefore there is insufficient data to present and this monitoring location has not been considered further.

The automatic monitors MAN1 (x384233, y397287) and MAN3 (x384310, y398337) are shown on Figure 3 and recent results are shown in Table 5.

Table 5 – Automatic Monitoring Results

Monitor	Pollutant	AQAL	AQAL (µg/m³)	Concentration (µg/m³)					
				2018	2019	2020	2021	2022	2023
MAN1 Manchester Oxford Road (Kerbside)	NO_2	Annual Mean	40	**62**	**59**	36	**44**	**43**	**45.7**
		1-hour Mean	200 (A)	2	1	0	0	3	0
	PM_{10}	Annual Mean	40	30	26	18	18	18	16.4
		24-Hour Mean	50 (B)	15	18	5	2	8	4
MAN3 Manchester Piccadilly (Urban Centre/Background)	NO_2	Annual Mean	40	35	36	27	30	29	26.8
		1-hour Mean	200 (A)	0	0	0	0	0	0
	PM_{10}	Annual Mean	40	21	20	15	15	17	15.1
		24-Hour Mean	50 (B)	2	7	1	2	4	1
	$PM_{2.5}$	Annual Mean	20	11	12	8	9	10	8.5

Notes:

(A) 200µg/m³ not to be exceeded more than 18 times/year

(B) 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 MAN1, located on Manchester Oxford Road. Exceedances have occurred each year, with the exception of 2020, likely due to the COVID-19 pandemic. The highest recorded concentration of NO_2 was 62µg/m³ in 2018.

30 https://uk-air.defra.gov.uk/interactive-map?network=nondefraaqmon

However, the monitor is located at a 'kerbside' location along one of the busiest roads in Manchester 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' location. However, concentrations are higher than the UK-AIR urban background concentrations, which suggests some influence of road traffic at this location.

There was one recorded exceedance of an annual mean greater than 60µg/m^3 at MAN1, which indicates that an exceedance of the 1-hour mean objective is potentially likely. However, there is a general downward trend in concentrations between 2028 – 2022 and no other exceedances of 60µg/m^3 have been measured.

There are no exceedances of the annual mean PM_{10} or $PM_{2.5}$ AQAL. Since 2020 concentrations monitored have been fairly consistent.

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

Passive NO_2 diffusion tube monitoring is currently undertaken by MCC at 40 locations throughout the Council's area as part of their commitment to LAQM. Monitoring locations within close proximity to the Site are shown in Figure 3 and the data presented in Table 6.

Additional monitoring is being undertaken as part of the Clean Air Plan (CAP). Recent monitoring data for locations closest to the Site are presented in the table below.

All tubes are classified as 'roadside' apart from MA77NO which is classified as 'urban background' and MA24NO which is classified as 'kerbside'.

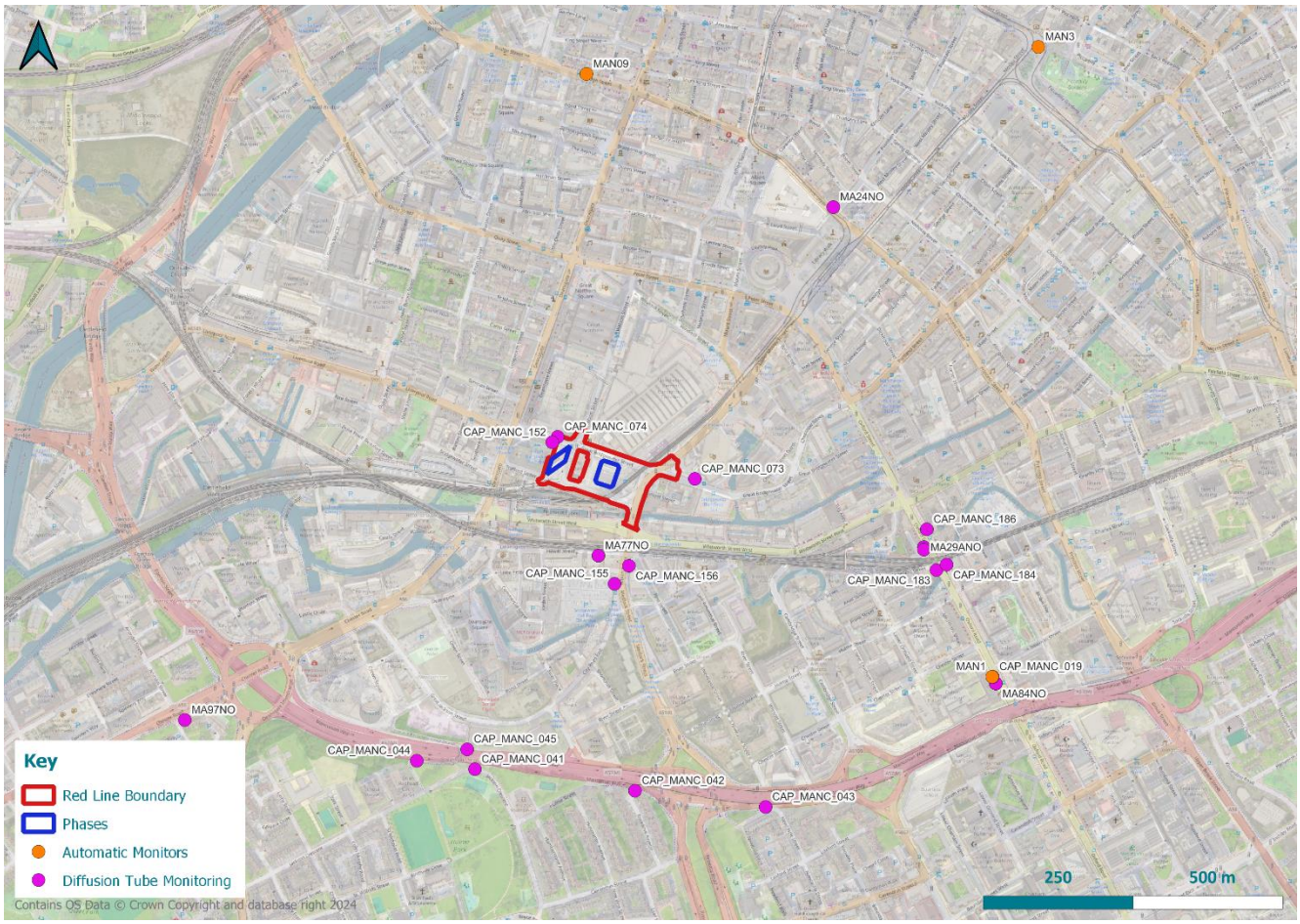


Figure 3: Local Authority Monitoring

Table 6: Passive Diffusion Tube Monitoring Concentrations

Site ID	X (m)	Y (m)	Distance from Site (km)	Annual Mean NO_2 Concentration (µg/m³)					
				2018	2019	2020	2021	2022	2023
LAQM									
MA77NO – Hewitt Street	383576	397489	0.1	**41.0**	**43.7**	26.9	30.8	33.1	31.6
MA29ANO – Oxford Street	384119	397503	0.5	**58.8**	**55.4**	39.0	**44.8**	**49.8**	**49.6**
MA24NO – Princess Street	383968	398070	0.5	**40.3**	**40.8**	26.8	31.8	32.4	29.8
MA84NO – Oxford Road	384239	397276	0.7	**54.0**	**52.0**	33.9	**40.7**	**42.6**	**41.4**
MA97BNO – Chester Road	382886	397215	0.8	-	32.3	23.4	28.4	27.8	27.4
CAP									
CAP_MANC_073 – Lingfield Terrace	383737	397617	0 E	-	**43.6**	25.8	29.3	34.8	32.9
CAP_MANC_152 – Great Bridgewater Street	383499	397678	0 W	-	-	-	-	39.4	32.5
CAP_MANC_074 – Oakleigh Avenue	383508	397687	0 W		**49.4**	28.1	32.3	**40.0**	31.3
CAP_MANC_155 - A5103 Medlock St	383603	397442	0.1 S	-	-	-	-	33.5	-
CAP_MANC_156 - A5103 Medlock St	383627	397472	0.1 S	-	-	-	-	35.7	-
CAP_MANC_042 – Mancunian Way	383637	397097	0.4 S	**41.3**	**40.1**	34.0	39.2	38.8	36.7
CAP_MANC_045 – Mancunian Way	383357	397166	0.5 S	**70.5**	**64.1**	**50.0**	**56.4**	**64.7** (A)	**50.4**
CAP_MANC_041 – Mancunian Way	383370	397133	0.5 S	**49.6**	**45.3**	36.2	**41.1**	**40.4**	39.3
CAP_MANC_044 – Mancunian Way	383273	397147	0.5 S	**62.8**	-	**43.7**	**52.2**	33.6 (A)	-
CAP_MANC_183 – Wakefield Street	384140	397465	0.5 E	-	-	-	-	**54.4**	**54.1**
CAP_MANC_185 – Wakefield Street	384119	397499	0.5 E	-	-	-	-	**49.7** (A)	**48.5**
CAP_MANC_186 – Wakefield Street	384124	397533	0.5 E	-	-	-	-	**42.4**	**43.0**

Site ID	X (m)	Y (m)	Distance from Site (km)	Annual Mean NO_2 Concentration (µg/m³)					
				2018	2019	2020	2021	2022	2023
CAP_MANC_184 – Wakefield Street	384157	397474	0.5 E	-	-	-	-	**41.1**	39.5
CAP_MANC_043 – Mancunian Way	383855	397070	0.5 S	**48.0**	**43.8**	31.2	33.2	35.7	-
CAP_MANC_019 – A34 (Oxford Road)	384234	397287	0.6 SE	-	-	-	-	**44.4**	**41.3**

Notes:

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

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

Locations CAP_MANC_073, 074 and 152 are considered most representative of the Site due to their location adjacent to the Site. Concentrations are below the annual mean in 2023. However, location 074 did monitor 40 µg/m³ during 2022 which is 100% of the AQAL for annual mean NO_2.

Location MA77NO is the LAQM closest 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 monitoring sites close to the Site during all recent years. The highest recorded concentration of NO_2 was 70.5µg/m³ CAP_MANC_045 in 2018. This location is along Mancunian Way, within the AQMA and on one of the busiest A-roads in Manchester, therefore exceedances are to be expected.

There were no recorded exceedances of an annual mean greater than 60µg/m³ in 2023 (the base year) which indicates that an exceedance of the 1-hour mean objective is unlikely at these sites. One exceedance occurred in 2022 at CAP_MANC_045, which is adjacent to Mancunian Way, over 500m south of the Site.

All locations have shown a general downward trend since 2018.

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[18]. 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

A small section of the Viaduct is required to be demolished prior to earthworks and construction. This volume to be demolished is within the IAQM 'small category (<12,000m^3).

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 greater than 110,000m^2 and therefore within the 'large' IAQM category.

The underlying soil texture is loamy and clayey soils [31] 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 '**Large**'.

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.

Plot 2a construction is due to start Q1 2026 and Plot 2b construction is due to start Q3 2028. Both plots will be complete by Q1 2032.

- .

The proposals comprise the erection of two phases of development. Phase 2A is proposed to be 76 storeys in height and Phase 2B is proposed to be 23 storeys in height. Therefore, an estimation of the total volume of

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

buildings to be constructed has been based on the pre-application information provided[32]. The total volume of buildings to be constructed was considered to be >75,000m^3.

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 '**Large**'.

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 between 20-50 HDVs 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 '**Medium**'.

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	Large
Construction	Large
Trackout	Medium

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 2019 in Appendix B. The wind rose shows that the prevailing winds are from the south.

Figure 4 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.

32 Simpson Haugh, 10448-SHP-ZZ- A-B5D9-G100-SE-AA-001, 1/12/2023 and 10448-SHP-ZZ- A-B5D9-G000-PL-XX-001, 1/12/2023

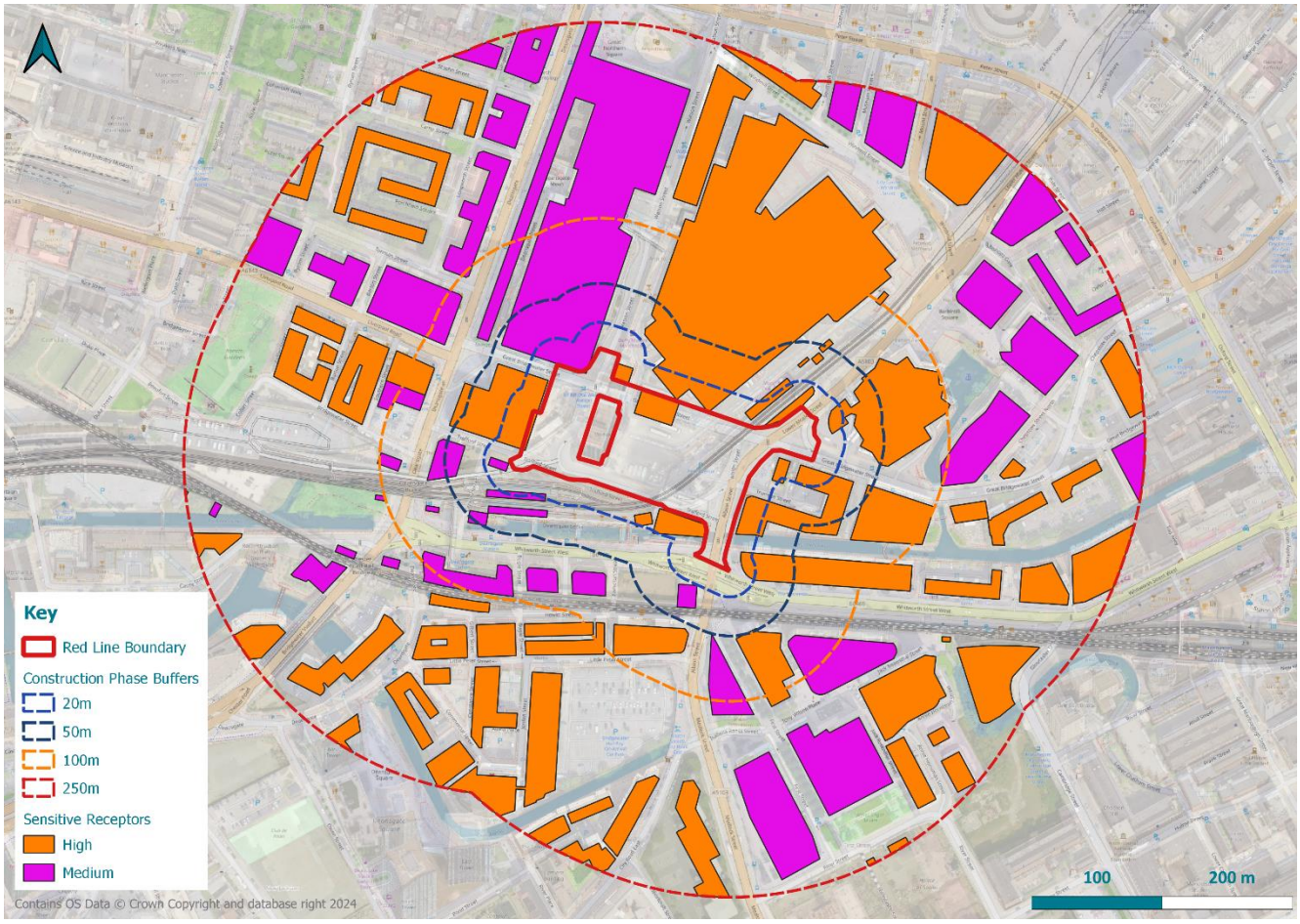


Figure 4: Construction Phase Receptors

5.3.1 Dust Soiling Impacts

Figure 4 illustrates there are considered to be >100 high sensitivity human receptors within 20m of the Site boundary associated with the residential high-rise apartment blocks the Hilton and AXIS Manchester. 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 '**High'**.

With regard to Trackout, the sensitivity for Large size sites is assessed where receptors are located within 50m from Trackout routes up to 500m from the Site. All potential Trackout routes have been taken into account. As a worst case there are more than 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 '**High**'.

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 2019 estimates. However, 2019 monitored concentrations at the MAN1 automatic monitor were 26µg/m^3 and LAQM.TG(22) does states that concentrations should take into account local sources. As such, there is potential for the annual mean PM_{10} concentrations to be greater than 24µg/m^3. According to IAQM guidance, where PM_{10} concentrations are 24-28µg/m^3 and there are more than 100 high sensitivity receptors within 20m of construction works, the overall sensitivity of the surrounding area to human health impacts is defined as '**High**' 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	High	High	High	High
Human Health	High	High	High	High

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 **High Risk** for nuisance dust soiling effects and a **High Risk** for PM_{10} health effects.

Table 9: Risk of Adverse Impacts During Construction Phase

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

Potential cumulative developments are listed in Appendix E.

6. Operational Phase Assessment

6.1 Trip Generation and Distribution

The Proposed Development is 'car-free' and there are no car parking spaces proposed. All trips generated are for servicing, access or taxis. The Transport Consultants for the scheme, SLR Consulting, provided the net trip generation for the Proposed Development. This is shown in Table 10 below.

Table 10: Trip Generation (AADT)

Viadux Phase 2A and 2B	Taxi	Servicing Trips	
Daily Trips (AADT)		HDV	LDV
Hotel Use	61	5	19
Private Residential	35	11	82
Affordable Residential	12	1	23
Total	**108**	**17**	**124**

As shown in Table 10 the net increase in trips is above the EPUK & IAQM threshold. However, the Site does have multiple access locations dependant upon the Site use (Hotel, Residential etc). As such, the trips would distribute as follows:

Table 11: Trip Distribution

Road Link	LDV and Taxi Trips (AADT)	HGV Trips (AADT)	Total Trips
Great Bridgewater Street (W of Albion Street)	58	9	**67**
Albion Street	75	9	**84**
Deansgate	51	11	**62**
Great Bridgewater Street (E of Albion Street)	49	0	**49**
Trafford Street (E)	40	9	**49**

As shown above, no road links will see an increase of greater than 100 LDVs. So, while total trips exceed the EPUK & IAQM criteria, due to the multiple access points, no one road will see an increase above the threshold criteria.

It is also noted that, site uses along Great Bridgewater Street and the other immediately surrounding road links, comprise of car parks, offices, hotels and commercial uses, including NCP, Odeon and Hilton Hotel, specifically. None of which are considered to be of high sensitivity in terms of long-term air quality impacts. Indeed, the residential aspects associated with Phase 1 and Phase 2 of the Viadux scheme are considered to be located at such a distance (due to the elevation of the site above the road link) that any impacts would be considered negligible. As such, MCC Environmental Health confirmed that trips are considered to be 'not significant' and detailed modelling of impacts is not required as trips would be below the threshold at locations of relevant exposure.

6.2 Exposure of Future Occupants

Traffic data provided by the transport consultants, SLR Consulting, state the following baseline (2023) flows along the roads closest to the proposals:

- Great Bridgewater Street – 6,255 AADT;
- Deansgate – 12,195 AADT; and
- Albion Street – 12,300 AADT.

It is also noted that the transport consultants stated the following with regards to traffic growth within MCC:

It is also noted that the Transport Consultants, SLR Consulting, have produced a Technical Memorandum with regards traffic growth within MCC. The Technical Memorandum can be viewed in Appendix C. The Technical Memorandum concludes:

> *"[…] over 20 years traffic has been falling by around 10,000 vehicles coming into the City Centre. For this reason, it is not appropriate to apply future year growth to traffic flows within the city centre and that it is reasonable to assume that existing flows will not increase in the future."*

Based on Defra guidance[33] 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 Albion Street. The building line associated with Phase 2A and 2B is located within 10m of Great Bridgewater Street. However, given the elevated nature of the Site, in comparison to Great Bridgewater Street, any residential dwellings (which start at floor 2) are considered to be at a greater distance of 10m from the road kerbside. As such, in line with guidance it can be considered as an urban background location. As such, it is considered that concentrations at the Site would be comparable to the urban background monitoring location MA77NO, located off Hewitt Street. Concentrations during 2023 (31.6 µg/m^3) were below the annual mean NO_2 AQAL.

Additionally, the Air Quality Chapter of the ES submitted for Phase 1[34] of the Viadux development, concluded that the maximum annual mean NO_2 concentration across the Site was 34.6µg/m^3.

Based upon the data above and the information presented within Section 4, it is considered that a detailed site suitability assessment is not required. This approach has been agreed with the EHO at MCC.

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

34 Former Bauer Millett Site, Albion Street, Manchester Environmental Statement Volume 1 March 2017, MCC Planning Application number: 115872/LO/2017

7. Damage Costs

While operational phase impacts have been screened out in line with the EPUK & IAQM guidance and MCC guidance, due to the size of the Proposed Development, a Damage Cost Calculation has been undertaken, otherwise known as an Emissions Mitigation Assessment.

Increases in pollutant emissions (NO_X and $PM_{2.5}$) caused by the development over a 5-year appraisal period are estimated, using development traffic data, Defra's EFT (v.12) and Damage Cost Appraisal Toolkit.

The latest version of Defra's Air Quality Appraisal: Damage Costs Toolkit[35] (last updated March 2023) is then used to apply the 'damage costs', which are a set of impact values, defined per tonne of emission by pollutant, to these development emissions. The result is an indicative value to be spent on mitigation measures to reduce incremental worsening in local ambient air quality from new development.

The central base damage costs for 'Road Transport Urban Large' are provided below in £/tonne:

NO_x: £11,013

$PM_{2.5}$: £78,835

The damage cost calculation applies inflationary uplift factors of 2% cumulatively per annum to the central damage cost from Defra's damage cost valuations (2022) and assumes a discount rate of 1.5%.

The calculation used in this assessment is summarised in the below general formula:

$$EFT\ output\ \times\ Damage\ costs\ \times\ 5\ years\ =\ 5\ year\ health\ exposure\ cost\ value\ (in\ £)$$

It is noted that emissions were calculated by assuming a reduction in emissions, in line with the EFT, for each year in the appraisal. This was accounted for as an input into Defra's EFT.

Table 12, below, shows the inputs used for the damage cost calculation for Viadux Phase 2 (Blocks A, B as worst-case):

Table 12 – Damage Cost Inputs

Input	Value	Unit	Source / Explanation
Trip Length	10	km	EPUK& IAQM guidance & National Travel Survey UK Average.
Traffic Flow	249 (7% HDV)	AADT	Worst-case scheme generated traffic, provided by SLR Consulting
EFT Road Type	Urban (Not London)	-	-
Appraisal Years	2030 - 2034 (5 years)	-	Reductions in line with EFT as forecast by Defra from the five years following proposed first occupation of Back A. It has been assumed as a worst-case that all Blocks are occupied from 2030
Average Speed	48	kph	Average speed of surrounding road links

[35] DEFRA, "Air Quality Damage Cost Appraisal Toolkit," March 2021, https://www.gov.uk/government/publications/assess-the-impact-of-air-quality.

Using the above inputs, the emissions caused by the development traffic are calculated for the years 2030 to 2034, which are the five years following the anticipated opening of the Proposed Development (i.e., first occupation of Block A). As a worst-case it has been assumed that all Blocks will be operational from 2030. The emissions per annum are shown below in Table 13.

Table 13 – Increase in Emissions (tonnes)

Pollutant	Development Emissions (tonnes/year)				
	2030	2031	2032	2033	2034
NO_x	0.094	0.082	0.071	0.064	0.058
$PM_{2.5}$	0.019	0.019	0.019	0.019	0.018

These emissions are then converted to the cost of 'damage' to human health using the Air Quality Appraisal Damage Costs Toolkit. For this the price base year of 2024 was used. The pollutant sector used was 'Road Transport Urban Large'. The results of this are shown below in Table 14:

Table 14 – Calculated Damage Cost Outputs

Pollutant	Low Sensitivity Present Value	Central Present Value	High Sensitivity Present Value
NOx	£708	£4,159	£15,921
$PM_{2.5}$	£2,968	£7,485	£21,447
TOTAL	£3,676	£11,645	£37,367

Based on the outputs in Table 14, the total emissions 'damage costs' (sum of NO_x and $PM_{2.5}$) = **£11,645**, which is the indicative value of a package of air quality mitigation measures to offset the real-world impact of emissions from the Proposed Development.

These damage costs do not take account of the effects of the Travel Plan prepared by SLR Consulting. The Travel Plan measures will have air quality benefits where they promote and encourage the use of sustainable transport and lead to a reduction in the number of polluting trips that the development generates.

8. Mitigation Measures

8.1 Construction Phase

The qualitative construction dust risk assessment shows that the works are **High 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 High-Risk sites are provided at Appendix D 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.

8.2 Operational Phase

8.2.1 Energy Strategy

There are no substantial combustions sources associated with the Proposed Development or situated within the locale, as such impacts from these sources are not discussed further. The proposed energy strategy for the Proposed Development is 100% electrical.

8.2.2 MCC AQ Planning Guidance – Best Practice

MCC Air Quality Planning Guidance[19] provides best practice measures for Electric Vehicle charging points. However, it is understood that the Proposed Development is 'car free' and no allocated parking spaces are to be provided.

8.2.3 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.

9. Discussion and Conclusion

Hydrock were commissioned by Salboy Ltd to prepare an AQA to support the planning application for the demolition of existing buildings and the construction of a residential led development known as Viadux Phase 2.

A qualitative construction dust risk assessment has been undertaken in line with IAQM guidance[18] 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.

An operational phase assessment has been undertaken by following screening criteria provided in EPUK & IAQM guidance. Vehicle traffic movements generated by the Proposed Development disperse to below the relevant EPUK & IAQM guidance criteria and 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 Application Site 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.

The proposed energy strategy for the Proposed Development is 100% electric. This strategy is beneficial in terms of air quality as it does not introduce any new combustion sources.

The total emission 'damage costs' of the Proposed Development (sum of NO_x and $PM_{2.5}$ emissions) have been calculated as based on the site generated traffic. Using Defra's Air Quality Appraisal Damage Costs Toolkit, the emissions generated have been applied to the damage costs spreadsheet resulting in the sums of £11,645. This is the indicative value of a package of air quality mitigation measures to offset the real-world impact of emissions from the Site.

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 Consultation

Hi ,

I have read your email and the proposals are acceptable.

I will look forward to seeing the report in due course.

Kind Regards

(MRes, MA, BSc(Hons))

Environmental Protection Officer

Environmental Protection Section

Environmental Health

Neighbourhoods Directorate

Manchester City Council

email:

website: www.manchester.gov.uk

Telephone:

Internal:

From: Lauren Massingham <LaurenMassingham@hydrock.com>

Sent: 19 January 2024 07:48

To: >

Cc:

Subject: RE: [Hydrock: 28401-AAIQ] Viadux Phase 2 - Scope of Assessment - Air Quality

Good morning

I appreciate that in Rebeccas email below she stated a 5 days for a response to my query. However, this project is quite time sensitive and if possible I would really appreciate a response to my proposed scope below.

If you require any additional information, please let me know. I am about most of today.

Thank you,

Kind regards,

MIAQM MIEnvSc BSc (Hons)

Principal Air Quality ConsultantMake flexibility work: Hydrock promotes flexible working; if you get an email from me outside normal hours it is because I am sending it at a time convenient to me. I do not expect you to read or reply until normal office hours.

Hydrock

Northern Assurance Buildings, 9-21 Princess Street, Albert Square, Manchester M2 4DN

Direct:

Tel:

From:

Sent: 18 January 2024 10:58

To: >

Cc: >

Subject: Re: [Hydrock: 28401-AAIQ] Viadux Phase 2 - Scope of Assessment - Air Quality

Dear ,

I've forwarded this to my colleague Laura as it's her area, and she will respond within the next 5 working days, but in future, so that your requests/enquiries are not missed and are properly recorded, please visit our website and register your enquiry via the webform. It should then be a simpler process for you to make further enquiries after this time. If you are unable to register please email your enquiry to contact@manchester.gov.uk. Many thanks.

Regards,

Environmental Protection Officer

Environmental Protection

Environmental Health

The Neighbourhoods Directorate

Manchester City Council

Tel:

Internal:

Email:

Website: www.manchester.gov.uk

From:

Sent: 18 January 2024 10:05

To:

Subject: [Hydrock: 28401-AAIQ] Viadux Phase 2 - Scope of Assessment - Air Quality

Good morning

Hydrock have been instructed to undertake the Air Quality Assessment for Phase 2 of the Viadux development in Manchester. I have now been provided with some traffic flows ad trip generation and wondered if you could please confirm that you are happy with the below approach?

The Site sits adjacent to the current in construction Phase 1 development and comprises two residential blocks and a retail unit.

As usual I would undertake a review of the relevant legislation, including MCC AQ guidance, as well as a baseline data review.

I have also proposed to undertake a construction phase assessment, using the relevant IAQM guidance and recommending the appropriate mitigation measures.

With regards to the operational phase of the development I would suggest the following,

A simple exposure assessment – the transport consultants have provided flows for Great Bridgewater Street (c.6,000 AADT), Deansgate and Albion Street (c.12,000 AADT). Based on the distance between the road links and the development it is considered that concentrations at residential dwellings (which start at floor 2+) would be comparable to urban background concentrations, specifically monitoring location MA77NO on Hewitt Street. Please could you confirm that you are happy with this approach?

The trip generation provided by the transport consultants is shown below. As you can see there is only one road link which will see an increase above EPUK&IAQM screening criteria for within an AQMA (Great Bridgewater Street). Due to the elevation of any committed and proposed residential dwellings, associated with Viadux, the road itself is greater than 20m from any long term sensitive receptors. As such, I would proposed to screen trips with the relevant thresholds and undertake a simple assessment. The Proposed Development itself is 'car free' and these trips are associated with servicing, taxis and drop off/pick ups for all three buildings associated with Phase 2 of the Viadux development.

There are no combustion sources associated with the proposals.

I will be recommending all mitigation measures suggested within the MCC AQ guidance.

If you could please confirm that you are happy with the above approach that would be much appreciated. This is quite time critical and therefore I would be really grateful for a prompt response.

Many thanks,

Kind regards,

MIAQM MIEnvSc BSc (Hons)

Principal Air Quality Consultant

Appendix B Windrose

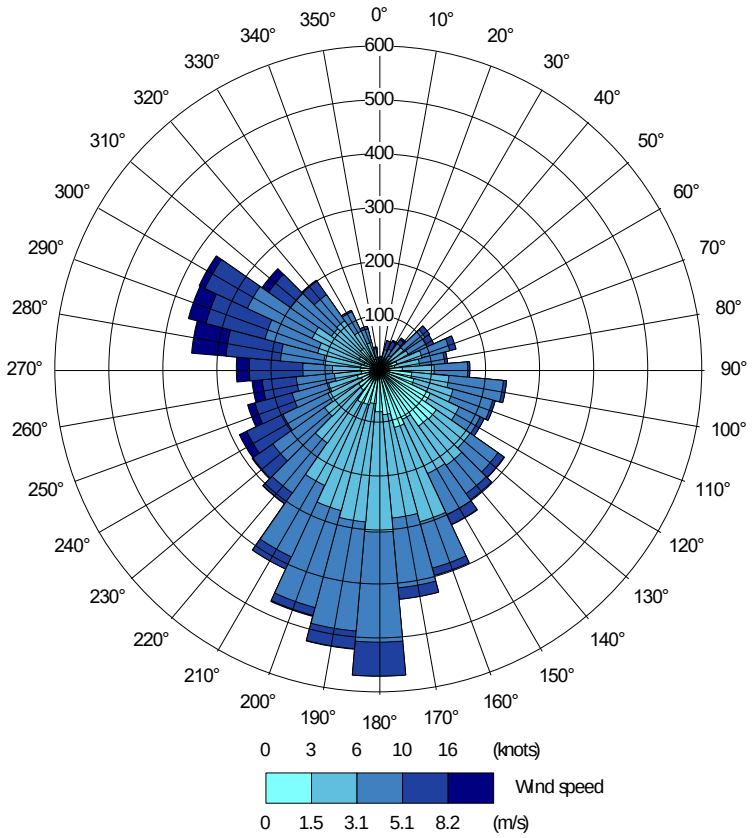


Figure 5: Wind rose Manchester Airport (2019)

Appendix C Technical Memorandum

Technical Memorandum

SLR

To: Lauren Massingham **From:** Gareth Davis

Company: Hydrock **SLR Consulting Limited**

Date: 15 October 2024

Project No. 410.066238.00001

RE: Manchester City Centre Traffic Growth

Application of Traffic Growth in Manchester

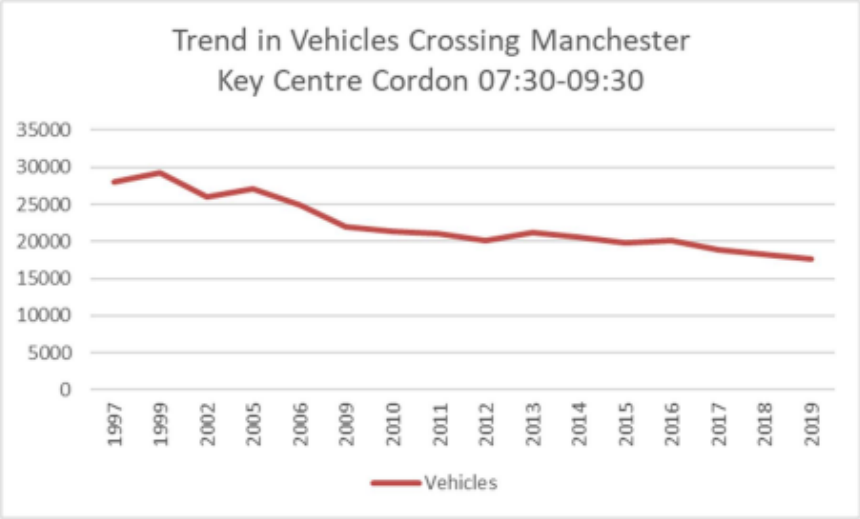
Typically to assess future traffic conditions, traffic growth is applied usually from the DfT TEMPRO programme which will apply a factor to take baseline traffic to a future year.

On development schemes in Manchester City Centre, within the Inner Relief Road (Ring Road) cordon it is notable from observation that traffic has not been growing despite the increases in population living in the city centre, possibly reflecting the loss of parking availability and highway changes limiting through routes within the city.

The Greater Manchester Transportation Unit, Highways Forecasting and Analytics team undertake annual surveys of traffic entering the city centre cordon (as defined by the Ring Road).

That data is presented in Figure 1 below and shows that over 20 years traffic has been falling by around 10,000 vehicles coming into the City Centre.

For this reason it is not appropriate to apply future year growth to traffic flows within the city centre and that it is reasonable to assume that existing flows will not increase in the future.



Source GMTU HFAS Manchester Key Centre Data

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Appendix D Construction Dust Mitigation

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

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information
- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, real-time PM10 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 checks of surfaces such as street furniture, cars and window sills within 100 m of 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 PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.

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

Operating Vehicle / Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- 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.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages, and clean up

Waste Management

- No bonfires and burning of waste materials.

Measures Specific to Demolition (Medium 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.
- Avoid explosive blasting, using appropriate manual or mechanical techniques.
- Bag and remove any biological debris or damp down such material before demolition.

Measures Specific to Earthworks (High Risk)

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use hessian, mulches or trackifers where it is not possible to re-vegetate or cover with top soil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

Measures Specific to Construction (High Risk)

- 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.

Measures Specific to Trackout (Medium Risk)

- Use water assisted dust sweeper(s) on access and local roads, to remove, as necessary, any material tracked out of the Site.
- Avoid dry sweeping 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 hail routes and subsequent action
- Install hard surfaced haul routes, which are generally damped down with fixed or mobile sprinklers.
- Implement wheel washing system.
- Ensure there is an adequate area of hard surfaces road between the wheel wash facility and the site exit.
- Access gates to be locations at least 10m from receptors where possible.

Appendix E Construction Phase Cumulative Development

The following Tables contains Baseline and Committed developments within 250m of the Site and are therefore considered within the cumulative construction phase assessment

Table 15: Existing Baseline Committed Developments

Location	Planning Reference	Description of Development	Distance from Site (m)	Status
Havelock	129081/FO/2021	Partial demolition and reconfiguration of 70 Great Bridgewater Street to create a new office building (Use Class E), including the replacement of building facades, a 2-storey rooftop extension and 23	183	Approved 23 April 2021 Under Construction Estimated Completion Q4 2024
Viadux Phase 1 and 2	115871/FO/2017	Erection of a 40 storey building to form 375 residential apartments (Use Class C3a) and the erection of a 14 storey building for form offices (Use Class B1) (31,756 sqm) together with ground floor commercial	0	Approved 27 July 2017 Phase 1 complete Phase 2 implemented

Location	Planning Reference	Description of Development	Distance from Site (m)	Status
Staycity Deansgate	125804/FO/2019	Demolition of existing buildings and structures on-site and erection of 22-storey building comprising apart-hotel (Use Class C1) with flexible commercial uses at ground floor and	153	Approved 26 June 2020 Under construction Estimated completionQ3 2025

Table 16: Committed Developments

Location	Planning Reference	Description of Development	Distance from Site (m)	Status
Vision	111003/FO/2016/C1	Demolition of existing building at 10 - 12 Whitworth Street West, and redevelopment of the site for a new 35 storey residential building (Use Class C3) comprising 327 apartments, with associated residents' services, facilities and communal spaces: servicing, highways, public realm and associated works	86	Construction commenced but stalled

Location	Planning Reference	Description of Development	Distance from Site (m)	Status
Great Northern Warehouse	135565/FO/2022	Demolition of the central atrium, car park ramps, and other elements, retention of casino (Sui Generis), bowling alley and existing food and drink unit (Use Class E) alongside to allow refurbishment, restoration and re-use of the Great Northern Car Park to provide office accommodation, retail and/or food and drink uses (Use Class E) and ancillary areas; and Refurbishment, restoration, partial demolition and erection of a 3-storey extension to Deansgate Terrace (northern section) and Goods Yard Entrance to form office, retail and / or food and drink use (Use Class E) and drinking establishments / hot food takeaway (Sui Generis), with associated public realm works comprising the reconfiguration of Great Northern Square and the introduction of additional public realm with associated hard and soft landscaping, highways works, access and servicing facilities, rooftop plant and other associated works; and Partial demolition of the existing leisure box to erect three residential buildings (ground plus 16, 27 and 34 storeys) to provide 746 residential apartments (Use Class C3), reconfiguration of existing car parking together with the creation of office, retail and / or food and drink use (Use Class E), or Sui Generis (drinking establishments / hot food takeaway) at ground floor and level 3, hard and soft landscaping, together with highways works, access and servicing facilities, rooftop plant and other associated works; and, External alterations and restoration of Deansgate Terrace (southern section) to provide office, retail or food and drink use (Use Class E) or Sui Generis (drinking establishments / hot food takeaway / live music venue), along with delivery of associated public realm, highways works, plant, and associated works	136	Resolution to Grant secured at Planning Committee on 16 February 2023 Not on Site

Location	Planning Reference	Description of Development	Distance from Site (m)	Status
Apex Tower	133172/FO/2022	Erection of a 26 storey residential tower for 72 apartments (Use Class C3) with associated car parking, cycle parking, servicing, and associated landscaping works	129	Application submitted - awaiting determination