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 Stantec

The Relocation of Squirrels, Fallowfield Campus

Air Quality Assessment

For University of Manchester

Date 25 March 2025

Doc ref 37821-HYD-XX-ZZ-RP-Y-2001_P02

Document control sheet

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Client	University of Manchester	
Project name	The Relocation of Squirrels, Fallowfield Campus	
Title	Air Quality Assessment	
Doc ref	37821-HYD-XX-ZZ-RP-Y-2001_P02	
Project number	37821	
Status	S3	
Date	25/03/2025	

Document production record		
Issue number	P02	Name
Prepared by	AF	
Checked by	LM	
Approved by	LM	

Issue number	Status	Date	Revision details
P01	S3	07/03/2025	DRAFT
P02	S4	25/03/2025	FINAL

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1. Introduction

Hydrock, now Stantec have been commissioned by University of Manchester (the 'Applicant') to prepare an Air Quality Assessment (AQA) to support the full planning application for the re-location of the 'Squirrels Bar', a University of Manchester campus building (the 'Proposed Development') to a location off Chancellors Way and Gunnery Lane, north of Armitage Sports (the 'Site'). The Site is within the administrative boundary of Manchester City Council (MCC) which is one of the nine districts brought together by the Greater Manchester Combined Authority (GMCA). The Proposed Site is centred on the National Grid Reference (NGR); x386002, y394168, as shown in Figure 1.

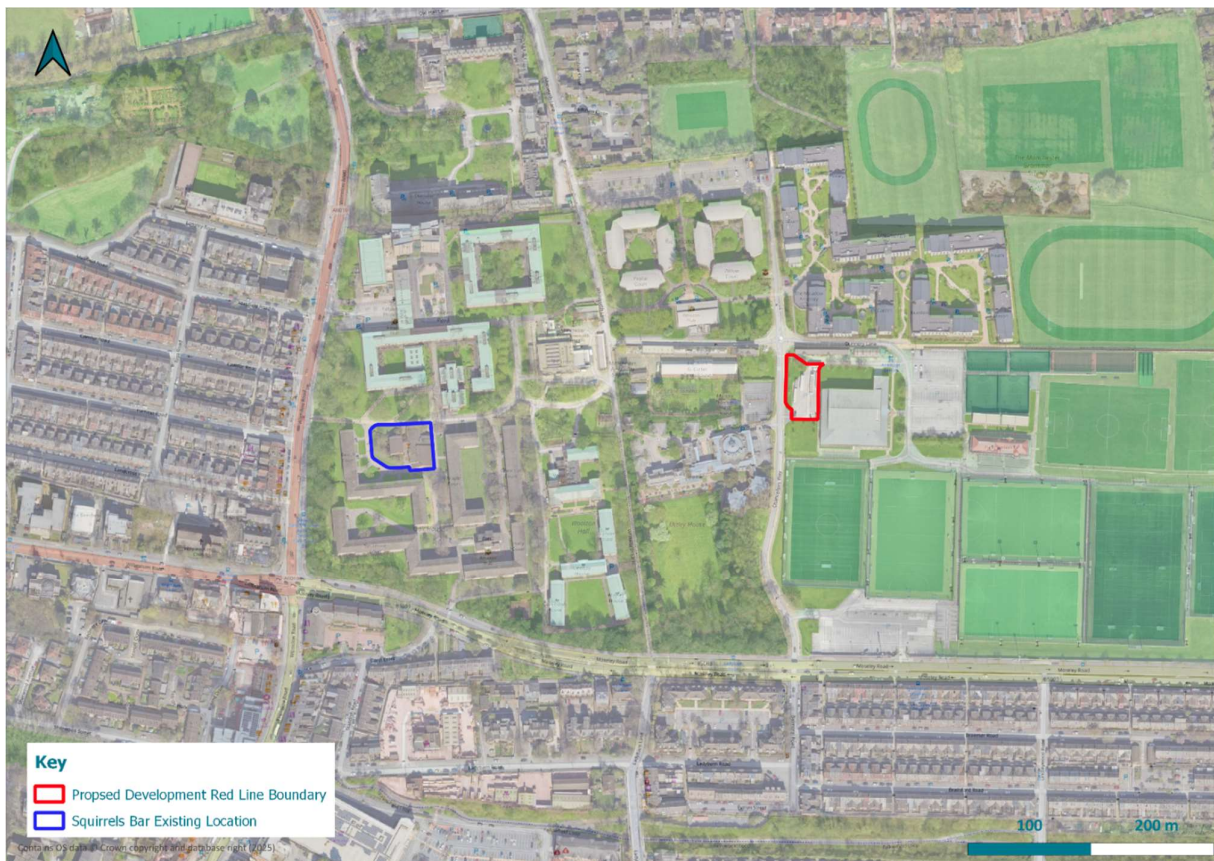


Figure 1: Existing and Proposed Site Location

The Site is located within the Fallowfield Campus area of Manchester. The closest main roads to the Site are Moseley Road to the south, and Wilmslow Road to the west. The Site is currently used for restricted car parking used for staff of the University of Manchester.

1.1 Project Overview and Proposed Development

The Proposed Development seeks to achieve the following:

"The University of Manchester (UoM) is considering the temporary re-provision of the Squirrels Bar, a key student social and events facility, to facilitate the demolition of the existing bar as part of the DBFO redevelopment of the Fallowfield Campus. The new facility is required to be

fully operational by September 2025 and remain in use until July 2028, ensuring continuity of services and minimising disruption to students.

The University has decided to proceed with a portal steel frame, single-storey solution, with a GIA 400-500m² (TBC). The solution will ensure a fully operational bar and events space, within the approved budget and critical timeline, providing a lifespan of 10 years which gives the University the opportunity to re-purpose beyond 2028."

1.2 Purpose of Air Quality Assessment

The purpose of this AQA 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; and
- » Consideration of potential impacts during the operational phase, both in terms of vehicle and plant emissions.

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/EC¹ 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 2023¹⁰ 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.

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 ₁₀	Annual Mean	40µg/m ³	
	24 Hour Mean	50µg/m ³	Not to be exceeded more than 35 times in a year.
	Annual Mean	40µg/m ³	
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 the date for compliance is 2040. In line with the Defra "PM_{2.5} Interim Planning Guidance on the consideration of the Environment Act PM_{2.5} targets in planning decision"¹¹ the operational phase assessment will also aim to consider the 2040 AMCT for PM_{2.5}, identify key sources of PM_{2.5} air pollution from the Proposed Development, and outline the measures proposed to minimise emissions of PM_{2.5} and its precursors as far as is reasonably practicable. The interim targets are that by January 2028 annual mean concentrations must be 12µg/m³ or lower and the population exposure must be reduced by at least 22% compared to 2018.

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.

¹¹ <https://uk-air.defra.gov.uk/pm25targets/planning>

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>

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.
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 2021¹³ (which provides an amendment to the Environment Act 1995¹⁴) 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).

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 Strategy¹⁷ 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. The Core Strategy was amended in 2024 and as such Policy EN16 has been replaced by PfE Policy JP-S5. References and policies referring to air quality are as follows:

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>

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

Policy JP-S5 stating that:

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."*

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 Plan¹⁸ 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:

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

3. Methodology

3.1 Consultation

Full details of the AQA approach were sent to MCC Environmental Health Officer (EHO) on 5th March 2025. On the 14th of March the appointed EHO replied approving the methodology as seen below:

"I have had a look at the Air Quality Assessment Methodology you submitted for the planned relocation of the existing Squirrels Bar on the Fallowfield campus and can confirm that your proposals are acceptable."

The proposed methodology is detailed below.

3.2 Guidance

The following guidance has been used to undertake this AQA:

- » Defra's LAQM.TG(22)¹²;
- » Environmental Protection UK (EPUK) & IAQM Land-use Planning & Development Control: Planning for Air Quality¹⁹; and,
- » The IAQM's guidance on assessing impacts from construction²⁰; and
- » MCC's Air Quality & Planning Technical Guidance²¹.

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 1.

- » Data from the National Atmospheric Emissions Inventory (NAEI)²², Environment Agency (EA)²³ and Defra's Pollutant Release and Transfer Register (PRTR) data²⁴;
- » 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 1km² National Grid square locations across the UK. Mapped background concentrations have been obtained based upon the 2021 base year Defra update (December 2024 publication);
- » Defra's predicted roadside concentrations of NO₂ 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;

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

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

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>

- » MCC's latest available air quality monitoring data, derived from the latest available air quality annual status report published in 2023²⁸.

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 guidance²⁰. This considers the risk of impacts during the construction phase in terms of nuisance dust, human health (PM₁₀ 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 website²⁷ 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 PM₁₀. 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 guidance²⁰ 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. Construction traffic data is not currently available and as such, short term effects of construction traffic emissions have not been assessed. It is considered that they are likely to be well below the EPUK & IAQM guidance¹⁹ 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 criteria¹⁹ which is also stated within the MCC Air Quality & Planning Technical Guidance²¹. 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

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.

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.

The Site is not located Greater Manchester Combined Authority (GMCA) AQMA and therefore the less stringent criteria from Table 3 apply to the immediate area surrounding the Site. However, the Site is within 200m of the AQMA which runs along Wilmslow Road to the west.

Hydrock, now Stantec Transport team, the Transport Consultants for the Site, 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. Further detail on trip generation can be found in Section 6.1.

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. The Greater Manchester AQMA has been declared for exceedances of the annual mean NO₂ AQAL and covers “An Area covering the 10 districts of Greater Manchester, including arterial routes, district centres, and airport.” The Site is not located within the AQMA. However, Wilmslow Road located 195m south of the Site, is within the AQMA boundary. The AQMA is shown below in Figure 3.

The GMCA have an AQAP²⁹ 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 the public.

4.2 Clean Air Zone

The Site is located within Greater Manchester, where an investment-led Clean Air Plan, was approved on January 23, 2025³⁰. Although the initially proposed charging CAZ proposal is no longer progressing, the Greater Manchester Clean Air Plan continues to identify 'at-risk' road links, which includes the junction of Wilmslow Road and Moseley Road. Approximately 400 west south west of the Site. The Development should ensure that compliance is not delayed on this road link as a result of emissions from additional traffic.

4.3 Local Emission Sources

The main source of air pollution in the Site locale is considered to be emissions from vehicles using the local road network, predominantly Old Hall Lane to the north, Moseley Road to the south, Birchfields to the east and Wilmslow Road to the west.

A review of the NAEI²², EA²³ and Defra's PRTR²⁴ 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 2023 (the base year), 2025 (the assessment year) and 2026 (the expected opening year) are displayed in Table 4.

Table 4: Defra Mapped Background Concentrations

Grid Square (x,y)	Pollutant	AQAL (µg/m ³)	Annual Mean Concentration (µg/m ³)		
			2023	2025	2026
385500, 394500	NO ₂	40	15.5	14.4	13.9
	PM ₁₀	40	13.0	12.9	12.8
	PM _{2.5}	20	7.9	7.7	7.7

The data show that annual mean background concentrations of NO₂, PM₁₀ and PM_{2.5} at the grid square within which the Site is located are below the AQALs in all years.

²⁹ GREATER MANCHESTER AIR QUALITY ACTION PLAN 2016–2021. <https://www.bing.com/search?q=GMCA+air+quality+action+plan&FORM=AWRE>

³⁰ Government backs local plans for clean air in Greater Manchester - GOV.UK

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 NO₂, which are used in reporting national 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 Moseley Road and Old Hall Lane, surrounding the Site have been included as PCM model links as illustrated in Figure 2. The 2023 roadside annual mean NO₂ concentrations are projected to be between 16.3µg/m³ and 19.4µg/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 NO₂ Concentrations for 2023

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 Report²⁸ states that the monitoring network within Manchester consisted of 4 automatic monitors and 40 passive sites.

The University of Manchester also run an Air Quality Supersite³¹, within the Fallowfield Campus. The Air Quality Supersite is housed at the Firs environmental research station and is an air quality research laboratory that gathers detailed data on a number of pollutants.

4.6.1 Automatic Monitoring

All of the automatic monitors run by MCC are located greater than 3km from the Proposed Development and therefore are not considered representative.

The Air Quality Supersite, run by The University of Manchester is located approximately 150m southwest of the Site. However, to date no annual mean data for the Site has been made available and therefore is not considered further within this assessment.

4.6.2 Passive Monitoring

Passive NO₂ diffusion tube monitoring was undertaken by MCC at 40 locations throughout the Council's area as part of their commitment to LAQM in 2023. Monitoring locations within 1km of the Site are shown in Figure 3 and the data presented in Table 5.



Figure 3: Local Authority Monitoring and Air Quality Management Areas

³¹ [Manchester Air Quality Super Site \(Centre for Atmospheric Science - The University of Manchester\)](#)

Table 5: 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)				
					2019	2020	2021	2022	2023
MA81NO – Peaceville Road	Urban Background	386589	394083	580 E	23.1	16.6	18.1	18.8	17.0

Notes: All results taken from the 2023 ASR.

There are no monitoring locations within the immediate vicinity of the Proposed Development. Location MA81NO is the closest monitoring location to the Site, classified as 'urban background'. Results have been consistently below the AQAL during recent years and are comparable with the 2023 DEFRA background concentrations (see Table 4).

There were no recorded exceedances of an annual mean greater than 60µg/m³, which indicates that an exceedance of the 1-hour mean objective is unlikely.

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 guidance²⁰. 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

There are no existing buildings on site which are required to be demolished prior to earthworks and construction. As such, demolition activities have not been considered further within this assessment.

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 (all areas within the red line boundary) is approximately 1,250m² and therefore within the 'small' IAQM category (<18,000m²).

The underlying soil texture is "*Slowly permeable seasonally wet acid loamy and clayey soils*"³² which have a medium potential for dust release due to the soil texture partly being comprised of small particles.

It is considered likely that there would be <5 heavy earth moving vehicles active on site at any one time.

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 duration of construction is proposed to be c.17 weeks.

³² Cranfield University, "Cranfield Soil and Agrifood Institute," n.d., <http://www.landis.org.uk/soilscapes/>.

The Proposed Development comprises a 2-storey building. The total volume/Gross Internal Area (GIA) expected to be constructed is 620m² and therefore total volume is expected to be 620*10 = 6,200m³ which is within IAQMs 'small' category (<12,000m³).

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 6 below shows a summary of the potential dust emission magnitudes from each activity.

Table 6: Dust Emission Magnitude Summary

Activity	Dust Emission Magnitude
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 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. There are also a number of low sensitivity receptors within these boundaries including school playing fields. These have not been highlighted.

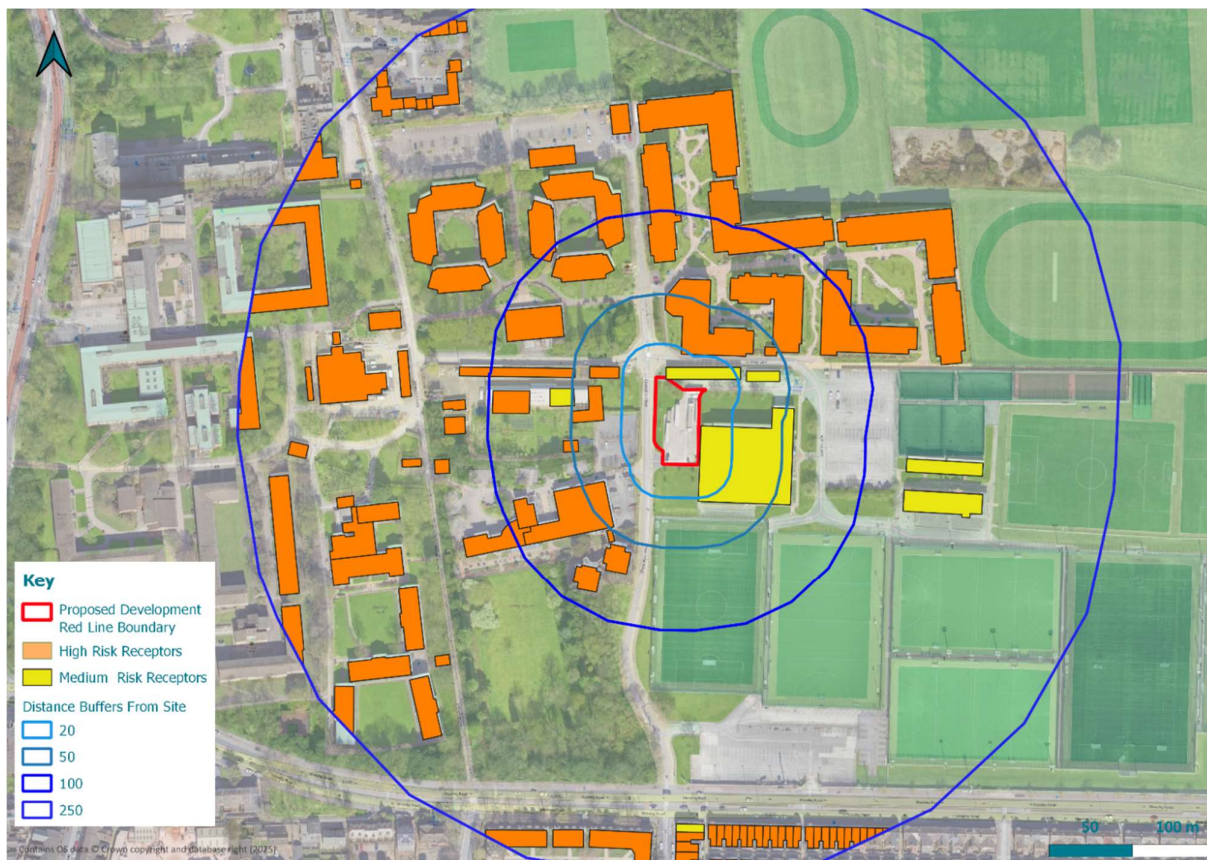


Figure 4: Construction Phase Receptors

5.3.1 Dust Soiling Impacts

Figure 4 illustrates there are considered to be 1-10 high sensitivity human receptors within 20m of the Site boundary associated with the student residences known as Unsworth Park. As such, the overall sensitivity of the surrounding area to nuisance dust soiling effects during Earthworks and Construction, according to IAQM guidance, is defined as **'Medium'**.

With regard to Trackout, the sensitivity for Small size 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 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 $24\mu g/m^3$ in the vicinity of the Site based on 2023 estimates. According to IAQM guidance, where PM_{10} concentrations are $<24\mu g/m^3$ and there are more than 1-10 high sensitivity receptors within 20m of construction works, the overall sensitivity of the surrounding area to human health impacts is defined as **'Low'** for 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 7 below.

Table 7: Sensitivity of Local Area

Potential Impact	Sensitivity of Surrounding Area		
	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	High
Human Health	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 8 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 PM₁₀ health effects.

Table 8: Risk of Adverse Impacts During Construction Phase

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

6. Operational Phase Assessment

6.1 Trip Generation and Distribution

The number of trips associated with the Proposed Development is unlikely to differ significantly from current levels. Trips generated are associated with deliveries, campus vans and staff. Transport Consultants for the scheme, Hydrock, now Stantec have stated the following:

"Due to the location of the proposed development in a densely populated student area, surrounded by student accommodation and adjacent to Wilmslow Road, Hydrock expects that most patrons, including staff, will primarily rely on sustainable transport options, such as walking, cycling, and public transport. As the development involves relocating an existing bar within the access barrier-controlled campus, any vehicle trips associated with the new location are expected to remain consistent with the current venue. Therefore, it is believed that a traditional trip generation exercise would not accurately reflect the actual vehicle trips to the site, given the minimal change in vehicle numbers"

Based on the above, trips generated are below the EPUK & IAQM threshold for both within and outside an AQMA and therefore detailed modelling of air quality impacts is not required.

Additionally, due to the zero trips generated by the proposals a, damage cost assessment has not been undertaken as part of this assessment as the total cost would be zero.

6.2 Exposure of Future Occupants

The Site itself does not include any high sensitivity receptors such as residential dwellings, which must comply with long-term AQALs. However, short term AQALs would apply at the Proposed Development.

Baseline traffic data comprising AADT flows sourced from the Department for Transport (DfT) Matrix³³ is shown below for those road links closest to the Site (where available). The most recent year available has been provided.

- » Birch Grove - DfT count point 808667 (considered comparable to Old Hall Lane and Whitworth Lane) – 705 AADT (year 2023);
- » Grangethorpe Road – DfT count point 810896 (considered comparable to Old Hall Lane and Whitworth Lane) – 1,856 AADT (year 2019); and
- » Moseley Road (B5093) – DfT count point 944403 – 15,962 AADT (year 2019).

The Defra guidance³⁴ 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 NO₂ (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.

³³ Map Road traffic statistics - Road traffic statistics (dft.gov.uk).

³⁴ Defra's AEA 'Diffusion Tube for Ambient NO₂ Monitoring: Practical Guidance' 2008

Based on the above, the Proposed Development is located greater than 20m from Moseley Road (classified as a busy road in line with the above). Additionally, the proposed Squirrels Bar building is located greater than 10m from both Old Hall Lane and Whitworth Lane (classified as main roads in line with the above). As such, in line with the above definitions, the Site can be considered as an urban background location.

Section 4.6.2, details that MA81NO monitors at an 'urban background' location and concentrations at this location have been consistently well below the annual mean AQAL for NO₂ during recent years.

Based upon the data above and the information presented within Section 1, it is considered that the risk of exceedance of AQALs at the Site is low. Based on the above future occupants of the Proposed Development should not be exposed to poor ambient air quality.

7. Mitigation Measures

7.1 Construction Phase

The qualitative construction dust risk assessment shows that the works are **Low Risk** for adverse impacts during the 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 Construction Environment Management Plan (CEMP), should effectively reduce the risk of impacts to negligible during the construction phase.

7.2 Operational Phase

There are no trips associated with the Proposed Development and therefore air quality impacts can be considered negligible. However, the below are good practice with regards to improving air quality in general across Greater Manchester.

- » Measures to promote walking;
- » Measures to promote cycling;
- » Measures to promote public transport;
- » Measures to encourage car sharing / shared transport; and
- » Initiatives to reduce the need to travel;

. These measures provide an opportunity to promote and establish sustainable modes of transport which will help to reduce potential air quality impacts.

8. Discussion and Conclusion

Hydrock have been commissioned by University of Manchester to prepare an AQA to support the planning application for the re-location of 'Squirrels Bar', a University of Manchester campus building.

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 NO₂, PM₁₀ and PM_{2.5} at the Site and surrounding locale are all below the relevant AQALs. Local air quality monitoring is undertaken at a background location and monitoring concentrations have been well below the AQAL during recent years.

A qualitative construction dust risk assessment has been undertaken in line with IAQM guidance²⁰ 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.

An operational phase assessment has been undertaken by following screening criteria provided in EPUK & IAQM guidance¹⁹. There are no vehicle traffic movements generated by the Proposed Development and as such, it is not anticipated that any significant adverse impacts on local air quality will occur. A desk-based exposure assessment has been undertaken, which concludes that the Proposed Development is considered to be at an 'urban background' location and it is considered that the risk of exceedance of short-terms AQALs at the Site is low. As such, future occupants of the Proposed Development should not be exposed to poor ambient air quality.

The proposed energy strategy for the Proposed Development is 100% electric and does not introduce any new combustion sources.

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

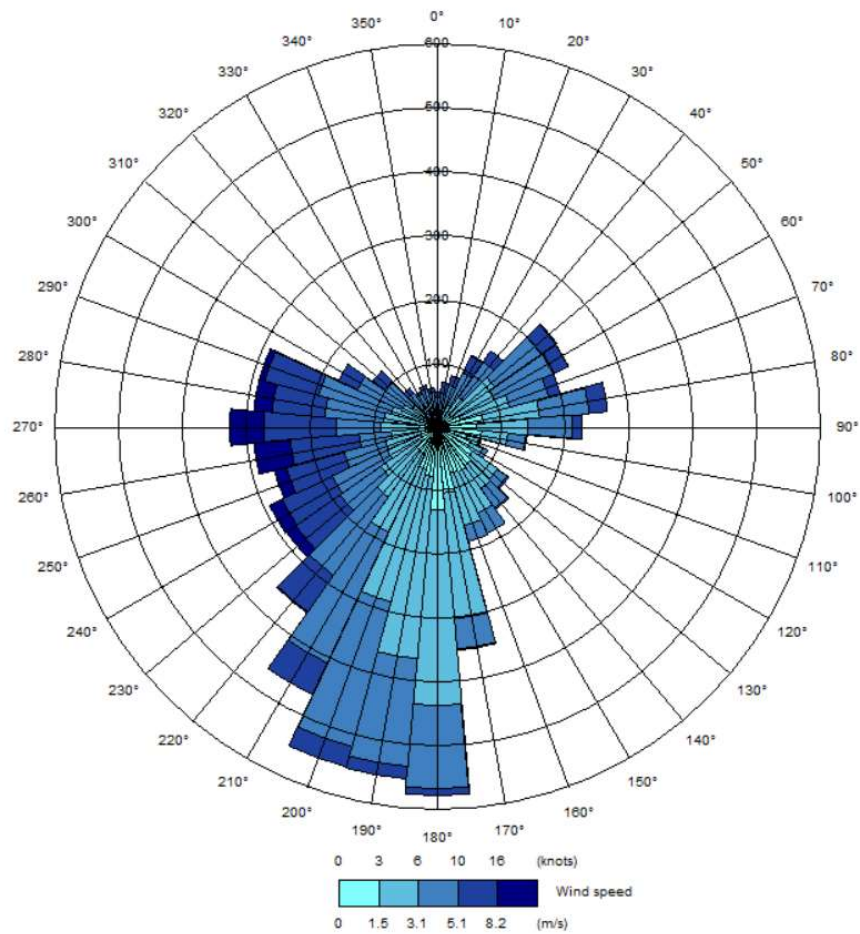


Figure 5: Wind rose Manchester Airport (2023)

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 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.
- » Display the head or regional office contact information

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 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.
- » 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.
- » No bonfires and burning of waste materials.

Measures Specific to Earthworks (Low Risk)

There are no Highly Recommended or Desired mitigation measures for Low Risk Sites.

Measures Specific to Construction (Low Risk)

There are no Highly Recommended mitigation measures for Low Risk Sites. The following measures are Desired:

- » 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 met.

Measures Specific to Trackout (Low Risk)

There are no Highly Recommended mitigation measures for Low Risk Sites. The following measures are Desired:

- » Use water assisted dust sweeper(s) on access and local roads, to remove, as necessary, any material tracked out of the Site. This may require the sweeper being continuously in use.
- » Avoid dry sweeping large areas.
- » Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- » Record all inspections of haul routes and any subsequent action in a site log book.
Implement wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).