



Evans Dakota Hotels Ltd
Dakota Manchester, Bailey Lane, Manchester
Air Quality Assessment
DC4542-AR1



Report Version Issue Log

Report Number	Issue Date	Note or Change	Author	Approval for Issue
DC4542-AR1	20.05.24	Report Issue	SG	

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1.0 INTRODUCTION

1.1 Introduction

Evans Dakota Hotels Ltd has appointed Dragonfly Consulting to undertake an Air Quality Assessment to inform the planning application for a proposed hotel development, located on land off Bailey Lane in Manchester (the 'Site').

The Site is located within the jurisdiction of Manchester City Council (MCC), in an area where air quality is mainly influenced by road traffic emissions along the local road network.

This report assesses the potential air quality impacts associated with the proposed development, through considering existing baseline air quality conditions across, and in the vicinity of, the Site and determining its suitability for the proposed end-use. Potential sources of emissions are identified and assessed in the context of existing air quality and emission sources and the nature and location of sensitive receptors.

A glossary of common air quality terminology is provided in Appendix A.

1.2 Scope of Assessment

Air quality across and in the vicinity of the Site has been assessed to determine the suitability of the Site for the proposed end-use. The assessment has concentrated on nitrogen dioxide (NO₂) and particulate matter with an aerodynamic diameter of less than 10µm and 2.5µm (PM₁₀ and PM_{2.5}), the pollutants most associated with traffic emissions and which can affect local amenity.

An assessment of air quality impacts associated with the construction phase activities has been undertaken, in accordance with the Institute of Air Quality Management (IAQM) '*Guidance on the assessment of dust from demolition and construction*'¹ document, to determine the most appropriate mitigation measures for the scheme.

Furthermore, the development has the potential to generate additional vehicle movements on the adjacent local road network. The potential impacts of the operational phase traffic associated with the scheme have therefore been considered with regard to the Environmental Protection UK (EPUK) and IAQM '*Land-Use Planning and Development Control: Planning for Air Quality*' guidance document², and the baseline air quality assessment undertaken.

¹ IAQM (2024) Guidance on the assessment of dust from demolition and construction, Version 2.2, January 2024.

² IAQM (2017) Land-use Planning and Development Control: Planning for Air Quality, January 2017.

2.0 SITE DESCRIPTION

2.1 Existing Site

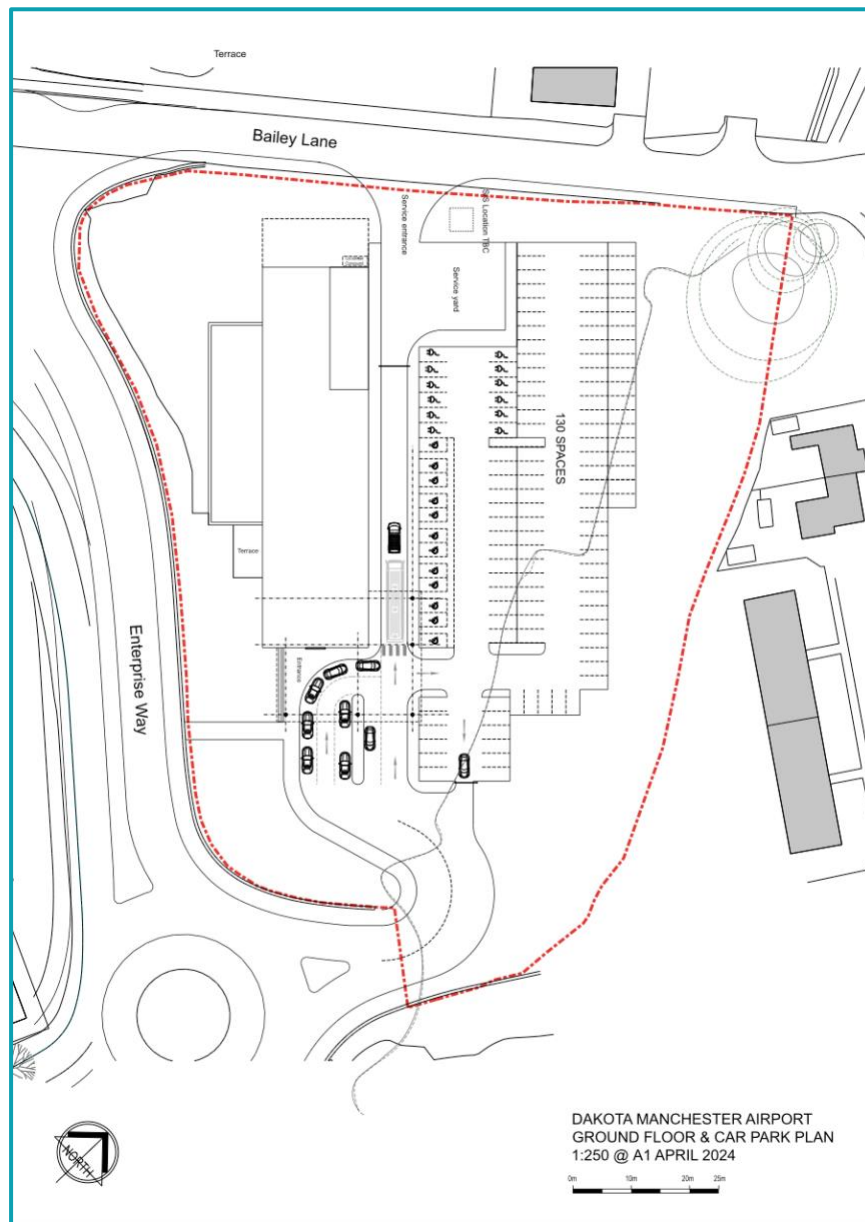
The Site is located on land off Bailey Lane in Manchester. The site is bound by Enterprise Way to the south, office buildings to the west and north and existing residential properties to the east of the site.

Reference should be made to Figure 1 for a map detailing the Site location.

2.2 Proposed Development

The development proposals include the erection of a 130-bed hotel with associated parking. Figure 2.1 below shows the Site Layout Plan for the proposed development.

Figure 2.1
Illustrative Site Plan



3.0 LEGISLATION, POLICY AND GUIDANCE

3.1 International Air Quality Policy

3.1.1 *European Directive on Ambient Air Quality and Cleaner Air for Europe*

The EU Directive 2008/50/EC³ on ambient air quality and cleaner air for Europe (the CAFE directive) sets out the ambient air quality standards for a number of pollutants and the dates by which these objectives should be met. The Air Quality Standards (Amendment) Regulations 2016 amend the Air Quality Standards Regulations 2010⁴, which implements the requirements of the Directive into UK legislation. The Directive contains a series of limit values for the protection of human health and critical levels for the protection of vegetation. These limit values are legally binding, and the UK may incur infringement action if it does not meet the required objective limits within the agreed time limits. The UK is currently exceeding the objective limits for NO₂ and PM₁₀ within London and a number of other air quality zones within the UK.

3.2 National Air Quality Policy

3.2.1 *The Air Quality Strategy for England*

The Air Quality Strategy for England (2023)⁵, is a strategic framework for local authorities and other partners and supersedes the Air Quality Strategy: Volume 1 in England only. This document sets out the actions that Defra expects local authorities to take in support of the long-term air quality targets.

The AQS sets out a framework for reducing hazards to health from air pollution and ensuring that international commitments are met in the UK. The AQS is designed to be an evolving process that is monitored and regularly reviewed.

The AQS sets standards and objectives for ten main air pollutants to protect health, vegetation, and ecosystems. These are benzene (C₆H₆), 1,3-butadiene (C₄H₆), carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), oxides of nitrogen (NO_x), particulate matter (PM₁₀, PM_{2.5}), sulphur dioxide (SO₂), ozone (O₃) and polycyclic aromatic hydrocarbons (PAHs).

The air quality standards are long-term benchmarks for ambient pollutant concentrations which represent negligible or zero risk to health, based on medical and scientific evidence reviewed by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO). These are general concentration limits, above which sensitive members of the public (e.g. children, the elderly and the unwell) might experience adverse health effects.

The air quality objectives (AQO) are medium-term policy-based targets set by the Government which take into account economic efficiency, practicability, technical feasibility and timescale. Some objectives are equal to the EPAQS recommended standards or WHO guideline limits, whereas others involve a margin of tolerance, i.e. a limited number of permitted exceedances of the standard over a given period.

³ 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

⁴ Air Quality Regulations 2010 – Statutory Instrument 2010 No. 1001

⁵ The Air Quality Strategy for England - August 2023

For some pollutants there is both a long-term (annual mean) standard and a short-term standard. In the case of NO₂, the short-term standard is for a 1-hour averaging period, whereas for PM₁₀ it is for a 24-hour averaging period. These periods reflect the varying impacts on health of differing exposures to pollutants (e.g. temporary exposure on the pavement adjacent to a busy road, compared with the exposure of residential properties adjacent to a road).

Of the pollutants included in the AQS, NO₂ and PM₁₀ would be particularly relevant to this project as these are the primary pollutants associated with vehicle emissions, the main source of pollutants in the vicinity of the Site.

The current statutory standards and objectives for NO₂ and PM₁₀ in relation to human health are set out in Table 3.1.

In relation to PM_{2.5} the 2019 Clean Air Strategy⁶ includes a commitment to set ‘*new, ambitious, long-term targets to reduce people’s exposure to PM_{2.5}*’ which the Environment Act 2021⁷ commits the Secretary of State to setting. As discussed in Local Air Quality Management Technical Guidance 2022 (LAQM.TG(22))⁸ issued by Defra, local authorities are expected to work towards reducing PM_{2.5} in their area, setting this out as the current objectives within England for PM_{2.5}. Historically, limit values were established via the EU Directive with both a Stage 1 and Stage 2 limit value identified. For the purposes of this assessment the Stage 2 limit value for PM_{2.5} (as provided in Table 3.1) is considered to be appropriate to use for assessing impacts of development proposals.

Table 3.1
Relevant Objectives set out in the Air Quality Strategy

Pollutant	Concentrations	Measured As	Date to be Achieved By
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times per year	1 hour mean	31 December 2005
	40 µg/m ³	Annual mean	
Particulate Matter (PM ₁₀)	50 µg/m ³ not to be exceeded more than 35 times per year	24-hour mean	31 December 2004
	40 µg/m ³	Annual mean	
Particulate Matter (PM _{2.5})	Stage 1 – 25 µg/m ³	Annual mean	1 st January 2020
	Stage 2 – 20 µg/m ³	-	-

The statutory standards and objectives apply to external air where there is relevant exposure to the public over the associated averaging periods within each objective. Guidance is provided within Local Air Quality Management Technical Guidance 2022 (LAQM.TG(22)) issued by Defra for Local Authorities on where the objectives apply, as detailed in Table 3.2. The objectives do not apply in workplace locations, to internal air or where people are unlikely to be regularly exposed (i.e. centre of roadways).

⁶ Defra (2019). Clean Air Strategy. London: HMSO

⁷ Secretary of State, The Environment Act 2021 HMSO

⁸ Defra (2022) Local Air Quality Management. Technical Guidance (LAQM.TG(22))

Table 3.2
Locations Where Air Quality Objectives 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 façades of residential properties, schools, hospitals, care home etc.	<p>Building façades of offices or other places of work where members of the public do not have regular access.</p> <p>Hotels, unless people live there as their permanent residence.</p> <p>Gardens of residential properties.</p> <p>Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.</p>
24-Hour Mean	All locations where the annual mean objective would apply together with hotels. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1-Hour Mean	<p>All locations where the annual mean and 24-hour mean objectives apply.</p> <p>Kerbside Sites (e.g. pavements of busy shopping streets).</p> <p>Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where the public might reasonably be expected to spend 1-hour or more. Any outdoor locations where the public might reasonably be expected to spend 1-hour or longer.</p>	Kerbside sites where the public would not be expected to have regular access.

3.2.2 Local Air Quality Management – The Environment Act 1995

Local authorities are seen to play a particularly important role. Section 82 of the Environment Act 1995 requires every local authority to conduct a review of the air quality from time to time within the authority's area. The Defra technical guidance, LAQM.TG(22), continues with the streamlined approach to the Local Air Quality Management (LAQM) regime, whereby every authority has to undertake and submit a single Annual Status Report/Annual Progress Report within its area, to identify whether the objectives have been or will be achieved at relevant locations by the applicable date. If the objectives are not being met, the authority must declare an Air Quality Management Area (section 83 of the Act) and prepare an action plan (section 84) which identifies measures that will be introduced in pursuit of the objectives.

3.2.3 National Air Quality Plan for NO₂ in the UK

The National Air Quality Plan⁹ was written as a joint venture between the Defra and the Department for Transport (DfT) and aims to tackle roadside concentrations of NO₂ in the UK. It includes a number of measures such as those aimed at investing in Ultra Low Emission Vehicles (ULEVs) charging infrastructure, public transport and grants to help local authorities in improving air quality.

The plan requires all local authorities (LAs) in England with areas expected not to meet the Limit Values by 2020 (known as 'air quality hotspots') to develop plans to bring concentrations within these values in "the shortest time possible". These plans are to be reviewed by the government and suggestions included in the plan include actions such as utilising retrofitting technologies, changing road layout and encouraging public transport and ULEV use. Where these approaches are not considered sufficient, the LA may need to consider implementation of a Clean Air Zone (CAZ) which places restrictions on vehicle access to an area and may include charging certain (or all) vehicles or restrictions on the type of vehicle allowed to access an area.

3.2.4 Road to Zero Strategy

The Road to Zero strategy¹⁰ sets out the government's plans to encourage zero emissions vehicles. These include the aim that by 2040 all new cars and vans will have zero tailpipe emissions and by 2050 almost every car will have zero emissions. Measures within the Strategy are aimed at encouraging the uptake of the cleanest vehicles and supporting electric charging infrastructure.

3.2.5 Clean Air Strategy

The Clean Air Strategy sets out policies to lower national emissions of pollutants in order to reduce background pollution and human exposure. It aims to create a strong framework to tackle air pollution and to reduce the number of people living in locations with PM_{2.5} concentrations exceeding 10µg/m³ by 50% by 2025.

3.3 Planning Policy

3.3.1 National Planning Policy

National Planning Policy Framework

The National Planning Policy Framework (NPPF)¹¹ sets out the Government's planning policies for England and how these are expected to be applied. At the heart of the NPPF is a presumption in favour of sustainable development. It requires Local Plans to be consistent with the principles and policies set out in the NPPF with the objective of contributing to the achievement of sustainable development.

The NPPF states that the planning system has three overarching objectives in achieving sustainable development including a requirement to 'protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.'

⁹ Defra and DfT (2017) UK plan for tackling roadside nitrogen dioxide concentrations. London: HMSO.

¹⁰ HM Government (2018) Road to Zero Strategy. London: HMSO.

¹¹ Ministry of Housing, Communities and Local Government: National Planning Policy Framework (December 2023).

Under Section 15: Conserving and Enhancing the Natural Environment, the NPPF (paragraph 180) requires that *'planning policies and decisions should contribute to and enhance the natural and local environment by ...preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible help to improve local environmental conditions such as air and water quality.'*

In dealing specifically with air quality the NPPF (paragraph 192) states that *'planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.'*

Paragraph 194 states that *'the focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively'*.

3.3.2 Local Planning Policy

Manchester Core Strategy (2012)

The Manchester Core Strategy¹², adopted in July 2012, provides the long-term strategic policies for Manchester's future development and sets out the key policies which will inform developments for the period up to 2027.

A review of the document has identified the following policies which are relevant to the assessment:

'Policy EN 16 Air Quality

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

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

'Policy DM 1 Development Management

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

¹² Sheffield City Council (2009) Sheffield Development Framework Core Strategy, March 2009

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

The above policies related to air quality have been considered within this assessment.

3.4 Air Quality Guidance

3.4.1 Defra Technical Guidance, LAQM.TG(22)

LAQM.TG(22) sets out detailed guidance on how air quality should be assessed and monitored by local authorities. The document provides useful guidance on how air quality from specific sources should be screened and the approaches that should be used to undertake detailed assessment where potentially significant emissions are identified, including details on model verification and consideration of monitoring data for use in assessments.

3.4.2 IAQM Land-Use Planning and Development Control: Planning for Air Quality

The IAQM and EPUK have published joint guidance on the assessment of air quality impacts for planning purposes. This includes information on when an air quality assessment is required, what should be included in an assessment and criteria for assessing the significance of any impacts.

3.4.3 IAQM Guidance on the Assessment of Dust from Demolition and Construction

Guidance produced by the IAQM on assessing impacts from construction and demolition activities (2024) includes a methodology for identifying the risk magnitude of potential dust sources associated with demolition, construction, earthworks and trackout. This is then used to identify the level of mitigation necessary in order for the impacts to be not significant.

3.4.4 Greater Manchester Air Quality Action Plan 2016-2021

A joint Greater Manchester Air Quality Action Plan¹³ (AQAP) has been prepared, which identifies the sources of air pollution within the area and sets out the actions to be introduced in order to improve air quality. The measures fall into a number of categories, specifically: reducing emissions from road traffic, protection of air quality through enforcement of air pollution legislation, awareness raising, action through building design and land use planning and increased energy efficiency.

3.4.5 Manchester City Council Air Quality & Planning Technical Guidance (2022)

The MCC Air Quality & Planning Technical Guidance document¹⁴ aims to provide information in relation to air quality in the planning context, to encourage good practice and mitigation of impacts.

¹³ Greater Manchester Combined Authority (2016) Air Quality Action Plan 2016-2021.

¹⁴ Manchester City Council (2022) Air Quality & Planning Technical Guidance, August 2022.

4.0 METHODOLOGY

4.1 Baseline Assessment

A baseline assessment of air quality across and in the vicinity of the Site has been carried out through a review of monitoring data available within the MCC 2022 Air Quality Annual Status Report (ASR)¹⁵ and on the MCC website¹⁶. Data has also been obtained for the assessment extents from the UK Air Information Resource (UK-AIR) background pollution maps¹⁷.

4.2 Construction Phase

4.2.1 Construction Phase Vehicle Emissions

During the construction phase of the Proposed Development, heavy goods vehicles (HGVs) will require access to the Site to deliver and remove materials; there is the potential that other mobile machinery such as earthmoving plant may also work on site in addition to generators and cranes. These machines produce exhaust emissions; of particular concern are emissions of NO₂ and PM₁₀.

The IAQM air quality planning guidance sets out criteria to determine when significant effects are likely to occur, and a more detailed assessment of traffic emissions is required. The criteria indicates that significant impacts on air quality are unlikely to occur where a development results in less than 25 HDV movements per day in locations within or adjacent to an AQMA and less than 100 HDV outside of an AQMA. Based on the development proposals it is anticipated that there would be no more than 25 HDV generated on any one road link on any given day during the construction phase. It is therefore anticipated that construction traffic generated by the Proposed Development would result in a **negligible** impact on local NO₂ and PM₁₀ concentrations and therefore, has not been considered any further in this assessment.

4.2.2 Construction Phase Fugitive Dust Emissions:

Construction phase activities associated with the proposed development may result in the generation of fugitive dust emissions (i.e. dust emissions generated by site-specific activities that disperse beyond the construction site boundaries).

If transported beyond the site boundary, dust can have an adverse impact on local air quality. The IAQM has published a guidance document for the assessment of demolition and construction phase impacts. The guidance considers the potential for dust nuisance and impacts to human health and ecosystems to occur due to activities carried out during the following stages of construction:

- Demolition (removal of existing structures);
- Earthworks (soil-stripping, ground-levelling, excavation and landscaping);
- Construction (activities involved in the provision of a new structure); and
- Trackout (the transport of dust and dirt from the construction site onto the public road network where it may be deposited and then re-suspended by vehicles using the network).

¹⁵ Manchester City Council (2023) 2022 Air Quality Annual Status Report (ASR), June 2023.

¹⁶ Clean Air Greater Manchester (undated) Diffusion Tube Data [Online] Available at: <https://cleanairgm.com/data-hub/diffusion-tubes> [Accessed on 17/05/2024].

¹⁷ Defra (undated) UK Air Information Resource - Background Mapping Data for Local Authorities - 2018 [Online] Available at: <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018> [Accessed on 17/05/2024].

A qualitative assessment of air quality impacts due to the release of fugitive dust and particulates (PM₁₀) during the construction phase was undertaken in accordance with the methodology detailed in the IAQM guidance.

The assessment takes into account the nature and scale of the activities undertaken for each source and the sensitivity of the area to an increase in dust and PM₁₀ levels, thus enabling a level of risk to be assigned. Risks are described in terms of there being a low, medium, or high risk of dust impacts.

Once the level of risk has been ascertained, then site specific mitigation proportionate to the level of risk is identified, and the significance of residual effects determined.

A summary of the IAQM Construction Phase Risk Assessment methodology is provided in Appendix B.

4.2.3 Selection of Receptors

The IAQM assessment is undertaken where there are:

- Human receptors within 250m of the site boundary or within 50m of the route(s) used by construction vehicles on the public highway;
- Human receptors up to 250m from the site entrance(s);
- Ecological receptors within 50m of the site boundary, or within 50m of the route(s) used by construction vehicles on the public highway; and
- Ecological receptors up to 250m from the site entrance(s).

It is within these distances that the impacts of dust soiling and increased particulate matter in the ambient air will have the greatest impact on local air quality at sensitive receptors.

4.2.4 Significance Criteria

The IAQM assessment methodology recommends that significance criteria are only assigned to the identified risk of dust impacts occurring from a construction activity following the application of appropriate mitigation measures. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effects will normally be negligible.

4.3 Operational Assessment

The air quality planning guidance published by IAQM sets out criteria for establishing when there is a risk of significant impacts on local air quality as a result of traffic generated by a proposed development. The guidance states that where the following criteria are exceeded a more detailed assessment may be required:

- An increase in light goods vehicles (LGV) of more than 100 vehicles per day within or adjacent to an AQMA, or an increase of more than 500 annual average daily traffic (AADT) flows per day elsewhere; and
- An increase in HGV of more than 25 vehicles per day within or adjacent to an AQMA, or an increase of more than 100AADT per day elsewhere.

The anticipated trip generation associated with the proposed development has therefore been assessed against the above criteria, and considered against the baseline air quality assessment undertaken.

5.0 BASELINE ASSESSMENT

5.1 Manchester City Council LAQM Review

According to the latest available Air Quality ASR from Greater Manchester Combined Authority (GMCA), dated June 2023, and the Greater Manchester Air Quality Action Plan 2016-2021, the Greater Manchester AQMA covers the ten districts of Greater Manchester, including arterial routes, district centres and the airport, and was declared based on the modelled $35\mu\text{g}/\text{m}^3$ isopleths for annual mean NO_2 concentrations. The Site is located in close proximity to the Greater Manchester AQMA and as such, potential effects associated with the development have been considered at sensitive receptors within this area.

5.2 Air Quality Monitoring

5.2.1 Nitrogen Dioxide

Automatic Monitoring

GMCA monitored NO_2 concentrations at 22 automatic (continuous) locations during 2022. The closest automatic monitoring station to the Site is MAHG 'Manchester Sharston', located approximately 2.18km east of the Site. Details of the automatic monitoring site, along with the most recent data, are presented in Table 5.1.

Table 5.1
Automatic Annual Mean NO_2 Concentrations ($\mu\text{g}/\text{m}^3$)

Site ID	Site Name	Site Type	Monitoring Year				
			2018	2019	2020	2021	2022
MAHG	Manchester Sharston	Suburban	24	23	14	16	15

As shown in Table 5.1, annual mean NO_2 concentrations were below the relevant AQO during all of the most recent monitoring years. It should be noted that data for 2020 and 2021 have been included for consistency purposes only. Due to the prevailing travel restrictions as a result of the COVID-19 pandemic, and the associated changes in travel behaviour, pollutant levels during these years are therefore, not considered to be representative.

As there were no exceedances of the AQO during the representative monitoring years and based on the automatic monitoring location being located in a representative location, away from the main road network, it is anticipated that pollutant concentrations would be similar at the Site and therefore, it is considered that there is no risk of the proposed development exposing sensitive receptors to elevated pollutant concentrations.

Non-Automatic Monitoring

GMCA monitored NO_2 concentrations at 434 non-automatic (passive) diffusion tube sites during 2022. Diffusion tubes, due to their relative in-expense, allow for a much greater spatial coverage than automatic monitoring sites. To allow the results to be reliably compared against the AQO, the data should be bias corrected using data collected from diffusion tubes co-located with continuous monitoring sites.

The data provided in Table 5.2, below, have been adjusted by GMCA using a national bias adjustment factor obtained from the Defra LAQM website¹⁸, which provided a conservative approach.

The closest diffusion tube to the Site is CAP_MANC_175, located along Ringway Road approximately 550m south-east of the Site. Details of the closest monitoring sites and data recorded since 2018 are set out in Table 5.2.

Table 5.2
Diffusion Tube Annual Mean NO₂ Concentrations (µg/m³)

Site ID	Site Description	Classification	Year				
			2018	2019	2020	2021	2022
MA8ANO	St Pauls School	Urban Background	26.6	28.0	18.2	20.6	23.9
MA90BNO	Manchester Sharston	Suburban	20.4	19.4	13.6	14.1	15.2
MA91BNO	Manchester Sharston	Suburban	19.7	18.2	13.6	14.1	15.2
MA92BNO	Manchester Sharston	Suburban	20.1	18.9	13.8	14.1	15.2
MA94BNO	Greenwood Road	Roadside	-	32.1	25.2	26.0	28.0
ST13NO	Prospect Vale	Urban Background	18.3	18.8	11.6	13.6	13.3
TR24NO	Tithebarn Road	Roadside	24.1	23.5	15.6	19.8	19.1
CAP_MANC_023	A555 (Ringway Road West)	Roadside	-	54.4	30.8	27.8	35.2
CAP_MANC_024	A555 (Manchester Airport Relief Road)	Roadside	-	57.6	25.9	26.9	37.9
CAP_MANC_025	Ringway Road	Roadside	-	30.3	15.2	15.9	19.1
CAP_MANC_174	Ringway Road	Roadside	-	-	-	-	37.5
CAP_MANC_175	Ringway Road	Roadside	-	-	-	-	41.4
Numbers in bold indicate an exceedance of the annual mean AQO of 40µg/m ³							

As presented in Table 5.2, at the majority of locations in the closest vicinity of the Site, there were no exceedances of the annual mean AQO for NO₂, with concentrations below the AQO limit of 40µg/m³. The only exceedances were at CAP_MANC_023 and CAP_MANC_024 during 2019 and at CAP_MANC_175 during 2022, all of which are located along the main A555 Ringway Road West road network and within the AQMA. These monitoring locations are therefore not considered to be representative of the Site location, which is set back from the major road network. The other diffusion tubes in the vicinity of the Site are set back from the major road network and are therefore considered to be representative. With no recent exceedances recorded at these locations, it is therefore considered that concentrations at the Site would be similar, if not less, than those presented in Table 5.2. It is therefore considered that there is no predicted risk of the proposed development exposing future occupants to elevated air pollutant concentrations.

Based on the nature of the development, being a hotel use, only the short-term mean AQO is applicable for this assessment. Guidance set out in LAQM.TG(22) indicates that where annual mean NO₂ concentrations are found to exceed 60µg/m³ there is a risk that the 1-hour objective is also being exceeded. Based on the data outlined in Table 5.2, NO₂ concentrations across all representative diffusion tube sites were significantly below 60µg/m³ and therefore, it is unlikely that concentrations will exceed the 1-hour objective at the development Site. Therefore, there is no predicted risk of the proposed development exposing future occupants to elevated air pollutant concentrations.

¹⁸ <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/>

5.2.2 Particulate Matter (PM_{10} and $PM_{2.5}$)

There are no automatic monitoring stations which record PM_{10} and $PM_{2.5}$ concentrations located in the vicinity of the Site.

5.3 Defra Background Maps

Additional information on estimated background pollutant concentrations at the Site has been obtained from the Defra background maps provided on UK-AIR.

Estimated air pollutant concentrations for oxides of nitrogen (NO_x), NO_2 , PM_{10} and $PM_{2.5}$ have been sourced from the 2018 based background maps for the UK for the current assessment year of 2024. These maps are available in 1km x 1km grid squares. The Site is located across grid squares 381500, 386500 and 382500, 385500. Concentrations for these locations have been taken which are representative of the Site.

The concentration for each pollutant is provided in Table 5.3 for the current assessment year of 2024.

Table 5.3
Annual Mean Background Air Pollutant Concentrations at the Development Site

OS Grid Reference	Pollutant Concentrations for 2024			
	NO_2 ($\mu g/m^3$)	NO_x ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)
381500, 386500	20.3	29.3	12.7	8.2
382500, 385500	23.5	36.3	10.2	6.9

As shown in Table 5.3, there were no exceedances of the annual mean AQOs for NO_2 , PM_{10} or $PM_{2.5}$ in 2024. For $PM_{2.5}$, the predicted background concentration was also below the target exposure level of $10\mu g/m^3$, implemented at the end of January 2023 under the Environment Act 2021.

Based on the nature of the development, being a hotel use, only the short-term mean AQO for NO_2 is applicable for this assessment. Guidance set out in LAQM.TG(22) indicates that where annual mean NO_2 concentrations are found to exceed $60\mu g/m^3$ there is a risk that the 1-hour objective is also being exceeded. Based on the data outlined in Table 5.3, NO_2 background concentrations for the Site location were significantly below $60\mu g/m^3$ and therefore, it is unlikely that concentrations will exceed the 1-hour objective at the development Site. Therefore, there is no predicted risk of the proposed development exposing future occupants to elevated air pollutant concentrations.

5.4 Site Suitability

Due to the nature of the proposed development, being a hotel use, the annual mean AQO limits for NO_2 , PM_{10} and $PM_{2.5}$ are not considered to apply to this assessment. However, as presented in Table 5.1 and Table 5.2, representative monitored annual mean NO_2 concentrations in the vicinity of the Site are below $40\mu g/m^3$ and it can be concluded that concentrations at the Site are likely to be similar, if not less, being located away from a main road. Annual mean NO_2 concentrations at the Site are therefore expected to be meet the AQO limit for this pollutant, resulting in no predicted risk of the proposed development exposing future occupants to elevated pollutant concentrations.

As presented in Table 5.3 the background NO₂, PM₁₀ and PM_{2.5} concentrations predicted at the Site are considerably below the relevant annual AQOs and target value. Given the low concentrations of these pollutants, even allowing for a reasonable traffic contribution, it can be concluded that pollutant concentrations at the Site will be below the relevant AQOs. Therefore, there is no predicted risk of the proposed development exposing future occupants to elevated pollutant concentrations, with annual mean NO₂, PM₁₀ and PM_{2.5} concentrations expected to meet the AQO for these pollutants.

The short-term objective limits such as the 1-hour NO₂ objective are considered relevant to the Site. As presented in Table 5.1 and Table 5.2, the annual mean NO₂ concentrations at representative locations in the vicinity of the Site are well below 60µg/m³. It can therefore be concluded that concentrations at the Site will be below 60µg/m³. Short-term NO₂ concentrations at the Site are therefore expected to be meeting the 1-hour objective limit for this pollutant.

For PM₁₀, the short-term objective of 50µg/m³ should not be exceeded more than 35 times per year. As presented in Table 5.3, predicted background concentrations of PM₁₀ were significantly below 50µg/m³ and therefore, even when considering the road traffic emission contribution, short-term concentrations are expected to meet the short-term AQO at the Site.

There is no short-term AQO for PM_{2.5}, and therefore, these concentrations are compared against the AQOs for PM₁₀. Based on this, there is no predicted risk of exceedance for PM_{2.5} at the Site.

It is therefore concluded that the proposed development will not introduce residential occupants into a location of poor air quality, and as such, the impact of the proposals in terms of new exposure is therefore considered to be **negligible**.

6.0 ASSESSMENT OF IMPACTS

6.1 Construction Impacts

6.1.1 Site and Surroundings

Step 1

A review of the Site location has identified residential properties located to the east of the Site, within the relevant screening distance of 250m. An assessment of construction related impacts in relation to human receptors has therefore been undertaken.

A review of the Defra MAGIC website¹⁹ has identified no designated ecological designations within the relevant screening distances and therefore, this element of the assessment is not considered further within this assessment. It is therefore concluded that, the level of risk for ecological receptors is **negligible**.

6.1.2 Meteorological Data

The precise behaviour of the dust, its residence time in the atmosphere, and the distance it may travel before being deposited would depend upon a number of factors. These include wind direction and strength, local topography, and the presence of intervening structures (buildings, etc.) that may intercept dust before it reaches sensitive locations. Furthermore, dust would be naturally suppressed by rainfall.

To consider the prevailing conditions at the Site, a review of historical weather data has been undertaken. The closest observation station with a suitable dataset is Manchester Airport, located approximately 1.8km to the south of the Site. It is anticipated that meteorological conditions would be reasonably similar over a distance of this magnitude.

Meteorological data were obtained for the period 1st January 2014 to 31st December 2023 (inclusive), and reference should be made to Appendix C for a wind rose of these data.

A review of the wind rose has shown that any receptors located to the north through to the east of the Site have the greatest potential to be affected by dust and particulate matter emitted and re-suspended during the construction phase, as a result of the prevailing wind direction. However, under low wind speed conditions, it is likely that the majority of dust would be deposited in the area immediately surrounding the source.

6.1.3 Risk Assessment of Dust Impacts

Step 2A - Defining the Potential Dust Emission Magnitude

With reference to the criteria detailed in Appendix B, the dust emission magnitude has been determined for each of the following categories: demolition, earthworks, construction and trackout. These have been summarised in Table 6.1

¹⁹ Defra (2024) MAGIC [Online] Available at: <https://magic.defra.gov.uk/magicmap.aspx> [Accessed on 17/05/2024].

Table 6.1
Dust Emission Magnitude

Activity	Criteria	Dust Emission Magnitude
Demolition	No demolition activities required.	N/A
Earthworks	Total site area <18,000m ² .	Small
Construction	Building volume assumed to be between 12,000m ³ - 75,000 m ³ , main construction materials brick and concrete.	Medium
Trackout	Unpaved road length <50m.	Small

Step 2B - Defining the Sensitivity of Surrounding Area

Using the criteria set out in Tables B2 to B4 in Appendix B, the sensitivity of the surrounding area to impacts from dust emissions has been determined and is set out in Table 6.2.

Dust Soiling

There are 1-10 residential properties located within 20m of the Site boundary. Given the proximity and number of existing **high sensitivity** residential receptors, the overall sensitivity of the surrounding area is considered to be **medium**, at worst.

Human Health Effects

As discussed in Section 5, the PM₁₀ concentrations taken from the Defra background maps, for the Site location, are predicted to be below the relevant AQO (Table 5.3). The data indicates background concentrations <15µg/m³ and based on professional judgment, it is anticipated that PM₁₀ concentrations at the Site and at adjacent properties are unlikely to be much higher than background. Therefore, PM₁₀ concentrations are expected to be below 24µg/m³. The sensitivity of the area is therefore considered to be **low** for human health impacts.

Table 6.2
Sensitivity of Receptors

Potential Impact	Sensitivity at Site
Dust Soiling	Receptor Sensitivity
	High
	Number of Receptors
	1-10 receptors within 20m
	Sensitivity of the area
	Medium
Human Health	Receptor Sensitivity
	High
	Annual mean PM ₁₀ Concentrations
	<24µg/m ³
	Number of Receptors
	1-10 receptors within 20m
	Sensitivity of the area
	Low

Step 2C - Defining the Risk of Impacts

The dust emission magnitude as set out in Table 6.1 is combined with the sensitivity of the area (Table 6.2) to determine the risk of both dust soiling and human health impacts, assuming no mitigation measures applied at Site. The risk of impacts associated with each activity is provided in Table 6.3 below.

Table 6.3
Summary of Effects Without Mitigation

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

Step 3 - Site Specific Mitigation

The maximum dust risk category defined in Table 6.3 has been used to inform the required site-specific mitigation measures, which are set out in Appendix D. In accordance with the IAQM guidance, where the risk is assigned as negligible, no mitigation measures beyond those required by legislation are required.

Step 4 - Determine Significant Effects

Once the risk of dust impacts has been determined in Step 2C and the appropriate dust mitigation measures identified in Step 3, the final step is to determine whether there are significant effects arising from the construction phase of a proposed development.

For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Following the application of all recommended best practice mitigation measures, the residual effect is likely to be **not significant**.

6.2 Operational Impacts

Development trip generation has been provided by the Project Transport Consultant (the 'PTC'), Hydrock. A summary of the anticipated trip generation associated with the development is provided below in Table 6.4.

Table 6.4
Anticipated Trip Generation for the Proposed Development

Class	Total Vehicles (AADT)		Total
	Arr.	Dep.	
Total	244	253	497
OGV	2	2	4
%OGV	1%	1%	1%

Based on the trip generation detailed above, the scheme will result in traffic flows below the EPUK/IAQM criteria of 500 AADT, being located outside of the AQMA. Furthermore, the total trip generation will distribute both east and west along Enterprise Way, thereby further reducing the net change in vehicles along this road link, which is outside of the AQMA.

It is noted from the PTC that the majority of these trips will route to and from the Site via either the M56 Junction 5 and the Airport Spur to the west (via the Terminal 2 Roundabout), or the A555 to the east (via Enterprise Way and A555 Ringway Road West). Whilst the trip generation along the M56, Airport Spur and A555 routes may be greater than 100AADT, being located within the AQMA, there are no sensitive receptor locations of relevant exposure along these road links, at the direct roadside.

Based on this, potential air quality impacts associated with the operational phase were predicted to be **not significant**. Furthermore, it should be noted that based on the nature of the proposals at the Site, the vast majority of these trips associated with the scheme can be expected to be undertaken by passengers travelling from further afield and staying at the proposed hotel before or after their flight. In this way, vehicle trips to and from the hotel will form part of journeys to Manchester Airport that would occur on these road links regardless of the proposed hotel being delivered (such trips would otherwise be made to one of the hotels located within the Airport complex). This therefore reduces the potential impact of the scheme as the trips would already be on the local road network, especially along the M56, Airport Spur and A555 routes which are key access routes to Manchester Airport itself.

Furthermore, the review of the baseline air quality conditions across and in the vicinity of the Site indicates that representative monitored annual mean NO₂ concentrations in the vicinity of the Site are below 40µg/m³, with background pollutant concentrations significantly below the relevant AQOs for all pollutants. It can therefore be concluded that concentrations at the Site are likely to be similar, if not less, being located away from a main road, with the additional trips generated by the Site unlikely to have a significant impact on local pollutant concentrations.

Annual mean NO₂ concentrations across and in the vicinity of the Site are therefore expected to be meet the AQO limit for this pollutant, resulting in no predicted risk of the proposed development exposing future occupants to elevated pollutant concentrations.

Based on the review of traffic data associated with the scheme, and following the baseline air quality assessment, the operational impact of the proposed development is deemed to be **negligible**.

7.0 MITIGATION

7.1 Construction Phase

The control of dust emissions from construction phase site activities relies upon management provisions and mitigation techniques to reduce emissions of dust and limit dispersion. Where dust emission controls have been used effectively, large-scale operations have been successfully undertaken without impacts to nearby properties.

The proposed development has been identified as a **medium-risk** site for dust soiling effects, based on the highest category detailed in Table 6.3. For human health, the Site has been identified as a **low-risk** site, based on the highest category set out in Table 6.3.

The developer should therefore implement appropriate dust and pollution control measures as set out within the IAQM guidance. A summary of these measures is set out in Appendix D. If applicable, the proposed measures can be set out within an accompanying Construction Environmental Management Plan (CEMP) and approved by MCC prior to commencement of any work on-site.

Following the implementation of the recommended mitigation measures, the impact of emissions during the construction phase of the proposed development would be **negligible**.

7.2 Operational Phase

The assessment has shown that the operational phase of the development would have a **negligible** impact on local air quality. No mitigation measures emissions have therefore been considered necessary.

8.0 CONCLUSIONS

Evans Dakota Hotels Ltd has appointed Dragonfly Consulting to undertake an Air Quality Assessment to inform the planning application for a proposed hotel development, located on land off Bailey Lane in Manchester.

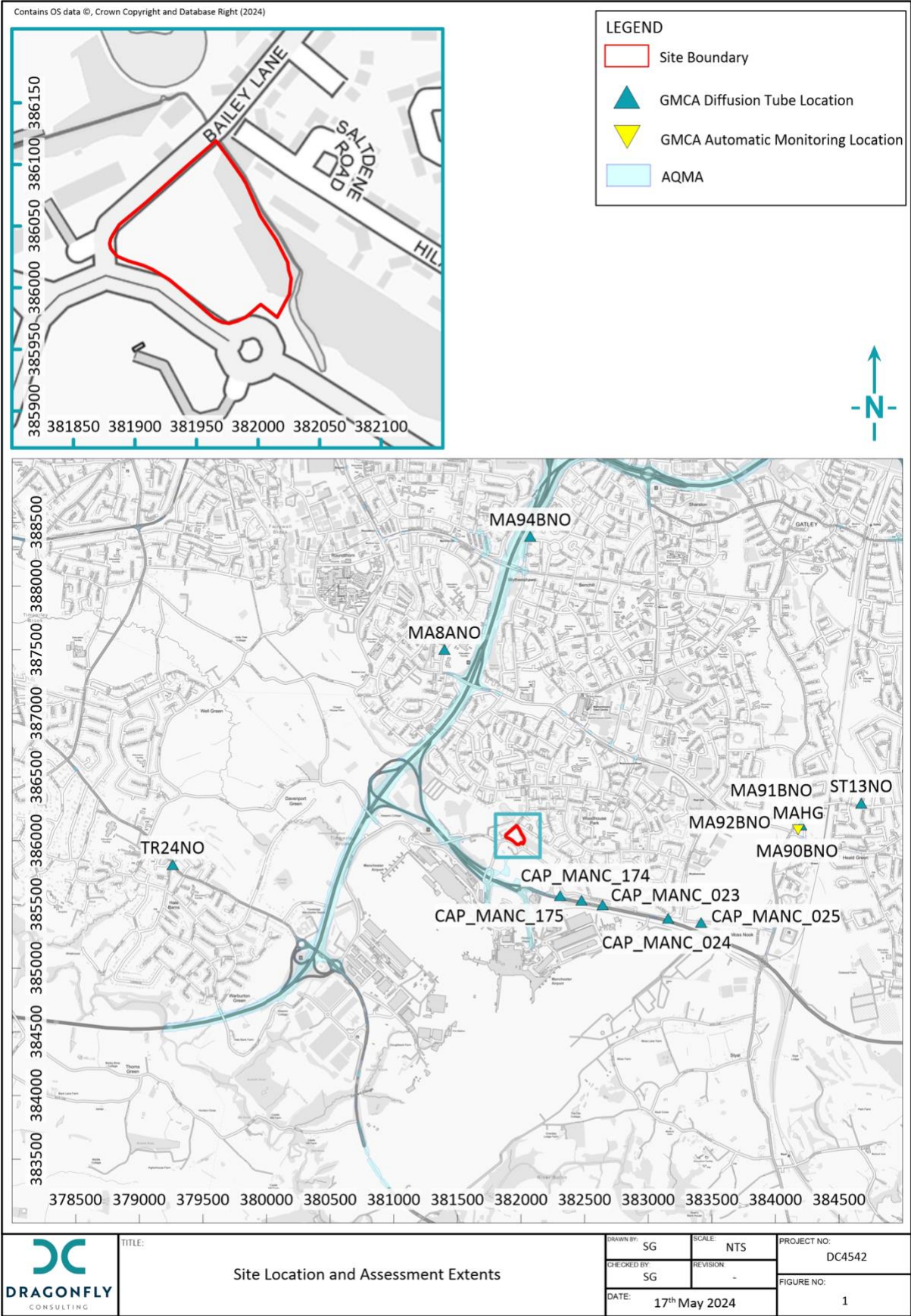
The IAQM guidance has been used to inform the qualitative assessment of the potential impacts on local air quality from construction phase activities at the Site, with the results used to determine the level of mitigation required at the Site to reduce dust emissions and associated impacts.

Due to the proximity and number of nearby residential receptors, the Site is considered to have a **medium risk** of dust soiling impacts and a **low risk** with regard to PM₁₀ concentrations. However, through good site practice and the implementation of the recommended, appropriate mitigation measures, the effects of dust and PM₁₀ associated with the construction phase of the Proposed Development are considered to be **not significant**.

Based on the review of traffic data associated with the scheme, and following the baseline air quality assessment, the operational impact of the proposed development is deemed to be **negligible**, in terms of exposure to NO₂, PM₁₀ and PM_{2.5} concentrations.

Based on the above, air quality does not pose a constraint to the development of the Site for the proposed hotel use and the proposals meet the requirements of both national and local air quality planning policy

Figure 1 - Site Location and Assessment Extents



Appendix A – Glossary of Terminology

Term	Definition
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Ambient air	Outdoor air in the troposphere, excluding workplace air.
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between 2 years, which is useful for pollutants that have higher concentrations during the winter months.
AQMA	Air Quality Management Area.
Defra	Department for Environment, Food and Rural Affairs.
Exceedance	A period of time where the concentration of a pollutant is greater than, or equal to, the appropriate air quality standard.
Fugitive emissions	Emissions arising from the passage of vehicles that do not arise from the exhaust system.
GMCA	Greater Manchester Combined Authority.
LAQM	Local Air Quality Management.
MCC	Manchester City Council.
NO	Nitrogen monoxide, a.k.a. nitric oxide.
NO ₂	Nitrogen dioxide.
NO _x	Nitrogen oxides.
O ₃	Ozone.
PM ₁₀	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
PM _{2.5}	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres.
µgm ⁻³ micrograms per cubic metre	A measure of concentration in terms of mass per unit volume. A concentration of 1µg/m ³ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.

Appendix B – IAQM Construction Phase Dust Risk Assessment Methodology

In order to assess the potential impacts, the activities on construction sites are divided into four categories. These are:

- demolition (removal of existing structures);
- earthworks (soil-stripping, ground-levelling, excavation and landscaping);
- construction (activities involved in the provision of a new structure); and
- trackout (the transport of dust and dirt from the construction site onto the public road network where it may be deposited and then re-suspended by vehicles using the network).

For each activity, the risk of dust annoyance, health and ecological impact is determined using three risk categories: low, medium and high risk. The risk category may be different for each of the four activities. The risk magnitude identified for each of the construction activities is then compared to the number of sensitive receptors in the near vicinity of the site in order to determine the risks posed by the construction activities to these receptors.

Step 1: Screen the Need for an Assessment

The first step is to screen the requirement for a more detailed assessment. An assessment is required where there is:

- a 'human receptor' within 250m of the boundary of the site or 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s); and/or
- an 'ecological receptor' within 50m of the boundary of the site; or 50m of the route(s) used by the construction vehicles on the public highway, up to 250m from the site entrance(s).

Step 2A: Define the Potential Dust Emission Magnitude

This is based on the scale of the anticipated works and the proximity of nearby receptors. The risk is classified as small, medium or large for each of the four categories.

Demolition: The potential dust emission classes for demolition are:

- Large: Total building volume $>75,000\text{m}^3$, potentially dusty construction material (e.g. Concrete), on site crushing and screening, demolition activities $>12\text{m}$ above ground level;
- Medium: total building volume $12,000\text{m}^3 - 75,000\text{m}^3$, potentially dusty construction material, demolition activities 6-12m above ground level; and
- Small: total building volume $<12,000\text{m}^3$, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities $<6\text{m}$ above ground, demolition during wetter months.

Earthworks: This involves excavating material, haulage, tipping and stockpiling. The potential dust emission classes for earthworks are:

- Large: Total site area $>110,000\text{m}^2$, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds $>6\text{m}$ in height;

- Medium: Total site area 18,000m² – 110,000m², moderately dusty soil (e.g. silt), 5 – 10 heavy earth moving vehicles active at any one time, formation of bunds 3m – 6m in height; and
- Small: Total site area <18,000m², soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3m in height.

Construction: The important issues here when determining the potential dust emission magnitude include the size of the building(s)/infrastructure, method of construction, construction materials, and duration of build. The categories are:

- Large: Total building volume >75,000m³, on site concrete batching, sandblasting;
- Medium: Total building volume 12,000m³ – 75,000m³, potentially dusty construction material (e.g. concrete), on site concrete batching; and
- Small: Total building volume <12,000m³, construction material with low potential for dust release (e.g. metal cladding or timber).

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 and speed, the duration of activities and local geology are also factors which are used to determine the emission class of the Site as a result of trackout. The categories are:

- Large: >50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length > 100m;
- Medium: 20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content, unpaved road length 50m - 100m; and
- Small: <20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

Step 2B: Defining the Sensitivity of the Area

The sensitivity of the area is defined for dust soiling, human health (PM₁₀) and ecological receptors. The sensitivity of the area takes into account the following factors:

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

Table B1 is used to define the sensitivity of different types of receptors to dust soiling, health effects and ecological effects.

Based on the sensitivities assigned to the different receptors surrounding the site and numbers of receptors within certain distances of the site, a sensitivity classification can be defined for each. Tables B2 to B4 indicate the criteria used to determine the sensitivity of the area to dust soiling, human health and ecological impacts.

Table B1
Examples of Factors Defining Sensitivity of an Area

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
High	<p>Users can reasonably expect enjoyment of a high level of amenity. The appearance, aesthetics or value of their property would be diminished by soiling'. The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.</p> <p>E.g. dwellings, museums and other important collections, medium and long term car parks and car showrooms.</p>	<p>10 – 100 dwellings within 20 m of site.</p> <p>Local PM₁₀ concentrations close to the objective (e.g. annual mean 36-40 µg/m³).</p> <p>E.g. residential properties, hospitals, schools and residential care homes.</p>	<p>Locations with an international or national designation and the designated features may be affected by dust soiling. Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red List for Great Britain.</p> <p>E.g. A Special Area of Conservation (SAC).</p>
Medium	<p>Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home.</p> <p>The appearance, aesthetics or value of their property could be diminished by soiling.</p> <p>The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.</p> <p>E.g. parks and places of work</p>	<p>Less than 10 receptors within 20m.</p> <p>Local PM₁₀ concentrations below the objective (e.g. annual mean 30-36 µg/m³).</p> <p>E.g. office and shop workers but will generally not include workers occupationally exposed to PM₁₀ as protection is covered by the Health and Safety at Work legislation.</p>	<p>Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown.</p> <p>Locations with a national designation where the features may be affected by dust deposition.</p> <p>E.g. A Site of Special Scientific Interest (SSSI) with dust sensitive features.</p>
Low	<p>The enjoyment of amenity would not reasonably be expected.</p> <p>Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling.</p> <p>There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.</p> <p>E.g. playing fields, farmland unless commercially sensitive horticultural, footpaths, short lived car parks and roads.</p>	<p>Locations where human exposure is transient.</p> <p>No receptors within 20m.</p> <p>Local PM₁₀ concentrations well below the objectives (less than 75%).</p> <p>E.g. public footpaths, playing fields, parks and shopping streets.</p>	<p>Locations with a local designation where the features may be affected by dust deposition.</p> <p>E.g. Local Nature Reserve with dust sensitive features.</p>

Table B2
Sensitivity of the Area to Dust Soiling on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table B3
Sensitivity of the Area to Human Health

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m ³	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m ³	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m ³	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m ³	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m ³	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32 µg/m ³	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 µg/m ³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m ³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	-	>1	Low	Low	Low	Low
		>1	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low

Table B4
Sensitivity of the Area to Ecological Impacts

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

Define the Risk of Impacts

The final step is to combine the dust emission magnitude determined in step 2A with the sensitivity of the area determined in step 2B to determine the risk of impacts with no mitigation applied. Tables B5 to B7 indicate the method used to assign the level of risk for each construction activity. The identified level of risk is then used to determine measures for inclusion within a site-specific Construction Environmental Management Plan (CEMP) aimed at reducing dust emissions and hence reducing the impact of the construction phase on nearby receptors. The mitigation measures are drawn from detailed mitigation set out within the IAQM guidance document.

Table B5
Risk of Dust Impacts from Demolition

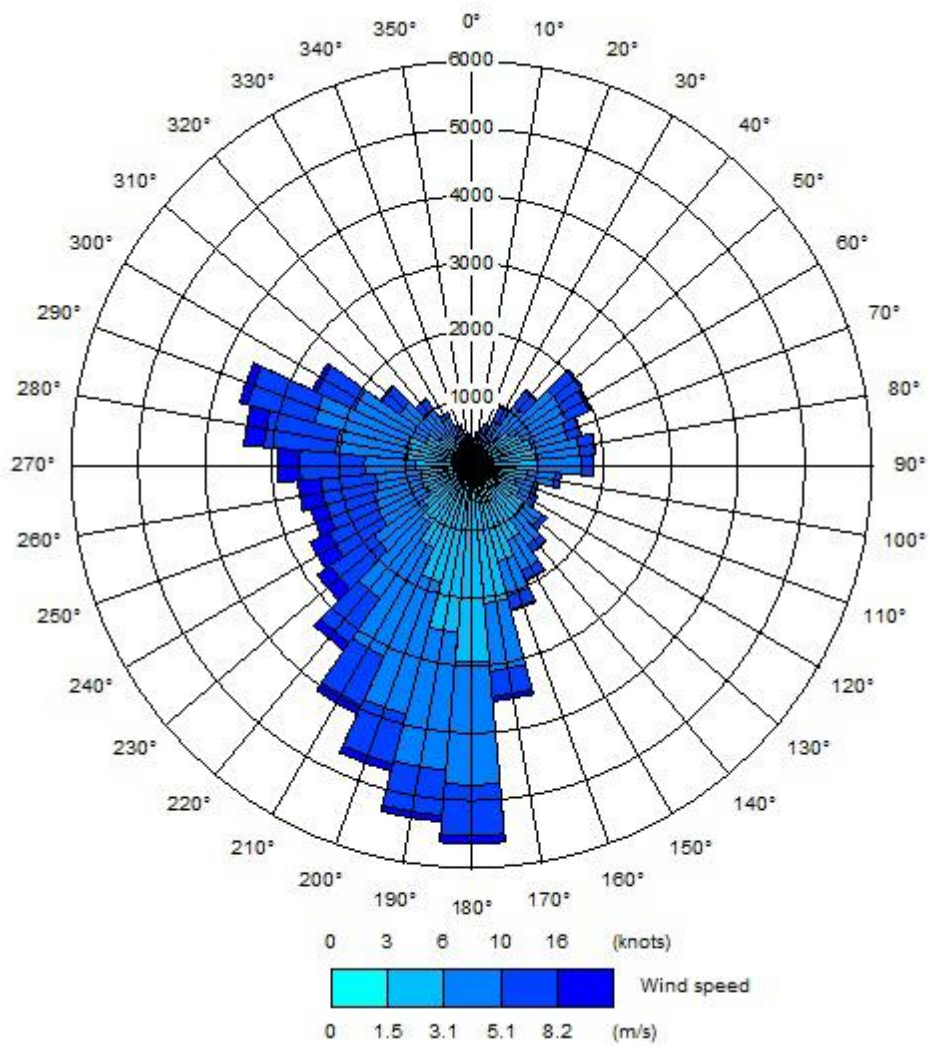
Sensitivity of Area	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table B6
Risk of Dust Impacts from Earthworks/Construction

Sensitivity of Area	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table B7
Risk of Dust Impacts from Trackout

Sensitivity of Area	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Appendix C - Wind Rose for Manchester Airport (2014-2023)

Appendix D - Construction Phase Mitigation Measures

The mitigation measures have been divided into general measures applicable to all sites and measures applicable specifically to demolition, earthworks, construction and trackout, for consistency with the IAQM assessment methodology.

The following table details the mitigation required for high, medium and low risk sites.

It is noted that not all mitigation measures will be applicable to every site and development, however, all of those recommended by the IAQM have been provided for completeness. Professional judgement should therefore be used, taking into consideration the site location, scale and nature of the proposed works.

Based on the assessment results, mitigation will be required during the construction phase of the Proposed Development, commensurate with a **medium risk** site, which is the highest risk category identified in Section 6. This column has therefore been highlighted for ease.

Key to Table:

H	Highly Recommended
D	Desirable
N	Not Required

Table D1 - IAQM Construction Phase Mitigation Measures

Mitigation Measure	Low Risk	Medium Risk	High Risk
Communication			
1. Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	N	H	H
2. 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.	H	H	H
3. Display the head or regional office contact information.	H	H	H
4. 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, realtime PM ₁₀ continuous monitoring and/or visual inspections.	D	H	H

Mitigation Measure	Low Risk	Medium Risk	High Risk
Site Management			
5. 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.	H	H	H
6. Make the complaints log available to the local authority when asked.	H	H	H
7. 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.	H	H	H
8. Hold regular liaison meetings with other high risk construction sites within 500m 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.	N	N	H
Monitoring			
9. Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.	D	D	H
10. 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.	H	H	H
11. 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.	H	H	H
12. Agree dust deposition, dust flux, or real-time PM ₁₀ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	H	H	H
Preparing and Maintaining the Site			
13. Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H	H	H
14. Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	H	H	H
15. Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	D	H	H
16. Avoid site runoff of water or mud.	H	H	H
17. Keep site fencing, barriers and scaffolding clean using wet methods.	D	H	H
18. 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.	D	H	H
19. Cover, seed or fence stockpiles to prevent wind whipping.	D	H	H
Operating Vehicle/Machinery and Sustainable Travel			
20. Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.	H	H	H
21. Ensure all vehicles switch off engines when stationary - no idling vehicles.	H	H	H

Mitigation Measure	Low Risk	Medium Risk	High Risk
22. Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	H	H	H
23. Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph 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).	D	D	H
24. Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	N	N	H
25. Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	N	D	H
Operations			
26. 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.	H	H	H
27. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate	H	H	H
28. Use enclosed chutes and conveyors and covered skips.	H	H	H
29. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	H	H	H
30. Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	D	H	H
Waste Management			
31. Avoid bonfires and burning of waste materials.	H	H	H
Measures Specific to Demolition			
32. Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	D	D	H
33. Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	H	H	H
34. Avoid explosive blasting, using appropriate manual or mechanical alternatives.	H	H	H
35. Bag and remove any biological debris or damp down such material before demolition	H	H	H
Measures Specific to Earthworks			
36. Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	N	D	H
37. Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.	N	D	H
38. Only remove the cover in small areas during work and not all at once.	N	D	H

Mitigation Measure	Low Risk	Medium Risk	High Risk
Measures Specific to Construction			
39. Avoid scabbling (roughening of concrete surfaces) if possible.	D	D	H
40. 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.	D	H	H
41. 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.	N	D	H
42. For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	N	D	D
Measures Specific to Trackout			
43. Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	D	H	H
44. Avoid dry sweeping of large areas.	D	H	H
45. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	D	H	H
46. Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	N	H	H
47. Record all inspections of haul routes and any subsequent action in a site logbook.	D	H	H
48. Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsters and regularly cleaned.	N	H	H
49. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	D	H	H
50. Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	N	H	H
51. Access gates to be located at least 10m from receptors where possible.	N	H	H