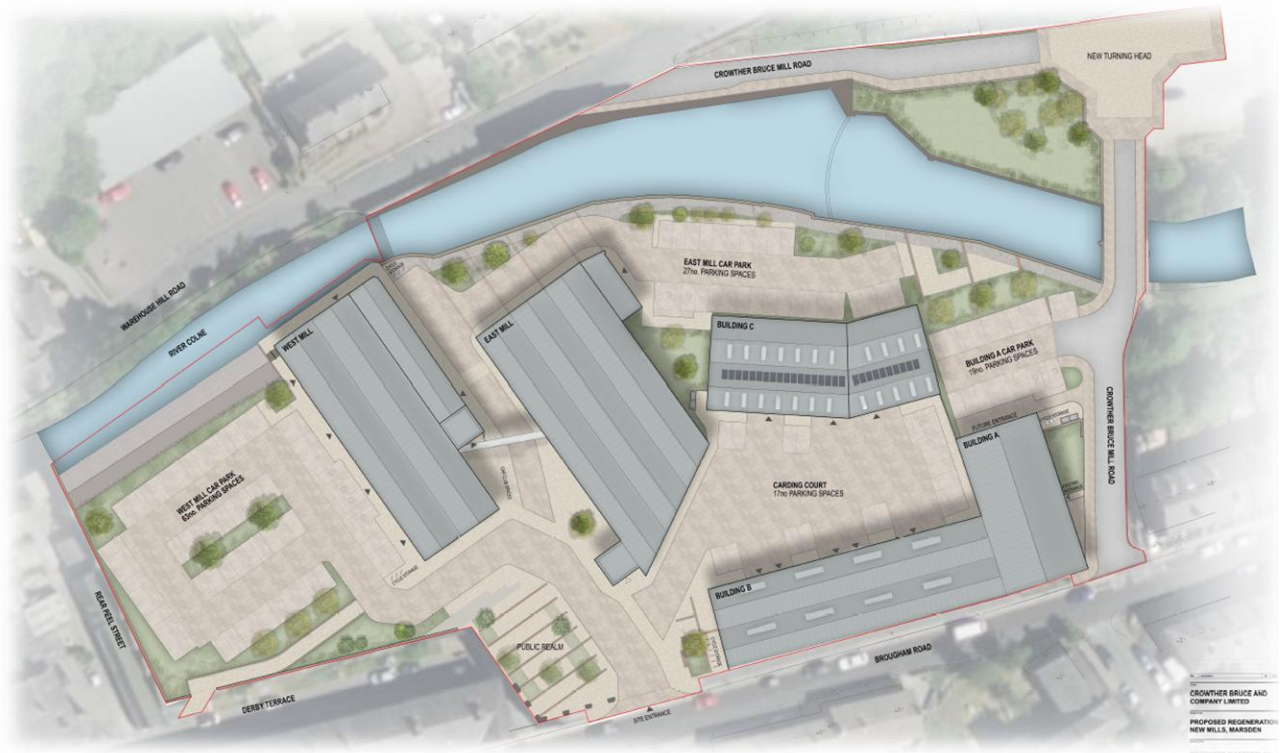


# New Mills, Brougham Road, Marsden, Huddersfield, HD7 6AZ



## Air Quality Assessment

784-B070552  
26<sup>th</sup> January 2026

### PRESENTED TO

**Crowther Bruce and Co Limited**





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## DOCUMENT CONTROL

<b>Document:</b>	<b>Air Quality Assessment</b>
<b>Project:</b>	New Mills, Marsden
<b>Client:</b>	Crowther Bruce and Co Limited
<b>Job Number:</b>	784-B070552
<b>File Origin:</b>	\\ds-dc-vm-101\Data\Projects

<b>Issue:</b>	<b>1</b>	<b>Status:</b>	<b>First Issue</b>
<b>Date:</b>	26 <sup>th</sup> January 2026		
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<b>Issue:</b>		<b>Status:</b>	
<b>Date:</b>			
<b>Prepared by:</b>	<b>Checked by:</b>	<b>Approved By:</b>	
<b>Description of revision:</b>			

<b>Issue:</b>		<b>Status:</b>	
<b>Date:</b>			
<b>Prepared by:</b>	<b>Checked by:</b>	<b>Approved By:</b>	
<b>Description of revision:</b>			

## EXECUTIVE SUMMARY

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This report presents the findings of an air quality assessment undertaken to assess road traffic emissions and construction dust impacts in support of a planning application for a commercial/industrial and residential development at New Mills, Brougham Road, Marsden, HD7 6AZ.

### Construction Phase

The potential effects during the demolition and construction phases include fugitive dust emissions from site activities, such as earthworks, construction and trackout.

During the construction phase, site specific mitigation measures detailed within this assessment will be implemented. With these mitigation measures in place, the effects from the construction phase are not predicted to be significant.

### Operational Phase

Detailed dispersion modelling of traffic pollutants has been undertaken for the proposed development. An operational year assessment for 2029 traffic emissions has been undertaken to assess the effects of the Proposed Development. The impacts during the operational phase take into account exhaust emissions from additional road traffic generated due to the proposed development.

The long-term (annual) assessment of the effects associated with the proposed development with respect to Nitrogen Dioxide (NO<sub>2</sub>) is determined to be 'negligible'. With respect to PM<sub>10</sub> and PM<sub>2.5</sub> exposure, the effect is determined to be 'negligible' at all identified existing sensitive receptor locations.

All proposed receptor locations are expected to be exposed to air quality below the Air Quality Objectives for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>. No further mitigation is required to protect future occupants.

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## ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
AADT	Annual Average Daily Traffic
ADMS	Atmospheric Dispersion Modelling Software
AQAL	Air Quality Assessment Level
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQO	Air Quality Objectives
AQS	Air Quality Standards
CHP	Combined Heat and Power
CL	Critical Level
CO	Carbon Monoxide
DEFRA	Department for Environment Food & Rural Affairs
EAL	Environmental Assessment Limits
EC	European Commission
EFT	Emissions Factors Toolkit
EPUK	Environmental Protection UK
EU	European Union
EPAQS	Expert Panel on Air Quality Standards
IAQM	Institute of Air Quality Management
LA	Local Authority
LAQM	Local Air Quality Management
NGR	United Kingdom National Grid Reference
NO	Nitric Oxide
NO <sub>2</sub>	Nitrogen Dioxide
PC	Process Contribution
MHCLG	Ministry for Housing, Communities and Local Government
NPPF	National Planning Policy Framework
OS	UK Ordnance Survey
PEC	Predicted Environment Concentration
PPG	Planning Policy Guidance
PPS	Planning Policy Statements
SAC	Special Areas of Conservation
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest
VOC	Volatile organic compounds
WHO	World Health Organization
UK	United Kingdom

## 1.0 INTRODUCTION

This report presents the findings of an air quality assessment undertaken to assess road traffic emissions and construction dust impacts in support of a planning application for a commercial/industrial and residential development at New Mills, Brougham Road, Marsden, HD7 6AZ.

### 1.1 SITE LOCATION

The central Grid Reference is approximately 405008, 411686. The application site is bounded to the north by Warehouse Hill Road and Mill Road followed by residential and commercial properties, to the east by Mill Road followed by residential properties along Brougham Road and the River Colne, to the south by Brougham Road followed residential properties, and to the west by residential and commercial properties along Peel Street.

Reference should be made to **Figure 1-1** for a map of the application site and surrounding area.

**Figure 1-1.** Satellite Image of Site and Surrounding Area



Google Imagery (2025)

### 1.2 CONTEXT

The primary source of the air quality pollutants associated with the proposed scheme is from vehicle movements, arriving and departing the proposed development. The traffic data generated by the development has been assessed at the surrounding sensitive receptors and proposed sensitive receptors.

The following assessment stages have been undertaken as part of this assessment:

- Baseline conditions evaluation;
- Assessment of potential air quality impacts during the construction phase;
- Assessment of potential air quality impacts during the operational phase; and,
- Identification of mitigation measures (as required).

The results of the assessment are detailed in the following sections of this report.

The construction phase assessment considers the potential effects of dust and particulate emissions from site activities and materials movement using a qualitative risk assessment method based on the Institute of Air Quality Management's (IAQM) 'Guidance on the Assessment of Dust from Demolition and Construction V2.2' document, published in 2024.

The assessment of the potential air quality impacts that are associated with the operational phase has focused on the predicted impact of changes in ambient nitrogen dioxide (NO<sub>2</sub>) and particulate matter with an aerodynamic diameter of less than 10 µm (PM<sub>10</sub>) and less than 2.5 µm (PM<sub>2.5</sub>) as a result of the development at key local receptor locations. The changes have been referenced to EU air quality limits and UK air quality objectives and the magnitude and impact description of the changes have been referenced to non-statutory guidance issued by the IAQM and Environmental Protection UK (EPUK).

## 1.3 REPORT STRUCTURE

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Following this introductory section, the remainder of this report is structured as follows:

- Section 2.0: Policy and Legislative Context
- Section 3.0: Assessment Methodology
- Section 4.0: Baseline Conditions
- Section 5.0: Assessment of Air Quality Impacts – Construction Phase
- Section 6.0: Assessment of Air Quality Impacts – Operational Phase
- Section 7.0: Mitigation
- Section 8.0: Conclusions

All technical Appendices are included at the end of this report for information.

## 2.0 POLICY AND LEGISLATIVE CONTEXT

### 2.1 DOCUMENTS CONSULTED

The following documents were consulted during the undertaking of this assessment:

#### Legislation and Best Practice Guidance

- The Air Quality Standards Regulations (Amendments), 2019<sup>1</sup>;
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Defra, 2007<sup>2</sup>;
- The Air Quality Strategy for England, Defra, 2023<sup>3</sup>;
- The Environment Act 1995<sup>4</sup>;
- The Environment Act 2021<sup>5</sup>;
- The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023<sup>6</sup>;
- PM<sub>2.5</sub> Targets: Interim Planning Guidance (2024)<sup>7</sup>;
- World Health Organization (2006) WHO Air Quality Guidance for Particulate Matter, Ozone, Nitrogen Dioxide and Sulphur Dioxide: Summary of Risk Assessment<sup>8</sup>;
- National Planning Policy Framework, Ministry for Housing, Communities and Local Government, Revised February 2025<sup>9</sup>;
- Planning Practice Guidance: Air Quality, Ministry for Housing, Communities and Local Government, November 2019<sup>10</sup>;
- Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, 2017<sup>11</sup>;
- A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (Version 1.1), IAQM, May 2020<sup>12</sup>;
- Ecological Assessment of Air Quality Impacts, CIEEM, Version 2, October 2023<sup>13</sup>;
- Design Manual for Roads and Bridges, Volume 11, Section 3, Part 1, LA 105 Air quality, Highways England, June 2024<sup>14</sup>;

<sup>1</sup> UK Parliament, (2019). 'The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019', HMSO, London.

<sup>2</sup> Department for Environment, Food & Rural Affairs (DEFRA), (2007). 'The Air Quality Strategy for England, Scotland, Wales and Northern Ireland', HMSO, London.

<sup>3</sup> Department for Environment, Food & Rural Affairs (DEFRA), (2023), 'Air Quality Strategy: framework for local authority delivery'. Available on: [Air quality strategy: framework for local authority delivery - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/air-quality-strategy-framework-for-local-authority-delivery)

<sup>4</sup> UK Government, (1995) 'Environment Act 1995'

<sup>5</sup> UK Government, (2021) 'Environment Act 2021'

<sup>6</sup> Department for Environment, Food & Rural Affairs (DEFRA), (2023), 'The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023'.

<sup>7</sup> PM<sub>2.5</sub> Targets: Interim Planning Guidance (2024);

<sup>8</sup> World Health Organization (2006) WHO Air Quality Guidance for Particulate Matter, Ozone, Nitrogen Dioxide and Sulphur Dioxide: Summary of Risk Assessment.

<sup>9</sup> Ministry of Housing, Communities and Local Government, (2025), 'National Planning Policy Framework', London.

<sup>10</sup> Ministry of Housing, Communities and Local Government, (2019), 'Planning Practice Guidance-Air Quality', Ministry of Housing, Communities and Local Government, London. Available on: <https://www.gov.uk/guidance/air-quality--3#history>.

<sup>11</sup> Environmental Protection UK & Institute of Air Quality Management (EPUK & IAQM) (2017) Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, London

<sup>12</sup> IAQM (2020), 'A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (Version 1.1)', IAQM, London.

<sup>13</sup> Chartered Institute of Ecology and Environmental Management (CIEEM), (2023) 'Ecological Assessment of Air Quality Impacts Version 2', London

<sup>14</sup> Highways England, Design Manual for Roads and Bridges (DMRB), LA 105 Air quality, June 2024, from: <https://www.standardsforhighways.co.uk/dmrb/>

- Guidance on the Assessment of Dust from Demolition and Construction, IAQM, Version 2.2, January 2024<sup>15</sup>;
- Guidance on the Assessment of Mineral Dust Impacts for Planning, IAQM, 2016<sup>16</sup>;
- Local Air Quality Management Technical Guidance LAQM.TG(22), Defra, 2022<sup>17</sup>;
- COVID-19 Supplementary Guidance – Local Air Quality Reporting in 2021, 2021<sup>18</sup>.

#### Websites Consulted

- Google maps ([maps.google.co.uk](https://maps.google.co.uk))<sup>19</sup>;
- Department for Transport: Road Traffic Statistics (<https://roadtraffic.dft.gov.uk/>)<sup>20</sup>;
- Multi-Agency Geographic Information for the Countryside (<http://magic.defra.gov.uk/>)<sup>21</sup>;
- Defra Background Mapping Data for Local Authorities - 2021 (<https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021>)<sup>22</sup>
- Planning Practice Guidance (<http://planningguidance.planningportal.gov.uk/>)<sup>23</sup>; and,
- Kirklees Council (<https://www.kirklees.gov.uk/>).

#### Site Specific Reference Documents

- Kirklees Council, Air Quality Annual Status Report 2025<sup>24</sup>; and,
- Kirklees Local Plan – Strategy and Policies, adopted 27<sup>th</sup> February 2019.<sup>25</sup>

## 2.2 AIR QUALITY LEGISLATIVE FRAMEWORK

### European Legislation

European air quality legislation is consolidated under Directive 2008/50/EC, which came into force on 11th June 2008. This Directive consolidates previous legislation which was designed to deal with specific pollutants in a consistent manner and provides new air quality objectives for fine particulates. The consolidated Directives include:

- **Directive 1999/30/EC** – the First Air Quality ‘Daughter’ Directive – sets ambient air limit values for NO<sub>2</sub> and oxides of nitrogen, sulphur dioxide, lead and PM<sub>10</sub>;

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<sup>15</sup> IAQM, (2024). ‘Assessment of dust from demolition and construction 2024 v2.2’, IAQM, London.

<sup>16</sup> IAQM, (2016). ‘Guidance on the Assessment of Mineral Dust Impacts for Planning v1.1’, IAQM, London.

<sup>17</sup> Department of Environment, Food and Rural Affairs (DEFRA). (2022). ‘Local Air Quality Management Technical Guidance (TG22)’. DEFRA, London

<sup>18</sup> Greater London Authority (GLA). (2021). ‘Local Air Quality Management Reporting in 2021 COVID-19 Supplementary Guidance’. GLA, London

<sup>19</sup> Google maps [online], from: <https://www.google.co.uk/maps>

<sup>20</sup> Department for Transport, Road Traffic Statistics, from: <https://roadtraffic.dft.gov.uk/>

<sup>21</sup> Department for Environment, Food and Rural Affairs, MAGIC [online], from: <https://magic.defra.gov.uk/MagicMap.aspx>

<sup>22</sup> Department for Environment, Food and Rural Affairs, Background Maps, from: <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021>

<sup>23</sup> National Planning Portal, from: <https://www.gov.uk/guidance/air-quality--3#what-air-quality-considerations-does-planning-need-to-address>

<sup>24</sup> Kirklees Council, (2025). ‘Kirklees Council 2025 Air Quality Annual Status Report’. (KC)

<sup>25</sup> Kirklees Council, (2019). ‘Kirklees Local Plan- Strategy and Policies adopted 27<sup>th</sup> February 2019’. (KC)

- **Directive 2000/69/EC** – the Second Air Quality ‘Daughter’ Directive – sets ambient air limit values for benzene and carbon monoxide; and,
- **Directive 2002/3/EC** – the Third Air Quality ‘Daughter’ Directive – seeks to establish long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone in ambient air.

The fourth daughter Directive was not included within the consolidation and is described as:

- **Directive 2004/107/EC** – sets health-based limits on polycyclic aromatic hydrocarbons, cadmium, arsenic, nickel and mercury, for which there is a requirement to reduce exposure to as low as reasonably achievable.

The European Commission (EC) Directive Limits, outlined above, have been transposed in the UK through the Air Quality Standards Regulations. In the UK responsibility for meeting ambient air quality limit values is devolved to the national administrations in England, Scotland, Wales and Northern Ireland.

The European Union (Withdrawal) Act 2018 (EUWA) provides a new framework for the continuity of 'retained EU law' in the UK. EU Directives no longer have to be implemented by the UK except to any extent agreed or decided by the UK unilaterally.

EUWA retains the domestic effect of EU Directives to the extent already implemented in UK law, by preserving the relevant domestic implementing legislation enacted in UK law before 'Implementation Period' completion day. Though the EU Directives are not retained, following the UK's departure from the EU, the EUWA converts the current framework of Air Quality targets, however the role that the EU instructions were party to are lost.

### UK Legislation

The Air Quality Standards Regulations (Amendments 2019) seek to simplify air quality regulation and provide a new transposition of the Air Quality Framework Directive, First, Second and Third Daughter Directives and also transpose the Fourth Daughter Directive within the UK. The Air Quality Limit Values are transposed into the updated Regulations as Air Quality Standards, with attainment dates in line with the European Directives. SI 2010 No. 1001, Part 7 Regulation 31 extends powers, under Section 85(5) of the Environment Act (1995), for the Secretary of State to give directions to Local Authorities (LAs) for the implementation of these Directives.

The UK Air Quality Strategy is the method for implementation of the air quality limit values in England, Scotland, Wales and Northern Ireland and provides a framework for improving air quality and protecting human health from the effects of pollution.

For each nominated pollutant, the Air Quality Strategy sets clear, measurable, outdoor air quality standards and target dates by which these must be achieved; the combined standard and target date is referred to as the Air Quality Objective (AQO) for that pollutant. Adopted national standards are based on the recommendations of the Expert Panel on Air Quality Standards (EPAQS) and have been translated into a set of Statutory Objectives within the Air Quality (England) Regulations (2000) SI 928, and subsequent amendments. The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 amends the AQO for PM<sub>2.5</sub> outlined within the Air Quality Standards Regulations (2010 & 2019 Amendments).

The AQOs for pollutants included within the Air Quality Strategy and assessed as part of the scope of this report are presented in **Table 2-1** and **Table 2-2** along with European Commission (EC) Directive Limits and World Health Organisation (WHO) Guidelines. The ecological levels are based on WHO and CLRTAP (Convention on Long-range Transboundary Air Pollution) guidance.

**Table 2-1.** Air Quality Standards, Objectives, Limits and Target Values

Pollutant	Applies	Objective	Concentration Measured as <sup>10</sup>	Date to be achieved and maintained thereafter	European Obligations	Date to be achieved and maintained thereafter	New or existing
PM <sub>10</sub>	UK	50 µg/m <sup>3</sup> by end of 2004 (max 35 exceedances a year)	24-hour Mean	1 <sup>st</sup> January 2005	50 µg/m <sup>3</sup> by end of 2004 (max 35 exceedances a year)	1 <sup>st</sup> January 2005	Retain Existing
	UK	40 µg/m <sup>3</sup> by end of 2004	Annual Mean	1 <sup>st</sup> January 2005	40 µg/m <sup>3</sup>	1 <sup>st</sup> January 2005	
PM <sub>2.5</sub>	UK	20 µg/m <sup>3</sup>	Annual Mean	1 <sup>st</sup> January 2020	-	-	Retain Existing
	UK	10 µg/m <sup>3</sup>	Annual Mean	31 <sup>st</sup> December 2040	-	-	New
NO <sub>2</sub>	UK	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-Hour Mean	31 <sup>st</sup> December 2005	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1 <sup>st</sup> January 2010	Retain Existing
	UK	40 µg/m <sup>3</sup>	Annual Mean	31 <sup>st</sup> December 2005	40 µg/m <sup>3</sup>	1 <sup>st</sup> January 2010	

**Table 2-2.** Ecological Air Quality Standards, Objectives, Limit and Target Values

Pollutant	Applies	Objective	Concentration Measured as
NO <sub>x</sub>	UK	30 µg/m <sup>3</sup>	Annual Mean

Within the context of this assessment, the annual mean objectives are those against which facades of residential receptors will be assessed and the short-term objectives apply to all other receptor locations, where people may be exposed over a short duration, both residential and non-residential such as using gardens, balconies, walking along streets, using playgrounds, footpaths or external areas of employment uses.

### Local Air Quality Management

Under Section 82 of the Environment Act (1995) (Part IV) Local Authorities (LAs) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves assessing present and likely future air quality against the AQOs. If it is predicted that levels at the façade of buildings where members of the public are regularly present (normally residential properties) are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA).

### Environment Act 2021

The Environment Act (2021) introduces a commitment to create a legally binding duty on government to reduce the concentrations of fine particulate matter (PM<sub>2.5</sub>) in ambient air, and to set a long-term target expected to be 10 µg/m<sup>3</sup>, a reduction from the current Air Quality objective of 20 µg/m<sup>3</sup> set out within the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020. The Environment Act 2021 requires a draft of a statutory instrument (or drafts of statutory instruments) containing regulations setting that the PM<sub>2.5</sub> air quality target must come into force.

### The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 was published on 31<sup>st</sup> January 2023, and came into force the following day. The 2023 Regulations introduce a reduced long-term annual average Air Quality Objective for PM<sub>2.5</sub> of 10 µg/m<sup>3</sup>, a reduction from the current Air Quality objective of 20 µg/m<sup>3</sup> set out within the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020. Additionally, the 2023 Regulations introduce a population exposure target for PM<sub>2.5</sub> where there is at least a 35% reduction in population exposure by the end of 31<sup>st</sup> December 2040, as compared with the average population exposure in the three-year period from 1<sup>st</sup> January 2016 to 31<sup>st</sup> December 2018.

It should be noted that, whilst the UK Government and Defra has recently set two new targets for Particulate Matter (PM<sub>2.5</sub>) (as per The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023), in March 2023, the Department for Levelling Up, Housing and Communities (DLUHC) explained that the new PM<sub>2.5</sub> targets will “...need to be integrated into the planning system, and in setting out planning guidance for local authorities and businesses, we will consider the specific characteristics of PM<sub>2.5</sub>. The guidance will be forthcoming in due course, until then we expect local authorities to continue to assess local air quality impacts in accordance with existing guidance.” This approach was detailed within the Chief Planners Newsletter, published by the DLUHC<sup>1</sup>. Therefore, until the new guidance referenced by the DLUHC is published, there is no specific requirement to assess against these new targets.

## 2.3 PLANNING AND POLICY GUIDANCE

### National Policy

#### National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF), revised 7<sup>th</sup> February 2025 (minor revision of the 12<sup>th</sup> December 2024 NPPF), principally brings together and summarises the suite of Planning Policy Statements (PPS) and Planning Policy Guidance (PPG) which previously guided planning policy making. The NPPF states that:

#### Paragraph 110

*“The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable*

*transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.”*

#### Paragraph 187

*“Planning policies and decisions should contribute to and enhance the natural and local environment by: ...*

*...e) 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, taking into account relevant information such as river basin management plans...”.*

#### Paragraph 199

*“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 201

*“The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities...”.*

#### Planning Practice Guidance (PPG)

The Planning Practice Guidance (PPG) web-based resource was updated by the Ministry for Housing, Communities and Local Government (MHCLG) on 1st November 2019 to support the National Planning Policy Framework and make it more accessible. A review of PPG: Air Quality identified the following guidance (Paragraph: 001 Reference ID: 32-001-20191101):

*“The 2008 Ambient Air Quality Directive sets legally binding limits for concentrations in outdoor air of major air pollutants that affect public health such as particulate matter ( $PM_{10}$  and  $PM_{2.5}$ ) and nitrogen dioxide ( $NO_2$ ).*

*The UK also has national emission reduction commitments for overall UK emissions of 5 damaging air pollutants:*

- *fine particulate matter (PM<sub>2.5</sub>);*
- *ammonia (NH<sub>3</sub>);*
- *nitrogen oxides (NO<sub>x</sub>);*
- *sulphur dioxide (SO<sub>2</sub>); and*
- *non-methane volatile organic compounds (NMVOCs).*

*As well as having direct effects on public health, habitats and biodiversity, these pollutants can combine in the atmosphere to form ozone, a harmful air pollutant (and potent greenhouse gas) which can be transported great distances by weather systems. Odour and dust can also be a planning concern, for example, because of the effect on local amenity.”*

Further guidance referring to additional considerations when assessing air quality impacts is outlined below;

*“Considerations that may be relevant to determining a planning application include whether the development would:*

- *Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield...*
- *Introduce new point sources of air pollution...*
- *Expose people to harmful concentrations of air pollutants...*
- *Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations;*
- *Have a potential adverse effect on biodiversity...”.*

Guidance on how detailed an air quality assessment needs to be provided and how air quality can be mitigated is stated below:

*“Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific...*

*...Mitigation option will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact. It is important that local planning authorities work with the applicants to consider appropriate mitigation so as to ensure new development is appropriate for its location and unacceptable risks are prevented...”.*

## **Local Policy**

Kirklees Local Plan: Strategy and policies adopted (27<sup>th</sup> February 2019)

Following a review of the Kirklees Local Plan: Strategy and Policies (adopted 27<sup>th</sup> February 2019), the following policy concerning air quality was identified.

### **“Policy LP51: Protection and Improvement of Local Air Quality**

1. *Development will be expected to demonstrate that it is not likely to result, directly or indirectly, in an increase in air pollution which would have an unacceptable impact on the natural and built environment or to people.*

2. *Proposals that have the potential to increase local air pollution either individually or cumulatively must be accompanied by evidence to show that the impact of the development has been assessed in accordance with the relevant guidance. Development which has the potential to cause levels of local air pollution to increase must incorporate sustainable mitigation measures that reduce the level of this impact. If sustainable measures cannot be introduced the development will not be permitted.*
  
3. *Where the development introduces new receptors into Air Quality Management Areas or Areas of Concern or near other areas of relatively poor air quality, for example near roads or junctions, the development must incorporate sustainable mitigation measures that protect the new receptors from unacceptable levels of air pollution. Where sustainable mitigation measures cannot be introduced which prevent receptors from being exposed to unsafe levels of air pollution, development will not be permitted.”*

### 3.0 ASSESSMENT METHODOLOGY

There is potential for environmental effects during the operational phase of the proposed development due to emissions from proposed vehicle movements. The significance of potential environmental effects is assessed according to the latest guidance produced by EPUK and IAQM in January 2017 ‘*Land-Use Planning & Development Control: Planning for Air Quality*’, May 2020 ‘*A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites*’ and January 2023 ‘*Ecological Assessment of Air Quality Impacts*’.

The EPUK and IAQM in January 2017 ‘*Land-Use Planning & Development Control: Planning for Air Quality*’ guidance document outlines the criteria used for screening the need for an Air Quality Assessment.

**Table 3-1.** Indicative Criteria for Requiring an Air Quality Assessment

The Development will:	Indicative Criteria to Proceed to an Air Quality Assessment
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.
Cause a significant change in Heavy Duty Vehicle (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.
Realign roads, i.e. changing the proximity of receptors to traffic lanes	Where the change is 5m or more and the road is within an AQMA.
Introduce a new junction or remove an existing junction near to relevant receptors	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
Introduce or change a bus station	Where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA. - more than 100 AADT elsewhere.
Have an underground car park with extraction system	The ventilation extract for the car park will be within 20m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).

The methodology used to determine the potential air quality effects of the construction phase of the proposed development has been derived from the IAQM ‘*Guidance on the Assessment of the Impacts of Dust from Demolition and Construction*’ document and is summarised in Section 5.0.

### 3.1 DETERMINING IMPACT DESCRIPTION OF THE AIR QUALITY EFFECTS

The impact description of the effects during the operational phase of the development is based on the latest guidance produced by EPUK and IAQM in January 2017. The guidance provides a basis for a consistent approach that could be used by all parties associated with the planning process to professionally judge the overall impact description of the air quality effects based on severity of air quality impacts.

The following rationale is used in determining the severity of the air quality effects at individual receptors:

1. The change in concentration of air pollutants, air quality effects, are quantified and evaluated in the context of Air Quality Action Level (AQAL). The effects are provided as a percentage of the Air Quality Objective (AQO), which may be an AQO, EU limit or target value, or an Environment Agency ‘Environmental Assessment Level (EAL)’;

2. The absolute concentrations are also considered in terms of the AQO and are divided into categories for long term concentration. These categories are based on the sensitivity of the individual receptor in terms of harm potential. The degree of harm potential to change increases as absolute concentrations are close to or above the AQAL;
3. Severity of the effect is described as qualitative descriptors; negligible, slight, moderate or substantial, by taking into account the combination of the harm potential and the air quality effect. This means that a small increase at a receptor which is already close to or above the AQAL will have higher severity compared to a relatively large change at a receptor which is significantly below the AQAL;
4. The effects can be adverse when pollutant concentrations increase or beneficial when concentrations decrease as a result of development;
5. The judgement of the overall impact description of the effects is then based on severity of effects on all the individual receptors considered; and,
6. Where a development is not resulting in any change in emissions itself, the impact description of effect is based on the effect of surrounding sources on new residents or users of the development, i.e., will they be exposed to levels above the AQAL.

**Table 3-2.** Impact Descriptors for Individual Receptors

Long term average concentration at receptor in assessment year	% Change in concentration relative to AQAL			
	1	2-5	6-10	>10
≤75% of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109 of AQAL	Moderate	Moderate	Substantial	Substantial
≥110 of AQAL	Moderate	Substantial	Substantial	Substantial

*\*Air Quality Action Level – in this case the objective levels.*

In accordance with explanation note 2 of Table 6.3 of the EPUK & IAQM guidance, the Table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e. less than 0.5%, will be described as Negligible.

The advisory note for the Ecological Assessment of Air Quality Impacts, created by the Chartered Institute of Ecology and Environmental Management (CIEEM), October 2023 outlines six steps to assessment the likelihood of negative effect of a development on ecological receptors. The six steps are as follows:

- Step 1. Identifying the Baseline Ecological Features and Air Quality;
- Step 2. Assessing Confounding Factors, Background Pollution Trends and the Sensitivity of the Receptor;
- Step 3. Is the Critical Load or Level Exceeded?;
- Step 4. Apply Critical Loads and Critical Levels with Expert Judgement;
- Step 5. Project Duration and Seasonal Effects; and,
- Step 6. Relative Importance of Pollutant Concentration vs Deposition.

## 3.2 ESTIMATING HOURLY AND DAILY MEAN CONCENTRATIONS

The latest Local Air Quality Management (LAQM) Technical Guidance TG (22) has been used for predicting 1 hourly and 24-hourly pollutant concentrations.

The guidance states that the one hour mean NO<sub>2</sub> AQO of 200 µg/m<sup>3</sup> is not likely to be exceeded at any roadside locations if the annual mean concentration is below 60 µg/m<sup>3</sup>. Therefore, this assessment evaluates the likelihood of exceeding the hourly average NO<sub>2</sub> objective by comparing predicted annual average NO<sub>2</sub> concentrations at all receptors to an annual average equivalent threshold of 60 µg/m<sup>3</sup> NO<sub>2</sub>. Where predicted concentrations are below this value, it can be concluded that the hourly average NO<sub>2</sub> objective is likely to be achieved.

Additionally, it is understood that the 24-hour PM<sub>10</sub> objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m<sup>3</sup>. Therefore, this assessment evaluates the likelihood of exceeding the hourly average PM<sub>10</sub> objective by comparing predicted annual average PM<sub>10</sub> concentrations at all receptors to an annual average equivalent threshold of 32 µg/m<sup>3</sup> PM<sub>10</sub>. Where predicted concentrations are below this value, it can be concluded that the hourly average 24-hour mean objective is likely to be achieved.

In accordance with the TG (22) guidance, the short term 24 hourly PM<sub>10</sub> mean concentrations can be calculated using the following equation as presented below.

$$\text{Number of 24 hour mean exceedances} = -18.5 + 0.00145 \times \text{annual mean}^3 + \left( \frac{206}{\text{annual mean}} \right)$$

## 3.3 OTHER GUIDANCE DOCUMENTS OUTLINING KEY METHODOLOGY

### COVID-19 Supplementary Guidance - Local Air Quality Reporting in 2021

This supplementary guidance document was prepared in order to inform the local authorities in England of the key changes and points of reference with respect to LAQM duties, as described in Part IV of the Environment Act 1995, for the 2021 reporting year. This document also outlines the validity of the data collected throughout COVID-19.

### Guidance on the Assessment of Dust from Demolition and Construction

In January 2024, the Institute of Air Quality Management (IAQM) published a revised version (V2.2) of their updated guidance for the 'Assessment of dust from demolition and construction', which was basically a rewrite of the previously published guidance in 2014, whilst adopting the lessons learnt since. The assessment procedure follows the following framework:

- Step 1 - Screen the requirement for a more detailed assessment;
- Step 2 - Assess the risk of dust impacts of the four phases of construction (demolition, earthworks, construction and trackout), taking into account:
  - the scale and nature of the works, which determines the potential Dust Emission Magnitude (Step 2A); and
  - the sensitivity of the area (Step 2B).
  - These factors are then combined to provide the risk of dust impacts (Step 2C).

- Step 3 - Determine the site-specific mitigation for the potential activities;
- Step 4 - Examine the residual effects and determine whether or not these are significant; and
- Step 5 - Prepare the Construction Dust Assessment.

The detailed methodology for undertaking a Construction Dust Risk Assessment (CDRA) contained within the 2024 guidance document is outlined in Appendix B and of this report.

#### Land-Use Planning & Development Control: Planning for Air Quality

This document provides advice and guidance to ensure that air quality is adequately considered in the land-use planning and development control processes. This is applicable to assessing the effect of changes in exposure of members of the public resulting from residential and mixed-use developments.

## 4.0 BASELINE CONDITIONS

### 4.1 AIR QUALITY REVIEW

This section provides a review of the existing air quality in the vicinity of the application site in order to provide a benchmark against which to assess potential air quality impacts of the proposed development. Baseline air quality in the vicinity of the application site has been defined from several sources, as described in the following sections.

#### Local Air Quality Management (LAQM)

The proposed development site falls within the jurisdiction of Kirklees Council (KC).

As required under section 82 of the Environment Act 1995, Kirklees Council (KC) has undertaken an ongoing exercise to review and assess air quality within its area of jurisdiction. The assessments have indicated that concentrations of NO<sub>2</sub> and PM<sub>10</sub> are above the relevant AQOs at many locations of relevant public exposure within KC. Hence 10 Air Quality Management Areas (AQMA) have been declared within the region, as outlined in **Table 4-1**.

**Table 4-1. Local Authority AQMA Details**

AQMA	Description	Date Declared	Date Amended	Pollutants Declared
AQMA 1 Bradley	The designated area incorporates the Leeds Road (A62) - Bradley Road (A6107) junction.	20/10/2008	N/A	NO <sub>2</sub> Annual Mean
AQMA 2 Scouthill	The designated area incorporates part of Huddersfield Road (A644) in Scouthill.	02/03/2009	N/A	PM <sub>10</sub> 24 Hour Mean
AQMA 3 Ainley Top	The designated area incorporates Halifax Road (A629), Lindley Moor Road Bradley Road (A643), Warren House Lane and Stirling Wood Close, which is in close proximity to the Ainley Top Roundabout at Birchencliffe.	01/11/2017	N/A	NO <sub>2</sub> Annual Mean
AQMA 4 Birkenshaw	The designated area incorporates Bradford Road (A651), Whitehall Road East (A58), Carlton Court, Grove Terrace, Swincliffe Crescent, Milford Grove, Tetley Drive and Manor Park Gardens, which is in close proximity to the M62 and A651- A58 Roundabout at Birkenshaw.	01/11/2017	N/A	NO <sub>2</sub> Annual Mean
AQMA 5 Eastborough	The designated area incorporates Leeds Road (A653), Dewsbury Ring Road (A638), Wakefield Road (A638), Highgate Road, Highgate Terrace, Bank Street and Old Bank Road, which is in close proximity to Dewsbury Town Centre.	01/11/2017	N/A	NO <sub>2</sub> Annual Mean
AQMA 6 Edgerton	The designated area incorporates Edgerton Road (A629) and Blacker Road, which is in close proximity to Huddersfield Town Centre.	01/11/2017	N/A	NO <sub>2</sub> Annual Mean
AQMA 7 Liversedge	The designated area incorporates Huddersfield Road (A62), Bradford Road (A638), Wakefield Road (A638), Wormald Street and Well Street, which is in Liversedge.	01/11/2017	N/A	NO <sub>2</sub> Annual Mean
AQMA 8 Outlane	The designated area incorporates New Hey Road and Round Ings Road, which is in close proximity to the M62 at Outlane.	01/11/2017	N/A	NO <sub>2</sub> Annual Mean
AQMA 9 Huddersfield Town Centre	The designated area incorporates roads bordering and within the Huddersfield Ring Road.	01/11/2017	N/A	NO <sub>2</sub> Annual Mean
AQMA 10 Thornton Lodge	The designated area incorporates Manchester Road.	15/06/2019	N/A	NO <sub>2</sub> Annual Mean

The closest AQMA is AQMA 8 Outlane, 7km north-east of the proposed development site. Due to the distance of the closest AQMA to the proposed development site, no sensitive receptors will be assessed within an AQMA.

### Air Quality Monitoring

Due to the COVID-19 pandemic, and associated governmental restrictions, monitoring years 2020, 2021 and 2022 are not considered to be representative due to the reduced emissions associated with governmental restrictions. Subsequently, as per the Covid-19 Supplementary Guidance produced by DEFRA in 2021, the data from 2020, 2021 and 2022 has not been used as reference years within this baseline evaluation. Therefore, this assessment has used 2024 data as the best representative year of post-COVID baseline concentrations and has been used to inform the baseline evaluation.

In June 2025, KC published their latest 2025 Air Quality Annual Status Report (ASR) which provides annual mean monitoring data between 2020-2024.

Monitoring of air quality within KC has been undertaken through both automatic and non-automatic monitoring methods in 2024. These have been reviewed in order to provide an indication of existing air quality in the area surrounding the application site.

#### Automatic Monitoring

KC undertook automatic pollution monitoring during 2024 at one location (CM1), located at Dewsbury Ashworth Grange approximately 21 km northeast of the proposed development site. The most recently available data is from 2024 which is presented in **Table 4-2**.

**Table 4-2.** Monitored Annual Mean Pollutant Concentrations at Automatic Monitoring Locations

Site ID	Location	Site Type	Distance from Kerb of Nearest Road (m)	Inlet Height (m)	2024 NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> )	2024 PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> )	2024 PM <sub>2.5</sub> Annual Mean Concentration (µg/m <sup>3</sup> )
CM1	Dewsbury Ashworth Grange	Urban Background	0	2	15.4	12.5	8.0

As outlined in **Table 4-2**, all monitoring locations monitored annual average concentrations below the AQO for NO<sub>2</sub> (40 µg/m<sup>3</sup> annual mean), PM<sub>10</sub> (40 µg/m<sup>3</sup> annual mean), and PM<sub>2.5</sub> (10 µg/m<sup>3</sup> annual mean) during 2024.

#### Non - Automatic Monitoring

KC operated a network of diffusion tubes during 2024. The closest diffusion tube is diffusion tube 47, which is located on Round Ings Road, Outlane approximately 6.4 km northeast of the application site. In 2024, diffusion tube 47 monitored an annual mean NO<sub>2</sub> concentration of 33.0 µg/m<sup>3</sup> which is below the air quality strategy objective of 40 µg/m<sup>3</sup>. The most recently available diffusion tube data is from 2024 which is presented in **Table 4-3**.

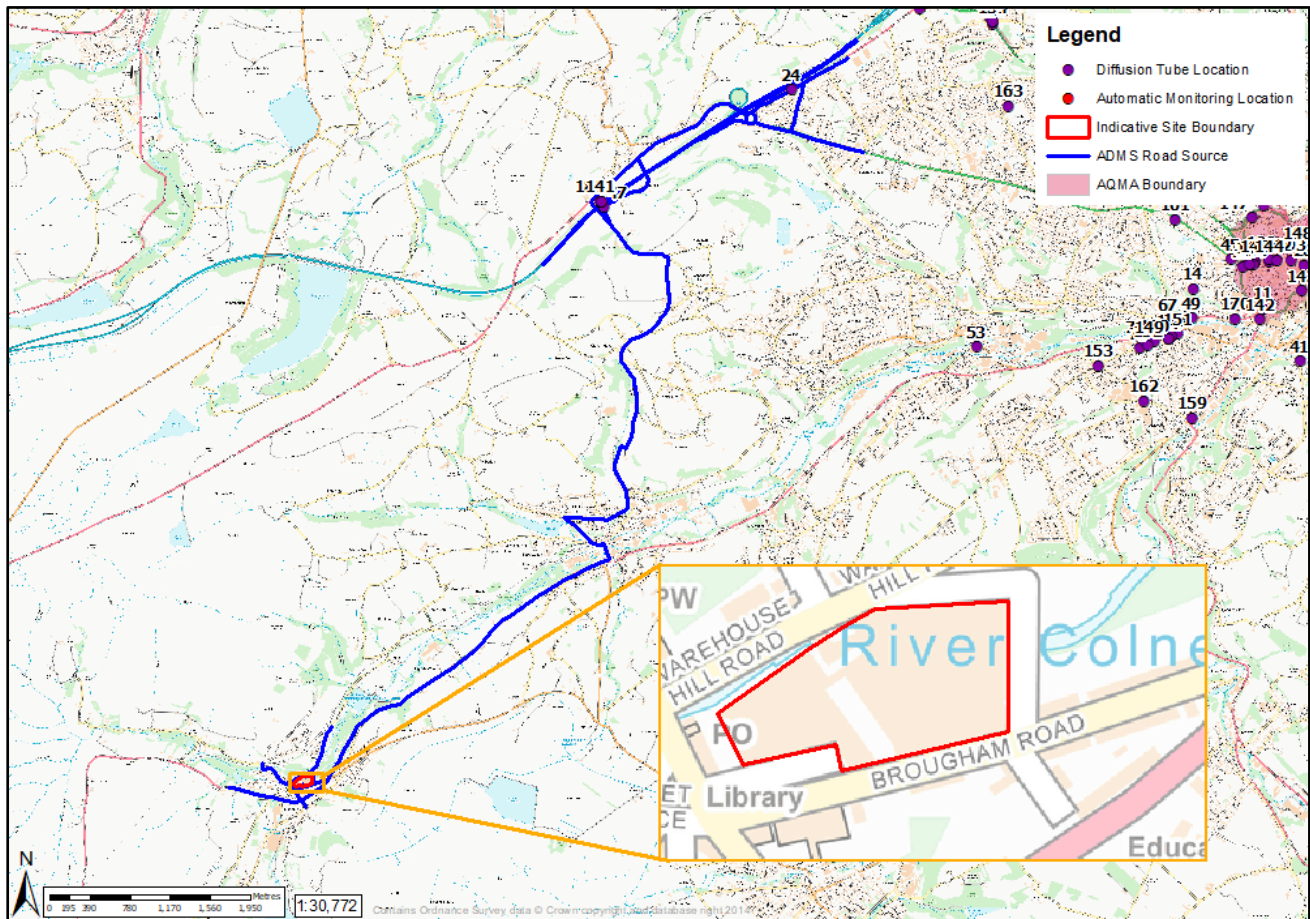
**Table 4-3.** Monitored Annual Mean NO<sub>2</sub> Concentrations at Diffusion Tubes

Site ID	Location	Site Type	Distance from Kerb (m)	Inlet Height (m)	Monitored 2024 Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> )
24	Lindley Moor Road	Roadside	2.2	2.0	31.8
47	Round Ings Road, Outlane, HD3 3FQ-Lamp Post 008	Other	14.4	2.0	33.0
141	Triplicate 1-Fence at Round Ings Road, Outlane	Roadside	4.5	1.0	23.2

As indicated in **Table 4-3**, all diffusion tubes located within the Air Quality Assessment area monitored annual average NO<sub>2</sub> concentrations below the AQO for NO<sub>2</sub> (40 µg/m<sup>3</sup> annual mean) during 2024.

It should be noted that as part of the model verification a review of diffusion tubes locations and monitoring heights was undertaken. As part of this process, the locations and monitoring heights were adjusted following desk-based review using Google Maps.

**Figure 4-1.** Local Authority Monitoring Locations

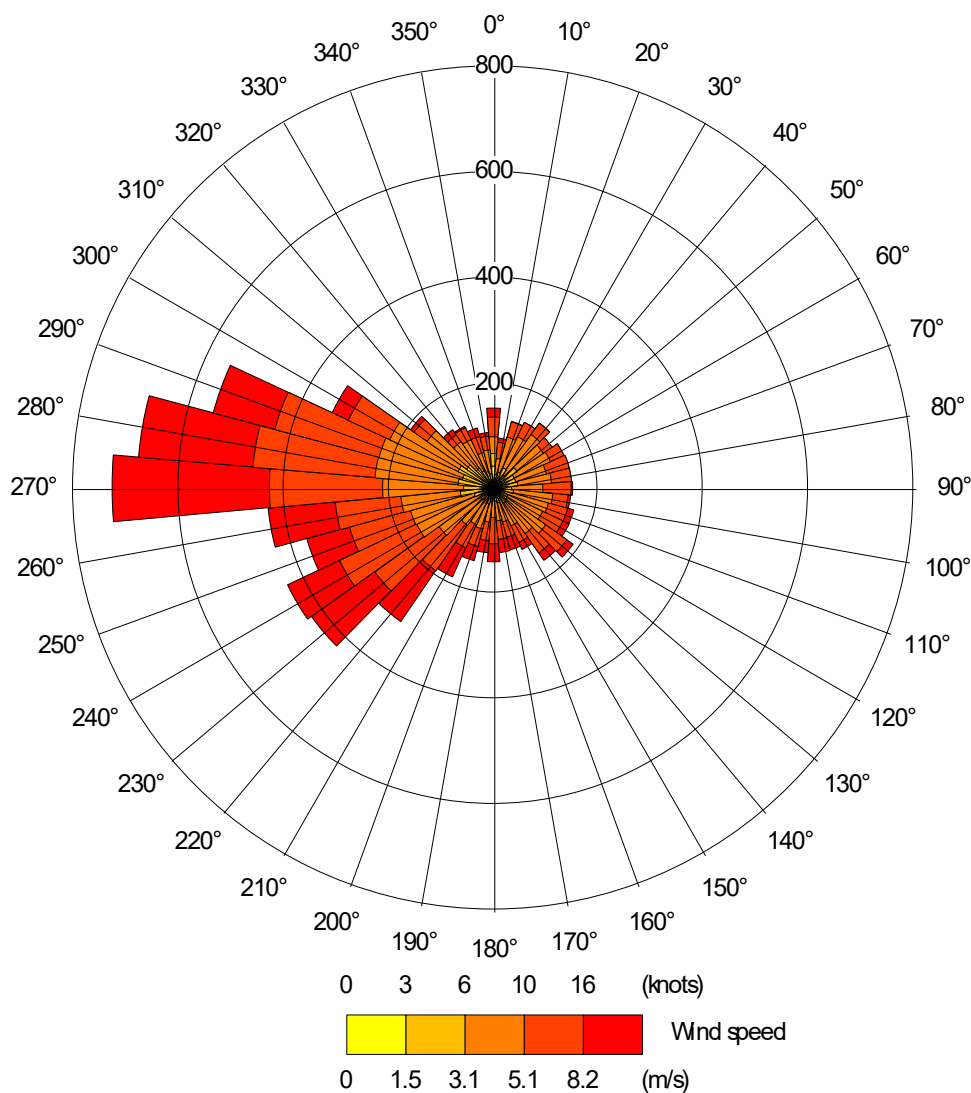


## 4.2 METEOROLOGY

Meteorological conditions have significant influence over air pollutant concentrations and dispersion. Pollutant levels can vary significantly from hour to hour as well as day to day, thus any air quality predictions need to be based on detailed meteorological data. The ADMS (Atmospheric Dispersion Modelling System) model calculates the dispersion of pollutants on an hourly basis using a year of local meteorological data.

The 2024 meteorological data used in the assessment is derived from Emley Moor Meteorological Station with the cloud cover data obtained from the Bingley weather station. This is the nearest meteorological station, which is considered representative of the application site, with all the complete parameters necessary for the ADMS model. Reference should be made to **Figure 4-2** which indicates that in 2024 the prevailing winds at Emley Moor Meteorological Station came from the west.

**Figure 4-2. Emley Moor 2024 Wind Rose**



## 4.3 EMISSION SOURCES

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A desktop assessment has identified that traffic movements are likely to be the most significant local source of pollutants affecting the site and its surroundings. The principal traffic derived pollutants likely to impact local receptors are NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>.

The assessment has therefore modelled all roads within the immediate vicinity of the application site which are considered likely to experience significant changes in traffic flow as a result of the proposed development. Reference should be made to **Figure A-1** for a graphical representation of the traffic data utilised within the ADMS Roads 5.0.1.3 model.

It should be noted that the pollutant contribution of minor roads and rail sources that are not included within the dispersion model is considered to be accounted for via the use of background air quality levels.

## 4.4 SENSITIVE RECEPTORS

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Receptors that are considered as part of the air quality assessment are primarily those existing receptors that are situated along routes predicted to experience significant changes in traffic flow as a result of the proposed development.

The existing receptor locations are summarised in **Table 4-4** and the spatial locations of all of the receptors are illustrated in **Figure 4-3**.

**Table 4-4.** Modelled Sensitive Receptor Locations

Existing Sensitive Receptor		X	Y	Receptor Height (m)
R1	36 Brougham Road, HD7 6BN	404997	411640	1.5
R2	6 Brougham Road, HD7 6BN	404948	411627	1.5
R3	Marsden Infant and Nursery School (1)	404995	411618	1.0
R4	Marsden Infant and Nursery School (2)	404968	411611	1.0
R5	25 Brougham Road, HD7 6BL	405065	411635	1.5
R6	83 Brougham Road, HD7 6BL	405185	411672	1.5
R7	94 Brougham Road, HD7 6BN	405187	411694	1.5
R8	1 Station Road, HD7 6BS	404880	411688	1.5
R9	15 Station Road, HD7 6DG	404794	411721	1.5
R10	30 Station Road, HD7 6DH	404729	411788	1.5
R11	3 Warehouse Hill Road, HD7 6AB	404931	411715	1.5
R12	17 Warehouse Hill Road, HD7 6AB	405025	411764	1.5
R13	29 Marsden Lane, HD7 6AF	405188	411947	1.5
R14	68 Marsden Lane, HD7 6AF	405235	412046	1.5
R15	Parkfield, Manchester Road, HD7 6ET	405043	411545	1.5
R16	Marsden Junior School (1)	405140	411569	1.0
R17	Marsden Junior School (2)	405160	411582	1.0
R18	7 Manchester Road, HD7 6EJ	405254	411672	1.5
R19	27 Weir Side, HD7 6BU	404819	411521	1.5
R20	1 Manchester Road, HD7 6DW	404512	411592	1.5
Proposed Sensitive Receptor		X	Y	Receptor Height (m)
PR1	Proposed Receptor	405050	411654	1.5
PR2	Proposed Receptor	405050	411654	4.5
PR3	Proposed Receptor	405043	411665	1.5
PR4	Proposed Receptor	405043	411665	4.5
PR5	Proposed Receptor	405083	411662	1.5
PR6	Proposed Receptor	405083	411662	4.5
PR7	Proposed Receptor	405095	411681	1.5
PR8	Proposed Receptor	405095	411681	4.5

Eight proposed residential and twenty existing sensitive receptors have been assessed to determine the effect of air quality, associated with the proposed development. The locations of the receptor are identified on **Figure 4-3**.

## 4.5 ECOLOGICAL RECEPTORS

Air quality impacts associated with the proposed development have the potential to impact on receptors of ecological sensitivity within the vicinity of the site. The IAQM guidance on 'Air Quality Impacts on Designated Nature Conservation Sites' (2020) outlines the types of designated nature sites within 2 km of the proposed development which require air quality assessment. These are inclusive of the following:

- Sites of Special Scientific Interest (SSSIs);
- Special Areas of Conservation (SACs);
- Special Protection Areas (SPAs);
- Ramsar Sites;

- Areas of Special Scientific Interest (ASSIs);
- National Nature Reserves (NNRs);
- Local Nature Reserves (LNRs);
- Local Wildlife Sites (LWSs); and,
- Areas of Ancient Woodland (AW).

The Conservation of Habitats and Species Regulations (2019)<sup>26</sup> additionally requires competent authorities to review planning applications and consents that have the potential to impact on European designated sites (e.g. Special Protection Areas).

A study was undertaken to identify any statutory designated sites of ecological or nature conservation importance within the extents of the dispersion modelling assessment. This was completed using the Multi-Agency Geographic Information for the Countryside (MAGIC) web-based interactive mapping service, which draws together information on key environmental schemes and designations. Following a search within a 2 km radius of the site boundary, the ecological receptors shown in **Table 4-5** were identified.

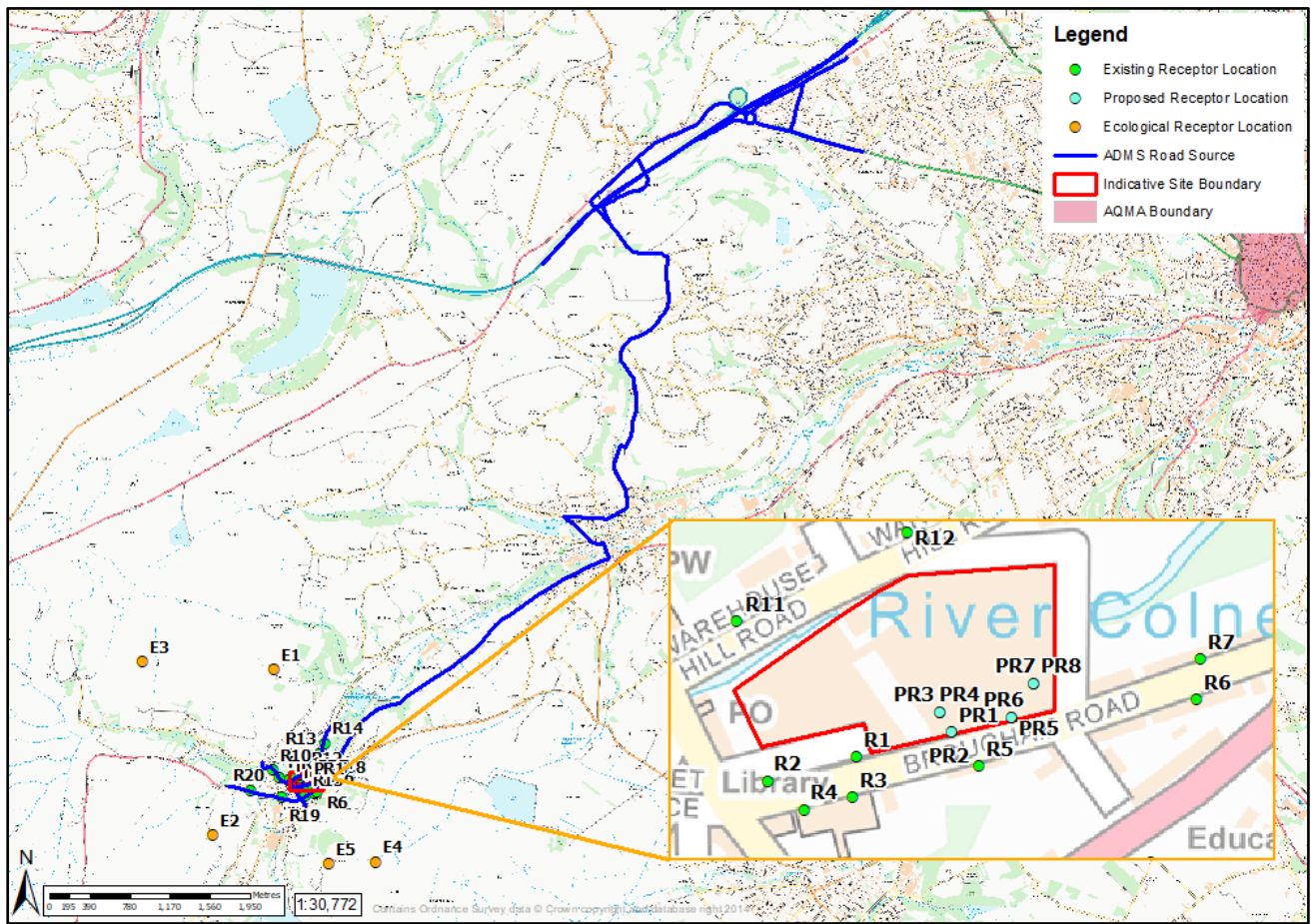
**Table 4-5.** Ecological Sensitive Receptor Locations

Site ID	Site	Designation	UK NGR (m)		Distance from Site (km)	Distance from Nearest Affected Road (m)
			X	Y		
E1	South Pennine Moors	SAC	404743	412766	1.04	800
E2	South Pennine Moors Phase 2	SPA	404146	411157	0.92	550
E3	South Pennine Moors	SSSI	403463	412841	1.83	1477
E4	Peak District Moors Phase 1	SPA	405735	410896	0.98	915
E5	Dark Peak	SSSI	405277	410875	0.76	610

It should be noted that the IAQM Guidance only requires the assessment of ecological receptors which are located within 200 m of the affected road network. Therefore, all ecological receptors have been scoped out of this assessment.

<sup>26</sup> Conservation of Habitat and Species Regulation, from: <https://www.legislation.gov.uk/ukdsi/2019/9780111176573>

Figure 4-3. Sensitive Receptor Locations



## 5.0 ASSESSMENT OF AIR QUALITY IMPACTS - CONSTRUCTION PHASE

### 5.1 POLLUTANT SOURCES

The main emissions during construction are likely to be dust and particulate matter generated during earth moving (particularly during dry months) or from construction materials. The main potential effects of dust and particulate matter are:

- Visual - dust plume, reduced visibility, coating and soiling of surfaces leading to annoyance, loss of amenity, the need to clean surfaces;
- Physical and/or chemical contamination and corrosion of artefacts;
- Coating of vegetation and soil contamination; and,
- Health effects due to inhalation e.g. asthma or irritation of the eyes.

A number of other factors such as the amount of precipitation and other meteorological conditions will also greatly influence the amount of particulate matter generated.

Construction activities can give rise to short-term elevated dust/PM<sub>10</sub> concentrations in neighbouring areas. This may arise from vehicle movements, soiling of the public highway, demolition or windblown stockpiles.

### 5.2 PARTICULATE MATTER (PM<sub>10</sub>)

The UK Air Quality Standards seek to control the health implications of respirable PM<sub>10</sub>. However, the majority of particles released from construction will be greater than this in size.

Construction works on site have the potential to elevate localised PM<sub>10</sub> concentrations in the area. On this basis, mitigation measures should still be taken to minimise these emissions as part of good site practice.

### 5.3 DUST

Particles greater than 10 µm are likely to settle out relatively quickly and may cause annoyance due to their soiling capability. Although there are no formal standards or criteria for nuisance caused by deposited particles, the IAQM 'Guidance on Monitoring in the Vicinity of Demolition and Construction Sites' (October 2018) and the Environment Agency Technical Guidance Note (TGN) M17<sup>27</sup> states that dust is usually compared with a 'complaints likely' guideline of 200 mg/m<sup>2</sup>/day. Therefore, a deposition rate of 200 mg/m<sup>2</sup>/day is often presented as a threshold for serious nuisance though this is usually only applied to long term exposure as people are generally more tolerant of dust for a short or defined period. Significant nuisance is likely when the dust coverage of surfaces is visible in contrast with adjacent clean areas, especially when it happens regularly. Severe dust nuisance occurs when the dust is perceptible without a clean reference surface.

Construction activities have the potential to suspend dust, which could result in annoyance of residents

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<sup>27</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/301206/TGN\\_M17\\_-\\_Monitoring\\_of\\_particulate\\_matter\\_in\\_ambient\\_air\\_around\\_waste\\_facilities.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/301206/TGN_M17_-_Monitoring_of_particulate_matter_in_ambient_air_around_waste_facilities.pdf)

surrounding the site. Measures will be taken to minimise the emissions of dust as part of good site practice.

Recommended mitigation measures proportionate to the risk associated with the development and based on best practice guidance are discussed in the following sections.

## 5.4 METHODOLOGY

The construction phase assessment utilises the IAQM Guidance on the Assessment of Dust from Demolition and Construction document published in January 2024.

Four construction processes are considered; these are demolition, earthworks, construction and trackout. For each of these phases, the impact description of the potential dust impacts is derived following the determination of a dust emission magnitude and the distance of activities to the nearest sensitive receptor, therefore assessing worst case impacts. A full explanation of the methodology is contained in Appendix B.

## 5.5 ASSESSMENT RESULTS

Based on the methodology detailed in Appendix B, the scale of the anticipated works has determined the potential dust emission magnitude for each process, as presented in the **Table 5-1**.

**Table 5-1. Dust Emission Magnitude**

Construction Process	Site Criteria	Dust Emission Magnitude
Demolition	Total Volume Demolished <12,000m <sup>3</sup> –	Small
Earthworks	Total site area <18,000m <sup>2</sup>	Small
Construction	Total Building Volume 12,000m <sup>3</sup> - 75,000m <sup>3</sup>	Medium
Trackout	Assumed 20 - 50 HDV outward movements in any one day	Medium

The sensitivity of the surrounding area to each construction process has been determined following stage 2B of the IAQM guidance. The assessment has determined the area sensitivities as shown in the **Table 5-2**.

The sensitivity of the ecological receptors is considered not applicable within the construction phase assessment due to the distance from the application site which is greater than 50 m from the site boundary, or 50 m of roads within 250 m of the site. This is in accordance with Table 4 of the IAQM Guidance.

**Table 5-2.** Sensitivity of the Area

Source	Area Sensitivity					
	Dust Soiling	Site Sensitivity Criteria	Health Effects of PM <sub>10</sub>	Site Sensitivity Criteria	Ecological	Site Sensitivity Criteria
Demolition	High	10-100 Highly Sensitive Receptors within 20m of site	Low	Annual Mean of <24 µg/m <sup>3</sup> for PM <sub>10</sub> 10-100 Highly Sensitive Receptors within 20 m of site	N/A	>50 m from site boundary
Earthworks	High	10-100 Highly Sensitive Receptors within 20m of site	Low	Annual Mean of <24 µg/m <sup>3</sup> for PM <sub>10</sub> 10-100 Highly Sensitive Receptors within 20 m of site	N/A	>50 m from site boundary
Construction	High		Low		N/A	
Trackout	High	10-100 Highly Sensitive Receptors within 50m of roads within 250m of site	Low	Annual Mean of <24 µg/m <sup>3</sup> for PM <sub>10</sub> 10-100 Highly Sensitive Receptors within 50 m of roads within 250 m of site	N/A	>50 m from roads within 250 m from site boundary

The dust emission magnitude determined in **Table 5-1** has been combined with the sensitivity of the area determined in **Table 5-2**, to determine the risk of impacts prior to the implementation of appropriate mitigation measures. The potential impact significance of dust emissions associated with the development, without mitigation, is presented in **Table 5-3**.

**Table 5-3.** Impact Description of Construction Activities without Mitigation

Source	Summary Risk of Impacts Prior to Mitigation		
	Dust Soiling	Health Effects of PM <sub>10</sub>	Ecological
Demolition	Medium	Negligible	N/A
Earthworks	Low	Negligible	N/A
Construction	Medium	Low	N/A
Trackout	Medium	Low	N/A

Appropriate mitigation measures are detailed and presented in Section 7.0. Following the adoption of these measures, the subsequent impact significance of the construction phase is not predicted to be significant.

## 6.0 ASSESSMENT OF AIR QUALITY IMPACTS - OPERATIONAL PHASE

In the context of the proposed development, road traffic is identified as the dominant emission source that is likely to cause potential risk of exposure of air pollutants at receptors.

The operational phase assessment therefore consists of the quantified predictions of the change in NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> for the operational phase of the development due to changes in traffic movement. Predictions of air quality at the site have been undertaken for the operational phase of the development using ADMS Roads.

In accordance with the provided traffic data, the operational phase assessment has been undertaken with an operational opening year of 2029. The assessment scenarios are therefore:

- 2024 Baseline = Existing Baseline Conditions;
- 2029 'Do Minimum' = Baseline Conditions + Committed Development Flows (through local growth factor); and,
- 2029 'Do Something' = Baseline Conditions + Committed Development (through local growth factor) + Proposed Development.

### 6.1 EXISTING AND PREDICTED TRAFFIC FLOWS

Baseline 2024 traffic data, projected 2029 'Do Minimum' and 'Do Something' traffic data, and average vehicle speeds have been obtained for the operational phase assessment in the form of Annual Average Daily Traffic figures (AADT).

Baseline 2024 was provided by the transport consultant for Brougham Road, Mill Road, Warehouse Hill Road, Peel Street, Station Road and the A62.

Baseline 2024 traffic data was downloaded from the Department for Transport (DfT) website for Manchester Road, Royd Street, A640, Lindley Moor Road and the M62.

The proposed development opening year is 2029. To determine the traffic flows for the 2029 'Do Minimum' traffic flows, a TEMPro factor of 1.0322 has been applied to the 2024 Baseline traffic data.

Predicted development flows have been combined with 2029 'Do Minimum' traffic flows to determine the 'Do Something' 2029 scenario traffic flows.

Emission factors for the 2024 baseline and 2029 projected 'Do Minimum' and 'Do Something' scenarios have been calculated using the Emission Factor Toolkit (EFT) Version 13.1 (March 2025)<sup>28</sup>.

It is assumed the average vehicle speeds on the local road network in an opening year of 2029 will be broadly the same as the ones in 2024. A 50 m 20 km/hr slow down phase is included on each link at every junction and roundabout within the assessment. All of the roads within the dispersion model are illustrated in **Figure A-1**. Detailed traffic figures are provided in the **Table 6-1**.

<sup>28</sup> Department for Environment, Food and Rural Affairs, Emissions Factor Toolkit, from: <https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>

Table 6-1. Traffic Data

Link	Speed (km/h)	2024 Baseline		2029 Do Minimum		2029 Do Something	
		AADT	HDV %	AADT	HDV %	AADT	HDV %
Brougham Road West (between Peel Street and main site access)	41	897	0.56	936	0.56	1086	0.62
Brougham Road (between main site access and Mill Road)	48	897	0.11	936	0.11	1797	1.50
Brougham Road East (between Mill Road and A62)	48	1050	0.10	1095	0.10	1843	1.27
Mill Road	48	413	0.00	430	0.00	728	0.00
Warehouse Hill Road (between Peel Street and Mill Road)	47	1176	0.34	1227	0.34	1456	0.29
Peel Street (between Warehouse Hill Road and Brougham Road)	47	2188	0.41	2282	0.41	2384	0.39
Station Road (between Peel Street and Church Lane)	48	1475	0.34	1539	0.34	1751	0.30
A62 to the east of junction with Brougham Road	48	5975	0.38	6233	0.38	6802	0.52
A62 between junctions of Brougham Road and Fall Lane	48	6475	0.25	6755	0.25	6859	0.26
A62 to the west of junction with Town Gate	48	5788	0.17	6038	0.17	6221	0.20
Manchester Road	64	5,871	3.07	6,078	3.06	6,826	3.05
Royd Street	48	899	7.60	930	7.58	1,304	6.27
A640 (New Hay Road)	64	11,671	3.30	12,082	3.29	12,456	3.28
Lindley Moor Road	64	15,046	2.07	15,576	2.07	15,950	2.09
M62 (1)	113	111,448	16.75	115,371	16.71	115,745	16.66
M62 (2)	113	99,496	15.45	102,998	15.41	103,372	15.36

## 6.3 BACKGROUND CONCENTRATIONS

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The use of background concentrations within the modelling process ensures that pollutant sources other than traffic are represented appropriately. Background sources of pollutants include industrial, domestic and rail emissions within the vicinity of the study site. Several sources have been used to obtain representative background levels as discussed below.

The background concentrations used within the assessment have been determined with reference to the IAQM Guidance and Technical Guidance (TG(22)).

The IAQM Guidance states:

*“A matter of judgement should take into account the background and future background air quality and whether it is likely to approach or exceed the value of the AQO.”*

Additionally, TG(22) states:

*“Typically, only the process contributions from local sources are represented within an output by the dispersion model. In these circumstances, it is necessary to add an appropriate background concentration(s) to the modelled source contributions to derive the total pollutant concentrations.”*

### Defra Published Background Concentrations for 2024

The background concentrations shown in **Table 6-2** were referenced from the UK National Air Quality Information Archive database based on the National Grid Co-ordinates of 1 x 1 km grid squares nearest to the application site. In November 2024, Defra issued revised 2021 based background maps<sup>29</sup> for nitrogen oxide (NO<sub>x</sub>), NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>.

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<sup>29</sup> Department for Environment, Food and Rural Affairs, Background Maps, from: <https://uk-air.defra.gov.uk/data/iaqm-background-maps?year=2021>

**Table 6-2.** Published Background Air Quality Levels ( $\mu\text{g}/\text{m}^3$ )

Receptor Location		2024			
		NO <sub>x</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Proposed Site</b>					
405053	411704	9.22	7.23	9.66	6.14
<b>Local Authority Monitoring</b>					
23		10.56	8.23	12.47	6.18
47		10.56	8.23	12.47	6.18
141		9.94	7.76	10.35	6.08
<b>Existing Sensitive Receptors</b>					
R1		9.22	7.23	9.66	6.14
R2		9.22	7.23	9.66	6.14
R3		9.22	7.23	9.66	6.14
R4		9.22	7.23	9.66	6.14
R5		9.22	7.23	9.66	6.14
R6		9.22	7.23	9.66	6.14
R7		9.22	7.23	9.66	6.14
R8		9.22	7.23	9.66	6.14
R9		9.22	7.23	9.66	6.14
R10		9.22	7.23	9.66	6.14
R11		9.22	7.23	9.66	6.14
R12		9.22	7.23	9.66	6.14
R13		9.22	7.23	9.66	6.14
R14		9.22	7.23	9.66	6.14
R15		9.22	7.23	9.66	6.14
R16		9.22	7.23	9.66	6.14
R17		9.22	7.23	9.66	6.14
R18		9.22	7.23	9.66	6.14
R19		9.22	7.23	9.66	6.14
R20		9.22	7.23	9.66	6.14
<b>Proposed Sensitive Receptors</b>					
PR1 – PR8		9.22	7.23	9.66	6.14

All the Defra background concentrations detailed in **Table 6-2** for 2024, show that the background levels are predicted to be below the relevant AQO within the study area.

A breakdown of the background source apportionment of NO<sub>x</sub> concentrations at each monitoring location and receptor is shown in **Table 6-3**.

**Table 6-3.** Pollutant Source Apportionment of NO<sub>x</sub> (µg/m<sup>3</sup>)

Receptor Location	2024						
	Total NO <sub>x</sub>	% of NO <sub>x</sub> from Road Sources	% of NO <sub>x</sub> from Industrial Sources	% of NO <sub>x</sub> from Domestic Sources	% of NO <sub>x</sub> from Aircraft Sources	% of NO <sub>x</sub> from Rail Sources	% of NO <sub>x</sub> from Other Sources
<b>Local Authority Monitoring</b>							
24	37.03	9.33	4.64	0.00	3.72	45.27	37.03
47	37.03	9.33	4.64	0.00	3.72	45.27	37.03
141	25.95	12.17	6.93	0.00	4.27	50.68	25.95
<b>Existing Sensitive Receptors</b>							
R1	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R2	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R3	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R4	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R5	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R6	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R7	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R8	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R9	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R10	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R11	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R12	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R13	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R14	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R15	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R16	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R17	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R18	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R19	9.22	17.29	9.89	6.54	0.00	14.78	51.50
R20	9.22	17.29	9.89	6.54	0.00	14.78	51.50
<b>Proposed Sensitive Receptors</b>							
PR1 – PR8	9.22	17.29	9.89	6.54	0.00	14.78	51.50

**Table 6-3** shows that the major background source of NO<sub>x</sub> at the monitoring, sensitive receptor locations where sources have been identified are mainly comprised of road and other sources.

A review of the Defra background site has determined that they are in line with the Local Authority monitoring within KC.

**Table 6-4** shows the background concentrations utilised within the assessment.

**Table 6-4.** Utilised Background Concentrations ( $\mu\text{g}/\text{m}^3$ )

Receptor Location	2024		Source
	NO <sub>x</sub>	NO <sub>2</sub>	
<b>Local Authority Monitoring</b>			
24	10.56	8.23	Defra Background Maps
47	10.56	8.23	
141	9.94	7.76	
<b>Existing Sensitive Receptors</b>			
R1	9.22	7.23	Defra Background Maps
R2	9.22	7.23	
R3	9.22	7.23	
R4	9.22	7.23	
R5	9.22	7.23	
R6	9.22	7.23	
R7	9.22	7.23	
R8	9.22	7.23	
R9	9.22	7.23	
R10	9.22	7.23	
R11	9.22	7.23	
R12	9.22	7.23	
R13	9.22	7.23	
R14	9.22	7.23	
R15	9.22	7.23	
R16	9.22	7.23	
R17	9.22	7.23	
R18	9.22	7.23	
R19	9.22	7.23	
R20	9.22	7.23	
<b>Proposed Sensitive Receptors</b>			
PR1 – PR8	11.33	15.03	Defra Background Maps

## 6.4 MODEL VERIFICATION

Model verification involves the comparison of modelled data to monitored data in order to gain the best possible representation of current pollutant concentrations for the assessment years. The verification process is in general accordance with that contained in Section 7 of the TG(22) guidance note and uses the most recently available diffusion tube monitoring data to best represent this. When using modelling techniques to predict concentrations, it is necessary to make a comparison between the modelling results and available roadside monitoring data, to ensure that the model is reproducing actual observations. Where systematic bias is evident in the base year verification, the modelled results are factored to better match the monitoring data and reduce the overall uncertainty in the model predictions. TG(22) (Section 'Model Validation, Verification, Adjustment and Uncertainty', Paragraphs 7.549-7.578) was followed when undertaking the verification.

The verification process consists of using the monitoring data and the published background air quality data in the UK National Air Quality Information Archive to calculate the road traffic contribution of NO<sub>x</sub> at the monitoring locations. Outputs from the ADMS Roads model are provided as predicted road traffic contribution NO<sub>x</sub> emissions. These are converted into predicted roadside contribution NO<sub>2</sub> exposure at the relevant receptor

locations based on the updated approach to deriving NO<sub>2</sub> from NO<sub>x</sub> for road traffic sources published in Local Air Quality Management TG(22). The calculation was derived using the NO<sub>x</sub> to NO<sub>2</sub> worksheet in the online LAQM tools website hosted by Defra. **Table 6-5** summarises the final model/monitored data correlation following the application of the model correction factor.

**Table 6-5.** Comparison of Roadside Modelling & Monitoring Results for NO<sub>2</sub>

Monitoring Site	NO <sub>2</sub> µg/m <sup>3</sup>		
	Monitored NO <sub>2</sub>	Modelled NO <sub>2</sub>	Difference (%)
24	31.80	29.16	-8.30
47	33.00	36.65	11.05
141	23.20	18.70	-19.40

The final model produced data at the monitoring locations to within 25% of the monitoring results at all of the verification points, as required by TG(22) guidance.

The final verification model correlation coefficient (representing the model uncertainty) is 1.00. This was achieved by applying a model correction factor of 3.88 to roadside predicted NO<sub>x</sub> concentrations before converting to NO<sub>2</sub>. This figure demonstrates that the model predictions were in line with the road traffic emissions at the monitoring locations.

As there is no suitable PM<sub>10</sub> or PM<sub>2.5</sub> monitoring data within the study area, it is not possible to perform a model verification for these pollutants. As such, the NO<sub>2</sub> adjustment factor has also been applied to the PM<sub>10</sub> and PM<sub>2.5</sub> modelled results, in accordance with LAQM.TG(22).

## 6.5 ADMS-ROADS MODEL INPUTS

**Table 6-6.** Summary of ADMS Roads Model Inputs

Parameter	Description	Input Value
<b>Chemistry</b>	A facility within ADMS-Roads to calculate the chemical reactions in the atmosphere between Nitric Oxide (NO), NO <sub>2</sub> , Ozone (O <sub>3</sub> ) and Volatile organic compounds (VOCs).	No atmospheric chemistry parameters included
<b>Meteorology</b>	Representative meteorological data from a local source	<b>Emley Moor 2024 Meteorological Station</b> , hourly sequential data
<b>Surface Roughness</b>	A setting to define the surface roughness of the model area based upon its location.	<b>1.5m</b> representing a typical surface roughness for <b>Large Urban Areas</b> was used for the Site <b>0.3m</b> representing a typical surface roughness for <b>Agricultural Areas</b> for the met. Measurement site.
<b>Latitude</b>	Allows the location of the model area to be set	United Kingdom = <b>53.0</b>
<b>Monin-Obukhov Length</b>	This allows a measure of the stability of the atmosphere within the model area to be specified depending upon its character.	Cities and Large Towns= <b>30m</b> was used for the Site Small Towns = <b>10m</b> was used for the met. Measurement site.
<b>Elevation of Road</b>	Allows the height of the road link above ground level to be specified.	Round Ings Road and M62 Slip Road were set to <b>2m</b> , New Hay Road was set to <b>4m</b> . All other road links were set at ground level = <b>0m</b> .
<b>Road Width</b>	Allows the width of the road link to be specified.	Road width used depended on data obtained from OS map data for the specific road link
<b>Topography</b>	This enables complex terrain data to be included within the model in order to account for turbulence and plume spread effects of topography	No topographical information used
<b>Time Varied Emissions</b>	This enables daily, weekly or monthly variations in emissions to be applied to road sources	No time varied emissions used
<b>Road Type</b>	Allows the effect of different types of roads to be assessed.	<b>Urban (Not London)</b> settings were used for the relevant links, <b>Motorway (Not London)</b> was used for the M62 links.
<b>Road Speeds</b>	Enables individual road speeds to be added for each road link	Based on national speed limits / Provided by the Transport Consultant
<b>Canyon Height</b>	Allows the model to take account turbulent flow patterns occurring inside a street with relatively tall buildings on both sides, known as a 'street canyon'.	No canyons used within the model
<b>Road Source Emissions</b>	Road source emission rates are calculated from traffic flow data using the in-built EFT database of traffic emission factors.	The <b>EFT Version 13.0 (2025)</b> dataset was used.
<b>Year</b>	Predicted EFT emissions rates depend on the year of emission.	<b>2024</b> data for verification and baseline Operational Phase Assessment. <b>2029</b> data for the Operational Phase Traffic Assessment.

## 6.6 ADMS MODELLING RESULTS

### 6.6.1 Traffic Assessment

The ADMS Model has predicted concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> at relevant receptor locations adjacent to roads likely to be affected by the development, as summarised in the following tables. Only receptors close to roads where there is predicted to be a change in emissions have been assessed.

### 6.6.2 Assessment Scenarios

For the operational year of 2029, assessment of the effects of emissions from the proposed traffic associated with the scheme, has been undertaken using the Emissions Factor Toolkit (EFT) 2025 emissions rates which take into account the rate of reduction in emissions from road vehicles into the future with the following factors:

- 2024 Baseline = Existing Baseline conditions;
- 2029 'Do Minimum' = 2029 Baseline + Committed Development Flows (through local growth factor); and,
- 2029 'Do Something' = 2029 Baseline + Committed Development Flows (through local growth factor) + Development Traffic Flows.

### 6.6.3 Long-Term Operational Traffic Assessment

#### Nitrogen Dioxide

**Table 6-7** presents a summary of the predicted change in NO<sub>2</sub> concentrations at relevant receptor locations, due to changes in traffic flow associated with the proposed development, based on modelled 'Do Minimum' and 'Do Something' scenarios.

**Table 6-7.** Predicted Annual Average Concentrations of NO<sub>2</sub> at Receptor Locations

Receptor		NO <sub>2</sub> (µg/m <sup>3</sup> )			
		2024 Baseline	2029 Do Minimum	2029 Do Something	Development Contribution
R1	36 Brougham Road, HD7 6BN	7.98	7.65	7.98	0.33
R2	6 Brougham Road, HD7 6BN	8.23	7.78	7.88	0.10
R3	Marsden Infant and Nursery School (1)	8.17	7.76	7.97	0.21
R4	Marsden Infant and Nursery School (2)	8.31	7.82	7.96	0.14
R5	25 Brougham Road, HD7 6BL	8.08	7.70	8.40	0.70
R6	83 Brougham Road, HD7 6BL	8.39	7.87	8.09	0.22
R7	94 Brougham Road, HD7 6BN	8.21	7.77	7.97	0.20
R8	1 Station Road, HD7 6BS	8.10	7.72	7.78	0.06
R9	15 Station Road, HD7 6DG	8.05	7.69	7.75	0.06
R10	30 Station Road, HD7 6DH	7.83	7.57	7.61	0.04
R11	3 Warehouse Hill Road, HD7 6AB	7.90	7.60	7.69	0.09
R12	17 Warehouse Hill Road, HD7 6AB	7.88	7.59	7.69	0.10
R13	29 Marsden Lane, HD7 6AF	7.75	7.52	7.57	0.05
R14	68 Marsden Lane, HD7 6AF	7.84	7.58	7.63	0.05
R15	Parkfield, Manchester Road, HD7 6ET	9.09	8.26	8.32	0.06
R16	Marsden Junior School (1)	9.00	8.20	8.28	0.08
R17	Marsden Junior School (2)	8.98	8.19	8.27	0.08
R18	7 Manchester Road, HD7 6EJ	9.62	8.55	8.66	0.11
R19	27 Weir Side, HD7 6BU	9.51	8.49	8.53	0.04
R20	1 Manchester Road, HD7 6DW	9.21	8.32	8.36	0.04
PR1	Proposed Receptor	7.94	7.63	9.50	1.87
PR2	Proposed Receptor	7.86	7.59	8.88	1.29
PR3	Proposed Receptor	7.80	7.55	9.11	1.56
PR4	Proposed Receptor	7.77	7.53	8.62	1.09
PR5	Proposed Receptor	7.99	7.65	8.10	0.45
PR6	Proposed Receptor	7.89	7.60	7.97	0.37
PR7	Proposed Receptor	7.83	7.57	7.82	0.25
PR8	Proposed Receptor	7.79	7.55	7.77	0.22
<b>Annual Mean AQO</b>		<b>40 µg/m<sup>3</sup></b>			

All modelled existing receptors are predicted to be below the AQO for NO<sub>2</sub> in both the 'Do Minimum' and 'Do Something' scenarios.

As indicated in **Table 6-7**, the maximum predicted increase in annual average exposure to NO<sub>2</sub> at any existing receptor, due to changes in traffic movements associated with the proposed development is likely to be 0.70 µg/m<sup>3</sup> at 25 Brougham Road (R5).

The maximum predicted annual average exposure to NO<sub>2</sub> at any proposed receptor at the ground floor is 9.50 µg/m<sup>3</sup>. All modelled proposed residential receptors are predicted to be below the annual average AQO for NO<sub>2</sub>.

The predicted long-term NO<sub>2</sub> concentrations at all proposed and existing receptors are well below 60 µg/m<sup>3</sup> in all scenarios. Therefore, it is unlikely there will be any exceedances for the short-term NO<sub>2</sub> AQO at all modelled receptors as outlined in LAQM TG(22) technical guidance.

**Figure 6-1, Figure 6-2 and Figure 6-3**, below, illustrate the total long term annual average Nitrogen Dioxide (NO<sub>2</sub>) contribution and concentration at the Proposed Development (µg/m<sup>3</sup>).

Figure 6-1. Annual Average Long-Term Nitrogen Dioxide (NO<sub>2</sub>) Contribution from Proposed Development (µg/m<sup>3</sup>)

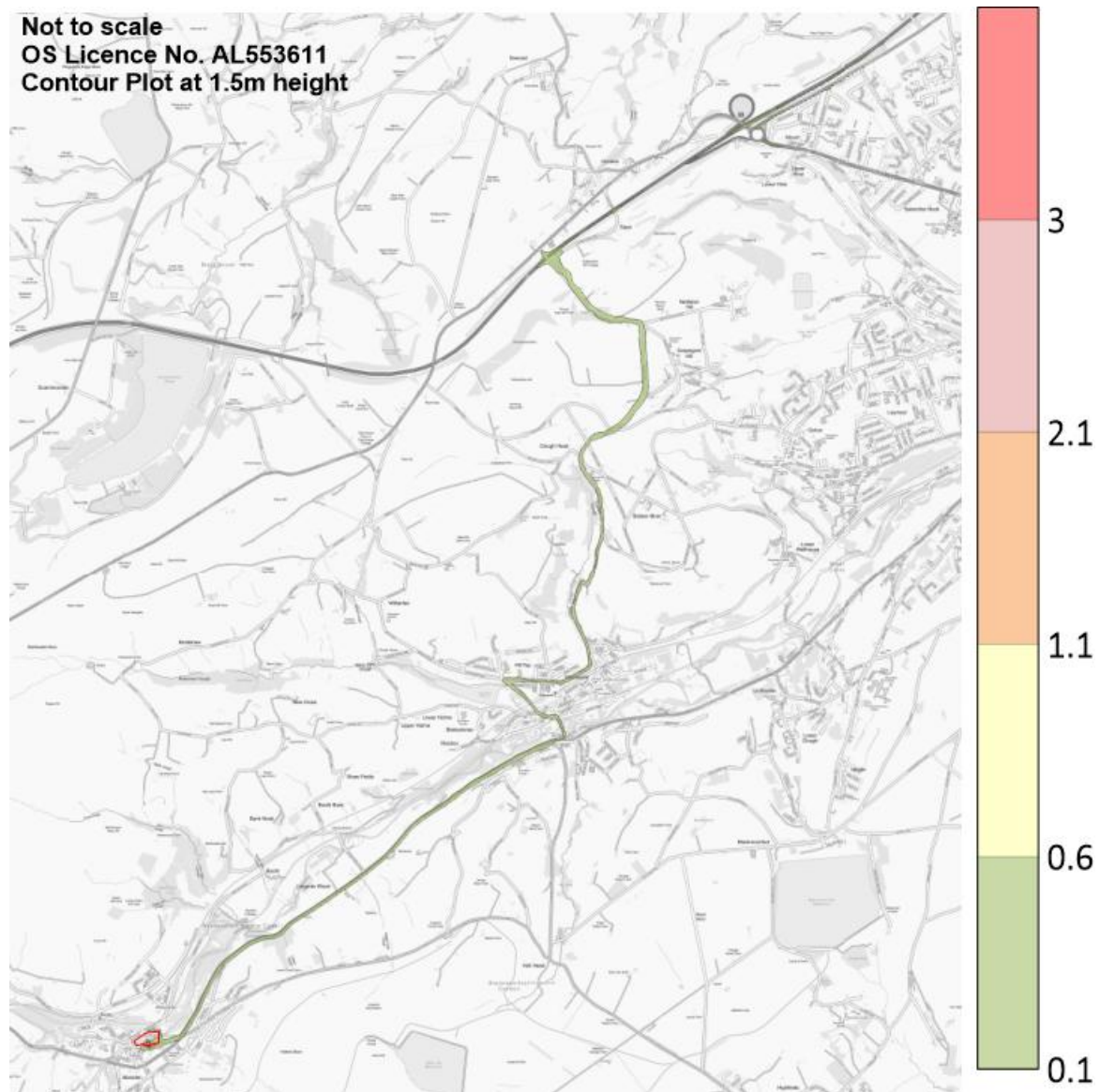


Figure 6-2. Total Long Term Annual Average Nitrogen Dioxide (NO<sub>2</sub>) Concentration at Proposed Development (µg/m<sup>3</sup>)

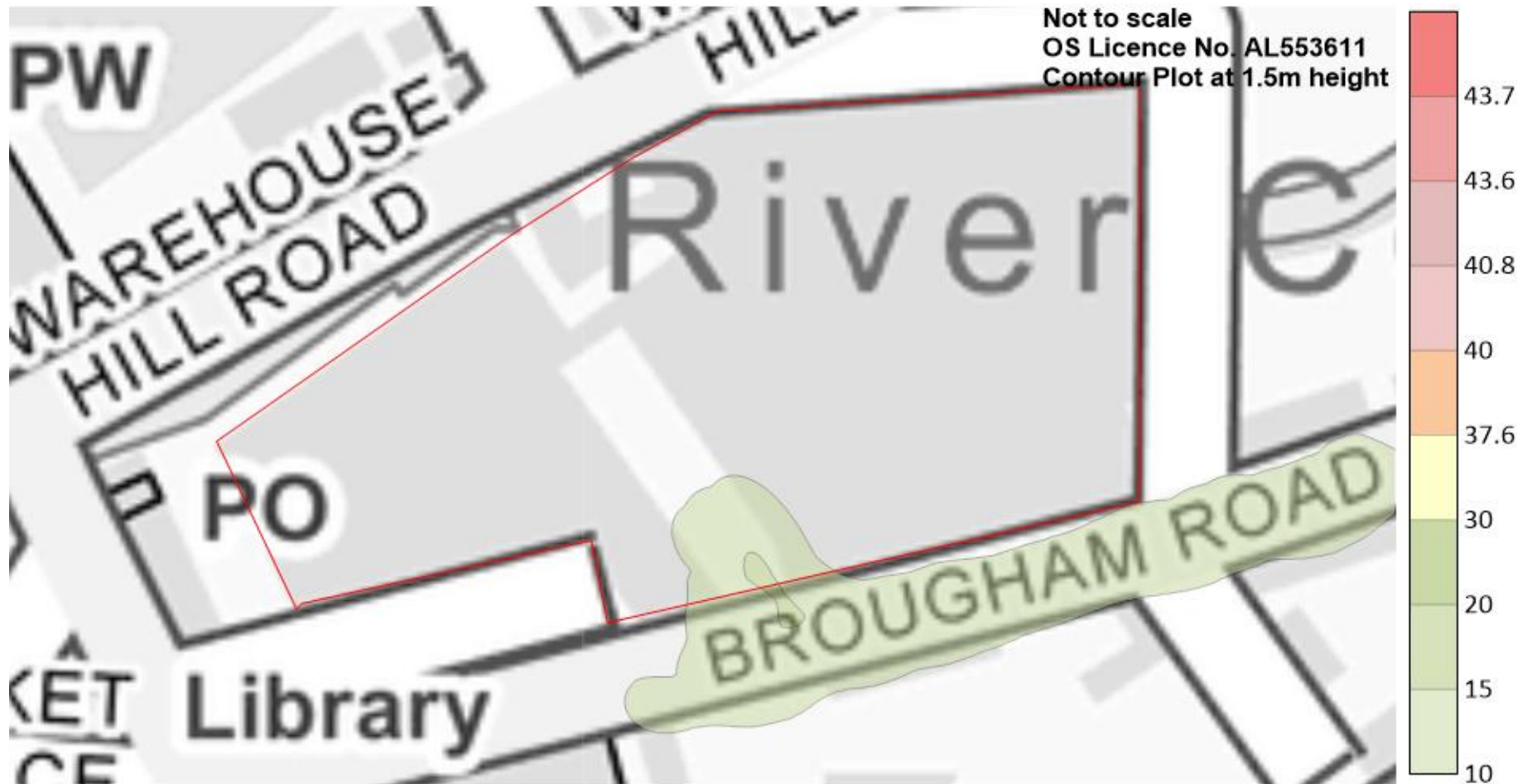
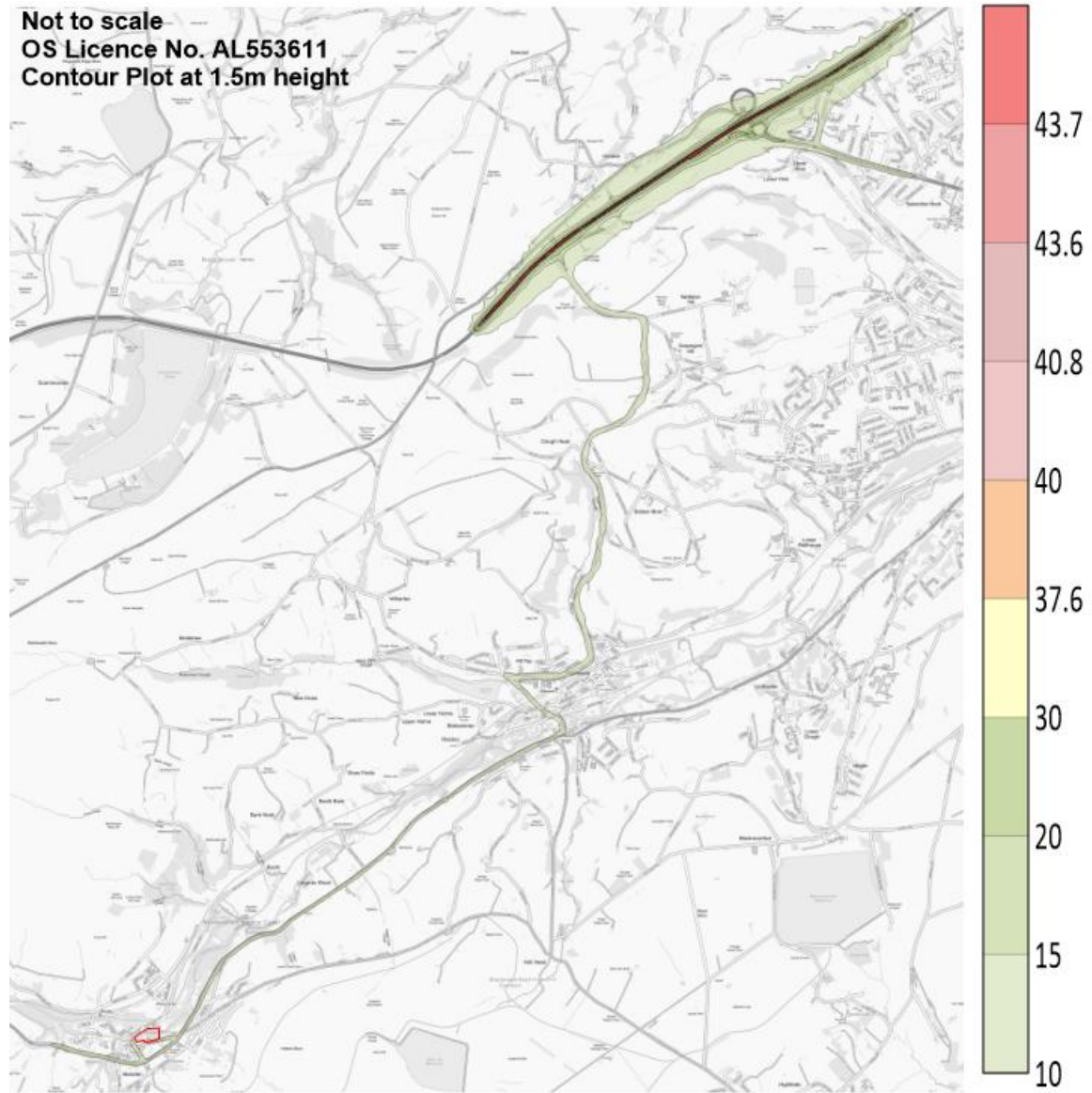


Figure 6-3. Total Long Term Annual Average Nitrogen Dioxide (NO<sub>2</sub>) Concentration Across the Study Area (µg/m<sup>3</sup>)



The impact description of changes in traffic flow associated with the proposed development with respect to annual mean NO<sub>2</sub> exposure has been assessed with reference to the criteria in Section 3.0. The outcomes of the assessment are summarised in **Table 6-8**.

**Table 6-8.** Impact Description of Effects at Key Receptors (NO<sub>2</sub>)

Impact Description of NO <sub>2</sub> Effects at Key Receptors					
Receptor	Change Due to Development (DS-DM) (µg/m <sup>3</sup> )	Change due to Development (% of AQO)	% Change in Concentration Relative to AQO	% Annual Mean Concentration in Assessment Year	Impact Description
R1	0.33	0.83	1%	≤75% of AQO	Negligible
R2	0.10	0.25	0%	≤75% of AQO	Negligible
R3	0.21	0.53	1%	≤75% of AQO	Negligible
R4	0.14	0.35	0%	≤75% of AQO	Negligible
R5	0.70	1.75	2-5%	≤75% of AQO	Negligible
R6	0.22	0.55	1%	≤75% of AQO	Negligible
R7	0.20	0.50	1%	≤75% of AQO	Negligible
R8	0.06	0.15	0%	≤75% of AQO	Negligible
R9	0.06	0.15	0%	≤75% of AQO	Negligible
R10	0.04	0.10	0%	≤75% of AQO	Negligible
R11	0.09	0.23	0%	≤75% of AQO	Negligible
R12	0.10	0.25	0%	≤75% of AQO	Negligible
R13	0.05	0.13	0%	≤75% of AQO	Negligible
R14	0.05	0.13	0%	≤75% of AQO	Negligible
R15	0.06	0.15	0%	≤75% of AQO	Negligible
R16	0.08	0.20	0%	≤75% of AQO	Negligible
R17	0.08	0.20	0%	≤75% of AQO	Negligible
R18	0.11	0.27	0%	≤75% of AQO	Negligible
R19	0.04	0.10	0%	≤75% of AQO	Negligible
R20	0.04	0.10	0%	≤75% of AQO	Negligible

+0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.

The impact description of the effects of changes in traffic flow as a result of the proposed development, with respect to NO<sub>2</sub> exposure for existing receptors, is determined to be 'negligible' at all modelled receptors. This is based on the methodology outlined in Section 3.0. Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the level of accuracy of the assessment results is considered to be 'high'.

#### Particulate Matter (PM<sub>10</sub>)

**Table 6-9** presents a summary of the predicted change in annual mean PM<sub>10</sub> concentrations at relevant receptor locations, due to changes in traffic flow associated with the proposed development, based on modelled 'Do Minimum' and 'Do Something' scenarios.

**Table 6-9.** Predicted Annual Average Concentrations of PM<sub>10</sub> at Receptor Locations

Receptor		PM <sub>10</sub> (µg/m <sup>3</sup> )			
		2024 Baseline	2029 Do Minimum	2029 Do Something	Development Contribution
R1	36 Brougham Road, HD7 6BN	9.91	9.90	10.01	0.11
R2	6 Brougham Road, HD7 6BN	10.00	9.98	10.03	0.05
R3	Marsden Infant and Nursery School (1)	9.98	9.97	10.04	0.07
R4	Marsden Infant and Nursery School (2)	10.03	10.01	10.06	0.05
R5	25 Brougham Road, HD7 6BL	9.94	9.93	10.17	0.24
R6	83 Brougham Road, HD7 6BL	10.04	10.03	10.14	0.11
R7	94 Brougham Road, HD7 6BN	9.98	9.96	10.07	0.11
R8	1 Station Road, HD7 6BS	9.95	9.94	9.98	0.04
R9	15 Station Road, HD7 6DG	9.94	9.92	9.96	0.04
R10	30 Station Road, HD7 6DH	9.86	9.85	9.88	0.03
R11	3 Warehouse Hill Road, HD7 6AB	9.88	9.87	9.91	0.04
R12	17 Warehouse Hill Road, HD7 6AB	9.88	9.87	9.91	0.04
R13	29 Marsden Lane, HD7 6AF	9.83	9.82	9.84	0.02
R14	68 Marsden Lane, HD7 6AF	9.86	9.85	9.89	0.04
R15	Parkfield, Manchester Road, HD7 6ET	10.29	10.27	10.29	0.02
R16	Marsden Junior School (1)	10.26	10.23	10.26	0.03
R17	Marsden Junior School (2)	10.25	10.23	10.26	0.03
R18	7 Manchester Road, HD7 6EJ	10.46	10.43	10.48	0.05
R19	27 Weir Side, HD7 6BU	10.44	10.40	10.43	0.03
R20	1 Manchester Road, HD7 6DW	10.34	10.31	10.33	0.02
PR1	Proposed Receptor	9.90	9.89	10.42	0.53
PR2	Proposed Receptor	9.87	9.86	10.23	0.37
PR3	Proposed Receptor	9.85	9.84	10.28	0.44
PR4	Proposed Receptor	9.84	9.83	10.14	0.31
PR5	Proposed Receptor	9.91	9.90	10.07	0.17
PR6	Proposed Receptor	9.88	9.87	10.01	0.14
PR7	Proposed Receptor	9.86	9.85	9.95	0.10
PR8	Proposed Receptor	9.85	9.84	9.92	0.08
<b>Annual Mean AQO</b>		<b>40 µg/m<sup>3</sup></b>			

All modelled existing receptors are predicted to be below the AQO for PM<sub>10</sub> in both the 'Do Minimum' and 'Do Something' scenarios.

As indicated in **Table 6-9**, the maximum predicted increase in annual average exposure to PM<sub>10</sub> at any existing receptor, due to changes in traffic movements associated with the proposed development is 0.24 µg/m<sup>3</sup> at 25 Brougham Road (R5).

The maximum predicted annual average exposure to PM<sub>10</sub> at any proposed receptor at the ground floor is 10.42 µg/m<sup>3</sup>. All modelled proposed residential receptors are predicted to be below the annual average AQO for PM<sub>10</sub>.

The impact description of changes in traffic flow associated with the proposed development with respect to annual mean PM<sub>10</sub> exposure has been assessed with reference to the criteria in Section 3.0. The outcomes of the assessment are summarised in **Table 6-10**.

**Table 6-10.** Impact Description of Effects at Key Receptors (PM<sub>10</sub>)

Impact Description of PM <sub>10</sub> Effects at Key Receptors					
Receptor	Change Due to Development (DS-DM) (µg/m <sup>3</sup> )	Change due to Development (% of AQO)	% Change in Concentration Relative to AQO	% Annual Mean Concentration in Assessment Year	Impact Description
R1	0.11	0.27	0%	≤75% of AQO	Negligible
R2	0.05	0.12	0%	≤75% of AQO	Negligible
R3	0.07	0.17	0%	≤75% of AQO	Negligible
R4	0.05	0.13	0%	≤75% of AQO	Negligible
R5	0.24	0.60	1%	≤75% of AQO	Negligible
R6	0.11	0.28	0%	≤75% of AQO	Negligible
R7	0.11	0.27	0%	≤75% of AQO	Negligible
R8	0.04	0.10	0%	≤75% of AQO	Negligible
R9	0.04	0.10	0%	≤75% of AQO	Negligible
R10	0.03	0.08	0%	≤75% of AQO	Negligible
R11	0.04	0.10	0%	≤75% of AQO	Negligible
R12	0.04	0.10	0%	≤75% of AQO	Negligible
R13	0.02	0.05	0%	≤75% of AQO	Negligible
R14	0.04	0.10	0%	≤75% of AQO	Negligible
R15	0.02	0.05	0%	≤75% of AQO	Negligible
R16	0.03	0.07	0%	≤75% of AQO	Negligible
R17	0.03	0.07	0%	≤75% of AQO	Negligible
R18	0.05	0.13	0%	≤75% of AQO	Negligible
R19	0.03	0.07	0%	≤75% of AQO	Negligible
R20	0.02	0.05	0%	≤75% of AQO	Negligible

+0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.

The impact description of the effects of changes in traffic as a result of the proposed development, with respect to annual mean PM<sub>10</sub> exposure for existing receptors is determined to be 'negligible' based on the methodology outlined in Section 3.0. Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the level of accuracy of the assessment results is considered to be 'high'.

#### Particulate Matter (PM<sub>2.5</sub>)

**Table 6-11** presents a summary of the predicted change in annual mean PM<sub>2.5</sub> concentrations at relevant receptor locations, due to changes in traffic flow associated with the proposed development, based on modelled 'Do Minimum' and 'Do Something' scenarios.

**Table 6-11.** Predicted Annual Average Concentrations of PM<sub>2.5</sub> at Receptor Locations

Receptor		PM <sub>2.5</sub> (µg/m <sup>3</sup> )			
		2024 Baseline	2029 Do Minimum	2029 Do Something	Development Contribution
R1	36 Brougham Road, HD7 6BN	6.27	6.26	6.32	0.06
R2	6 Brougham Road, HD7 6BN	6.32	6.31	6.33	0.02
R3	Marsden Infant and Nursery School (1)	6.31	6.30	6.34	0.04
R4	Marsden Infant and Nursery School (2)	6.33	6.32	6.35	0.03
R5	25 Brougham Road, HD7 6BL	6.29	6.28	6.41	0.13
R6	83 Brougham Road, HD7 6BL	6.34	6.33	6.39	0.06
R7	94 Brougham Road, HD7 6BN	6.31	6.30	6.35	0.05
R8	1 Station Road, HD7 6BS	6.29	6.29	6.30	0.01
R9	15 Station Road, HD7 6DG	6.29	6.28	6.30	0.02
R10	30 Station Road, HD7 6DH	6.25	6.24	6.25	0.01
R11	3 Warehouse Hill Road, HD7 6AB	6.26	6.25	6.27	0.02
R12	17 Warehouse Hill Road, HD7 6AB	6.25	6.25	6.27	0.02
R13	29 Marsden Lane, HD7 6AF	6.23	6.22	6.24	0.02
R14	68 Marsden Lane, HD7 6AF	6.25	6.24	6.26	0.02
R15	Parkfield, Manchester Road, HD7 6ET	6.48	6.46	6.47	0.01
R16	Marsden Junior School (1)	6.46	6.44	6.46	0.02
R17	Marsden Junior School (2)	6.45	6.44	6.45	0.01
R18	7 Manchester Road, HD7 6EJ	6.57	6.54	6.57	0.03
R19	27 Weir Side, HD7 6BU	6.55	6.53	6.54	0.01
R20	1 Manchester Road, HD7 6DW	6.50	6.48	6.49	0.01
PR1	Proposed Receptor	6.27	6.26	6.55	0.29
PR2	Proposed Receptor	6.25	6.24	6.45	0.21
PR3	Proposed Receptor	6.24	6.23	6.47	0.24
PR4	Proposed Receptor	6.23	6.23	6.40	0.17
PR5	Proposed Receptor	6.27	6.27	6.36	0.09
PR6	Proposed Receptor	6.26	6.25	6.32	0.07
PR7	Proposed Receptor	6.24	6.24	6.29	0.05
PR8	Proposed Receptor	6.24	6.23	6.28	0.05
<b>Annual Mean AQO</b>		<b>Current 20 µg/m<sup>3</sup>, Future (2040) 10 µg/m<sup>3</sup></b>			

All modelled existing receptors are predicted to be below the current and future AQO for PM<sub>2.5</sub> in both the 'Do Minimum' and 'Do Something' scenarios.

As indicated in **Table 6-11**, the maximum predicted increase in annual average exposure to PM<sub>2.5</sub> at any existing receptor, due to changes in traffic movements associated with the proposed development is 0.13 µg/m<sup>3</sup> at 25 Brougham Road (R5).

The maximum predicted annual average exposure to PM<sub>2.5</sub> at any proposed receptor at the ground floor is 6.55 µg/m<sup>3</sup>. All modelled proposed residential receptors are predicted to be below the annual average AQO for PM<sub>2.5</sub>.

It should be noted that the proposed development is assessed against the PM<sub>2.5</sub> AQO as outlined in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 which introduced the objective of

10 µg/m<sup>3</sup> by 2040. Additionally, it should be noted that this assessment utilises a worst-case approach, applying the baseline year background concentrations to the future year scenarios, which assumes there will be no reduction in background concentrations with time. As the Objective is to reduce the concentration of PM<sub>2.5</sub> to 10 µg/m<sup>3</sup> by 2040, and due to the fact that concentrations of air quality pollutants are predicted to reduce with time (with the reduction likely to be accelerated by the introduction of the new AQO), in combination with the mitigation measures outlined with the application Travel Plan, and the worst-case assessment methodology, it has been determined that the proposed receptor locations will experience concentrations of PM<sub>2.5</sub> below the AQO by 2040, and therefore, no further mitigation is required.

The impact description of changes in traffic flow associated with the proposed development with respect to annual mean PM<sub>2.5</sub> exposure has been assessed with reference to the criteria in Section 3.0. The outcomes of the assessment are summarised in **Table 6-12**.

**Table 6-12. Impact Description of Effects at Key Receptors (PM<sub>2.5</sub>)**

Impact Description of PM <sub>2.5</sub> Effects at Key Receptors					
Receptor	Change Due to Development (DS-DM) (µg/m <sup>3</sup> )	Change due to Development (% of AQO)	% Change in Concentration Relative to AQO	% Annual Mean Concentration in Assessment Year	Impact Description
R1	0.06	0.60	1%	≤75% of AQO	Negligible
R2	0.02	0.20	0%	≤75% of AQO	Negligible
R3	0.04	0.40	0%	≤75% of AQO	Negligible
R4	0.03	0.30	0%	≤75% of AQO	Negligible
R5	0.13	1.30	1%	≤75% of AQO	Negligible
R6	0.06	0.60	1%	≤75% of AQO	Negligible
R7	0.05	0.50	0%	≤75% of AQO	Negligible
R8	0.01	0.10	0%	≤75% of AQO	Negligible
R9	0.02	0.20	0%	≤75% of AQO	Negligible
R10	0.01	0.10	0%	≤75% of AQO	Negligible
R11	0.02	0.20	0%	≤75% of AQO	Negligible
R12	0.02	0.20	0%	≤75% of AQO	Negligible
R13	0.02	0.20	0%	≤75% of AQO	Negligible
R14	0.02	0.20	0%	≤75% of AQO	Negligible
R15	0.01	0.10	0%	≤75% of AQO	Negligible
R16	0.02	0.20	0%	≤75% of AQO	Negligible
R17	0.01	0.10	0%	≤75% of AQO	Negligible
R18	0.03	0.30	0%	≤75% of AQO	Negligible
R19	0.01	0.10	0%	≤75% of AQO	Negligible
R20	0.01	0.10	0%	≤75% of AQO	Negligible

+0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.

The impact description of the effects of changes in traffic as a result of the proposed development, with respect to annual mean PM<sub>2.5</sub> exposure for existing receptors is determined to be 'negligible' based on the methodology outlined in Section 3.0. Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the level of accuracy of the assessment results is considered to be 'high'.

## 7.0 MITIGATION

### 7.1 CONSTRUCTION PHASE

The dust risk categories have been determined in Section 5.0 for each of the four construction activities. The assessment has determined that the potential impact description of dust emissions associated with the construction phase of the proposed development is ‘medium risk’ at the worst affected receptors.

Using the methodology described in Appendix B, appropriate site-specific mitigation measures associated with the determined level of risk can be found in Section 8.2 of the 2024 IAQM Guidance Document ‘*Guidance on the Assessment of Dust from Demolition and Construction*’.

The mitigation measures have been divided into general measures applicable to all sites and measures applicable specifically to demolition, earthworks, construction and trackout. They are categories into ‘highly recommended’ (H), ‘desirable’ (D) and ‘not required’ (N) measures.

The mitigation measures for the proposed development are highlighted green and detailed in **Table 8-1**.

**Table 7-1.** IAQM Guidance on the Assessment of Dust from Demolition and Construction

Mitigation Measure	Low Risk	Medium Risk	High Risk
<b>Communications</b>			
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	N	H	H
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
Display the head or regional office contact information.	H	H	H
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 PM10 continuous monitoring and/or visual inspections.	D	H	H
<b>Site Management</b>			
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
Make the complaints log available to the local authority when asked.	H	H	H
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

Hold regular liaison meetings with other high risk construction sites within 250 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.	N	N	H
<b>Monitoring</b>			
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary.	D	D	H
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
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
Agree dust deposition, dust flux, or real-time PM <sub>10</sub> 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
<b>Preparing and maintaining the site</b>			
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H	H	H
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
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
Avoid site runoff of water or mud.	H	H	H
Keep site fencing, barriers and scaffolding clean using wet methods.	D	H	H
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
Cover, seed or fence stockpiles to prevent wind whipping.	D	H	H
<b>Operating vehicle/machinery and sustainable travel</b>			
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
Ensure all vehicles switch off engines when stationary - no idling vehicles.	H	H	H

Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	H	H	H
Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).	D	D	H
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	N	N	H
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	N	D	H
<b>Operations</b>			
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
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
Use enclosed chutes and conveyors and covered skips.	H	H	H
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
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
<b>Waste management</b>			
Avoid bonfires and burning of waste materials.	H	H	H
<b>Demolition</b>			
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
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
Avoid explosive blasting, using appropriate manual or mechanical alternatives.	H	H	H
Bag and remove any biological debris or damp down such material before demolition.	H	H	H

Earthworks			
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	N	D	H
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.	N	D	H
Only remove the cover in small areas during work and not all at once.	N	D	H
Construction			
Avoid scabbling (roughening of concrete surfaces) if possible.	D	D	H
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
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
For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	N	D	D
Trackout			
Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	D	H	H
Avoid dry sweeping of large areas.	D	H	H
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	D	H	H
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	N	H	H
Record all inspections of haul routes and any subsequent action in a site log book.	D	H	H
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	N	H	H
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
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
Access gates to be located at least 10 m from receptors where possible.	N	H	H

H = Highly Recommended D = Desirable N = Not Required

Following the implementation of the mitigation measures detailed in the table above, the impact description of the construction phase is not considered to be significant.

## 7.2 OPERATIONAL PHASE

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All modelled proposed residential receptors are predicted to be below the annual average AQO for NO<sub>2</sub> and PM<sub>10</sub> except for PM<sub>2.5</sub>.

The impact description of the effects of changes in traffic as a result of the proposed development is assessed against the PM<sub>2.5</sub> AQO as outlined in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 which introduced the objective of 10 µg/m<sup>3</sup> by 2040. Given that the Objective is to reduce the concentration of PM<sub>2.5</sub> to 10 µg/m<sup>3</sup> by 2040, and that concentrations of air quality are predicted to reduce with time (likely to be accelerated by the introduction of the new AQO, in combination with mitigation measures outlined with the application Travel Plan, it has been determined that overall, the scheme is not considered to have a significant impact on existing air quality.

As such, the impact description of the effects of changes in traffic flow as a result of the proposed development, with respect to NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> exposure, is determined to be 'negligible' at all existing receptors. Therefore, no further mitigation is required.

## 8.0 CONCLUSIONS

This report presents the findings of an air quality assessment undertaken to assess road traffic emissions and construction dust impacts in support of a planning application for a commercial/industrial and residential development at New Mills, Brougham Road, Marsden, HD7 6AZ.

### Construction Phase

Prior to the implementation of appropriate mitigation measures, the potential impact description of dust emissions associated with the construction phase of the proposed development is 'medium risk' at the worst affected receptors without mitigation. However, appropriate site-specific mitigation measures have been proposed based on Section 8.2 of the IAQM Guidance on the Assessment of Dust from Demolition, Earthworks, Construction and Trackout. It is anticipated that with these appropriate mitigation measures in place, the risk of adverse effects due to dust emissions from the construction phase will not be significant.

### Operational Assessment

The 2029 assessment of the effect of emissions from traffic associated with the scheme, has determined that the maximum predicted increase in annual average exposure to NO<sub>2</sub> at any existing receptor, due to changes in traffic movements associated with the proposed development is likely to be 0.70 µg/m<sup>3</sup> at 25 Brougham Road (R5).

The maximum predicted annual average exposure to NO<sub>2</sub> at any proposed receptor at the ground floor is 9.50 µg/m<sup>3</sup>. All modelled proposed residential receptors are predicted to be below the annual average AQO for NO<sub>2</sub>.

For PM<sub>10</sub>, the maximum predicted increase in the annual average exposure is likely to be 0.24 µg/m<sup>3</sup> at 25 Brougham Road (R5). For PM<sub>2.5</sub>, the maximum predicted increase in the annual average exposure is likely to be 0.13 µg/m<sup>3</sup> at 25 Brougham Road (R5).

The impact description of the effects of changes in traffic flow as a result of the proposed development, with respect to NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> exposure, is determined to be 'negligible' at all existing receptors.

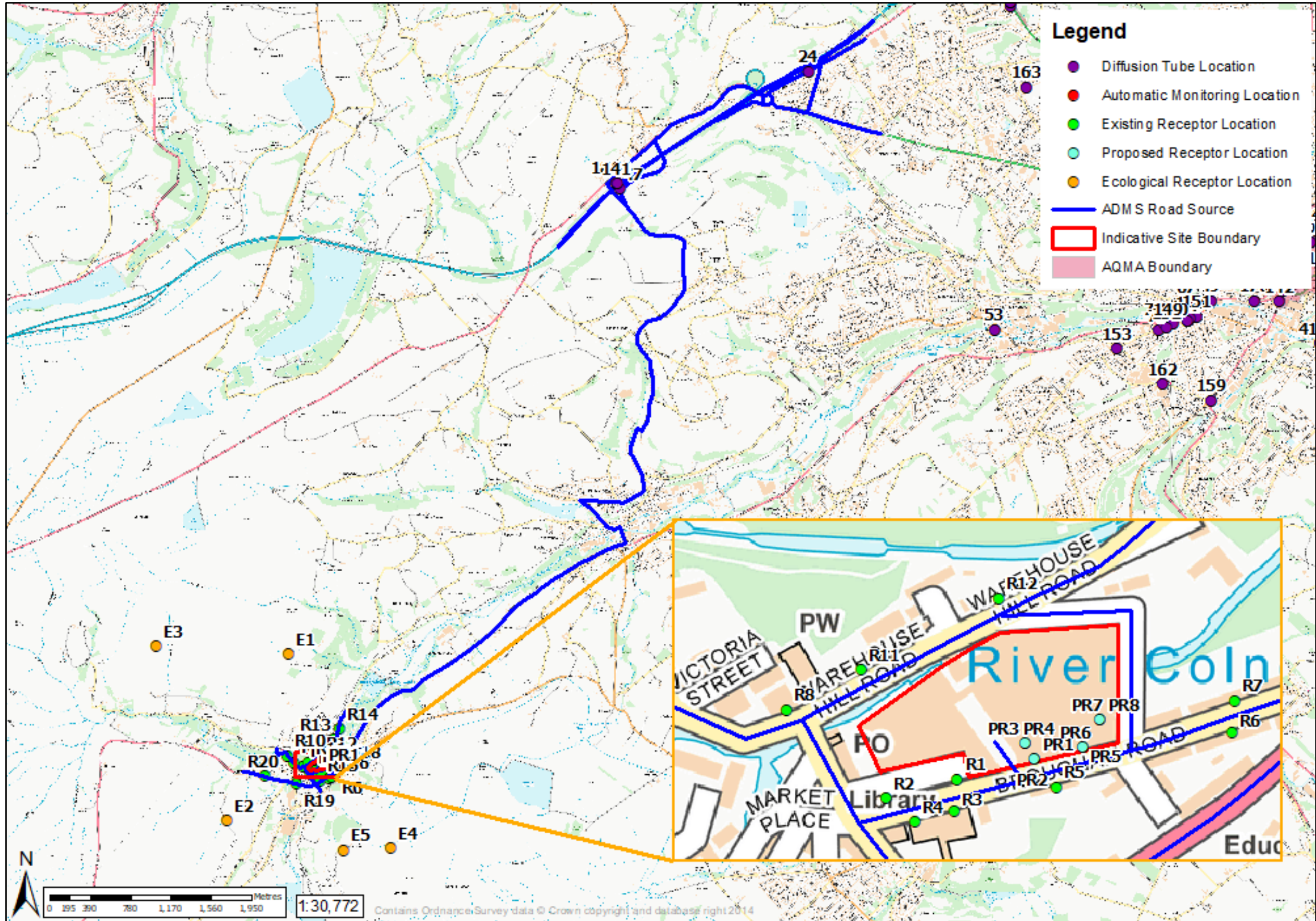
At any proposed sensitive receptors, there is not predicted to be any exceedances of the NO<sub>2</sub>, PM<sub>10</sub> or PM<sub>2.5</sub> pollutant concentrations and therefore, mitigation is not required at the proposed development.

Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the level of accuracy of the assessment results is considered to be 'high'.

In conclusion, the development is not considered to be contrary to any of the national and local planning policies regarding air quality.

## APPENDIX A - FIGURES

Figure A-1 Air Quality Assessment Area



## APPENDIX B - CONSTRUCTION PHASE ASSESSMENT METHODOLOGY

The following information sets out the adopted approach to the construction phase impact assessment in accordance with the aforementioned IAQM guidance<sup>30</sup>.

### Step 1 – Screen the Requirement for a more Detailed Assessment

An assessment will normally be required where there is:

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

For specific (high risk) schemes the planning authority may require dust assessment despite the proposed site falling outside the distances above.

### Step 2A – Define the Potential Dust Emission Magnitude

#### Demolition

The dust emission magnitude for the demolition phase has been determined based on the below criteria:

- *Large*: Total building volume >75,000 m<sup>3</sup>, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12 m above ground level;
- *Medium*: Total building volume 12,000 m<sup>3</sup> – 75,000 m<sup>3</sup>, potentially dusty construction material, demolition activities 6-12 m above ground level; and
- *Small*: Total building volume <12,000 m<sup>3</sup>, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months.

#### Earthworks

The dust emission magnitude for the planned earthworks has been determined based on the below criteria:

- *Large*: Total site area >110,000 m<sup>2</sup>, 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 m in height;
- *Medium*: Total site area 18,000 m<sup>2</sup> – 110,000 m<sup>2</sup>, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3 m – 6 m in height; and
- *Small*: Total site area <18,000 m<sup>2</sup>, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3 m in height.

#### Construction

The dust emission magnitude for the construction phase has been determined based on the below criteria:

- *Large*: Total building volume >75,000 m<sup>3</sup>, on site concrete batching, sandblasting;
- *Medium*: Total building volume 12,000 m<sup>3</sup> – 75,000 m<sup>3</sup>, potentially dusty construction material (e.g. concrete), on site concrete batching; and
- *Small*: Total building volume <12,000 m<sup>3</sup>, construction material with low potential for dust release (e.g. metal cladding or timber).

#### Trackout

The dust emission magnitude for trackout has been determined based on the below criteria:

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

It should be noted that a vehicle movement is a one-way journey. i.e. from A to B, and excludes the return journey. HDV movements during a construction project vary over its lifetime, and the number of movements is the maximum not the average.

<sup>30</sup> Institute of Air Quality Management 2024. *Guidance on the assessment of dust from demolition and construction version 2.2.*

**Step 2B - Defining the Sensitivity of the Area**

*Sensitivities of People to Dust Soiling Effects*

- *High:*
  - 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;
  - indicative examples include dwellings, museums and other culturally important collections, medium- and long-term car parks and car showrooms.
- *Medium:*
  - 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;
  - the appearance, aesthetics or value of their property could be diminished by soiling;
  - 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;
  - indicative examples include parks and places of work.
- *Low:*
  - The enjoyment of amenity would not reasonably be expected;
  - property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling;
  - 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;
  - indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.

The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout, using the following table:

**Table B-1.** Sensitivity of the Area to Dust Soiling Effects 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

*Note* - For trackout, the distances should be measured from the side of the roads used by construction traffic. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

*Sensitivities of People to the Health Effects of PM<sub>10</sub>*

- *High:*
  - locations where members of the public are exposed over a time period relevant to the air quality objective for PM<sub>10</sub> (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).
  - indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.
- *Medium:*
  - locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM<sub>10</sub> (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).
  - indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM<sub>10</sub>, as protection is covered by Health and Safety at Work legislation.
- *Low:*
  - locations where human exposure is transient.
  - indicative examples include public footpaths, playing fields, parks and shopping streets.

The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout, using the following table:

Table B-2. Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM <sub>10</sub> Concentration	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m <sup>3</sup> (>18 µg/m <sup>3</sup> in Scotland)	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28 – 32 µg/m <sup>3</sup> (16 – 18 µg/m <sup>3</sup> in Scotland)	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24 – 28 µg/m <sup>3</sup> (14 – 16 µg/m <sup>3</sup> in Scotland)	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m <sup>3</sup> (<14 µg/m <sup>3</sup> in Scotland)	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m <sup>3</sup> (>18 µg/m <sup>3</sup> in Scotland)	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28 – 32 µg/m <sup>3</sup> (16 – 18 µg/m <sup>3</sup> in Scotland)	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24 – 28 µg/m <sup>3</sup> (14 – 16 µg/m <sup>3</sup> in Scotland)	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m <sup>3</sup> (<14 µg/m <sup>3</sup> in Scotland)	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low

Note - For trackout, the distances should be measured from the side of the roads used by construction traffic. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

#### Sensitivities of Receptors to Ecological Effects

- **High:**
  - locations with an international or national designation and the designated features may be affected by dust soiling; or
  - locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain.
  - indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
- **Medium:**
  - locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or
  - locations with a national designation where the features may be affected by dust deposition.
  - indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.
- **Low:**
  - locations with a local designation where the features may be affected by dust deposition.
  - indicative example is a local Nature Reserve with dust sensitive features.

The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout, using the following table:

Table B-3. Sensitivity of the Area to Ecological Impacts

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

Note - For trackout, the distances should be measured from the side of the roads used by construction traffic. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

**Step 2C - Defining the Risk of Impacts**

The risk of impacts with no mitigation is determined by combining the dust emission magnitude determined in Step 2A and the sensitivity of the area determined in Step 2B.

The following tables provide a method of assigning the level of risk for each activity.

*Demolition*

**Table B-4.** Risk of Dust Impacts, Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

*Earthworks*

**Table B-5.** Risk of Dust Impacts, Earthworks

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

*Construction*

**Table B-6.** Risk of Dust Impacts, Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

*Trackout*

**Table B-7.** Risk of Dust Impacts, Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Negligible
Low	Low Risk	Low Risk	Negligible

**Step 3 – Site Specific Mitigation**

The dust risk categories for each of the four activities determined in Step 2C should be used to define the appropriate, site-specific mitigation measures to be adopted.

These mitigation measures are contained within section 8.2 of the IAQM Guidance on the Assessment of Dust from Demolition and Construction.