



Air Quality Assessment

Holcombe Mill, Bridge Street, Ramsbottom

Eccleston Homes

MAN.1178.001.AQ.R.001



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Air Quality Assessment

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Non-Technical Summary

- i. This report provides a consideration of potential development impacts and pollutant exposure relating to a proposed residential led development at Holcombe Mill, Bridge Street, Ramsbottom.
- ii. It is understood that planning permission is sought for the construction of 57 residential dwellings as well as a 47-space public car park alongside access and landscaping.
- iii. The development has potential to cause impacts at nearby sensitive locations during the construction and operational phases. Impacts could arise due to fugitive dust emissions generated by construction phase activities and road traffic emissions generated during the operational phase. Local emission sources also have potential to expose future site occupiers to poor air quality.
- iv. Construction phase impacts were assessed in accordance industry standard guidance to determine risk and identify necessary dust control measures. The implementation of good practice dust control measures during the construction phase would ensure that residual impacts relating to fugitive dust emissions were not significant.
- v. On-site pollutant exposure impacts were assessed using dispersion modelling with results compared against national air quality standards to determine site suitability. The modelling results indicated that pollutant concentrations across the site were acceptable at all sensitive locations. Further mitigation to protect future occupiers is not required.
- vi. Operational road traffic impacts were modelled with and without the development in place, and results were assessed against industry standard criteria to determine the overall significance of operational phase impacts. The results indicated that operational impacts were not significant at all modelled sensitive locations in the vicinity of the site.
- vii. In summary it is considered that development led impacts and onsite pollutant exposure are not significant and should not form a constraint to planning consent.

1.0 Introduction

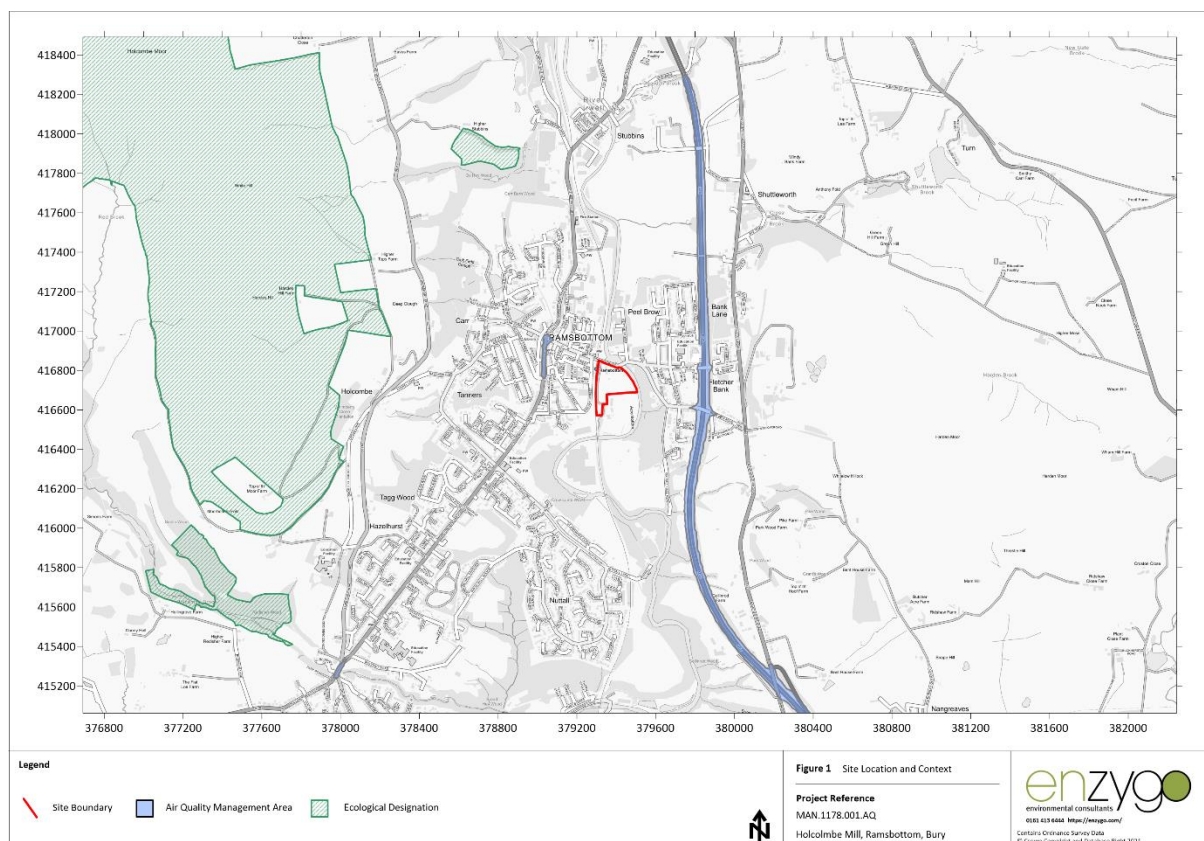
1.1 Background

- 1.1.1 Enzygo Limited (Ltd) was commissioned by Ecclestone Homes to produce an Air Quality Assessment in support of a planning application for a residential development at the former Holcombe Mill, Bridge Street, Ramsbottom, referred to as the 'Proposed Development'.
- 1.1.2 Enzygo understands that the Proposed Development seeks planning approval to provide 57 residential units alongside parking, associated infrastructure, landscaping, and access. The proposals also include the provision of a 47 space public car park to the north of the site with access from Bridge Street.
- 1.1.3 Pollutant emissions associated with construction activities and traffic generated during operation have potential to cause impacts at sensitive locations within the vicinity of the site. Additionally, existing pollutant emissions associated with Bridge Street, the A676 and M66 have potential to introduce future residential occupiers to an area of poor air quality.
- 1.1.4 An Air Quality Assessment was therefore required in order to determine baseline conditions at the site, assess site suitability for the proposed end-use and assess the potential impacts as a result of the proposed development in accordance with the requirements of the National Planning Policy Framework (NPPF) and Bury Metropolitan Borough Council (BMBC).
- 1.1.5 Details of the assessment methodology, assessment inputs, results and conclusions are detailed within this report.

1.2 Site Location and Context

- 1.2.1 The application site is located at the approximate National Grid Reference (NGR): 379385, 416750 and set within a well-established residential area and is flanked to the north by Bridge Street and to the west by Acre Bottom Lane, close to Ramsbottom town centre.
- 1.2.2 The site formally accommodated the Holcombe Paper Mill which has laid derelict since 2008 and was partially demolished in 2013 leaving in place the former chimney stack and three buildings.
- 1.2.3 Land to the north of the site comprises of commercial use adjacent to Kenyon Street, with sensitive residential receptors located adjacent to Bridge Street and Peel Brow. Immediately east of the site is the River Irwell and beyond the water course lies further residential properties off Bury New Road.
- 1.2.4 Directly to the south of the site is Ramsbottom Cricket Club, and to the west are several commercial units including ALDI, Tesco and Morrisons supermarkets, with further residential dwellings adjacent to Square Street.
- 1.2.5 The Proposed Development is also in close proximity to the Greater Manchester Combined Authority (GMCA) Air Quality Management Area (AQMA), which was declared for exceedances of the annual mean Air Quality Objective (AQO) for nitrogen dioxide (NO₂). No ecological designations were identified close to the site boundary or affected road network.
- 1.2.6 Figure 1 below shows a map of the site boundary and surrounding context.

Figure 1 – Site Location and Surrounding Context



2.0 Legislation Guidance and Policy

2.1 Introduction

2.1.1 The following legislation, guidance and policy were considered during the preparation of the Air Quality Assessment:

- European Union (EU) Directive 2008/50/EC;
- The National Planning Policy Framework (NPPF), updated on 20th July 2021;
- The National Planning Practice Guidance (NPPG), relevant chapters produced on 5th September 2023;
- Section 82 of the Environment Act (1995) (Part IV);
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Department for Environment, Food and Rural Affairs (DEFRA), 2007¹;
- The Air Quality Standards (Amendment) Regulations (2016);
- Local Air Quality Management Technical Guidance 2022²;
- Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management (IAQM)³; and
- Land-Use Planning and Development Control: Planning for Air Quality Guidance, Environmental Protection UK and IAQM⁴.

2.2 UK Legislation and National Strategy

2.2.1 Government policy requires the Secretary of State to publish a national Air Quality Strategy (AQS). The national AQS produced by the Department for Environment, Food and Rural Affairs (DEFRA) sets out the framework to reducing adverse impacts of air pollution upon human health, vegetation, and ecosystems. To achieve this the AQS defines air quality objectives (AQOs) for 10 key pollutant species, including nitrogen dioxide (NO₂), fine Particulate Matter (PM₁₀ and PM_{2.5}) which are relevant to this assessment.

2.2.2 In accordance with the Environment Act (1995), Local Authorities (LAs) have an obligation to periodically review and assess air quality within their administration to determine if specified pollutants are exceeding relevant objectives. This review involves the assessment of present and likely future air quality and is termed Local Air Quality Management (LAQM).

2.2.3 Should the LAQM process identify areas which are predicted to or currently exceed relevant AQOs the LA is required to designate an Air Quality Management Area (AQMA). The AQMA is then accompanied by an Air Quality Action Plan (AQAP) which sets various measures and polices to improve air quality with the goal of restoring compliance with the AQOs. The process of LAQM is informed by DEFRA's Technical Guidance LAQM.TG22².

2.2.4 European Directive 2008/50/EC also sets out a similar approach to the AQS and defines limit values for the protection of human health and ecosystems. The Environmental Permitting

¹ The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, DEFRA, 2007

² Local Air Quality Management Technical Guidance 2022 LAQM.TG22, DEFRA, August 2022.

³ Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management, 2016.

⁴ Land-Use Planning and Development Control: Planning for Air Quality, EPUK and IAQM, January 2017.

(England and Wales) (Amendment) (EU Exit) Regulations 2019 ensures that the Environmental Permitting (EP) regime can continue following the UK's exit from the European Union (EU).

2.2.5 The regulations state also that exceedances of the objectives should be assessed in relation to air quality at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present”.

2.2.6 AQOs applicable to this assessment are summarised in Table 1 with relation to human health receptors. It should be noted that site suitability will be determined using these objectives.

Table 1: National Air Quality Objectives

Pollutant	Air Quality Objectives	
	Concentration ($\mu\text{g}/\text{m}^3$)	Averaging Periods
NO ₂	40	Annual mean
	200	1-hour mean; not to be exceeded more than 18 times a year
PM ₁₀	40	Annual mean
	50	24-hour mean; not to be exceeded more than 35 times a year
PM _{2.5}	25	Annual mean

2.2.7 LAQM.TG22² specifies locations where the AQOs should be applied as detailed in Table 2.

Table 2: Where Air Quality Objectives Apply

Averaging Period	Objectives Should Apply At	Objectives Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc.	Building facades of offices and places of work where members of the public do not have regular access Hotels, unless people live there as their permanent residence Gardens of residential properties Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
24-hour mean	As above together with hotels, and gardens of residential properties	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
1-hour mean	As above, and kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Kerbside sites where the public would not be expected to have regular access

2.2.8 Based on the proposed C3 land use the Proposed Development would be sensitive to all objectives detailed in Table 2.

2.3 Local Planning Policy

Bury Metropolitan Borough Council – Core Strategy

- 2.3.1 The Bury Core Strategy⁵ was adopted in July 2013 and is one of the key tools to realise the vision of the Community Strategy. It is the central document within the Council's emerging Local Plan and sets out the vision, objectives, and spatial planning strategy for the borough up until 2029. Policies relevant to air quality are detailed below.

Policy EN18 – Pollution Control

“The Council will seek to prevent both new and existing development from contributing to or being adversely affected by unacceptable levels of pollution either individually or cumulatively with other existing or proposed developments.

In assessing the potential impact of pollution, the Council will have particular regard to:

- a) human health and amenity;*
- b) existing levels of pollution;*
- c) the sensitivity of natural resources and/or uses that may be affected; and*
- d) any relevant strategies and targets for pollution control and reduction.*

Where new development gives rise to the potential for unacceptable adverse impacts from pollution, the Council will require applicants to submit a Pollution Assessment which includes proposed mitigation measures. Where necessary, the Council will impose planning condition and/or obligations to ensure that the impacts of pollution are being effectively monitored and that proposed mitigation measures are being effectively implemented.”

Policy CP2 - Delivering High Standards of Design and Layout in New Development

“The Council is keen to ensure that all new development makes a positive contribution to the appearance, function, safety, and amenity of the Borough's built environment and supports wider objectives for sustainable development. In consideration of these factors, the Council will seek to ensure that the design and layout of new development is appropriate to the site and the wider character and townscape of specific areas within the Borough.

All new development (including conversions, changes of use and extensions to existing buildings) will be expected to display high standards of design and layout. The following factors will be considered when assessing planning applications:

[...]

- a) the impact on the amenity of adjacent neighbours or wider area by virtue of issues relating to safety, noise, dust, fumes, air and water quality or disturbance”*

Bury Metropolitan Borough Council – Local Plan

- 2.3.2 The Bury Local Plan contains strategic and non-strategic planning policies that will manage the growth and development of the Borough up to 2037. When adopted the plan will form part of

⁵ Bury Local Plan Publication Core Strategy, Bury Council, July 2013

the Borough's overall development plan and policies contained within this document provide the future basis for planning determination. Policies relevant to air quality are detailed below.

Policy Direction OP4 – Air Quality and Pollution Control

“It is proposed that the Local Plan should include a policy that seeks to prevent both new and existing development from contributing to, or being adversely affected by, unacceptable levels of pollution either individually or cumulatively with other existing or proposed developments.

It is considered that the policy should also set out the issues that the Council will have regard to when considering the potential impact of development on pollution and what should be required from applicants, including mitigation measures, in the event that a proposal is considered to have the potential to give rise to any impacts on air quality or other forms of pollution.”

Policy Direction OP8: Amenity

“It is proposed that the Local Plan should include a policy that seeks to ensure that all new development does not have an adverse impact on the amenity of new and existing residents in the surrounding area.”

- 2.3.3 Consideration has been made to these policies by assessing the significance of development led impacts related to construction dust and road vehicle exhaust emissions, and exposure impacts at proposed receptor locations.

3.0 Methodology

3.1 Introduction

3.1.1 Emissions generated by the Proposed Development during the construction and operational phases have potential to cause impacts at existing sensitive locations. Additionally, NO₂ and fine PM emissions associated with the local road network have potential to introduce future site occupiers to an area of existing poor air quality.

- Baseline Assessment;
- Construction Phase Dust Risk Assessment;
- Onsite Pollutant Exposure Assessment; and
- Offsite Operational Phase Impact Assessment.

3.2 Baseline Assessment

3.2.1 Baseline conditions within the assessment extents were determined by a review of the latest Greater Manchester Air Quality Status Report (ASR)⁶ and diffusion tube results published on the Clean Air Greater Manchester website⁷, and predicted background pollutant concentrations produced by DEFRA⁸. Local emission sources along with the nearby AQMAs were considered to identify potential emission sources in the local area.

3.3 Construction Phase Impacts

3.3.1 There is potential for fugitive dust impacts to occur at sensitive locations as a result of demolition, earthworks, construction and trackout activities during the construction phase of the Proposed Development. A qualitative assessment has been undertaken in accordance with the methodology outlined within the IAQM document 'Guidance on the Assessment of Dust from Demolition and Construction'³.

3.3.2 The assessment has identified specific control measures to be implemented on site which aim to reduce residual fugitive dust impacts. Appendix C details the IAQM methodology.

3.4 Operational Phase Site Exposure

3.4.1 The suitability of the site with regards to future pollutant exposure was determined by modelling NO₂ and PM concentrations across the site and comparing results against the AQOs detailed in Table 1. Any exceedance of the AQOs at proposed sensitive receptor locations is determined a significant impact.

3.4.2 Dispersion modelling using the ADMS-Roads model (version 5.0.0.1), developed by Cambridge Environmental Research Consultants (CERC), was carried out to predicted future year concentrations during the anticipated completion year of 2025.

3.4.3 The model requires various inputs including traffic flow data, emission factor inventories, and meteorological data, among other inputs which are detailed further in Appendix A.

3.4.4 Table 3 provides a summary of which AQOs apply.

⁶ 2022 Air Quality Annual Status Report, Greater Manchester Combined Authority, June 2023

⁷ <https://cleanairgm.com/data-hub/monitoring-reports>

⁸ <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>

Table 3: Relevant Air Quality Objectives

Land Use	Applicable AQO
Residential (Class C3)	Annual mean
	1-hour mean
	24-hour mean

3.5 Operational Phase Impacts

3.5.1 The operational phase will generate additional traffic on the local road network which may cause increases in pollutant concentrations at sensitive receptors close to the Proposed Development.

3.5.2 Potential road vehicle exhaust impacts with vehicles travelling to and from the site were initially screened against the criteria contained within the EPUK and IAQM guidance⁴ to determine the likely significance of impacts and where detailed assessment work is necessary. The EPUK and IAQM guidance document states the following assessment thresholds with regards operational phase impacts:

- Proposals that will cause a change in Heavy Duty Vehicle (HDV) flows of more than 25 Annual Average Daily Traffic (AADT) flows within or adjacent to an AQMA; and
- Proposals that will cause a change in Light Duty Vehicle (LDV) flows of more than 100 AADT flows within or adjacent to an AQMA.

3.5.3 Based on the information provided by the appointed transport consultant, SCP transport the Proposed Development is anticipated to generate an AADT flow of 258 during the operational phase and are expected to exceed the EPUK and IAQM assessment criteria detailed above.

3.5.4 NO₂ and PM concentrations were therefore predicted at sensitive discrete receptors, with and without the development in place, along the roads where anticipated development traffic is anticipated to exceed the EPUK and IAQM thresholds detailed above. The following scenarios were assessed:

- Opening year do-minimum (DM) - Predicted traffic flows for 2025 should the Proposed Development not be completed, plus local committed developments; and
- Opening year do-something (DS) - Predicted traffic flows for 2025, plus local committed developments in combination with addition of traffic flows generated by the Proposed Development.

3.5.5 TEMPRO v8 growth factors were applied to 2019 baseline traffic to take account of forecasted growth in 2022 and 2025 which represent the most recent baseline year and anticipated future development year.

EPUK and IAQM Impact Significance Criteria

3.5.6 Receptors potentially sensitive to changes in pollutant concentrations will be identified within the assessment extents and defined using the guidance provide in LAQM.TG22². The impact at each receptor will be defined in accordance with EPUK and IAQM guidance⁴ criteria shown in Table 4.

Table 4: EPUK and IAQM Assessment Impact Criteria

Long Term Average Concentration	% Change in Concentration Relative to AQO			
	1	2-5	6-10	>10
75% or less of AQO	Negligible	Negligible	Slight	Moderate

Long Term Average Concentration	% Change in Concentration Relative to AQO			
	1	2-5	6-10	>10
76 - 94% of AQO	Negligible	Slight	Moderate	Moderate
95 - 102% of AQO	Slight	Moderate	Moderate	Substantial
103 - 109% of AQO	Moderate	Moderate	Substantial	Substantial

3.5.7 The criteria shown in Table 4 is extracted from the EPUK and IAQM guidance⁴ and provides descriptors to allow comparisons of various air quality impacts. It should be noted that changes of 0%, i.e. less than 0.5%, will be described as negligible in accordance with the EPUK and IAQM guidance⁴.

3.5.8 Following the prediction of impacts at discrete receptor locations utilising the criteria in Table 3 the EPUK and IAQM guidance⁴ states that this framework is to be used as a starting point to make a judgement on significance of effect. The guidance suggests that any judgement on the overall significance of effect of a development will need to take into account such factors as:

- the existing and future air quality in the absence of the development
- the extent of current and future population exposure to the impacts; and
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts.

3.5.9 Full details of inputs utilised in the modelling assessment exercise and subsequent results are presented in Appendix A and Appendix B, respectively.

4.0 Baseline Conditions

4.1 Introduction

4.1.1 Available air quality data and the surrounding context was reviewed to provide a baseline for assessment. The following sources were used in the assessment of baseline conditions:

- DEFRA's LAQM Background Mapping Data and AQMA Database⁹;
- Greater Manchester Local Air Quality Management NO₂ Diffusion Tube Results¹⁰; and
- Greater Manchester 2022 ASR⁶.

4.2 Emission Sources

4.2.1 The primary sources pollutant emissions near the Proposed Development are exhaust emissions from road vehicle, particularly along Bridge Street which runs perpendicular to the northern site boundary. Additionally, the A767 and M66 are situated within 300 m of the site boundary. NO other significant sources of pollutant emissions were identified in the assessment extents.

4.3 Air Quality Management Areas

4.3.1 As required by the Environment Act (1995), the Greater Manchester Combined Authority (GMCA), on behalf BMBC, undertakes an annual review and assessment of air quality across Greater Manchester. This process indicated that roadside annual mean NO₂ concentrations currently exceed the relevant AQO at specific areas throughout Bury and one AQMA has been declared and is described as:

"Greater Manchester AQMA (Bury Metropolitan Borough Council) - This is the part of the Greater Manchester Combined Authority AQMA located within the Bury Council area".

4.3.2 The site is located in close proximity to the AQMA, with sections of the A676 and M66 designated due to annual mean NO₂ exceedances. As such, there is the potential to expose future residents to elevated annual mean NO₂ pollutant concentrations, as well as to cause impacts within the sensitive area.

4.3.3 BMBC have concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs and as such no further AQMA's have been designated.

4.4 Air Quality Monitoring

4.4.1 GMCA's monitoring database⁶ was reviewed to identify representative monitoring stations which could assist in the determination of background conditions. 2020 and 2021 monitoring results are affected by the impact of enforced restrictions during the national and local COVID lockdowns and are considered unrepresentative of normal conditions.

4.4.2 The review indicated the closest automatic station as Bury Bridge (BUR03) located 6 km south of the Proposed Development. The location of analyser is unrepresentative of the Proposed Development and data from this station has not been considered further during the baseline review.

⁹ https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=43

¹⁰ Greater Manchester Local Air Quality Management NO₂ diffusion Tube Results 2011-2022 - <https://cleanairgm.com/data-hub/monitoring-reports/> - Accessed 16/10/2023.

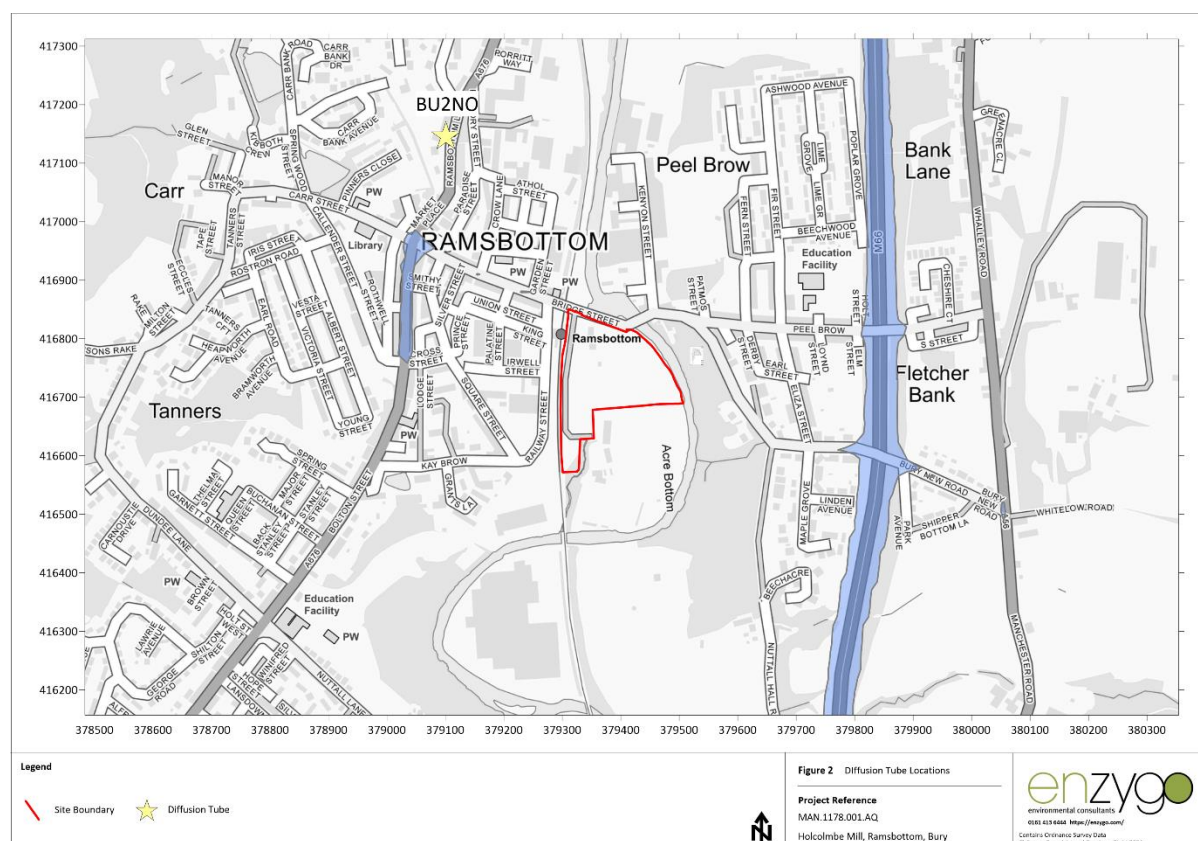
4.4.3 A further review GMCA's monitoring database⁶ indicated one diffusion tube monitoring location within 500 m of the site, adjacent to the A676. Recent monitoring data is presented in Table 5.

Table 5: Diffusion Tube Monitoring Results

Site ID and Name	Type	Distance to Site (m)	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)			
			2019	2020	2021	2022
BU2NO - Ramsbottom Lane	Roadside	493	38.77	25.05	27.38	28.70

4.4.4 Monitoring data does not indicate any exceedance of the annual mean AQO at BU2NO in recent years. Figure 2 presents the diffusion tube monitoring locations within the assessment extents.

Figure 2 - Diffusion Tube Monitoring Locations



4.5 DEFRA Background Concentrations

4.5.1 To assist LAs in their air quality Review and Assessments, DEFRA have produced background concentration maps for NO₂, PM₁₀ and PM_{2.5}. Predictions are based on a 1 km by 1 km grid basis across the entire UK with the Proposed Development located in NGR: 379500, 416500.

4.5.2 Data for this grid square was downloaded for the most recent baseline year of 2022 and the anticipated opening year of 2025. Table 6 presents the data.

Table 6: DEFRA Background Pollutant Concentrations

Pollutant	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)	
	2022	2025
NO ₂	12.65	11.17
PM ₁₀	10.63	10.33
PM _{2.5}	7.07	6.84

4.5.3 DEFRA background predictions concentrations of NO₂ and PM are not predicted to exceed the relevant AQOs.

4.6 Sensitive Receptors

4.6.1 A sensitive receptor is defined as any location which may be affected by changes in air quality as a result of a development. These have been defined for construction dust and road vehicle exhaust emissions impacts in the following sections.

Construction Phase Sensitive Receptors

4.6.2 No national or European ecological designations are located within 50 m of the Site boundary, or 50 m from a route used by construction vehicles on the public highway (up to 500 m from the Site entrance). Therefore, the risk of dust effects at a nationally or European designated ecological receptor site from construction impacts is not considered further in this assessment.

4.6.3 Human receptors sensitive to potential dust impacts during earthworks and construction were identified from a desk-top study of the area up to 350 m from the development boundary. These are summarised in Section 5.1.

Operational Phase Sensitive Receptors

4.6.4 A desk-top study was undertaken to identify worst case sensitive receptor locations adjacent to the affected road network. Receptor locations were plotted where development traffic generation exceeds the EPUK and IAQM thresholds (Section 3.5.2).

4.6.5 The majority of receptor locations represent residential premises where members of the public might reasonably be expected to spend one hour or more. The identified receptor locations are summarised Table 7 and presented in Figure 3.

Table 7: Existing Sensitive Human Receptors

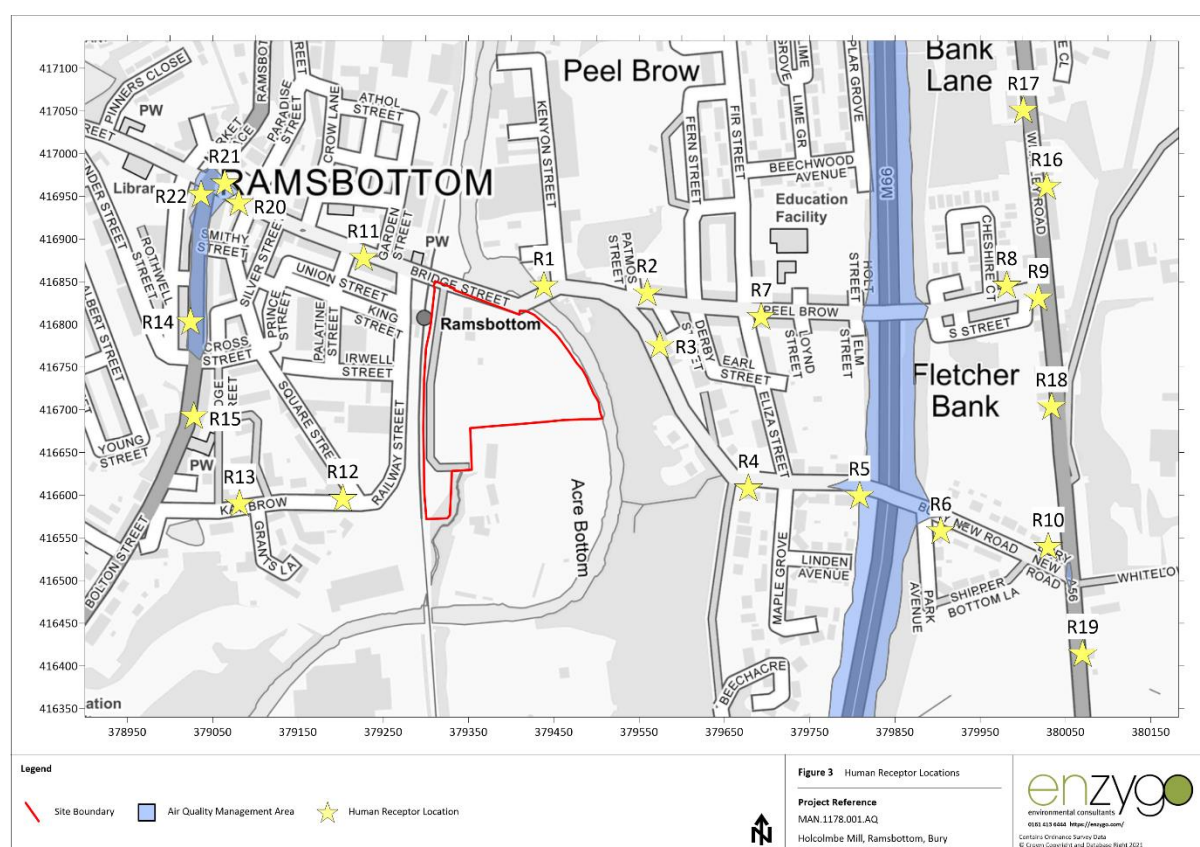
Receptor Name		NGR (m)		Height (m)
		X	Y	
R1	5 Peel Brow	379438.6	416844.7	1.5
R2	31 Peel Brow	379559.4	416836.4	1.5
R3	11 Bury New Road	379574.0	416774.8	1.5
R4	46 Bury New Road	379678.3	416607.6	1.5
R5	64 Bury New Road	379808.4	416598.8	1.5
R6	1 Park Avenue	379903.8	416557.6	1.5
R7	80 Peel Brow	379693.3	416808.2	1.5
R8	2 Cheshire Court	379980.9	416845.1	1.5
R9	1 Manchester Road	380018.3	416830.1	1.5
R10	99 Bury New Road	380029.6	416538.8	1.5
R11	12 Bridge Street	379226.9	416877.1	1.5
R12	1-6 The Gate House, Kay Brow	379202.6	416595.3	1.5
R13	Little Miracles Daycare	379081.5	416589.2	1.5
R14	60 Bolton Street (	379023.8	416802.6	1.5
R15	75 Bolton Street	379028.1	416691.9	1.5
R16	30 Whalley Road	380028.0	416960.9	1.5
R17	55 Whalley Road	380000.6	417050.1	1.5

Receptor Name		NGR (m)		Height (m)
		X	Y	
R18	40 Manchester Road	380033.7	416703.0	1.5
R19	119 Manchester Road	380070.1	416413.6	1.5
R20	80 Bridge Street	379080.6	416941.3	1.5
R21	59 Bridge Street	379064.0	416964.7	1.5
R22	6 Bolton Street	379036.4	416951.7	1.5

4.6.6 Receptors modelled at 1.5 m to represent the average UK “breathing height” above ground level. Receptors modelled at heights above this level represent upper floors.

4.6.7 Figure 3 presents the modelled operational phase human receptor locations.

Figure 3 – Modelled Receptor Locations



5.1 Construction Phase Impact Assessment

Table 8: Construction Phase Sensitive Receptor Counts

Distance from Site or Trackout Routes (m)	Approximate Number of Receptors
Earthworks and Construction	
Less than 20	1 - 10
20 – 50	1 - 10
50 – 100	10 - 100
100 – 350	More than 100
Trackout	
Less than 20	More than 100
20 – 50	More than 100

5.1.3 Figure 4 and Figure 5 provide maps of the construction and trackout buffer distances.

Legend

- Site Boundary
- 20m from Site Boundary
- 50m from Site Boundary
- 100m from Site Boundary
- 350m from Site Boundary

Figure 4 Demolition, Earthworks and Construction Dust Distance Bands

Project Reference
MAN.1178.001.AQ

Holcombe Mill, Ramsbottom, Bury

enzygo
environmental consultants
0161 619 6666 <http://enzygo.com/>
Carta Carta GIS Survey Data

[illegible]

5.1.4 The scale and nature of the works has been determined to assess the magnitude (Step 2A) of fugitive dust emissions arising from each construction phase activity. The determination of magnitude was based upon the criteria detailed in Appendix C.

5.1.5 The site is currently occupied the former chimney stack and three buildings associated with the former Paper Mill which are planned for demolition. Based on the estimated building volumes the magnitude of potential dust emissions related to demolition activities is considered small. (i.e. Total building volume <20,000m³)

5.1.6 The Proposed Development site could require large imports or exports of material to complete site remediation. Based on the estimated site area and anticipated remediation works the magnitude of potential dust emissions related to earthwork activities is considered large. (*i.e. Total site area >10,000m²*)

5.1.7 The Proposed Development comprises the construction of 57 residential units. Based on the anticipated construction volumes the magnitude of potential dust emissions related to construction activities is considered is medium. (*i.e. construction volumes between 25,000 and 100,000 m³*).

Trackout

5.1.8 Information on the number of HDV trips generated during the construction phase was not available at the time of assessment. Based on the site area it is anticipated that the unpaved road length the magnitude of potential dust emissions related to trackout activities is considered large. (*i.e. unpaved road length greater than 100 m*).

5.1.9 A summary of the construction phase magnitudes is detailed in Table 9.

Table 9: Dust Emission Magnitude

Demolition	Earthworks	Construction	Trackout
Small	Large	Medium	Large

Sensitivity of the Area

5.1.10 The next step (Step 2B) determined the sensitivity of the surrounding area, based on the number, proximity, and type of receptors. To ensure a worse case assessment all receptors were assumed to be highly sensitive (e.g. residential).

Dust Soiling

5.1.11 Residential premises are located within the assessment area which presents a high receptor sensitivity. When combined with receptor counts provided in Table 8 the sensitivity of the surrounding area is medium for demolition, earthworks, and construction activities and high for trackout activities.

Human Health

5.1.12 Predicted annual mean background concentrations of PM₁₀ within the vicinity of the proposed site, as predicted by DEFRA, are 10.63 µg/m³ (Table 6). Based on the receptor counts provided in Table 8, the sensitivity of the surrounding area is low for earthworks and construction and medium for trackout activities.

Table 10: Summary of Area Sensitivity to Dust Impacts

Impact	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium	High
Human Health	Low	Low	Low	Medium

Risk

5.1.13 The next stage of the assessment (Step 2C) combined the dust magnitude and receptor sensitivity defined above to determine the overall risk with no mitigation applied. This is summarised in Table 11.

Table 11: Summary of Unmitigated Dust Risk

Impact	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low	Medium	Medium	High
Human Health	Negligible	Low	Low	Medium

5.1.14 Following the determination of risk for each activity, the final step (Step 3) detailed necessary mitigation measures to reduce impacts during the construction phase. These measures have been adapted for the Proposed Development and summarised in Table 15 within Section 6.1.

5.2 On-site Exposure

Long Term Objectives

5.2.1 Opening year pollutant concentrations were modelled across the Proposed Development during the future opening year of 2025. Results are presented in Table 12, which present the range of concentrations across the site. The maximum concentrations were predicted at non-sensitive proposed uses on the site directly adjacent to Bridge Street and the site access.

Table 12: Predicted Annual Mean Concentrations Across the Site

Receptor Location	Maximum Concentration ($\mu\text{g}/\text{m}^3$)		
	NO ₂ (AQO – 40 $\mu\text{g}/\text{m}^3$)	PM ₁₀ (AQO – 40 $\mu\text{g}/\text{m}^3$)	PM _{2.5} (AQO – 25 $\mu\text{g}/\text{m}^3$)
Site	12.6 – 28.8	10.7 – 15.3	7.1 – 9.5

5.2.2 Predicted annual mean concentrations presented in Table 12 indicate compliance with national AQOs detailed in Table 1. Based on these results, on-site exposure to annual mean pollutant concentrations was considered not significant and the site is considered suitable for residential use without the requirement of protective mitigation measures.

5.2.3 Predictions at heights above first floor have not been assessed, as pollutant concentrations reduce with increased height from emission sources, i.e., the local road network.

5.2.4 Pollutant contour plots in Figure 6, Figure 7 and Figure 8 provide a graphical representation of pollutant concentrations across the site.

Figure 6 – Annual Mean NO₂ Contours

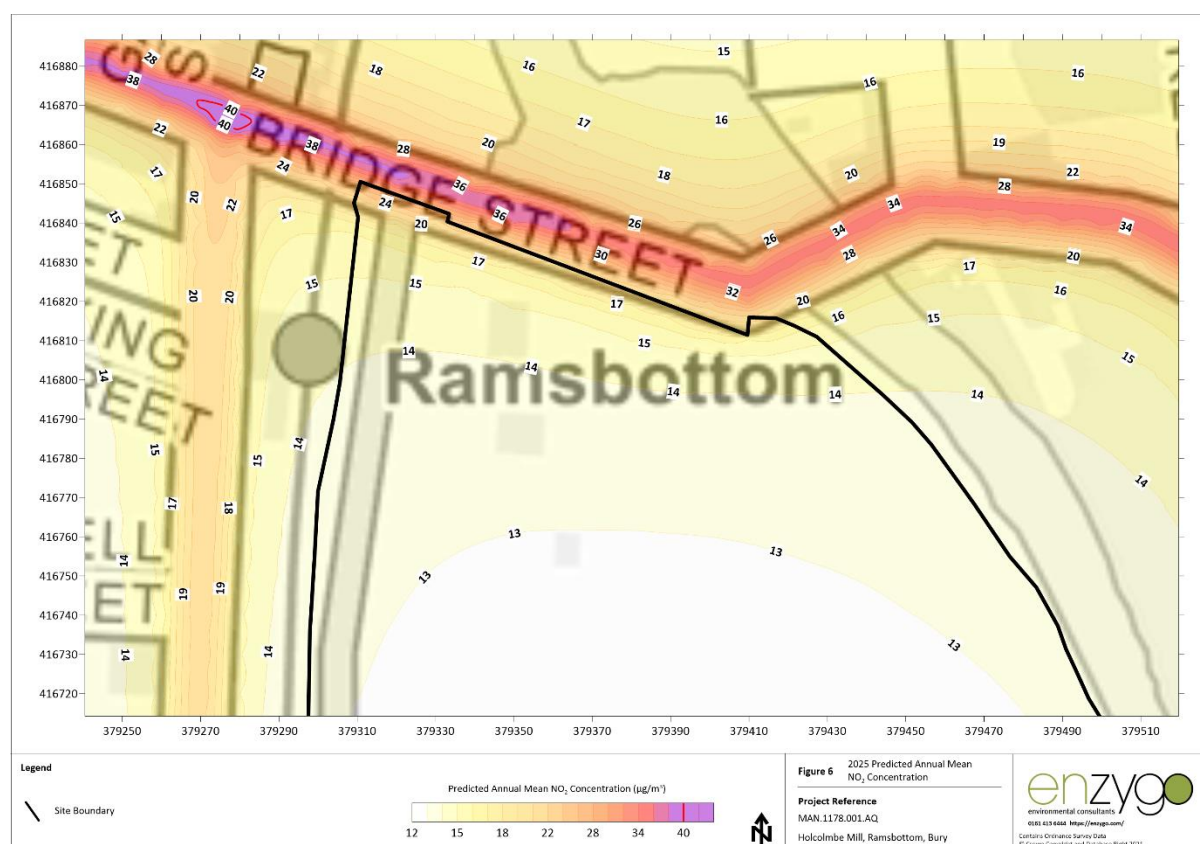


Figure 7 – Annual Mean PM₁₀ Contours

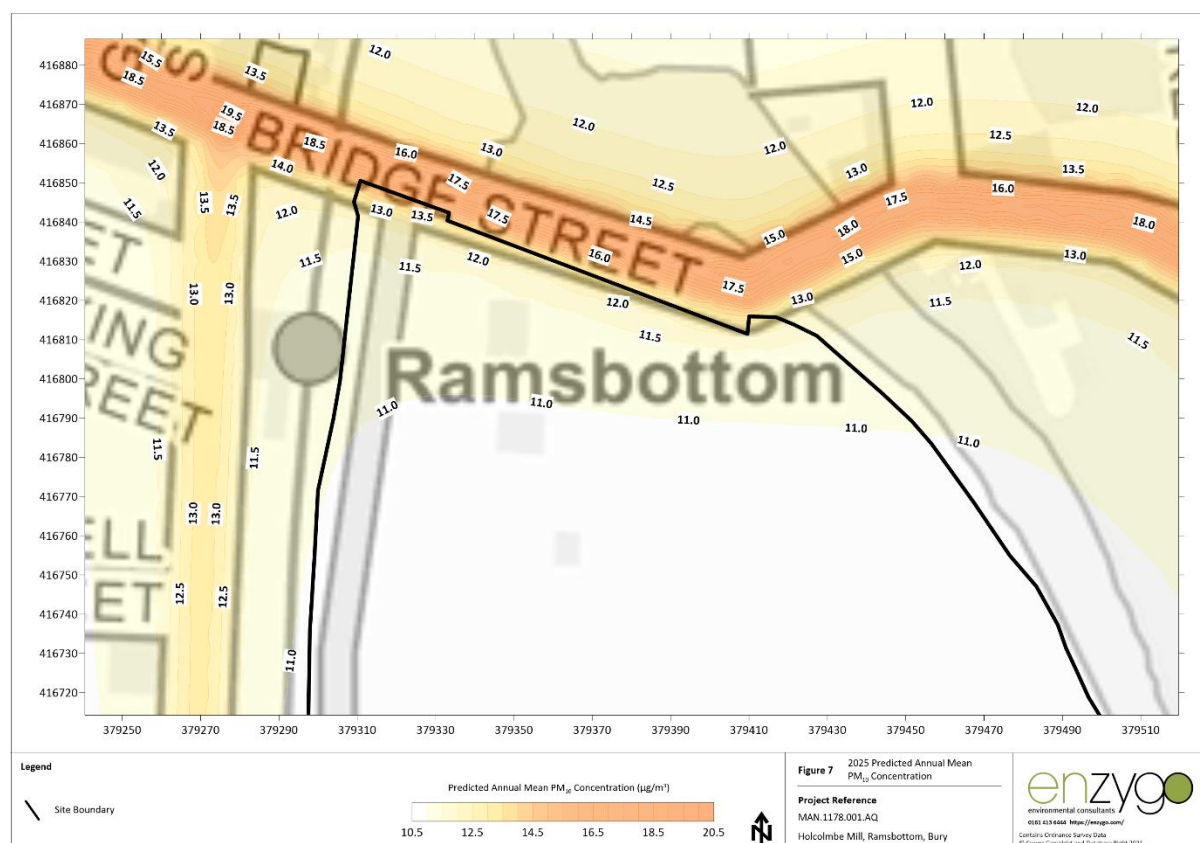
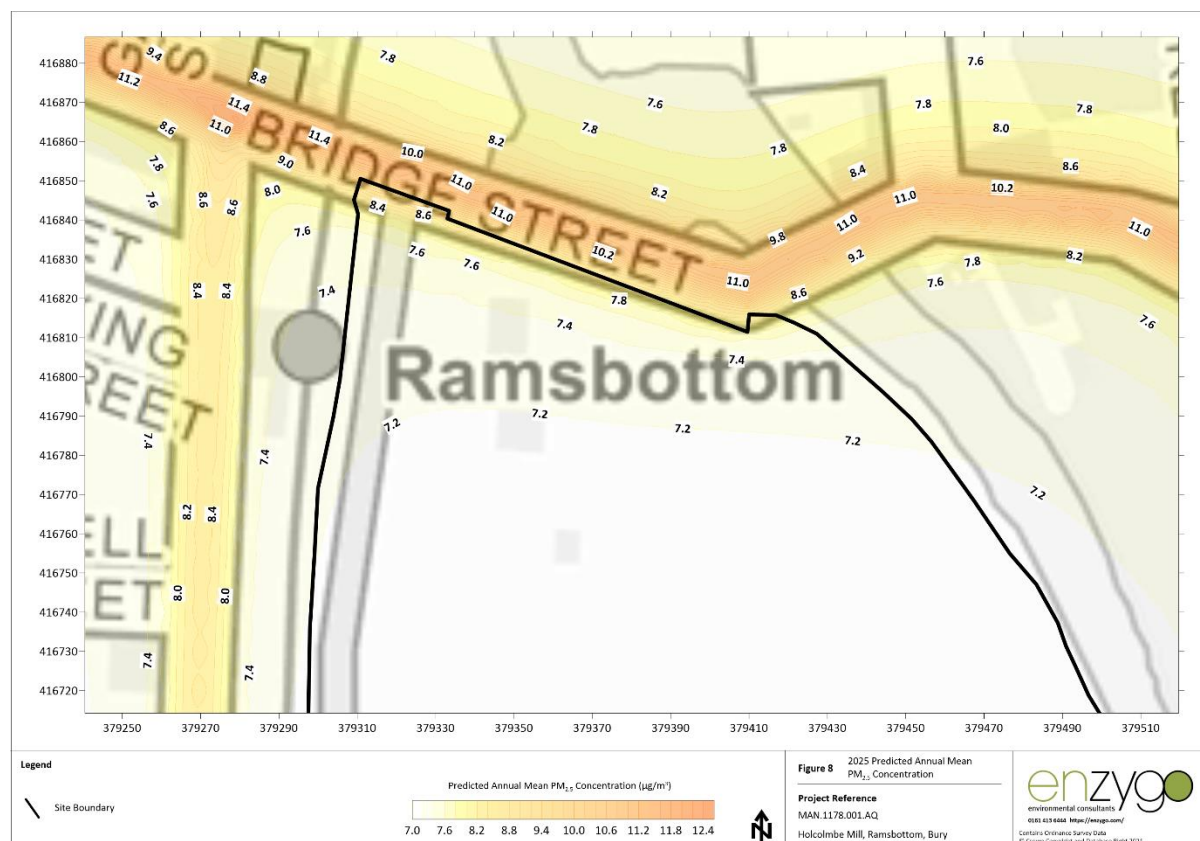


Figure 8 – Annual Mean PM_{2.5} Contours



Short Term Objectives

- 5.2.5 Exposure to 1-hour NO₂ or 24-hour PM₁₀ concentrations are relevant at the Proposed Development Site but contours have not been produced as part of the dispersion modelling assessment. LAQM.TG22² states if annual mean NO₂ concentrations are below 60 µg/m³ then it is unlikely that the 1-hour AQO will be exceeded. Similarly, if the annual PM₁₀ concentrations are below 32 µg/m³ then it is unlikely that the 24-hour AQO will be exceeded.
- 5.2.6 Annual mean NO₂ and PM₁₀ concentrations across the site are predicted as 28.8 µg/m³ and 15.3 µg/m³ and therefore both 1 hour and 24-hour AQOs are not predicted to exceed short term AQOs at any location across the site.

5.3 Road Traffic Exhaust Impacts

- 5.3.1 It is expected the Proposed Development will generate 258 AADT flows during operation. Based on the anticipated AADT trip generation a dispersion modelling assessment was undertaken to quantify potential changes in pollutant concentrations at sensitive locations across the affected road network.
- 5.3.2 Predicted impact significance at individual receptors on annual mean NO₂, PM₁₀ and PM_{2.5} concentrations, based on the criteria given in Table 4, are summarised in Table 13.

Table 13: Summary of Operational Phase Impacts

Pollutant and Period	Receptors	Impact Descriptor
Annual Mean NO ₂	All Receptors	Negligible
Annual Mean PM ₁₀	All Receptors	Negligible
Annual Mean PM _{2.5}	All Receptors	Negligible

- 5.3.3 As shown in Table 13 the significance of impacts was predicted to be negligible at all sensitive receptors. The overall significance of potential impacts was determined to be not significant in accordance with the EPUK and IAQM guidance⁴. Assessment results and commentary can be found in Appendix B, with justifications summarised in in Table 14.

Table 14: Overall Road Emissions Impact Significance

Guidance	Comment
Number of properties affected by slight, moderate or substantial air quality impacts and a judgement on the overall balance	Impacts on NO ₂ , PM ₁₀ and PM _{2.5} concentrations were predicted to be negligible at all sensitive receptors. These represent worst-case locations and therefore it is unlikely that any other receptors would be significantly affected by the Proposed Development.
Where new exposure is introduced into an existing area of poor air quality, then the number of people exposed to levels above the objective or limit value will be relevant	The Proposed Development will not result in any new sensitive exposure to pollutant concentrations above the AQOs at sensitive locations
The percentage change in concentration relative to the objective and the descriptions of the impacts at the receptors	The maximum changes in annual mean NO₂ and PM₁₀ concentrations relative to their respective AQOs were predicted to range from: 0.03% to 0.50% for NO₂, <0.01% to 0.17% for PM₁₀; and <0.01% to 0.12% for PM_{2.5}. Resultant impacts were therefore negligible at all receptor locations for each pollutant species

Guidance	Comment
Whether or not an exceedance of an objective is predicted to arise or be removed in the study area due to a substantial increase or decrease	There were no predicted exceedances of the annual mean AQOs for NO ₂ , PM ₁₀ or PM _{2.5} at any sensitive receptor location within the modelling extents
The extent to which an objective is exceeded e.g. an annual mean NO ₂ concentration of 41µg/m ³ should attract less significance than an annual mean of 51 µg/m ³	As above, there were no predicted exceedances at any receptor locations within the modelling extents, and impacts should attract less significance.

5.3.4 Based on the above analysis the overall operational phase road traffic emission impacts were determined as not significant.

6.0 Mitigation

6.1 Construction Phase

6.1.1 The IAQM guidance³ provides several control measures to reduce fugitive dust impacts during the construction phase. These measures have been adapted based on professional judgment for the Proposed Development site and summarised in Table 15.

Table 15: Fugitive Dust Mitigation Measures

Impact	Recommended Control Measure and Requirement		
Communications	1	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	H
	2	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	H
	3	Display the head or regional office contact information	H
	4	Develop and implement a Dust Management Plan, which may include measures to control other emissions.	H
Site Management	5	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner	H
	6	Make the complaints log available to the local authority when asked	H
	7	Record any exceptional incidents that cause dust and/or air emissions and the action taken to resolve the situation in the log book.	H
Monitoring	9	Undertake 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.	H
	10	Carry out regular site inspections to monitor compliance with the Dust Management Plan, record inspection results, and make an inspection log available to the local authority when asked	H
	11	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	H
	12	Agree dust monitoring locations with the Local Authority	H
Preparing & Maintaining Site	13	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H
	14	Erect solid screens or barriers around dusty activities or the site boundary.	H
	15	Fully enclose site or specific operations where there is a high potential for dust production	H
	16	Avoid site runoff of water or mud	H
	18	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	H
	19	Cover, seed or fence stockpiles to prevent wind whipping	H

Impact	Recommended Control Measure and Requirement		
Operating Vehicle/Machinery & Sustainable Travel	21	Ensure all vehicles switch off engines when stationary - no idling vehicles	H
	22	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	H
	23	Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced 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)	H
	24	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials	H
	25	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)	H
Operations	26	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction,	H
	27	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	H
	28	Use enclosed chutes and conveyors and covered skips.	H
	29	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	H
	30	Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	H
Waste Management	31	Avoid bonfires and burning of waste materials	H
Demolition	32	Soft strip inside buildings before demolition	D
	33	Ensure effective water suppression is used during demolition operations.	H
	34	Use appropriate manual or mechanical techniques.	H
	35	Bag and remove any biological debris or damp down such material before demolition	H
Earthworks & Construction	36	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	D
	37	Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable	D
	38	Only remove the cover in small areas during work and not all at once	D
	39	Avoid scabbling (roughening of concrete surfaces) if possible	D
	40	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	H
	41	Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	D
	42	For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	D
Trackout	43	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site.	D

Impact	Recommended Control Measure and Requirement		
	44	Avoid dry sweeping of large areas.	H
	45	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport, as necessary.	H
	46	Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	H
	47	Record all inspections of haul routes and any action in a site log book.	H
	48	Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	H
	49	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	H
	50	Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	H
	51	Access gates to be located at least 10 m from receptors where possible	H

*D – desired

*H – highly recommended

6.1.2 Assuming the relevant mitigation measures outlined in Table 15 are implemented, the residual effect from all dust generating activities (Step 4) is predicted to be negligible and therefore not significant in accordance with the IAQM guidance³.

6.2 Operational Phase

6.2.1 The results of operational phase assessment concluded that associated development impacts are predicted to be not significant, as a result of negligible impacts at all locations. Additionally, no exceedances of the AQOs were predicted at any location identified in the assessment.

6.2.2 As such, no measures are required to offset operational impacts. However principles of good practice include the following measures to be provided:

- Dwellings with dedicated spaces: One Electric Vehicle charging point for each residential unit;
- Dwellings with unallocated parking: One fast capability EV charging point per 10 parking spaces;
- Secure cycling parking;
- Provision of a detailed travel plan which sets out measures to encourage sustainable means of transport; and
- All gas-fired boilers to meet a minimum standard of <40 mgNO_x/kWh.

7.0 Conclusions

- 7.1.1 Enzygo Ltd was commissioned by Eccleston Homes to produce an Air Quality Assessment in support of a planning application for a residential led development at the Former Holcombe Mill, Bridge Street, Ramsbottom, referred to as the 'Proposed Development'.
- 7.1.2 The Proposed Development comprises 57 residential units alongside parking, associated infrastructure, landscaping, and access, and the provision of a 47 space public car park to the north of the site with access off Bridge Street.
- 7.1.3 A qualitative construction dust risk assessment was undertaken in accordance with the IAQM methodology to assess impact risk and define a suitable mitigation strategy. Assuming good practice and the implementation of suggested dust control measures, detailed in Table 15, residual impacts are predicted to be not significant.
- 7.1.4 Potential impacts during the operational phase of the development may occur due to future exposure to pollution on the site and from additional NO₂ and fine PM emissions associated with vehicles travelling to and from the site. A dispersion modelling assessment was undertaken to quantify air quality impacts at sensitive locations. Results were verified using monitoring results obtained from BMBC.
- 7.1.5 The results of the site exposure modelling predicted that annual and hourly mean concentrations across the Proposed Development site comply with the national AQOs at all proposed sensitive locations. Further mitigation to protect future occupiers is therefore not required and operational phase exposure was predicted to be not significant.
- 7.1.6 Impacts on NO₂, PM₁₀ and PM_{2.5} concentrations from development generated traffic were predicted to be negligible at all sensitive receptor locations within the vicinity of the site. The overall significance of potential impacts was determined to be not significant in accordance with the EPUK and IAQM guidance³.
- 7.1.7 In summary, it is predicted that both development impacts and on-site pollutant exposure are deemed not significant and should not form a constraint to planning consent.

8.0 Abbreviations

AADT	Annual Average Daily Traffic
ADM	Atmospheric Dispersion Modelling
ADMS	Atmospheric Dispersion Modelling Software
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Strategy
ASR	Annual Status Report
BMBC	Bury Metropolitan Borough Council
CERC	Cambridge Environmental Research Consultants
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DM	Do Minimum
DS	Do Something
EA	Environment Agency
EPUK	Environmental Protection UK
EV	Electric Vehicle
EU	European Union
GMCA	Greater Manchester Combined Authority
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LA	Local Authority
LAQM	Local Air Quality Management
LDV	Light Duty Vehicle
NGR	National Grid Reference
NO ₂	Nitrogen Dioxide
NO _x	Oxides of nitrogen
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
PM ₁₀	Particulate Matter with an aerodynamic diameter less than 10µm
PM _{2.5}	Particulate Matter with an aerodynamic diameter less than 2.5µm
UK	United Kingdom
z ₀	Roughness Length

Appendix A – Assessment Inputs

Dispersion modelling was undertaken using the ADMS-Roads dispersion model (version 5.0.0.1) which is developed by Cambridge Environmental Research Consultants (CERC) and is routinely used throughout the UK for the prediction of pollutant dispersion from road sources. The Environment Agency and DEFRA also widely accept modelling predictions from this software package.

The model requires input data that details the following parameters:

- Traffic flow data;
- Vehicle emission factors;
- Spatial co-ordinates of emissions;
- Street width;
- Meteorological data;
- Roughness length; and
- Monin-Obukhov length.

Traffic Flow Data

Baseline traffic flow data was obtained from the Air Quality Assessment (ref: AQ108648) produced for a full planning application at the site (ref: 65217/FUL¹¹) withdrawn in 2020. The 2019 baseline data was taken from the Transport Assessment (TA) (ref: CT/220419/TA/00), produced by SCP Transport, and converted to the 2022 and 2025 assessment scenarios using TEMPRO v8 growth factors.

As detailed within the TA manual classified turning count surveys were undertaken at the following junctions in order to establish the existing traffic flows on the local highway network:

- A56 Whalley Road / A56 Manchester Road / Peel Brow;
- A56 Manchester Road / Bury New Road;
- A576 Bolton Street / Kay Brow; and,
- A576 Bolton Street / A576 Bolton Road West / Dundee Lane / Nuttall Lane

Baseline data for the M66 was obtained from the Department for Transport (DfT) database¹².

Traffic generation associated with the Proposed Development was obtained from Table 7.5 of SCP Transport's TA. The net traffic generation of the Proposed Development, in peak hour format is detailed below in Table A1, which equates to a 24-hour AADT flow of 258 using national traffic statistics.

Table A1: Net Trip Generation

Mode	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Arrivals	Departures	Arrivals	Departures
Vehicles	7	20	20	7

¹¹ https://planning.bury.gov.uk/online-applications/applicationDetails.do?activeTab=dates&keyVal= BURY_DCAPR_55877 – Accessed 19/10/2023

¹² <https://roadtraffic.dft.gov.uk/manualcountpoints/73199> - Accessed 16/10/2023.

According to the TA the public car park element of the Proposed Development is not anticipated to generate any new demand on the network and will instead alleviate town centre parking pressures, providing a betterment over the existing scenario. As such, traffic flows associated with the public car park were not assessed further.

Vehicle speeds were estimated based on the free flow potential of each link and local speed limits. Assumptions account for speed reductions at junctions and peak hour congestion in line with Section 7.260 of LAQM.TG22². Road widths and street canyon characteristics were estimated from aerial photography provided by Google Earth Pro.

A summary of the traffic data used to inform each operation scenario is presented Table A2.

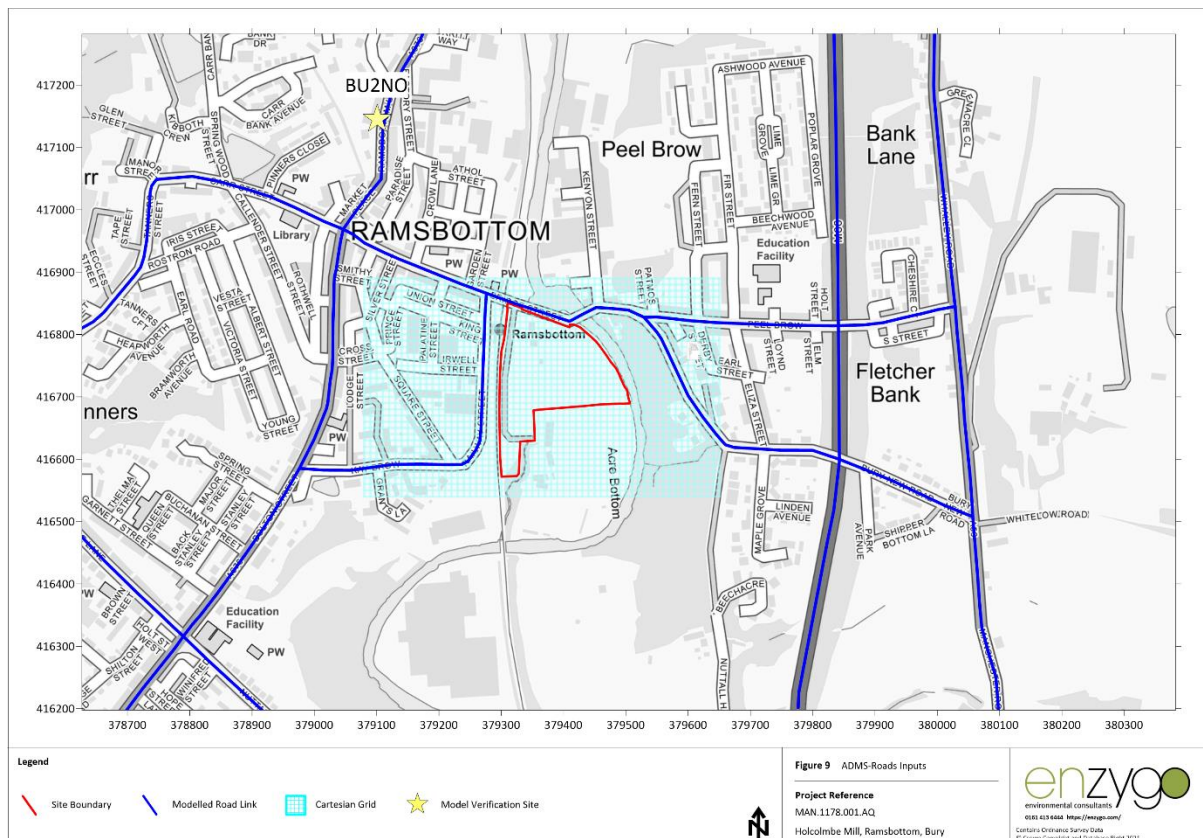
Table A2: 24-hour AADT Traffic Data

Road Link		Width (m)	Speed (km/h)	Canyon Height (m)	Verification Scenario 2022		DM Scenario 2026		DS Scenario 2026		Dev't Trips (AADT)
					AADT	HGV%	AADT	HGV%	AADT	HGV%	
L1	Bridge Street - West of Site Access	6.6	25	0	10,963	5.7	11,564	5.7	11,610	5.7	46
L2	Bridge Street - West of Railway Street	6.6	25	0	10,963	5.7	11,564	5.7	11,610	5.7	46
L3	Bridge Street - Street Canyon Section	10.5	25	6.5	10,963	5.7	11,564	5.7	11,610	5.7	46
L4	Bridge Street - A676 Junction	10.5	15	6.5	10,963	5.7	11,564	5.7	11,610	5.7	46
L5	Peel Brow - East of Site Access	7.8	32	0	10,963	5.7	11,564	5.7	11,776	5.7	212
L6	Peel Brow	6.8	32	0	2,378	5.6	2,520	5.6	2,570	5.6	50
L7	Peel Brow - A56 Junction	9.9	15	0	2,378	5.6	2,520	5.6	2,570	5.6	50
L8	Bury New Road	7.8	32	0	8,584	5.7	9,175	5.7	9,336	5.7	162
L9	Bury New Road - A56 Junction	12.5	15	0	8,584	5.7	9,175	5.7	9,336	5.7	162
L10	(A676) Ramsbottom Lane - Bridge Street Junction	8.5	15	0	10,337	4.1	10,882	4.1	10,882	4.1	0
L11	(A676) Ramsbottom Lane	8.9	25	0	10,337	4.1	10,882	4.1	10,882	4.1	0
L12	(A676) Bolton Street Slowdown at Bridge Street Junction	13.0	15	7	10,337	4.1	10,882	4.1	10,882	4.1	0
L13	(A676) Bolton Street Canyon	13.0	25	7	10,337	4.1	10,882	4.1	10,882	4.1	0
L14	(A676) Bolton Street	7.7	25	0	10,337	4.1	10,882	4.1	10,882	4.1	0
L15	(A676) Bolton Street - South of Kay Brow	7.7	25	0	14,354	3.5	15,134	3.5	15,180	3.5	46
L16	(A676) Bolton Street - Dundee Lane/Nuttall Lane Junction	10.0	15	0	14,354	3.5	15,134	3.5	15,180	3.5	46
L17	(A676) Bolton Street - Dundee Lane/Nuttall Lane Junction	10.2	15	0	13,897	3.6	14,653	3.6	14,697	3.6	44
L18	(A676) Bolton Street - South of Dundee Lane/Nuttall Lane	8.4	25	0	13,897	3.6	14,653	3.6	14,697	3.6	44
L19	Dundee Lane	5.4	20	0	1,410	2.5	1,484	2.5	1,485	2.5	0
L20	Nuttall Lane	8.0	20	0	5,715	2.1	6,016	2.1	6,018	2.1	2
L21	(A56) Whalley Road	9.8	32	0	9,359	4.8	9,887	4.8	9,938	4.8	50
L22	(A56) Whalley Road - South of Peel Brow	9.8	32	0	8,649	6.5	9,124	6.5	9,124	6.5	0

Road Link		Width (m)	Speed (km/h)	Canyon Height (m)	Verification Scenario 2022		DM Scenario 2026		DS Scenario 2026		Dev't Trips (AADT)
					AADT	HGV%	AADT	HGV%	AADT	HGV%	
L23	(A56) Whalley Road - Bury New Road Junction	8.7	15	0	17,005	6.1	18,022	6.1	18,183	6.1	162
L24	(A56) Manchester Road - South of Bury New Road	9.0	38	0	17,005	6.1	18,022	6.1	18,183	6.1	162
L25	Railway Street	7.3	32	0	4,156	1.7	4,398	1.7	4,444	1.7	46
L26	Kaybrow	4.7	32	0	4,156	1.7	4,398	1.7	4,444	1.7	46
L27	Carr Street	6.0	32	0	2,378	5.6	2,520	5.6	2,520	5.6	0
L28	M66 Motorway	18.8	72	0	58,245	6.8	59,486	6.8	59,486	6.8	0

Figure 9 presents the modelled road link locations used within the operational phase assessment.

Figure 9 – ADMS Road Inputs



Emission Factors

Emission factors for each link were calculated using the relevant traffic flows and the Emissions Factor Toolkit (version 11.0) released in November 2021, which incorporates updated COPERT 5.3 vehicle emissions factors for NO_x and PM and EURO 6 vehicle fleet sub-categories.

The 2025 future scenarios assume a reduction to future year emission factors guided by increasing EV fleets and future advancements to low emission technologies as provided by the Eft.

Assessment Area

A cartesian grid was plotted over the region NGR: 379240, 416710 to 379520, 416980 to produced gridded outputs (see Figure 9). Results were processed and combined with 2025 DEFRA background predictions detailed in Table 6 to provide total pollutant concentrations across the site. Pollutant contours are presented in Figure 6, Figure 7 and Figure 8.

Ambient concentrations were also predicted at discrete sensitive receptor locations as presented in Figure 3.

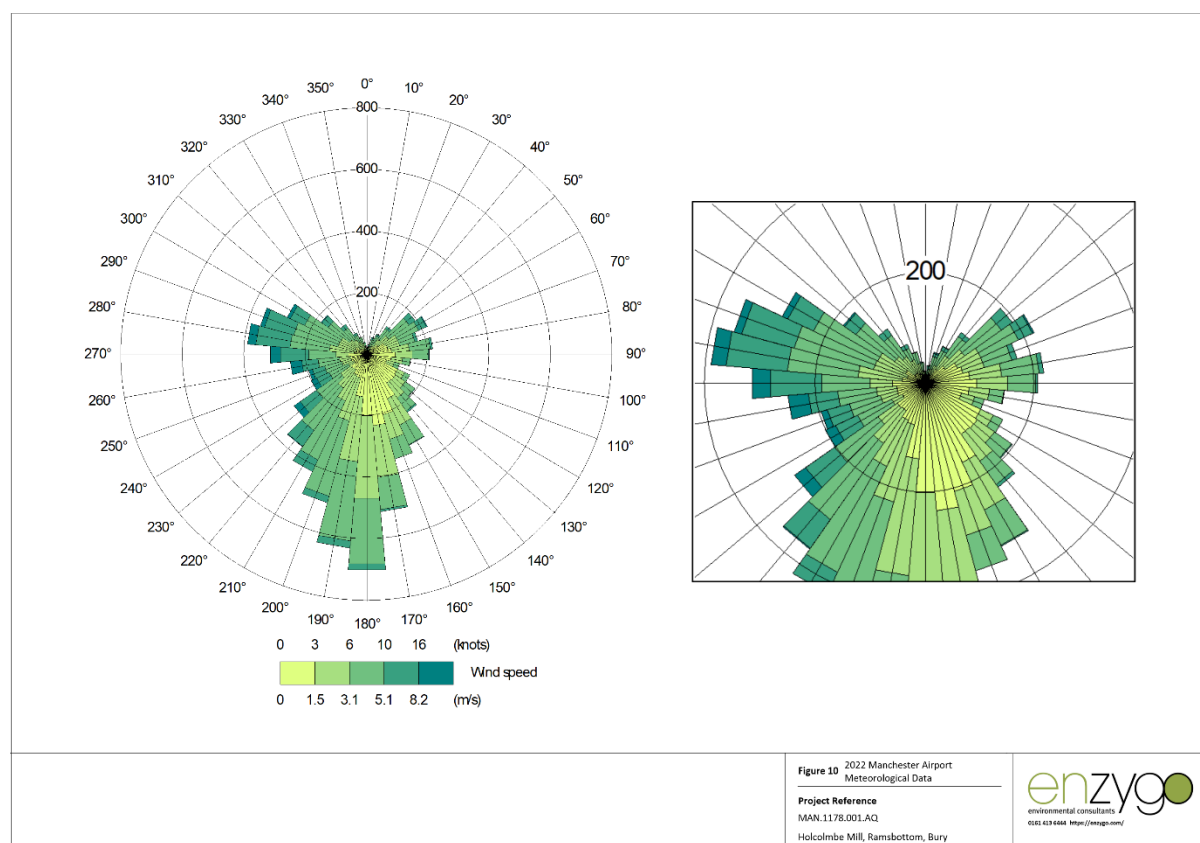
NO_x to NO₂ Conversion

Predicted annual mean NO_x concentrations from the dispersion model were converted to NO₂ concentrations using the NO_x to NO₂ Calculator (v.8.1) provided by DEFRA, which is the method detailed within LAQM.TG22².

Meteorological Data

Hourly sequential data for 2022 was obtained from Manchester Airport meteorological station, located 32 km south of the Proposed Development. Figure 10 presents the 2022 wind rose.

Figure 10 – Meteorological Wind Rose



The choice of data is considered suitable to represent meteorological conditions across the modelled domain. All meteorological data used in the assessment was provided by ADM Ltd.

Meteorological Parameters

The specific roughness length (z_0) values specified with ADMS-5 are summarised in Table A3.

Table A3: Roughness Lengths

Scenario	Roughness Length (m)	ADMS Description
All Assessment Scenarios	0.5	Parkland, open suburbia
Met Station	0.3	Agricultural areas (max)

The Monin-Obukhov length values are summarised in Table A4.

Table A4: Monin-Obukhov Lengths

Scenario	Monin-Obukhov Length (m)	ADMS Description
All Assessment Scenarios and Met Station	30	Cities and Large Towns/ Mixed urban/industrial

Background Concentrations

Table A5 displays the specific baseline background concentrations as predicted by DEFRA, utilised to represent background conditions at model verification sites.

Table A5: Predicted 2022 Background Concentrations for Monitoring Locations

Monitoring Location	DEFRA Grid Square	Pollutant	Background Concentration ($\mu\text{g}/\text{m}^3$)
BU2NO	337500, 392500	NO _x	17.31
		NO ₂	12.90

Table A6 displays the predicted future background concentrations utilised in the operational phase to represent background conditions at model sensitive receptor locations.

Table A6: Predicted 2025 Background Concentrations at Sensitive Receptors

Receptor Location	DEFRA Grid Square	Pollutant	Background Concentration ($\mu\text{g}/\text{m}^3$)
R1 - R8 R11 - R15 R20 - R22	379500, 416500	NO _x	14.79
		NO ₂	11.17
		PM ₁₀	10.33
		PM _{2.5}	6.84
R9 - R10 R16 R18 - R19	380500, 416500	NO _x	11.91
		NO ₂	9.16
		PM ₁₀	10.47
		PM _{2.5}	6.63
R17	380500, 417500	NO _x	10.69
		NO ₂	8.28
		PM ₁₀	9.68
		PM _{2.5}	6.33

Similar to emission factors, background concentrations for 2025 were used to represent predicted background concentrations during the future year operation scenarios.

Verification

The predicted results from a dispersion model may differ from measured concentrations for many reasons, including:

- Estimates of background concentrations;
- Uncertainties in source activity data such as traffic flows and emission factors;
- Variations in meteorological conditions;
- Overall model limitations; and
- Uncertainties associated with monitoring data, including locations.

Model verification is the process by which these and other uncertainties are investigated and where possible minimised. In reality, the differences between modelled and monitored results are likely to be a combination of all of these aspects.

For the purpose of this assessment model verification was undertaken for 2022, using traffic data, meteorological data, and monitoring results from this year. The verification process was undertaken at BU2NO adjacent to the A676 (Ramsbottom Lane) which is the closest monitoring site to the Proposed Development. There are no further monitoring locations close to the Proposed Development, with the next closest monitor, BU8NO, located 4 km south of the site.

DEFRA guidance LAQM.TG22² advises that the verification should consider the performance of the model in predicting road sourced NO_x. Reasonable efforts were made to optimise the accuracy of modelling across the assessment extents. In accordance with LAQM TG22² checks on traffic data, road widths, speed estimations were made to improve modelled roadside contributions.

Table A7 presents the adjusted model and comparison of monitored and predicted annual mean road NO_x concentrations following the initial revision to modelling parameters.

Table A7: Initial Modelled NO_x Results

Site ID	Monitored Road NO _x Concentration (µg/m ³)	Modelled Road NO _x Concentration (µg/m ³)	% Difference ((Modelled – Monitored)/Monitored) * 100
N22	10.63	30.76	-65%

The monitored and modelled NO_x Road contribution concentrations were compared and produced an adjustment factor of **1.7406**. This factor was applied to the modelled road NO_x contributions with results presented in Table A8.

Table A8: Adjusted Modelled and Monitored NO₂ Concentrations

Site ID	Monitored NO ₂ Concentration (µg/m ³)	Adjusted Modelled NO ₂ Concentration (µg/m ³)	% Difference ((Modelled – Monitored)/Monitored) * 100
N22	28.70	28.70	0%

As PM monitoring is not undertaken within the assessment extents, the NO_x adjustment factor was applied to all PM model predictions in accordance with the guidance provided within LAQM.TG22.

Appendix B - Assessment Results

PREDICTED CONCENTRATIONS AT SENSITIVE RECEPTORS

Nitrogen Dioxide (NO₂)

Table B1: Predicted Annual Mean Concentrations

Potential Impact		Predicted Annual Mean Concentration (µg/m ³)		
		DM	DS	Change
R1	5 Peel Brow	24.00	24.20	0.20
R2	31 Peel Brow	18.13	18.23	0.10
R3	11 Bury New Road	21.70	21.85	0.15
R4	46 Bury New Road	16.78	16.84	0.06
R5	64 Bury New Road	26.53	26.58	0.05
R6	1 Park Avenue	18.96	19.01	0.05
R7	80 Peel Brow	15.97	16.01	0.04
R8	2 Cheshire Court	18.31	18.37	0.06
R9	1 Manchester Road (A56)	17.82	17.85	0.03
R10	99 Bury New Road	21.68	21.81	0.13
R11	12 Bridge Street	15.60	15.62	0.02
R12	1-6 The Gate House, Kay Brow	17.72	17.78	0.06
R13	Little Miracles Daycare	18.00	18.06	0.06
R14	60 Bolton Street	29.34	29.35	0.01
R15	75 Bolton Street	20.74	20.75	0.01
R16	30 Whalley Road (A56)	17.42	17.45	0.03
R17	55 Whalley Road (A56)	22.16	22.21	0.05
R18	40 Manchester Road (A56)	19.43	19.45	0.02
R19	119 Manchester Road (A56)	26.96	27.10	0.14
R20	80 Bridge Street	32.82	32.89	0.07
R21	59 Bridge Street	36.61	36.68	0.07
R22	6 Bolton Street	31.58	31.59	0.01

As indicated in Table B1, annual mean concentrations were below the relevant AQO at all receptor locations considered. Predicted impacts are summarised in Table B2.

Table B2: Predicted Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	IAQM Impact Descriptor
R1	5 Peel Brow	0.50	75% or Less	Negligible
R2	31 Peel Brow	0.25	75% or Less	Negligible
R3	11 Bury New Road	0.38	75% or Less	Negligible
R4	46 Bury New Road	0.15	75% or Less	Negligible
R5	64 Bury New Road	0.12	75% or Less	Negligible
R6	1 Park Avenue	0.13	75% or Less	Negligible

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	IAQM Impact Descriptor
R7	80 Peel Brow	0.10	75% or Less	Negligible
R8	2 Cheshire Court	0.15	75% or Less	Negligible
R9	1 Manchester Road (A56)	0.08	75% or Less	Negligible
R10	99 Bury New Road	0.32	75% or Less	Negligible
R11	12 Bridge Street	0.05	75% or Less	Negligible
R12	1-6 The Gate House, Kay Brow	0.15	75% or Less	Negligible
R13	Little Miracles Daycare	0.15	75% or Less	Negligible
R14	60 Bolton Street	0.03	75% or Less	Negligible
R15	75 Bolton Street	0.03	75% or Less	Negligible
R16	30 Whalley Road (A56)	0.07	75% or Less	Negligible
R17	55 Whalley Road (A56)	0.13	75% or Less	Negligible
R18	40 Manchester Road (A56)	0.05	75% or Less	Negligible
R19	119 Manchester Road (A56)	0.35	75% or Less	Negligible
R20	80 Bridge Street	0.18	76-94%	Negligible
R21	59 Bridge Street	0.18	76-94%	Negligible
R22	6 Bolton Street	0.03	76-94%	Negligible

As indicated in Table B2 impacts on annual mean NO₂ concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be negligible at all receptor locations.

Particulate Matter (PM₁₀)

Table B3: Predicted Annual Mean Concentrations

Potential Impact		Predicted Annual Mean Concentration (µg/m ³)		
		DM	DS	Change
R1	5 Peel Brow	14.28	14.35	0.07
R2	31 Peel Brow	12.35	12.38	0.03
R3	11 Bury New Road	13.49	13.54	0.05
R4	46 Bury New Road	11.84	11.85	0.02
R5	64 Bury New Road	14.11	14.13	0.02
R6	1 Park Avenue	12.29	12.30	0.01
R7	80 Peel Brow	11.55	11.56	0.01
R8	2 Cheshire Court	12.12	12.13	0.02
R9	1 Manchester Road (A56)	12.89	12.90	0.01
R10	99 Bury New Road	13.54	13.57	0.03
R11	12 Bridge Street	11.53	11.54	0.01
R12	1-6 The Gate House, Kay Brow	12.28	12.30	0.02
R13	Little Miracles Daycare	12.36	12.38	0.02
R14	60 Bolton Street	15.60	15.60	0.00
R15	75 Bolton Street	13.00	13.00	0.00

Potential Impact		Predicted Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)		
		DM	DS	Change
R16	30 Whalley Road (A56)	12.82	12.83	0.01
R17	55 Whalley Road (A56)	13.41	13.42	0.01
R18	40 Manchester Road (A56)	13.47	13.47	0.00
R19	119 Manchester Road (A56)	16.48	16.53	0.05
R20	80 Bridge Street	16.62	16.64	0.02
R21	59 Bridge Street	16.66	16.68	0.02
R22	6 Bolton Street	15.45	15.45	0.00

As indicated in Table B3 annual mean concentrations were below the relevant AQO at all receptor locations considered. Predicted impacts are summarised in Table B4.

Table B4: Predicted Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	IAQM Impact Descriptor
R1	5 Peel Brow	0.17	75% or Less of AQO	Negligible
R2	31 Peel Brow	0.08	75% or Less of AQO	Negligible
R3	11 Bury New Road	0.12	75% or Less of AQO	Negligible
R4	46 Bury New Road	0.04	75% or Less of AQO	Negligible
R5	64 Bury New Road	0.05	75% or Less of AQO	Negligible
R6	1 Park Avenue	0.03	75% or Less of AQO	Negligible
R7	80 Peel Brow	0.03	75% or Less of AQO	Negligible
R8	2 Cheshire Court	0.04	75% or Less of AQO	Negligible
R9	1 Manchester Road (A56)	0.02	75% or Less of AQO	Negligible
R10	99 Bury New Road	0.09	75% or Less of AQO	Negligible
R11	12 Bridge Street	0.02	75% or Less of AQO	Negligible
R12	1-6 The Gate House, Kay Brow	0.05	75% or Less of AQO	Negligible
R13	Little Miracles Daycare	0.04	75% or Less of AQO	Negligible
R14	60 Bolton Street	0.00	75% or Less of AQO	Negligible
R15	75 Bolton Street	0.00	75% or Less of AQO	Negligible
R16	30 Whalley Road (A56)	0.02	75% or Less of AQO	Negligible
R17	55 Whalley Road (A56)	0.03	75% or Less of AQO	Negligible
R18	40 Manchester Road (A56)	0.01	75% or Less of AQO	Negligible
R19	119 Manchester Road (A56)	0.13	75% or Less of AQO	Negligible
R20	80 Bridge Street	0.06	75% or Less of AQO	Negligible
R21	59 Bridge Street	0.05	75% or Less of AQO	Negligible
R22	6 Bolton Street	0.01	75% or Less of AQO	Negligible

As indicated in Table B4 impacts on annual mean PM_{10} concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be negligible at all receptor locations.

Particulate Matter (PM_{2.5})

Table B5: Predicted Annual Mean Concentrations

Potential Impact		Predicted Annual Mean Concentration (µg/m³)		
		DM	DS	Change
R1	5 Peel Brow	9.05	9.09	0.04
R2	31 Peel Brow	7.98	8.00	0.02
R3	11 Bury New Road	8.62	8.64	0.03
R4	46 Bury New Road	7.71	7.72	0.01
R5	64 Bury New Road	9.11	9.12	0.01
R6	1 Park Avenue	7.99	8.00	0.01
R7	80 Peel Brow	7.55	7.56	0.01
R8	2 Cheshire Court	7.87	7.88	0.01
R9	1 Manchester Road (A56)	8.01	8.01	0.00
R10	99 Bury New Road	8.38	8.40	0.02
R11	12 Bridge Street	7.51	7.52	0.00
R12	1-6 The Gate House, Kay Brow	7.93	7.94	0.01
R13	Little Miracles Daycare	7.98	7.99	0.01
R14	60 Bolton Street	9.80	9.81	0.00
R15	75 Bolton Street	8.34	8.34	0.00
R16	30 Whalley Road (A56)	7.96	7.97	0.01
R17	55 Whalley Road (A56)	8.52	8.53	0.01
R18	40 Manchester Road (A56)	8.32	8.33	0.00
R19	119 Manchester Road (A56)	9.98	10.01	0.03
R20	80 Bridge Street	10.38	10.39	0.01
R21	59 Bridge Street	10.44	10.46	0.01
R22	6 Bolton Street	9.75	9.75	0.00

As indicated in Table B5 annual mean concentrations were below the relevant AQO at all receptor locations considered. Predicted impacts are summarised in Table B6.

Table B6: Predicted Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	IAQM Impact Descriptor
R1	5 Peel Brow	0.15	75% or Less of AQO	Negligible
R2	31 Peel Brow	0.07	75% or Less of AQO	Negligible
R3	11 Bury New Road	0.11	75% or Less of AQO	Negligible
R4	46 Bury New Road	0.04	75% or Less of AQO	Negligible
R5	64 Bury New Road	0.04	75% or Less of AQO	Negligible
R6	1 Park Avenue	0.03	75% or Less of AQO	Negligible
R7	80 Peel Brow	0.02	75% or Less of AQO	Negligible
R8	2 Cheshire Court	0.04	75% or Less of AQO	Negligible
R9	1 Manchester Road (A56)	0.01	75% or Less of AQO	Negligible

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	IAQM Impact Descriptor
R10	99 Bury New Road	0.08	75% or Less of AQO	Negligible
R11	12 Bridge Street	0.02	75% or Less of AQO	Negligible
R12	1-6 The Gate House, Kay Brow	0.04	75% or Less of AQO	Negligible
R13	Little Miracles Daycare	0.04	75% or Less of AQO	Negligible
R14	60 Bolton Street	0.00	75% or Less of AQO	Negligible
R15	75 Bolton Street	0.00	75% or Less of AQO	Negligible
R16	30 Whalley Road (A56)	0.02	75% or Less of AQO	Negligible
R17	55 Whalley Road (A56)	0.03	75% or Less of AQO	Negligible
R18	40 Manchester Road (A56)	0.01	75% or Less of AQO	Negligible
R19	119 Manchester Road (A56)	0.12	75% or Less of AQO	Negligible
R20	80 Bridge Street	0.06	75% or Less of AQO	Negligible
R21	59 Bridge Street	0.05	75% or Less of AQO	Negligible
R22	6 Bolton Street	0.01	75% or Less of AQO	Negligible

As indicated in Table B6 impacts on annual mean PM_{2.5} concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be negligible at all receptor locations.

It is therefore considered that the overall impacts as a result of the Proposed Development are not significant. Further justifications are discussed in Section 5.3 and Table 14.

Appendix C – IAQM Construction Phase Methodology

There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the IAQM guidance. Activities are divided into four types to reflect their different potential impacts. These are:

- Demolition
- Earthworks;
- Construction; and
- Trackout.

The potential for dust emissions was assessed for each activity that is likely to take place and considered three separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to a significant increase in exposure to PM₁₀ and PM_{2.5}.

The assessment steps are detailed below.

Step 1

Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 350m from the site boundary or 50m from the construction vehicle route up to 500m from the site entrance, then the assessment should proceed to Step 2. Additionally, should ecological receptors be identified within 50m of the boundary site or 50m from the construction vehicle route up to 500m from the site entrance, then the assessment should also proceed to Step 2.

Should sensitive receptors not be present within the relevant distances then negligible impacts would be expected and further assessment is not necessary.

Step 2

Step 2 assesses the risk of potential dust impacts. A site is allocated to a risk category based on two factors:

- The scale and nature of the works, which determines the magnitude of dust arising as: small, medium or large (Step 2A); and
- The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity (Step 2B).

The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied. Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table C1.

Table C1: Construction Dust - Magnitude of Emission

Magnitude	Activity	Criteria
Large	Demolition	- Total building volume greater than 50,000m³ - Potentially dusty construction material (e.g. concrete) - On-site crushing and screening - Demolition activities greater than 20m above ground level
	Earthworks	- Total site area greater than 10,000m² - Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) - More than 10 heavy earth moving vehicles active at any one time - Formation of bunds greater than 8m in height - More than 100,000 tonnes of material moved
	Construction	- Total building volume greater than 100,000m³ - On site concrete batching - Sandblasting
	Trackout	- More than 50 Heavy Duty Vehicle (HDV) trips per day - Potentially dusty surface material (e.g. high clay content) - Unpaved road length greater than 100m
Medium	Demolition	- Total building volume 20,000m³ to 50,000m³ - Potentially dusty construction material - Demolition activities 10m to 20m above ground level
	Earthworks	- Total site area 2,500m² to 10,000m² - Moderately dusty soil type (e.g. silt) 5 to 10 heavy earth moving vehicles active at any one time - Formation of bunds 4m to 8m in height - Total material moved 20,000 tonnes to 100,000 tonnes
	Construction	- Total building volume 25,000m³ to 100,000m³ - Potentially dusty construction material (e.g. concrete) - On site concrete batching
	Trackout	10 to 50 HDV trips per day - Moderately dusty surface material (e.g. high clay content) - Unpaved road length 50m to 100m
Small	Demolition	- Total building volume under 20,000m³ - Construction material with low potential for dust release (e.g. metal cladding or timber) - Demolition activities less than 10m above ground level - Demolition during wetter months
	Earthworks	- Total site area less than 2,500m² - Soil type with large grain size (e.g. sand) - Less than 5 heavy earth moving vehicles active at any one time - Formation of bunds less than 4m in height - Total material moved less than 20,000 tonnes - Earthworks during wetter months
	Construction	- Total building volume less than 25,000m³ - Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	<10 HDV (3.5t) outward movements in any one day - Surface material with low potential for dust release

Magnitude	Activity	Criteria
		Unpaved road length <50m

Step 2B defines the sensitivity of the area around the development site for construction, earthworks and trackout. The factors influencing the sensitivity of the area are shown in Table C2.

Table C2: Examples of Factors Defining Sensitivity of an Area

Sensitivity	Receptors	
	Human	Ecological
High	- Users expect of high levels of amenity - High aesthetic or value property - People expected to be present continuously for extended periods of time - Locations where members of the public are exposed over a time period relevant to the AQO for PM₁₀ e.g. residential properties, hospitals, schools and residential care homes	Internationally or nationally designated site e.g. Special Area of Conservation
Medium	- Users would expect to enjoy a reasonable level of amenity - Aesthetics or value of their property could be diminished by soiling - 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 e.g. parks and places of work	Nationally designated site e.g. Sites of Special Scientific Interest
Low	- Enjoyment of amenity would not reasonably be expected - Property would not be expected to be diminished in appearance - Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, playing fields, shopping streets, playing fields, farmland, footpaths, short term car park and roads	Locally designated site e.g. Local Nature Reserve

The sensitivity of the area to dust soiling effects on people and property is shown in Table C3.

Table C3: 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	<350
High	More than 100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low
	1 - 10	Medium	Low	Low	Low
Medium	More than 1	Medium	Low	Low	Low
Low	More than 1	Low	Low	Low	Low

Table C4 outlines the sensitivity of the area to human health impacts.

Table C4: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	Greater than 32µg/m ³	More than 100	High	High	High	Medium	Low
		10 - 100	High	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	28 - 32µg/m ³	More than 100	High	High	Medium	Low	Low

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	24 - 28µg/m ³	More than 100	High	Medium	Low	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	Less than 24µg/m ³	More than 100	Medium	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
	Less than 24µg/m ³	More than 100	Medium	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Medium	Greater than 32µg/m ³	More than 10	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	28 - 32µg/m ³	More than 10	Medium	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	24 - 28µg/m ³	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	Less than 24µg/m ³	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Low	-	More than 1	Low	Low	Low	Low	Low

Table C5 outlines the sensitivity of the area to ecological impacts.

Table C5: Sensitivity of the Area to Ecological Impacts

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

Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts.

Table C6 outlines the risk category from demolition activities.

Table C6: Dust Risk Category from Demolition

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Medium
Medium	High	Medium	Low
Low	Medium	Low	Negligible

Table C7 outlines the risk category from earthworks and construction activities.

Table C7: Dust Risk Category from Earthworks and Construction

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Medium	Low
Low	Low	Low	Negligible

Table C8 outlines the risk category from trackout.

Table C8: Dust Risk Category from Trackout

	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Low	Negligible
Low	Low	Low	Negligible

Step 3

Step 3 requires the identification of site-specific mitigation measures within the IAQM guidance to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with negligible risk mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

Step 4

Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step is to determine the significance of any residual impacts. For almost all construction activity, the aim should be to control effects using effective mitigation.

Experience shows that this is normally possible. Hence the residual effect will normally be not significant.

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