

10 AIR QUALITY

Introduction

- 10.1 This Chapter assesses the effects of the Proposed Development on local air quality. In particular it identifies and assesses the likely significant effects resulting from the Proposed Development on air quality during enabling, construction and operational phases.
- 10.2 The Chapter describes the methods used to assess the likely significant effects, the baseline conditions currently existing at the site and surroundings, the potential direct, indirect and cumulative effects of the development, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. It has been written by Cundall.
- 10.3 This Chapter is supported by the following appendices:
- **Appendix 10.1:** Air Quality Assessment.

Legislative and Planning Policy Context

Legislation

- 10.4 **Table 10.1** below considers key air quality legislation.

Table 10.1: Key Legislation

Legislation	Description
EU Ambient Air Quality Directive 2008/50/EC ¹	Establishes the requirements of Member States in terms of improvements required to air quality. Sets standards for a variety of pollutants for human-health and the environment.
The Air Quality Standards Regulations 2010 ²	Transposes formalised EU Limit Values set out in directive 2008/50/EC to UK law. An Amendment was published in 2016 ³
Clean Air Strategy 2019 ⁴	Defra published a Clean Air Strategy in January 2019, setting out a wide range of actions for UK Government to reduce pollutant emissions and improve air quality. The actions are grouped into four main emission sources: Transport, Domestic, Farming and Industry The Clean Air Strategy sets out the case for action and demonstrates the government's determination to improve air quality. In some cases, the goals are even more ambitious than EU requirements to reduce people's exposure to toxic pollutants like nitrogen oxides, ammonia, particulate matter, non-methane volatile organic compounds and sulphur dioxide.
Environment Act 1995, Part IV ⁵ , amended by the Environment Act 2021 ⁸ .	Defines the requirements for Local Air Quality Management (LAQM).

Legislation	Description
Environment Protection Act 1990, amended by the Pollution Prevention and Control Act 1999 ⁶ and the Environment Act 2021 ⁸ .	Part III provides statutory nuisance provisions for nuisance dust. Nuisance complaints about dust would need to be investigated by the Local Authority. In practice, dust deposition is generally managed appropriately by suitable on-site practices and mitigation, avoiding the determination of statutory nuisance and/or prosecution or enforcement notices.
The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018 ⁷	Developers and contractors are required to meet compliance with the emission standards for Non-Road Mobile Machinery (NRMM). The Regulations exercise of the powers conferred by section 2(2) of, and paragraph 1A of Schedule 2 to, the European Communities Act 1972 in relation to the type, description, construction or equipment of vehicles.
Environment Act, 2021 ⁸ .	The Act makes provision about targets, plans and policies with the focus of improving the natural environment. This includes air quality, as well as water, nature and biodiversity, regulation of chemicals, waste and resource efficiency and recall of products failing to meet environmental standards. The Act introduces a duty on government to bring forward at least two air quality targets by October 2022 for consultation. These are to be to reduce the annual average level of fine particulate matter (PM2.5) and to set a long-term (minimum of 15 year) target for its reduction. The 2021 Act amends the Environment Act 1995 Part IV by seeking to strength local air quality a management (LAQM) through greater cooperation at local level and broadening the range of organisations that play a role in improving air quality. Responsibility for tackling air pollution is to be shared between designated local authorities, all tiers of local government and neighbouring authorities. The environment secretary will be required to review the Air Quality Strategy at least every five years and publish annual progress reports to parliament. The 2021 Act amends the Clean Air Act 1993 to give local authorities more power to reduce pollution in smoke control areas by replacing the criminal offence of emitting smoke from a chimney in a smoke control area with a civil penalty regime, seeking to enable simpler, quicker and more proportionate enforcement at local level. It also amends the Environmental Protection Act 1990 by extending the system of statutory nuisance to private dwellings in smoke control areas, which could result in abatement notice and issuing fines for criminal offence of breaches. The 2021 Act introduces new powers for the government to compel vehicle manufacturers to recall vehicles and non-road machinery that fails to meet legal binding standards.
Environmental Improvement Plan, 2023 ⁹	The Environmental Improvement Plan (EIP23) highlights that air quality continues to be the biggest environmental risk to human health and a source of harm to the natural environment. The document makes provision about targets and plans with the focus of improving the environmental quality. This includes reducing emissions in the home, driving effective local action through local authorities, maintaining and improving regulatory framework for industrial emissions, supporting farmers to cut the impact of agriculture on air quality and reducing emissions from cars and other forms of transport.

Legislation	Description
	Ten environmental goals were set in the 25 Year Environmental Plan. The second goal is clean air and the EIP23 seeks to address this further through the following targets and commitments: In 2040 reduce population exposure of fine particulate matter (PM_{2.5}) by 35% compared to 2018 levels (with an interim target of a 22% reduction by January 2028) Work towards meeting compliance with a 40µg/m³ limit for nitrogen dioxide (NO₂) Maximum annual mean 10µg/m³ for PM_{2.5} (with an interim target of 12µg/m³ by January 2028) Legal emission reduction targets for five damaging pollutants by 2030 relative to 2005 levels: Reduce emissions of nitrogen oxides by 73%. Reduce emissions of sulphur dioxide by 88%. Reduce emission of (PM_{2.5}) by 46%. Reduce emissions of ammonia by 16%. Reduce emissions of non-methane volatile organic compounds by 39%. Progress towards delivering the EIP23 will be monitored through Annual Progress Reports and the Outcome Indicator Framework. This framework contains 66 indicators, six which are relevant to clean air.

National Planning Policy and Guidance

10.5 Relevant planning policy and guidance at the National level is summarised in **Table 10.2**.

Table 10.2: National Policy and Guidance

Policy / Guidance	Description
Ministry for Levelling Up, Housing and Communities– National Planning Policy Framework (NPPF) (2023) ¹⁰	The National Planning Policy (NPPF) published March 2012 and last updated in December 2023 with the purpose of planning achieving sustainable development. Paragraph 191 of the NPPF states that: <i>“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 AQMAs 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”.</i> In addition, paragraph 109 states that: <i>“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</i>

Policy / Guidance	Description
	areas, and this should be taken into account in both plan-making and decision-making.” Paragraph 180 discusses how planning policies and decisions should contribute to and enhance the natural and local environment. Of relevance to air quality, NPPF notes that this can be achieved by: <i>“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”</i>
Planning Policy Guidance (updated 2019) ¹¹	Planning Practice Guidance (PPG) documents have been published as part of the NPPF. PPG relating to air quality was last updated in November 2019. It provides guidance on the significance of air quality in determining the local impact of proposed developments and highlights the importance of local and neighbourhood plans with regard to air quality. A flowchart is provided to assist local authorities in determining how air quality considerations might fit into development management processes.
UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations. Detailed Plan. Defra / Department of Transport (DfT) (2017) ¹²	This plan was produced in response to a UK Supreme Court Ruling and sets out how the UK will achieve compliance with EU Limit Values for nitrogen dioxide (NO ₂) in the shortest possible time. The plan outlined infrastructure initiatives and grants and the requirements for Local Authorities to produce local action plans, with the aim of reducing NO ₂ concentrations below the objective as soon as practically possible.

Regional Planning Policy and Guidance

- 10.6 Regional policy and planning guidance of relevance for the Greater Manchester region is summarised in **Table 10.3**.

Table 10.3: Regional Planning Policies

Policy / Guidance	Description
Greater Manchester's Clean Air Plan ¹³	The 10 Greater Manchester local authorities (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford and Wigan), Greater Manchester Combined Authority (GMCA) and Transport for Greater Manchester (TfGM) are working together to develop a Clean Air Plan to tackle nitrogen dioxide (NO₂) exceedances at the roadside “in the shortest time possible” and by 2026 at the latest. The key aims are summarised as follows: ▪ Target funding towards the most polluting vehicles travelling in locations with nitrogen dioxide levels above the legal limit. ▪ Reduce emissions and bring health benefits as quickly as possible from every funded vehicle upgrade. ▪ Take into account the benefit of delivering the transformational Bee Network and investment in zero-emission bus fleets that wasn't available to Greater Manchester when it agreed the previous Clean Air Plan in summer 2021.

Policy / Guidance	Description
	In January 2023, more evidence was requested for the Plan by the government. Following submission of this evidence, the Plan will be opened for public consultation.
Greater Manchester Planning Guidance on Air Quality (2022) ¹⁴	Greater Manchester Combined Authority (GMCA) have adopted the most recent Institute of Air Quality Management (IAQM) guidance on the assessment and control of dust from demolition and construction sites, and also for air quality considerations in land-use planning and development control. Applicants, developers and consultants are advised to read the IAQM guidance prior to submitting a planning application.
Emerging Greater Manchester's Places for Everyone Plan ¹⁵	The emerging plan is being prepared on behalf of 9 of the 10 Greater Manchester local authorities (including Bury) and looks ahead to the period 2020 to 2037. The plan: ▪ Sets out how Greater Manchester should develop up until 2037. ▪ Identifies the amount of new development that will come forward across the districts, in terms of housing, offices, and industry and warehousing, and the main areas in which this will be focused. ▪ Supports the delivery of key infrastructure, such as transport and utilities. ▪ Protects the important environmental assets across the city region. ▪ Allocates sites for employment and housing outside of the existing urban area; and defines a new green belt boundary for Greater Manchester.
Greater Manchester Air Quality Action Plan 2016-2021 (AQAP) ¹⁶	The AQAP identifies a range of actions to reduce emissions and mitigate the impacts on air quality. Some Key actions regards development and transportation are: ▪ Actions for managing new development: ▪ Construction Management Guidance – where a key priority area is affected by a proposed scheme, a high level of mitigation control will be requested. ▪ Development Planning Guidance - to ensure that potential local air quality effects are not overlooked and is not intended to introduce a burden on developers or local authorities to undertake unnecessary work. ▪ Cumulative Development Database - A centralised database of significant planning applications and air quality assessments will be managed by Transport for Greater Manchester (TfGM), as a record of the cumulative effects of multiple developments and thereby facilitate combined approaches to minimising emissions. ▪ Clean Air Zone – TfGM will undertake an appraisal of the effects of charging Clean Air Zones (CAZ). ▪ 20mph Zones - The implementation of 20mph zones in urban areas has been cited as having the potential to benefit local air quality through smoother vehicle flow through junctions and reduced acceleration and braking, as well as having potential for additional benefits from encouraging modal shift from driving to walking or cycling. ▪ Encouraging Travel Planning - Individuals and companies are encouraged to look at travel planning measures, and to investigate the potential of additional demand management measures to affect a significant mode shift and to stimulate the uptake of low-emission vehicles. ▪ Taxi and Private Hire Quality Controls to Priorities Low-Emission Vehicles.

Policy / Guidance	Description
	Green Infrastructure - The provision of green infrastructure in and around urban areas is now widely recognised as contributing towards creating places where people want to live and work.
Greater Manchester Low-Emission Strategy (2016) ¹⁷	The Low-Emission Strategy sets out a framework for policies and measures to: - Reduce air pollution as a contributor to ill-health in Greater Manchester. - Support the UK government in meeting EU air quality thresholds. - Contribute to a reduction in Greater Manchester's carbon footprint; and encourage low-emission behaviours in the culture and lifestyles of the city region.

Local Planning Policy and Guidance

10.7 **Table 10.4** below summarises the Bury local authority planning policies relevant to the Proposed Development.

Table 10.4: Local Planning Policies

Local Planning Policies	
Bury Unitary Development Plan (UDP) (1997) ¹⁸	The plan acts as a guide for the future development or protection of land in the Borough. Its plans and proposals currently form the basis for the Council's decisions on planning applications. The UDP is set to be replaced by the Bury Local Plan once adopted. Policy EN7/1 – Atmospheric Pollution, states that: <i>"In seeking to limit atmospheric pollution the Council will not permit development which:</i> <i>would result in unacceptable levels of atmospheric pollution; and/or</i> <i>is not compatible with the achievement of the Council's long term air quality standards."</i> <i>"The Borough's air quality can be protected by restricting developments likely to cause atmospheric pollution problems. The Council's Environmental Principles Statement (approved by Council 1991), as part of its intention to reduce air pollution emissions, has made reference to developing and maintaining an "air pollution monitoring network". This policy will be implemented in liaison with the Council's Environmental Health Division which will not attempt to duplicate the work of other Pollution Control Authorities. The Council will also have regard to the proposed Greater Manchester Air Quality Strategy, which is to be produced following the requirements of the Environment Act 1995. This Act requires local authorities to assess and manage air quality."</i>
Bury Local Plan ¹⁹	Bury Council is in the process of preparing a new Local Plan to guide future development in the borough. It will form part of Bury's overall development plan, alongside the emerging Places for Everyone joint development plan. The documents will form the basis for determining future proposals for the next 20 years. It will contain locally-specific planning policies.
Local Development Scheme (2022) ²⁰	The scheme sets out the proposed programme and timescales for the production of Bury's Development Plan and other associated documents.
Bury Local Plan Policy Directions (2018) ²¹	The Bury Local Plan is currently being prepared; this document sets out the broad direction that the Council would wish to take. The Local Plan will form

Local Planning Policies	
	part of Bury's overall development plan and provide non-strategic policies on non-strategic issues. The document states that: <i>"the Plan should contribute to the protection and enhancement of natural, built and historic assets, the improvement of air quality, reduced carbon emissions and adapt to the cause and effects of climate change."</i> Policy Direction OP4, relating to Air Quality and Pollution Control, states: <i>"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."</i>

Other Relevant Policy, Standards and Guidance

- 10.8 Summarised below in **Table 10.5** is any other policy and guidance relevant to the Proposed Development.

Table 10.5: Other Relevant Policy and Guidance

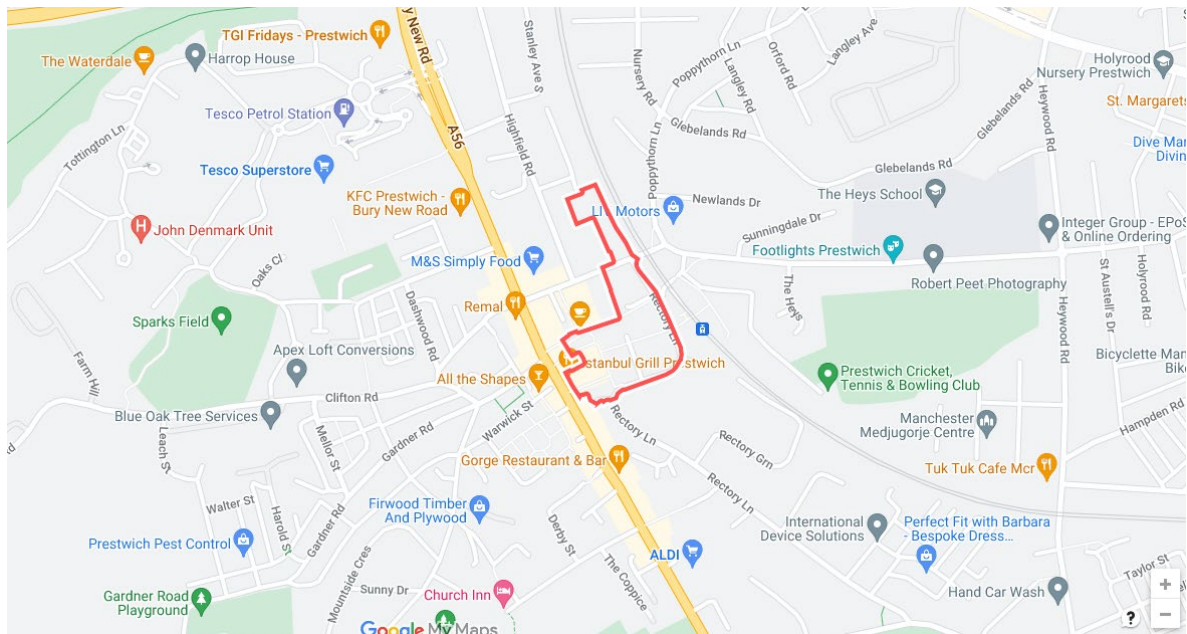
Other Relevant Policy and Guidance	
Defra Local Air Quality Management (LAQM) Policy Guidance (2022) ²² and Technical Guidance (2022) ²³	The guidance issued under Part IV of the Environment Act 1995 is designed to help local authorities with their LAQM duties. The guidance sets out the general approach to use and detailed technical guidance to guide local authorities through the Review and Assessment process.
World Health Organisation (WHO) Global Air Quality Guidelines (2021) ²⁴	Since 1987, WHO has periodically issued health-based air quality guidelines to assist governments and civil society to reduce human exposure to air pollution and its adverse effects. The WHO air quality guidelines published in 2006 provided health-based guideline levels for the major health-damaging air pollutants, including particulate matter (PM₁₀ and PM_{2.5}), ozone (O₃), nitrogen dioxide (NO₂) and sulphur dioxide (SO₂). These guidelines had a significant impact on pollution abatement policies all over the world and led to the first universal frame of reference. Following extensive research which started in 2016 and has referred to numerous epidemiological studies, WHO have reassessed their guideline values and in September 2021 published updated values.
IAQM Indoor Air Quality Guidance (2021) ²⁵	The IAQM have provided guidance on the assessment of indoor air quality. This was published in September 2021 and covers assessment, monitoring, modelling and mitigation relating to indoor air quality.
Covid-19: Supplementary Guidance, Local Air Quality Management Reporting in 2021 ²⁶	The guidance had been informed by responses from an impact survey received following the release of the interim statement on Covid-19 impacts to the LAQM regime. The guidance is to be read in conjunction with LAQM (TG22)
Environmental Protection	This guidance has been produced to ensure that air quality is adequately considered in the land use planning and development control processes

Other Relevant Policy and Guidance	
(EPUK)/Institute of Air Quality Management (IAQM) Land Use Planning & Development Control (2017) ²⁷	by relevant officers within local authorities, developers, and consultants involved in the preparation of development proposals and planning applications. This document is best practice guidance and has no formal or legal status.
IAQM Assessment of Dust from Demolition and Construction (2014) ²⁸	The document provides guidance for developers, their consultants and environmental health practitioners on how to undertake a construction impact assessment (including demolition and earthworks). The guidance provides a method for assigning a magnitude of risk (high, medium or low) and identifies appropriate mitigation measures.
IAQM assessment of air quality impacts on designated nature conservation sites ²⁹	This guidance signposts the appropriate thresholds used by local authorities, the Environment Agency and other regulators to determine the potential for air quality damage on sensitive ecological sites. Should threshold be likely to be exceeded, a suitably qualified and experienced ecologist is required to determine whether there is likely to be a significant impact on the habitat.

Assessment Methodology and Significance Criteria

Identification of the Study Area

- 10.9 The Proposed Development is situated adjacent to Bury New Road (A56) within Prestwich Village centre.
- 10.10 The site is approximately 2.48 hectares and comprises a mixture of surface level car parking bound by Rectory Lane to the south and existing buildings including; the Longfield Centre, Prestwich Library and Prestwich Health Centre. The site also incorporates an existing surface level car park north of Fairfax Road. The site is irregular in shape and bound by Rectory Lane to the south; existing retail units and Bury New Road (A56) to the west; with retail units and residential dwellings, including The Radius building to the north. In addition, the Prestwich Metrolink stop is located adjacent to the site's eastern boundary.
- 10.11 The location of the site is illustrated in **Figure 10.1**. Additional context is provided by the aerial image on **Figure 10.2**.

Figure 10.1: Location of the Development Site (Courtesy of Google Maps)**Figure 10.2: Location of the Development Site (Aerial) (Courtesy of Google Satellite)**

10.12 The overall approach of this air quality assessment comprises the following:

- A review of existing conditions within the study area, defined as 2 km from the boundary of the Proposed Development as this is considered to be the distance that provides sufficient data for the baseline assessment.

- An assessment of the potential to change in air quality conditions as a result of the enabling, demolition and construction works and completed and operation of the Proposed Development.
- The formulation of appropriate mitigation measures, where required, to mitigate any adverse effects on air quality as a result of the enabling, demolition and construction works and/or completed and operation of the Proposed Development.

10.13 The scope and methodology of this assessment has been agreed with the Environmental Health Officer (EHO) at Bury Council (refer to **Table 10.7** below).

Assessment Methodology

Existing Conditions

10.14 Existing ambient air quality conditions relates to relevant air pollution that is already present in the environment from various sources such as industrial processes, commercial and domestic activities, road traffic emissions and natural resources.

10.15 Existing sources of emissions within the study area (2 km) have been defined using several approaches, as follows:

- Local sources have been reviewed through examination of the latest Air Quality Annual Status Report.
- Background concentrations have been defined using the national pollution maps published by Defra. These cover the whole country on a 1x1 km grid.
- Industrial and waste management sources that may affect the area have been identified using the Environment Agency's Pollution Inventory Data.

Enabling, Demolition and Construction Phase Assessment Methodology

10.16 Machinery used during demolition and construction can generate new sources of emissions, as well as traffic movements to/from the site and the works themselves. When assessing the effect of dust emissions generated during construction works, receptors include those nearest to the construction boundary of the site in each direction. These receptors have the potential to experience effects of greater magnitude due to emissions of dust generated by the works, when compared with more distant receptors.

10.17 The impact of anticipated construction activities has been assessed in accordance with IAQM Guidance on the Assessment of Dust from Demolition and Construction v1.1 (2014)²⁸. The construction phase assessment considers the anticipated physical

activities occurring on-site that are likely to result in the generation of dust which gives rise to impacts on dust soiling and human health, especially through the generation of PM₁₀ and PM_{2.5}.

10.18 The assessment involves the identification of whether each phase of on-site activity (demolition, earthworks, construction, and trackout) represents a low, medium, or high risk of causing a significant effect and then identifies suitable mitigation measures for the relevant level of risk assigned. Details of the IAQM construction impact assessment procedure are presented in Annex C of **Appendix 10.1**.

10.19 Best practice mitigation controls have been identified in accordance with IAQM guidance.

Enabling, Demolition and Construction Phase Significance Criteria

10.20 In assessing the significance of construction impacts using the IAQM guidance, the dust emission magnitude is combined with the sensitivity of the area to determine the risk of impacts prior to mitigation. This is shown in more detail in **Appendix 10.1**. This assessment deviates from the methodology set out in **Chapter 2: Assessment Scope and Methodology**, as the IAQM guidance does not assign a significance before applying mitigation measures. Once appropriate mitigation measures have been identified as required, the significance of enabling, demolition and construction phase impacts can be determined. A matrix is therefore not provided in the guidance to determine significance. The aim of the guidance is to ensure that mitigation measures are recommended which are commensurate with the level of risk. With the implementation of these measures, impacts and subsequent effects should be considered to be not significant.

Completed and Operational Phase Assessment Methodology

10.21 EPUK/IAQM's guidance on *Land-Use Planning and Development Control: Planning for Air Quality*²⁷ was published to ensure that air quality is adequately considered in the land-use planning and developmental control process. A summary of the requirements is provided in Annex D of **Appendix 10.1**. To determine the need for operational assessment, a screening assessment has been undertaken using the criteria outlined in the EPUK/IAQM guidance note (Annex E of **Appendix 10.1**).

10.22 Detailed dispersion modelling of NO_x, PM₁₀ and PM_{2.5} emissions from operational traffic (including from the proposed Travel Hub) was used to undertake assessment of human exposure at the existing receptors close to the modelled road network as set out in Section 3.4 and Annex F of **Appendix 10.1**. This has been carried out using the latest version of Atmospheric Dispersion Modelling System (ADMS) Roads Extra (version

5.0.1.3), which is an internationally recognised new generation dispersion model developed by Cambridge Environmental Research Consultants (CERC). ADMS uses advanced algorithms to describe the boundary layer structure, turbulence and stability.

10.23 Full details on the methodology and the inputs required for the modelling are included in Section 3.4.4 of **Appendix 10.1**.

Completed and Operational Phase Significance Criteria

10.24 The EPUK/IAQM guidance²⁷ details a two-stage process for determining the likely significant effects of the impacts on air quality:

- A qualitative or quantitative description of the impacts on local air quality arising from the Proposed Development; and
- A judgement on the overall significance of the effects.

10.25 Highly sensitive human receptors are considered to include residential dwellings and care homes, i.e. any location where members of the public would be exposed over a time period relevant to the air quality objective (for example annual mean NO₂ would apply if receptors spend the majority of the year at this location). Schools and hospitals would also be considered as highly sensitive. All receptors included within the assessment have been chosen as worst-case based on professional judgement.

10.26 A framework for describing the impacts is set out in EPUK/IAQM guidance and summarised in **Table 10.6** below.

Table 10.6: Impact descriptors for individual receptors

Long-term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less 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% or more of AQAL	Moderate	Substantial	Substantial	Substantial

10.27 For air quality impacts arising from existing sources on proposed receptors (such as new occupants) of a development, the impacts are best described in relation to whether an air

quality objective will not be met or is at risk of not being met. Where the air quality is such that an air quality objective at the building façade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means.

- 10.28 Any value less than 1% after rounding (effectively less than 0.5%) will be described as “Negligible”. The guidance also states that a judgement of effect significance should be made by a competent professional who is suitably qualified. This air quality assessment and determination of the significance of the development on local air quality have been undertaken by current members of the IAQM.
- 10.29 The impact descriptors above are to be applied to annual mean concentrations. With regard to short-term air quality impacts, any exceedances of the air quality objectives would be considered to be a significant effect in EIA terms.

Assumptions/Limitations

- 10.30 No terrain data has been included within the model. Topographical features such as hills can have a significant effect on the dispersion of pollutants, generally when the ground level within 1 km of the sources varies by more than 100m (1 in 10). A review of the local area indicated difference in height of <100m. The use of terrain data was therefore excluded from further consideration within the assessment.
- 10.31 The local air quality impacts were assessed based on the results from atmospheric dispersion modelling. A series of assumptions have been made in relation to the dispersion modelling used to predict impacts from the Proposed Development. These have been outlined in the impact assessment methodology outlined in Section 6.0 of the Air Quality Assessment (**Appendix 10.1**),
- 10.32 The uncertainty in the predictions for the current baseline was reduced by carrying out model verification. It was concluded that model adjustment was required. This process is summarised in Annex G of the Air Quality Assessment (**Appendix 10.1**).
- 10.33 Defra modelled background concentrations were used to process the NO₂, PM₁₀ and PM_{2.5} results.
- 10.34 Modelling was undertaken using 2031 emissions (anticipated year of full completion and opening year) but retaining backgrounds from 2022 in both scenarios, to provide an indication of the anticipated results without background concentration improvement, as a conservative assessment. To provide an additional assessment scenario in the unlikely

event of no improvement in vehicle emissions, the Air Quality Assessment (**Appendix 10.1**) also includes results based on current year 2023 emissions.

- 10.35 Details for demolition, earthworks, construction and trackout listed are based on indicative design information provided by the project team. Estimations/assumptions have been made where information is not available, based on our experience of similar sites and professional judgement.
- 10.36 The Proposed Development is to be delivered in two principal phases, as discussed in **Chapter 4: The Proposed Development and Alternatives**. However, due to the anticipated continuous nature of the construction programme, the phasing of the development has not been considered separately within the assessment.

Pre-Application Consultation and Scoping

- 10.37 The consultation table below outlines the scope of the assessment that has been agreed with the EHO at Bury Council.

Table 10.7: Pre-Application Consultation

Consultee	Date and Time	Comments
Bury Council	21 st July 2023 09:32am	Initial consultation email sent.
Bury Council	7 th August 2023 10:22am	Response from the EHO at Bury Council with clarifications regarding the Proposed Development.
Bury Council	14 th August 2023 09:36am	Provided details on traffic flows and car parking to the EHO at Bury Council for agreement.
Bury Council	14 th August 2023 14:38pm	EHO at Bury Council confirmed agreement with the proposed scope and the requirement for a detailed modelling assessment.
Bury Council	23 rd August 2023 08:54am	Clarification issued to the EHO at Bury Council on whether the use of 2022 as the baseline year is acceptable.
Bury Council	23 rd August 2023 11:21am	Confirmation from the EHO at Bury Council that a baseline year of 2022 is acceptable to use.

- 10.38 Consultation has been undertaken to inform the assessment. Comments in Bury Council's EIA Scoping Opinion (included at **Appendix 2.2** of the ES) have been considered in the assessment.

Baseline Conditions

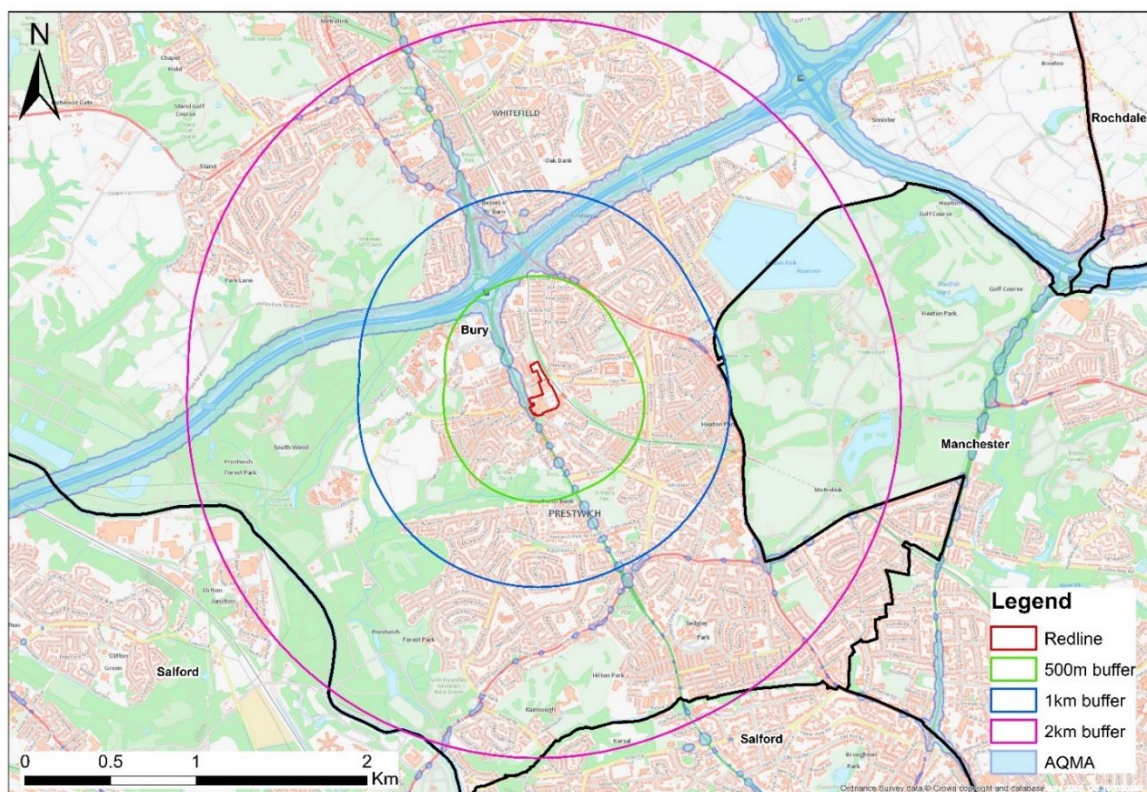
Local Air Quality

- 10.39 The Environment Act 1995⁵ requires local authorities to review and assess air quality with respect to the objectives for seven pollutants specified in the National Air Quality Strategy. Local authorities are required to carry out an assessment and provide an Annual Status

Report (ASR) of their area every year. If the ASR identifies any potential hotspot areas likely to exceed air quality objectives, a detailed assessment of those areas is required. If objectives are not predicted to be met, the local authority must declare the area as an Air Quality Management Area (AQMA). If an AQMA has been declared, the Local Authority will also need to produce an Air Quality Action Plan (AQAP), to includes measures to improve air quality in the AQMA.

- 10.40 The Proposed Development is in Bury Local Authority area, and the baseline assessment includes a brief review and summary of Greater Manchester Combined Authority's latest LAQM Annual Status Report (ASR)³¹, AQAP¹⁶ and available monitoring data³⁰.
- 10.41 The south-western edge of the site is located within the Bury Air Quality Management Area (AQMA) which covers large portions of the main roads within the borough, including the Bury New Road (A56) located to the immediate west of the Proposed Development site. Bury Council declared the AQMA in 2002 for exceedances of the annual mean NO₂ objective and 24-hour mean PM₁₀ objective. It was amended in 2007 to only include annual mean NO₂. The location of the Proposed Development in relation to the AQMA boundary is shown in **Figure 10.3**.

Figure 10.3: Air Quality Management Area (AQMA)



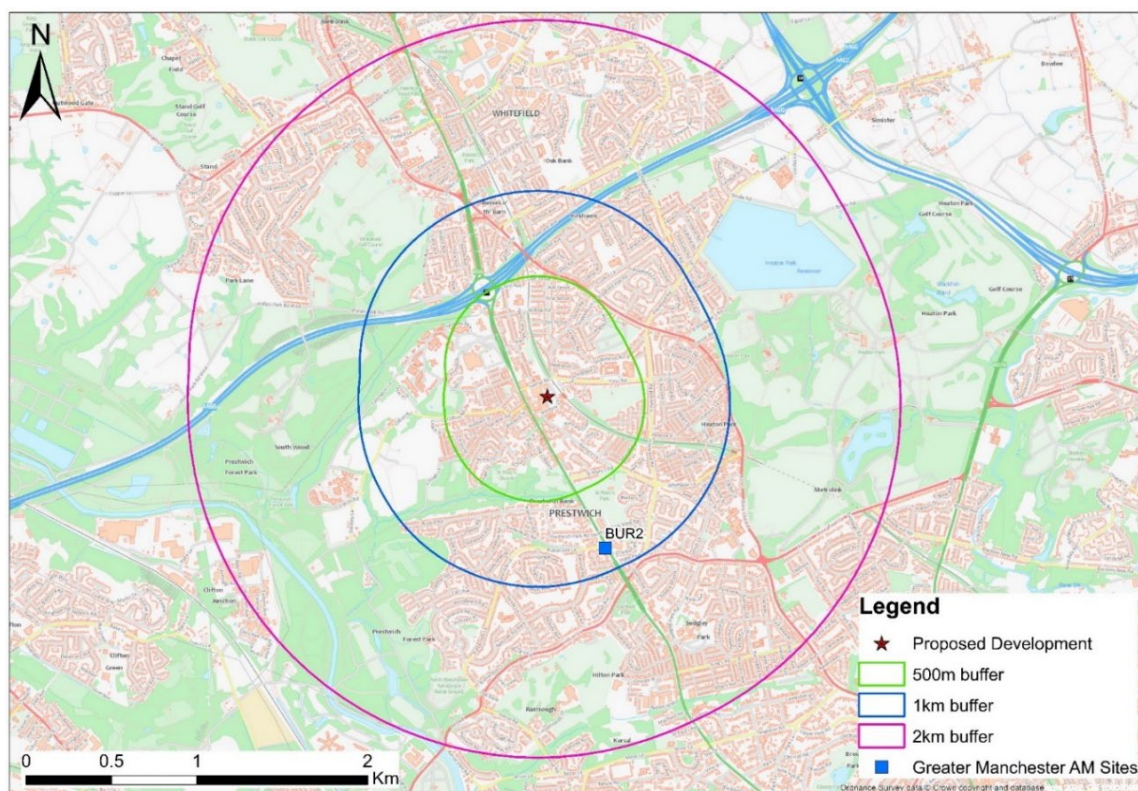
10.42 A review of existing local air quality conditions in the vicinity of the Proposed Development has been undertaken. Automatic and diffusion tube monitors within the Study Area (2 km) of the site have been evaluated as part of this assessment.

10.43 Automatic or continuous monitoring involves drawing air through an analyser continuously to obtain near real-time pollutant concentration data. A review of the most recent ASR from Greater Manchester Combined Authority³¹, which includes Bury, showed that there is one automatic monitoring station within 2 km. The location of the automatic monitor is shown in **Figure 10.4** and details about the automatic monitoring site are provided in **Table 10.8**.

Table 10.8: Details of Automatic Monitoring Sites within 2km

Site ID	Site Location	OS Grid Reference		Site Type	Pollutants Monitored	Distance to kerb of nearest road (m)
		x	y			
BUR2	Bury Prestwich	381650	403222	Roadside	NO ₂ , PM ₁₀	2.5

Figure 10.4: Automatic Monitoring Sites



10.44 Recent NO₂ monitoring results from 2017 to 2022 are shown in **Table 10.9**, with numbers of hourly exceedances of 200 µg/m³ indicated in brackets. An exceedance is defined as an annual mean greater than 40 µg/m³ for NO₂, or when the hourly value exceeds

200 µg/m³ more than 18 times within a calendar year. All exceedances of the objective thresholds are indicated in bold.

Table 10.9: Results of Local Air Quality Monitoring at Automatic Sites – Nitrogen Dioxide

Site ID	Site Type	Distance from Site (km)	Annual Mean NO ₂ Concentration (µg/m ³)					
			2017	2018	2019	2020	2021	2022
BUR2	Roadside	0.95	42 (0)	38 (0)	39 (0)	-	33.3 (0)	30 (0)
Notes: Exceedances of the annual mean air quality objective are indicated in bold . “-” = no data available								

- 10.45 These results show that the NO₂ annual mean air quality objective has not been exceeded at the roadside site since 2017, with a general downward trend from this time. The concentration recorded in 2022 was 30 µg/m³. BUR2 is located on Bury New Road (A56), and as the Proposed Development is located adjacent to Bury New Road (A56), it is anticipated to provide an indicative value of expected NO₂ concentrations at the roadside boundary of the site.
- 10.46 The short-term NO₂ objective was met at all locations during the monitoring period between 2017 and 2022. The number of daily exceedances of 200 µg/m³ have remained below the permissible 18 days per year. The concentrations recorded at the site during this monitoring period have been well below 60 µg/m³, and therefore exceedances of the short-term objective for NO₂ are considered to be unlikely.
- 10.47 Annual mean concentrations of PM₁₀ recorded at the monitoring site within the Study Area (2 km) are shown in **Table 10.10**, with number of days exceedance shown in brackets. An exceedance is defined as an annual mean greater than 40 µg/m³ for PM₁₀, or when the daily value exceeds 50 µg/m³ more than 35 days within a calendar year.

Table 10.10: Results of Local Air Quality Monitoring at Automatic Sites- PM₁₀

Site ID	Site Type	Distance from Site (km)	Annual Mean PM ₁₀ Concentration (µg/m ³)					
			2017	2018	2019	2020	2021	2022
BUR2	Roadside	0.95	19 (4)	19 (1)	19 (9)	-	17.5 (1)	19 (6)

- 10.48 Annual mean concentrations of PM₁₀ have met the air quality objective (40 µg/m³) at the monitoring site in all years. A maximum concentration of 19 µg/m³ was recorded at the roadside site in 2017-2019 and 2022. The number of daily exceedances of 50 µg/m³ have

remained below the permissible 35 days per year, with a maximum of 9 days recorded in 2019 at the site.

10.49 There is no local monitoring of PM_{2.5}.

10.50 The latest ASR indicates that Greater Manchester has 434 diffusion tubes monitoring NO₂ across the region, 19 of which are within 2 km of the Proposed Development; these are classified as either “Kerbside” or “Roadside” sites. The locations of the sites within 2 km are shown in **Figure 10.5**, and the details of the diffusion tubes within 2 km are given in **Table 10.11**.

Figure 10.5: Local Diffusion Tube Sites

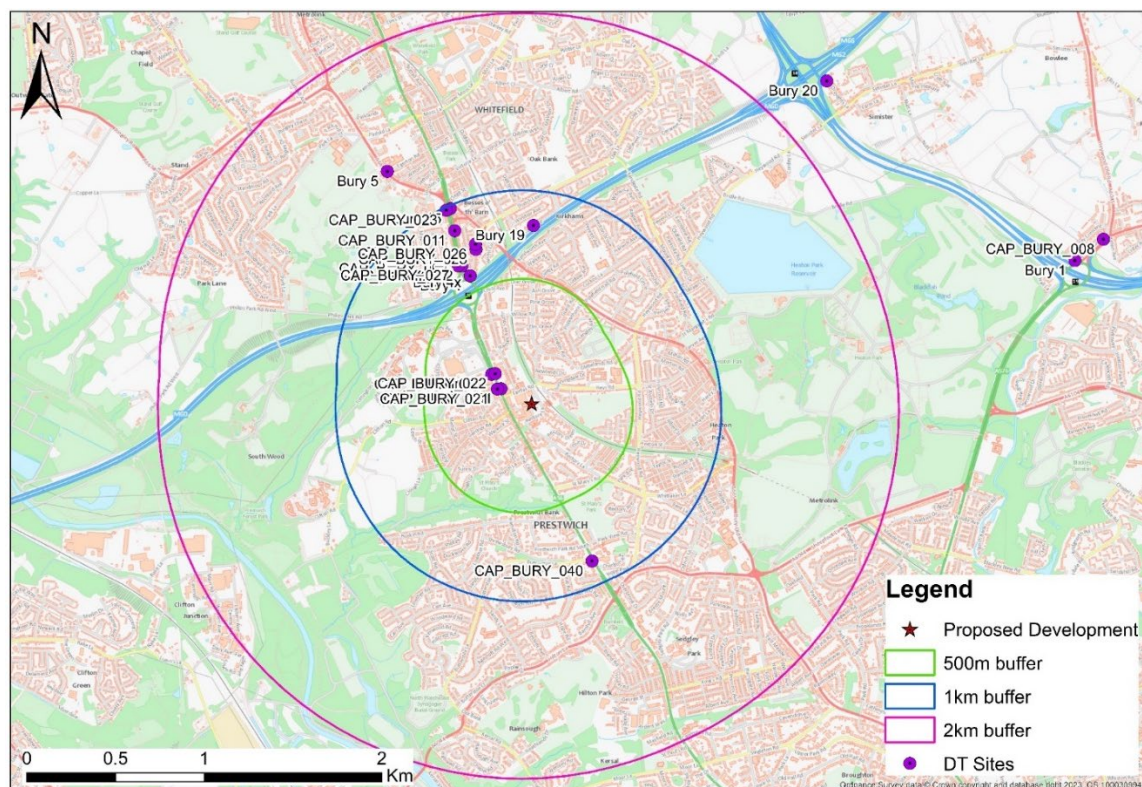


Table 10.11: Details of Diffusion Tube Monitoring Sites within 2 km

Site ID	Site Location	OS Grid Reference		Site Type	Distance to kerb of nearest road (m)
		x	y		
BU15NO	BU15	380852	405204	Kerbside	0.5
BU16NO	BU16	380916	404891	Roadside	2.2
BU17NO	BU17	381105	404279	Roadside	3
BU19NO	BU19	381321	405115	Roadside	12
BU4NO	BU4 10 Hardmans Rd Whitefield	380964	404831	Roadside	18.2

Site ID	Site Location	OS Grid Reference		Site Type	Distance to kerb of nearest road (m)
		x	y		
BU4xNO	10 Hardmans Road	380964	404831	Roadside	18.2
BU5NO	BU5 Radcliffe New Rd. Whitefield	380501	405413	Roadside	2.8
CAP_BURY_001	A56 (Bury New Road)	381138	404194	Roadside	0.7
CAP_BURY_002	A56 (Bury New Road)	380917	404886	Roadside	2.4
CAP_BURY_003	A56 (Bury New Road)	381085	404275	Roadside	2.6
CAP_BURY_004	A56 (Bury New Road)	380888	404927	Roadside	2.4
CAP_BURY_011	A56 (Bury New Road)	380877	405085	Roadside	2.2
CAP_BURY_021	A56 Bury New Rd	381118	404192	Roadside	2.2
CAP_BURY_022	A56 Bury New Rd	381105	404279	Roadside	3
CAP_BURY_023	A56	380830	405200	Roadside	1.8
CAP_BURY_025	Hardmans Rd	380997	404980	Roadside	1.4
CAP_BURY_026	Hardmans Rd	380994	405009	Roadside	1.3
CAP_BURY_027	A56	380896	404888	Roadside	2.4
CAP_BURY_040	A56 Prestwich	381651	403222	Roadside	3.1

10.51 Recent monitoring results are given in **Table 10.12**. An exceedance is defined as an annual mean greater than 40 µg/m³ for NO₂. Any exceedances are written in **bold**.

Table 10.12: Diffusion Tube Monitoring Results 2017 to 2022

Site ID	Site Type	Annual Mean NO ₂ Concentration (µg/m ³)					
		2017	2018	2019	2020	2021	2022
BU15NO	Kerbside	-	-	46.6	34.4	37.4	40.5
BU16NO	Roadside	-	-	46.8	32.5	36.1	39.0
BU17NO	Roadside	-	-	35.4	25.7	28.2	28.6
BU19NO	Roadside	-	-	42.1	32.7	33.1	37.7
BU4NO	Roadside	-	-	39.2	27.4	28.4	31.8
BU4xNO	Roadside	31.9	31.2	-	-	-	-
BU5NO	Roadside	-	-	27	21.1	20.9	21.0
CAP_BURY_001	Roadside	-	-	30	30	35.2	34.6
CAP_BURY_002	Roadside	-	-	32.1	32.1	35.1	35.8
CAP_BURY_003	Roadside	-	-	32.9	32.9	36.4	36.2
CAP_BURY_004	Roadside	-	-	38.4	38.4	44.4	45.2
CAP_BURY_011	Roadside	-	-	37.3	37.3	41.2	42.7
CAP_BURY_021	Roadside	-	-	-	-	-	33.2

Site ID	Site Type	Annual Mean NO ₂ Concentration (µg/m ³)					
		2017	2018	2019	2020	2021	2022
CAP_BURY_022	Roadside	-	-	-	-	-	28.2
CAP_BURY_023	Roadside	-	-	-	-	-	37.1
CAP_BURY_025	Roadside	-	-	-	-	-	25.9
CAP_BURY_026	Roadside	-	-	-	-	-	26.9
CAP_BURY_027	Roadside	-	-	-	-	-	42.4
CAP_BURY_040	Roadside	-	-	-	-	-	33.1
Notes: Exceedances of the annual mean air quality objective are indicated in bold . “-” = no data available							

- 10.52 Of the 19 diffusion tube monitoring locations within 2 km, six of the sites exceeded the NO₂ objective (40 µg/m³) during the period between 2017 and 2022. The maximum recorded concentration was 46.8 µg/m³, recorded at BU16NO in 2019, a roadside site located on Bury New Road (A56) at a junction with the M60. The maximum recorded concentration in 2022 was 45.2 µg/m³ at site CAP_Bury_004, located just north of site BU16NO.
- 10.53 The Proposed Development is located on Bury New Road (A56), approximately 850m from the junction with the M60. It is therefore anticipated that site BU17NO, located 270m north-east of the Proposed Development site, is most representative of site concentrations, from available data.
- 10.54 The annual mean NO₂ concentrations recorded at all of the six sites within 2 km between 2017 and 2022 are well below 60 µg/m³. Exceedances of the short-term objective are therefore considered to be unlikely.
- 10.55 Defra’s Background concentrations refer to existing levels of pollution in the atmosphere, as a result of emission from a variety of sources, such as traffic, industrial and agricultural processes. Defra publishes background pollutant mapping³² for every 1km x 1km OS grid square across the UK for NO_x, NO₂, PM₁₀ and PM_{2.5}. Background pollutant mapping has been reviewed for the grid square in which the Proposed Development lies and surrounding grid squares. The 2022 (baseline) and 2030 (closest available date to the proposed completion and opening year of 2031) background concentrations (which are based on 2018 monitoring data) are presented in **Table 10.13**.

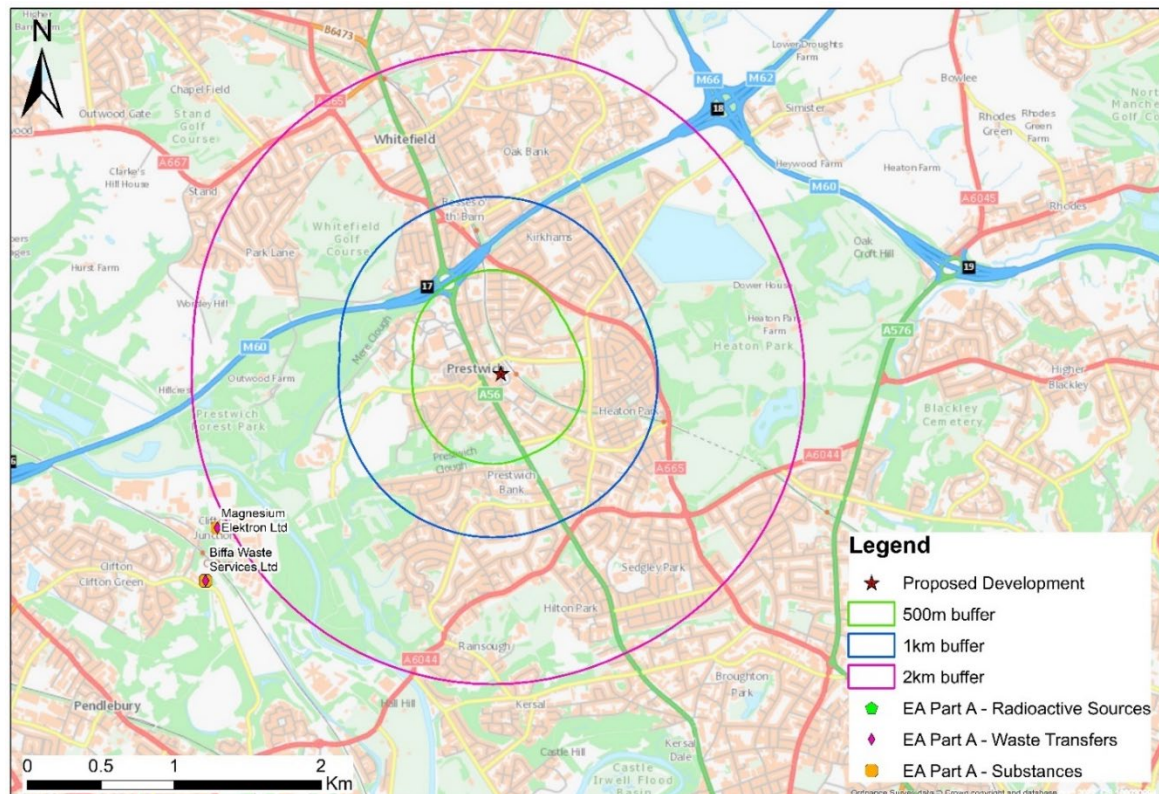
Table 10.13: Defra's 2022 and 2030 background concentrations of NO_x, NO₂, PM₁₀ and PM_{2.5}

OS Grid Square		Annual Mean Concentration (µg/m ³)							
		NO _x		NO ₂		PM ₁₀		PM _{2.5}	
X	Y	2022	2030	2022	2030	2022	2030	2022	2030
381500	404500	27.7	20.2	19.5	14.6	13.6	13.2	9.0	8.7
381500	405500	27.9	19.5	19.7	14.3	13.6	13.3	9.0	8.7
380500	404500	30.8	21.3	21.3	15.4	12.9	12.5	8.4	8.1
382500	404500	20.3	15.4	14.8	11.5	11.6	11.2	7.8	7.5
381500	403500	21.1	16.2	15.3	12.1	11.8	11.4	8.0	7.7
Average:		25.6	18.5	18.1	13.6	12.7	12.3	8.4	8.1

- 10.56 Defra background concentrations are all below the air quality objectives for annual mean NO₂ and PM₁₀ and PM_{2.5}.
- 10.57 The emissions from roads in the area are assumed to be represented in the background concentrations used.
- 10.58 Traffic data was provided by the Transport Planners (Civic Engineers). This data has been used in the dispersion modelling assessment and is discussed further in Section 3.4.4 and listed in Annex F of the Air Quality Assessment (**Appendix 10.1**).
- 10.59 There are tram lines located within 50 m of the Proposed Development. As these are electrified lines, they are not a source of rail emissions, and are therefore not considered further in this assessment in terms of air quality impacts.
- 10.60 Industrial air pollution sources are regulated through operating permits or authorisations, which list stringent emission requirements. Regulated industrial process are classified as either Part A or Part B processes and are regulated through the Pollution Prevention and Control (PPC) system³³ which has been transposed into National legislation³⁴. The larger, more polluting, Part A processes are regulated by the Environment Agency for emissions to air, water and land. The smaller, less polluting processes are regulated by the local authority for emission to air.
- 10.61 A review of the Environment Agency Pollutant Inventory for 2021³⁵ indicated that there are no Part A permit sites within 2 km of the Proposed Development. The closest sites are operated by Magnesium Elektron Ltd and Biffa Waste Services Ltd, located 2.2 km and 2.5 km south-east of the Proposed Development, respectively. The locations of the nearest Part A sites are shown in **Figure 10.6**.

- 10.62 The Part B processes are regulated and reviewed by the Local Authorities and given the nature of these processes, are unlikely to significantly affect ambient air quality in the vicinity of the Proposed Development.
- 10.63 Any emissions from these installations are assumed to be represented in the Defra background concentrations and are therefore not considered further in this assessment.

Figure 10.6: Part A Sites within 2 km



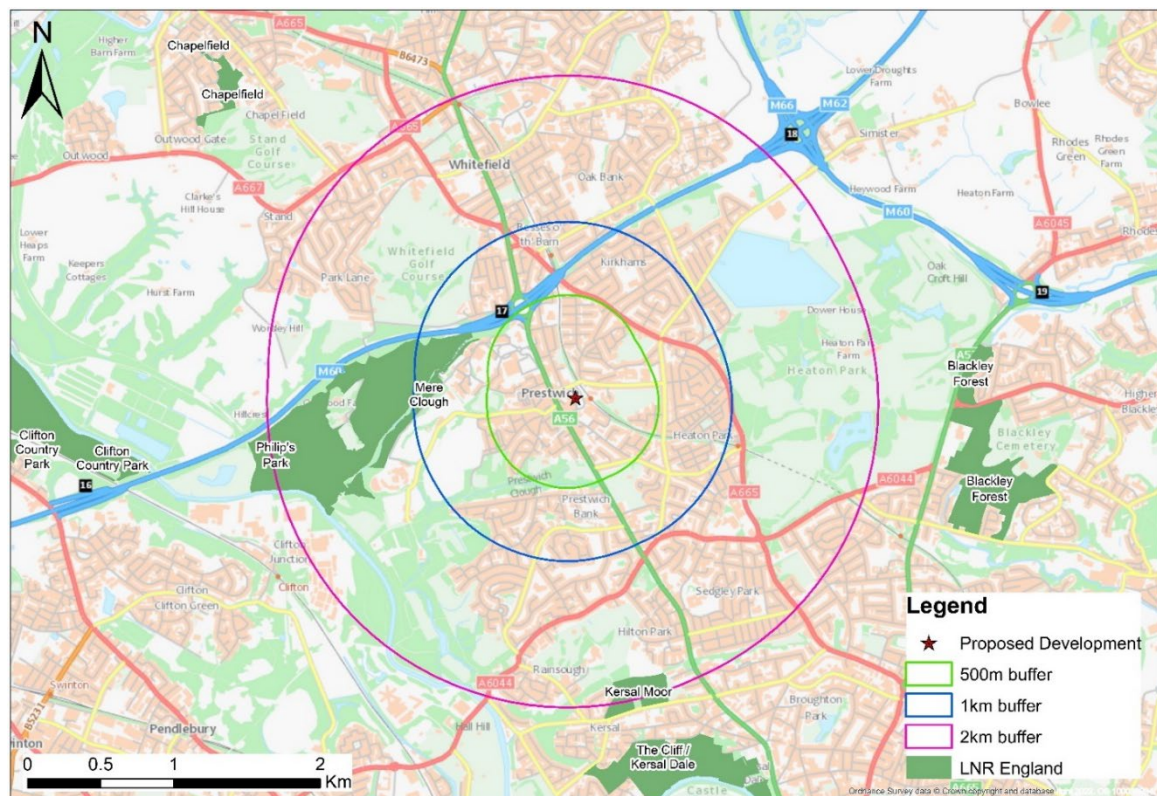
Identification of Sensitive Receptors

- 10.64 Sensitive receptors in proximity to the Proposed Development site were identified with reference to mapping data provided by Ordnance Survey. Sensitive receptors within 350m are illustrated in **Figure 10.7**. Guidance on the distance buffer for receptors and the sensitivity of different receptor types is provided within the IAQM guidance²⁸, provided in Annex C of the Air Quality Assessment (**Appendix 10.1**).

Figure 10.7: Sensitive Receptors

- 10.65 The site is located within a densely urbanised area. There are several properties surrounding the site including commercial and residential properties (apartments and residential housing). Commercial properties include, but are not limited to, All the Shapes bar, Dokes Pizzeria, Farmfoods, M&S Simply Food, and NatWest Prestwich. Residential properties include those located on Rectory Green, Highfield Place, Highfield Road and Bury New Road, and Albion Mews apartment building. Additionally, there is a primary school located off of Rectory Lane. Therefore, there are sensitive human receptors located within 350 m of the site.
- 10.66 Defra MAGIC mapping³⁶ has been reviewed to determine the presence of any sensitive ecological sites. Typical ecological receptors of significance include Special Conservation Areas (SACs), Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs), RAMSAR sites, Local Nature Reserves (LNRs) and Ancient Woodland with dust sensitive features (e.g. vascular species included in the Red Data List for Great Britain³⁷). There are three designated ecological receptors within the Study Area (2 km). Mere Cough, Philip's Park and Kersal Moor are LNRs, located approximately 800 m north-west, 1.6 km west and 1.9 km south of the Proposed Development, respectively. The locations of nearby ecological receptors are illustrated in **Figure 10.8**.

Figure 10.8: Sensitive Ecological Sites



Embedded Mitigation

10.67 This section describes the measures which have been ‘embedded’ into the development.

The Completed and Operational Development

10.68 The following design measures are embedded into the Proposed Development relevant to the assessment of air quality:

- Provision of 28 active EV spaces (10% of all parking). There will also be passive provision in place to ensure further installation if needed in the future;
- The provision of cycle parking and a car club scheme with the Travel Hub;
- Improved cycle/walk infrastructure, for example new dedicated pedestrian infrastructure, lighting, and an improved public realm.

Assessment of Likely Significant Effects

Enabling, Demolition and Construction Phase

10.69 As noted in the Methodology section of this Chapter, the assessment has been undertaken for the entire Proposed Development i.e. Phases 1 and 2 combined due to the intended continuous construction programme of each phase.

Assessment of the Proposed Development

- 10.70 In accordance with the stated methodology, the assessment considers ‘human receptors’ within 350 m of the boundary of the site; 50 m of the route used by construction vehicles on the public highway and up to 500 m from the site entrances.
- 10.71 The dust emission magnitude is based on the scale of the anticipated work and classified in **Table 10.14** below. Details listed are based on indicative construction information provided by the project team. Estimations/assumptions have been made where information is not available, based on our experience of similar sites and professional judgement.

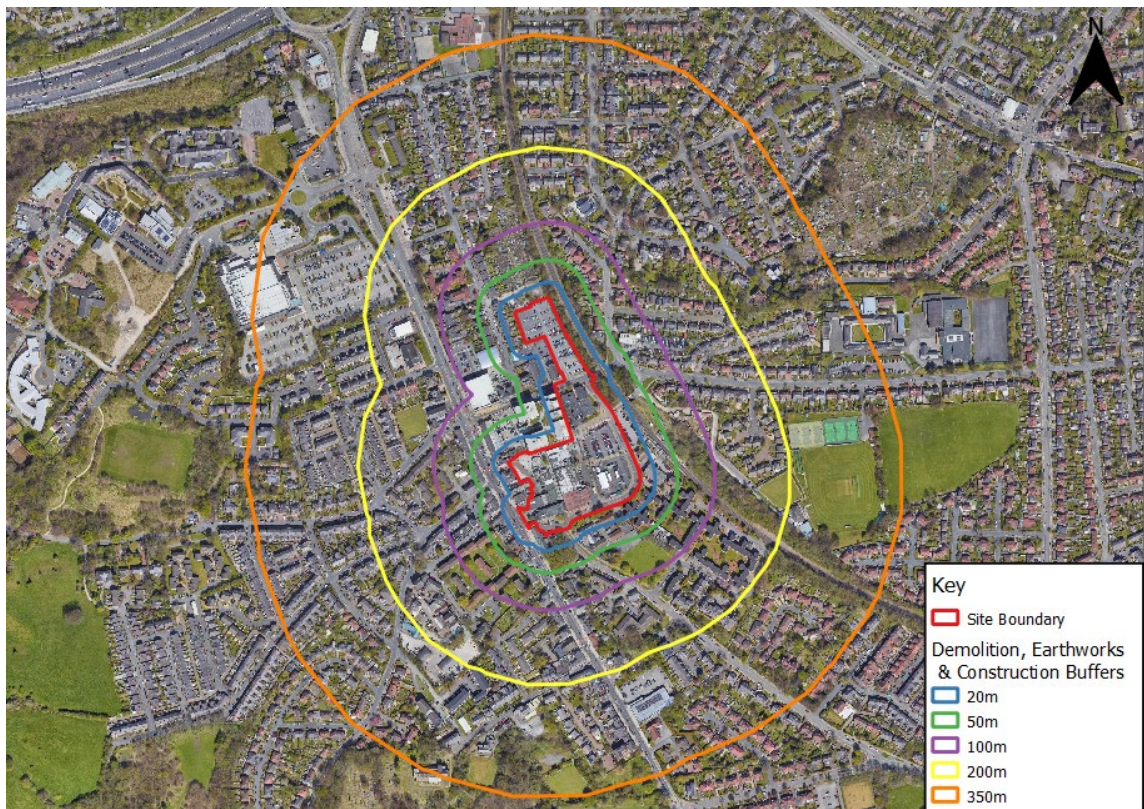
Table 10.14: Determination of the potential dust emission magnitude

Stage	Relevant Definition	Highest Potential Dust Emission Magnitude
Demolition	- Volume of buildings to be demolished is estimated to be >50,000 m³. - Demolition materials are potentially dusty. - The height of demolition activities above ground are estimated to be 10-20 m. - It is assumed that on-site crushing and screening may take place	Large
Earthworks	- Total site area is > 10,000 m². - It is estimated that the number of heavy earth moving vehicles active at any one time will be > 10. - It is estimated that stockpile/bund height may be > 8 m.	Large
Construction	- Total building volume to be constructed is estimated to be >25,000-100,000 m³. - Potentially dust construction material (concrete piles) - It is assumed that concrete batching and sandblasting may take place.	Medium-Large
Trackout	Estimated to be 10-50 HDV (> 3.5 tonnes) outward movements in any one day. - The surface material is potentially dusty. - The length of unpaved road within the site is estimated to be > 100m	Medium-Large

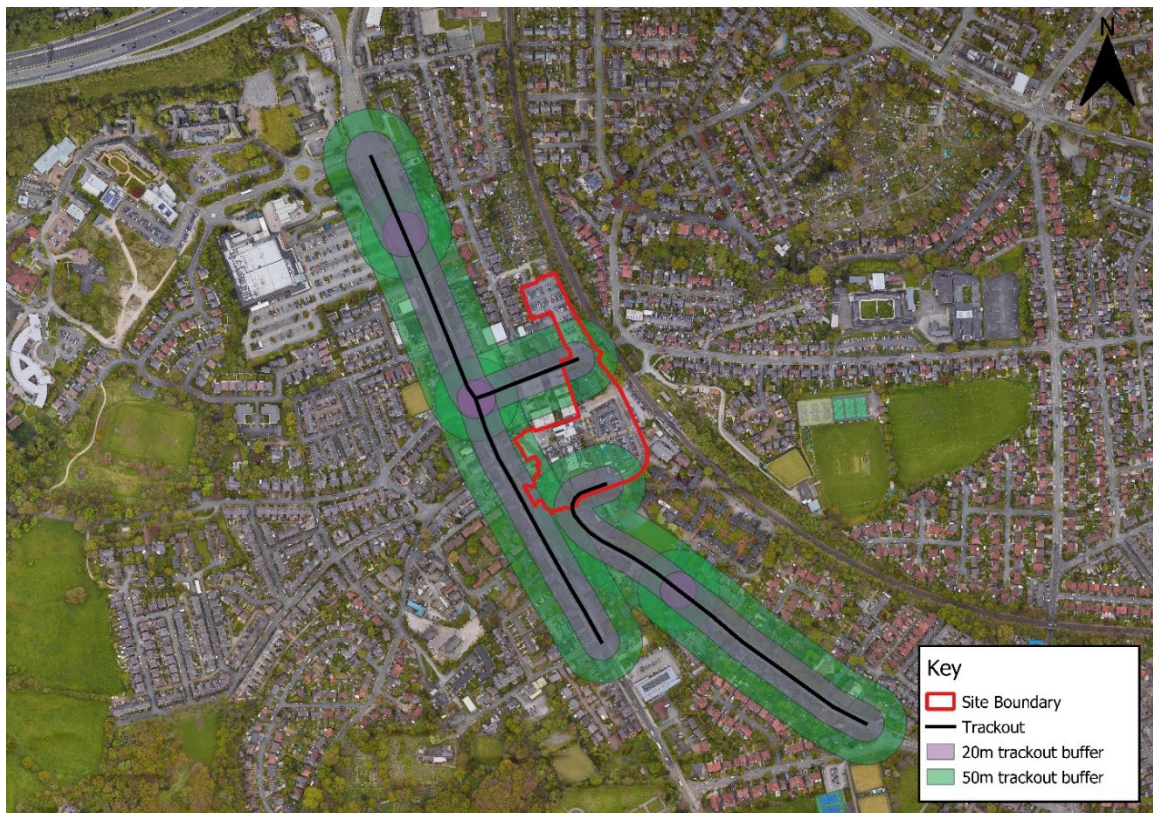
- 10.72 The highest dust emission magnitude is likely to be **Large**.

Sensitivity of Receptors (including receptor locations)

- 10.73 The surrounding area has a significant density of human receptors, which are potentially sensitive to dust soiling and health effects. Receptor sensitivity and the sensitivity of the area is defined as high, medium or low, in line with the methodology and criteria in the IAQM guidance²⁸, further detailed in Annex C of **Appendix 10.1**.
- 10.74 The numbers of these receptors likely to be affected by demolition, earthworks and construction activities during the construction phase has been assessed. The analysis involved counting receptors within each of the IAQM guidance²⁸ defined distance bands from the site boundary (20, 50, 100, 200 and 350 m), as illustrated in **Figure 10.9**.
- 10.75 Sensitive receptors are also susceptible to dust soiling and health effects resulting from construction vehicle trackout. The IAQM guidance states that trackout may occur from roads up to 500 m from large sites, 200 m from medium sites, and 50 m from small sites. It is understood that construction traffic is likely to use both Fairfax Road and Rectory Lane to access and egress the site. As the trackout dust emission magnitude is medium-large, a 500 m distance band has been applied accounting for sensitive receptors 50 m from the construction traffic route (**Figure 10.10**).
- 10.76 There are no designated ecological receptors sensitive to dust within 50m (the IAQM guidance²⁸ defined distance band) of the site boundary or trackout route and therefore the sensitivity of the area to ecological receptors is not applicable.

Figure 10.9: Construction Dust Buffer Zones (courtesy of Google Satellite)

10.77 There are 10 to 100 high sensitivity receptors within 20 m of the Proposed Development boundary. The sensitivity of the area to dust soiling effects on people and property from demolition, earthworks and construction activities is therefore **high** in accordance with the stated methodology. The Defra PM₁₀ background concentration in the area of the Proposed Development is <24 µg/m³. There are 10 to 100 high sensitivity receptors within 20 m of the Proposed Development boundary. The sensitivity of the area to human health impacts for demolition, earthworks and construction activities is therefore **low** in accordance with the stated methodology.

Figure 10.10: Trackout Buffer Zones (courtesy of Google Satellite)

10.78 There are >100 high sensitivity receptors within 20m of the Proposed Development's potential track-out routes. The sensitivity of the area to dust soiling effects on people and property from trackout activities is therefore **high** in accordance with the stated methodology. The Defra PM₁₀ background concentration in the area of the Proposed Development is <24 µg/m³. There are >100 high sensitivity receptors within 20 m of the trackout boundary (along roads potentially used by construction traffic within 500 m of the site exit). The sensitivity of the area to human health impacts for trackout activities is therefore **low** in accordance with the stated methodology.

10.79 The analysis of sensitive receptors within each distance band is presented in **Table 10.15**.

Table 10.15: Sensitivity of the Area Summary

Potential Impact	Sensitivity of the Area		
	Description	During Demolition, Earthworks and Construction	During Trackout
Dust Soiling	Receptor sensitivity	High	High
	Number of receptors and distance from source	10-100 residential properties within 20 m of the site boundary	10-100 residential properties within 20 m of the trackout boundary
	Sensitivity of the Area	High	High
Human Health	Receptor sensitivity	High	High
	Annual mean PM ₁₀ concentration	<24 µg/m ³	<24 µg/m ³
	Number of receptors and distance from source	10-100 residential properties within 20 m of the site boundary	>100 residential properties within 20 m of the trackout boundary
	Sensitivity of the Area	Low	Low
Ecological	Receptor sensitivity	N/A	N/A
	Number of receptors and distance from source	N/A	N/A
	Sensitivity of the Area	N/A	N/A

10.80 The dust emission magnitudes have been combined with the sensitivity of the area to determine the overall risk of dust impacts with no mitigation applied. The risk of impacts for dust soiling and human health for each construction activity are summarised in **Table 10.16**.

Table 10.16: Risk of Impacts

Potential Impact (Sensitivity of the Area)	Dust Risk (Dust Emission Category)				
	Demolition (Large)	Earthworks (Large)	Construction (Medium-Large)	Trackout (Medium-Large)	Overall Risk
Dust Soiling (High)	High	High	Medium-High	Medium-High	High
Human Health (Low)	Medium	Low	Low	Low	Low-Medium
Overall Risk	High	High	Medium-High	Medium-High	High

- 10.81 The assessment has demonstrated that the maximum risk of dust soiling without any mitigation is **high** for demolition, earthworks, construction and trackout.
- 10.82 The maximum risk of adverse human health effects of PM₁₀ without any mitigation is **low-medium** for demolition, earthworks, construction and trackout.
- 10.83 The overall risk of unmitigated impacts is **high** for demolition, earthworks, construction and trackout. In accordance with the IAQM guidance, the 'site specific mitigation' are discussed in Annex I of **Appendix 10.1** and the 'Further Mitigation' section of this Chapter.

The Completed and Operational Development

- 10.84 As noted in the Methodology section of this Chapter, the assessment has been undertaken for the entire Proposed Development i.e. Phases 1 and 2 combined due to the intended continuous construction programme of each phase.

Assessment of the Proposed Development

- 10.85 Comprehensive dispersion model results are provided in Annex H of **Appendix 10.1**.
- 10.86 Results are presented for the following scenarios:
- Worst-case scenario (use of 2023 emissions):
 - Do-minimum (DM) with 2031 traffic flows without the Proposed Development in place and with 2022 backgrounds.
 - Do-something (DS) with 2031 traffic flows with the Proposed Development in place and with 2022 backgrounds.
 - Realistic scenario (use of 2031 emissions):
 - Do-minimum (DM) with 2031 traffic flows without the Proposed Development in place and with 2022 backgrounds.
 - Do-something (DS) with 2031 traffic flows with the Proposed Development in place and with 2022 backgrounds.
- 10.87 Interpretation of the results based on the worst-case DS Scenario indicates the following:
- Exceedance of the national annual mean NO₂ objective is unlikely at all modelled receptor locations. There are no exceedances of the annual mean objective at any modelled receptors, in the DM and DS future scenarios. The maximum predicted concentration for the existing receptors in the DS scenario is 26.7 µg/m³, and for the

proposed receptors is $22.5 \mu\text{g}/\text{m}^3$. These worst-case concentrations are based on the retaining emissions at current year (2023 emissions). In the more realistic scenario, (2031 emissions), the maximum predicted concentrations are $22.9 \mu\text{g}/\text{m}^3$ for the existing receptors and $20.9 \mu\text{g}/\text{m}^3$ for the proposed receptors. The impact of the Proposed Development on modelled receptors (based on the criteria set out in **Table 10.6**) is **Negligible** for all receptors.

- Since all modelled NO_2 values are well below $60 \mu\text{g}/\text{m}^3$, exceedance of national short-term NO_2 objectives is unlikely at all modelled receptor locations.
- Exceedance of national annual mean and short-term mean PM_{10} objectives is unlikely at all modelled receptor locations. Modelled PM_{10} concentrations in both the DM and DS scenarios are below the annual mean PM_{10} objective at all receptor locations. The maximum predicted PM_{10} concentration for the existing receptors in the worst case (2023 emissions) and realistic case (2031 emissions) DS scenario is $15.3 \mu\text{g}/\text{m}^3$, and for the proposed receptors is $14.3 \mu\text{g}/\text{m}^3$. The impact of the Proposed Development on modelled receptors is **Negligible** for all receptors.
- Exceedance of the national annual mean $\text{PM}_{2.5}$ objective is unlikely at all modelled receptor locations. Modelled $\text{PM}_{2.5}$ concentrations in both the DM and DS scenarios are below the annual mean $\text{PM}_{2.5}$ objectives at all receptor locations. The maximum predicted $\text{PM}_{2.5}$ concentration for the existing receptors is $10.0 \mu\text{g}/\text{m}^3$ in the worst case (2023 emissions) and $9.9 \mu\text{g}/\text{m}^3$ in the realistic case (2031 emissions) DS scenario, and for the proposed receptors is $9.4 \mu\text{g}/\text{m}^3$. The impact of the Proposed Development on modelled receptors is **Negligible** for all receptors.
- The predicted concentrations at receptors closest to the proposed Travel Hub (gardens of residents along Highfield Road and Highfield Place) did not exceed the air quality objectives for NO_2 , PM_{10} , or $\text{PM}_{2.5}$. The maximum concentrations in the worst case (2023 emissions) DS scenario are $22.2 \mu\text{g}/\text{m}^3$ for NO_2 , $14.2 \mu\text{g}/\text{m}^3$ for PM_{10} and $9.3 \mu\text{g}/\text{m}^3$ for $\text{PM}_{2.5}$. The impact of the Proposed Development on modelled receptors closest to the proposed Travel Hub is **Negligible**.
- The impact on the AQMA adjacent to the Proposed Development is anticipated to be **Negligible**.

10.88 As the Proposed Development is predicted to result in a negligible impact at all receptors, the overall significance of effect is considered to be **Not Significant**.

Further Mitigation, Enhancement Measures and Residual Effects

- 10.89 This section describes the measures which are required to mitigate any significant environmental effects with regards to air quality.

Enabling, Demolition and Construction Phase

- 10.90 The IAQM guidance identifies appropriate site-specific mitigation. These measures are related to the site risk for each activity that will be adopted to ensure there will be no significant effect on local amenity and public health.
- 10.91 The dust assessment determined that there was a risk of impacts resulting from enabling and construction activities without the implementation of mitigation measures. The IAQM guidance document also suggests a number of dust mitigation measures which should be implemented to reduce potential adverse effects associated with high, medium and low risk sites. It is recommended that the good practice measures outlined in the IAQM guidance are followed.
- 10.92 Full details of mitigation measures are presented in Annex I of the Air Quality Assessment (**Appendix 10.1**) and have been selected based on the findings of the construction dust assessment.
- 10.93 The Applicant will commit to the implementation of the best practice mitigation measures identified above during the construction phase of the development. It is anticipated that the generation of dust and harmful pollutants emissions from construction site activities will be reduced with the correct implementation of these measures.
- 10.94 Measures to control emissions during the construction phase will be included in a Construction Environmental Management Plan (CEMP), see **Appendix 4.3** for a Framework CEMP. These mitigation measures will be implemented for both phases of the Proposed Development.
- 10.95 A CEMP and a Construction Logistics Plan can be secured for each phase via the issue of a suitably worded planning condition.

The Completed and Operational Development

- 10.96 The significance of air quality effects was predicted to be not significant, and therefore mitigation measures are not considered to be required. However, it is noted that a Travel Plan is proposed (refer to **Appendix 8.2**) which includes a number of measures which will benefit local air quality.

Residual Effects Summary

- 10.97 The table below summarises the residual effects.

Table 10.17: Residual Effects Summary

Description of Effect	Embedded Mitigation	Potential Effect	Additional Mitigation / Enhancement Measures	How are Additional Mitigation / Embedded Mitigation / Enhancement Measures secured?	Residual Effect
Enabling, Demolition and Construction					
Construction dust	None identified in line with IAQM guidance	Major adverse, short-term, local level	As outlined in Annex I of the Air Quality Assessment (Appendix 10.1) and included in the CEMP (Appendix 4.3)	Condition	Negligible Not Significant
Completed and Operational					
Operational traffic emissions (from road network and proposed Travel Hub)	Inclusion of electric vehicle charging spaces within car parking provision. Cycling parking and a car club scheme. Improved cycle/walk infrastructure.	Negligible	None	Detailed Design Drawings secured by Condition	Negligible Not Significant
Operational on-site combustion plant	Proposed Development is all electric.	Negligible	None	Energy Strategy to be secured by Condition	Negligible Not Significant

Summary of Residual Effects and Mitigation Measures

Enabling, Demolition and Construction Phase

- 10.98 The impact of the construction phase of the Proposed Development was considered in accordance with the latest guidance available from the Institute of Air Quality Management (IAQM). The assessment defined the sensitivity of the area and the risk of the construction of the development to cause dust and particulate matter impacts for both phases of the development. It was concluded that in the absence of any adequate mitigation, there is a high risk from the demolition, earthworks, construction and trackout dust-generating activities associated with the Proposed Development. However, with appropriate mitigation measures implemented, it is anticipated that the dust generation and harmful emissions from construction site activities will not be significant.
- 10.99 An Air Quality and Dust Management Plan (AQDMP) (forming part of a Construction Environmental Management Plan (CEMP)/Construction Logistics Plan) which conforms to the requirements of Bury Council will need to be provided prior to the commencement of any on-site works to ensure that the mitigation measures recommended are implemented throughout the construction phase. Based on the provision of a CEMP and a Construction Logistics Plan and with the implementation of this mitigation, the residual impacts from construction activities is expected to be Not Significant in accordance with IAQM guidance. Both the CEMP and Construction Logistics Plan can be secured by a suitably worded planning condition for each phase of the development.

Completed and Operational Phase

- 10.100 A road traffic emissions dispersion modelling assessment was undertaken to consider the impact of the operational phase development-generated trips on identified receptor locations within the study area. The base year (2022) and the opening year (2031) with and without the development scenarios were assessed for both phases of the development. Annual mean concentrations of NO₂, PM_{2.5} and PM₁₀ were predicted to be below the relevant air quality objectives at all locations, both 'without' and 'with' the Proposed Development in the opening year. The locations assessed included the Air Quality Management Area (AQMA) along Bury New Road. The proposed Travel Hub was also included within the 'with' development scenario. Exceedances of the short-term 1-hour mean objective for NO₂ and 24-hour mean objective for PM₁₀ were considered to be unlikely, based on annual mean concentrations, at any receptors with the development in place.
- 10.101 The impact of road traffic emissions generated by the Proposed Development on existing human receptors was therefore predicted to be negligible at all receptors in all scenarios.

The overall significance of effect was therefore considered to be Not Significant. As such, no mitigation measures were required beyond those that are embedded within the design of the Proposed Development.

Assessment of Cumulative Effects

- 10.102 An assessment of cumulative effects has been scoped out.

Assessment of Significance Summary and Conclusions

- 10.103 The air quality assessment has considered the potential for likely significant effects as a result of the Proposed Development during its construction and operation. The assessment considered the potential for the Proposed Development to impact on local air quality during its construction and operation.

Summary of Baseline Conditions

- 10.104 The south-western edge of the site is located within the Bury Air Quality Management Area (AQMA) which covers large portions of the main roads within the borough, including the Bury New Road (A56) located to the immediate west of the Proposed Development site. Bury Council declared the AQMA in 2002 for exceedances of the annual mean NO₂ objective and 24-hour mean PM₁₀ objective. It was amended in 2007 to only include annual mean NO₂.

Summary of Likely Significant Effects

Enabling, Demolition and Construction Phase

- 10.105 The impact of the construction phase of the Proposed Development was considered in accordance with the latest guidance available from the Institute of Air Quality Management (IAQM). The assessment defined the sensitivity of the area and the risk of the construction of the development to cause dust and particulate matter impacts for both phase of the development. It was concluded that in the absence of any adequate mitigation, there is a high risk from the demolition, earthworks, construction and trackout dust-generating activities associated with the Proposed Development. However, with appropriate mitigation measures implemented, it is anticipated that the dust generation and harmful emissions from construction site activities will not be significant. These mitigation measures will need to be outlined in an Air Quality and Dust Management Plan (AQDMP) (forming part of a Construction Environmental Management Plan (CEMP)/Construction Logistics Plan) and approved by Bury Council prior to the commencement of any on-site works. With the implementation of these mitigation measures, the impacts from construction activities are expected to be Not Significant

The Completed and Operational Phase

- 10.106 A road traffic emissions dispersion modelling assessment was undertaken to consider the impact of the operational phase development-generated trips on identified receptor locations within the study area. The base year (2022) and the opening year (2031) with and without the development scenarios were assessed for both phases of the development. Annual mean concentrations of NO₂, PM_{2.5} and PM₁₀ were predicted to be below the relevant air quality objectives at all locations, both 'without' and 'with' the Proposed Development in the opening year. The locations assessed included the Air Quality Management Area (AQMA) along Bury New Road. The proposed Travel Hub was also included within the 'with' development scenario. Exceedances of the short-term 1-hour mean objective for NO₂ and 24-hour mean objective for PM₁₀ were considered to be unlikely, based on annual mean concentrations, at any receptors with the development in place.
- 10.107 The impact of road traffic emissions generated by the Proposed Development on existing human receptors was therefore predicted to be Negligible at all receptors in all scenarios. The overall significance of effect was therefore considered to be Not Significant. As such, no mitigation measures were required beyond those that are embedded within the design of the Proposed Development.

Summary of Mitigation and Enhancement Measures***Demolition, Enabling and Construction Phase***

- 10.108 Site-specific mitigation is recommended in the form of a Construction Environmental Management Plan (CEMP) and a Construction Logistics Plan and with the implementation of this mitigation, the residual impacts from construction activities is Not Significant in accordance with IAQM guidance. Both the CEMP and Construction Logistics Plan can be secured by a suitably worded planning condition for each phase of the development.

The Completed and Operational Phase

- 10.109 The overall significance of effect is assessed to be Not Significant. As such, no mitigation measures were required beyond those that are embedded within the design of the Proposed Development.

Conclusion

- 10.110 It is considered that the Proposed Development adheres to policy and guidance and that there would be no significant air quality effects during construction or operation.

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