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The Milne Trust

STAKEHILL DEVELOPMENT

Environmental Statement Volume I Chapter 6 - Air
Quality

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Environmental Statement Volume I Chapter 6 - Air Quality

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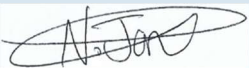
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6 AIR QUALITY

ABBREVIATIONS

AQMA	Air Quality Management Area
APIS	Air Pollution Information System
AQO	Air Quality Objective
ASR	Annual Status Report
AURN	Automatic Urban and Rural Network
CAP	Clean Air Plan
CEMP	Construction Environmental Management Plan
DEFRA	Department for Education, Food and Rural Affairs
DM	Do Minimum
DMP	Dust Management Plan
DS	Do Something
EV	Electric Vehicle
GMCA	Greater Manchester Combined Authority
HRA	Habitats Regulations Assessment
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxides
PfE	Places for Everyone
PM _{2.5}	Particulate matter with an aerodynamic diameter of less than 2.5µm
PM ₁₀	Particulate matter with an aerodynamic diameter of less than 10µm
RBC	Rochdale Borough Council
SAC	Special Area of Conservation

GLOSSARY

Air Quality Limit Value	Legally binding parameters defined in European Union air quality legislation that must not be exceeded. Limit values are set for individual pollutants and are a combination of a concentration value, an averaging time over which it is measured, the number of exceedances allowed per year, and a date by which it must be achieved
Air Quality Management Area	An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives.
Air Quality Objective	The name given to the maximum ambient pollutant concentration that is not to be exceeded either without exception or within a permitted number of exceedances over a specified timescale for a pollutant outlined in the national Air Quality Strategy.
Air Quality Strategy	A national government document which contains standards, objectives and measures for improving ambient air quality.
Annual Average Daily Traffic	The number of traffic movements on a given road in a 24-hour period as an average across one year.
Background Concentration	The pollutant concentration assumed to represent baseline concentrations in the atmosphere across the modelled area.
Heavy Duty Vehicle	Vehicles with a gross weight of greater than 3.5 tonnes.
PM ₁₀	Particulate matter with an aerodynamic diameter of less than 10µm
PM _{2.5}	Particulate matter with an aerodynamic diameter of less than 2.5µm

6.1 INTRODUCTION

- 6.1.1. This chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Development upon local air quality. This chapter has been produced by Redmore Environmental Ltd.
- 6.1.2. The assessment of air quality effects has established that additional mitigation measures are not required. However, a Construction Environmental Management Plan (CEMP) will be produced to control potential air quality effects during the construction phase.
- 6.1.3. The following residual effects have been identified:
- There is likely to be a direct, temporary, short-term **minor adverse** residual effect at local human receptors as a result of fugitive dust and particulate matter with an aerodynamic diameter of less than 10µm (PM₁₀) emissions during the construction phase (**not significant**);
 - There is likely to be a direct, temporary, short-term **negligible to minor adverse** residual effect at local human receptors as a result of road vehicle exhaust emissions during the construction phase (**not significant**);
 - There is likely to be a direct, permanent, long-term **negligible to minor adverse** residual effect at local human receptors as a result of road vehicle exhaust emissions during the operational phase (**not significant**);
 - There is likely to be a **negligible** residual effect at local ecological receptors as a result of road vehicle exhaust emissions during the operational phase (**not significant**); and
 - There is likely to be a **negligible** residual effect at future occupants as a result of road vehicle exhaust emissions during the operational phase (**not significant**).
- 6.1.4. No monitoring requirements have been identified during the undertaking of the assessment
- 6.1.5. No environmental enhancement opportunities have been identified.
- 6.1.6. The remainder of this chapter describes the assessment methodology and the baseline conditions relevant to the assessment, which have been used to reach these conclusions, as well as a summary of the likely significant effects leading to the additional mitigation measures required to avoid, prevent, reduce or, if possible, offset any likely significant adverse effects, and the likely residual effects and any required monitoring after these measures have been employed. Opportunities for environmental enhancement, where such opportunities exist, are also discussed.
- 6.1.7. This chapter (and its associated figures and appendices) is intended to be read as part of the wider ES, and the following appendices:
- Appendix 6.1 - Air Quality - Assessment Input Data; and
 - Appendix 6.2 - Air Quality - Supporting Information.

6.2 CONSULTATION, SCOPE, METHODOLOGY AND SIGNIFICANCE CRITERIA

CONSULTATION UNDERTAKEN TO DATE

- 6.2.1. **Table 6-1** provides a summary of the consultation activities undertaken in support of the preparation of this assessment.

Table 6-1 - Summary of Consultation undertaken

Organisation	Individual	Date and Form of Consultation	Summary of Outcome of Discussions
Rochdale Borough Council (RBC)	Melanie Hale, Head of Planning Services	4 th April 2024, scoping report	Proposed methodology submitted to RBC as part of the Scoping Report. The assessment (presented within this chapter) has been undertaken in accordance with the methodology
RBC	Richard Chapman, Senior Transport Strategy & Project Officer	11 th December 2024, email correspondence	Agreement of intended ES assessment methodology. Recommendations from RBC to assess the impact of the Proposed Development on concentrations of PM ₁₀ and particulate matter with an aerodynamic diameter of less than 2.5µm (PM _{2.5}), as well as consider key ecological impacts and the vicinity of Slattocks Roundabout

SCOPE OF THE ASSESSMENT

- 6.2.2. The scope of this assessment has been established through an ongoing scoping process. Further information can be found in **Chapter 5: Approach to EIA**.
- 6.2.3. This section provides an update to the scope of the assessment and re-iterates the evidence base for scoping out elements following further iterative assessment.

ELEMENTS SCOPED OUT OF THE ASSESSMENT

- 6.2.4. No specific air quality elements were scoped out of the assessment.

ELEMENTS SCOPED INTO THE ASSESSMENT

Construction Phase

- 6.2.5. The following elements are considered to have the potential to give rise to likely significant effects during construction of the Proposed Development and have therefore been considered within this assessment:
- Fugitive dust and increases in PM₁₀ concentrations generated by earthworks, construction and trackout activities; and,
 - Vehicle exhaust emissions associated with vehicles travelling to and from the Site.

Operational Phase

- 6.2.6. The following elements are considered to have the potential to give rise to likely significant effects during operation of the Proposed Development and have therefore been considered within this assessment:
- Vehicle exhaust emissions associated with vehicles travelling to and from the Site; and
 - Potential exposure of future occupants to poor air quality.

EXTENT OF THE STUDY AREA

- 6.2.7. The study area for the assessment of fugitive dust and PM₁₀ emissions during the construction phase of the Proposed Development has been defined using the Institute of Air Quality Management (IAQM) guidance (**Ref. 6.1**). The assessment considered sensitive receptors within 250m from the Site for earthworks and construction activities, and within 50m of the Site access route up to 250m from the Site entrance for trackout.
- 6.2.8. The study area for the assessment of road vehicle exhaust emissions during the construction and operational phases was within 200m of roads with associated sensitive receptor locations where there was a predicted change in traffic flow as a result of the Proposed Development. The IAQM guidance (**Ref. 6.2**) was utilised to identify road links where the change in traffic flow had the potential to result in significant effects. The relevant roads considered as part of the assessment are shown in **Figure 6-1**.
- 6.2.9. The study area encompasses RBC and borders Oldham Council.

6.3 METHOD OF BASELINE DATA COLLATION

DESK STUDY

- 6.3.1. The scope of the assessment has been determined through completion of the following tasks:
- A review of predicted background concentrations within the vicinity of the Proposed Development produced by the Department for Education, Food and Rural Affairs (DEFRA);
 - A desk study of satellite imagery to confirm the location of existing sensitive receptors that may be sensitive to changes in air quality as a result of the Proposed Development;
 - A review of the Greater Manchester Combined Authority (GMCA) 2023 Air Quality Annual Status Report (ASR) (**Ref. 6.3**) to determine monitoring data within the vicinity of the Proposed Development and Air Quality Management Areas (AQMAs); and
 - A review of baseline and future opening year (without and with the Proposed Development) traffic data, as provided by the Project Transport Consultants.

SURVEYS

- 6.3.2. For the purpose of this assessment, no site visits or surveys were required as sufficient information was available from the previously identified sources to describe the baseline environment.

ASSESSMENT METHODOLOGY

- 6.3.3. The Proposed Development has the potential to cause air quality effects during the construction and operational phases. These were assessed in accordance with the following methodology.

Construction Phase

Fugitive Dust and PM₁₀ Emissions

- 6.3.4. 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 document 'Guidance on the Assessment of Dust from Demolition and Construction V2.2' (**Ref. 6.1**).
- 6.3.5. Activities to be undertaken as part of the Proposed Development have been divided into three types of reflect their different potential impacts. These are:
- Earthworks;
 - Construction; and
 - Trackout.
- 6.3.6. 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.
- 6.3.7. The first stage screens the requirement for a more detailed assessment. Should human receptors be identified within 250m from the Site boundary or 50m from the construction vehicle route up to 250m from the Site entrance, then the assessment proceeds to the next step. Additionally, should ecological receptors be identified within 50m of the Site or the construction vehicle route up to 250m from the Site entrance, then the assessment also proceeds to the next stage.
- 6.3.8. The second stage of the assessment screens the risk of potential dust impacts. The risk category was defined based on two factors:
- The scale and nature of the works, which determines the magnitude of dust arising as small, medium or large; and
 - The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity.
- 6.3.9. The two factors are combined in order to determine the impact risk without mitigation applied.
- 6.3.10. The influencing factors that define the sensitivity of specific receptors are shown in **Table 6-2**.

Table 6-2 - Construction Dust - Sensitivities of People and Ecological Receptors

Receptor Sensitivity	Example	
	Human Receptors	Ecological Receptors
High	Users expect 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 Air Quality Objective (AQO) for PM ₁₀ 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, farmland, short term car parks and roads	Locally designated site e.g. Local Nature Reserve

6.3.11. The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in **Table 6-3**.

Table 6-3 - Construction Dust - Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		Less than 20	Less than 50	Less than 100	Less than 250
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

6.3.12. **Table 6-4** below outlines the criteria for determining the sensitivity of the area to human health impacts.

Table 6-4 - Construction Dust - Sensitivity of the Area to Human Health Impacts

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

Receptor Sensitivity	Background Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from the Source (m)			
			Less than 20	Less than 50	Less than 100	Less than 250
		1 - 10	Low	Low	Low	Low
Low	-	Greater than 1	Low	Low	Low	Low

6.3.13. **Table 6-5** outlines the criteria for determining the sensitivity of the area to ecological impacts.

Table 6-5 - Construction Dust - Sensitivity of the Area to Ecological Impacts

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

6.3.14. The scale and nature of the construction works determined the magnitude of dust impacts arising from each activity. The relevant criteria are summarised in **Table 6-6**.

Table 6-6 - Construction Dust - Magnitude of Emission

Magnitude	Activity	Criteria
Large	Earthworks	Total site area more than 110,000m ² Potentially dusty soil type (e.g. clay) More than 10 heavy earth moving vehicles active at any one time Formation of bunds greater than 6m in height
	Construction	Total building volume more than 75,000m ³ On site concrete batching, sand blasting
	Trackout	More than 50 Heavy Duty Vehicles (HDV) movements per day Potentially dusty surface material (e.g. high clay content) Unpaved road length more than 100m
Medium	Earthworks	Total site area between 18,000m ² and 110,000m ² Moderately dusty soil type (e.g. silt) Between 5 and 10 heavy earth moving vehicles active at any one time Formation of bunds between 3m and 6m in height
	Construction	Total building volume between 12,000m ³ and 75,000m ³ Potentially dusty construction material (e.g. concrete)

Magnitude	Activity	Criteria
	Trackout	Between 20 and 50 HDV movements per day Moderately dusty surface material (e.g. high clay content) Unpaved road length between 50m and 100m
Low	Earthworks	Total site area less than 18,000m ² 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 3m in height
	Construction	Total building volume less than 12,000m ³ Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	Less than 20 HDV movements per day Surface material with low potential for dust release Unpaved road length less than 50m

- 6.3.15. The dust emission magnitude and the sensitivity of the area were combined to determine the significance of the unmitigated effects.
- 6.3.16. **Table 6-7** combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts.

Table 6-7 - Construction Dust - Dust Risk Category from Earthworks, Construction and Trackout

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

- 6.3.17. It should be noted that predicted effects from construction phase fugitive emissions are considered to be adverse but temporary in nature.
- 6.3.18. Based on the dust risk category, Site-specific mitigation measures were identified from the IAQM guidance (**Ref. 6.1**) in order to reduce potential dust effects. The residual effect was subsequently defined based on the methodology outlined below.

Road Vehicle Exhaust Emissions

- 6.3.19. The Proposed Development has the potential to affect air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the Site during the construction phase. These have been assessed qualitatively using the findings of the operational phase road vehicle exhaust emissions assessment.

Operational Phase

Road Vehicle Exhaust Emissions

Human Receptors

- 6.3.20. The Proposed Development has the potential to impact on existing air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the Site during the operational phase. Potential effects were defined by predicting pollutant levels at sensitive human receptor locations using dispersion modelling for the following scenarios:
- 2023 - Model Verification (comparison of predicted and measured pollutant concentrations allowing a verification factor to be made to adjust results accordingly);
 - Opening year Do-Minimum (DM) (predicted flows in 2040 should the Proposed Development not proceed); and
 - Opening year Do-Something (DS) (predicted flows in 2040 should the Proposed Development be completed).
- 6.3.21. The DM scenario (i.e. without the Proposed Development) included baseline traffic data, inclusive of anticipated growth and committed developments for 2040. The DS scenario (i.e. with the Proposed Development) included baseline traffic data, inclusive of anticipated growth and committed developments for 2040, in addition to predicted vehicle trips associated with the Proposed Development.
- 6.3.22. Reference should be made to **Appendix 6.6** for a description of the dispersion modelling inputs.
- 6.3.23. The sensitivity of receptor and magnitude of impact was combined to determine the effect significance. This is explained in the Significance Criteria Section.

Ecological Receptors

- 6.3.24. The Proposed Development has the potential to impact on existing air quality at ecological receptors as a result of road traffic exhaust emissions associated with vehicles travelling to and from the Site during the operational phase. These were assessed in accordance with 'Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations', which describes how competent authorities and others will assess plans and projects likely to generate road traffic emissions and subsequently affect international ecological designations. This provides a staged assessment methodology to provide consideration of potential air quality impacts from a development both alone and cumulatively with other developments.

6.3.25. The approach is summarised as follows. Please note that this has been adapted to align with the requirements under the EIA Regulations:

- Stage 1a - Undertake a baseline study to determine the location of any ecological designations within 200m of a road link subject to changes in traffic flows as a result of the Proposed Development alone. If there are any features within the relevant distance that are considered sensitive to changes in air quality then the assessment should proceed to Stage 1b;
- Stage 1b - Determine the predicted change in Annual Average Daily Traffic (AADT) flow on road links situated within the relevant distance of sensitive ecological receptors as a result of the Proposed Development alone. If the AADT flow change is above 1,000 then there is a risk of a significant effect on air quality and further assessment is required. If the change in AADT is below 1,000 then the assessment should proceed to Stage 2; and
- Stage 2 - If the change in AADT is below 1,000 then there is a risk of an appreciable effect on air quality, but it is unlikely to be significant for the Proposed Development alone. As such, screening for cumulative effects should be undertaken. This requires the predicted change in AADT flow on road links within the vicinity of the sensitive ecological receptors as a result of the Proposed Development and any other relevant committed development. If this is below 1,000 then it can be concluded that air quality impacts are not significant. If the threshold is exceeded the further assessment is required.

6.3.26. Should the change in vehicle movements exceed the screening criteria outlined above, a Stage 2: Appropriate Assessment is required in accordance with the Habitats Regulations Assessments: Protecting a European Site. This should consider in greater details whether the air quality impact would contribute to a likely significant effect at the relevant ecological designation.

6.3.27. Dispersion modelling was undertaken by Ricardo Energy & Environment as part of the Air Quality Habitats and Regulations Assessment (**Ref. 6.4**) conducted to support the Habitats and Regulations Assessment (HRA for the Places for Everyone (PfE) Plan. This quantified changes in pollutant concentrations at relevant ecological designations as a result of road vehicle exhaust emissions associated with traffic generated by sites allocated within the PfE Plan. This includes the Proposed Development. The Natural England (**Ref. 6.5**) and IAQM guidance (**Ref. 6.6**) documents state that for individual planning applications, where European designations are a consideration, it is acceptable to adopt the assessment, reasoning, and conclusions of the Local Plan HRA that considers said application. As such, the conclusions of the PfE Plan HRA were considered when determining the potential for air quality impacts on the relevant sensitive ecological receptors as a result of the Proposed Development.

Potential Future Exposure

6.3.28. The Proposed Development has the potential to expose future residents to poor air quality. Pollutant concentrations were therefore quantified across the Site using dispersion modelling. The results were subsequently compared with the relevant Air Quality Objectives (AQOs) and Concentration Target to determine the potential for exceedance. Reference should be made to **Appendix 6.1** for a full description of the assessment input data.

Significance Criteria

- 6.3.29. The significance level attributed to each effect has been assessed based on the sensitivity/value of the affected receptor(s) and the magnitude of change arising from the Proposed Development, as well as a number of other factors that are outlined in more detail in **Chapter 5: Approach to EIA**. In general, the sensitivity of the affected receptor is assessed on a scale of high, medium, low and negligible, and the magnitude of change is assessed on a scale of large, medium, small, negligible and no change, as set out in **Chapter 5: Approach to EIA**. It should be noted that these descriptors and classifications have been amended as required to align with the requirements of relevant IAQM guidance.

Operational Phase

Road Vehicle Exhaust Emissions

- 6.3.30. Receptors sensitive to potential changes in off-site pollutant concentrations were identified within 200m of the highway network in accordance with the guidance provided within the Design Manual for Roads and Bridges (DMRB) (**Ref. 6.7**) on the likely limits of pollutant dispersion from road sources. The criteria provided within DEFRA guidance (**Ref 6.8**) on where the AQOs apply was utilised to determine worst-case receptor positions in the vicinity of links likely to be affected by changes in traffic flows as a result of the Proposed Development.
- 6.3.31. The magnitude of predicted air quality impacts was calculated based on the predicted concentration change between the DM and DS scenarios as a proportion of the AQO or Concentration Target. This is outlined in **Table 6-8**.

Table 6-8 - Road Vehicle Exhaust Emissions - Receptor Sensitivity

Receptor Sensitivity	Pollutant Concentration at Receptor in Assessment Year
Very High	110% or more of AQO/Concentration Target
High	103 - 109% of AQO/Concentration Target
Medium	95 - 102% of AQO/Concentration Target
Low	76 - 94% of AQO/Concentration Target
Very Low	75% or less of AQO/Concentration Target

- 6.3.32. The magnitude of predicted air quality impacts was calculated based on the predicted concentration change between the DM and DS scenarios as a proportion of the AQO or Concentration Target. This is outlined in **Table 6-9**.

Table 6-9 - Road Vehicle Exhaust Emissions - Magnitude of Impact

Predicted Concentration Change as a Proportion of AQO and Concentration Target (%)	Magnitude of Impact
0	Negligible
1	Small

Predicted Concentration Change as a Proportion of AQO and Concentration Target (%)	Magnitude of Impact
2 - 5	Medium
6 - 10	Large
More than 10	Very Large

6.3.33. It should be noted that the categories shown in **Table 6-9** are intended to be used by rounding the change in percentage pollutant concentration to whole numbers.

Effect Significance

Construction Phase

Fugitive Dust and PM₁₀

6.3.34. Site-specific mitigation measures were identified from the IAQM guidance (**Ref. 6.1**) to reduce potential dust impacts based upon the predicted impact risk. The IAQM guidance indicates industry standard procedures are usually effective in minimising dust emissions during construction, hence the residual effect will normally be **negligible**. This is regarded as **not significant** with respect to the Town and Country Planning (Environmental Impact Assessment) Regulations (UK Government, 2017) (**Ref. 6.9**).

Road Vehicle Exhaust Emissions

6.3.35. The assessment of effects associated with construction phase road vehicle exhaust emissions was based on the operational phase results, as outlined below.

Operational Phase

Road Vehicle Exhaust Emissions - Human Receptors

6.3.36. The significance of operational phase road vehicle exhaust emissions effects was determined through the interaction between the magnitude of impact and sensitivity of the receptor, as outlined in **Table 6-10**.

Table 6-10 - Road Vehicle Exhaust Emissions - Effect Significance

Magnitude	Sensitivity				
	Very High	High	Medium	Low	Very Low
Very Large	Major	Major	Major	Moderate	Moderate
Large	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Small	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

6.3.37. The following terms have been used to define the significance of the effects identified and apply to both beneficial and adverse effects:

- **Major effect:** where the Proposed Development could be expected to have a substantial improvement or deterioration on receptors;
- **Moderate effect:** where the Proposed Development could be expected to have a noticeable improvement or deterioration on receptors;
- **Minor effect:** where the Proposed Development could be expected to result in a perceptible improvement or deterioration on receptors; and
- **Negligible:** where no discernible improvement or deterioration is expected as a result of the Proposed Development on receptors, including instances where no change is confirmed.

6.3.38. As set out in **Chapter 5: Approach to EIA**, effects that are classified as **moderate or above** are considered to be **significant**. Effects classified as below **moderate** are considered to be **not significant**.

Road Vehicle Exhaust Emissions - Ecological Receptors

6.3.39. The significance of predicted air quality impacts was determined in accordance with the guidance provided within IAQM 'A guide to the assessment of air quality impacts on designated nature conservation sites' (**Ref. 6.6**) and within Natural England (2018) guidance (**Ref. 6.5**).

Potential Future Exposure

6.3.40. In relation to potential exposure of future occupants to poor air quality, should the AQOs or Concentration Target be exceeded at locations of relevant exposure, then the IAQM guidance (**Ref. 6.2**) considers air quality to be **significant** and mitigation is required. Should compliance with the AQOs and Concentration Target be indicated then effects would be considered **not significant** with respect to the Town and Country Planning (Environmental Impact Assessment) Regulations (2017) (**Ref. 6.9**).

6.4 LEGISLATIVE FRAMEWORK, POLICY AND GUIDANCE

LEGISLATIVE FRAMEWORK

6.4.1. The applicable legislative framework is summarised as follows, refer to full details in **Appendix 6.2**.

- Air Quality Standards Regulations (Amendments) 2016 (**Ref. 6.10**);
- Air Quality Strategy 2023 (**Ref. 6.11**);
- The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (**Ref. 6.12**);
- The Environment Act 1995 (**Ref. 6.13**);
- Environmental Improvement Plan 2023 (**Ref. 6.14**);
- Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (**Ref. 6.15**); and
- The Environment Protection Act 1990 (**Ref. 6.16**).

POLICY

6.4.2. The applicable policy framework is summarised as follows:

- National Planning Policy Framework (NPPF) 2024, Chapter 15 (**Ref. 6.17**);
- Clean Air Strategy 2019 (**Ref. 6.18**);

- Places for Everyone Plan 2024, Policy JP:S5 and Policy JP-P1 (**Ref. 6.19**); and
- Rochdale Local Plan 2016, Core Strategy 2016 - 2028, Policy G9, Policy DM1, Policy DM2 and Policy C6 (**Ref. 6.20**).

6.4.3. In addition, this chapter has been prepared in accordance with the Government's National Planning Practice Guidance (**Ref. 6.21**).

GUIDANCE

6.4.4. The following guidance documents have been used during the preparation of this chapter:

- DEFRA The Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2011 (**Ref. 6.22**);
- DEFRA Local Air Quality Management Technical Guidance TG22 (**Ref. 6.8**);
- IAQM Land-use Planning & Development Control: Planning for Air Quality 2017 (**Ref. 6.2**);
- Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations 2018 (**Ref. 6.5**);
- IAQM Guidance on the Assessment of Dust from Demolition and Construction (2024) (**Ref. 6.1**);
- Greater Manchester Clean Air Plan (CAP) 2022 (**Ref. 6.23**);
- IAQM A guide to the assessment of air quality impacts on designated nature conservation sites (**Ref. 6.6**); and
- Design Manual for Roads and Bridges (DMRB) 2024 (**Ref. 6.7**).

6.5 BASELINE CONDITIONS

6.5.1. Existing air quality conditions in the vicinity of the Proposed Development were identified in order to provide a baseline for the assessment. These are detailed in the following sections.

LOCAL AIR QUALITY MANAGEMENT

6.5.2. A review of the latest Local Air Quality Management (LAQM) review and assessment report published by RBC (**Ref. 6.3**) confirmed that there are a number of roads within Rochdale that have been included within the GMCA AQMA due to exceedances of annual mean NO₂ concentrations across the borough.

6.5.3. The Proposed Development is located approximately 5m to the west of the Rochdale AQMA. As such, there is the potential for vehicles travelling to and from the Site to increase pollution levels in this sensitive area, as well as exposure future residents to existing poor air quality. This has been considered throughout the assessment. Reference should be made to **Appendix 6.2** for further information.

LOCAL AIR QUALITY MONITORING

6.5.4. RBC has undertaken monitoring of NO₂ concentrations throughout their area of jurisdiction. Data has also been collected by the GMCA to inform the CAP.

6.5.5. Recent annual mean NO₂ concentrations recorded within the vicinity of the Proposed Development were below the AQO of 40µg/m³ at all monitors between 2020 to 2023. Reference should be made to **Appendix 6.2** for the monitoring results and **Figure 6-2** for a map of the survey positions.

6.5.6. RBC do not undertake monitoring of PM₁₀ or PM_{2.5} concentrations within the vicinity of the Site.

BACKGROUND POLLUTANT CONCENTRATIONS

- 6.5.7. Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK to assist local authorities in their Review and Assessment of air quality. The Proposed Development Site is located across three grid squares. Predicted background concentrations for these locations are below the relevant AQOs, Interim Target and Concentration Target.
- 6.5.8. Reference should be made to **Appendix 6.2** for the background concentrations.

FUTURE BASELINE

- 6.5.9. It is currently predicted that air quality will improve in future years. The DEFRA 'Air Pollution in the UK 2020 (Ref. 1.24) report published in September 2021 indicates that ambient concentrations of NO₂, as measured by the Automatic Urban and Rural Network (AURN), have demonstrated a downward trend since the AURNs inception in 1992. In addition, in January 2019 the UK Government launched the Clean Air Strategy which included a commitment to end the sale of new diesel and petrol cars and vans by the end of 2030. This will continue to aid the reduction of road vehicle exhaust emissions from combustion engines, including nitrogen oxides (NO_x) and PM₁₀.
- 6.5.10. Notwithstanding the above, it was assumed that air quality conditions will not change throughout the construction stage of the Proposed Development as a worst-case.
- 6.5.11. In order to provide a future baseline for assessment of potential operational stage air quality impacts, predicted 2040 annual mean NO₂, PM₁₀ and PM_{2.5} background concentrations were taken from the DEFRA mapping study (Ref.6.25) for the grid squares containing the Site. These are summarised in **Appendix 6.2**.

6.6 SENSITIVE RECEPTORS

- 6.6.1. A sensitive receptor is defined as any location which may be affected by changes in air quality as a result of a development. The following sensitive receptors have been assessed during the construction and operational phase.

CONSTRUCTION PHASE

- 6.6.2. Receptors sensitive to potential dust impacts during earthworks and construction were identified from a desk-top study of the area up to 250m from the Site boundary. These are summarised in **Table 6-11**.

Table 6-11 - Construction Dust Sensitive Receptors - Earthworks and Construction

Distance from Site Boundary (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Up to 20	More than 100	0
Up to 50	More than 100	0
Up to 100	More than 100	-
Up to 250	More than 100	-

- 6.6.3. Receptors sensitive to potential dust impacts from trackout were identified from a desk-top study of the area up to 50m from the road network within 250m of the site access. These are summarised in **Table 6-12**.

Table 6-12 - Construction Dust Sensitive Receptors - Trackout

Distance from Site Access Route (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Up to 20	10 - 100	0
Up to 50	More than 100	0

- 6.6.4. Dust sensitive receptors within 250m of the Site include places of work and residential dwellings. These are considered to be of medium and high sensitivity, respectively. It should be noted that there are only 10 to 100 high sensitivity receptors present within 20m of the boundary.
- 6.6.5. There are no ecological receptors within 50m of the Site boundary or the access route within 250m of the site entrance. As such, impacts on ecological receptors as a result of fugitive dust emissions during construction have not been considered further.
- 6.6.6. The sensitivity of the receiving environment to dust soiling and human health impacts has been derived from **Table 6-3**, **Table 6-4** and **Table 6-5**, respectively. These are shown in **Table 6-13**.

Table 6-13 - Construction Dust - Sensitivity of the Surrounding Area to Specific Dust Impacts

Potential Impact	Sensitivity of the Surrounding Area		
	Earthworks	Construction	Trackout
Dust Soiling	High	High	High
Human Health	Low	Low	Low

OPERATIONAL PHASE

Human Receptors

- 6.6.7. Locations sensitive to potential operational phase road vehicle exhaust emission impacts were identified from a desk-top study and are summarised in **Table 6-14**. It should be noted that these include locations within the Rochdale AQMA. Receptor heights were selected based on the location of residential units to allow for less sensitive land uses, such as retail at ground level.

Table 6-14 - Operational Phase - Vehicle Exhaust Emissions Sensitive Receptors

Receptor		NGR (m)		Height (m)
		X	Y	
R1	Residential - A664 Manchester Road	388515.71	409857.97	1.5
R2	Residential - A664 Manchester Road	388499.20	409935.95	1.5

Receptor		NGR (m)		Height (m)
		X	Y	
R3	St Gabriels RC Primary School	388532.94	410167.90	1.5
R4	Meadow View Residential Home	388475.83	409745.66	1.5
R5	Residential - A664 Manchester Road	388415.15	410318.02	1.5
R6	Residential - A664 Manchester Road	388492.65	409093.45	1.5
R7	Residential - Lowry Way	389980.30	410304.39	1.5
R8	Residential - Thornfields Farm	389381.41	409429.05	1.5
R9	Residential - A664 Manchester Road	388501.95	408423.59	1.5
R10	Residential - Bentley Avenue	388611.47	408375.93	1.5
R11	Residential - Bentley Avenue	389074.93	408349.48	1.5
R12	Residential - Bentley Avenue	389372.36	408088.36	1.5
R13	Residential - Whitegates Road	388289.26	408090.33	1.5
R14	Hopwood Hall College	387977.81	407917.54	1.5
R15	Residential - Rochdale Road	388119.00	407822.88	1.5
R16	Cardinal Langley Roman Catholic High School	387982.32	407585.66	1.5
R17	Care Mount Care Home	387853.48	407463.61	1.5
R18	Residential - Rochdale Road	387173.63	406814.69	1.5
R19	Middleton Parish C of E Primary School	386942.05	406597.96	1.5
R20	Residential - Rochdale Road	387108.53	406624.04	1.5
R21	Residential - Long Street	387083.99	406219.26	1.5
R22	Residential - Long Street	387074.85	406141.58	4.5
R23	Residential - Cinderhill Farm	389911.58	407620.06	1.5
R24	Residential - Woodside Farm	390100.88	407356.47	1.5
R25	St Johns CE Thornham Primary School	389164.08	408913.02	1.5
R26	Residential - Ruskin Road	389438.51	410629.40	1.5

6.6.8. All key sensitive receptor locations in relation to air quality are shown on **Figure 6-3**.

Ecological Receptors

- 6.6.9. One ecological receptor sensitive to potential operational phase road vehicle exhaust emission impacts was identified from a desk-top study. This is the Rochdale Canal Special Area of Conservation (SAC) which is located within 10m of a road link subject to changes in traffic flow as a result of the Proposed Development.
- 6.6.10. Reference should be made to **Figure 6-3** for the receptor location.

6.7 ASSESSMENT OF POTENTIAL EFFECTS, MITIGATION AND RESIDUAL EFFECTS

CONSTRUCTION PHASE - FUGITIVE DUST AND PM₁₀ EMISSIONS

Assessment of Potential Effects

- 6.7.1. Activities such as excavation, ground works, cutting, construction, concrete batching and storage of materials have the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements both on-Site and on the local road network also have the potential to result in the re-suspension of dust from haul roads and highway surfaces.
- 6.7.2. The potential for effects at sensitive locations depends significantly on local meteorology during the undertaking of dust generating activities, with the most significant effects likely to occur during dry and windy conditions.
- 6.7.3. The desk-top study undertaken to inform the baseline identified a number of sensitive receptors within 250m of the Site boundary. As such, a detailed assessment of potential dust effects has been undertaken.

Earthworks

- 6.7.4. Earthworks will primarily involve excavating material, haulage, tipping and stockpiling, as well as Site levelling and landscaping. The area of the Site is more than 110,000m². In accordance with the criteria outlined in **Table 6-6**, the magnitude of potential dust emissions from earthworks is therefore **large**.
- 6.7.5. As indicated in **Table 6-13**, the sensitivity of the study area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in **Table 6-7**, the Proposed Development is considered to be a **high** risk site for dust soiling as a result of earthworks.
- 6.7.6. As indicated in **Table 6-13**, the sensitivity of the study area to human health impacts **low**. In accordance with the criteria outlined in **Table 6-7**, the Proposed Development is considered to be a **low** risk site for human health receptors as a result of earthworks.

Construction

- 6.7.7. Due to the size of the Proposed Development, the total building volume is likely to be greater than 75,000m³. In accordance with the criteria outlined in **Table 6-6**, the magnitude of potential dust emissions from construction is therefore **large**.
- 6.7.8. As indicated in **Table 6-13**, the sensitivity of the study area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in **Table 6-7**, the Proposed Development is considered to be a **high** risk site for dust soiling as a result of construction activities.

- 6.7.9. As indicated in **Table 6-13**, the sensitivity of the study area to human health impacts **low**. In accordance with the criteria outlined in **Table 6-7** the Proposed Development is considered to be a **low** risk site for human health receptors as a result of construction activities.

Trackout

- 6.7.10. Based on the site area, it is anticipated that the unpaved road length may be greater than 100m during certain stages of construction. In accordance with the criteria outlined in **Table 6-6** the magnitude of potential dust emissions from trackout is therefore **large**.
- 6.7.11. As indicated in **Table 6-13**, the sensitivity of the study area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in **Table 6-7**, the Proposed Development is considered to be a **high** risk site for dust soiling as a result of trackout activities.
- 6.7.12. As indicated in **Table 6-13** the sensitivity of the study area to human health impacts **low**. In accordance with the criteria outlined in **Table 6-7**, the Proposed Development is considered to be a **low** risk site for human health receptors as a result of trackout activities.

Mitigation

- 6.7.13. Due to the size and nature of the Proposed Development, a CEMP will be produced to control potential air quality effects during the construction phase. This will include the measures outlined in **Table 6-15** to mitigate fugitive dust emissions during construction. These are based on the advice provided within the IAQM guidance and are therefore considered suitable for the Site.

Table 6-15 - Fugitive Construction Dust Emission Mitigation Measures

Issue	Control Measure
Communications	Develop and implement a stakeholder communications plan that includes community engagement before work commences on Site Display the name and contact details of person(s) accountable for air quality and dust issues on the Site boundary Display the head or regional office contact information Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by RBC
Site Management	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken Make the complaints log available to RBC when requested Record any exceptional incidents that cause dust and / or air emissions, either on- or off-Site, and the action taken to resolve the situation in the log book
Monitoring	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked Carry out regular site inspections, record inspection results, and make an inspection log available to the local authority upon request Increase the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions
Site preparation	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible

Issue	Control Measure
	Erect solid screens or barriers around dusty activities or the site Fully enclose site or specific operations where there is a high potential for dust production, and they are active for an extensive period Avoid site runoff of water or mud Keep site fencing, barriers and scaffolding clean using wet methods Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used Cover, seed or fence stockpiles to prevent wind whipping
Operating vehicle/machinery and sustainable travel	Ensure all vehicles switch off engines when stationary - no idling vehicles Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable Impose and signpost a maximum speed limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques Ensure an adequate water supply on the site for effective dust suppression, using non-potable water where possible and appropriate Use enclosed chutes and conveyors and covered skips Minimise drop heights and use fine water sprays wherever appropriate Ensure equipment is available to clean any dry spillages, and clean up spillages as soon as reasonably practicable using wet cleaning methods
Waste management	Avoid bonfires or burning of waste materials
Earthworks	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable Only remove the cover in small areas during work and not all at once
Construction	Avoid scabbling (roughening of concrete surfaces) if possible Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust
Trackout	Use water-assisted dust sweeper on access and local roads, if required Avoid dry sweeping of large areas Ensure vehicles entering and leaving site are covered to prevent escape of materials Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable Record all inspections of haul routes and any subsequent action in a site log book

Issue	Control Measure
	Implement a wheel washing system, if required Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exist, wherever size and layout permits Access gates to be located at least 10m from receptors where possible

Residual Effects

- 6.7.14. Assuming the relevant mitigation measures outlined in **Table 6-15** are implemented, the residual effects from all dust generating activities is predicted to be **not significant**, in accordance with the IAQM guidance (**Ref.6.1**)

Summary

- 6.7.15. A summary of the potential air quality impacts as a result of fugitive dust and PM₁₀ emissions during the construction phase are summarised in **Table 6-16**.

Table 6-16 - Assessment of Potential Effects, Additional Mitigation, Residual Effects and Monitoring During the Construction Phase - Fugitive Dust and PM₁₀

Sensitive Receptor	Local Residents
Potential effects	During the construction phase there is the potential for air quality impacts on local residents as a result of fugitive dust and increases in PM₁₀ emissions from the Proposed Development. The sensitivity of local residents is high, and the potential risk of dust soiling and human health impacts is high and low, respectively, as a result of earthworks, construction and trackout activities. Therefore, there is likely to be a direct, temporary short-term impact on local residents
Additional mitigation	Due to the size and nature of the Proposed Development, a CEMP will be produced to control potential air quality effects during the construction phase. This will include the measures outlined in Table 6-15 to mitigate fugitive dust emissions during construction. These are based on the advice provided within the IAQM guidance (Ref. 1.1) and are therefore considered suitable for the Site
Residual effects and monitoring	Assuming the relevant mitigation measures outlined in Table 6-15 are implemented, the residual impacts from all dust generating activities is predicted to be not significant, in accordance with the IAQM guidance (Ref. 1.1) and there is no requirement for monitoring

CONSTRUCTION PHASE - ROAD VEHICLE EXHAUST EMISSIONS

Assessment of Potential Effects

- 6.7.16. At the time of reporting the number of vehicle trips likely to be generated by the Proposed Development during the construction phase was unknown. However, it is likely that it will be lower than the operational phase due to the scale and nature of the Proposed Development. As such, the results of the operational phase assessment, as outlined below, have been used to represent impacts during construction as a worst-case.

- 6.7.17. As outlined in the section below, effects on annual mean NO₂, PM₁₀ and PM_{2.5} concentrations at sensitive locations were predicted to range between **negligible** and **minor adverse (not significant)** as a result of road vehicle exhaust emissions during the operational phase.

Mitigation

- 6.7.18. Air quality effects as a result of construction phase road vehicle exhaust emissions were predicted to be **not significant**. As such, additional mitigation measures were not considered necessary.

Residual Effects

- 6.7.19. Residual air quality effects as a result of construction phase road vehicle exhaust emissions were predicted to be **not significant**.

Summary

- 6.7.20. A summary of the potential air quality impacts as a result of road vehicle exhaust emissions during the construction phase are summarised in **Table 6-17**.

Table 6-17 - Assessment of Potential Effects, Additional Mitigation, Residual Effects and Monitoring During the Construction Phase - Road Vehicle Exhaust Emissions

Sensitive Receptor	Local Residents
Potential effects	During the construction phase there is the potential for air quality impacts at sensitive receptors as a result of road vehicle exhaust emissions from the Proposed Development The sensitivity of receptors is very low to medium, and the magnitude of change is negligible to medium. Therefore, there is likely to be a direct, temporary, short-term negligible to minor adverse effect (not significant)
Additional mitigation	Air quality effects as a result of construction phase road vehicle exhaust emissions were predicted to be not significant . As such, additional mitigation measures were not considered necessary
Residual effects and monitoring	Residual air quality effects as a result of construction phase road vehicle exhaust emissions were predicted to be not significant . As such, there is no requirement for monitoring

OPERATIONAL PHASE - ROAD VEHICLE EXHAUST EMISSIONS - HUMAN RECEPTORS

Assessment of Potential Effects

- 6.7.21. Vehicle movements associated with the operation of the Proposed Development will generate exhaust emissions on the local and regional road networks. An assessment was therefore undertaken using dispersion modelling in order to quantify potential changes in pollutant concentrations at sensitive locations in the vicinity of the Site.
- 6.7.22. Reference should be made to **Appendix 6.1** for assessment inputs.

Predicted Concentrations

- 6.7.23. Annual mean NO₂ concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. The results are summarised in **Table 6-18**.

Table 6-18 - Operational Phase Road Vehicle Exhaust Emissions - Predicted Annual Mean NO₂ Concentrations

Receptor		Annual Mean NO ₂ Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - A664 Manchester Road	34.18	34.70	0.52
R2	Residential - A664 Manchester Road	37.11	37.58	0.47
R3	St Gabriels RC Primary School	20.09	20.21	0.12
R4	Meadow View Residential Home	20.93	21.11	0.18
R5	Residential - A664 Manchester Road	25.90	26.46	0.56
R6	Residential - A664 Manchester Road	22.33	22.75	0.42
R7	Residential - Lowry Way	22.45	22.46	0.01
R8	Residential - Thornfields Farm	19.91	19.94	0.03
R9	Residential - A664 Manchester Road	35.06	36.34	1.28
R10	Residential - Bentley Avenue	27.85	28.51	0.66
R11	Residential - Bentley Avenue	21.26	21.72	0.46
R12	Residential - Bentley Avenue	16.64	16.66	0.02
R13	Residential - Whitegates Road	18.68	19.03	0.35
R14	Hopwood Hall College	16.94	17.14	0.20
R15	Residential - Rochdale Road	19.79	20.29	0.50
R16	Cardinal Langley Roman Catholic High School	18.12	18.54	0.42
R17	Care Mount Care Home	19.79	20.44	0.65
R18	Residential - Rochdale Road	23.68	25.12	1.44
R19	Middleton Parish C of E Primary School	15.90	16.02	0.12
R20	Residential - Rochdale Road	20.03	20.59	0.56
R21	Residential - Long Street	17.72	18.04	0.32
R22	Residential - Long Street	24.94	26.02	1.08

Receptor		Annual Mean NO ₂ Concentration (µg/m ³)		
		DM	DS	Change
R23	Residential - Cinderhill Farm	22.38	22.39	0.01
R24	Residential - Woodside Farm	23.53	23.53	0.00
R25	St Johns CE Thornham Primary School	18.38	18.42	0.04
R26	Residential - Ruskin Road	20.55	20.57	0.02

6.7.24. As shown in **Table 6-18**, predicted annual mean NO₂ concentrations were below the relevant AQO at all sensitive receptors in both the DM and DS scenarios.

6.7.25. Annual mean PM₁₀ concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. The results are summarised in **Table 6-19**.

Table 6-19 - Operational Phase Road Vehicle Exhaust Emissions - Predicted Annual Mean PM₁₀ Concentrations

Receptor		Annual Mean PM ₁₀ Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - A664 Manchester Road	17.55	17.76	0.21
R2	Residential - A664 Manchester Road	18.03	18.23	0.20
R3	St Gabriels RC Primary School	13.41	13.45	0.04
R4	Meadow View Residential Home	13.73	13.78	0.05
R5	Residential - A664 Manchester Road	15.91	16.10	0.19
R6	Residential - A664 Manchester Road	14.74	14.87	0.13
R7	Residential - Lowry Way	13.63	13.63	0.01
R8	Residential - Thornfields Farm	13.15	13.16	0.01
R9	Residential - A664 Manchester Road	18.21	18.47	0.26
R10	Residential - Bentley Avenue	15.74	15.91	0.17
R11	Residential - Bentley Avenue	14.27	14.43	0.16
R12	Residential - Bentley Avenue	12.60	12.61	0.01
R13	Residential - Whitegates Road	13.51	13.61	0.10

Receptor		Annual Mean PM ₁₀ Concentration (µg/m ³)		
		DM	DS	Change
R14	Hopwood Hall College	12.93	12.98	0.05
R15	Residential - Rochdale Road	13.96	14.11	0.15
R16	Cardinal Langley Roman Catholic High School	13.30	13.39	0.09
R17	Care Mount Care Home	13.85	13.99	0.14
R18	Residential - Rochdale Road	14.86	15.11	0.25
R19	Middleton Parish C of E Primary School	12.64	12.67	0.03
R20	Residential - Rochdale Road	14.10	14.27	0.17
R21	Residential - Long Street	13.26	13.35	0.09
R22	Residential - Long Street	15.91	16.25	0.34
R23	Residential - Cinderhill Farm	13.36	13.39	0.04
R24	Residential - Woodside Farm	13.52	13.56	0.04
R25	St Johns CE Thornham Primary School	12.91	12.92	0.01
R26	Residential - Ruskin Road	13.21	13.23	0.01

- 6.7.26. As shown in **Table 6-19**, predicted annual mean PM₁₀ concentrations were below the relevant AQO at all sensitive receptors in both the DM and DS scenarios.
- 6.7.27. Annual mean PM_{2.5} concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. The results are summarised in **Table 6-20**.

Table 6-20 - Operational Phase Road Vehicle Exhaust Emissions - Predicted Annual Mean PM_{2.5} Concentrations

Receptor		Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - A664 Manchester Road	9.19	9.30	0.10
R2	Residential - A664 Manchester Road	9.46	9.56	0.10
R3	St Gabriels RC Primary School	7.13	7.15	0.02

Receptor		Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R4	Meadow View Residential Home	7.28	7.31	0.03
R5	Residential - A664 Manchester Road	8.31	8.41	0.10
R6	Residential - A664 Manchester Road	7.74	7.81	0.07
R7	Residential - Lowry Way	7.27	7.27	0.00
R8	Residential - Thornfields Farm	7.01	7.02	0.01
R9	Residential - A664 Manchester Road	9.35	9.48	0.13
R10	Residential - Bentley Avenue	8.20	8.28	0.08
R11	Residential - Bentley Avenue	7.52	7.60	0.08
R12	Residential - Bentley Avenue	6.72	6.73	0.01
R13	Residential - Whitegates Road	7.15	7.20	0.05
R14	Hopwood Hall College	6.87	6.89	0.03
R15	Residential - Rochdale Road	7.36	7.43	0.08
R16	Cardinal Langley Roman Catholic High School	7.04	7.08	0.04
R17	Care Mount Care Home	7.30	7.37	0.07
R18	Residential - Rochdale Road	7.77	7.89	0.12
R19	Middleton Parish C of E Primary School	6.73	6.74	0.01
R20	Residential - Rochdale Road	7.42	7.51	0.09
R21	Residential - Long Street	7.02	7.07	0.04
R22	Residential - Long Street	8.29	8.46	0.17
R23	Residential - Cinderhill Farm	7.14	7.16	0.02
R24	Residential - Woodside Farm	7.23	7.25	0.03
R25	St Johns CE Thornham Primary School	6.88	6.89	0.01
R26	Residential - Ruskin Road	7.05	7.06	0.01

6.7.28. As shown in **Table 6-20**, predicted annual mean PM_{2.5} concentrations were below the Concentration Target at all sensitive receptors in both the DM and DS scenarios.

Effect Significance

6.7.29. Predicted effects on annual mean NO₂ concentrations at sensitive receptor locations as a result of operational phase road vehicle exhaust emissions are summarised in **Table 6-21**.

Table 6-21 - Operational Phase Road Vehicle Exhaust Emissions - Effect Significance NO₂

Receptor		Sensitivity	Magnitude of Impact	Effect Significance
R1	Residential - A664 Manchester Road	Low	Small	Negligible
R2	Residential - A664 Manchester Road	Low	Small	Negligible
R3	St Gabriels RC Primary School	Very Low	Negligible	Negligible
R4	Meadow View Residential Home	Very Low	Negligible	Negligible
R5	Residential - A664 Manchester Road	Very Low	Small	Negligible
R6	Residential - A664 Manchester Road	Very Low	Small	Negligible
R7	Residential - Lowry Way	Very Low	Negligible	Negligible
R8	Residential - Thornfields Farm	Very Low	Negligible	Negligible
R9	Residential - A664 Manchester Road	Low	Medium	Minor
R10	Residential - Bentley Avenue	Very Low	Medium	Negligible
R11	Residential - Bentley Avenue	Very Low	Small	Negligible
R12	Residential - Bentley Avenue	Very Low	Negligible	Negligible
R13	Residential - Whitegates Road	Very Low	Small	Negligible
R14	Hopwood Hall College	Very Low	Small	Negligible
R15	Residential - Rochdale Road	Very Low	Small	Negligible
R16	Cardinal Langley Roman Catholic High School	Very Low	Small	Negligible
R17	Care Mount Care Home	Very Low	Medium	Negligible
R18	Residential - Rochdale Road	Very Low	Medium	Negligible
R19	Middleton Parish C of E Primary School	Very Low	Negligible	Negligible

Receptor		Sensitivity	Magnitude of Impact	Effect Significance
R20	Residential - Rochdale Road	Very Low	Small	Negligible
R21	Residential - Long Street	Very Low	Small	Negligible
R22	Residential - Long Street	Very Low	Medium	Negligible
R23	Residential - Cinderhill Farm	Very Low	Negligible	Negligible
R24	Residential - Woodside Farm	Very Low	Negligible	Negligible
R25	St Johns CE Thornham Primary School	Very Low	Negligible	Negligible
R26	Residential - Ruskin Road	Very Low	Negligible	Negligible

- 6.7.30. As shown in **Table 6-21**, effects on annual mean NO₂ concentrations as a result of operational phase road vehicle exhaust emissions were predicted to be **minor** at R9 (**not significant**) and **negligible** (**not significant**) at all other receptors.
- 6.7.31. Predicted effects on annual mean PM₁₀ concentrations at sensitive receptor locations as a result of operational phase road vehicle exhaust emissions are summarised in **Table 6-22**.

Table 6-22 - Operational Phase Road Vehicle Exhaust Emissions - Effect Significance PM₁₀

Receptor		Sensitivity	Magnitude of Impact	Effect Significance
R1	Residential - A664 Manchester Road	Very Low	Small	Negligible
R2	Residential - A664 Manchester Road	Very Low	Negligible	Negligible
R3	St Gabriels RC Primary School	Very Low	Negligible	Negligible
R4	Meadow View Residential Home	Very Low	Negligible	Negligible
R5	Residential - A664 Manchester Road	Very Low	Negligible	Negligible
R6	Residential - A664 Manchester Road	Very Low	Negligible	Negligible
R7	Residential - Lowry Way	Very Low	Negligible	Negligible
R8	Residential - Thornfields Farm	Very Low	Negligible	Negligible
R9	Residential - A664 Manchester Road	Very Low	Small	Negligible
R10	Residential - Bentley Avenue	Very Low	Negligible	Negligible
R11	Residential - Bentley Avenue	Very Low	Negligible	Negligible

Receptor		Sensitivity	Magnitude of Impact	Effect Significance
R12	Residential - Bentley Avenue	Very Low	Negligible	Negligible
R13	Residential - Whitegates Road	Very Low	Negligible	Negligible
R14	Hopwood Hall College	Very Low	Negligible	Negligible
R15	Residential - Rochdale Road	Very Low	Negligible	Negligible
R16	Cardinal Langley Roman Catholic High School	Very Low	Negligible	Negligible
R17	Care Mount Care Home	Very Low	Negligible	Negligible
R18	Residential - Rochdale Road	Very Low	Small	Negligible
R19	Middleton Parish C of E Primary School	Very Low	Negligible	Negligible
R20	Residential - Rochdale Road	Very Low	Negligible	Negligible
R21	Residential - Long Street	Very Low	Negligible	Negligible
R22	Residential - Long Street	Very Low	Small	Negligible
R23	Residential - Cinderhill Farm	Very Low	Negligible	Negligible
R24	Residential - Woodside Farm	Very Low	Negligible	Negligible
R25	St Johns CE Thornham Primary School	Very Low	Negligible	Negligible
R26	Residential - Ruskin Road	Very Low	Negligible	Negligible

- 6.7.32. As shown in **Table 6-22**, effects on annual mean PM₁₀ concentrations as a result of operational phase road vehicle exhaust emissions were predicted to be **negligible (not significant)** at all receptors.
- 6.7.33. Predicted effects on annual mean PM_{2.5} concentrations at sensitive receptor locations as a result of operational phase road vehicle exhaust emissions are summarised in **Table 6-23**.

Table 6-23 - Operational Phase Road Vehicle Exhaust Emissions - Effect Significance PM_{2.5}

Receptor		Sensitivity	Magnitude of Impact	Effect Significance
R1	Residential - A664 Manchester Road	Low	Small	Negligible
R2	Residential - A664 Manchester Road	Medium	Small	Minor
R3	St Gabriels RC Primary School	Very Low	Negligible	Negligible

Receptor		Sensitivity	Magnitude of Impact	Effect Significance
R4	Meadow View Residential Home	Very Low	Negligible	Negligible
R5	Residential - A664 Manchester Road	Low	Small	Negligible
R6	Residential - A664 Manchester Road	Low	Small	Negligible
R7	Residential - Lowry Way	Very Low	Negligible	Negligible
R8	Residential - Thornfields Farm	Very Low	Negligible	Negligible
R9	Residential - A664 Manchester Road	Medium	Small	Minor
R10	Residential - Bentley Avenue	Low	Small	Negligible
R11	Residential - Bentley Avenue	Low	Small	Negligible
R12	Residential - Bentley Avenue	Very Low	Negligible	Negligible
R13	Residential - Whitegates Road	Very Low	Small	Negligible
R14	Hopwood Hall College	Very Low	Negligible	Negligible
R15	Residential - Rochdale Road	Low	Small	Negligible
R16	Cardinal Langley Roman Catholic High School	Very Low	Negligible	Negligible
R17	Care Mount Care Home	Very Low	Small	Negligible
R18	Residential - Rochdale Road	Low	Small	Negligible
R19	Middleton Parish C of E Primary School	Very Low	Negligible	Negligible
R20	Residential - Rochdale Road	Low	Small	Negligible
R21	Residential - Long Street	Very Low	Negligible	Negligible
R22	Residential - Long Street	Low	Medium	Minor
R23	Residential - Cinderhill Farm	Very Low	Negligible	Negligible
R24	Residential - Woodside Farm	Very Low	Negligible	Negligible
R25	St Johns CE Thornham Primary School	Very Low	Negligible	Negligible
R26	Residential - Ruskin Road	Very Low	Negligible	Negligible

- 6.7.34. As shown in **Table 6-23**, effects on annual mean PM_{2.5} concentrations as a result of operational phase road vehicle exhaust emissions were predicted to be **minor** at R2, R9 and R22 (**not significant**) and **negligible (not significant)** at all other receptors.

Mitigation

- 6.7.35. Air quality effects as a result of operational phase road vehicle exhaust emissions were predicted to be **not significant**. As such, additional mitigation was not considered necessary. However, a number of measures have been proposed in accordance with the requirements of the IAQM guidance (**Ref.6.1**) to encourage the use of sustainable transport modes, manage vehicle flow and reduce pollution around the Site. These include the following:
- Provision of a Travel Plan to encourage sustainable modes of transport to and from the Site;
 - Provision of green infrastructure throughout the Site to absorb pollution and increase deposition rates;
 - Provision of secure cycle parking spaces;
 - Provision of EV charging points; and
 - Provision of a Travel Information Pack.
- 6.7.36. The above methods can be secured through planning condition and would further reduce the overall pollutant burden of the Proposed Development.

Residual Effects

- 6.7.37. Following the effective implementation of the mitigation measures, the residual effects are predicted to be **not significant** during the operational phase.

Summary

- 6.7.38. A summary of the potential air quality impacts as a result of road vehicle exhaust emissions on human receptors during the construction phase are summarised in **Table 6-24**.

Table 6-24 - Assessment of Potential Effects, Additional Mitigation, Residual Effects and Monitoring During the Operational Phase - Road Vehicle Exhaust Emissions - Human Receptors

Sensitive receptor	Local sensitive receptors
Potential effects	During the operational phase there is the potential for air quality impacts on local residents as a result of road vehicle exhaust emissions from the Proposed Development The sensitivity of receptors is very low to medium, and the magnitude of change is negligible to medium. Therefore, there is likely to be a direct, long-term negligible to minor adverse effect (not significant)
Additional mitigation	Air quality effects as a result of operational phase road vehicle exhaust emissions were predicted to be not significant . As such, additional mitigation measures were not considered necessary. However, a number of measures have been included within the Proposed Development and can be secured by RBC through a planning condition, if required

Sensitive receptor	Local sensitive receptors
Residual effects and monitoring	Residual air quality effects as a result of construction phase road vehicle exhaust emissions were predicted to be not significant . As such, there is no requirement for monitoring

OPERATIONAL PHASE - ROAD VEHICLE EXHAUST EMISSIONS - ECOLOGICAL RECEPTORS

Assessment of Potential Effects

6.7.39. Any vehicle movements associated with the Proposed Development will generate exhaust emissions on the local and regional road networks. Potential impacts on ecological designations are therefore considered in the following Sections.

Step 1a

6.7.40. Step 1a required identification of ecological designations for inclusion with the assessment. A desktop study indicated that following site should be considered:

- Rochdale Canal – SAC.

6.7.41. Information from the Air Pollution Information System (APIS) website indicated that the designation contains features sensitive to atmospheric pollution. As shown in **Figure 6-3**, the designation is located within 200m of the following roads which are affected by traffic generated by the Proposed Development:

- A664 - Manchester Road;
- A664 - Rochdale Road;
- A627M, eastbound and westbound;
- Bentley Avenue;
- M62, eastbound and westbound;
- Slattocks Roundabout; and
- Whitbrook Way, northbound and southbound.

6.7.42. As such, the assessment proceeded to Step 1b.

Step 1b

6.7.43. Predicted vehicle trip generation from the Proposed Development on the listed roads was provided by WSP, the Transport Consultants for the project. This is summarised in **Table 6-25**.

Table 6-25 - Operational Phase - Predicted Development Alone Change in AADT Flows

Link	Predicted Change in AADT Flow as a Result of the Development Alone
A664 Manchester Road	175
A664 - Rochdale Road	658

Link	Predicted Change in AADT Flow as a Result of the Development Alone
A627M Eastbound	155
A627M Westbound	165
Bentley Avenue	799
M62 Eastbound	26
M62 Westbound	25
Slattocks Roundabout	330
Whitbrook Way Northbound	148
Whitbrook Way Southbound	207

- 6.7.44. As shown in **Table 6-25**, the Proposed Development is not predicted to increase traffic flows in the vicinity of the Rochdale Canal SAC by more than 1,000. As such, a likely significant effect from the development alone can be ruled out and the assessment proceeded to Step 2.

Step 2

- 6.7.45. The predicted change in AADT flow on the above road links as a result of the Proposed Development and other committed developments was not known at the time of reporting. However, as the Proposed Development is located south of the JPA allocation 2 Stakehill northern plot and approximately 2.5km south-east of the JPA allocation 1.1 Northern Gateway a significant effect in-combination with other relevant plans was considered within the HRA undertaken by Ricardo Energy & Environment and The Greater Manchester Ecology Team in support of the PfE Plan (**Ref.1.4**). This included an Appropriate Assessment to determine the potential for air quality impacts at the Rochdale Canal SAC as a result of all PfE Plan allocations in-combination with other plans and projects. This indicated that the PfE Plans alone would have no adverse effect on the integrity of any of the Rochdale Canal SAC. As such, a likely significant effect from the Proposed Development in-combination can be ruled out.

Conclusion

- 6.7.46. Based on the above, air quality effects as a result of operational phase road vehicle exhaust emissions at ecological designations are predicted to be **not significant**

Mitigation

- 6.7.47. Air quality effects as a result of operational phase road vehicle exhaust emissions at ecological designations were predicted to be **not significant**. As such, additional mitigation was not considered necessary.

Residual Effects

- 6.7.48. Residual air quality effects at ecological designations as a result of operational phase road vehicle exhaust emissions were predicted to be **not significant**.

Summary

- 6.7.49. A summary of the potential air quality effects as a result of road vehicle exhaust emissions on ecological receptors during the operational phase are summarised in **Table 6-27**.

Table 6-26 - Assessment of Potential Effects, Additional Mitigation, Residual Effects and Monitoring During the Operational Phase - Road Vehicle Exhaust Emissions - Ecological Receptors

Sensitive receptor	Rochdale Canal SAC
Potential effects	During the operational phase there is the potential for air quality impacts on the Rochdale Canal SAC as a result of road vehicle exhaust emissions from the Proposed Development Review of the HRA conducted to support the HRA PfE Plan indicated that a likely significant effect of operational phase road vehicle exhaust emissions from the Proposed Development in-combination could be ruled out. As such, effects are predicted to be not significant
Additional mitigation	Air quality effects as a result of operational phase road vehicle exhaust emissions were predicted to be not significant . As such, additional mitigation measures were not considered necessary
Residual effects and monitoring	Residual air quality effects as a result of operational phase road vehicle exhaust emissions were predicted to be not significant . As such, there is no requirement for monitoring

OPERATIONAL PHASE - POTENTIAL FUTURE EXPOSURE

Assessment of Potential Effects

- 6.7.50. The Proposed Development has the potential to cause the exposure of future residents to elevated pollution levels associated with local road vehicle exhaust emissions. Dispersion modelling was undertaken with the inputs described in **Appendix 6.1** to quantify air quality conditions at the Site. Reference should be made to **Figure 6-4**, **Figure 6-5** and **Figure 6-6** for graphical representations of the results.
- 6.7.51. As shown in **Figure 6-4**, annual mean NO₂ concentrations were below the AQO of 40µg/m³ across the Proposed Development. The maximum level was 32.78µg/m³.
- 6.7.52. As shown in **Figure 6-5**, annual mean PM₁₀ concentrations were below the AQO of 40µg/m³ across the Proposed Development. The maximum level was 17.20µg/m³.
- 6.7.53. As shown in **Figure 6-6**, annual mean PM_{2.5} concentrations were below the Concentration Target of 10µg/m³ across the Proposed Development. The maximum level was 8.90µg/m³.
- 6.7.54. Based on the results of the assessment, exposure of future residents to exceedances of the relevant AQOs and Concentration Target has not been predicted. As such, the predicted effect is **not significant**.

Mitigation

- 6.7.55. Exposure of future residents to existing poor air quality was considered to be **not significant**. As such, additional mitigation measures were not considered necessary. However, the Proposed Development will include a minimum buffer zone of 25m between the A627M and residential units, as well as dense vegetation around the Site boundary to help further reduce exposure to pollutants.

Residual Effects

- 6.7.56. Exposure of future residents to poor air quality was considered to be **not significant**.

Summary

- 6.7.57. A summary of the potential exposure of future residents to poor air quality during the operational phase is summarised in **Table 6-27**.

Table 6-27 - Assessment of Potential Effects, Additional Mitigation, Residual Effects and Monitoring During the Operational Phase - Potential Future Exposure

Sensitive receptor	Future residents
Potential effects	During the operational phase there is the potential for exposure of future residents to existing poor air quality Results of the dispersion modelling indicated that predicted annual mean NO ₂ , PM ₁₀ and PM _{2.5} concentrations across the Proposed Development were below the relevant AQOs and Concentration Target. As such, predicted effects were considered not significant
Additional mitigation	Exposure of future residents to existing poor air quality during the operational phase was predicted to be not significant . As such, additional mitigation measures were not considered necessary
Residual effects and monitoring	As exposure of future residents to existing poor air quality was predicted to be not significant , there are no significant residual effects arising from the Proposed Development and there is no requirement for monitoring

INTERIM PLANNING GUIDANCE FOR PM_{2.5}

- 6.7.58. Interim Planning Guidance on the consideration of the PM_{2.5} targets identified in the Environment Act (2021) in planning decisions has been produced by DEFRA. This requires evidence that the key sources of air pollution within a development have been identified and appropriate action to minimise PM_{2.5} and its precursors as far as is reasonably practicable be provided in support of planning applications. To assist the process, two questions and associated considerations are provided. These are summarised in **Table 6-28** below, along with the development response.

Table 6-28 - Interim Planning Guidance for PM_{2.5}

Question	Response
How has exposure to PM_{2.5} been considered when selecting the development site? •Site proximity to people (particularly large populations and/or vulnerable groups, e.g. schools, hospitals, care homes, areas of deprivation) and the impact of the development on these •Site proximity to pollution sources and the impact of these on users of the development •Exposure and emissions during both construction and in-use	The Site is located in a predominantly industrial area, with Stakehill Industrial Estate to the west, the A627M to the north and east and agricultural fields to the south. There are no schools, hospitals or care homes within 300m of the Site boundary. As such, the scheme is set back from large populations and vulnerable groups and emissions from the development are unlikely to impact on these people. This is supported by the assessment results summarised previously The Site borders the A627M to the north and east however, a minimum buffer zone of 25m will be in place between the road and residential units. As pollutant concentrations decrease with distance and the Site is not located within an AQMA, users of the development are unlikely to be exposed to any existing air quality issues as a result of vehicle exhaust emissions. This is supported by the assessments results summarised previously As outlined in Table 6-15, a number of mitigation measures will be used throughout the construction phase in order to reduce fugitive dust emissions as far as practicable. This will control potential exposure at off-site locations
What actions and/or mitigations have been considered to reduce PM_{2.5} exposure for development users and nearby receptors (houses, hospitals, schools etc.) and to reduce emissions of PM_{2.5} and its precursors? •Site layout •The development's design •Technology used in the construction or installed for use in the development •Construction and future use of the development	A number of mitigation measures have been incorporated into the design of the scheme in order to reduce PM_{2.5} exposure for future users. These include the following: ▪ Existing vegetation surrounding the Site will be retained and vegetation will be planted throughout the development. This will help reduce any concentrations at the Site from emission sources ▪ No residential units will be constructed within 25m of the Site boundary. This will provide additional separation from the A627M In order to reduce emissions of PM_{2.5} with associated impacts at nearby receptors, the following measures have also been included: ▪ Provision of electric vehicle charging; ▪ Secure cycle storage; and ▪ Provision of a Travel Plan Further to the above, in order to reduce emissions during the construction phase, a number of mitigation measures will be used to minimise dust generation from associated activities

6.7.59. Based on the responses provided in **Table 6-28** and the results of the assessment, as outlined previously, it is considered that the proposal has identified key sources of air pollution and taken appropriate action to minimise emissions of PM_{2.5}.

ASSESSMENT AGAINST FUTURE BASELINE

- 6.7.60. Pollutant concentrations will vary in the future when compared to the baseline scenario, because of projected improvements in vehicle emissions and variations in traffic distribution across the road network, both because of the implementation of new policies and strategies, potential new road schemes for the area, changing attitudes towards driving, and improvements in fuel and vehicle technology.
- 6.7.61. As part of the operational phase assessment, future air quality was assessed against the opening year of the Proposed Development (2040). As shown in the Assessment Section, annual mean NO₂, PM₁₀ and PM_{2.5} concentrations were predicted to be below the relevant AQOs and Concentration Target across the Proposed Development in 2040. Additionally, NO₂ and PM₁₀ concentrations are likely to be lower in future years as the assessment used 2023 background pollutant concentrations and emission factors to provide a robust assessment. This is further explained in **Appendix 6.1**.

CUMULATIVE EFFECTS

Construction Phase

- 6.7.62. Should permission be granted for other committed developments within 500m of the Site, it is possible that cumulative dust effects may occur during construction. However, fugitive dust emissions associated with the Proposed Development will be minimised through the outlined mitigation measures. A similar level of control would also be expected for any other scheme. Therefore, cumulative effects are predicted to be **not significant**.

Operational Phase

- 6.7.63. Cumulative vehicle exhaust emission effects may occur during operation as a result of additional traffic movements associated with committed developments in the vicinity of the Site. However, the traffic data utilised for the assessment included predicted changes in flows as a result of relevant committed developments. As outlined previously, effects were predicted to be **not significant**. As such, cumulative effects are also predicted to be **not significant**.

6.8 OPPORTUNITIES FOR ENVIRONMENTAL ENHANCEMENT

- 6.8.1. No opportunities for environmental enhancement were identified during the assessment.

6.9 DIFFICULTIES AND UNCERTAINTIES

- 6.9.1. A number of assumptions have been made during the undertaking of the assessment. These include the following:
- The meteorological data used for the assessment is representative of the conditions at the site. Records were obtained based on a review of available observation locations to ensure the most representative record station was selected;
 - Background pollutant concentrations used for the assessment are representative of baseline and future baseline annual mean pollutant concentrations in the vicinity of the Site. These values were obtained from the DEFRA background mapping study, an industry standard database produced on behalf of the UK Government, to ensure the most accurate representation of background pollutant concentrations;
 - Road traffic emissions of NO_x are predicted to decrease in future years with changes to the UK's fleet in line with Government legislation. An assumption that emission factors remain the same was therefore adopted in order to provide a robust assessment;

- The traffic data obtained for the purpose of the assessment is accurate. These values were provided by WSP, the Transport Consultants for the project. The data is therefore considered suitable for an assessment of this nature; and
- The monitoring data used in the assessment is accurate. The results were obtained from GMCA's '2023 Air Quality ASR' which have been ratified by DEFRA and are therefore considered valid.

6.9.2. The above assumptions are similar to those required for any project of this nature and the adoption of worst-case parameters, where necessary, has ensured the assessment results can be considered sufficiently robust.

6.10 SUMMARY

6.10.1. **Table 6-29** provides a summary of the findings of the assessment.

Table 6-29 - Summary of Air Quality Effects

Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
Construction Phase - Fugitive Dust and PM₁₀					
Local residents	Dust soiling as a result of fugitive dust emissions and human health effects as a result of increases in PM ₁₀ concentrations	High risk of dust soiling for earthworks, construction and trackout Low risk of human health impacts from earthworks, construction and trackout (not significant) T / D / ST	CEMP	Not significant T / D / ST	No requirement
Construction Phase - Road Vehicle Exhaust Emissions					
Local residents	Increases in NO ₂ , PM ₁₀ and PM _{2.5} concentrations associated with vehicle exhaust emissions	Negligible to Minor Adverse (not significant) T / D / ST	None	Not Significant T / D / ST	No requirement
Operational Phase - Road Vehicle Exhaust Emissions - Human Receptors					
Local residents	Increases in NO ₂ , PM ₁₀ and PM _{2.5} concentrations associated with vehicle exhaust emissions	Negligible to Minor Adverse (not significant) P / D / LT	Additional mitigation was not considered necessary. However, a number of measures have been included. These can be secured	Negligible to Minor Adverse (not significant) P / D / LT	No requirement

Receptor	Potential Effects	Significance of Effects Prior to Mitigation/Enhancement	Additional Mitigation	Residual Effects	Monitoring
			through a planning condition by RBC		
Operational Phase - Road Vehicle Exhaust Emissions - Ecological Receptors					
Rochdale Canal SAC	Changes in pollutant levels as a result of vehicle exhaust emissions	Not Significant	None	Not Significant	No requirement
Operational Phase - Potential Future Exposure					
Future residents	Exposure of future residents to exceedances of the AQOs and Concentration Target	Not Significant	Additional mitigation was not considered necessary	Not Significant	No requirement

Key to table:

P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term, N/A = Not Applicable

6.11 REFERENCES

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- **Reference 6.2:** IAQM (2017) *Land-Use Planning & Development Control: Planning for Air Quality*. Available at: <https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> [Accessed 21/01/2025].
- **Reference 6.3:** GMCA (2024) *2023 Air Quality Annual Status Report*. Available at: https://downloads.ctfassets.net/tlpgbvy1k6h2/3XAEIZRea7W64L3A61H8R7/7a092aac00f18413a78ac611418526fe/ASR_2024_reporting_on_2023_Air_Quality_Final.pdf [Accessed 21/01/2025].
- **Reference 6.4:** Ricardo Energy and Environment (2022) *HRA of the PfE Joint Development Plan*. Available at: https://www.greatermanchester-ca.gov.uk/media/8546/mdc13-hra_pfe-main-modifications.pdf [Accessed 27/01/2025].
- **Reference 6.5:** Natural England (2018) *Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations*. Available at: <https://publications.naturalengland.org.uk/publication/4720542048845824> [Accessed 30/01/2025].
- **Reference 6.6:** IAQM (2020) *A guide to the assessment of air quality impacts on designated nature conservation sites*. Available at: <https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf> [Accessed 30/01/2025].
- **Reference 6.7:** Highways England (2024) *LA 105 - Air Quality (vertical barriers)*. Available at: <https://www.standardsforhighways.co.uk/search/html/af7f4cda-08f7-4f16-a89f-e30da703f3f4?standard=DMRB> [Accessed 30/01/2025].
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- **Reference 6.9:** *Town and Country Planning Act (Environmental Impact Assessment) Regulation 2017 (SI 2017/571)*. Available at: <https://www.legislation.gov.uk/ukxi/2017/571/contents> [Accessed 28/01/2025].
- **Reference 6.10:** *The Air Quality Standard (Amendment) Regulations 2016 (SI 2010/1001)*. Available at: <https://www.legislation.gov.uk/ukxi/2016/1184/contents/made> [Accessed 30/01/2025].
- **Reference 6.11:** DEFRA (2023) *'Air Quality Strategy: framework for local authority delivery'*. Available at: <https://www.gov.uk/government/publications/the-air-quality-strategy-for-england/air-quality-strategy-framework-for-local-authority-delivery> [Accessed 30/01/2025].
- **Reference 6.12:** *The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (SI 2020/1313)*. Available at: <https://www.legislation.gov.uk/ukxi/2020/1313/contents/made> [Accessed 30/01/2025].
- **Reference 6.13:** *Environment Act 1995 (SI 2010/001)*. Available at: <https://www.nationalarchives.gov.uk/> [Accessed 30/01/2025].
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6.12 FIGURES



Figure 6-1 - ADMS - Roads Inputs



Figure 6-2 - Monitoring Locations



Figure 6-3 - Sensitive Receptor Locations



Figure 6-4 - Annual Mean NO₂ Concentrations



Figure 6-5 - Annual Mean PM_{10} Concentrations



Figure 6-6 - Annual Mean $PM_{2.5}$ Concentrations

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