

10. Air Quality

Introduction

- 10.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Project for Assessment in relation to Air Quality. It also reports the likely significant environmental effects associated with the Proposed Scheme, which comprises the planning application.
- 10.2 The Chapter describes the technical consultation that has been undertaken during the EIA, the scope of the assessment and assessment methodology, and a summary of the baseline information that has informed the assessment.
- 10.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details) and is informed by the EIA Scoping process (**Appendix 2.1 – 2.2**) and iterative scoping process where applicable.
- 10.4 This Chapter, and its associated **Figures 10.1 to 10.5** and **Appendices 10.1 to 10.3**, is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 6**), as well as **Chapter 8: Transport and Access** and **Chapter 11: Biodiversity**.
- 10.5 In addition, this Chapter should be read in conjunction with **Chapter 19: Assessment of Cumulative Effects**.

Summary of Consultation

- 10.6 **Table 10.1** provides an overview of the consultation that has been undertaken to inform the EIA, including the consideration of likely significant effects and the methodology for assessment.

Table 10.1: Summary of Consultation

Body/Organisation	Contact	Date/Form of Consultation	Summary of Consultation Outputs
Bury Council (BC) and Rochdale Borough Council (RBC)	Environmental Protection Officer (EPO)	January 2022 - Formal Consultation Response.	Recommendation that air quality monitoring is carried out prior to the completion of the assessment. This has been completed and is reported within this Chapter.
BC	EPO	3 rd May 2022 - Formal	Recommendation that air quality monitoring is carried out prior to

Body/Organisation	Contact	Date/Form of Consultation	Summary of Consultation Outputs
		Consultation Response	the completion of the assessment. This has been completed and is reported within this Chapter.
BC	EPO	14 th May 2024 - Email	The proposed methodology for a 3-month programme of Air Quality Monitoring was provided to BC. This was subsequently agreed on 8 th July 2024, subject to a request to change the location of one monitoring position to consider traffic around the junction of A576 Manchester Road and A6045 Heywood Old Road.
RBC	Senior Transport Strategy & Projects Officer	14 th May 2024 - Email	The proposed methodology for a 3-month programme of air quality monitoring was provided to RBC. This was subsequently agreed on 15 th May 2024, subject to a request to change the location of one monitoring position to consider traffic around the junction of A576 Manchester Road and A6045 Heywood Old Road. A request was made for the monitoring programme to avoid school term times where possible. This was subsequently agreed on 3 rd July 2024.
Environment Agency (EA)	Green Growth Team Project Manager	8 th November 2024 - Email and subsequent response to EIA Scoping Report dated 12 th November 2024	A request was made to consider layout and development type in proximity to the Pilsworth Quarry Landfill to ensure a sufficient buffer is in place to reduce risk of nuisance / impacts to receptors / occupants of the intended proposed development coming forward. An Odour Assessment to consider impacts at the Assessment Boundary has been undertaken (Appendix 10.3). The findings

Body/Organisation	Contact	Date/Form of Consultation	Summary of Consultation Outputs
			odour assessment confirm that effects are considered to be Not Significant and therefore remain scoped out of this Chapter.

Scope of the Assessment

10.7 An EIA Scoping Report was submitted to BC and RBC on 17th October 2024, as presented as **Appendix 2.1**. A Scoping Opinion has not been received to date; however a number of consultation responses have been received and are provided in **Appendix 2.2**. A response to the comments in **Appendix 2.2** are provided in **Appendix 2.3**. This section provides an update on the scope of the assessment presented within this Chapter following submission of the EIA Scoping Report.

Effects Not Considered to be Significant

10.8 The following effects were not considered significant as part of the EIA Scoping Report and are not considered further in this Chapter:

- Air quality effects as a result of dust from construction activities; and
- Air quality effects as a result of odour from the Pilsworth South Landfill Site.

10.9 Although impacts as a result of fugitive dust emissions during construction are not considered to be Significant, a Construction Dust Assessment was completed and is provided in **Appendix 10.2** to further evidence this and provide certainty on the mitigation that will be implemented. This mitigation will be incorporated into the Construction Environmental Management Plan (CEMP) summarised in **Volume 3: Environmental Management Plan**. An Odour Assessment (**Appendix 10.3**) has also been undertaken which provides further detail/evidence in accordance with that set out in the EIA Scoping Report (**Appendix 2.1**) that potential effects of odour from Pilsworth South Landfill are considered to be Not Significant and therefore remain scoped out of this Chapter.

10.10 Following the EIA Scoping process the following additional effect(s) are now not considered significant and the evidence to support this determination is outlined below:

- Potential exposure of future residents of the Project for Assessment to elevated pollutant concentrations associated with road vehicle exhaust emissions from the local road network; and
- Air quality effects at sensitive ecological designations as a result of variation in traffic flows associated with the Project for Assessment.

Potential exposure of future residents of the Project for Assessment to elevated pollutant concentrations associated with road vehicle exhaust emissions from the local road network

10.11 The dispersion modelling undertaken to inform the assessment, indicated pollutant concentrations were below the relevant air quality standards at the proposed residential land use included in the Project for Assessment (Assessment Plot FF). As such, there is no

possibility of a significant effect. Effects of elevated pollutant concentrations on future residential receptors have therefore not been considered further within the EIA or reported within this Chapter. Reference should be made to **Appendix 10.1** for details of the dispersion modelling study and associated results.

Air quality effects at sensitive ecological designations as a result of variation in traffic flows associated with the Project for Assessment

- 10.12 Air quality effects at sensitive ecological designations as a result of variation in traffic flows associated with the Project for Assessment were considered in the context of the Habitats Regulations Assessment (HRA) undertaken by Ricardo Energy & Environment and The Greater Manchester Ecology Team in support of the Places for Everyone (PfE) Plan. This included an Appropriate Assessment to determine the potential for air quality effects at the relevant ecological designations as a result of all PfE Plan allocations in-combination with other plans and projects. The Natural England (NE) and Institute of Air Quality Management (IAQM) guidance 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. The PfE Plan HRA concluded that a likely significant effect on the Rochdale Canal Special Area of Conservation (SAC), South Pennine Moors SAC and South Pennine Moors SPA could be ruled out. As such, effects associated with the Project for Assessment are not considered to be Significant at these designations.
- 10.13 The PfE Plan HRA concluded that a likely significant effect on the Holcroft Moss Site of Special Scientific Interest (SSSI), which is a component of the Manchester Mosses SAC, could be ruled out subject to implementation of appropriate management practices. These are to be funded through planning linked financial contributions based on the quantum of development associated with each consent. The relevant mechanism for this measure is provided in the Draft Holcroft Moss Planning Obligations Joint Supplementary Planning Document (SPD), which has been produced by the GMCA. As such, this contribution is applicable to the Proposed Scheme and is considered as tertiary mitigation, as set out in **Chapter 5: Development Specification – Proposed Scheme**. A similar contribution would also be applicable to the Project for Assessment when future planning applications are brought forward, as set out in **Chapter 4: Development Specification – Project for Assessment**. Following implementation of these measures through the planning process, residual effects associated with both the Proposed Scheme and Project for Assessment are not considered to be Significant at Holcroft Moss SSSI.
- 10.14 Based on the above, effects of air pollutants on ecological designations have not been considered further within this Chapter. Reference should be made to **Appendix 10.1** for further justification of this position.

Effects Considered Likely to be Significant

- 10.15 The following effects (**Table 10.2**) were considered likely to be significant and are reported within this Chapter.
- 10.16 It should be noted that the terminology utilised in **Table 10.2** is slightly different to that presented within the EIA Scoping Report. This was amended to reflect potential effects associated with changes in traffic flows as a result of the Project for Assessment as represented within the traffic modelling, rather than solely development generated traffic emissions.

Table 10.2: Effects Considered Likely to be Significant

Likely Significant Effect	Receptor(s)	Applicable Development Stage	Spatial Zone
Changes to concentrations of nitrogen dioxide (NO ₂), particulate matter with an aerodynamic diameter of less than 10µm (PM ₁₀) and particulate matter with an aerodynamic diameter of less than 2.5µm (PM _{2.5}) as a result of changes to traffic flows.	Existing sensitive receptors, such as residential properties, schools and medical practices within 200m of any roads experiencing changes in traffic flow as a result of the Project for Assessment.	Construction/ Operation	All Spatial Zones

Assessment Methodology

Legislative Framework, Policy and Guidance

10.17 The following legislation and policy has informed the assessment of effects within this Chapter, and is detailed further in **Appendix 10.1**:

- The Air Quality Standards Regulations, UK Government, 2010;
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Department for Environment Food and Rural Affairs (DEFRA), 2023;
- The Environment (Miscellaneous Amendments) (EU Exit) Regulations, UK Government, 2020;
- Environmental Improvement Plan, DEFRA, 2023;
- Environmental Targets (Fine Particulate Matter) (England) Regulations, UK Government, 2023; and,
- Holcroft Moss Planning Obligations Joint Supplementary Planning Document (SPD) - Consultation Draft, Greater Manchester Combined Authority, 2024.

10.18 The following guidance has informed the assessment of effects within this Chapter:

- Local Air Quality Management Technical Guidance TG22, DEFRA, 2022;
- LA 105: Air Quality, National Highways, 2024;
- Land-use Planning & Development Control: Planning for Air Quality, IAQM, 2017;
- Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations, NE, 2018; and

- A guide to the assessment of air quality impacts on designated nature conservation sites, IAQM, 2019.

Defining the Study Area

- 10.19 The study area for the assessment was based upon the extents of the road network considered within the Transport Assessment, undertaken by Tetra Tech. This was chosen to provide continuity between the assessment of transport and air quality related impacts.
- 10.20 Reference should be made to **Figure 10.1** for a map of the study area.

Background Studies to Inform the ES / Establishing the Baseline

- 10.21 **Table 10.3** summarises the Air Quality Constraints Report and Air Quality Monitoring Survey undertaken to inform the assessment presented within this Chapter. Additional details, including the methodology and results, are presented in **Appendix 10.1**.

Table 10.3: Air Quality Monitoring Survey

Survey	Overview	Date of Completion
Air Quality Constraints Report	A review of potential impacts associated with development. This included review of the 'Northern Gateway: Area GMA 1.1 - Noise & Air Quality High Level Constraints Review' produced by WYG and subsequent comments from BC.	12 th August 2021
Baseline Air Quality Monitoring Survey (Appendix 10.1)	A 3-month programme of Air Quality Monitoring was undertaken to quantify baseline NO ₂ concentrations in the vicinity of the Assessment Boundary. Agreement of the monitoring programme was secured with BC and RBC, as detailed in Table 10.1 .	5 th June – 2 nd September, 2024

Assessment Process

- 10.22 As outlined in **Table 10.3**, the Project for Assessment has the potential to cause the following effect at the construction and operational stages:
- Changes to concentrations of nitrogen dioxide (NO₂), particulate matter with an aerodynamic diameter of less than 10µm (PM₁₀) and particulate matter with an aerodynamic diameter of less than 2.5µm (PM_{2.5}) as a result of variation in traffic flows.
- 10.23 This has considered the changes in pollution levels at human receptors as a result of variations in traffic flow and associated emissions. It should be noted that these have been described as 'Road Vehicle Exhaust Emissions Effects' throughout the Chapter for reasons of brevity.
- 10.24 The assessment has focused on the assessment of the Project for Assessment, which will ensure that the impacts of the Proposed Scheme are fully understood. Detailed analysis for the Proposed Scheme is only considered necessary if a likely significant effect is identified for the Project for Assessment.

10.25 These have been assessed in accordance with the following methodology.

Construction Stage Road Vehicle Exhaust Emissions

10.26 The Project for Assessment has the potential to affect air quality as a result of changes in traffic flows and associated road vehicle exhaust emissions during the construction stage. Specific data to define vehicle trip generation and distribution was unavailable to inform the assessment. However, it is anticipated that any change in traffic flow is likely to be lower than during the operational stage. As such, potential effects have been assumed to be the same as the findings of the operational stage assessment, as a worst case. This is likely to overestimate potential effects during the construction stage, accommodating various phasing options that could come forward at a later stage, ensuring robust conclusions.

Operational Stage Road Vehicle Exhaust Emissions

10.27 The Project for Assessment has the potential to affect air quality as a result of changes in traffic flows and associated road vehicle exhaust emissions during the operational stage. These have been assessed using the criteria contained within the IAQM 'Land-Use Planning & Development Control: Planning for Air Quality'¹ guidance. This was informed by a dispersion modelling study undertaken in accordance with the methodology outlined in **Appendix 10.1**.

10.28 Dispersion modelling was undertaken for the following scenarios:

- Verification - Undertaken to allow verification of model results against local monitoring data. Considered traffic flows in 2023, as well as other relevant inputs for this year;
- Do-Minimum (DM) - Traffic flows for 2039 without the Project for Assessment but including the predicted growth and vehicle movements from projects included within the Development Log¹, with the exception of allocation JPA1.2; and
- Do-Something (DS) - Traffic flows for 2039 should the Project for Assessment be completed, inclusive of predicted growth and vehicle movements from projects included within the Development Log, with the exception of allocation JPA1.2.

10.29 Adopting an assessment year of 2039 is anticipated to provide worst-case results. This is because the magnitude of change in pollutant concentrations should be broadly similar between the DM and DS scenarios irrespective of whether a 2024 or 2039 base year is considered. Use of a 2039 base year ensures future traffic growth and associated emissions are included in the predicted concentrations. It also ensures that future improvements in air quality are excluded to accommodate the worst case.

10.30 However, a sensitivity analysis of potential effects using 2024 traffic data has been undertaken to identify any changes presented within the 2039 scenario. The overall conclusions of the assessment were found to be the same as reported for the 2039 scenario reported in this Chapter. Further details of the sensitivity analysis are provided in **Appendix 10.1**.

10.31 The assessment approach was adopted in order to ensure robust outputs. The relevant factors can be summarised as follows:

¹ See **Chapter 2: Approach to EIA** for further details regarding the Development Log.

- The assessment was based on traffic flows following completion of the Project for Assessment, rather than the Proposed Scheme. Given the quantum of the Project for Assessment is larger, this ensured the maximum impact on the road network (and associated air quality effects) was considered;
- An assessment year of 2039 was adopted. The timescales for the implementation of JPA 1.1 extend beyond 2039. However, 2039 has been identified due to the alignment with the PfE Plan² period and is considered, in transport terms, to represent a 'worst-case' in terms of build-out and associated vehicle trips on the road network. As such, this represents the maximum amount of traffic anticipated on the relevant links. It should be noted that all vehicle trips associated with the Project for Assessment were included in this scenario in preference to only those associated with the amount of development anticipated to be completed by this year;
- The modelling scenarios did not consider changes to traffic flows as a result of a potential access road through the South Heywood development (Plot CCC shown on **Figure 4.1**) and re-modelling of the M62 (Plot BBB shown on **Figure 4.1**). As such, improved junction capacities, congestion and vehicle routing on the relevant highway links were not included in the analysis. This ensured robust modelling outputs, as air quality conditions are likely to improve should these measures proceed; and
- Annual mean PM_{2.5} concentrations were compared against the Concentration Target of 10µg/m³. This is the most stringent air quality standard for this pollutant, ensuring a robust assessment outcome.

Reporting of the Environmental Effects and Significance Criteria

10.32 The assessment of likely significant environmental effects as a result of the Project for Assessment has taken into account the construction and operational stages. The following Sections define the approach adopted within the assessment for the determination of sensitivity (or value/importance), magnitude of change (or impact), the level of effect and significance.

Road Vehicle Exhaust Emissions

Determining Sensitivity of Receptor

10.33 Dispersion modelling was initially undertaken in order to quantify the pollutant concentration at the relevant receptor. The sensitivity was then classified on a scale of **high**, **medium** or **low** as outlined in **Table 10.4**. These are based on the values provided within the IAQM guidance¹, which have been adapted to ensure consistency with the terminology and classifications adopted throughout the EIA.

Table 10.4: Road Vehicle Exhaust Emission Human Receptor Sensitivity

Receptor Sensitivity	Pollutant Concentration at Receptor in Assessment Year of 2039
High	103% or more of Air Quality Objective (AQO)
Medium	95 - 102% of AQO
Low	94% or less of AQO
Negligible	_(a)

NOTE: (a) Receptor not sensitive to change in pollutant concentrations. It should be noted this classification has not been utilised in the assessment and is included for EIA continuity purposes only.

Determining the Magnitude of Change

10.34 The magnitude of change has been considered as the change experienced from the future baseline conditions at the sensitive receptor should the Project for Assessment not proceed and has been considered on a scale of **large**, **medium**, **small** or **negligible**. This is shown in **Table 10.5**. As previously, these are based on the values provided within the IAQM¹, which have been adapted to ensure consistency with the terminology and classifications adopted throughout the EIA.

Table 10.5: Road Vehicle Exhaust Emissions Magnitude of Change

Predicted Change as a Proportion of AQO (%)	Magnitude of Change
0	Negligible
1	Small
2 – 5	Medium
> 6	Large

Determining the Level of Effect

10.35 The level of effect has been informed by the magnitude of change due to the Project for Assessment and the evaluation of the sensitivity of the affected receptor. The level of effect has been determined using professional judgement and **Table 10.6** has been a tool which has assisted with this process.

10.36 Whilst **Table 10.6** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*' or '*adverse*'.

Table 10.6: Matrix to Support Determining the Level of Effect

Magnitude of change	Sensitivity				
		High	Medium	Low	Negligible
	Large	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

10.37 The following terms have been used to define the level of the effects identified and these can be 'beneficial' or 'adverse':

- **Major effect:** where the Project for Assessment / Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;
- **Moderate effect:** where the Project for Assessment / Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;
- **Minor effect:** where the Project for Assessment / Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the Project for Assessment / Proposed Scheme is likely to cause a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change; and
- **Negligible:** where the Project for Assessment / Proposed Scheme is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

10.38 The duration of the effect has been assessed as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.

Determining Significance

10.39 For each effect, a statement has been made as to whether the level of effect is '**Significant**' or '**Not Significant**'. This determination has been based on professional judgement and/or relevant guidance/legislation where applicable.

10.40 Significance has only been concluded for residual effects (i.e. following the identification of secondary mitigation).

Baseline Conditions

Local Air Quality Management

10.41 As required by the Environment Act (1995), as amended by the Environment Act (2021), BC has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual mean concentrations of NO₂ are above the AQO within BC's administrative extents. As such, a number of roads have been included within the Greater Manchester Combined Authority (GMCA) Air Quality Management Area (AQMA), which is described as follows:

"This is the part of the GMCA AQMA located within the Bury Council area."

10.42 As shown in **Figure 10.1**, the Assessment Boundary is partly located within the AQMA.

10.43 The Assessment Boundary is also situated within RBC's administrative extents. RBC has also undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual mean concentrations of NO₂ are above the AQO within the borough. As such, a number of roads have been included within the GMCA AQMA, which is described as follows:

"This is the part of the GMCA AQMA located within the Rochdale Council area."

10.44 As shown in **Figure 10.1**, the Assessment Boundary is partly located within the AQMA.

10.45 BC and RBC have concluded that concentrations of all other pollutants considered within the Air Quality Strategy³ are currently below the relevant AQOs. As such, no further AQMAs have been designated.

Local Authority Air Quality Monitoring

10.46 Monitoring of NO₂ concentrations is undertaken by BC and RBC at 51 positions in the vicinity of the Assessment Boundary. Review of recent results indicated levels were above the AQO of 40µg/m³ at eight positions in the vicinity of the A56 - Bury New Road, A576 - Middleton Road, A58 - Bury New Road, A57 and Walsh Lane in recent years. Elevated concentrations would be expected within the vicinity of the Assessment Boundary based on the AQMA designations summarised previously.

10.47 Monitoring of annual mean PM₁₀ concentrations is undertaken at one position in the vicinity of the Assessment Boundary. Levels were below the AQO of 40µg/m³ between 2020 and 2023.

10.48 Reference should be made to **Figure 10.2** for a map of the monitoring locations in the vicinity of the Assessment Boundary.

10.49 BC and RBC do not undertake monitoring of PM_{2.5} in the vicinity of the Assessment Boundary.

10.50 Reference should be made to **Appendix 10.1** for further details of Local Authority air quality monitoring in the vicinity of the Assessment Boundary.

Project Specific Air Quality Monitoring

10.51 At the request of BC⁴, monitoring of NO₂ concentrations was undertaken by Redmore Environmental Ltd between 5th June 2024 and 2nd September 2024 at 15 positions in the

vicinity of the Assessment Boundary in order to provide a baseline for assessment. The results indicated levels above the relevant AQO at two locations and below at 13 survey sites. Reference should be made to **Figure 10.3** for a map of the project specific monitoring locations and **Appendix 10.1** for full details of the results and sampling methodology.

Background Pollutant Concentrations

- 10.52 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 LAs in their Review and Assessment of air quality. The Assessment Boundary is located in a number of grid squares. Data for these locations was downloaded from the DEFRA website for the purpose of the assessment. This indicated that annual mean NO₂, PM₁₀ and PM_{2.5} background concentrations are below the relevant AQOs and Concentration Target at the Assessment Boundary. Reference should be made to **Appendix 10.1** for full details of predicted background pollutant concentrations.

Future Baseline

- 10.53 When determining the future baseline, the EIA Regulations focus on the ‘natural evolution’ of the baseline in the absence of the Project for Assessment. From an air quality perspective, there are limited ‘natural’ aspects that would influence the change in the baseline and any changes would be as direct consequence of human intervention.
- 10.54 Air quality has improved over recent decades and is predicted to in the future. The UK Government has committed to action to improve air quality across the UK through the Air Quality Strategy⁵ and Environmental Improvement Plan⁶. These documents outline a number of initiatives and commitments to Interim and long-term targets to reduce road vehicle exhaust emissions across the UK.
- 10.55 In order to provide a future baseline for assessment of operational stage road vehicle exhaust emission effects, dispersion modelling was undertaken to represent conditions in 2039 without the Project for Assessment in place. This was completed in accordance with the methodology outlined previously and in **Appendix 10.1**. Reasonable assumptions, as outlined previously in the Methodology section, were adopted throughout the assessment to ensure predicted concentrations were robust, whilst also ensuring relevant Government policy and legislation was considered appropriately.

Sensitive Receptors

- 10.56 Human receptor locations sensitive to changes in pollution levels as a result of vehicle exhaust emissions were identified within 200m of the highway network from a desktop study. These comprise 77 positions, labelled R1 to R77, which are considered locations of relevant exposure to long-term pollutant concentrations, as defined by DEFRA, such as residential properties, educational facilities and medical centres. These include properties that may be demolished as part of the Project for Assessment to ensure effects prior to clearance were considered. Reference should be made to **Appendix 10.1** and **Figure 10.4** for details of human receptor positions included in the assessment.
- 10.57 Receptor sensitivity was determined through dispersion modelling and the criteria outlined previously. This indicated the sensitivity of the identified receptors ranged between **low** and **high**.

Primary and Tertiary Mitigation

Construction Stage

10.58 The following primary and tertiary mitigation which has been evaluated as part of the construction stage assessment is outlined in the table below. It is worth noting that those which are relevant to the Proposed Scheme can be controlled through **Volume 3: Environmental Management Plan**, although those that apply to the Project for Assessment lie outside of the Application.

Table 10.7: Primary and Tertiary Mitigation to Inform Assessment of Construction Effects

Mitigation	Relevant to	
	Project for Assessment	Proposed Scheme
CEMP to minimise road vehicle exhaust and other emissions (Volume 3: Environmental Management Plan)	✓	✓
Fugitive Dust Mitigation Measures identified from the IAQM 'Guidance on the Assessment of Dust from Demolition and Construction V2.2', as outlined in Appendix 10.2 and Volume 3: Environmental Management Plan .	✓	✓

Operational Stage

10.59 The following primary and tertiary mitigation which has been evaluated as part of the operational stage assessment is outlined in the table below.

Table 10.8: Primary and Tertiary Mitigation to Inform Assessment of Operational Effects

Mitigation	Relevant to	
	Project for Assessment	Proposed Scheme
Relevant pedestrian and cycle access that encourage the use of sustainable transport modes to / from and through the Assessment Boundary as outlined in Chapter 4: Development Specification – Project for Assessment .	✓	✓

Assessment of Effects, Secondary Mitigation and Residual Effects

Construction Stage

Construction Stage Road Vehicle Exhaust Emissions [Project for Assessment and Proposed Scheme]

10.60 The Project for Assessment has the potential to affect air quality as a result of changes in traffic flows and associated road vehicle exhaust emissions during the construction stage. Specific data to define vehicle trip generation and distribution was unavailable to inform the

assessment. However, it is anticipated that any change in traffic flow is likely to be lower than during the operational stage. As such, potential effects have been assumed to be the same as the findings of the operational stage assessment, as a worst case. This is likely to overestimate potential effects during the construction stage, accommodating various phasing options that could come forward at a later stage, ensuring robust conclusions.

Operational Stage

Operational Stage Road Vehicle Exhaust Emissions [Project for Assessment and Proposed Scheme]

Introduction

- 10.61 The Project for Assessment has the potential to affect air quality as a result of changes in traffic flows and associated road vehicle exhaust emissions during the operational stage. An assessment was therefore undertaken in order to assess changes in pollutant concentrations at sensitive locations in accordance with the IAQM guidance¹. This was informed by a dispersion modelling study and the findings discussed in the following Sections.
- 10.62 Reference should be made to **Appendix 10.1** for full details of the dispersion modelling study and the results.
- 10.63 To aid with proportionality, a greater level of detail has been provided in this Chapter for those receptors which are likely to experience a significant effect prior to the implementation of secondary mitigation. However, this level of detail is provided for all receptors within **Appendix 10.1**.

Evaluation of Effects - NO₂

- 10.64 Annual mean NO₂ concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. Pollution levels were above the relevant AQO at two receptors (R9 and R11 – See **Figure 10.4**) and below at 75 positions in both scenarios. No new exceedances of the AQO were predicted at any receptor between the DM and DS scenarios.
- 10.65 Pollutant concentrations were predicted to reduce at eight receptors (R1, 2, 3, 5, 6, 7, 8 and 11) and increase at 69 positions between the DM and DS scenarios. The decreases were associated with redistribution of traffic as a result of the Project for Assessment (which are predicted to occur in the vicinity of Junction 17 of the M60/A56). Reference should be made to **Figure 10.4** and **Appendix 10.1** for the location and results at the individual receptors.

Project for Assessment

- 10.66 The sensitivity of receptors is considered to be low to high. The magnitude of change is considered to be negligible to large. The largest change in annual mean NO₂ concentration was predicted at receptor R36, a residential property off Moss Hall Lane. This was due to the change in traffic flow on Moss Hall Lane and proximity of the property façade to the roadside.
- 10.67 The predicted effects on annual mean NO₂ concentrations as a result of the Project for Assessment can be summarised as follows:
- **Negligible** at 24 receptors;
 - **Minor adverse** at 52 receptors; and

- **Moderate adverse** at one receptor. This was at R36, a residential property adjacent to Moss Hall Lane.

10.68 In relation to R36, the sensitivity was classified as low as the overall predicted annual mean NO₂ concentration was below 94% of the AQO (25.91µg/m³) and the magnitude of change was classified as large as the change in annual mean NO₂ concentration between the DM and DS scenarios was more than 6% of the AQO (10.85µg/m³). As such, the effect significance was classified as moderate using the matrix in **Table 10.6**.

10.69 Based on the above, there is likely to be a direct, permanent, long-term, overall adverse effect which is considered to range from **negligible** to **moderate adverse** as outlined above.

Proposed Scheme

10.70 The effects for the receptors for the Proposed Scheme are the same as that reported for the Project for Assessment.

Evaluation of Effects - PM₁₀

10.71 Annual mean PM₁₀ concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. Pollution levels were below the relevant AQO at all receptors in both scenarios.

10.72 Pollutant concentrations were predicted to reduce at three (R1, 2 and 3) receptor positions and increase at the remaining 74 receptor positions between the DM and DS scenarios. The decreases were associated with redistribution of traffic as a result of the Project for Assessment in the vicinity of the A56 (south of the M60). Reference should be made to **Figure 10.4** and **Appendix 10.1** for the location and results at the individual receptors.

Project for Assessment

10.73 The sensitivity of receptors is considered to be low. The magnitude of change is considered to range between negligible and medium. The largest change in annual mean PM₁₀ concentration was predicted at receptor R36, a residential property off Moss Hall Lane. This was due to the change in traffic flow on Moss Hall Lane and proximity of the property façade to the roadside.

10.74 Predicted effects on annual mean PM₁₀ concentrations as a result of the Project for Assessment are as follows:

- **Negligible** at 73 receptors; and
- **Minor adverse** at four receptors.

10.75 Based on the above, there is likely to be a direct, permanent, long-term, overall adverse effect which is considered to range from **negligible** to **minor adverse** as outlined above.

Proposed Scheme

10.76 The effects for the receptors for the Proposed Scheme are the same as that reported for the Project for Assessment.

Evaluation of Effect - PM_{2.5}

- 10.77 Annual mean PM_{2.5} concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. Pollution levels were below the Concentration Target at all receptors in both scenarios.
- 10.78 Pollutant concentrations were predicted to reduce at three receptor positions (R1, 2 and 3) and increase at the remaining 74 receptor positions between the DM and DS scenarios. The decreases were associated with redistribution of traffic as a result of the Project for Assessment in the vicinity of the A56 (south of the M60). Reference should be made to **Figure 10.4** and **Appendix 10.1** for the location and results at the individual receptors.

Project for Assessment

- 10.79 The sensitivity of receptors is considered to be low. The magnitude of change is considered to range between negligible and large. The largest change in annual mean PM_{2.5} concentration was predicted at receptor R36, a residential property off Moss Hall Lane. This was due to the change in traffic flow on Moss Hall Lane and proximity of the property façade to the roadside.
- 10.80 Predicted effects on annual mean PM_{2.5} concentrations as a result of the Project for Assessment are as follows:
- **Negligible** at 59 receptors;
 - **Minor adverse** at 17 receptors; and,
 - **Moderate adverse** at one receptor. This effect was identified at R36, a residential property adjacent to Moss Hall Lane.
- 10.81 In relation to R36, the sensitivity was classified as low as the overall predicted annual mean PM_{2.5} concentration was below 94% of the Concentration Target (7.66µg/m³) and the magnitude of change was classified as large as the change in annual mean PM_{2.5} concentration between the DM and DS scenarios was more than 6% of the Concentration Target (1.08µg/m³). As such, the effect significance was classified as moderate using the matrix in **Table 10.6**.
- 10.82 Based on the above, there is likely to be a direct, permanent, long-term, overall adverse effect which is considered to range from **negligible** to **moderate adverse** as outlined above.

Proposed Scheme

- 10.83 The effects for the receptors for the Proposed Scheme are the same as that reported for the Project for Assessment.

Secondary Mitigation or Enhancement

- 10.84 Potential air quality effects were predicted to be moderate and adverse at R36, a residential property off Moss Hall Lane, as a result of operational stage road vehicle exhaust emissions. As such, measures to reduce effects are considered necessary. This should comprise realignment of Moss Hall Lane to create a suitable separation distance between the emission source and the residential property. The increased distance would allow greater dispersion and dilution of emissions prior to impacting the receptor, reducing the overall effect.

- 10.85 In order to inform the exact road realignment required to reduce effects to minor or below, additional dispersion modelling should be undertaken at the detailed design stage. This can be secured through a suitably worded planning condition.

Table 10.9: Summary of Secondary Mitigation for Operational Stage

Mitigation	Person Responsible	Secured by	Relevant to	
			Project for Assessment	Proposed Scheme
Realignment of Moss Hall Lane	Applicant / future applications	Planning Condition	✓	✓

- 10.86 Implementation of the mitigation measure outlined in **Table 10.9** would lead to a reduction in the change of pollutant concentrations and subsequent air quality effects at the receptor R36.

Residual Effect

Project for Assessment

- 10.87 The sensitivity of receptors is considered to be low to high. The magnitude of change, following secondary mitigation, is considered to be negligible to medium. Therefore, there is likely to be a direct, permanent, long-term, adverse residual effect which is considered to range from negligible to minor adverse at all receptors.

Proposed Scheme

- 10.88 The effects for the receptors for the Proposed Scheme are the same as that reported for the Project for Assessment.

Significance

- 10.89 This effect is considered to be **Not Significant** for the Project for Assessment and the Proposed Scheme.

Limitations and Assumptions

- 10.90 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- 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 meteorological data used for the assessment are representative of conditions at the Assessment Boundary. Records were obtained based on a review of available observation locations to ensure the most representative record station was selected;
 - The annual mean NO₂ background concentrations used for the assessment are representative of baseline levels in the study area. Annual mean NO₂ concentrations were obtained from a monitor installed by Redmore Environmental Ltd as part of the monitoring survey in line with best practice guidance. Subsequent analysis was

undertaken in accordance with DEFRA guidance. The use of data obtained from a background monitoring location within the vicinity of the Assessment Boundary is considered to provide a more accurate representation of air quality conditions than estimations obtained from the DEFRA mapping tool;

- The annual mean PM₁₀ and PM_{2.5} background concentrations are representative of baseline levels in the study area. These 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 available;
- The traffic data provided for the purpose of the assessment are accurate. Information was provided by Tetra Tech. This was based on traffic modelling undertaken by WSP and the methodology agreed with Transport for Greater Manchester. Reference should be made to **Chapter 8: Transport and Access** for further details of the traffic data. This ensured an accurate representation of vehicle flows in the local area;
- The monitoring data used in the assessment is accurate. The results were obtained from GMCA and have been ratified by DEFRA and are therefore considered valid. Additional monitoring data to support the assessment was provided by Redmore Environmental Ltd. This has been annualised and bias adjusted in accordance with DEFRA guidance and is therefore considered valid;
- The results of the assessment of operation stage road vehicle exhaust emissions can be considered representative of construction stage effects. It is anticipated that any change in traffic flow is likely to be lower than during the operational stage. As such, potential effects during the construction stage are likely to be overestimated, ensuring robust conclusions; and
- A sensitivity analysis of potential effects using 2024 traffic data was not undertaken. It is considered the assessment year of 2039 is likely to provide robust results as future traffic growth and associated emissions is included in the concentration predictions, whilst anticipated improvements in emissions were not represented as discussed in **Appendix 10.1**.

10.91 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.

Summary

10.92 **Table 10.10** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter, with reference to both the Project for Assessment and Proposed Scheme.

10.93 The table only provides a summary of the residual effects identified within the assessment. Details of all primary, secondary and tertiary mitigation that has been taken into account is summarised within **Volume 3: Environmental Management Plan**

Table 10.10: Summary of Residual and Significant Effects for the Project for Assessment and Proposed Scheme

Effect	Receptor	Project for Assessment		Proposed Scheme	
		Residual Effect	Is the Effect Significant?	Residual Effect	Is the Effect Significant?
Construction Stage					
Road Vehicle Exhaust Emissions	Human Receptors	Negligible to minor adverse	NO	Negligible to minor adverse	NO
Operational Stage					
Road Vehicle Exhaust Emissions	Human Receptors	Negligible to minor adverse	NO	Negligible to minor adverse	NO

References

- ¹ 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>. [Date accessed: 31/01/2025].
- ² GMCA, 2024. Places for Everyone Joint Development Plan Document for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan. Available at: <https://www.greatermanchester-ca.gov.uk/media/9578/places-for-everyone-joint-development-plan-document.pdf>. [Date accessed: 31/01/2025].
- ³ DEFRA, 2023. Air Quality Strategy: Framework for Local Authority Delivery. Available at: <https://www.gov.uk/government/publications/the-air-quality-strategy-for-england>. [Date accessed: 31/01/2025].
- ⁴ Bury Council, 2022. Northern Gateway Development Comments from Services with Public Protection. Available at: Upon request. [Date accessed: 31/01/2025].
- ⁵ DEFRA, 2023. Air Quality Strategy: Framework for Local Authority Delivery. Available at: <https://www.gov.uk/government/publications/the-air-quality-strategy-for-england>. [Date accessed: 31/05/2025].
- ⁶ DEFRA, 2023. Environmental Improvement Plan. Available at: <https://www.gov.uk/government/publications/environmental-improvement-plan>. [Date accessed: 31/01/2025].