

Intermodal Logistics Park North Ltd

INTERMODAL LOGISTICS PARK NORTH (ILPN)

Intermodal Logistics Park North (ILPN) Strategic Rail Freight Interchange (SRFI)

Project reference TR510001

Preliminary Environmental Information Report (PEIR)

Chapter 08: Air quality

October 2025

Planning Act 2008

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

This document forms a part of a Preliminary Environmental Information Report (PEIR) for the Intermodal Logistics Park North (ILPN) project.

A PEIR presents environmental information to assist consultees to form an informed view of the likely significant environmental effects of a proposed development and provide feedback.

This PEIR has been prepared by the project promoter, Intermodal Logistics Park North Ltd. The Proposed Development is described in Chapter 3 of the PEIR and is the subject of a public consultation.

Details of how to respond to the public consultation are provided at the end of Chapter 1 of the PEIR and on the project website:

<https://www.tritaxbigbox.co.uk/our-spaces/intermodal-logistics-park-north/>

This feedback will be taken into account by Intermodal Logistics Park North Ltd in the preparation of its application for a Development Consent Order for the project.

Chapter 8 ◆ Air quality

INTRODUCTION

- 8.1 The Chapter summarises the assessment work undertaken on the Intermodal Logistics Park North Rail Freight Interchange (ILPN RFI) with regard to air quality. ILPN SRFI comprises a Strategic Rail Freight Interchange (SRFI) proposed on land to the east of Newton-Le-Willows.
- 8.2 This Chapter describes the methods used to assess the effects, the baseline conditions currently existing at the DCO Site and surrounding area, the mitigation measures required to prevent, reduce or offset any significant effects and the likely residual effects after these measures have been adopted.
- 8.3 This Chapter has been prepared by Redmore Environmental Ltd. The author of this Chapter is Emily Macey BSc (Hons) MSc MIAQM MEnvSc, a Senior Air Quality Consultant with over six years of industry experience. This Chapter has been reviewed by Jethro Redmore BEng (Hons) MSc CEnv PISEP MIAQM MEnvSc, Director of Redmore Environmental, with 19 years of relevant UK experience.
- 8.4 This Chapter is accompanied by the following appendices:
- Appendix 8.1 Construction Phase Dust Assessment Methodology; and,
 - Appendix 8.2 Rail Emissions Modelling Methodology.

RELEVANT LAW, POLICY AND GUIDANCE

Legislation

- 8.5 The Air Quality Standards Regulations (2010) and subsequent amendments include Air Quality Limit Values (AQLVs) for the following pollutants:
- Nitrogen dioxide (NO₂);
 - Sulphur dioxide (SO₂);
 - Lead;
 - Particulate matter with an aerodynamic diameter of less than 10µm (PM₁₀);
 - Particulate matter with an aerodynamic diameter of less than 2.5µm (PM_{2.5});
 - Benzene; and

- Carbon monoxide.
- 8.6 Air Quality Target Values have also been provided. It should be noted that the AQLV for PM_{2.5} stated in the Air Quality Standards Regulations (2010) was amended in the Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020).
- 8.7 The Air Quality Strategy (AQS) was produced by the Department for Environment, Food and Rural Affairs (DEFRA) and published on 28th April 2023¹. The document contains standards, objectives and measures for improving ambient air quality, including a number of Air Quality Objectives (AQOs). These are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedances over a specified timescale. These are generally in line with the AQLVs, although the requirements for the determination of compliance vary.
- 8.8 The Environmental Improvement Plan² was published in January 2023, providing long term and Interim Targets in order to reduce population exposure to PM_{2.5}. The Concentration Target for 2040 was subsequently adopted in the Environmental Targets (Fine Particulate Matter) (England) Regulations (2023).
- 8.9 Table 8.1 presents the AQO, Interim Target and Concentration Target for pollutants considered within the assessment.

¹ AQS: Framework for Local Authority Delivery, DEFRA, 2023.

² Environmental Improvement Plan 2023, DEFRA, 2023.

Table 8.1 Air Quality Objectives/Interim Target/Concentration Target

Pollutant	Air Quality Objective/Interim Target/Concentration Target	
	Concentration ($\mu\text{m}/\text{m}^3$)	Averaging Period
NO ₂	40	Annual mean
	200	1-hour mean, not to be exceeded on more than 18 occasions per annum
PM ₁₀	40	Annual mean
	50	24-hour mean, not to be exceeded on more than 35 occasions per annum
PM _{2.5}	12	Annual mean Interim Target to be achieved by end of January 2028
	10	Annual mean Concentration Target to be achieved by 2040

8.10 Table 8.2 summarises the advice provided in DEFRA guidance³ on where the AQOs for pollutants considered within this Chapter apply.

³ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

Table 8.2 Examples of Where the Air Quality Objectives Apply

Averaging Period	Objectives Should Apply at	Objectives Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed Building façade of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access Hotels, unless people live there as their permanent residence Gardens of residential properties Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
24-hour mean	All locations where the annual mean objective would apply, together with hotels Gardens of residential properties	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
1-hour mean	All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Kerbside sites where the public would not be expected to have regular access

Local Air Quality Management

- 8.11 Local Authorities are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves comparing present and likely future pollutant

concentrations against the AQOs. If it is predicted that levels at locations of relevant exposure, as summarised in Table 8.2, are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA). For each AQMA the LA is required to produce an Air Quality Action Plan (AQAP), the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

Dust Legislation

- 8.12 The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such as construction sites, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). The Act defines nuisance as:

'any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance.'

- 8.13 Enforcement of the Act, in regard to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the LA is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

National Planning Policy

- 8.14 The following national planning policy is relevant to air quality and was considered in the undertaking of the assessment:

- Department for Transport (DfT), National Networks National Policy Statement⁴ (NPSNN), Paragraphs 5.7 to 5.25;
- National Planning Policy Framework (NPPF)⁵ (December 2024, as amended February 2025), Chapter 15; and
- Department for Communities and Local Government, Planning Practice Guidance⁶.

Regional Planning Policy

- 8.15 The following regional planning policy is relevant to air quality and was considered in the undertaking of the assessment:

- Liverpool City Region Combined Authority, Towards a Spatial Development Strategy for the Liverpool City Region up to 2024⁷. The policies relevant to air quality are Policy LCR SS1, Policy LCR DP5 and Policy LCR DP7. It is at a relatively early stage of preparation,

⁴ National Networks National Policy Statement, DfT, 2024.

⁵ NPPF, Ministry of Housing, Communities and Local Government, 2024.

⁶ Planning Practice Guidance, Department for Communities and Local Government, 2019.

⁷ Towards a Spatial Development Strategy for the Liverpool Region up to 2040, Liverpool City Region Combined Authority, 2023.

has not yet been through Examination in Public and is expected to have unresolved objections. As such, and in accordance with the NPPF, it cannot currently be afforded any material weight. Its progress will be monitored throughout the DCO application preparation process;

- Greater Manchester Combined Authority (GMCA), Holcroft Moss Planning Obligations Joint Supplementary Planning Document; and,
- GMCA, Places for Everyone Joint Development Plan Document⁸, Policy JP-S5 and Policy JP-C5.

Local Planning Policy

8.16 The following local planning policy is relevant to air quality and was considered in the undertaking of the assessment::

- St Helens Borough Council (SHBC), St Helens Borough Local Plan up to 2037⁹, Policy LPA02, Policy LPA12, Policy LPD01, Policy LPD09 and Policy LPA09;
- Wigan Council (WC), The Wigan Local Plan Core Strategy¹⁰, Policy CR 17; and
- Warrington Borough Council (WBC), Warrington Local Plan 2021/22 - 2038/39¹¹, Policy ENV8.

Guidance Documents

8.17 The following guidance documents were used in the undertaking of the assessment:

- DEFRA (2022) 'Local Air Quality Management Review and Assessment Technical Guidance (TG22)'¹²;
- Institute of Air Quality Management (IAQM) (2017) 'Land-use Planning and Development Control: Planning for Air Quality'¹³;
- National Highways (2024) 'DMRB LA 105 - Air quality'¹⁴;
- IAQM (2024) 'Guidance on the assessment of dust from demolition and construction'¹⁵;
- IAQM (2020) 'A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites V1.1'¹⁶;

⁸ Places for Everyone Joint Development Plan Document, GMCA, 2024.

⁹ St Helens Borough Local Plan up to 2037, SHBC, 2022.

¹⁰ Wigan Local Plan Core Strategy, WC, 2013.

¹¹ Warrington Local Plan 2021/22 - 2038/39, WBC, 2023.

¹² Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

¹³ Land-use Planning and Development Control: Planning for Air Quality, IAQM, 2017.

¹⁴ DMRB LA 105 - Air quality, National Highways, 2014.

¹⁵ Guidance on the assessment of dust from demolition and construction, IAQM, 2024.

¹⁶ A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites v1.1., IAQM, 2020.

- WC (2021) 'Development and Air Quality Supplementary Planning Document (SPD)'¹⁷;
- DEFRA (2024) 'Interim Planning Guidance for PM_{2.5}'¹⁸; and
- Natural England (NE) (2018) 'Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations'¹⁹.

CONSULTATION TO DATE

¹⁷ Development and Air Quality SPD, WC, 2021.

¹⁸ <https://uk-air.defra.gov.uk/pm25targets/planning>

¹⁹ Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations, NE, 2018.

Table 8.3 Scoping and informal consultation summary

Consultee	Consultee comment	Response
EIA Scoping Consultation		
Planning Inspectorate	Effects from combustion plant such as CHP are scoped into the assessment are dependent on the specification of the plant that would be included in the Proposed Development. The study area and approach for this assessment should be discussed where possible agreed with relevant consultation bodies and should include effects on both human and ecological receptors	It has been confirmed that the Proposed Development will not include any combustion plant and therefore further assessment is not required
Planning Inspectorate	The Applicant's attention is drawn to the Inspectorate's comments in ID 3.2.2 and 3.5.7 of this Scoping Opinion in relation to the assessment of air quality effects from potential combustion plant on ecological receptors are identified as part of the scope of air quality assessment and are not referred to in the ecology and biodiversity scope. The ES should include an assessment of air quality effects from combustion on ecological receptors. There should be appropriate cross reference between the air quality and ecology and biodiversity assessments to ensure consistency. The study area and approach for this assessment should be discussed with relevant consultation bodies	It has been confirmed that the Proposed Development will not include any combustion plant and therefore further assessment is not required

Consultee	Consultee comment	Response
Informal Consultation		
WBC	Consultation email detailing proposed assessment methodology issued to WBC for review. The following comment was received: It is acknowledged that the Proposed Development is located within St Helens and their approval should be sought. The assessment will need to identify sensitive receptors/locations in both boroughs, and the baseline data confirmed i.e. the year/date	Consultation has been undertaken with SHBC and agreement received in relation to the proposed methodology. Sensitive receptors that may be affected by the Proposed Development have been identified in the vicinity of the site, including locations in both St Helens and Warrington. The baseline year to be used for assessment is 2024, reflecting the traffic survey data collected.
SHBC	Consultation email detailing proposed assessment methodology issued to SHBC for review. Agreement received.	Assessment to be completed in accordance with agreed methodology.
WC	Consultation email detailing proposed assessment methodology issued to WC for review. Agreement received.	Assessment to be completed in accordance with agreed methodology.

- 8.18 Traffic modelling is ongoing in consultation with the Transport Working Group (TWG) but will not be completed in time for the write up of statutory consultation.
- 8.19 Based on discussion with the TWG, 15 off-site options including a relief road for the southern side of Lane Head will be included in the draft Order Limits and assessed further as part of the traffic modelling.
- 8.20 Potential highway mitigation options are identified and evaluated in the Highway Mitigation Options Report (Appendix 7.2) for statutory consultation.
- 8.21 Once the final highways mitigation package has been settled, it is proposed that a second round of statutory consultation will be undertaken in Q1 2026. This will be a targeted consultation exercise which will focus on traffic impacts, highways mitigation and the associated air quality and noise impacts.

METHODOLOGY AND DATA SOURCES

Construction Phase Fugitive Dust Emissions

- 8.22 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 V2.2'²⁰. The full assessment methodology is provided in Appendix 8.1 and a summary provided below:
- Step 1 - screen the requirement for a more detailed assessment. No assessment is required if there are no human receptors within 250m of the DCO Site boundary or 50m of the construction vehicle route up to 250m from the DCO Site entrance or if there are no ecological receptors within 50m of the DCO Site or the construction vehicle route up to 250m from the DCO Site entrance;
 - Step 2 - assess the risk of dust impacts separately for each of the four activities considered (demolition, earthworks, construction and trackout);
 - Step 2a - define the potential magnitude of dust emission through the construction phase;
 - Step 2b - define the sensitivity of the area around the development to potential dust impacts;
 - Step 2c - determine the risk if dust impacts by combining the findings of Step 2a and Step 2b;
 - Step 3 - determine the site-specific mitigation for each of the four activities; and

²⁰ Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

- Step 4 - examine the residual and in-combination effects and determine significance.

- 8.23 The study area included human sensitive receptors within 250m of the DCO Site boundary and 50m of the construction vehicle route up to 250m from the DCO Site entrance, and ecological receptors within 50m of the DCO Site and the construction vehicle route up to 250m from the DCO Site entrance. This was based on the requirements of the IAQM guidance²¹. The effects were considered with regard to dust soiling, human health effects and ecological designated sites.
- 8.24 It should be noted that the IAQM²² guidance does not provide a methodology for the determination of mitigated risk. As such, it was assumed that the embedded mitigation is not implemented for the purpose of the initial assessment. Additionally, the methodology considers risk of effect, rather than magnitude of effect. This therefore represents a departure from the overall PEIR methodology as required by the relevant Institute for air quality practitioners.

Construction Phase Road Vehicle Exhaust Emissions

- 8.25 The Proposed Development has the potential to increase concentrations of NO₂, PM₁₀ and PM_{2.5} as a result of road traffic exhaust emissions associated with vehicles travelling to and from the DCO Site during the construction phase. An assessment was undertaken using the criteria contained within the IAQM 'Land-Use Planning & Development Control: Planning for Air Quality' guidance²³ to determine the potential for trips generated by the Proposed Development to affect local air quality.
- 8.26 The following criteria are provided to help establish when an assessment of potential road traffic impacts on the local environment is likely to be considered necessary:
- A change in Light Duty Vehicle (LDV) flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA or more than 500 AADT elsewhere; and
 - A change of Heavy Duty Vehicle (HDV) flows of more than 25 AADT within or adjacent to an AQMA or more than 100 elsewhere.
- 8.27 Should these criteria not be met then the IAQM guidance²⁴ considers air quality impacts associated with a scheme to be **negligible** and **not significant**. If the criteria are exceeded then the assessment proceeds to dispersion modelling, as described below for operational phase road vehicle exhaust emissions.
- 8.28 Traffic modelling was not complete at the time of writing. As such, an assessment of construction phase road vehicle exhaust emissions will be undertaken for further targeted consultation and included in the ES in time for submission of the DCO application.

Operational Phase Road Vehicle Exhaust Emissions

²¹ Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

²² Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

²³ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

²⁴ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

8.29 The Proposed Development has the potential to impact on existing air quality as a result of exhaust emissions associated with vehicles travelling to and from the DCO Site during the operational phase. These were assessed for human and ecological receptors as outlined in the following Sections.

Human Receptors

8.30 Potential effects as a result of operational phase road vehicle exhaust emissions at human receptors have been assessed in accordance with the IAQM guidance²⁵.

8.31 Dispersion modelling using Atmospheric Dispersion Modelling System (ADMS) ADMS-Roads, Version 5.0.1.3 was undertaken to predict changes in concentrations of NO₂, PM₁₀ and PM_{2.5} at existing human receptor locations within the study area as a result of vehicle emissions associated with traffic generated by the Proposed Development for the following scenarios:

- Baseline;
- Future Baseline (Future Year Do-Minimum (DM)) (predicted baseline traffic flows without the Proposed Development in place during the opening year); and
- Future Baseline with the Proposed Development (Future Year Do-Something (DS)) (predicted traffic flows with the Proposed Development in place during the opening year).

8.32 The study area was determined in accordance with the guidance provided by National Highways²⁶ in relation to the extents of emission dispersion from road sources. As such, human receptors sensitive to potential changes in off-site pollutant concentrations were identified within 200m of the highway network.

8.33 Following modelling of pollutant concentrations at sensitive receptor locations, the significance of effect was determined using the IAQM guidance²⁷ based on the predicted level with the Proposed Development in place and the change in air quality as a result of emissions associated with the Proposed Development.

8.34 The sensitivity of receptors to potential changes in pollutant concentrations as a result of road vehicle exhaust emissions was initially defined using the criteria summarised in Table 8.4. These are based on the values provided within the IAQM guidance²⁸ with added descriptors to provide continuity throughout the PEIR.

²⁵ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

²⁶ LA 105: Air Quality, National Highways, 2024.

²⁷ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

²⁸ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

Table 8.4 Operational Phase Road Vehicle Exhaust Emissions - Receptor Sensitivity

Receptor Sensitivity	Pollutant Concentration at Receptor in Assessment Year
Very High	110% or more of Air Quality Assessment Level (AQAL)
High	103 - 109% of AQAL
Medium	95 - 102% of AQAL
Low	76 - 94% of AQAL
Negligible	75% or less of AQAL

8.35 The magnitude of predicted air quality impacts was calculated based on the concentration change between the DM and DS scenarios as a proportion of the AQAL. This is outlined in Table 8.5 and are based on the values provided within the IAQM guidance²⁹.

Table 8.5 Operational Phase Road Vehicle Exhaust Emissions - Magnitude of Impact

Predicted Concentration Changes as a Proportion of the AQAL (%)	Magnitude of Impact
0	No change
1	Negligible
2 - 5	Minor
6 - 10	Moderate
More than 10	Major

8.36 It should be noted that the categories outlined in Table 8.5 were used by rounding the change in percentage pollutant concentration to whole numbers.

²⁹ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

- 8.37 The interaction between the magnitude of impact and sensitivity of the receptor was utilised to define the significance of effect, as outlined in Table 8.6. This is based on the IAQM guidance³⁰.

Table 8.6 Operational Phase Road Vehicle Exhaust Emissions - Significance of Effect

Concentration at Receptor in Assessment Year	Predicted Concentration Change as Proportion of AQAL ($\mu\text{g}/\text{m}^3$)			
	1	2 - 5	6 - 10	> 10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 - 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 - 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 - 109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

- 8.38 The IAQM³¹ indicate that where the overall effect is **substantial** or **moderate**, the effect is likely to be considered **significant**, whilst if the effect is **slight** or **negligible**, the effect is likely to be considered **not significant**.
- 8.39 Traffic data was not available at the time of reporting. An assessment of operational phase road vehicle exhaust emissions will be revisited for a further targeted consultation and reported in the ES in time for submission of the DCO application.

Ecological Receptors

- 8.40 Potential effects as a result of operational phase road vehicle exhaust emissions at ecological receptors have been assessed in accordance with NE guidance 'Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitat Regulations'³² and the IAQM guidance 'A Guide to the Assessment of Air Quality Impacts on Designated Conservation Sites'³³.

³⁰ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

³¹ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

³² Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitat Regulations, NE, 2018.

³³ A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites, IAQM, 2019.

- 8.41 The study area was determined in accordance with the guidance provided by NE³⁴ in relation to the extents of emission dispersion from road sources. As such, ecological receptors sensitive to potential changes in off-site pollutant concentrations were identified within 200m of the highway network.
- 8.42 The sensitivity of ecological receptors was defined using the methodology outlined in Chapter 5.
- 8.43 It should be noted that traffic data was not available at the time of reporting due to delays in local network modelling. As such, an assessment of operational phase road vehicle exhaust emissions on human receptors was not undertaken as part of the PEIR. This will be revisited through the ES in time for submission of the DCO application.

Operational Phase Rail Emissions

- 8.44 The Proposed Development has the potential to impact on existing air quality as a result of rail emissions associated with diesel locomotives travelling to and from the DCO Site during the operational phase. These were assessed for human and ecological receptors as outlined in the following Sections.

Human Receptors

- 8.45 Potential effects as a result of operational phase rail emissions at human receptors have been assessed in accordance with DEFRA guidance 'Local Air Quality Management Technical Guidance (TG22)'³⁵.
- 8.46 The guidance recommends that air quality impacts on annual mean NO₂ concentrations in the vicinity of railway lines should be considered where the following criteria are met:
- Rail lines with a heavy traffic of diesel locomotives, as defined within the guidance;
 - Where estimated background NO₂ concentration is greater than 25µg/m³; and
 - Where there is potential for long-term exposure within 30m of a railway line.
- 8.47 The guidance recommends that air quality impacts on SO₂ concentrations in the vicinity of railway lines should be considered where the following criteria are met:
- Where there is the potential for short-term exposure should a stationary locomotive be situated within 15m of a sensitive land use on more than three occasions per day.
- 8.48 Should these criteria not be met then the DEFRA guidance³⁶ indicates that rail emissions would not cause exceedances of the relevant AQOs. As such, effects would be considered **negligible** and **not significant**. If the criteria are exceeded then the assessment proceeds to dispersion modelling, as described previously for operational phase road vehicle exhaust

³⁴ Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitat Regulations, NE, 2018.

³⁵ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

³⁶ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

emissions.

Ecological Receptors

- 8.49 Potential effects as a result of operational phase rail emissions at ecological receptors have been assessed in accordance with NE guidance 'Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitat Regulations'³⁷ and the IAQM guidance 'A Guide to the Assessment of Air Quality Impacts on Designated Conservation Sites'³⁸.
- 8.50 Locomotive emissions associated with the Proposed Development may occur within 200m of Highfield Moss Site of Special Scientific Interest (SSSI), both on the Chat Moss Line and within the DCO Site itself. Dispersion modelling using ADMS-Roads was therefore undertaken to predict change in oxides of nitrogen (NO_x) and SO₂ concentrations, as well as nitrogen and acid deposition, at the site. This was completed for the following scenarios:
- 2030 Baseline - Pollutant level without the Proposed Development; and
 - 2030 Proposed Development - Baseline pollutant level without the Proposed Development in addition to the contribution from diesel locomotives accessing the DCO Site.
- 8.51 Reference should be made to Appendix 8.2 for details of the dispersion modelling methodology and associated inputs.
- 8.52 The sensitivity of ecological receptors was defined using the methodology outlined in Chapter 5.
- 8.53 The predicted Process Contribution (PC), the difference between the Proposed Development and Baseline scenarios, as a proportion of the relevant critical load or level was calculated from the modelling results. PCs below 1% of the relevant critical level or load were classified as **not significant** in accordance with the NE guidance³⁹. If PCs exceeded 1%, the modelling results were provided to the Project Ecologists for ecological interpretation and determination of effect significance.
- 8.54 It should be noted that the NE guidance⁴⁰ does not define the magnitude of effect, it solely provides a criterion below which effects can be considered **not significant**. This therefore represents a departure from the overall PEIR methodology in response to NE guidance.

³⁷ Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitat Regulations, NE, 2018.

³⁸ A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites, IAQM, 2019.

³⁹ Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitat Regulations, NE, 2018.

⁴⁰ Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitat Regulations, NE, 2018.

BASELINE CONDITIONS

Local Air Quality Management

- 8.55 As required by the Environment Act (1995), as amended by the Environment Act (2021), Local Authorities within the vicinity of the DCO Site have undertaken Review and Assessment of air quality within their area of jurisdiction. The outcomes, including details of any declared AQMAs, are summarised in the following Sections.

St Helens Borough Council

- 8.56 Four AQMAs have been declared by SHBC due to exceedances of the annual mean AQO for NO₂. AQMA No.1 and AQMA No.2 are within the vicinity of the DCO Site and are defined as follows:

'AQMA No.1 - an area encompassing the M6 for its entire length within the borough.'

'AQMA No.2 - High Street Newton le Willows (A49) between the junctions of Ashton Road and Church Street.'

- 8.57 The Proposed Development is located within AQMA No. 1 and approximately 310m south of AQMA No.2. As such, there is the potential for vehicles travelling to and from the DCO Site to increase pollution levels in this sensitive area. This has been considered throughout the assessment.
- 8.58 SHBC has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs. As such, no further AQMAs have been designated.

Wigan Council

- 8.59 A number of roads within Wigan have been included within the GMCA AQMA due to exceedances of the annual mean AQO for NO₂. This is described as follows:

'This is the part of the Greater Manchester Combined Authority AQMA located within the Wigan Council area.'

- 8.60 The Proposed Development is located approximately 730m south of the GMCA AQMA. As such, there is the potential for vehicles travelling to and from the DCO Site to increase pollution levels in this sensitive area. This has been considered throughout the assessment.
- 8.61 WC has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs. As such, no further AQMAs have been designated.

Warrington Borough Council

- 8.62 WBC has declared two AQMAs due to exceedances of the annual mean AQO for NO₂. These are described as follows:

'Motorway AQMA - An area 50m from roadside around the M62, M6 and M56.'

'Warrington AQMA - Around the town centre and major arterial roads.'

- 8.63 The Proposed Development is adjacent to both the Motorway and Warrington AQMAs. As such, there is the potential for vehicles travelling to and from the DCO Site to increase pollution levels in these sensitive areas. This has been considered throughout the assessment.
- 8.64 WBC has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs. As such, no further AQMAs have been designated.

Air Quality Monitoring

- 8.65 Monitoring of pollutant levels is undertaken by SHBC, WC and WBC throughout their areas of jurisdiction. Recent NO₂ concentrations recorded in the vicinity of the DCO Site are shown in Table 8.7. Exceedances of the AQO of 40µg/m³ are shown in **bold**.

Table 8.7 Air Quality Monitoring

Monitoring Site		Local Authority	Monitored NO ₂ Concentration (µg/m ³)			
			2021	2022	2023	2024
HS	St Helens High Street	SHBC	30	27	25.1	--(a)
SR	St Helens Southworth Road	SHBC	34	37	31	-(a)
1	170 Southworth Road	SHBC	24.1	18.9	19.5	-(a)
6	Parkside Lampost	SHBC	20.9	17.7	20.0	-(a)
7, 10 31	160 Southworth Road	SHBC	36.5	27.8	26.8	-(a)
8	157 High Street	SHBC	23.4	20.3	19.1	-(a)
11	Southworth Road LP 11	SHBC	35.1	28.9	26.6	-(a)
14, 23	19 High Street	SHBC	34.4	25.5	27.7	-(a)
25, 32	High Street Monitor	SHBC	31.2	26.0	26.9	-(a)
15	2 Parkside Cottages	SHBC	26.6	23.2	25.7	-(a)

Monitoring Site		Local Authority	Monitored NO ₂ Concentration (µg/m ³)			
			2021	2022	2023	2024
DT6	M62 Elm Road	WBC	28.4	24.5	23.4	21.9
WI167NO	60 Newton Road	WC	20.6	19.2	19.2	17.0
WI168NO	239a Newton Road	WC	25.4	25.0	24.3	21.5
WI169NO	East Lancashire Road	WC	26.1	24.1	22.8	21.4
WI205NO	Lime Grove, Lane Head	WC	23.0	22.9	21.1	19.0
WI170NO	269 Newton Road	WC	22.7	21.4	19.3	18.7
WI180NO	4 Winwick Lane	WC	44.6	45.3	42.4	39.1
WI188NO	Winwick Lane	WC	30.6	30.7	28.5	24.7
WI189NO	Newton Road	WC	25.3	21.9	-	-
WI206NO	Winwick Lane	WC	22.6	20.7	-	-
WI207NO	Winwick Lane	WC	27.3	23.2	-	-
WI214NO	Newton Road	WC	17.1	17.0	-	-
WI215NO	Newton Road	WC	19.0	17.7	-	-
WI213NO	Newton Road	WC	17.1	16.0	14.9	13.4
WI52NO	Church Lane	WC	30.5	29.7	26.8	25.0
W199NO	Church Street	WC	23.1	22.8	-	-

Monitoring Site		Local Authority	Monitored NO ₂ Concentration (µg/m ³)			
			2021	2022	2023	2024
WI226NO	Charles Street	WC	20.8	20.3	19.0	17.4
WI227NO	Church Street	WC	25.1	23.9	21.4	21.0
WI228NO	High Street	WC	21.6	22.4	20.8	20.4
WI225NO	Charles Street	WC	19.9	20.5	19.7	17.7
WI229NO	Heath Street	WC	22.8	21.1	-	-
WI221NO	Tanner's Lane	WC	20.9	21.8	19.6	17.7
WI222NO	Tanner's Lane	WC	22.1	24.9	23.0	21.8
WI223NO	High Street	WC	20.7	22.4	20.9	18.9
WI224NO	High Street	WC	29.6	30.3	27.3	29.1
WI230NO	Heath Street	WC	27.1	29.1	27.0	23.9
WI242NO	Slag Lane	WC	-	17.1	-	-
WI243NO	Slag Lane	WC	-	17.9	16.8	-

Note: (a) Data not available at time of reporting.

8.66 As shown in Table 8.7, annual mean NO₂ concentrations were above the AQO of 40µg/m³ at only a single monitoring location: WI180NO – 4 Winwick Lane in 2021 to 2023. The monitor is located on a building façade, in a row of 6 terraced houses, approximately 2m from the kerb of the nearest road, immediately to the south of a set of traffic lights, where idling and queuing traffic occurs. As such, elevated levels would be expected at this location. Levels were below the AQO in 2024. Levels recorded on the opposite side of Winwick Lane: WI188NO have been well below the AQO since 2021 and show evidence of a clear improvement in air quality over that period. Results were below the AQO at all remaining monitors in recent years,

including all other locations monitored in Lane Head and along Winwick Lane. Reference should be made to Figure 8.1 for a map of the survey positions.

- 8.67 Pollutant concentrations during 2021 were affected by changes to travel patterns associated with the COVID-19 pandemic. The results should therefore be viewed with caution. However, data for 2022 is now considered representative of post-pandemic conditions. This is supported by the IAQM⁴¹, who have adopted the following position:

'ambient air quality monitoring data for the year 2022 and beyond is generally considered to represent the current post-pandemic baseline.'

- 8.68 Monitoring of PM₁₀ and PM_{2.5} concentrations is not undertaken within the vicinity of the DCO Site.

Background Concentrations

- 8.69 Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA to assist Local Authorities in their review and assessment of air quality. The DCO Site is partly located in six grid squares. Data for these locations was downloaded from the DEFRA website⁴² for the purpose of the assessment and is summarised in Table 8.8 for the baseline year of 2025 and future assessment year of 2030.

⁴¹ Use of 2020 and 2021 Monitoring Datasets - IAQM Position Statement V1.1, IAQM, 2023.

⁴² <https://uk-air.defra.gov.uk/data/iaqm-background-maps?year=2021>.

Table 8.8 Background Pollutant Concentration Predictions

NGR (m)	Predicted Background Pollutant Concentration ($\mu\text{g}/\text{m}^3$)					
	NO ₂		PM ₁₀		PM _{2.5}	
	2025	2030	2025	2030	2025	2030
359500, 395500	10.94	8.64	13.35	13.08	7.02	6.76
360500, 394500	14.24	10.89	13.96	13.68	6.77	6.51
360500, 395500	11.07	8.63	14.19	13.92	6.83	6.57
361500, 394500	11.22	8.94	14.84	14.57	6.78	6.52
361500, 395500	9.83	7.93	13.14	12.86	6.56	6.30
362500, 395500	9.75	7.87	13.36	13.08	6.58	6.32

8.70 As shown in Table 8.8, background concentrations at the DCO Site are below the AQO of $40\mu\text{g}/\text{m}^3$ for NO₂ and PM₁₀ and Interim Target of $12\mu\text{g}/\text{m}^3$ for PM_{2.5}.

Sensitive Receptors

8.71 A sensitive receptor is defined as any location which may be affected by changes in air quality as a result of the Proposed Development. These are summarised in the following Sections.

Construction Phase Fugitive Dust Emission Sensitive Receptors

8.72 Receptors sensitive to potential dust effects during demolition, earthworks and construction were identified from a desk-top study of the area up to 250m from the DCO Site boundary. These are summarised in Table 8.9

Table 8.9 Construction Dust - Demolition, Earthworks and Construction Dust Sensitive Receptors

Distance from DCO Site Boundary (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Up to 20	10 - 100	1
Up to 50	10 - 100	1
Up to 100	More than 100	-
Up to 250	More than 100	-

8.73 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 DCO Site access. These are summarised in Table 8.10.

Table 8.10 Construction Dust - Trackout Dust Sensitive Receptors

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

8.74 The ecological receptor identified in Table 8.9 is Highfield Moss SSSI, which is adjacent to the DCO Site.

8.75 Based on the criteria outlined within Appendix 8.1, the sensitivity of the receiving environment to potential dust soiling and health impacts is classified as **high**. This was because the identified receptors included residential properties.

8.76 As the identified ecological receptor is a SSSI, the sensitivity to potential construction phase fugitive dust emission effects was classified as **medium** based on the criteria outlined within Appendix 8.1.

Operational Phase Road Vehicle Exhaust Emissions

8.77 There are a number of residential properties and ecological designations within the vicinity of roads which may be affected by changes in traffic flow and associated increases in vehicle

exhaust emissions as a result of the Proposed Development. The exact receptors for consideration within the ES will be determined following receipt and review of the finalised traffic data. This will ensure all relevant sensitive locations are considered.

Operational Phase Rail Emissions

- 8.78 Receptors sensitive to potential operational phase rail emission impacts were identified from a desk-top study. This indicated the Highfield Moss SSSI is located adjacent to the DCO Site. No other statutory ecological designations or sensitive human receptors were identified within the study area.
- 8.79 For the purpose of the assessment, discrete receptors were identified throughout Highfield Moss SSSI to represent the potential locations of sensitive features. These are summarised in Table 8.11.

Table 8.11 Operational Phase Rail Emissions: Discrete Ecological Receptor Locations

Receptor		NGR (m)	
		X	Y
E1	Highfield Moss SSSI	360989.8	395644.7
E2	Highfield Moss SSSI	361153.2	395685.3
E3	Highfield Moss SSSI	361364.1	395733.4
E4	Highfield Moss SSSI	361004.7	395620.2
E5	Highfield Moss SSSI	361219.9	395670.7
E6	Highfield Moss SSSI	361397.1	395710.0
E7	Highfield Moss SSSI	361534.7	395742.5
E8	Highfield Moss SSSI	361722.4	395791.6
E9	Highfield Moss SSSI	361039.0	395592.2

Receptor		NGR (m)	
		X	Y
E10	Highfield Moss SSSI	361085.0	395568.3
E11	Highfield Moss SSSI	361160.9	395534.9
E12	Highfield Moss SSSI	361278.7	395450.9
E13	Highfield Moss SSSI	361348.5	395379.6
E14	Highfield Moss SSSI	361379.2	395356.3
E15	Highfield Moss SSSI	361407.7	395378.8

8.80 Reference should be made to Figure 8.2 for a map of the discrete receptor locations.

8.81 Critical loads and levels for the qualifying features of Highfield Moss SSSI were obtained from the APIS website⁴³. The annual mean critical levels for NO_x and SO₂ are presented in Table 8.12.

Table 8.12 Annual Mean NO_x and SO₂ Critical Levels

Site Interest Feature	Annual Mean Critical Level (µg/m ³)	
	NO _x	SO ₂
Carex Echinata - Sphagnum Recurvum (Fallax) /Auriculatum (Denticulatum) Mire	30	20
Erica Tetralix - Sphagnum Compactum Wet Heath	30	10
Gentiana pneumonanthe	30	20

⁴³ www.apis.ac.uk.

Site Interest Feature	Annual Mean Critical Level ($\mu\text{g}/\text{m}^3$)	
	NO _x	SO ₂
Molinia Caerulea - Potentilla Erecta Mire	30	10 to 20
Sphagnum Cuspidatum/recurvum (Fallax) Bog Pool Community	30	20

8.82 The critical loads for nitrogen deposition are presented in Table 8.13.

Table 8.13 Critical Loads for Nitrogen Deposition

Feature	Relevant Nitrogen Critical Load Class	Nitrogen Critical Load (kgN/ha/yr)	
		Low	High
Carex Echinata - Sphagnum Recurvum (Fallax) /Auriculatum (Denticulatum) Mire	Valley mires, poor fens and transition mires	5	15
Erica Tetralix - Sphagnum Compactum Wet Heath	Northern wet heath: Erica tetralixdominated wet heath (lowland)	5	15
Gentiana pneumonanthe	Raised and blanket bogs	5	10
Molinia Caerulea - Potentilla Erecta Mire	Moist or wet mesotrophic to eutrophic hay meadow	15	25
Sphagnum Cuspidatum/recurvum (Fallax) Bog Pool Community	Northern wet heath: Erica tetralixdominated wet heath (lowland)	-	-

8.83 The critical loads for acid deposition are presented in Table 8.14.

Table 8.14 Critical Loads for Acid Deposition

Feature	Relevant Acid Critical Load Class	Acid Critical Load (keq/ha/yr)		
		CLMinN	CLMaxS	CLMaxN
Carex Echinata - Sphagnum Recurvum (Fallax) /Auriculatum (Denticulatum) Mire	Bogs	0.320	0.249	0.570
Erica Tetralix - Sphagnum Compactum Wet Heath	Dwarf shrub Heath	0.714	0.470	1.362
Sphagnum Cuspidatum/recurvum (Fallax) Bog Pool Community	Bogs	0.321	0.249	0.570
Gentiana pneumonanthe	No Critical load assigned	-	-	-

- 8.84 As shown in the Tables above, Highfield Moss SSSI contains features sensitive to changes in atmospheric pollution levels. For the purpose of the assessment, the most sensitive feature was assumed to be present at all discrete receptors to ensure a robust assessment.
- 8.85 The sensitivity of Highfield Moss SSSI to potential air quality effects as a result of operational phase rail emissions was defined as **high** in accordance with the methodology outlined in Chapter 5.

EMBEDDED MITIGATION MEASURES

Construction Phase Fugitive Dust Emissions

- 8.86 An outline Construction Environmental Management Plan (oCEMP) will be produced to control potential air quality effects during each construction phase. The mitigation measures outlined in Table 8.15 will be included within the phase-specific oCEMP to mitigate fugitive dust emissions during construction of that phase as relevant. These are based on the advice provided within IAQM guidance⁴⁴ and are therefore considered suitable for the DCO Site.

⁴⁴ Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

Table 8.15 Construction Phase Fugitive Dust Emissions - Embedded Mitigation

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 at various locations on the site boundary Display the head or regional office contact information. Develop and implement a Dust Management Plan (DMP), which will include measures to control other emissions, approved by the relevant Local Authorities
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 the relevant Local Authorities when asked 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 Hold regular liaison meetings with other high risk construction sites within 250m of the DCO Site boundary, to ensure plans are co-ordinated and particulate matter emissions are minimised
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 relevant Local Authorities when asked Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the relevant Local Authorities when requested 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

Issue	Control Measure
Preparing and maintaining the site	Identify sensitive receptors and activities likely to give rise to dust, odours or emissions Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible: Consider placement of stockpile locations in order to reduce the potential for dust production Where applicable, adopt good working practice to avoid or reduce problems e.g., revegetate or seal earthworks Consider of the erection of solid screens or barriers around dusty activities where practicable. Since it is difficult to suppress dust once it is airborne, try to stop dust being generated in the first place – damp down unpaved areas subject to traffic or wind, sand, spoil and aggregate stocks, etc. Consider the use of additives in spraying water for some applications to increase the effectiveness of spraying. Ensure vehicles transporting dusty materials are sheeted Consider screening dust-generating activities if dust production cannot be prevented Monitor weather forecasts and conditions and take adequate measures when high winds expected. Avoid site runoff of water or mud Remove materials that have a potential to produce dust from site as soon as possible Cover, seed or fence stockpiles to prevent wind whipping
Operating vehicle/machinery and sustainable travel	Ensure all vehicles switch off engines when stationary for more than 1 minute, no idling vehicles Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials

Issue	Control Measure
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 where present Minimise drop heights and use fine water sprays where appropriate Ensure equipment is available to clean any dry spillages, and clean up spillages as soon as reasonably practicable using wet cleaning methods, where appropriate
Waste management	Avoid bonfires and burning of waste materials
Demolition	Ensure water suppression is available during demolition operations Avoid explosive blasting, using appropriate manual or mechanical alternatives Bag and remove any biological debris or damp down such material before demolition
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

Issue	Control Measure
Trackout	Use water-assisted dust sweepers on the access and local roads, to remove, as necessary, any material tracked out of the DCO Site Avoid dry sweeping of large areas Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport 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 Install hard surfaced haul routes where appropriate, which are regularly dampened down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned Implement a wheel washing system Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit Access gates to be located at least 10m from receptors

Operational Phase Road Vehicle Exhaust Emissions

8.87 The operation of the Proposed Development will incorporate a range of embedded mitigation measures designed to minimise air quality impacts. These include the following that are integrated into the layout, design and operational protocols from the outset:

- the Proposed Development will be designed to prioritise rail over road freight, reducing Heavy Goods Vehicle (HGV) movements;
- a Delivery, Servicing and HGV Management Strategy that sets out the preferred routes for HGVs travelling to and from the DCO Site;
- a Framework Travel Plan which includes measures such as an electronic Travel Welcome Pack, car sharing, information on the existing local cycle routes and bus services to promote sustainable travel habits;
- staff and visitor access will be supported by public transport links, cycle paths, and pedestrian routes;
- secure cycle storage and changing facilities will be provided to encourage active travel; and

- regular audits and stakeholder engagement will ensure continuous improvement.

8.88 Measures to promote active travel are set out in the Framework Travel Plan and the Sustainable Access and Movement Strategy. In addition, suitable off-site highways mitigation will be provided based on the results of future analysis. A summary of the potential options is included within the Highways Mitigation Options Report. This will be confirmed within the ES.

Operational Phase Rail Emissions

8.89 In order to minimise operational phase rail emissions, the majority of trains accessing the DCO Site will be fully electric or bimodal electric/ diesel, using electricity where possible and Hydrogenated Vegetable Oil (HVO) in place of diesel. Diesel locomotives will be phased out progressively as the wider rail network is electrified. Additionally, the Proposed Development includes fully electrified rail apart from the track under the crane gantries within the Railport.

POTENTIAL EFFECTS PRIOR TO ADDITIONAL MITIGATION

Construction Phase Fugitive Dust Emissions

8.90 The construction phase of the Proposed Development will involve activities such as demolition, excavation, ground works, cutting, construction, concrete batching and storage of materials which 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.

8.91 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.

8.92 The assessment of potential effects associated with construction phase fugitive dust emissions is provided in the following Sections.

Step 1 - Screen the requirement for a more detailed assessment

8.93 As shown in Table 8.10, the desk-top study undertaken to inform the baseline identified a number of sensitive receptors within 250m of the DCO Site boundary. As such, a detailed assessment of potential dust effects has been undertaken.

Step 2a - Define the risk of dust impacts

8.94 The dust emission magnitude for the construction activities was defined using the criteria detailed in the IAQM guidance⁴⁵, as detailed in Appendix 8.1. These are summarised in Table 8.16.

⁴⁵ Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

Table 8.16 Construction Phase Dust Emission Magnitude

Activity	Dust Emission Magnitude	Justification
Demolition	Medium	Total building volume to be demolished between 12,000m ³ to 75,000m ³ Potentially dusty construction material Demolition activities 6m to 12m above ground level
Earthworks	Large	Total site area is greater than 110,000m ² Potentially dusty soil type Potentially more than 10 heavy earth moving vehicles active at any one time
Construction	Large	Total building volume is greater than 75,000m ³ Potentially dusty construction material
Trackout	Large	Based on the site area the unpaved road length is likely to be greater than 100m during certain stages of construction Potentially dusty surface material

Step 2b - Define the sensitivity of the area

8.95 The sensitivity of the study area was defined using the criteria detailed in the IAQM guidance⁴⁶, as detailed in Appendix 8.1, based on the number and type of individual receptors within the vicinity of the DCO Site, as well as the local background PM₁₀ concentration. This is summarised in the following Section.

Dust Soiling

8.96 There are between 10 and 100 **high** sensitivity receptors within 20m of the DCO Site boundary. The sensitivity of the area with respect to dust soiling from demolition, earthworks and construction is therefore considered to be **high**.

8.97 There are between 10 and 100 **high** sensitivity receptors within 20m of the road network within 250m of the DCO Site access. The sensitivity of the area with respect to dust soiling

⁴⁶ Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

from trackout is therefore considered to be **high**.

Human Health

- 8.98 As shown in Table 8.5, the maximum annual mean background concentration at the DCO Site is $11.22\mu\text{g}/\text{m}^3$. The sensitivity of the area to potential human health effects from demolition, earthworks, construction and trackout is therefore **medium**.

Ecological

- 8.99 There is one **medium** sensitivity ecological receptor within 20m of the DCO Site boundary. The sensitivity of the area with respect to ecological impacts from demolition, earthworks and construction is therefore considered to be **medium**.

Step 2c - Define the risk of impacts

- 8.100 The derived dust magnitude for each activity was combined with the sensitivity of the area to determine the risk of unmitigated impacts in line with the IAQM⁴⁷ methodology shown in Appendix 8.1. A summary of the risk from each dust generating activity is shown in Table 8.17. It should be noted that the IAQM⁴⁸ guidance does not provide a methodology for the determination of mitigated risk. As such, the following assumes that the embedded mitigation previously outlined for inclusion in the oCEMP is not implemented.

⁴⁷ Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

⁴⁸ Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

Table 8.17 Summary of Potential Unmitigated Construction Phase Fugitive Dust Risks

Potential Effect	Activity	Step 2a - Dust Emission Magnitude	Step 2B - Sensitivity of the Area	Step 2C - Risk
Dust Soiling	Demolition	Medium	High	Medium
	Earthworks	Large	High	High
	Construction	Large	High	High
	Trackout	Large	High	High
Human Health	Demolition	Medium	Medium	Medium
	Earthworks	Large	Medium	Medium
	Construction	Large	Medium	Medium
	Trackout	Large	Medium	Medium
Ecological	Demolition	Medium	Medium	Medium
	Earthworks	Large	Medium	Medium
	Construction	Large	Medium	Medium
	Trackout	Large	N/A	N/A

8.101 As indicated in Table 8.16, the potential risk of dust soiling is **high** from earthworks, construction and trackout and **medium** from demolition. The potential risk of human health impacts is **medium** from demolition, earthworks, construction and trackout. The potential risk of ecological impacts is **medium** from demolition, earthworks and construction.

8.102 It should be noted that the potential for impacts depends significantly on the distance between the dust generating activity and receptor location. Risk was predicted based on a worst-case scenario of works being undertaken at the DCO Site boundary closest to each sensitive area. Therefore, actual risk is likely to be lower than that predicted during the

majority of the construction phase.

Construction Phase Road Vehicle Exhaust Emissions

8.103 Any vehicle movements associated with the construction phase of the Proposed Development will generate exhaust emissions on the local and regional road networks. As outlined previously, traffic data was not available to inform the analysis at the time of reporting. As such, an assessment of construction phase road vehicle exhaust emissions was not undertaken as part of the PEIR. This will be revisited through the ES in time for submission of the DCO application.

Operational Phase Road Vehicle Exhaust Emissions

8.104 Any vehicle movements associated with the operational phase of the Proposed Development will generate exhaust emissions on the local and regional road networks. As outlined previously, traffic data was not available to inform the analysis at the time of reporting. However, following receipt of the information concentrations of NO₂, PM₁₀ and PM_{2.5} will be predicted at existing human receptor locations to consider the effect of additional vehicle movements on local air quality. This will be undertaken through the ES in time for submission of the DCO application. Potential effects at sensitive ecological receptors will also be considered in accordance with the methodology provided in the NE⁴⁹ and IAQM⁵⁰ guidance outlined previously.

Operational Phase Rail Emissions

8.105 The Proposed Development has the potential to impact on existing air quality as a result of rail emissions associated with diesel locomotives travelling to and from the DCO Site, as well as within the Proposed Development itself, during the operational phase. This will include trains using the following routes:

- Scotland via Golborne to West Coast Main Line;
- East coast via the Chat Moss Line then the TransPennine line;
- Port of Liverpool via the Chat Moss Line; and
- Midlands/South West and Southern Ports via the Chat Moss Line then the West Coast Main Line.

8.106 The following locomotives will be utilised:

- Class 99 - bimodal (diesel or Hydrotreated Vegetable Oil (HVO) and electric) or electric;
- Class 90 - electric; and
- Class 66 - diesel or HVO. These will be replaced by electric locomotives over time in line

⁴⁹ Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitat Regulations, NE, 2018.

⁵⁰ A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites, IAQM, 2019.

with relevant policy.

- 8.107 The Chat Moss Line is electrified. Therefore, all bimodal locomotives will utilise electricity when travelling to and from the Proposed Development, as well as when manoeuvring within the DCO Site itself.
- 8.108 There will be a maximum of 16 trains per weekday (32 two-way daily movements) travelling to and from the Proposed Development. These will include four Class 66 (8-two-way daily movements) expected to be split one to the east coast via the Chat Moss Line and three to the south via the Chat Moss Line then the West Coast Main Line.
- 8.109 There will be a maximum of six trains per Saturday (12 two-way daily movements) travelling to and from the Proposed Development. These will include two Class 66 (4-two-way daily movements) to the south via the Chat Moss Line then the West Coast Main Line.
- 8.110 There will be a maximum of two trains per Sunday (4 two-way daily movements) travelling to and from the Proposed Development. These may include one Class 66 (2-two-way daily movements) to the south via the Chat Moss Line then the West Coast Main Line as a worst-case.
- 8.111 Emissions from diesel locomotives have the potential to cause air quality effects at human and ecological receptors. These are assessed in the following Sections.

Human Receptors

- 8.112 The DEFRA guidance⁵¹ indicates there is risk of exposure to exceedances of the 15-minute mean AQO for SO₂ should a stationary locomotive be situated within 15m of a sensitive land use on more than three occasions per day. As outlined in Table 8.2, the Proposed Development is not considered a location of relevant exposure for 15-minute AQOs and there are no other sensitive human receptor locations within 15m of the proposed rail alignment. As such, potential effects on SO₂ concentrations are predicted to be **negligible and not significant**.
- 8.113 DEFRA guidance⁵² indicates there is risk of exposure to exceedances of the annual mean AQO for NO₂ should a sensitive land use be situated within 30m of a railway line identified as having a heavy flow of diesel locomotives and the annual mean background NO₂ concentration is above 25µg/m³. Review of Table 7.2 in the LAQM guidance⁵³ indicates the Chat Moss Line and West Coast Mainline have not been identified as tracks experiencing a high number of diesel train movements. Additionally, the maximum predicted annual mean background NO₂ concentration at the DCO Site is 11.22µg/m³. As such, exceedances of the relevant AQO for NO₂ due to rail emissions are not anticipated at any sensitive location. Potential effects on NO₂ concentrations are therefore predicted to be **negligible and not significant**.

Ecological Receptors

- 8.114 The proposed rail alignment within the DCO Site is within 200m of Highfield Moss SSSI and

⁵¹ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

⁵² Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

⁵³ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

locomotives will also utilise the Chat Moss Line which dissects the designation. Emissions from diesel trains therefore have the potential to affect existing pollution levels at the site. Potential effects were therefore assessed using dispersion modelling to predict changes in NO_x and SO₂ concentrations, as well as nitrogen and acid deposition, at discrete receptors within the designation. The results were then compared to the criteria outlined previously.

8.115 Predicted annual mean NO_x concentrations are provided in Table 8.18.

Table 8.18 Predicted NO_x Concentrations at Highfield Moss SSSI

Discrete Receptor	Predicted Annual Mean NO _x Concentration (µg/m ³)			PC as Prop. Of Critical Level (%)
	Baseline	Development	PC	
E1	14.55	14.77	0.22	0.73
E2	12.80	12.95	0.15	0.49
E3	12.80	12.92	0.12	0.39
E4	12.80	13.02	0.22	0.73
E5	12.80	12.92	0.12	0.39
E6	12.80	12.89	0.09	0.31
E7	12.80	12.88	0.08	0.27
E8	12.80	12.87	0.07	0.25
E9	12.80	13.01	0.21	0.69
E10	12.80	12.99	0.19	0.63
E11	12.80	12.96	0.16	0.54
E12	12.80	12.96	0.16	0.52
E13	12.80	12.99	0.18	0.61
E14	12.80	12.99	0.19	0.63
E15	12.80	12.94	0.14	0.46

8.116 As shown in Table 8.18, the predicted PC was below 1% of the critical level of $30\mu\text{g}/\text{m}^3$ at all discrete receptors. As such, potential effects on annual mean NO_x concentrations are predicted to be **not significant**.

8.117 Predicted annual mean SO_2 concentrations are provided in Table 8.19.

Table 8.19 Predicted SO₂ Concentrations at Highfield Moss SSSI

Discrete Receptor	Predicted Annual Mean SO ₂ Concentration (µg/m ³)			PC as Prop. Of Critical Level (%)
	Baseline	Development	PC	
E1	2.10	2.10	0.00	0.00
E2	2.00	2.00	0.00	0.00
E3	2.00	2.00	0.00	0.00
E4	2.10	2.10	0.00	0.00
E5	2.00	2.00	0.00	0.00
E6	2.00	2.00	0.00	0.00
E7	2.00	2.00	0.00	0.00
E8	2.00	2.00	0.00	0.00
E9	2.10	2.10	0.00	0.00
E10	2.00	2.00	0.00	0.00
E11	2.00	2.00	0.00	0.00
E12	2.00	2.00	0.00	0.00
E13	2.00	2.00	0.00	0.00
E14	2.00	2.00	0.00	0.00
E15	2.00	2.00	0.00	0.00

8.118 As shown in Table 8.19, the predicted PC was below 1% of the lower critical level of $10\mu\text{g}/\text{m}^3$ at all discrete receptors. As such, potential effects on annual mean SO_2 concentrations are predicted to be **not significant**.

8.119 Predicted nitrogen deposition rates are provided in Table 8.20.

Table 8.20 Predicted Nitrogen Deposition at Highfield Moss SSSI

Discrete Receptor	Predicted Annual Nitrogen Deposition (kgN/ha/yr)			PC as Prop. Of Critical Load (%)
	Baseline	Development	PC	
E1	17.70	17.72	0.02	0.32
E2	17.70	17.71	0.01	0.20
E3	17.70	17.71	0.01	0.17
E4	17.70	17.72	0.02	0.32
E5	17.70	17.71	0.01	0.17
E6	17.70	17.71	0.01	0.14
E7	17.70	17.71	0.01	0.12
E8	17.70	17.71	0.01	0.12
E9	17.70	17.71	0.01	0.29
E10	17.70	17.71	0.01	0.29
E11	17.70	17.71	0.01	0.23
E12	17.70	17.71	0.01	0.23
E13	17.70	17.71	0.01	0.26
E14	17.70	17.71	0.01	0.26
E15	17.70	17.71	0.01	0.20

8.120 As shown in Table 8.20, the predicted PC was below 1% of the lowest critical load of 5kgN/ha/yr at all discrete receptors. As such, potential effects on nitrogen deposition are predicted to be **not significant**.

8.121 Predicted acid deposition rates are provided in Table 8.21.

Table 8.21 Predicted Acid Deposition at Highfield Moss SSSI

Discrete Receptor	Predicted Annual Acid Deposition Development PC (keq/ha/yr)	PC as Prop. Of Critical Load (%)
E1	0.003	0.54
E2	0.002	0.34
E3	0.002	0.29
E4	0.003	0.54
E5	0.002	0.29
E6	0.001	0.24
E7	0.001	0.20
E8	0.001	0.20
E9	0.003	0.49
E10	0.003	0.49
E11	0.002	0.39
E12	0.002	0.39
E13	0.003	0.44
E14	0.003	0.44
E15	0.002	0.34

8.122 As shown in Table 8.21, the predicted PC was below 1% of the critical load at all discrete

receptors. As such, potential effects on acid deposition are predicted to be **not significant**.

PROPOSED ADDITIONAL MITIGATION MEASURES

Construction Phase

8.123 Following implementation of the dust control measures outlined for inclusion in the oCEMP outlined previously within this chapter, air quality effects as a result of construction phase fugitive emissions are predicted to be **not significant** in accordance with the IAQM guidance⁵⁴, as summarised in Appendix 8.1. As such, additional mitigation measures are not considered necessary.

Operational Phase Road Vehicle Exhaust Emissions

8.124 A Framework Travel Plan, Sustainable Access and Movement Strategy and a Delivery, Servicing and HGV Management Strategy will be submitted with the DCO application. The package of transport mitigation as part of the Proposed Development will be selected following completion of the detailed assessment works (see the Highway Mitigation Options Report for an initial assessment of potential options). The Travel Plan will promote the use of sustainable transport methods such as public transport, walking and cycling to the Proposed Development and therefore reduce road traffic emissions.

8.125 In addition to the above, the following additional mitigation is proposed:

- A Travel Plan co-ordinator will be appointed to implement and monitor measures across the Proposed Development;
- Car parking will be supplied with active and passive Electric Vehicle charging facilities. This will encourage the uptake of low emissions transportation for staff;
- Space reserved for electric HGV charging points; and
- Secure cycle storage areas to encourage the use of sustainable modes of travel.

8.126 The measures above aim to reduce emissions associated with the Proposed Development and encourages the use of sustainable modes of transport. Any reduction in emissions will be beneficial to both human and ecological receptors. These incentives were not included in the Air Quality Assessment and are therefore proposed additional mitigation measures.

Operational Phase Rail Emissions

8.127 No additional mitigation measures are proposed in relation to operational phase rail emissions.

⁵⁴ Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

RESIDUAL ENVIRONMENTAL EFFECTS

Construction Phase Fugitive Dust Emissions

8.128 In accordance with the IAQM guidance⁵⁵, following implementation of the mitigation measures detailed in Table 8.15, the residual effect from fugitive dust emissions during the construction phase are considered to be **local, adverse, temporary** and **not significant** at receptors of **medium** and **high** sensitivity.

Construction Phase Road Vehicle Exhaust Emissions

8.129 Residual air quality effects on human and ecological receptors as a result of construction and operational phase road vehicle exhaust emissions will be reported following receipt of the traffic data and completion of the relevant assessment.

Operational Phase Rail Emissions

Human Receptors

8.130 Residual effects on human receptors as a result of operational phase rail emissions are predicted to be considered to be **negligible, local, adverse, permanent** and **not significant**.

Ecological Receptors

8.131 Residual effects on ecological receptors as a result of operational phase rail emissions are predicted to be considered to be **adverse, permanent** and **not significant** on a receptor of **high** sensitivity.

CUMULATIVE AND IN-COMBINATION EFFECTS

Construction Phase Fugitive Dust Emissions

8.132 Should construction of other developments within 500m of the DCO Site, including CS1, CS2, CS3 and CS4 and the associated allocations, overlap with the Proposed Development it is possible that in-combination dust effects may occur at sensitive receptors. 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, in-combination effects are predicted to be **not significant**.

Road Vehicle Exhaust Emissions

8.133 Cumulative and in-combination effects as a result of construction and operational phase road vehicle exhaust emissions will be assessed once traffic data is received. The results will then be reported through the ES in time for submission of the DCO application.

Operational Phase Rail Emissions

⁵⁵ Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

- 8.134 Cumulative effects as a result of existing rail emissions were considered through use of the relevant methodologies which incorporate baseline air quality conditions into the assessment.
- 8.135 No developments with the potential for in-combination operational phase rail emissions were identified for consideration in the assessment.

IMPLICATIONS OF CLIMATE CHANGE

- 8.136 The Proposed Development will provide a major shift from road transport to rail. This will reduce the overall distance covered by HGVs per annum with associated emissions savings. These have been considered separately within Chapter 17 of this PEIR.
- 8.137 Changes in climate can result in impacts on local air quality. For example, atmospheric warming associated with climate change has the potential to increase ground-level ozone. However, the impact of climate change on other air pollutants, such as particulate matter, is less certain. Given this uncertainty, it is not feasible to incorporate the effects of climate change within the air quality assessment at this time.
- 8.138 Notwithstanding the above, the overall effects of climate change are considered unlikely to materially affect the results of the assessment. Should the effects of climate change cause worsening of air pollutant levels at the DCO Site in the future, any such effect would be counterbalanced by the forecasted reduction in polluting vehicles on the road network in the future due to the introduction of electric vehicles, as well as other Government policy to reduce atmospheric pollutant concentrations.

SUMMARY AND CONCLUSIONS

- 8.139 The Proposed Development has the potential to cause air quality effects at sensitive locations during the construction and operational phases. As such, an assessment was undertaken in order to determine baseline conditions, assess potential effects and identify any required mitigation.
- 8.140 Potential construction phase air quality effects from fugitive dust emissions were assessed as a result of demolition, earthworks, construction and trackout. Measures were identified for inclusion in an oCEMP to minimise emissions during construction activities. Following implementation of these mitigation measures, the residual effect of construction dust emissions is predicted to be **not significant**.
- 8.141 During the construction and operational phases of the Proposed Development there is the potential for road traffic exhaust emission impacts associated with vehicles travelling to and from the DCO Site. At the time of reporting, traffic data was not available to inform the analysis. As such, an assessment of road vehicle exhaust emissions was not undertaken as part of the PEIR. This will be revisited through the ES in time for submission of the DCO application and will be the subject of a further targeted consultation in Q1 2026. Consultation with the environmental health departments at St Helens, Wigan and Warrington will be

ongoing.

- 8.142 During the operational phase of the Proposed Development there is the potential for rail emission impacts associated with locomotives travelling to and from the DCO Site, as well as within the Proposed Development itself. An assessment of the potential effects on human receptors was therefore undertaken in accordance with the DEFRA guidance⁵⁶. This indicated that effects were predicted to be **negligible** and **not significant**.
- 8.143 An assessment of the potential effects of rail emissions on Highfield Moss SSSI during the operational phase was also undertaken. This indicated that effects were predicted to be **not significant**.

⁵⁶ Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

Table 8.22 Summary of effects

Receptor	Receptor sensitivity	Magnitude of effect	Description of potential impact	Proposed mitigation	Residual effect	Significant / not significant
Main Site and Western Rail Chord						
Construction Phase						
Human receptors within 250m of the DCO Site and 50m of the access route within 250m of the DCO Site entrance	High	IAQM guidance does not assess magnitude of effect	Temporary increase in dust soiling as a result of demolition, earthworks, construction and trackout	oCEMP	Negligible	Not Significant
Human receptors within 250m of the DCO Site and 50m of the access route within 250m of the DCO Site	Medium	IAQM guidance does not assess magnitude of effect	Temporary increase in PM ₁₀ concentrations as a result of demolition, earthworks, construction and trackout	oCEMP	Negligible	Not Significant

Receptor	Receptor sensitivity	Magnitude of effect	Description of potential impact	Proposed mitigation	Residual effect	Significant / not significant
Main Site and Western Rail Chord						
entrance						
Highfield Moss SSSI	Medium	IAQM guidance does not assess magnitude of effect	Temporary increases in dust deposition on Highfield Moss SSSI as a result of demolition, earthworks and construction	oCEMP	Negligible	Not Significant
Human and ecological receptors within 200m of the affected road network	High	To be assessed for further targeted consultation	Increases in NO ₂ , PM ₁₀ and PM _{2.5} concentrations associated with vehicle exhaust emissions	-	-	-
Operation Phase						
Human and ecological receptors within 200m of the affected road network	High	To be assessed for further targeted consultation	Increases in NO ₂ , PM ₁₀ and PM _{2.5} concentrations associated with vehicle exhaust emissions	-	-	-

Receptor	Receptor sensitivity	Magnitude of effect	Description of potential impact	Proposed mitigation	Residual effect	Significant / not significant
Main Site and Western Rail Chord						
Human receptors	High	Negligible	Increases in NO ₂ and SO ₂ concentrations associated with locomotive exhaust emissions	None	Negligible	Not Significant
Highfield Moss SSSI	High	NE guidance does not assess magnitude of effect	Increases in NO ₂ and SO ₂ concentrations, as well as nitrogen and acid deposition, associated with locomotive exhaust emissions	None	Not assessed in accordance with NE guidance	Not Significant