

Preliminary Environmental Information Report

Calderdale Energy Park

7 April 2026

Volume 2, Chapter 16 : Air Quality

PINS Reference: EN0110023

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations
2009 – Reg 5 (2) (a).



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16 Air Quality

16.1 Introduction

- 16.1.1 This Chapter of the PEIR has been prepared by Logika Group on Behalf of the Applicant and presents the preliminary likely significant environmental effects of the Proposed Development upon Air Quality. It is based on the environmental information available to date (which is detailed in this Chapter), as well as the current description of the Proposed Development as set out in **Chapter 4: The Proposed Development**.
- 16.1.2 This Chapter concludes that there are no preliminary likely significant environmental effects of the Proposed Development on air quality for human receptors during the construction, operation and maintenance and decommissioning phases. Whilst potential impacts on air quality at the locations of ecological receptors are considered within this Chapter, the overall conclusion on preliminary likely significant effects is drawn in **Chapter 8: Biodiversity**. The effects from this Chapter conclude that dust deposition resulting in degradation and / or loss of habitat is likely to be Not Significant, whereas significant effects cannot be ruled out for changes in air quality resulting in degradation and / or loss of habitat.
- 16.1.3 The conclusions of the following topic assessments and documents are relevant to the receptors of this assessment, and have been taken into account in the assessment for air quality:
- **Chapter 8: Biodiversity**; and
 - **Chapter 14: Transport and Access**.
- 16.1.4 This Chapter is supported by:
- **Appendix 16-1: Construction Dust Assessment Procedure**;
 - **Appendix 16-2: EPUK & IAQM Planning for Air Quality Guidance**; and
 - **Appendix 16-3: Proposed Approach to Modelling Impacts on Ecological Receptors**.
- 16.1.5 Supporting Figures can be found at:
- **Figure 16-1: Study Area for Construction Dust**; and
 - **Figure 16-2: Study Area for Road Traffic Emissions**.

16.2 Legislation Policy and Guidance

16.2.1 Key legislation, policy and guidance relating to Air Quality and of relevance to this preliminary assessment comprises the following, as shown in **Table 16-1**.

Table 16-1: Legislation Policy and Guidance

Type	Title	Relevance to Assessment
Legislation	Environmental Protection Act 1990 ¹	Provides the legal framework for controlling emissions in the UK.
	Part IV of the Environment Act 1995 ²	Established the national Air Quality Strategy ¹⁶ , which sets out policies for the assessment and management of air quality.
	Air Quality (England) Regulations 2000 ³ and the Air Quality (England) (Amendment) Regulations 2002 ⁴	Prescribes the objectives for use by local authorities.
	EU Directive 2008/50/EC on ambient air quality and cleaner air for Europe ⁵	Sets limit values for nitrogen dioxide (NO ₂), particulate matter less than 10 and 2.5 micrometres in aerodynamic diameter (PM ₁₀ and PM _{2.5}), and is implemented in UK law through the Air Quality Standards Regulations (2010) ⁶

¹ *Environmental Protection Act 1990* (1990), Available: <http://www.legislation.gov.uk/ukpga/1990/43/contents>.

² *Environment Act* (1995), HMSO, Available: <http://www.legislation.gov.uk/ukpga/1995/25/contents>.

³ The Air Quality (England) Regulations 2000 Statutory Instrument 928 (2000), HMSO, Available: <http://www.legislation.gov.uk/uksi/2000/928/contents/made>

⁴ The Air Quality (England) (Amendment) Regulations 2002, Statutory Instrument 3043 (2002), HMSO, Available: <https://www.legislation.gov.uk/uksi/2002/3043/contents/made>

⁵ The European Parliament and the Council of the European Union (2008) *Directive 2008/50/EC of the European Parliament and of the Council*, Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0050>.

Type	Title	Relevance to Assessment
	Air Quality Standards Regulations (2010) ⁶	Implements EU Directive 2008/50/EC ⁵ into UK law.
	Environment Act 2021 ⁷	Gave the Government the power to set long-term, legally binding environmental targets. These include the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (SI 2023 No. 96), which sets two new targets for future concentrations of PM _{2.5} ¹³ .
National planning policy	NPS EN-1 (2025) ⁸	Sets out matters to be considered in the assessment and evaluation of air quality effects and identifies the situations in which mitigation would be required.
	NPS EN-3 (2025) ⁹	Identifies no technology specific air quality matters for onshore wind. , EN-3 defers to generic air quality impacts set out in EN-1.
	NPS EN-5 (2025) ¹⁰	EN-5 defers to generic air quality impacts within EN-1.

⁶ The Air Quality Standards Regulations 2010 Statutory Instrument 1001 (2010), HMSO, Available:

http://www.legislation.gov.uk/ukxi/2010/1001/pdfs/ukxi_20101001_en.pdf.

⁷ Environment Act 2021 (2021)

⁸ Department for Energy Security & Net Zero (2025) *Overarching National Policy Statement for Energy (EN-1)*, Available:

<https://assets.publishing.service.gov.uk/media/695d1015f41883f4e50ed9ab/overarching-national-policy-statement-for-energy-en-1-web-accessible.pdf>

⁹ DESNZ (2025) National Policy Statement for Renewable Energy Infrastructure (EN-3)

<https://assets.publishing.service.gov.uk/media/695d1368b5c46330350ed9a2/national-policy-statement-for-renewable-energy-infrastructure-en-3-web-accessible.pdf>

¹⁰ Department for Energy Security & Net Zero (2025) Draft Overarching National Policy Statement for Electricity Networks Infrastructure (EN-5). Available at: <https://www.gov.uk/government/publications/national-policy-statement-for-electricity-networks-infrastructure-en-5-2025>

Type	Title	Relevance to Assessment
	National Planning Policy Framework (NPPF), 2024 (updated February 2025) ¹¹ and Draft NPPF (December 2025) ¹²	Sets out how planning policies should prevent unacceptable risks from pollution and ensure that new development is appropriate for its location.
	Environmental Improvement Plan 2025 ¹³	Updates air quality targets for PM _{2.5} and outlines the role of local authorities in meeting them.
	Clean Air Strategy 2019 ¹⁴	Sets out a wide range of actions for the UK Government to reduce pollutant emissions and improve air quality.
	Air Quality Strategy 2007 ¹⁵	Lays out the policy framework for air quality management and assessment in the UK.
	Air Quality Strategy 2023 ¹⁶	Strategic air quality framework for local authorities and other Air Quality Partners ¹⁷ in England.
	Reducing Emissions from Road Transport: Road to Zero Strategy 2018 ¹⁸	Outlines the transition to zero tailpipe emission road transport.

¹¹ Ministry of Housing Communities & Local Government (2024) National Planning Policy Framework (December 2024) Updated online February 2025. Available: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf

¹² Ministry of Housing Communities & Local Government (2025) Draft National Planning Policy Framework (December 2025)

¹³ Defra (2025) *Environmental Improvement Plan 2025*, [Online], Available: <https://www.gov.uk/government/publications/environmental-improvement-plan-2025/environmental-improvement-plan-eip-2025>

¹⁴ Defra (2019) *Clean Air Strategy 2019*, Available:

<https://www.gov.uk/government/publications/clean-air-strategy-2019>.

¹⁵ Defra (2007) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland*, Defra.

¹⁶ Defra (2023) *Air Quality Strategy: Framework for Local Authority Delivery*, [Online], Available: <https://www.gov.uk/government/publications/the-air-quality-strategy-for-england/air-quality-strategy-framework-for-local-authority-delivery>.

¹⁷ Bodies that are declared by the local authority as being in control of a source causing or contributing to objective exceedance, such a county council, Environment Agency or National Highways.

¹⁸ DfT (2018) *The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy*.

Type	Title	Relevance to Assessment
	National Air Quality Plan 2017 ¹⁹ and Supplement 2018 ²⁰	This had measures to reduce roadside NO ₂ concentrations, with focus on local authorities with exceedances of the limit values.
Local planning policy	The Calderdale Local Plan 2018/19 – 2032/33 was adopted in 2023 ²¹	This provides a framework for planning in Calderdale referencing air quality and renewable energy.
	Rochdale Core Strategy (adopted October 2016) ²²	This provides a framework for planning in Rochdale referencing air quality and renewable energy.
	City of Bradford MDC adopted Local Plan (2017) ²³ and Bradford District Local Plan 2020 (Regulation 18) (2021) ²⁴	These provides a framework for planning in Bradford referencing air quality and wind farms.
	West Yorkshire Combined Authority “Transport Strategy 2040” (2017) ²⁵	This outlines Yorkshire’s transport plan including impacts on air quality.
	Local Plan for the Bradford District – Core Strategy Development Plan Document (adopted 2017) ²⁶	This provides a framework for planning in Bradford referencing air quality and wind farms.

¹⁹ Defra (2017) *Air quality plan for nitrogen dioxide (NO₂) in the UK*, Available: <https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017>.

²⁰ Defra (2018) *Supplement to the UK plan for tackling roadside nitrogen dioxide concentrations*, Available:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746100/air-quality-no2-plan-supplement.pdf.

²¹ Calderdale Council, 2023. Available at: <https://new.calderdale.gov.uk/planning-and-building-control/planning-policy/local-plan>

²² Rochdale Borough Council, 2016. Available at:

<https://www.rochdale.gov.uk/downloads/download/266/core-strategy>

²³ City of Bradford Metropolitan District Council, 2017. Available at: [Adopted Local Plan | Bradford Council](#)

²⁴ City of Bradford Metropolitan District Council, 2021. Available at: [Bradford District Local Plan | Bradford Council](#)

²⁵ West Yorkshire Combined Authority, 2019. Available at: [transport-strategy-2040.pdf](#)

²⁶ City of Bradford Metropolitan District Council, 2017. Available at: <https://www.bradford.gov.uk/planning-and-building-control/planning-policy/core-strategy-dpd/>

Type	Title	Relevance to Assessment
	Pendle Borough Council Core Strategy (adopted December 2015) ²⁷	This provides a framework for planning in Pendle referencing air quality and renewable energy.
National Guidance	Planning Practice Guidance 2023 ²⁸	This provides guidance on how to implement NPPF policies within England.
	Defra Local Air Quality Management Technical Guidance (TG22) 2025 ²⁹	This outlines in which locations the air quality objectives apply. It also provides guidance on analysis of air quality monitoring data and modelling road traffic emissions.
	Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction (2024) ³⁰	This provides a suggested approach to assess and mitigate air quality impacts of construction.
	Environmental Protection UK (EPUK) and the Institute of Air Quality Management Guidance on Land-Use Planning & Development Control: Planning For Air Quality ³¹	This provides guidance on the assessment and mitigation of air quality impacts of developments
	Design Manual for Roads and Bridges (DMRB) 2024 ³²	This sets out the standards for design, assessment and operation of roads and bridges.

²⁷ Pendle Borough Council, 2015. Available at:

https://www.pendle.gov.uk/info/20072/planning_policies/275/development_plan_documents/2

²⁸ Department for Levelling Up, Housing and Communities (DLUHC) (2024) *Planning practice guidance* [Online], Available:

<https://www.gov.uk/government/collections/planning-practice-guidance>.

²⁹ Defra (2022) *Review & Assessment: Technical Guidance LAQM.TG22 May 2025 Version*, [Online], Available: <https://laqm.defra.gov.uk/wp-content/uploads/2021/03/LAQM-TG22-May-25-v2.1.pdf>.

³⁰ IAQM (2024) *Guidance on the Assessment of Dust from Demolition and Construction v2.2*, Available: <http://iaqm.co.uk/guidance/>

³¹ Moorcroft and Barrowcliffe et al (2017) *Land-Use Planning & Development Control: Planning For Air Quality v1.2*, IAQM, London, Available:

<http://iaqm.co.uk/guidance/>.

³² Highways England (2024) *Design Manual for Roads and Bridges*. Available:

<https://www.standardsforhighways.co.uk/>

Type	Title	Relevance to Assessment
Local Guidance	West Yorkshire Air Quality & Emissions Technical Planning Guidance (West Yorkshire Guidance) ³³	This sets out requirements for air quality assessments and mitigation.

16.3 Scoping and Stakeholder Engagement

2025 Scoping Opinion

- 16.3.1 In September 2025, a request for a scoping opinion was submitted alongside a Scoping Report. **Table 16-2** presents the details of the Planning Inspectorate (PINS) Scoping Opinion relevant to air quality and confirms how the response has been considered within the proposed scope of assessment (as set out below).

Table 16-2: Consideration of PINS Scoping Response

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
PINS	3.9.1	<p>Ecological receptors</p> <p>The Inspectorate does not agree to scope out ecological receptors from the air quality assessment. While the Scoping Report indicates air quality effects on ecological receptors would be covered in Chapter 8 (Biodiversity), this chapter provides insufficient detail on the assessment of potential impacts. Therefore, the ES must assess likely significant effects of air quality on ecological receptors, and the Applicant should agree on sensitive receptors with relevant bodies.</p>	<p>The potential preliminary air quality impacts of the Proposed Development at the locations of ecological receptors are considered within this chapter, the overall conclusion on the preliminary likely significant effects is drawn in Chapter 8: Biodiversity (as there is no definitive threshold for assessing the significance for air quality impacts, on these ecological receptors). The final</p>

³³ West Yorkshire Low Emissions Group (n.d.) Air Quality & Emissions Technical Planning Guidance <https://new.calderdale.gov.uk/sites/default/files/2023-08/Air-Quality-Emissions-Planning-Technical-Guide.pdf>

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
			<p>conclusions on the likely significant effects of air quality on ecological receptors will be assessed in Chapter 8: Biodiversity of the ES. The assessment will ensure, between the air quality and biodiversity chapters, that the air quality effects on ecological receptors are sufficiently assessed.</p>
	3.9.2	<p>Dust and particulate matter creation from ground, excavation and profiling works during construction</p> <p>The Inspectorate agrees to scope out construction dust impacts on human receptors, provided the mitigation outlined in the oCEMP is implemented effectively.</p> <p>However, due to the proximity of designated ecological sites and limited construction process details, the Inspectorate does not agree to scope out construction dust impacts on ecological receptors. The ES must include an assessment of these impacts, demonstrating that proposed dust suppression measures adequately mitigate effects on designated sites within 200m, resulting in no significant change from baseline.</p>	<p>Construction dust impacts on ecological receptors will be determined in the ES, alongside appropriate environmental measures. The mitigation measures will be designed to avoid any significant effects on designated sites (including those within 200m) and will be set out in the oCEMP (Appendix 4-2), which will be updated at ES. The assessment of construction dust impacts will be retained in the ES and will ensure, between the air quality and biodiversity chapters, that the air quality effects on ecological</p>

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
		<p>Mitigation delivery and security should be clearly cross-referenced in the oCEMP and DCO.</p> <p>The Applicant should refer to Natural England's consultation response regarding construction dust assessment.</p>	<p>receptors are sufficiently assessed.</p>
	3.9.3	<p>Construction phase plant and Non-Road Mobile Machinery (NRMM) air quality effects</p> <p>The Inspectorate agrees to scope out NRMM emissions for human receptors during construction, given the provided information, site management, and mitigation.</p> <p>However, the ES must include an assessment of NRMM emissions during construction that are likely to significantly affect ecological receptors. Additionally, the ES should detail any proposed back-up generators to ensure a comprehensive impact assessment.</p> <p>The Applicant should consult Natural England's response for more information.</p>	<p>The air quality impact of construction phase NRMM emissions on biodiversity receptors will be considered in the ES. The impact of any back-up generators will be detailed in the ES. Natural England will be consulted.</p>
	3.9.4	<p>Operational phase traffic air quality effects</p> <p>The Inspectorate agrees that operational traffic emissions can be scoped out.</p>	<p>Noted.</p>
	3.9.5	<p>Operational phase wind turbine air quality effects</p>	<p>Noted.</p>

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
		<p>The Inspectorate agrees that that the operational effects of wind turbine and associated infrastructure can be scoped out.</p>	
	3.9.6	<p>Operational phase BESS fire hydrogen fluoride (HF) effects</p> <p>The Inspectorate agrees to scope out this matter, given the BESS's cooling system and the commitment to submit an 'Unplanned Atmospheric Emissions from BESS' Report with the DCO application. Air quality effects will need to be assessed within the fire and explosion risk assessment.</p>	<p>The Battery Energy Storage System (BESS) is no longer included in the Proposed Development and as such no assessment of the Unplanned Atmospheric Emissions from the BESS will be undertaken.</p>
	3.9.7	<p>Dust and particulate matter creation from ground, excavation and profiling works during decommissioning</p> <p>The Inspectorate agrees to scope out decommissioning impacts on human receptors, provided a decommissioning dust risk assessment, similar to the construction phase, is undertaken.</p> <p>However, the Inspectorate does not agree to scope out this matter for ecological receptors. The ES must include an assessment of decommissioning dust emissions likely to significantly affect ecological receptors. This assessment should identify potential risks and appropriate mitigation, to be incorporated into the oDEMP,</p>	<p>An assessment of decommissioning dust emissions on ecological receptors will be included in the ES. The potential risks and appropriate measures will be incorporated into an oDEMP.</p>

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
		<p>ensuring no significant ecological impacts. Mitigation delivery and security must be clearly cross-referenced in the oDEMP and DCO.</p>	
	3.9.8	<p>Decommissioning phase delivery vehicles, plant and NRMM air quality effects</p> <p>The Inspectorate agrees to scope out NRMM emissions for human receptors during decommissioning, assuming sufficient information demonstrates no likely significant effects and site management/mitigation are secured as per the construction phase.</p> <p>However, the ES must include an assessment of NRMM emissions during decommissioning that are likely to significantly affect ecological receptors.</p> <p>Additionally, the ES should detail any proposed back-up generators to ensure a comprehensive impact assessment.</p>	<p>The air quality impact of decommissioning phase NRMM emissions on ecological receptors will be considered in the ES. The impact of any back-up generators will be detailed.</p>
	3.9.9	<p>Study area</p> <p>The Inspectorate requires a study area for assessing construction dust impacts on human health to extend 250m from turbine and cable corridor search areas, plus 50m either side of routes extending 200m from their exit points. For</p>	<p>Noted. These are the study areas used at PEIR and noted in Section 16.4. A plan will be provided in the ES. Justification for all factors used to define the study area has been provided, with</p>

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
		<p>emissions from plant and machinery, the study area should extend 250m from turbine and cable corridor search areas.</p> <p>The ES must justify these study areas with reference to relevant guidance and, where possible, agree them with consultation bodies. The ES should include a plan detailing the final study area, proposed construction routes, and receptor locations.</p> <p>The Applicant should consult the Calderdale Metropolitan Borough Council (CMBC) and Natural England's responses (Appendix 2 of the Scoping Opinion) for additional information.</p>	<p>reference to relevant guidance.</p>
	3.9.10	<p>Human receptors</p> <p>The Inspectorate states that the Applicant should consider the potential for the Proposed Development to impact on all air sensitive receptors within the study area, including community and social infrastructure, health facilities and recreational and route-based users, not only residential and educational receptors.</p> <p>The Applicant should refer to the response from CBMC which lists other possible receptors.</p>	<p>Noted. All relevant receptors will be identified specifically in the ES. Figure 16-1 and Figure 16-2 illustrate the study areas in which the receptors are concentrated.</p>
	3.9.11	<p>Baseline data</p> <p>The Applicant should ensure that the baseline can be</p>	<p>The requirement for additional air quality monitoring is currently under discussion with</p>

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
		adequately characterised through a desk-based study and effort should be made to reach agreement with relevant consultation bodies, including the local authorities, as to whether any additional survey or monitoring work is required.	the Calderdale and Pendle District and Bradford Metropolitan District Councils.
	3.9.12	Construction phase delivery vehicles air quality effects The ES must refer to Natural England's (NE) guidance to assess likely significant effects on air quality from increased traffic, especially concerning designated sites within 200 metres of these access routes.	The guidance and approach noted in NE's consultation response, namely NEA001 and use of ammonia emissions model, will be followed.
	3.9.13	Guidance The Applicant's attention is drawn to the Defra advice 'PM _{2.5} Targets: Interim Planning Guidance' ³⁴ . The ES should explain how key sources of air pollution within the Proposed Development have been identified and how action has been taken to minimise emissions of PM _{2.5} or its precursors.	Noted. Initial measures to reduce emissions during the construction and decommissioning phases are set out in the oCEMP (Appendix 4-2) and oDEMP. Further detail will be included in the ES.

16.3.2 An overview of other consultation (beyond the PINS Scoping Opinion) undertaken to date for air quality, and how this has informed the scope of the assessment is provided in **Table 16-3** (as set out below).

³⁴ Defra (2024) *PM_{2.5} Targets: Interim Planning Guidance*, Available: <https://uk-air.defra.gov.uk/pm25targets/planning>

Table 16-3: Other Consultation Undertaken

Consultee	Type and Date	Summary of Discussion	Discussion Response
Bradford MBC	Response to Scoping 23 September 2025	<p>The proposed approach to the assessment of air quality is overall acceptable.</p> <p>Construction dust - We will need to have sight of this CEMP and an opportunity to comment on it before it is approved, especially with regards to the cable routing works that may take place within the Bradford District. We will expect any NRMM machinery used in the Bradford district to meet the London standards as already suggested in this scoping document.</p> <p>The Bradford Clean Air Zone (CAZ) should be treated the same as an AQMA for screening traffic movements, and there would be an expectation that any vehicles passing through the Bradford CAZ to meet the CAZ standards. It won't be acceptable to have non-compliant vehicles paying to drive through the CAZ to support the Proposed Development given its scale and duration. The Environmental Statement would benefit from a section about the Bradford CAZ including its extent, access</p>	<p>A draft oCEMP is submitted with the PEIR (Appendix 4-2) and will be updated for the ES an Census data very good or good health</p> <p>The Bradford CAZ will be treated as an AQMA when screening construction traffic.</p> <p>A section on the Bradford CAZ is included in this PEIR (16.5.8).</p> <p>STOR is not included in the Proposed Development.</p> <p>If construction traffic modelling in BMBC area is needed for the ES, the details will be discussed with BMBC.</p>

Consultee	Type and Date	Summary of Discussion	Discussion Response
		<p>restrictions and expectation from Bradford Metropolitan District Council (BMDC) about the emission standard of any construction vehicles likely to pass through it. It should also be noted that there are some places within the Bradford CAZ that still exceed the national air quality standards. We would strongly advise that the person(s) preparing the Environmental Statement obtains a copy of the Bradford 2025 ASR report from ourselves and has a conversation with us about the CAZ and how to model any future construction-based movements within it.</p> <p>Operational impacts - we accept that the wind farm once built will generate very few operational vehicle movements and that the turbines and associated equipment will not have any direct emissions to air. On this basis we agree operational emissions to air can be scoped out of the ES. The only exception to this would be if any back up STOR that included on site combustion was to form part of the Proposed Development.</p>	

Consultee	Type and Date	Summary of Discussion	Discussion Response
		<p>We would like to request that prior to modelling the impact of any construction traffic within the Bradford district we are further consulted on the proposed modelling methodologies and the location of modelled receptor locations within the Bradford district.</p>	
<p>Calderdale Council</p>	<p>Response to Scoping 29 September 2025</p>	<p>The Council disagrees with the proposed approach to the air quality assessment. Air quality should be scoped in for construction and decommissioning.</p> <p>An air quality impact assessment should be included in the ES and West Yorkshire Low Emissions Strategy and Air Quality & Emissions Technical Planning Guidance (or equivalent guidance).</p> <p>Given the exposed, elevated moorland context, a precautionary approach using the IAQM 2014³⁵ guidance should be used (human receptors within 350 m of active works and within 50 m of construction traffic routes</p>	<p>Air quality impacts during construction and decommissioning will be included in the ES.</p> <p>The assessment methodology outlined in the PEIR that will be detailed in the ES is consistent with West Yorkshire Low Emissions Strategy and Air Quality & Emissions Technical Planning Guidance³³.</p> <p>As directed by PINS, further consideration has been given to appropriate distances for</p>

³⁵ IAQM (2014) *Guidance on the assessment of dust from demolition and construction*, Available: <https://iaqm.co.uk/text/guidance/construction-dust-2014.pdf>

Consultee	Type and Date	Summary of Discussion	Discussion Response
		<p>and track-out up to 500 m from site exits). The assessment should be augmented by targeted downwind extensions where local wind conditions indicate.</p> <p>The human receptor list should be expanded to include are homes, GP/health facilities, tourist accommodation, community facilities, and route-based users (National Trails/PRoW). Committed developments within the dust/track-out zones should be identified and included within the receptors.</p> <p>The council disagrees with scoping out construction and decommissioning dust/particulate effects. The ES must summarise risk, mitigation and residual significance (pre/post mitigation) and commit measures via oCEMP/oDEMP.</p> <p>A screened appraisal is required for NRMM where near-field receptors exist. The ES should present plant inventories/locations, nearest receptors and a clear mitigation/monitoring set. A</p>	<p>consideration of construction/decommissioning dust in paragraph 16.4.3.</p> <p>All relevant receptors will be specifically identified in the ES, in line with the methodology outlined in the PEIR.</p> <p>A draft oCEMP (Appendix 4-2) will be submitted with the PEIR. An oDEMP will be submitted with the DCO application.</p> <p>A BESS is no longer included in the Proposed Development.</p>

Consultee	Type and Date	Summary of Discussion	Discussion Response
		<p>mirrored approach should be applied at decommissioning.</p> <p>The Council agree that operational traffic and turbine operation air quality effects can be scoped out with a short justification note retained in the ES.</p> <p>The Council welcome the commitment to produce a oCEMP and oDEMP. The ES should include a phase-specific mitigation table (dust, track-out, NRMM controls, monitoring/inspections, trigger-based adaptive measures) and list these in the Commitments Register tied to DCO Requirements.</p> <p>The Council welcomes the Unplanned Atmospheric Emissions from BESS Report; however, the Air Quality chapter must summarise the worst-case plume (HF and other combustion products), receptor impacts, and mitigation/response (cross-refer to Health and Major Accidents & Disasters), with commitments secured in the DCO.</p>	
Natural England	Response to Scoping	The assessment of air quality impacts should include emissions from construction	Noted, assessment of the emissions from construction

Consultee	Type and Date	Summary of Discussion	Discussion Response
	<p>29 September 2025</p>	<p>traffic, dust, particulate matter, NRMM and any other relevant activities.</p> <p>We advise that dust produced during the construction phase could cause smothering effects if the designated site is within 200 m. The assessment should therefore assess whether proposed dust-suppression measures provide adequate mitigation for impacts to designated sites within 200 m of the works, and would result in no significant change from the baseline.</p> <p>An assessment should also be undertaken which considers the impacts of NRMM on designated sites. Where back-up generators are proposed, the assessment should include information on the location, number, capacity, and operational hours of proposed back-up generators. It should be considered that back-up generators may have a larger radius of pollution impact than other NRMM.</p> <p>Natural England has produced guidance for public</p>	<p>traffic, dust, particulate matter, NRMM and any generators will be included in the ES. The proposed approach is set out in Appendices 16-1 and 16-2.</p> <p>The buffer zones in these appendices (which include designated sites within 200m) will be used when considering the potential construction dust impacts and appropriate mitigation will be included in the oCEMP at ES. The assessment of emissions from traffic upon designated sites will follow NEA001 and any subsequent guidance and will include consideration of ammonia emissions using CREAM³⁷ as set out in Appendix 16-3.</p> <p>Consultation with Calderdale,</p>

Consultee	Type and Date	Summary of Discussion	Discussion Response
		<p>bodies to help assess the impacts of road traffic emissions to air quality capable of affecting European³⁶, which should be referred to in the assessment. As detailed in guidance document NEA001, we advise that designated sites within 200m of a road which will experience a significant increase in traffic movements from the proposal should be assessed for impacts due to air pollution from traffic.</p> <p>Natural England advises that ammonia sourced from traffic emissions should be included for assessment within the Habitats Regulation Assessment. There are currently two models which can be used to calculate the ammonia concentration and contribution to total N deposition from road sources. One of these models is publicly available and called CREAM³⁷ and there is another produced by National Highways.</p>	<p>Pendle and Bradford Councils is currently ongoing.</p>

³⁶ Natural England (2018) *Natural England’s approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations – NEA001*, Available:

<https://publications.naturalengland.org.uk/publication/4720542048845824>

³⁷ AQC (2025) *Calculator for Road Emissions of Ammonia CREAM V2A*, Available: <https://www.aqconsultants.co.uk/resources>

16.4 Assessment Methodology

Study Area

- 16.4.1 There are two study areas, including; the study area for the consideration of construction dust from ground, excavation and profiling works upon human health and ecological receptors; and the study area for the consideration of emissions from plant and machinery (ecological receptors). The second study area is for road traffic emissions (human and ecological receptors). These are described in more detail below.
- 16.4.2 The study area for the consideration of construction dust from ground, excavation and profiling works upon human and ecological receptors will extend 250m from the Turbine Area, Bradford West Cable Corridor; and 50m either side of the Access Routes extending 200m from the exit points of these areas. The study area for consideration of emissions from plant and machinery will also extend 250m from the Turbine Area and Bradford West Cable Corridor. This is in line with current IAQM guidance³⁰ and is set out in the Scoping Opinion request from PINs (see reference 3.9.9).
- 16.4.3 Previous versions of the IAQM guidance (first published in 2014) used slightly larger screening distances, up to 350m from construction works. However, based on 10 years' experience of implementing the guidance, the working group made up of IAQM members considered that the presence of receptors 250m to 350m from construction works did not influence the outcome of the dust risk assessments and the screening distances were amended accordingly. Regardless, the construction dust risk assessment will be carried out using professional judgement taking into account the specific factors relevant to the areas of construction works including the topography, meteorology and activities being undertaken, as set out in **Appendix 16-1**.
- 16.4.4 The study area for construction dust and plant emissions is illustrated in **Figure 16-1**. The assessment of impacts upon ecological receptors will take into account the combined influence of NRMM and construction traffic emissions in this area.
- 16.4.5 For road traffic, the study area is based on the criteria in the DMRB³² which considers there is a potential for air quality impacts from vehicle emissions "*on sensitive receptors within 200m of a road*". A distance of 200m is used as concentrations from the road source decrease rapidly with distance from the source and beyond this distance the road source contribution is not typically discernible.
- 16.4.6 The study area is shown in **Figure 16-1**. on predicted construction traffic flows provided by the Transport Consultant for the Proposed Development, only roads where there will potentially be sufficient traffic to trigger a detailed assessment (see above) have been included.

Existing Sources of Emissions and Baseline Air Quality Conditions

16.4.7 Existing sources of emissions and baseline air quality conditions within the two study areas have been defined and identified using a number of approaches and sources:

- any industrial sources that may affect the study areas have been identified using Defra's Pollutant Release and Transfer Register³⁸;
- any specific local sources have been identified through discussion with the host local authorities and through examination of their Air Quality Review and Assessment reports^{39 40 41};
- background concentrations of nitrogen oxide (NO_x) and ammonia (NH₃), and nitrogen and acid nitrogen deposition fluxes, have been taken from the Air Pollution Information System (APIS)⁴² (2025);
- information on existing air quality has been obtained by collating the results of monitoring, within the public domain, carried out by the local authority in the last 5 years. This covers both the study areas and nearby monitoring sites in nearby Air Quality Management Areas (AQMAs), the latter being used to provide context for the assessment on the sensitivity of the area to changes in air quality⁴³; and
- background concentrations as defined using Defra's 2021-based background maps⁴⁴. These cover the whole of the UK on a 1x1km grid. The background annual mean nitrogen dioxide (NO₂), PM₁₀ and PM_{2.5} maps have been calibrated against concurrent measurements⁴⁴. The calibration factor has also

³⁸ Defra (2026) *UK Pollutant Release and Transfer Register*, [Online], Available: <http://prtr.defra.gov.uk/map-search>.

³⁹ Calderdale Council (2025) *2025 Air Quality Annual Status Report*, Available: <https://new.calderdale.gov.uk/sites/default/files/2025-08/Air-Quality-Annual-Status-Report-2025.pdf>

⁴⁰ BMDC (2025) *2025 Annual Air Quality Status Report*, Available: <https://www.bradford.gov.uk/media/zk5lq145/2025-air-quality-annual-status-report.pdf>

⁴¹ PBC (2024) *2024 Air Quality Annual Status Report*, Available: <https://www.pendle.gov.uk/downloads/file/10289/air-quality-annual-status-report>

⁴² APIS (2025) *APIS*, [Online], Available: <http://www.apis.ac.uk/>.

⁴³ Defra (2025) *Air Quality Management Areas (AQMAs)*, [Online], Available: <https://uk-air.defra.gov.uk/aqma/>

⁴⁴ Defra (2025) *Local Air Quality Management (LAQM) Support Website*, [Online], Available: <http://laqm.defra.gov.uk/>.

been applied to the future year backgrounds presented in Table 16-12. Mapped background concentrations of PM₁₀ and PM_{2.5} have not been adjusted; and

- whether or not there are any exceedances of the annual mean limit value for NO₂, PM₁₀ and PM_{2.5} in the study areas has been identified using Defra's compliance data⁴⁵.

Methodology

Road Traffic

Human Health Criteria

- 16.4.8 The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations, below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations (2000)³ and the Air Quality (England) (Amendment) Regulations (2002)⁴.
- 16.4.9 The UK-wide objectives for NO₂ and PM₁₀ were meant to have been achieved by 2005 and 2004 respectively and continue to apply in all future years thereafter. Measurements across the UK have shown that the 1-hour mean NO₂ objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m³⁴⁶. Therefore, 1-hour NO₂ concentrations will only be considered if the annual mean concentration is above this level.
- 16.4.10 Measurements have also shown that the 24-hour mean PM₁₀ objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m³. The predicted annual mean PM₁₀ concentrations are thus used as a proxy to determine the likelihood of an exceedance of the 24-hour mean PM₁₀ objective. Where predicted annual mean concentrations are below 32 µg/m³ it is unlikely that the 24-hour mean objective will be exceeded.
- 16.4.11 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. Defra explains where these objectives will apply in its Local Air Quality

⁴⁵ <https://uk-air.defra.gov.uk/data/compliance-map/>

⁴⁶ Defra (2022) *Review & Assessment: Technical Guidance LAQM.TG22 May 2025 Version*, [Online], Available: <https://laqm.defra.gov.uk/wp-content/uploads/2021/03/LAQM-TG22-May-25-v2.1.pdf>

Management Technical Guidance (LAQM)⁴⁶. The annual mean objectives for NO₂ and PM₁₀ are considered to apply at the façades of residential properties, schools, hospitals etc.; they do not apply at hotels. The 24-hour mean objective for PM₁₀ is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties and at hotels. The 1-hour mean objective for NO₂ applies wherever members of the public might regularly spend 1-hour or more, this typically includes picnic areas and other points of interest.

16.4.12 For PM_{2.5}, the objective set by Defra for local authorities is to work toward reducing concentrations without setting any specific numerical value. In the absence of a numerical objective, it is convention to assess local air quality impacts against the limit value, currently set at 20 µg/m³.

16.4.13 Defra has set two new targets, and two new interim targets, for PM_{2.5} concentrations in England. One set of targets focuses on absolute concentrations. The long-term target is to achieve an annual mean PM_{2.5} concentration of 10 µg/m³ by the end of 2040 (referred to as the annual mean concentration target or AMCT), with the interim target being a value of 12 µg/m³ by the start of 2028⁴⁷. The second set of targets relate to reducing overall population exposure to PM_{2.5}. By the end of 2040, overall population exposure to PM_{2.5} should be reduced by 35% compared with 2018 levels (referred to as the population exposure reduction target or PERT), with the interim target being a reduction of 22% by the start of 2028 (**Table 16-4**).

Table 16-4 Environment Act PM_{2.5} Targets

Metric	Target	Target Year
AMCT	Interim target: 10 µg/m ³	2030
	Legally binding target: 10 µg/m ³	2040
PERT	Interim target: 30% reduction in exposure compared to 2018	2030
	Legally binding target: 35% reduction in exposure compared to 2018	2040

16.4.14 In 2024, Defra published Interim Planning Guidance on the PM_{2.5} targets³⁴. This states that:

⁴⁷ National targets are assessed against concentrations expressed to the nearest whole number, for example a concentration of 10.4 µg/m³ would not exceed the 10 µg/m³ target.

“The purpose of the targets is to improve air quality by reducing levels of PM_{2.5} across the country, therefore improving public health. While achievement of the targets will be assessed at relevant monitoring sites, the targets apply to ambient (outdoor) air throughout England. Applicants and Local Planning Authorities should therefore consider the impact of developments on air quality in all ambient air, whether a monitor is present or not.”

16.4.15 In order to address the new targets, it is not sufficient to assess solely whether a Proposed Development is likely to lead to an exceedance of a legal limit. Instead, developments need to implement appropriate mitigation measures from the design stage, ensuring the lowest possible amount of pollution is emitted and that exposure is reduced.

16.4.16 Pending publication of the new guidance, Defra advises Applicants to provide evidence that they have identified key sources of air pollution within the Proposed Development and taken appropriate action to reduce emissions of PM_{2.5} and its precursors as far as possible (see also PINs scoping opinion reference 3.9.13). More detailed assessment is expected for development closer to populations and/or that have higher emissions. Defra has posed two questions to be used as prompts to support the interim assessment process:

“How has exposure to PM_{2.5} been considered when selecting the development site?”; and

“What actions and/or mitigations have been considered to reduce PM_{2.5} exposure for development users and nearby receptors (houses, hospitals, schools etc.) and to reduce emissions of PM_{2.5} and its precursors?”

16.4.17 EU Directive 2008/50/EC⁵ sets limit values for NO₂, PM₁₀ and PM_{2.5}, and is implemented in UK law through the Air Quality Standards Regulations (2010)⁶. The limit values for NO₂ and PM₁₀ are the same numerical concentrations as the UK objectives, but achievement of the limit values is a national obligation rather than a local one and concentrations are reported to the nearest whole number. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not normally recognise local authority monitoring or local modelling studies when determining the likelihood of the limit values being exceeded, unless such studies have been audited and approved by Defra and DfT’s Joint Air Quality Unit (JAQU).

16.4.18 The relevant air quality criteria for this assessment are provided in **Table 16-5**.

Table 16-5: Air Quality Criteria for NO₂, PM₁₀ and PM_{2.5}

Pollutant	Time Period	Value
NO ₂	1-hour Mean	200 µg/m ³ not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m ³
PM ₁₀	24-hour Mean	50 µg/m ³ not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m ³ ^a
PM _{2.5}	Annual Mean	20 µg/m ³ ^b

^a A proxy value of 32 µg/m³ as an annual mean will be used in the ES to assess the likelihood of the 24-hour mean PM₁₀ objective being exceeded (at modelled receptors). Measurements have shown that, above this concentration, exceedances of the 24-hour mean PM₁₀ objective are possible ⁴⁶.

^b There is no numerical PM_{2.5} objective for local authorities. Convention is to assess against the UK limit value which is currently 20 µg/m³.

Human Health Screening Criteria

- 16.4.19 EPUK and the IAQM recommend a screening approach to determine whether emissions from road traffic generated by a development have the potential for significant air quality impacts.
- 16.4.20 Where reference to the screening criteria terminology; HDVs are Heavy Duty Vehicles (>3.5 tonnes), including buses and coaches, whereas LDVs are Light Duty Vehicles (<3.5 tonnes), including cars. The changes in vehicle flows on local roads that a development will lead to are compared against specified screening criteria. The screening thresholds (described in **Appendix 16-2**) inside an AQMA are a change in flows of more than 25 HDVs or 100 LDVs per day⁴⁸; outside of an AQMA the thresholds are 100 HDVs or 500 LDVs. Where these criteria are exceeded, a detailed assessment is likely to be required, although the guidance advises that “*the criteria provided are precautionary and should be treated as indicative*”, and “*it may be appropriate to amend them on the basis of professional judgement*”.
- 16.4.21 While these screening criteria are specifically intended to act as a trigger for a detailed assessment, they can also sometimes be used to identify the extent of the

⁴⁸ At the request of BMBC these thresholds have also been applied to the Bradford CAZ area

road network that requires assessment. Where the change in traffic on a given road link is less than the relevant screening threshold, it is unlikely that a significant impact would occur, and these links can be disregarded unless there are additional development-related emissions affecting receptors along the link.

Ecological Criteria

16.4.22 EU Directive 2008/50/EC (The European Parliament and the Council of the European Union, 2008) sets a limit value for annual mean concentrations of nitrogen oxides. The same values have been set as domestic objectives within the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations (2002). The limit values and objectives only apply:

a) more than 20km from an agglomeration (about 250,000 people); and

b) more than 5km from Part A industrial sources, motorways and built-up areas of more than 5,000 people.

16.4.23 Critical levels (CLes) and critical loads (CLOs) are the ambient concentrations and deposition fluxes below which significant harmful effects to sensitive ecosystems are unlikely to occur. While some CLes align numerically with air quality objectives, they differ in that they are not subject to the same spatial limitations and can apply across a wider range of ecological receptors. The CLes relevant to this assessment are set out in **Table 16-6**.

16.4.24 The CLe for annual mean NO_x concentrations is set at the same concentration irrespective of the habitats features of interest. There are two CLes for NH₃, with the lower value (1 µg/m³) applying only where lichens or bryophytes are present or form a key part of the ecosystem integrity. This reflects the fact that lichens and bryophytes are not connected directly to soil nutrients and can therefore be particularly susceptible to changes in atmospheric nitrogen. Logika has advised which NH₃ CLe applies in which location. A short-term (24-hour mean) CLe for NO_x has also been set, however guidance from the Institute of Air Quality Management (IAQM)⁴⁹ recommends that: “...*only the annual mean NO_x concentration is used in assessments unless specifically required by a regulator; for instance, as part of an industrial permit application where high, short term peaks in emissions, and consequent ambient concentrations, may occur*”. Thus the 24-hour mean CLe, is only considered in relation to emissions from NRMM.

16.4.25 The CLOs are specific to different habitat types. The Air Pollution Information System (APIS)⁴² sets out the CLOs which might apply across the entirety of nationally and internationally-designated sites. This information has been used,

⁴⁹ IAQM (2020) A guide to the assessment of air quality impacts on designated nature conservation sites. Version 1.1

alongside discussions with Logika to define which CLOs are relevant to the locations of interest to this study.

16.4.26 The CLOs for nitrogen deposition are published as ranges. This is because other factors influence how sensitive a habitat may be to additional nitrogen; for example how a site is managed can affect its sensitivity to nitrogen deposition. To provide a worst-case assessment, this report has focussed on the lower-bound of each CLO range. However, this should not be taken to suggest that the lower-bound value is indicative of potential effects in the study areas.

16.4.27 Acid deposition is assessed against the “CLmaxN” value published on APIS⁴². This is the level above which additional deposition will cause acidification.

16.4.28 The CLOs used in this assessment are provided in **Table 16-7**.

Table 16-6: Vegetation and Ecosystem CLe^a

Pollutant	Time Period	CLe
Nitrogen Oxides (expressed as NO ₂)	Annual Mean ^{a,b}	30 µg/m ³
	24-Hour Mean ^{a,c}	75 (200 ^d) µg/m ³
NH ₃	Annual Mean	3 (1 ^e) µg/m ³

^a The CLeS are defined by the World Health Organisation (WHO, 2000).

^b Away from major sources (see Paragraph 16.4.22), this CLe is set as an objective (Defra, 2007) and a limit value (The European Parliament and the Council of the European Union, 2008).

^c This CLe is not an objective and thus does not have the same legal standing.

^d The CLe is 75 µg/m³ but Natural England and IAQM both recommend that a value of 200 µg/m³ is usually more appropriate for current UK conditions. The Environment Agency (2025) recommends that the higher value should be used if dispersion modelling has been carried out, local ozone concentrations are below the ‘AOT40’ critical level, and sulphur dioxide concentrations are <10 µg/m³ (i.e. where all three conditions are met). The current assessment considers values of both 75 µg/m³ and 200 µg/m³.

^e The more stringent CLe of 1 µg/m³ only applies where lichens or bryophytes are present or form a key part of the ecosystem integrity.

Table 16-7: Vegetation and Ecosystem CLOs

Site	Nutrient Nitrogen (kgN/ha/yr)	Acid Deposition ‘N _{max} ’ (keq/ha/yr)
South Pennine Moors Special Area of Conservation (SAC)	5-15	0.569-0.689

Site	Nutrient Nitrogen (kgN/ha/yr)	Acid Deposition 'N _{max} ' (keq/ha/yr)
South Pennine Moors Phase 2 Special Protection Area (SPA)	5-15	0.569-0.689
South Pennines Moors Site of Special Scientific Interest (SSSI)	5-25	0.569-0.689
Crimsworth Dean SSSI (Geological designation)	N/A	N/A

Ecological Screening Criteria

- 16.4.29 Natural England have published a guidance note⁵⁰ in the assessment of road traffic emissions under the Habitats Regulations, which references the Design Manual for Roads and Bridges (DMRB) screening criteria⁵¹ for determining whether development traffic may cause a significant impact on the ecological sites. The criteria state that, on roads within 200m of the receptors exceeding 1,000 Annual Average Daily Traffic (or AADT), or 200 AADT for HDVs, a detailed assessment is likely to be required to determine whether impacts will result in significant effects. For European sites, these criteria should be applied in-combination with other relevant developments.
- 16.4.30 The first step in considering the road traffic impacts on designated ecological sites is to screen the traffic generation against the screening criteria set out in Natural England's guidance note. Where impacts can be screened out there is no need to progress to a more detailed assessment.
- 16.4.31 The Turbine Area lies within the South Pennines Moors SSSI, the South Pennine Moors SAC; and South Pennine Moors Phase 2 SPA. These ecological designations have been considered in the assessment.
- 16.4.32 Crimsworth Dean SSSI lies 0.5km southeast of the Proposed Development. This has been designated for geological features and is not sensitive to air pollution. Therefore, the impact of air quality onto the Crimsworth Dean SSSI will not be given any further consideration in the assessment.

⁵⁰ Natural England (2018) *Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations*, NEA001 Available:

<https://publications.naturalengland.org.uk/file/5431868963160064>

⁵¹ Standards For Highways (2024) *Design Manual For Roads and Bridges: LA 104 – Air quality*, Available:

<https://www.standardsforhighways.co.uk/tses/attachments/10191621-07df-44a3-892e-c1d5c7a28d90?inline=true>

Assessment of Impacts

Human Health Receptors

- 16.4.33 The construction of the Proposed Development will lead to an increase in traffic on the local roads, which may affect air quality at existing sensitive human health receptors. The main air pollutants of concern relating to traffic emissions are NO₂, PM₁₀ and PM_{2.5}. An assessment of the construction impacts that the Proposed Development will have on concentrations of these pollutants will be carried out following the methodology presented below.
- 16.4.34 The first step in considering the road traffic impacts of the Proposed Development has been to screen traffic generation associated with the Proposed Development against the criteria set out in the EPUK/IAQM guidance³¹, as described in Paragraph 16.4.19 and detailed further in **Appendix 16-2**. Where impacts can be screened out there is no need to progress to a more detailed assessment.

Ecological Receptors

- 16.4.35 The approach to assessment of road traffic impacts upon the ecological receptors for the PEIR has been to compare anticipated road traffic generation during the construction phase with the Natural England criteria described in paragraph 16.4.29.

NRMM

Assessment Criteria

- 16.4.36 The assessment criteria for consideration of NRMM impacts upon ecological receptors are the same as those set out above for road traffic. As agreed with PINS in the Scoping Opinion, the impacts of NRMM emissions upon human health are expected to be not significant and have not been assessed.

Assessment of Impact

- 16.4.37 At this stage, impacts of NRMM emissions upon ecological receptors have been assessed qualitatively, based on professional judgement and previous experience taking into consideration the location and duration of the use of NRMM.

Construction

Assessment Criteria

- 16.4.38 There are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the IAQM has been used. Full details of this approach are provided in **Appendix 16-1**.

Construction Dust

16.4.39 The construction dust assessment considers the potential for impacts within 250m of the PEIR Boundary, or within 50m of roads used by construction vehicles. The assessment methodology is that provided by IAQM³⁰. This follows a sequence of steps:

- Step 1 is a basic screening stage, identifying whether there are any sensitive receptors within the screening distances set out above, to determine whether the more detailed assessment provided in Step 2 is required.
- Step 2a determines the potential for dust to be raised from on-site works and by vehicles leaving the site. Step 2b defines the sensitivity of the area to any dust that may be raised. Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without appropriate mitigation.
- Step 3 uses this information to determine the appropriate level of mitigation required to ensure that there should be no significant impacts.

16.4.40 The approach is set out in more detail in **Appendix 16-1**.

Decommissioning

16.4.41 The potential sources of air quality impacts associated with the decommissioning phase of the Proposed Development are broadly similar to those during construction. However, given the 35-year operational life of the Proposed Development, decommissioning is not expected to occur until 2067, by which time the impacts of emissions from vehicles and NRMM are expected to be much lower due to the electrification of the fleet. Regardless, consideration will be given to impacts during decommissioning using the same approach as for the construction phase assessment, taking into account the oDEMP.

Significance Criteria

Magnitude of Impact

Construction Dust

16.4.42 As detailed above, there are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the IAQM has been used. The magnitude of impact associated with dust generated from the demolition and construction activities is determined during Step 2 of the method. Full details of this approach are provided in **Appendix 16-1**.

Construction Traffic

Human Health Receptors

16.4.43 The approach developed jointly by EPUK and the IAQM has been used in describing the modelled impacts. The approach identifies impacts at individual receptors based on the percentage change in concentrations relative to the relevant air quality objective, rounded to the nearest whole number, and the absolute concentration relative to the objective. **Table 16-8** sets out the method for determining the impact descriptor for annual mean concentrations at individual receptors, having been adapted from the table presented in the guidance document. For the assessment criterion the term Air Quality Assessment Level or AQAL has been adopted, as it covers all pollutants, i.e. those with and without formal standards. Typically, as is the case for this assessment, the AQAL will be the air quality objective value. Note that impacts may be adverse or beneficial, depending on whether the change in concentration is positive or negative.

Table 16-8: Air Quality Impact Descriptors for Individual Receptors for All Pollutants ^a

Long-Term Average Concentration at Receptor In Assessment Year ^b	Change in Concentration relative to AQAL ^c				
	0%	1%	2-5%	6-10%	>10%
75% or less of AQAL	Negligible	Negligible	Negligible	Slight	Moderate
76 – 94% of AQAL	Negligible	Negligible	Slight	Moderate	Moderate
95 – 102% of AQAL	Negligible	Slight	Moderate	Moderate	Substantial
103 – 109% of AQAL	Negligible	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Negligible	Moderate	Substantial	Substantial	Substantial

^a Values are rounded to the nearest whole number.

^b This is the “Without Proposed Development” concentration where there is a decrease in pollutant concentration and the “With Proposed Development” concentration where there is an increase.

^c AQAL = Air Quality Assessment Level, which may be an air quality objective, limit or target value or an Environment Agency ‘Environmental Assessment Level (EAL)’.

Ecological Receptors

- 16.4.44 The Environment Agency has published criteria which allow impacts from industrial developments requiring environmental permits to be screened out as insignificant⁵². Exceeding these criteria does not mean that there is a significant effect, it simply means that further consideration is required of the potential changes to air quality or deposition. With respect to annual average impacts from most industrial sources, no further assessment is required whenever the change caused by the Proposed Development (termed by the Environment Agency as the Process Contribution, or 'PC') is less than 1% of the relevant CLe or CLo. Furthermore, there is no need to for further assessment if detailed dispersion modelling has shown that the CLe or CLo is not exceeded (i.e. the Predicted Environmental Concentration, or 'PEC' is less than 100% of the CLe or CLo).
- 16.4.45 Natural England's guidance on advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations⁵³ recommends the use of the Environment Agency criteria described above for changes to traffic caused by all types of plans or projects affecting European sites. It explains:
- "1% of critical load/level are considered by Natural England's air quality specialists ... to be suitably precautionary, as any emissions below this level are ... considered to be imperceptible". It goes on: "There can therefore be a high degree of confidence in [the use of these criteria] to screen for risks of an effect".*
- 16.4.46 For European sites, Natural England⁵³ explains that the 1% criterion should be applied to plans and projects both alone and in-combination. As with the Environment Agency guidance, exceeding 1% of the CLe or CLo does not mean that there will be a significant effect, it is simply a trigger for when further assessment is needed.
- 16.4.47 The CLe and CLo are defined as the *"deposition/concentration ... below which adverse effects on receptors ... do not occur according to present scientific knowledge"*⁴². There is therefore no reasonable scientific doubt regarding the absence of a significant effect wherever the CLe and CLo are not exceeded, even where the PC exceeds the 1% criterion.

⁵² Environment Agency (2025) *Air emissions risk assessment for your environmental permit*, <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit> edition, Available: <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit>.

⁵³ Natural England (2018) 'Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001)', pp. <http://publications.naturalengland.org.uk/publication/4720542048845824>.

16.4.48 The CLoS were recently subject to a detailed review and revision⁵⁴. Prior to that revision, Natural England³⁶ referred to earlier work⁵⁵ that there may be adverse effects below the (previously published) CLoS. Natural England has not revised its guidance following the CLo revision and therefore, for European sites where there is a restore objective in place, requires Appropriate Assessment wherever the PC is >1% of the CLe or CLo even when the total concentration or deposition is below the CLe or CLo. Natural England has confirmed that the potential for adverse effects may still be discounted on the basis that the total concentration or deposition is less than the current CLe or CLo, but procedurally, this should happen at the appropriate assessment, rather than screening stage, of a Habitats Regulations Assessment. This modelling report simply considers whether adverse effects can be ruled out solely on the basis of the air quality predictions and has therefore applied the following tests. The potential for a significant effect can be discounted wherever:

- The change (PC), both alone and in-combination, is less than 1% of the relevant CLe or CLo; OR
- The total concentration or deposition (PEC) is less than the relevant CLe or CLo.

Defining the Effect

Construction Dust

16.4.49 Dust generated by the Proposed Development during construction has the potential to cause direct, temporary effects at a local and borough level (up to 250m from the PEIR boundary) upon both human and ecological receptors. At most locations, effects will be short-term (less than a year) but near to Access Routes, effects may be medium-term (more than a year but not permanent).

16.4.50 Guidance from the IAQM is that, with appropriate mitigation in place, the effects of construction dust will be 'not significant'. The assessment thus focuses on determining the appropriate level of mitigation to ensure that effects will be 'not significant'.

⁵⁴ Bobbink et al. (2022) 'Review and revision of empirical critical loads of nitrogen for Europe', pp. https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/2022-10-12_texte_110-2022_review_revision_empirical_critical_loads.pdf.

⁵⁵ NECR210 (2016) 'Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance', pp. <https://publications.naturalengland.org.uk/publication/5354697970941952>.

Construction Traffic and NRMM

- 16.4.51 Emissions of pollutants associated with construction of the Proposed Development have the potential to cause direct, temporary, short-term air quality effects at a local level. At most locations, effects will be short-term (less than a year) but near to Access Routes, effects may be medium-term (more than a year but not permanent).
- 16.4.52 There is no official guidance in the UK in relation to development control on how to assess the significance of air quality upon human health effects. The approach developed jointly by EPUK / IAQM³¹ has therefore been used. The impacts of construction traffic and NRMM will be combined before the effect is defined.
- 16.4.53 It is important to differentiate between the terms 'impact' and 'effect' with respect to the assessment of air quality. The term 'impact' is used to describe a change in pollutant concentration at a specific location. The term 'effect' is used to describe an environmental response resulting from an impact, or series of impacts. The overall significance of the air quality effects upon human health is then determined using professional judgement, giving consideration to various factors including the magnitude of the predicted impacts and the presence of any objective exceedances; full details of the EPUK/IAQM approach are provided in Appendix 16-2.
- 16.4.54 The air quality impacts upon ecological receptors, i.e. changes in pollutant concentration or deposition flux are described in this chapter, with the potential effects on ecological receptors considered in **Chapter 8: Biodiversity**.

Limitations and Assumptions

- 16.4.55 Construction activity is anticipated to commence in Quarter 4, 2029 and will continue for a period of approximately 30 months. The Proposed Development is anticipated to be operational by 2032. At this stage, phasing of works is not confirmed until a construction contractor has been appointed. The air quality assessment will consider the peak year of construction within the ES (and will form part of the consultation on the PEIR).

16.5 Baseline Conditions

Existing Baseline

Local Air Quality Monitoring

- 16.5.1 Local authorities must regularly review air quality within their administrative boundaries⁴⁶ and declare an AQMA in areas where the air quality objectives have not been achieved, as well as produce an action plan to improve air quality in these areas.

- 16.5.2 CMBC has declared six AQMAs due to exceedances of the annual mean NO₂ objective. These are all to the south of the Proposed Development and are summarised in **Table 16-9**. Further afield there are also AQMAs in BMDC, Rochdale Metropolitan Borough Council (RMBC), Pendle Borough Council (PBC) and Kirklees Council (KC).
- 16.5.3 As shown in **Table 16-9**, exceedances of the annual mean NO₂ objective in 2024 were only measured in BMDC in the Manningham Lane AQMA 2 and Shipley AQMA 4; these are 6km and 7km from the Proposed Development, respectively.
- 16.5.4 The closest AQMA to the Proposed Development where exceedances of the objective are still being measured is Hebden Bridge. Outside the AQMAs NO₂ concentrations will be well below the objectives.

Table 16-9: AQMAs^a

Local Authority	AQMA	Maximum NO ₂ concentration 2024 (µg/m ³)	No. years compliance with Air Quality Objective (2025)
CMBC	No. 1 Salterhebble	43.2	0
CMBC	No.2 Sowerby Bridge	44.0	0
CMBC	No.3 Hebden Bridge	37.7	1
CMBC	No.6 Brighouse	41.2	0
CMBC	No.7 Hipperholme	40.9	0
CMBC	No.8 New Bank	38.7	1
BMDC	Mayo Avenue/Manchester Road (Order 1)	36.5	6
BMDC	Manningham Lane/Queens Road (Order 2)	47.7	0
BMDC	Thornton Road (Order 3)	29.9	6
BMDC	Shipley Airdale Road (Order 4)	46.8	0
RMBC	Part of Greater Manchester AQMA	46.8	0

Local Authority	AQMA	Maximum NO ₂ concentration 2024 (µg/m ³)	No. years compliance with Air Quality Objective (2025)
PBC	Colne AQMA	26.4 (2023)	6 (2024)
Objective (from Table 16-5)b		40	

^a Information taken from Annual Status Reports ^{39 40 41}

16.5.5 ^b This applies to all Local Authorities Specific air quality monitoring data for Colne⁴¹, Hebden Bridge³⁹ and Keighley⁴⁰ are outlined in **Table 16-10**, in line with the anticipated construction traffic routes provided by the Transport Consultant for the Proposed Development.

Table 16-10: Summary of Annual Mean NO₂ Monitoring in 2024 (µg/m³)

Local Authority	Site No.	Site Type	Location	Annual Mean NO ₂ (µg/m ³)
PBC ^a	PEN4, PEN54, PEN3 ^b	Roadside	92 Skipton Road, Colne	24.3
PBC ^a	PEN36	Roadside	22 Langroyd Road, Colne	22.2
PBC ^a	PEN63, PEN64	Roadside	100 Skipton Road, Colne	23.4
PBC ^a	PEN65, PEN66	Roadside	60 Windsor Street, Colne	24.7
PBC ^a	PEN67, PEN68	Roadside	44 Windsor Street, Colne	26.5
PBC ^a	PEN69, PEN70	Roadside	32 Windsor Street, Colne	24.1
PBC ^a	PEN76, PEN77	Roadside	9 Langroyd Road, Colne	20.5
PBC ^a	PEN82, PEN83	Roadside	257 North Valley Road, Colne	23.4
PBC ^a	PEN84, PEN85	Roadside	Junction North Valley / Langroyd Rd, Colne	28.3

Local Authority	Site No.	Site Type	Location	Annual Mean NO ₂ (µg/m ³)
PBC ^a	PEN86, PEN87	Roadside	Likkle Monkeys Nursery, Langroyd Rd, Colne (RHS)	28.9
PBC ^a	PEN90	Urban Background	37 Parker Street, Colne	20.9
CMBC	AQS3	Roadside	Market Street, Hebden Bridge	30.5
CMBC	BS1HB	Roadside	Market Street, Hebden Bridge	28.6
CMBC	HB6	Roadside	Burnley Road, Hebden Bridge	28.1
CMBC	HQ1	Roadside	Bridge Lane, Hebden Bridge	37.7
CMBC	HQ9	Roadside	New Road	28.5
BMBC	CM2	Urban Centre	Keighley	17.6
BMBC	DT135	Roadside	LP9, Outside 28 Hard Ings Rd	25.0
BMBC	DT136	Roadside	LP13, Outside 6 Hard Ings Rd	27.0
BMBC	DT137	Roadside	LP15, Next to 150 Lawkholme Ln	31.7
BMBC	DT138	Roadside	LP31, Next to round about, Hard Ings Rd	30.1
Objective (from Table 16-5)				40

^a Monitoring data for Pendle is for 2023.

^b Average of triplicate diffusion tubes.

^c Information taken from Annual Status Reports ^{39 40 41}

16.5.6 CMBC measures PM₁₀ and PM_{2.5} concentrations at a single location in Sowerby Bridge. PM_{2.5} is also measured at a location in Hebden Bridge. Measured concentrations between 2020 and 2024 were below the annual mean and 24-hour objectives³⁹.

Exceedances of the Limit Value

- 16.5.7 Defra compliance data has not identified any exceedances of the limit values in the Turbine Area, the Bradford West Cable Corridor for the Access Routes.
- 16.5.8 In the National Air Quality Plan^{19 20} BMDC was identified as a local authority with potential exceedances of the limit values beyond 2019. As a result, Bradford has identified as a CAZ, which covers the area inside, and including, the Bradford outer ring road, and also extends along the Aire valley corridor (Manningham Lane/Bradford Road and Canal Road area) to include Shipley and Saltaire. Pollutant concentrations within the CAZ have improved to the extent that no exceedances of the limit value are being monitored within the CAZ⁵⁶⁴⁵.
- 16.5.9 Across CMBC, BMDC, PBC and RMBC a single monitoring site was identified as being within 10% of the limit value in 2024, alongside the Bradford Road in the centre of Keighley in the BMDC area⁵⁶.

Background Concentrations

- 16.5.10 Estimated background concentrations in the study areas have been determined for the baseline year 2024 using Defra’s 2021-based background maps⁴⁴. These cover the whole of the UK on a 1x1km grid. The background concentrations are set out in **Table 16-11**. The background concentrations are all well below the objectives for human health.

Table 16-11 Estimated Annual Mean Background Concentrations in 2024 (µg/m³)

Year	NO ₂	PM ₁₀	PM _{2.5}
2024	4.1 – 10.4	7.5 – 11.1	4.7 – 6.9
Objective (from Table 16-5)	40	40 ^b	20 ^a

^a The 20µg/m³ PM_{2.5} objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

^b A proxy value of 32 µg/m³ as an annual mean will be used in the ES to assess the likelihood of the 24-hour mean PM₁₀ objective being exceeded (at modelled receptors). Measurements have shown that, above this concentration, exceedances of the 24-hour mean PM₁₀ objective are possible⁵⁷.

⁵⁶ Ricardo (2025) UK Urban NO₂ Network Operational Annual Report 2024.

https://uk-air.defra.gov.uk/assets/documents/reports/cat05/2509300423_UUNN_Annual_Report_2024.pdf

⁵⁷ Local Air Quality Management Technical Guidance (LAQM) LAQM

16.5.11 The background concentrations and deposition rates for ecological receptors are presented in **Table 8-18** in **Chapter 8: Biodiversity**.

Further Data Collection

16.5.12 To date, no additional surveys have been undertaken. Following consultation with Pendle Borough Council and Bradford Metropolitan District Council, air quality monitoring will be undertaken alongside roads expected to be used by construction phase traffic to inform the ES. Based on where construction traffic increases are expected, no monitoring in Calderdale is likely to be necessary, pending consultation with Calderdale Council.

Future Air Quality Conditions

16.5.13 Future baseline air quality conditions within the study areas have also been defined by considering Defra’s background maps, which predict concentrations up to the year 2030.

Future Baseline Conditions

Background Concentrations

16.5.14 Estimated background concentrations in the study areas have been determined for the proposed future opening year 2032 using Defra’s 2021-based background maps. These cover the whole of the UK on a 1x1km grid. The background concentrations for the Turbine Area are set out in **Table 16-12**.

Table 16-12: Estimated Annual Mean Background Concentrations in 2032 (µg/m³)

Year	NO ₂	PM ₁₀	PM _{2.5}
2032	3 - 8	7 - 11	4 - 6
Objective (Table 16-5)	40	40 ^b	20 ^a

^a The 20µg/m³ PM_{2.5} objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

^b A proxy value of 32 µg/m³ as an annual mean will be used in the ES to assess the likelihood of the 24-hour mean PM₁₀ objective being exceeded (at modelled receptors). Measurements have shown that, above this concentration, exceedances of the 24-hour mean PM₁₀ objective are possible⁵⁸.

16.6 Environmental Measures

16.6.1 This section describes details of the environmental measures which have been included within the design of the Proposed Development (as presented in **Chapter**

⁵⁸ Local Air Quality Management Technical Guidance (LAQM) LAQM

4: The Proposed Development). These measures are an inherent part of the design of the Proposed Development and have been included to benefit air quality where possible, as well as avoid, reduce or compensate for the adverse environmental effects of the Proposed Development.

- 16.6.2 Consideration will be paid to the opportunity to introduce environmental measures (and mitigation) that will help to avoid or reduce the potential for an adverse significant effect to occur. In accordance with Schedule 4(7) of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, the ES will be based on an EIA mitigation hierarchy which seeks to avoid, prevent, reduce and offset (where appropriate) likely significant effects. Specific environmental measures relevant to air quality will be identified and will be considered as part of the assessments (i.e. the assessments of likely significant effects have been undertaken with the inclusion of the environmental measures, as these measures will form part of the Proposed Development). At this stage of the Proposed Development, the following environmental measures will be implemented and included within the Proposed Development.

Construction

- 16.6.3 It is anticipated that standard measures to reduce dust and NRMM emissions during the construction phase will be set out in an oCEMP (**Appendix 4-2**) and measures to minimise the impacts of construction traffic in an outline Construction Traffic Management Plan (oCTMP) (**Appendix 14-2**). Measures in the oCEMP will be consistent with the Greater London Authority's SPG on the Control of Dust and Emissions. During Construction and Demolition^{59 60}, while intended for London, this approach is a requirement of the West Yorkshire Guidance³³.

Operation and Maintenance

- 16.6.4 It is not anticipated that any specific measures will be necessary during the operation and maintenance phase.

⁵⁹ GLA (2014) *The Control of Dust and Emissions from Construction and Demolition SPG*, Available: <https://www.london.gov.uk/programmes-strategies/planning/implementing-london-plan/london-plan-guidance-and-spgs/control-dust-and#:~:text=The%20aim%20of%20this%20supplementary,for%20non%2Droad%20mobile%20machinery>.

⁶⁰ <https://www.london.gov.uk/sites/default/files/2024-07/Control-of-Dust-Practice-Note.pdf>

Decommissioning

16.6.5 Measures to reduce emissions during the decommissioning phase will be set out in an oDEMP, which will include the same considerations as set out for the oCEMP (**Appendix 4-2**) in Paragraph 16.6.3.

Assumptions

16.6.6 The suggested scope set out above is based on the following assumptions:

- The overall significance of effects upon ecological receptors will be assessed and concluded in the **Chapter 8: Biodiversity**;
- There will be no emergency generators that will require testing during the operation and maintenance phase (but this will be confirmed in the ES); and
- Emissions from the vehicle, plant and machinery fleet will have reduced by the decommissioning phase, as a result of improvements in vehicle technology and reduced reliance on fossil fuel combustion engines.

16.7 Potential Effects Scoped Out

16.7.1 This section lists the effects which are scoped out of the air quality assessment as they are not considered likely to be significant. This includes the evidence that justifies this approach, as shown in **Table 16-13**.

Table 16-13: Potential Effects Scoped Out

Effects Scoped Out	Justification	Phase
Effects on human health from dust and particulate matter creation from ground, excavation and profiling works	Mitigation measures set out in the oCEMP will ensure that any dust impacts upon human receptors will not be significant and therefore will not be scoped into the EIA (as agreed in PINs ID 3.9.2) . A Construction Dust Risk Assessment will be prepared as a Technical Appendix to the ES. This will identify the risk of dust impacts to human receptors and the mitigation measures required to ensure that effects are not significant in accordance with IAQM ³⁰ and West Yorkshire guidance ³³ . The IAQM guidance is clear that, “ <i>with the implementation of effective site-specific mitigation measures the environmental effect will not be significant.</i> ” ³⁰	Construction

Effects Scoped Out	Justification	Phase
<p>Effects on human health from plant and machinery (NRMM)</p>	<p>The IAQM guidance³⁰ states: <i>“Experience of assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. For site plant and on-site traffic, consideration should be given to the number of plant/vehicles and their operating hours and locations to assess whether a significant effect is likely to occur”</i>. The amount of NRMM to be used is relatively small (<10 units at any location at the same time) and the site is large, with only a small number of sensitive human health receptors near to the Proposed Development. The site layout will take account of the location of sensitive receptors, and the distance between NRMM and sensitive properties will be maximised, as far as possible. All vehicles and plant will be switched off when not in use. In addition, the West Yorkshire Guidance requires that all NRMM adhere with London Best Practice Guidance, which currently requires all to meet Stage IV emissions standards to ensure that older engines with higher NOX and PM emissions are not used⁶⁰. Any NRMM emissions required near to sensitive properties in the area for the Bradford West Cable Corridor will be short-term. It is judged that there is negligible risk of significant human health effects as a result of on-site machinery emissions. This approach is confirmed by PINS (PINS ID 3.9.3).</p>	<p>Construction</p>
<p>Operational phase traffic air quality effects</p>	<p>Traffic generated during the operational phase will be limited to a small number</p>	<p>Operation and maintenance</p>

Effects Scoped Out	Justification	Phase
	of maintenance visits, and therefore no likely significant effects.	
Operational phase wind turbine air quality effects	The wind turbines and associated infrastructure will not cause any emissions to air and thus there will be no likely significant air quality effects.	Operation and maintenance
Operational phase BESS fire HF effects	No BESS is included in the Proposed Development.	Operation and maintenance
Impacts on human health and amenity from dust and particulate matter creation from ground, excavation and profiling works during decommissioning	As described for the construction phase effects, with the mitigation measures set out in the oDEMP the effects will be not significant and are thus scoped out of the EIA.	Decommissioning
Impacts of human health from decommissioning phase delivery vehicles, plant and machinery (NRMM) air quality effects	By the time decommissioning is carried out vehicle, plant and machinery emissions are expected to be much lower than at present due to improvements in vehicle technology and progression towards net zero carbon emissions driving an increase in electrically powered plant, in preference to combustion engines. Therefore, no likely significant effects on air quality are anticipated.	Decommissioning

16.7.2 Where effects have likely significant effects and are therefore scoped in, please refer to the scoped in effects section in the Preliminary Environmental Assessment below.

16.8 Preliminary Environmental Assessment

16.8.1 The Preliminary Environmental Assessment will detail the effects that are considered to be likely significant including providing details of how and why such a conclusion has been reached.

16.8.2 This is a preliminary assessment of Likely Significant Effects with the environmental measures in place, but without additional mitigation.

Construction Phase

Construction Dust

- 16.8.3 The main pollutants of concern relate to the construction activities of the Proposed Development are dust and PM₁₀.

Approach

- 16.8.4 The potential effects from dust generated during the construction phase of the Proposed Development have been assessed using the approach presented above and detailed in **Appendix 16-1**.

Receptors and Receptor Sensitivity

- 16.8.5 The IAQM construction dust risk assessment approach does not require specific sensitive receptors to be identified; instead, the numbers of different types of receptors within given distance bands are counted. It considers the potential for impacts within 250m of the Proposed Development or within 50m of roads used by construction vehicles within 250m of the Proposed Development.
- 16.8.6 The guidance for the construction dust risk assessment explains that residential properties, schools and care homes are 'high' sensitivity receptors to dust soiling, while public parks and places of work are 'medium' sensitivity receptors with farmland being 'low' sensitivity. Residential properties, schools and care homes are classified as being of 'high' sensitivity for human health effects, while places of work and shops are classified as being of 'medium' sensitivity and public parks are of 'low' sensitivity. It also identifies that sensitive ecological receptors within 50m of construction activities may be at risk of dust impacts, with those within the SAC considered high sensitivity. There are high, medium and low sensitivity receptors within the areas and therefore an assessment of the risk of dust impacts for human and ecological receptors will be presented in the ES. Appropriate mitigation will be identified, and incorporated in the oCEMP (**Appendix 4-2**), which will be commensurate with the identified risk.

Defining Impacts

- 16.8.7 The IAQM guidance is clear that, with appropriate mitigation in place, the residual effects will normally be 'not significant':

"in the case of demolition / construction it is assumed that mitigation (secured by planning conditions, legal requirements or required by regulations) will ensure that a potential significant adverse effect will not occur, so the residual effect will normally be 'not significant'."

Preliminary Assessment

- 16.8.8 As stated above, an oCEMP will be adopted to reduce the environmental impacts of the construction works, and a set of best-practice measures (as detailed within the IAQM guidance) will be incorporated into the specification for the works. The IAQM guidance³⁰ recognises that for “*For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be ‘not significant’*”. On this basis, with the implementation of dust control measures, the preliminary conclusions are that there will be **no likely significant** air quality effects in relation to ecological effects as a result of dust generated by construction activities.

Next Steps

- 16.8.9 To ensure the list of measures included in the oCEMP are commensurate with the risks outlined within the full risk assessment (based on the latest description for the Proposed Development), a dust risk assessment will be conducted in accordance with the IAQM guidance and will be presented in the ES. The assessment of the dust risk, will take into account the proximity of high, medium and low sensitivity receptors and scale of dust emitting activities. Following this, assessment measures in the oCEMP will be reviewed and updated in accordance with IAQM guidance and a list of proposed mitigation measures will be presented in the ES.

Construction Road Traffic on Human Health

- 16.8.10 The Proposed Development will generate additional traffic on local roads, the emissions from which may impact air quality at existing properties along the affected road network. The main air pollutants of concern related to road traffic emissions are NO₂, PM₁₀ and PM_{2.5}.

Approach

- 16.8.11 Traffic generation during the construction phase has initially been screened against the criteria set out in the Environmental Protection UK and Institute of Air Quality Management guidance document on Planning for Air Quality³¹. Where necessary, roadside pollutant concentrations, and the impacts of the development-generated traffic, will be predicted using the ADMS-Roads dispersion model and presented in the ES. The model will be used to predict existing baseline pollutant concentrations and the likely concentrations in the year of peak construction, both without and with the development. Traffic data will include any relevant cumulative developments at ES, as identified in **Chapter 14: Transport and Access**.

Receptors and Receptor Sensitivity

16.8.12 All the objectives (see **Table 16-5**) apply at locations where members of the public are likely to be regularly present on a long-term basis such as at residential properties, schools, hospitals and care homes. Only the 1-hour NO₂ applies at retail, community properties and picnic areas or viewpoints as in these locations it is unlikely people will spend an extended period (i.e. 24 hours) in these locations. Public footpaths where people are unlikely to spend an hour or more are not relevant exposure for the air quality objectives. Offices and places of work are not covered by the national air quality objectives²⁹.

Defining Impacts

16.8.13 The assessment has compared the predicted road traffic generation during the construction phase (as provided by the Transport Consultant for the Proposed Development) to the screening criteria set out in the EPUK and IAQM Guidance. Where the trip rate falls below the criteria, a further detailed assessment is not required; conversely, where the criteria are exceeded a detailed modelling assessment is typically required to quantify the impacts.

16.8.14 The approach to define the overall significance of the air quality effects has also been taken from the EPUK and the IAQM⁶¹ Guidance. This uses professional judgement, considering numerous factors including the frequency, duration and magnitude of the predicted impacts, their relationship to appropriate air quality objectives and the high sensitivity of the receptors.

16.8.15 Full details of the EPUK/IAQM approach are provided in **Appendix 16-2**.

Preliminary Assessment

16.8.16 The scale and distribution of the anticipated increases in road traffic movements resulting from the construction of the Proposed Development is set out in **Chapter 14: Transport and Access**. This shows that in the peak month of construction, in total, there would be 234 Heavy Goods Vehicle (HGV) movements per day (117 inbound and 117 outbound) and 86 Car / Light Goods Vehicles (LGV) movements (43 inbound trips and 43 outbound trips). These vehicle movements would be split across two access points; one from the north and west via Two Laws Road, and another from the east off Hebden Bridge Road.

16.8.17 Furthermore, there will be a maximum of 201 HGVs and 39 LGVs on the A6088 Colne, which passes through the Colne AQMA. Although the HGV figures exceed the IAQM Guidance of 100 HDVs outside of an AQMA, or 25 HDVs inside, these are daily figures for the peak month rather than an annual average, and taking into

⁶¹ The IAQM is the professional body for air quality practitioners in the UK.

account the lower flows in other months and non-working days the calculated Annual Average Daily Traffic (AADT) for comparison with the IAQM screening criteria will be lower. Considering that these trip generation figures (based on the peak month), and the existing air quality along the affected roads are well below the objectives (see **Table 16-10**), the marginal changes in concentrations are not expected to result in any likely significant effects on human health. Additionally, traffic will be managed in a way which reduces the potential air quality impacts at sensitive receptor locations through environmental measures (as mentioned in Section 16.6). This includes measures such as the use of agreed Access Routes and measures included within the oCTMP (**Appendix 14-2**) including a outline Staff Travel Plan (Appendix A of **Appendix 14-2**), as well as a oCEMP (**Appendix 4-2**) (see **Chapter 4: The Proposed Development** for further details on the management plans).

Additional Mitigation

- 16.8.18 No additional mitigation is required at this stage based on the preliminary assessment. Details of any additional mitigation required following detailed design information, will be set out in the ES.

Residual Effects

- 16.8.19 Based on the initial data and preliminary assessment described above, the residual human health effects from construction traffic emissions are expected to be **not significant**. This will, however, be confirmed in the ES.

Next Steps

- 16.8.20 Should the final AADT data exceed the screening criteria set out in the EPUK and IAQM Guidance, an air quality computer dispersion model approved by Defra (known as ADMS-Roads) will be used to quantify the impacts that road traffic emissions (associated with existing and development-generated road traffic) will have on air quality at existing receptor locations.
- 16.8.21 The model will be used to predict annual mean concentrations of NO₂, PM₁₀ and PM_{2.5} at representative worst-case existing sensitive receptors, which will in turn also be used to assess the likelihood of exceedances of the 1-hour mean NO₂ objective and 24-hour mean PM₁₀ objective according to the methodology set out in LAQM.TG(22)²⁹.
- 16.8.22 The assessment will be based on the worst-case option with respect to traffic generation (i.e. the year of construction predicted to generate the greatest number of additional vehicle trips). The approach to, and results of, this assessment will be presented in the ES.

Construction Road Traffic on Ecological Sites

- 16.8.23 There is the potential for the Proposed Development to have a significant effect on sensitive ecological sites within the study areas from construction and decommissioning traffic emissions. The main air pollutants of concern related to potential ecological effects are NO_x and ammonia, and their influence of nitrogen and acid deposition rates.

Approach

- 16.8.24 In accordance with guidance published by Natural England, as described in paragraph 16.4.29, a detailed assessment of the impacts of the anticipated increases in traffic on local roads from the operation and maintenance of the Proposed Development is required where roads within 200 m of designated ecological sites will experience an increase of more than 1,000 AADT (either in-isolation or in-combination with cumulative developments). Where the traffic increases fall below the screening threshold, it can be concluded that there will be no significant effects on sensitive ecological receptors. Traffic data will include any relevant cumulative developments at ES, as identified in **Chapter 14: Transport and Access**.

Receptors and Receptor Sensitivity

- 16.8.25 Internationally and nationally designated ecological sites – SACs, SPAs, Ramsar and SSSIs – within 10km of the Proposed Development were identified. The South Pennines Moors Site of SSSI, the South Pennine Moors SAC; and South Pennine Moors Phase 2 SPA are located within 200m of a road that is likely to be affected by the construction of the Proposed Development and have been considered as sensitive to potential air quality impacts.

Defining Impacts

- 16.8.26 The impacts have been defined comparing the traffic data to the aforementioned Natural England criteria. While this provides an indication of the likelihood of significant effects, ultimately the significance of effects on designated ecological sites is assessed in **Chapter 8: Biodiversity**.

Preliminary Assessment

- 16.8.27 The traffic data set out in **Chapter 14: Transport and Access**, as discussed above for human health effects, shows that in the peak month of construction there would be 102 HGV movements per day 47 Car / LGV movements using Two Laws Road, and 12 HGV and 40 Car/LGVs movements onto Hebden Bridge Road within the designated site. As these are rural roads, it is not expected that sufficient traffic from cumulative developments would also use these roads to take the total in-combination traffic flows over the 1,000 AADT (total traffic) and 200 AADT (HGV)

thresholds described in the Natural England guidance. The impacts are therefore not expected to result in any significant effects. Due to the potential for combined effects, emissions from construction phase traffic will be considered using the final traffic in addition to NRMM emissions in the ES, and the overall significance will be presented in **Chapter 8: Biodiversity**.

Additional Mitigation

- 16.8.28 Based on the preliminary assessment, it is not expected that additional mitigation on air quality grounds (from construction phase traffic emissions) will be required. Details of any additional mitigation required following detailed design information, will be set out in the ES.

Residual Effects

- 16.8.29 The residual effects for emissions from construction phase traffic on their own are expected to remain as set out above (**Not Significant**).

Next Steps

- 16.8.30 An updated assessment based on the final AADT flows provided by the Transport Consultant for the Proposed Development will be undertaken and reported in the ES, and a detailed computer modelling assessment will be carried out to enable to combined effects of road traffic emissions and NRMM to be assessed. The proposed approach to this assessment is set out in **Appendix 16-3**.

NRMM On Ecological Sites

- 16.8.31 There is the potential for the Proposed Development to have a significant effect on sensitive ecological sites within the study area from on-site construction and decommissioning NRMM emissions. The main air pollutants of concern related to potential ecological effects are NO_x and ammonia, and their influence of nitrogen and acid deposition rates.

Approach

- 16.8.32 At this preliminary stage of the Proposed Development, given the uncertainty of the final NRMM plant to be used during the construction and decommissioning phases, only professional judgement and previous experience can be used to assess the likelihood of significant effects.

Receptors and Receptor Sensitivity

- 16.8.33 Internationally and nationally designated ecological sites – SAC, SPAs, Ramsar and SSSIs – within 10km of the Proposed Development were identified. The South Pennines Moors SSSI, the South Pennine Moors SAC; and South Pennine Moors Phase 2 SPA are located within 200m of on-site NRMM during construction and

decommissioning and have been considered as sensitive to potential air quality impacts.

Defining Impacts

- 16.8.34 The impacts of NRMM emissions on pollutant concentrations and deposition rates at the sensitive receptors will be predicted quantitatively and presented in the ES. For the purposes of this preliminary assessment, an overall professional judgement has been made based on previous experience.

Preliminary Assessment

- 16.8.35 Based on professional judgement, NRMM emissions can lead to locally elevated NO_x and ammonia concentrations, in excess of the screening criteria defined in paragraph 16.4.44 to 16.4.48. The extent of any impacts will be dependent on the equipment and duration of use in specific locations. In the absence of detailed construction information and the estimated use of NRMM, the magnitude of impact cannot be estimated. Therefore, a significant adverse effect on the South Pennine Moors SAC and SSSI has not been ruled out at this stage as detailed in **Chapter 8: Biodiversity**.

Additional Mitigation

- 16.8.36 If likely significant effects are identified in **Chapter 8: Biodiversity** following completion of detailed modelling at ES, additional mitigation may be required. If necessary, mitigation may include restrictions on location or duration of use of specific plant, or selection of lower emission equipment. The requirements will be considered and presented in the ES.

Residual Effects

- 16.8.37 If additional mitigation is required, the residual effects will be reduced, but we **cannot rule out likely significant effects** at this stage.

Next Steps

- 16.8.38 The impacts of emissions from NRMM will be predicted using computer dispersion modelling (specifically, using the ADMS-6 dispersion model) and combined with emissions from construction phase traffic, as set out in **Appendix 16-3**. The air quality modelling will be carried out based on a number of necessary assumptions; where possible a realistic worst-case approach will be adopted. Deposition fluxes will be calculated from the predicted concentrations. This assessment will be presented in detail in the ES, with any additional mitigation identified.

16.9 Conclusions

- 16.9.1 The information provided within this chapter is preliminary. The preliminary assessment has been completed based on likely worse-case parameters against a series of assumptions. The final assessment within the ES will be refined in respect of any revision to the Proposed Development design, comments and information received through stakeholder engagement, and further evaluation surveys.
- 16.9.2 To ensure the list of measures included in the oCEMP and oDEMP are appropriate, a risk assessment based on the final description for the Proposed Development will be conducted in accordance with the IAQM guidance and will be presented in the ES.
- 16.9.3 Similarly, the likely construction plant specifications, as well as the likely duration and location of the plant to be used as part of the construction and decommissioning phases of the Proposed Development, will be discussed in the ES to confirm whether there will be **no likely significant air quality effects**.
- 16.9.4 As the design develops, the final estimated road traffic generation will be compared to the EPUK and IAQM screening criteria for human health, and Natural England guidance for ecology. Should these criteria be exceeded, the impacts of road traffic emissions on air quality will be assessed in detail using computer dispersion modelling and presented in the ES. The assessment will be based on the likely worst-case option with respect to traffic generation (i.e. the year of construction or decommissioning predicted to generate the greatest number of additional vehicle trips).
- 16.9.5 **Table 16-14** presents a summary of the preliminary assessment of likely significant effects, with further information. It also includes the next steps to be undertaken as part of the Environmental Impact Assessment.

Table 16-14: Summary of Preliminary Assessment of Likely Significant Effects

Element	Preliminary assessment of Likely Significant Effect	Additional Mitigation	Residual Effect	Further Information	Next Steps
Construction dust impacts on ecological receptors.	Not significant	None	Not significant	-	Dust risk to ecological (and human) receptors will be

Element	Preliminary assessment of Likely Significant Effect	Additional Mitigation	Residual Effect	Further Information	Next Steps
					identified further in the ES and further mitigation measures identified and added to the oCEMP/o, as necessary.
Construction traffic impacts on human health receptors	Not significant	None	Not significant	-	Will be demonstrated further in ES when we have the detailed design (and final construction traffic figures).
Construction traffic impacts on ecological receptors.	See Chapter 8: Biodiversity – a significant effect cannot be ruled out when considered in combination with NRMM.	None	See Chapter 8: Biodiversity – a significant effect cannot be ruled out when considered in combination with NRMM.	Construction traffic not expected to exceed Natural England screening threshold when considered on its own.	Combined influence of traffic and NRMM emissions will be determined in the ES, and further mitigation identified (these are assessed together).

Element	Preliminary assessment of Likely Significant Effect	Additional Mitigation	Residual Effect	Further Information	Next Steps
NRMM on ecological receptors	See Biodiversity Chapter – a significant effect cannot be ruled out.	None	See Biodiversity Chapter - a significant effect cannot be ruled out	Extent of any impact will be dependent on equipment, location and duration of use	As above, combined influence of traffic and NRMM emissions will be determined in the ES, and further mitigation identified, if necessary.
Demolition dust impacts on ecological receptors.	A significant effect cannot be ruled out due to lack of information on decommissioning	None	A significant effect cannot be ruled out due to lack of information on decommissioning	-	Dust risk to ecological (and human) receptors will be identified further in the ES and further mitigation measures identified and added to oDEMP, as necessary.

