



Scout Moor II Wind Farm Environmental Impact Assessment (EIA) Scoping Report

December 2024

Applicant
Cubico UK Development (Wind 1) Limited
Our reference
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Turley

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Glossary of Project Terms

Term	Description
Applicant	Cubico UK Development (Wind 1) Limited
Applications	The duplicate planning applications for the construction, operation and decommissioning of a wind farm and associated infrastructure alongside moorland restoration / minor fencing works on a part of the Common Land under the Town and Country Planning Act 1990 ¹
Assessment Boundary	The maximum extent / spatial footprint of the Project for Assessment (this is shown in Figure 1.1).
Common Land Application	Applications under Section 16 for the deregistration and replacement of Common Land and Section 38 pertaining to the carrying out of works on Common Land of the Commons Land Act 2006 to remove and replace Common Land to facilitate the construction of the Proposed Scheme.
Electrical Grid Connection	The connection from the wind farm to the Bulk Supply Point (BSP) in Rawenstall, for which two options are considered at this stage (Figure 1.1). This forms a component of the Project for Assessment.
High-Level Development Specification	The principles which have been agreed by the project team about the Project for Assessment at this stage (this is set out in Chapter 4).
Project for Assessment	The wider, comprehensive development project including the Proposed Scheme and the Electrical Grid Connection.
Proposed Scheme	The construction, operation and decommissioning of a wind farm and associated infrastructure alongside moorland restoration / works on the Common Land. This forms a component of the Project for Assessment. This development for which detailed planning permission is sought through the Applications and the Common Land Application. The difference between the Project for Assessment and Proposed Scheme is the Electrical Grid Connection.

¹ Town and Country Planning Act 1990 c.8.

1. Introduction

Overview

- 1.1 Cubico UK Development (Wind 1) Limited (the 'Applicant') is preparing to submit duplicate full planning applications² (the 'Applications') to Rochdale Metropolitan Borough Council (RMBC) and Rossendale Borough Council (RBC) for a wind farm with up to 21 wind turbines (up to 180m in height) with a generating capacity of up to 100MW³, associated infrastructure and access. The Applications also include proposals to restore and enhance an extensive area of badly degraded peat moorland as part of a Moorland Restoration and Management Plan.
- 1.2 Alongside the Applications, an Application for Common Land Consent⁴, that will seek to remove relevant parts of the Assessment Boundary from 'The Common' to facilitate the wind farm (the 'Common Land Application'), will be submitted. However, it is as part of the Applications that planning permission will be sought for works (e.g. fencing) on the Common Land⁵. Collectively the wind farm, moorland restoration and works on Common Land are referred to as the 'Proposed Scheme'.
- 1.3 In addition to the Applications, electrical connection infrastructure required to connect the wind farm to the Rossendale Bulk Supply Point (BSP) will be delivered by the Applicant (the 'Electrical Grid Connection'). The mechanisms and timing of this are not yet known.
- 1.4 Collectively, the permanent and temporary works associated with the Applications and Electrical Grid Connection will be assessed as part of the EIA and are referred to as the 'Project for Assessment'. Further details are provided in **Chapter 2**.
- 1.5 The project team have developed a description of the Project for Assessment (a 'High-Level Development Specification'), which is outlined in **Chapter 4**. Whilst the Project for Assessment continues to be refined as part of the design process, agreed development principles have been defined at this stage and **Chapter 4** provides factual and sufficient information to inform the Environmental Impact Assessment (EIA) Scoping process and the preparation of this EIA Scoping Report.
- 1.6 Given the above, the area to be considered for the purposes of the EIA reflects the spatial footprint of the Project for Assessment and is termed the 'Assessment Boundary'. The Assessment Boundary covers approximately 1,038 hectares (ha) and is defined in **Figure 1.1**. Further details on the existing land uses within the Assessment Boundary are provided in **Chapter 3**. Note that the Assessment Boundary is larger than the boundaries of the Applications.

² Under the Town and Country Planning 1990 c.8.

³ While it is noted that the threshold for electricity generation to be Nationally Significant Infrastructure Projects (NSIPs) is to be increased to 100MW by the end of 2025, the Applications will be submitted under the Town and Country Planning regime.

⁴ Under Section 16 of the Commons Act 2006 c. 26.

⁵ Alongside an application under Section 38 of the Commons Act 2006 c. 26.

Request for a Scoping Opinion

- 1.7 The Applicant has instructed Turley to lead, manage and control the EIA process for this project in line with The Town and Country Planning (EIA) Regulations 2017 (as amended)⁶ (the 'EIA Regulations'). Competent experts will also contribute to the process (see **Chapter 2**).
- 1.8 To inform the EIA process, in accordance with Regulation 15 of the EIA Regulations, Turley requests a Scoping Opinion from RMBC and RBC informed by this report.
- 1.9 In line with Regulation 15, Paragraph 2 of the EIA Regulations, this report contains the following:
- A plan sufficient to identify the land – the 'Assessment Boundary' (**Figure 1.1**);
 - A brief description of the nature and purpose of the development, including its location and technical capacity – the 'Project for Assessment' (**Chapter 4**);
 - An explanation of the likely significant effects of the development on the environment (**Chapters 6 – 15**); and
 - Such other information or representations as the person making the request may wish to provide or make.
- 1.10 This report aims to ensure that there is a clear and agreed scope for the EIA. As such, the Scoping Opinion is sought on the breadth of the technical topics and associated effects to be considered within the EIA and reported in the ES, as well as the scope and methodology for assessment. This is set out in **Chapters 6 – 15**. The approach for the assessment of cumulative effects is provided in **Chapter 16**.
- 1.11 Discussions have taken place with RBC and RMBC between May and November 2024 to ensure there are appropriate synergies between the two separate (but co-ordinated) scoping processes. It is understood that the appropriate synergies will be achieved by the following steps:
- Turley request a Scoping Opinion from both RBC and RMBC (this report forms this request);
 - RBC and RMBC will co-ordinate the release of statutory consultee letters with a view of explaining that there are two statutory processes for the same project and this is necessary as the project straddles two authority boundaries. There will be a request, wherever possible, that a single individual is identified at each statutory consultee so that a co-ordinated statutory consultee response can be provided;
 - RBC and RMBC will review all received statutory consultee letters with the aim of providing a co-ordinated Scoping Opinion with no or limited conflicts; and

⁶ The Town and Country Planning (EIA) Regulations 2017 No. 571 (as amended).

- RBC and RMBC will each send a duplicate copy of the Scoping Opinion to Turley.
- 1.12 In accordance with Regulation 15, Paragraph 4 of the EIA Regulations it is anticipated that the statutory timescales will be met and that Turley will be in receipt of the Scoping Opinion no later than five weeks from the date of receipt of this request. Any deviation from this will be subject to a request from RBC and / or RMBC and subsequent agreement by the Applicant.
- 1.13 Furthermore, in line with Regulation 28, it is anticipated that RBC and RMBC will make available this report and the Scoping Opinion, with accompanying consultee comments where applicable, for public inspection, either through the RBC / RMBC planning portal or by other means.

Definition of EIA

- 1.14 The term 'EIA' has the meaning given by Regulation 4, Paragraph 1 of the EIA Regulations, as '*a process consisting of -*
- (a) the preparation of an environmental statement;*
- (b) any consultation, public and notification required by, or by virtue of, these Regulations or any other enactment in respect of EIA development; and*
- (c) the steps required under regulation 26' (consideration of whether planning permission or subsequent consent should be granted)'*.
- 1.15 Under Regulation 4, Paragraph 2 an EIA must '*identify, describe, and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors -*
- (a) population and human health*
- (b) biodiversity, with particular attention to species and habitats protected [under any law that implemented] Directive 92/43/EEC(1) and Directive 2009/147/EC(2);*
- (c) land, soil, water, air and climate;*
- (d) material assets, cultural heritage and the landscape; and*
- (e) the interaction between the factors referred to in sub-paragraphs (a) to (d)'*.
- 1.16 EIA is a procedure that must be followed for certain types of projects before 'development consent' (e.g. planning permission) can be given. The procedure is a means of drawing together, in a systematic way, an assessment of a project's likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for reducing or mitigating them are properly understood by the public and the relevant determining authority (in this case both RBC and RMBC) before they make a decision.
- 1.17 The aim of EIA, as defined by national Planning Practice Guidance (PPG), is to '*protect the environment by ensuring that a local planning authority when deciding to grant*

planning permission for a project, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision making process....’ and ‘..also to ensure that the public are given early and effective opportunities to participate in the decision making procedures’⁷.

Requirement for EIA

- 1.18 The need to consider EIA is recognised as the Project for Assessment meets the thresholds / criteria within Schedule 2, 3(a) ‘*industrial installations for the production of electricity, steam and hot water*’ as the Assessment Boundary exceeds the 0.5ha threshold.
- 1.19 At this stage, a number of likely significant effects have been identified. Therefore, an EIA will be undertaken, the outputs of which will be reported in an Environmental Statement (ES).
- 1.20 The EIA is being used as a tool to identify and manage the environmental impacts and where possible avoid, reduce or offset them as part of the design process (see further details in **Chapter 2**).

Stakeholder Engagement

- 1.21 Consultation is an important part of the EIA process. It is the responsibility of RBC and RMBC to undertake the appropriate level of consultation, including the identification of relevant and applicable statutory and non-statutory consultees, required to inform the Scoping Opinion.
- 1.22 It is anticipated that RBC and RMBC will consult with the following stakeholders during the preparation of the Scoping Opinion:
- RMBC / RBC Internal Technical Departments and associated advisors⁸;
 - Lancashire County Council (LCC)⁹;
 - Environment Agency;
 - Natural England;
 - Historic England;

⁷ Department for Levelling Up, Housing & Communities (DLUHC) and Ministry of Housing, Communities & Local Government (MHCLG), PPG, Paragraph 002 Reference ID: 4-002-20140306 [Online].

⁸ For RMBC, this is understood to involve the following departments: Highways and Engineering; Public Rights of Way; Environmental Protection (Noise and Odours / Air Quality / Landfill Gas and Contaminated Land); Conservation and Design; Climate Change and Tree). For RBC, this is understood to involve the following departments: Conservation; Economic Development; Land Contamination; Climate Change and Trees.

⁹ LCC are acting on behalf of RMBC in relation to Highways; Ecology; and Archaeology.

- National Highways;
- Greater Manchester Ecology Unit (GMEU);
- Greater Manchester Archaeological Advisory Service (GMAAS);
- LCC Flood Risk Management (as Lead Local Flood Authority);
- Defence Infrastructure Organisation (Ministry of Defence);
- National Air Traffic Services (NATS) Safeguarding;
- Civil Aviation Authority;
- Manchester Airport Group;
- BAE Systems;
- Coal Authority;
- United Utilities;
- Met Office;
- National Grid;
- Electricity North West (ENW);
- Health and Safety Executive (HSE);
- Minerals for Greater Manchester;
- Rochdale Development Agency;
- Royal Society for the Protection of Birds (RSPB);
- Lancashire Wildlife Trust;
- Lancashire Badger Group;
- The Ramblers Association;
- Peak and Northern Footpaths Society;
- British Horse Society;
- Pennine Soaring Club;
- Rossendale Harriers;
- Rossendale Ramblers;

- Rochdale Ramblers;
- Rossendale Cycleways;
- Pennine Mountain Bike Association (PBMA);
- National Trust; and
- Open Spaces Society.

1.23 In advance of preparing this report, consultation with several of the above consultees has already been undertaken and continues, to inform specifics of the design of the Project for Assessment, baseline data collection and assessment methodologies.

1.24 It is also noted that a first round of consultation has been undertaken, including drop-in events. The issues raised through consultation will be outlined within the ES, signposting how / where these have been considered within the EIA process.

2. Approach to EIA

Approach to EIA Scoping

- 2.1 This report has been prepared in line with common EIA practice, whereby the appointed project team, based on an understanding of the Assessment Boundary and the Project for Assessment, have:
- Established the existing technical baseline, either through desk-top studies / reviews, surveys, analysis and evaluation of available technical data;
 - Identified whether effects associated with a technical topic are unlikely / not significant. This may be due to the absence of a source, pathway or receptor or through the commitment to mitigation;
 - Identified the effects that are likely / significant and the associated sensitive receptors that will be assessed in the ES; and
 - Established the methodology for assessing the effects in the ES which are likely to be significant.
- 2.2 The above has been informed by the Turbine Development Zones plan (**Figure 4.1**). This shows the maximum extent of where the wind turbines will be located, alongside maximum turbine heights within these zones. Ancillary infrastructure works, such as access, substation and borrow pits, will fall both inside and outside of these zones.
- 2.3 The outputs of the above are documented in **Chapters 5 – 15**.
- 2.4 The EIA process has been and will continue to be undertaken in accordance with the regulatory framework set by the EIA Regulations, relevant case law and the following best practice documents and guidance:
- PPG¹⁰;
 - Institute of Environmental Management and Assessment (IEMA) 'Shaping Quality Development'¹¹; and
 - IEMA 'Delivering Quality Development'¹².

Iterative Approach to Scoping

- 2.5 This report seeks to establish the overall framework for the EIA in relation to the technical topics and associated likely significant effects that will be subject to detailed assessment in the ES. However, iterative 're-scoping' will continue as the design and

¹⁰ DLUHC / MHCLG (2020) PPG [Online], available at:
<https://www.gov.uk/guidance/environmental-impact-assessment>.

¹¹ IEMA (2015) EIA Guide to: Shaping Quality Development.

¹² IEMA (2016) EIA Guide to: Delivering Quality Development.

strategy are refined, plans and principles evolve and additional technical work is completed. This will enable environmental effects to be well understood and primary and tertiary mitigation developed (see 'Defining Mitigation and how this will be Controlled' below).

- 2.6 The EIA process (as reported within the ES) will be based on the Scoping Opinion (as required by Regulation 18, Paragraph 4(a)), though it will take account of the continued scope development. This iterative 're-scoping' process will continue up until the point when the assessments within the ES are in their first draft, in advance of submission.
- 2.7 Any deviation between the scope of effects considered within this report and the ES will be clearly communicated in the ES. This is in accordance with the PPG¹³, which states that

'...where it becomes evident during the assessment process...that a particular environmental factor is absent or unlikely to be significantly affected by a proposed development, there should be no need for further assessment of that factor even though it was identified in the scoping process...'

- 2.8 It is requested that such an approach is clearly endorsed within the Scoping Opinion issued by RBC and RMBC.

Approach to the Consideration of Alternatives

- 2.9 The EIA Regulations¹⁴ and PPG¹⁵ do not require that an Applicant considers alternatives but instead where reasonable alternatives have been considered by the Applicant, these should be described and an indication of the main reasons for selecting the chosen option, including a comparison of the environment effects, should be provided.
- 2.10 The EIA Regulations and the PPG do not identify a specific methodology for the consideration of reasonable alternatives nor any associated criteria. Therefore, the methodology to be adopted will be based on professional experience and an understanding of the Project for Assessment and its characteristics as well as a focus on the delivery of proportionate reporting in line with PPG.
- 2.11 The consideration of alternatives has followed a two-step approach, with Step 1 completed as part of this report:
- **Step 1:** Consideration of 'factors' that constitute alternatives based on the EIA Regulations (i.e. alternative sites, alternative designs, alternative technologies and the 'do nothing' scenario) and justification / discussion of their inclusion / exclusion from further appraisal and reporting; and
 - **Step 2:** Qualitative appraisal of the 'factors' brought forward from Step 1 and, where appropriate, a comparison of the environmental effects.

¹³ DLUHC and MHCLG, PPG, Paragraph: 038 Reference ID: 4-038-20170728 [Online].

¹⁴ Schedule 4, Paragraph 2 of the EIA Regulations.

¹⁵ DLUHC and MHCLG, PPG, Paragraph 041 Reference ID: 4-041-20170728 [Online].

Step 1 – Consideration of Factors

2.12 The relevant factors have been considered to determine the need for further reporting. The outputs of this are as follows:

- **Alternative sites** – a number of aspects have influenced the location of the Project for Assessment, in particular the Applicant’s control over the land alongside its location adjacent to an existing operational wind farm (Scout Moor I) and in an area with a very good wind resource. Further analysis of these aspects will be provided within the ES, where applicable;
- **Alternative designs** – the design of the Project for Assessment has and will continue to evolve in response to the identification of:
 - Environmental features, sensitivities and impacts; and
 - Engineering requirements.

This is particularly the case during the wind turbine location optimisation process, which is ongoing. This is likely to include consideration of alternative:

- Accesses;
- Grid Infrastructure routing; and
- Construction compounds.

On this basis, alternative designs will be taken forward to Step 2;

- **Alternative technologies** – due to the nature of the Project for Assessment, a series of alternative technology options have been and will continue to be considered, influenced by engineering requirements as well as product supply and availability. On this basis, alternative designs will be taken forward to Step 2; and
- **‘Do Nothing’ scenario** – the technical assessments presented in the ES will include the determination of the ‘future baseline’ (see ‘Consideration of Future Baseline’ below). This is the likely condition of the Assessment Boundary in the absence of development (i.e. the evolution of the baseline that would occur through natural changes). In addition, consideration will be given to the likely significant effects identified and reported in the ES that would not occur in the absence of development (i.e. no adverse or beneficial effects). On this basis, the ‘do nothing’ scenario will be taken forward to Step 2.

2.13 As set out above, alternative sites, designs and technologies and the ‘do nothing’ scenario will be taken forward to Step 2 and reported in the ES.

Definition of the Project for Assessment

2.14 As outlined in **Chapter 1**, the Project for Assessment includes the following components:

- The wind farm, associated infrastructure and access, moorland restoration and works on the Common Land (the 'Proposed Scheme'); and
 - Electrical connection infrastructure required to connect the wind farm to the Rossendale Bulk Supply Point (BSP) (the 'Electrical Grid Connection').
- 2.15 A High-Level Development Specification, providing a description of the Project for Assessment inclusive of the components above, is provided in **Chapter 44**.
- 2.16 At this stage, no off-site improvements / mitigation are likely to be identified through the EIA and reported in the ES. As such, no consideration of indirect / secondary effects arising from such improvements or mitigation is anticipated to be required.

The Extent of Data Collection

- 2.17 The Assessment Boundary, upon which baseline data has been collected is defined by **Figure 1.1**. As noted in **Chapter 1**, this is considered to be the maximum extent of all permanent and temporary works associated with the components of the Project for Assessment (see 'Definition of the Project for Assessment' above).
- 2.18 Where required, technical specific study areas (informed by relevant best practice and guidance) will be based upon the Assessment Boundary. They are generally defined as a radius from this Assessment Boundary.
- 2.19 Less baseline data has been considered necessary for the Electrical Grid Connection routes due to the below-ground nature of permanent works, the extent of such works (within the existing highway corridor) and the limited likely significant effects associated with this component of the Project for Assessment.

Baseline Data Collection

- 2.20 Likely significant effects as a result of the Project for Assessment will be described in the ES in relation to the deviation from the baseline environment within the Assessment Boundary and / or relevant technical study areas.
- 2.21 For the majority of technical topics and associated effects, the baseline environment will comprise the existing environmental characteristics and conditions based on the following:
- Site visits and surveys;
 - Desk-based studies;
 - Review of existing site-specific information or public literature;
 - Modelling;
 - Review of relevant national and local planning policies; and
 - Consultation with the relevant statutory and non-statutory consultees through the EIA process.

- 2.22 Where there is a deviation from the use of existing environmental characteristics and conditions, this is noted below under 'Assessment Scenarios'. This will be outlined within the ES.
- 2.23 The data used to inform the baseline conditions for the technical assessments reported in the ES (for those technical topics 'scoped in', see **Chapters 6 – 15** for more details) will vary depending upon the timing of the survey or the date when data sources will have been accessed.
- 2.24 Where relevant, older data may be obtained from third parties, though may still be relevant to the baseline scenario if there have been no notable changes or is the latest available information. The origin of all data, the dates of surveys and the dates when data sources have been accessed will be clearly outlined, alongside any limitations and assumptions, within the ES.
- 2.25 It is understood that the majority of the Assessment Boundary has been / will be subject to a degree of ongoing land management, such as grazing, during baseline data collection. While such management practices directly influence the 'baseline' of the majority of the Assessment Boundary, there is unlikely to be any material influence on the overall prevailing environmental conditions due to the nature of such practices.
- 2.26 It is also noted that there have been quarry operations at Scout Moor Quarry, which lies adjacent to the western extents of the Assessment Boundary (albeit currently the quarry has been mothballed), and at Whitworth Quarry, situated close to the eastern extents of the Assessment Boundary. There are also a number of projects under construction in the vicinity of the Assessment Boundary during the collection of baseline data. These will contribute to the overall baseline conditions, as recorded within the baseline data collected for the EIA process.

Consideration of Future Baseline

- 2.27 As required by the EIA Regulations¹⁶, the ES will report the future baseline scenario. The discussion will focus on how the Assessment Boundary and wider technical study area(s) may change assuming the Project for Assessment did not go forward and the continuation of the existing land management regime.
- 2.28 Separate consideration of a 'future baseline' scenario without Scout Moor I will be undertaken for specific technical topics. Further details are provided under 'Assessment Scenarios' below.

Identification of Sensitive Receptors

- 2.29 Informed by baseline information and data, a series of receptors or receptor groups are identified and evaluated to determine if they may experience likely significant effects. Where such potential exists, these receptors will be subject to assessment within the ES.

¹⁶ Schedule 4, Paragraph 3 of the EIA Regulations.

- 2.30 As well as baseline information data, the receptors associated with the Project for Assessment have also been considered in terms of future receptors, for example, construction workers and future users of the moorland. This will ensure that all effects of the Project for Assessment are considered throughout all stages.
- 2.31 Details of the receptors that are considered likely to be affected at this stage are set out in **Chapters 6 – 15**.

Information to Inform the Final Assessments within the ES

- 2.32 The technical assessments reported in the ES will be based on a series of plans and a description of the Project for Assessment, captured as part of the ‘Development Specification’ to be provided as part of the ES.
- 2.33 The Development Specification will be an expanded version of **Chapter 4** and will cover all components of the Project for Assessment and different stages, including site preparation / enabling works, earthworks, remedial works and construction activities (collectively referred to as ‘construction’), operation and decommissioning.
- 2.34 For the Applications, detailed plans for approval for the wind farm and associated ancillary infrastructure will set out aspects such as:
- Turbine layout;
 - Mast layout; and
 - New and existing access tracks configuration.
- 2.35 There will also be plans showing the extent and nature of moorland restoration works¹⁷. Alongside the plans for the Applications, there will be plans prepared for the Common Land Application, including Section 16 plans to show the extent of Common Land, Release Land and Replacement Land and Section 38 plans to show the location of proposed works (e.g. fencing, etc.).
- 2.36 Further details on the plans that have informed the technical assessments will be provided in the ES.
- 2.37 For the Electrical Grid Connection, no specific plans have been prepared at this stage in addition to the Assessment Boundary. Therefore, assumptions will be made based on our understanding of this type of works and these will be set out within the ES.
- 2.38 Together the Development Specification and the supporting plans will provide the necessary information required to inform a robust assessment of likely significant environmental effects and to meet the requirements of the EIA Regulations.

¹⁷ These plans will form part of the Moorland Restoration and Management Plan prepared for the Applications.

Assessment Scenarios

- 2.39 The EIA will assess the likely effects arising from the Project for Assessment, taking into account the construction, operational and decommissioning stages.

Primary Scenarios

- 2.40 The following primary scenarios will be assessed where relevant to each technical topic / likely significant effect:
- **Baseline vs peak construction** – this will vary across technical topics and will not be attributed to a specific year, rather it will be determined at what point the worst-case effect could occur. This will be clearly defined within the technical assessments reported in the ES; and
 - **Baseline vs operation** – this will consider the environmental effects associated with the full operation of the Project for Assessment (or specific components thereof).

Decommissioning

- 2.41 Decommissioning would apply to the wind farm component of the Project for Assessment only and would include the shutdown of plant / equipment and removal of above ground structures at the end of its operating life. It is assumed that below ground structures would be left in-situ. However, due to the lack of information available on the activities / process of the decommissioning stage, the technical assessments for the construction stage undertaken as part of the EIA and presented in the ES will be used as a proxy (worst-case) for the decommissioning stage and represent a reasonable worst case assessment¹⁸.
- 2.42 It is assumed that decommissioning works would be controlled by a Decommissioning Environmental Management Plan (DEMP). This will be informed by the construction related mitigation identified within the ES and will be controlled by the Environmental Management Plan (EMP), submitted as part of the ES. Further details on mitigation are provided under 'Defining Mitigation and how this will be controlled' below.

Further Assessment Scenarios

- 2.43 Additional assessment scenarios will be considered for specific technical topics / likely significant effects within the ES and are set out below.
- 2.44 It should be noted that the assessment scenarios set out are for purposes of the EIA only. For a number of standalone technical assessments (see 'Interaction of the ES with Other Application Documents and Plans' below), alternative or additional scenarios may be considered and / or required. For instance, some standalone reports will only report on the Applications boundary and the Proposed Scheme instead of the Assessment Boundary and the Project for Assessment.

¹⁸ With the exception of transport and access for which no consideration of decommissioning activities will be undertaken.

Greenhouse gas emissions

- 2.45 The assessment of Greenhouse Gas (GHG) emissions will consider the whole lifecycle of emissions associated with both the construction, operational and decommissioning stages of the Project for Assessment, as far as reasonably possible (see **Chapter 15** for more detail). GHG savings / reductions resulting from the operation of the Project for Assessment relative to energy generation from standard fossil fuels will also be considered.
- 2.46 This approach will enable the net GHG effect of the Project for Assessment to be established in accordance with the latest guidance on assessing GHGs in EIA¹⁹. The guidance also ensures that establishing the significance of effects reflects the transboundary nature of climate change.
- 2.47 These emissions will be compared with baseline emissions targets as well as to relevant future carbon budgets (further details are provided within **Chapter 15**). The overall level of effect and significance will be reported for the net GHG emissions effect only.

Scout Moor I

- 2.48 To the east of the Application Boundary is the existing 'Scout Moor I' wind farm²⁰. This existing wind farm comprises 26 turbines, each with a blade tip height of 100m and an installed capacity of 2.5MW per turbine (65MW total). Scout Moor I began exporting electricity in 2008. The consent is temporary for a period of 25 years and therefore the wind farm is required to be decommissioned by July 2033.
- 2.49 As Scout Moor I is adjacent to the Assessment Boundary and it is due to be decommissioned three years after the start of the operational stage of the Project for Assessment commences (i.e. in 2030), the following assessments will be influenced by the decommissioning:
- Landscape and visual (see **Chapter 11**); and
 - Built heritage (see **Chapter 12**).
- 2.50 Therefore, the assessments for the Project for Assessment will consider two 'baseline' scenarios – with and without Scout Moor I in situ. This will ensure an assessment is provided both against the existing baseline (in line with the EIA Regulations) whilst also taking into consideration that the majority of the lifespan of the Project for Assessment (approximately 37 of the 40 year operational lifespan) will be without Scout Moor I.

Defining Mitigation and how this will be Controlled

- 2.51 In accordance with the EIA Regulations²¹ through the EIA process different types of mitigation have been / will be identified and developed and these are defined as:

¹⁹ IEMA (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance (2nd edition).

²⁰ Section 36 reference: GBDC/003/00005c-02.

²¹ Schedule 4, Part 7.

- **Primary mitigation** – modifications to the location or design of the Project for Assessment made during the pre-application phase that are an inherent part of the project;
- **Secondary mitigation** – actions that will require further activity in order to achieve the anticipated outcome and secured by planning condition and / or obligation; and
- **Tertiary mitigation** – actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements or actions that are considered to be standard practices used to manage commonly occurring environmental effects.

- 2.52 The assessment of the effects of the Project for Assessment within the ES will be based on the information contained within the 'Development Specification' (see 'Information to Inform the Final Assessments within the ES' above), which will include primary and tertiary mitigation, which can be taken into account when scoping potential effects because they are common measures which are tried and tested, and their effectiveness is known. Examples of primary mitigation include the minimum 50m offset of wind turbine locations from watercourses. Examples of tertiary mitigation include the adoption of best practice measures that can be controlled via a Construction Environmental Management Plan (CEMP), or measures required by legislative requirements (e.g., the Construction (Design and Management) Regulations 2015²²)).
- 2.53 Within the ES, following the conclusion of the likely significant effects based on the Project for Assessment (inclusive of primary and tertiary mitigation), any further mitigation (secondary mitigation) to reduce an adverse effect or enhance a beneficial one will be identified.
- 2.54 Secondary or tertiary mitigation measures are only considered appropriate if there is a high-level of confidence in their mechanism for implementation (by the Applicant or third party).
- 2.55 Primary and tertiary mitigation known at this stage is presented in **Chapter 44**. This is also set out in the Preliminary Environmental Management Plan (PEMP) provided as **Appendix 2.1**.
- 2.56 The ES will be supported by an EMP that will detail all mitigation identified within the EIA process (including through this report) and will form Volume 3 of the ES (see 'Format of the ES' below).
- 2.57 This document will define all the environmental requirements of the Project for Assessment to ensure that the impacts concluded through the EIA process can be relied upon. The EMP can be extracted by RBC and RMBC to support the preparation of

²² Construction (Design and Management) Regulations 2015 No. 51.

appropriate planning conditions / obligations attached to any planning permissions, where necessary.

Approach to Defining Level of Effect and Significance

- 2.58 A stepped approach will be adopted to define effects arising from the Project for Assessment. The steps comprise the following:

Step 1: Define the Sensitivity, Value or Importance of a Receptor / Receiving Environment to Change

- 2.59 The sensitivity (or value, importance, etc.) of a receptor or a receiving environment to change includes aspects such as adaptability, tolerance to change or recoverability from a change. Sensitivity (or value, importance, etc.) will be assessed on a scale of high, medium, low and negligible.

Step 2: Define the Magnitude of Change or Impact

- 2.60 The magnitude of change or impact from the baseline conditions and / or against a prescribed threshold / criteria incorporates aspects such as probability, likelihood of occurrence, geographical extent, complexity, duration, frequency and reversibility (i.e. temporary or permanent). The magnitude of change (or impact) will be assessed on a scale of large, medium, small and negligible.
- 2.61 For Steps 1 and 2, where relevant, other factors such as feedback from stakeholders, relevant legislation, international / national / regional / local standards and guidance and the inter-relationship between effects will also be considered. The interpretation and use of Step 1 and 2 will be set out within the assessment methodology for each technical topic in the ES.

Step 3: Assignment of the Level of Effect

- 2.62 The assignment of the level of effect will be based on professional judgement with the support of the matrix below (**Table 2.1**), which is seen as a tool to assist with the process. Whilst the matrix within **Table 2.1** provides ranges, this is to guide the competent expert and a definitive level of effect will be provided, where possible, for each effect. The level of effect can be adverse or beneficial.

Table 2.1: Matrix to support determining the level of effect

Magnitude of change (or impact)	Sensitivity (or value, importance, etc.)				
		High	Medium	Low	Negligible
Large		Major	Moderate to Major	Minor to Moderate	Negligible
Medium		Moderate to Major	Moderate	Minor	Negligible
Small		Minor to Moderate	Minor	Negligible to Minor	Negligible
Negligible		Negligible	Negligible	Negligible	Negligible

- 2.63 For some technical topics, relevant guidance or the nature of the effect requires that differing criteria or scales for determining the level of effect be used. For consistency within the ES, the final 'level of effect' will be reported using the terminology and conclusions set out above. This enables the conclusions of assessments across all technical topics to be understood for the decision-making process, along with allowing robust analysis and appraisal as part of the assessment of cumulative effects.

Step 4: Determination of significance

- 2.64 For each effect, a binary judgement will be made as to whether the effect is 'Significant' or 'Not Significant'. This determination will be based on professional judgement and / or relevant guidance and standards, where applicable. Significance will only be concluded for residual effects (i.e. following the identification of secondary mitigation or enhancement).
- 2.65 Effects will also be described in line with the requirements of the EIA Regulations (i.e. as direct or indirect, short (<1 year), medium (1 – 10 years) or long-term (10+ years) and permanent or temporary).
- 2.66 Summary of effect tables that outline the likely significant effects, receptors, residual level of effect and whether this is considered to be 'Significant' or 'Not Significant' will be provided at the end of each Technical Chapter within the ES.
- 2.67 Cumulative effects will be considered as a single co-ordinated assessment as outlined in **Chapter 16**.

Consideration of the Components of the Project for Assessment

- 2.68 As the Project for Assessment includes the Proposed Scheme and Electrical Grid Connection, where effects are derived from / relevant to a specific component(s), this will be clearly identified by the effect titles in the ES. This will also be also captured in the summary tables at the end of Technical Chapters in the ES.
- 2.69 Where mitigation is specific to the components of the Project for the Assessment this will also be clearly set out in the ES.
- 2.70 This approach ensures that the impacts, residual effects and mitigation that are relevant to each component(s) are clearly identified.

Format of the ES

- 2.71 The ES will comprise four volumes:
- **Volume 1: Primary Report and Supporting Graphics;**
 - **Volume 2: Technical Appendices to the Primary Report;**
 - **Volume 3: Environmental Management Plan; and**
 - **Volume 4: Non-Technical Summary.**
- 2.72 The proposed format and structure of the ES is provided in **Appendix 2.2**.

Competent Expertise

- 2.73 Regulation 18, Paragraph 5(a) of the EIA Regulations requires the ES to be prepared by competent experts.
- 2.74 The EIA will be led by Turley. IEMA has awarded Turley the EIA Quality Mark in recognition of our technical quality and commitment to improvement in practice.
- 2.75 All technical assessments within the EIA will be undertaken by a suitably qualified project team, inclusive of a thorough technical review to assure technical credibility, followed by a subsequent procedural review by the EIA co-ordination team and EIA Project Director.
- 2.76 In line with the EIA Regulations, all contributors to the EIA are competent experts in EIA and this will be demonstrated in the ES with an overview of each key expert's qualifications, professional accreditations, and experience.



Interaction of the ES with Other Application Documents and Plans

- 2.77 The Applications and Common Land Application will be accompanied by a number of documents and plans, some of which will form standalone 'Application Documents' and where they contain information of relevance to the EIA, this will be summarised in the ES to ensure sufficient and robust data is included. Others will inform the ES and will be appended to the ES as supporting technical evidence (included as part of Volume 2).
- 2.78 At this stage, the following documents do not form part of the ES but are anticipated to be submitted alongside the Applications:
- Design and Access Statement;
 - Planning Statement;
 - Project Benefits Statement;
 - Transport Assessment;
 - Biodiversity Net Gain Assessment and Metric;
 - Moorland Restoration and Management Plan;
 - Peat Management Plan;
 - Flood Risk Assessment;
 - Drainage Strategy;
 - Air Quality Assessment;
 - Lighting Scheme and Impact Assessment;

- Aviation Impact Assessment;
- Telecommunications Impact Assessment;
- Sustainability, Energy and Climate Change Statement;
- Health Impact Assessment; and
- Statement of Community Involvement.

2.79 At this stage, the following documents or plans are anticipated to be submitted alongside the Common Land Application that do not form part of the ES:

- Supporting Statement;
- Consultation Summary Report;
- Moorland Restoration and Management Plan; and
- Fencing Justification Report.

2.80 At this stage, the technical appendices to the ES provided in Volume 2 are anticipated to include:

- Noise survey reporting;
- Ecological survey reporting;
- Ecological Impact Assessment;
- Landscape and Visual Impact Assessment;
- Heritage Assessment;
- Archaeological Desk-Based Assessment; and
- Peat survey reporting.

Co-ordination with Habitats Regulation Assessment

2.81 Due to the Assessment Boundary's proximity to National Site Network Sites (i.e. the South Pennines Moors Special Protection Area (SPA) and Special Area of Conservation (SAC) and Rochdale Canal SAC – see further details in **Chapters 9 and 10**, respectively) and that the Project for Assessment is not related to the management of these sites, The Conservation of Habitats and Species Regulations 2017 (as amended) are to be considered for the Project for Assessment²³, though it is anticipated that Likely Significant Effects can be discounted at the screening stage.

²³ The Conservation of Habitats and Species Regulations 2017 No. 1012 (as amended).

2.82 In line with the EIA Regulations²⁴, the following aspects have been / will be co-ordinated:

- Baseline data collection, specifically bird surveys that have been undertaken within the Assessment Boundary (further details are provided in **Chapter 10**);
- Scope development, with disturbance to qualifying species the key consideration;
- Consultation, with respect to both local authority advisors and Natural England; and
- Appraisal, in terms of the approach and methodology for the impacts considered. Where appropriate, there will be alignment between the projects considered cumulatively within the EIA and HRA processes, noting that HRA requires consideration of strategic plans.

2.83 The co-ordination will be fully documented within the ES.

²⁴ Regulation 27.

3. Assessment Boundary Context

Overview

- 3.1 This Chapter summarises the location of the Assessment Boundary and its wider setting. Technical baseline information is provided in **Chapter 55** (for those technical topics for which no likely significant effects are identified) and in **Chapters 6 – 15** (for those technical topics for which likely significant effects have been identified).

Location and Setting

- 3.2 The Assessment Boundary (**Figure 1.1**) is approximately 1,038ha and is located within both the administrative areas of RBC and RMBC.
- 3.3 The Assessment Boundary includes an area of open moorland between the urban areas of Rochdale, Bury, Blackburn, Accrington and Halifax, consisting of Rooley Moor, Scout Moor, Cowpe Moss and Brandwood Moor that collectively form part of the Southern Pennines.
- 3.4 The majority of the Assessment Boundary comprises Common Land, primarily used for the grazing of sheep and cattle alongside public access. It is located on an area of open upland heathland and blanket bog with a series of reservoirs to the west and a number of quarried areas within the Assessment Boundary. Scout Moor I is situated directly to the west of the Assessment Boundary.
- 3.5 There are no residential properties located within the Assessment Boundary. However, there are a number of existing properties located along Rooley Moor Road to the south. Further residential properties are located within Whitworth, to the east, as well as a cluster of properties situated to the north in the hamlet of Cowpe.
- 3.6 Section 6 (Summit to Lumb) of the Pennine Bridleway, utilised by walkers and horse riders, runs through the central section of the Assessment Boundary and is part of a larger 330km recreational trail running through North West England. This includes parts of the Mary Towneley Loop. Additionally, the Rossendale Way traverses the western and northern boundaries of the Assessment Boundary, while the Rochdale Way traverses its south-western edge.
- 3.7 The southern and western extents of the Assessment Boundary alongside a discrete area in the northern part of the Assessment Boundary are designated as Green Belt (as part of the Liverpool, Manchester and West Yorkshire Green Belt).

Topography

- 3.8 The Assessment Boundary has an elevation of between 247m Above Ordnance Datum (AOD) and 476m AOD.

4. High-Level Development Specification

Introduction

- 4.1 This Chapter presents the High-Level Development Specification (HLDS) and has been split into three parts: Overview of the Construction Stage, Scheme Principles and Decommissioning. It is noted that the overarching principles outlined below were set out in the first round of public consultation.

Overview of the Construction Stage²⁵

Construction Sequencing

- 4.2 The following activities will be undertaken during the construction stage of the Project for Assessment:

- Site securement;
- Enabling works and establishment of temporary construction staging areas / laydown areas / construction compounds;
- Preparation of peat receptor sites ahead of excavation;
- Earthworks to enable the creation of site access tracks, hardstands and other infrastructure;
- Formation of drainage features and creation of outfall(s);
- Earthworks and operations (e.g. concrete-batching) to create turbine foundations, crane pads (alongside associated landscaping) and possible excavation of borrow pits;
- Excavated peatland to be translocated to suitable receptor sites during groundworks;
- Wind turbine erection;
- Installation of electrical connections and construction of substation / control facility;
- Turbine commissioning and testing;
- Decommissioning of temporary construction compound, reinstatement of borrow pits / turbine hardstanding / crane pads alongside site finishes; and
- Habitat management / peatland enhancement works.

²⁵ As noted in **Chapter 2**, ‘construction’ includes site preparation / enabling, earthworks, remedial works and construction activities.

- 4.3 Following completion, the wind farm will be operational for 40 years, before being decommissioned.
- 4.4 Construction will be undertaken in accordance with the Construction (Design and Management) Regulations 2015. The relevant construction areas (i.e. each turbine location) and compound areas / laydown areas will be appropriately secured to prevent unauthorised entry during construction works. Additional security measures will include the use of lighting, on-site personnel and the installation of gates to manage the movement of vehicles, plant, equipment and personnel.
- 4.5 The construction compounds / laydown areas, including welfare facilities and storage areas for the wind farm, will be set up by the contractor(s) and appointed subcontractors. It is assumed that the main contractor will provide a temporary power generator to provide power to the contractor's compounds to support the construction activities. The construction compounds / laydown areas will be accessed via the existing Scout Moor Quarry access from the A680.
- 4.6 Land within the Assessment Boundary has previously been subject to quarrying and mining in some locations. Historical landfill has also been recorded in the western extents of the Assessment Boundary, which is considered to be the infilled former Scout Moor Quarry that received inert waste and sludge. Therefore, there is a potential for contamination to be present on-site. Intrusive ground investigation works will be undertaken to determine the absence or presence, type and distribution of any forms of ground contamination and confirm the existing ground conditions and geotechnical properties. If contamination risks are identified, remedial works will be undertaken, where practicable. Details will be provided within a remediation strategy to be agreed upon with RBC / RMBC and the Environment Agency, with a subsequent verification strategy to ensure that the required thresholds / criteria have been achieved. If further unexpected contamination is encountered following remediation, appropriate measures will be implemented by the appointed contractor(s).
- 4.7 Existing features will be retained where required with offsets to be implemented around those features to be retained. Further details will be provided in the ES.
- 4.8 A temporary drainage strategy will be implemented during the works, which will be in accordance with British Standard 8582:2013 – Code of practice for surface water management for development sites²⁶ and CIRIA's Control of water pollution from construction sites. Guidance for consultants and contractors²⁷.
- 4.9 Information regarding the exact foundations has not been finalised and will be subject to factors such as turbine specification and underlying ground conditions at each turbine location. Site specific design will therefore be developed once the turbines are selected and further detailed geotechnical studies are completed. Nevertheless, at this stage, the foundation solution for the wind turbines is anticipated to comprise gravity foundations (unless geotechnical studies indicate a piled (deep) foundation is more

²⁶ British Standard 8582:2013 – Code of practice for surface water management for development sites.

²⁷ CIRIA (2001) Control of water pollution from construction sites. Guidance for consultants and contractors (C532).

appropriate). Foundations will be constructed in line with national standards and guidance.

- 4.10 It is anticipated that mobile cranes up to a lifting capacity of 1,000 tonnes will be used on-site during the construction stage.

Construction Material, Waste Management and Peatland Management

- 4.11 There will be excavation works to enable access, install electrical services, foundations, crane pads, substation, temporary construction compounds and borrow pits. There will be areas where levels will reduce (areas of cut) and areas where levels will increase (areas of fill). Currently, it is expected there will be an overall cut and fill balance with any excavated material retained within the Assessment Boundary.

- 4.12 These initial excavation works will include a level of peat stripping to enable construction of the Project for Assessment although any excavated peat will be appropriately stored and reinstated or translocated on-site as part of restoration activities, achieving an overall 'balance'. In addition to this 'balance', there will be the enhancement of degraded peat areas to deliver benefits. An Outline Peat Management Plan (OPMP) will be an integral part of the Project for Assessment that would:

- Provide details on the volumes of peat to be excavated and the characteristics of the peat;
- Define the principles of how and where this peat would be excavated, stored, translocated and managed; and
- Define how eroded or degraded peat would be restored through the use of excavated peat, or through reprofiling, reseedling and damming measures and the necessary management that this would require.

- 4.13 The OPMP will provide sufficient detail in order for there to be confidence in the estimated volume and management of peat required to be excavated and the enhancement of degraded peat. These details would be further developed as part of a detailed Peat Management Plan after pre-construction intrusive investigations have taken place and would be agreed with RBC and RMBC and the Environment Agency with the principles implemented as part of the CEMP.

- 4.14 Construction waste arisings will be separated to maximise material recycling. The appointed contractor(s) will take responsibility for inspecting and classifying waste materials generated by the works in accordance with relevant guidance, such as Waste Classification: Guidance on the classification and assessment of waste²⁸.

²⁸ Environment Agency, Natural Resources Wales and Scottish Environmental Protection Agency (2021) Waste Classification: Guidance on the classification and assessment of waste (1st edition v.1.2 GB).

- 4.15 Construction waste materials will be removed, handled and disposed of in line with legislative requirements (including The Hazardous Waste (England and Wales) Regulations 2005²⁹) and any necessary permits, licenses, or notices will be obtained.

Borrow Pits

- 4.16 During construction, stone may be required to be excavated from borrow pits for the construction of the Project for Assessment (i.e. access tracks, hardstanding at turbine bases and construction compounds). It is anticipated that this stone material could be sourced from on-site borrow pits, the locations and volume of material to be extracted is, however, unknown at this stage.
- 4.17 Following extraction, borrow pits will be reinstated through backfilling with appropriate material.

Site Access

- 4.18 Construction access will be via the existing Scout Moor Quarry access from the A680 to the west of the Assessment Boundary.
- 4.19 An Abnormal Indivisible Loads (AIL) Route Survey is being prepared and will assess the access requirements associated with turbine components deliveries. The exact AIL access route has yet to be determined, although loads are likely to originate at the Port of Liverpool and access the Assessment Boundary from the north via the M65, A56, A680, B6527, A680 and Scout Road.
- 4.20 General construction material deliveries such as aggregate, concrete and plant will be delivered by Heavy Goods Vehicles (HGV). Other movements to and from the Assessment Boundary will be via Light Goods Vehicles (LGV) and cars. Consideration of all trips to and from the Assessment Boundary will be considered following a full design freeze.
- 4.21 All appointed contractor(s) and subcontractor construction parking will be located within the Assessment Boundary, with no parking on roads within the wider area.
- 4.22 Public access may be temporarily restricted along public footpaths and bridleways that cross the Assessment Boundary when construction activities are occurring for health and safety purposes. Clear diversion signage will also be provided for any routes that are closed, and signposting will be provided for suitable alternative routes.

Construction Employment

- 4.23 It is anticipated that during construction, there will be 320 Full-Time Equivalent (FTE) jobs created.

Construction Working Hours and Days

- 4.24 Unless otherwise agreed with RBC / RMBC, construction working hours will be 08:00 to 18:00 Monday to Friday and 09:00 to 14:00 Saturday, with no working on Sundays or Public / Bank Holidays. Exceptions to these working hours may arise, for example, when AIL are delivered and offloaded or to conduct specialist activities. Appropriate

²⁹ The Hazardous Waste (England and Wales) Regulations 2005 No. 894.

permissions and notifications will be sought from RBC / RMBC where these circumstances arise. Some quiet works may take place outside of these hours.

Construction Environmental Management

- 4.25 A CEMP will be prepared that sets out relevant environmental management measures and controls in line with relevant legislation, guidance and standards. All works will be undertaken in accordance with the Construction (Design and Management) Regulations 2015. Appropriate risk assessments and method statements will be prepared before the commencement of work.

Timescales

- 4.26 Site preparation is anticipated to commence in 2028 with the completion in 2030 with a main construction programme of circa 2 years. The wind farm will have an operational life of 40 and be decommissioned in 2070.

Scheme Principles

- 4.27 The Project for Assessment comprises the construction of a new wind farm that will harness the wind environment on Scout Moor and Rooley Moor to generate electricity for distribution on the electricity network to serve regional energy demands, to address issues such as energy insecurity, and to support the UK's trajectory to net zero.

Wind Farm Physical Infrastructure / Plant and Structures

- 4.28 New infrastructure, plant and structures will be required within the Assessment Boundary for the Project for Assessment to function. This will comprise:

- Wind turbines;
- Access tracks;
- Substation / control building;
- Meteorological (Anemometer) mast;
- Turbine foundations / crane pads;
- Bridge structures / watercourse crossings;
- Underground electrical cabling;
- Drainage infrastructure; and
- Security apparatus, such as CCTV.

Wind Turbines

- 4.29 The wind farm will consist of up to 21 turbines, distributed across the development zones outlined in **Figure 4.1** (Turbine Development Zones plan), with a total generation capacity of up to 100MW.

- 4.30 Ancillary infrastructure such as access tracks, substation, compound and borrow pits alongside the Moorland Restoration Area may be located outside of the Turbine Development Zones shown in **Figure 4.1**.
- 4.31 The exact number and locations of the wind turbines within the Turbine Development Zones are still under review and subject to further refinement. As shown in **Figure 4.1**, the wind turbines across the Turbine Development Zones are expected to have a maximum height of up to 180m.
- 4.32 Turbines will be positioned to optimise wind resource within the Assessment Boundary. The location of the turbines has also considered the following:
- A minimum 1km distance between the wind turbines and nearest residential property;
 - A minimum of 3 times the rotor diameter between the wind turbines and overhead lines;
 - A minimum circa 200m distance between the wind turbines and Pennine Bridleway (topple distance + 10%) dependent on topple distance;
 - A minimum distance between the wind turbines and Public Rights of Way (PRoW) will be the blade length (figure not yet known and will be dependent on turbine manufacturer and specification);
 - A minimum 125m distance between the wind turbines and telecommunication infrastructure;
 - A minimum 50m distance between the wind turbines and watercourses; and
 - Peatland areas over 1m in depth will be avoided.
- 4.33 Each of the wind turbines will also be subject to a separation distance from other turbines. The separation distance is based on ellipses of 5 rotor diameter in the major axis by 3 rotor diameter in the minor axis.

Meteorological Mast

- 4.34 A meteorological mast will be erected within the Assessment Boundary to collect meteorological data for the operational life of the wind farm. The exact nature, location and dimensions of this are yet to be determined.

Electrical Infrastructure

On-site cabling

- 4.35 Turbines will be connected back to the on-site substation using cables, with each cable connecting several turbines together in a string. The routing of these cables is yet to be confirmed. Cabling will be underground and laid in trenches approximately 1m – 1.5m in depth that will be backfilled with the excavated material.

Substation / control building

- 4.36 The Project for Assessment will include the provision of a new substation and substation building that will step up the voltage for connection to the grid network and will be secured by a palisade security fence or similar.

Electrical Grid Connection

- 4.37 The Project for Assessment will have a 132kV grid connection into the Rossendale Bulk Supply Point (BSP) Substation in Rawtenstall.
- 4.38 There are two options for the routing:
- Option A – to the north and then east of the Proposed Scheme; or
 - Option B – to the west and north of the Proposed Scheme.
- 4.39 Both options are identified in **Figure 1.1** and will follow the route of the existing highway corridors.
- 4.40 The exact routing of this connection is not known at this stage and will be subject to further consultation with the Local Highways Authority (LHA), Electricity North West and National Grid.
- 4.41 It is likely that this connection will be delivered by the Applicant. The mechanism and timings of this are not yet known.

Operational Access and Parking

- 4.42 Once operational, vehicular access will be required to access the wind turbines and associated infrastructure for routine maintenance activities (i.e. statutory inspections, addressing faults, HV maintenance). The vehicle movements associated with the operational Proposed Scheme are anticipated to be limited consisting of approximately 15 visits per turbine, per year (up to 315-two-way movements per year).
- 4.43 Similar to the construction stage, primary operational access / egress will be taken from the existing Scout Moor Quarry access to the west of the Assessment Boundary that will connect to the internal road structure to enable access to each wind turbine within the Assessment Boundary.
- 4.44 The route and nature of the internal site tracks are yet to be confirmed and will be subject to further detailed studies. Site tracks and pads will be retained for use in ongoing maintenance operations and the decommissioning of the wind farm.
- 4.45 Rooley Moor Bridleway will be retained on its current alignment.

Waste Management

- 4.46 Due to the large amounts of moving components associated with wind turbines oil is required for their lubrication, hydraulics and gearbox. This will occasionally (approximately every 5 – 7 years) require changing and the subsequent 'spent' oil needing to be removed.

- 4.47 Wastes also include greases from bearings, rags for cleaning components, damaged / worn components and associated packaging of new components that will be removed and disposed of appropriately.

Replacement Common Land

- 4.48 A portion of the Project for Assessment is located on land designated as Common Land under the Commons Act 2006. Applications will be made to release land from the Common Land to facilitate all wind turbine and access track infrastructure, along with any micro-siting allowance required within the Common Land. The land will be deregistered under Section 16 of the Commons Act 2006. Suitable replacement land will be provided to compensate for the areas released from the Common Land.
- 4.49 Grazing rights will be granted on the replacement land and regranted over the release land required for micro-siting but not utilised for construction, resulting in a net gain in the extent of Common Land. Similarly rights of access will be regranted over these areas to include access tracks, resulting in enhanced amenity use potential of the Common Land. This approach ensures the rights of common land graziers and those members of the public exercising rights for amenity use of the common are not affected.

Drainage Strategy

- 4.50 Run-off from hardstanding areas will be managed through the use of ditches or filter drains, which will collect and convey surface water. The collected run-off will then be directed to an attenuation pond, where it will be temporarily stored and controlled to prevent flooding and reduce peak flow rates. After attenuation, the water will be safely discharged back into the existing watercourses, ensuring that discharge rates align with pre-development conditions and minimize the impact on the surrounding environment.

Biodiversity Strategy

- 4.51 A Habitat Management and Monitoring Plan (HMMP) and Moorland Restoration and Management Plan will be developed for the Project for Assessment. The area is currently in a degraded condition, across the grassland and moorland habitats, and the strategy concentrates on enhancing the existing habitats and providing a net gain particularly in irreplaceable habitats with wider benefits, such as improvement in water quality, reducing flood risk and enhancing climate resilience.
- 4.52 The strategy will include approximately 90ha of poor condition grassland that will be enhanced using various habitat enhancement measures, including reseeded, fencing and appropriate cutting regimes to encourage a biodiverse grassland and provide an enhancement from the current baseline within the Assessment Boundary.
- 4.53 The Moorland Restoration and Management Plan has been / will be developed using the most recent guidance for developments on peatland³⁰. All peatland habitats lost to the Project for Assessment will be restored at a ratio of 1:10, i.e. for every 1ha of peatland habitat loss, 10ha of additional degraded habitat (e.g. bare, eroding peat) will be restored. There will be no net loss of peat material.

³⁰ NatureScot (2023) A risk-based approach to peatland restoration and peat instability.

4.54 There is a commitment to achieving the following measurable outcomes:

- Peat Balance: ensure no net loss of peat material;
- Peat Restoration: restore areas of bare, eroding peat;
- Habitat Condition Improvement: where feasible, upgrade degraded peatland from “poor” to “good” condition; and
- Biodiversity Net Gain (BNG): exceed the statutory 10% requirement.

Aviation and Lighting Strategy

4.55 In line with Article 222 of the Air Navigation Order (ANO) (SI 2016/765 as amended) and Civil Aviation Authority (CAA) Policy Guidelines³¹ and Statement³² all wind turbines at or above 150m above ground level will be fitted with medium intensity (2000 candela) steady red aviation lights on top of the nacelles and low intensity red lights (32 candela) at an intermediate height on the wind turbine towers. This will ensure these structures are detectable by aircrafts in vicinity of the Project for Assessment.

4.56 The substation / control building within the Assessment Boundary will also be equipped with passive infrared sensor-controlled security lighting. These would illuminate the substation compound when activated.

Operational Employment

4.57 The Project for Assessment will lead to the requirement for dedicated personnel (approximately four) to manage, monitor and maintain the infrastructure for the wind farm. This will include staff to monitor operational activities, complete routine maintenance and servicing on each turbine at regular intervals; periodic oil changes (e.g. gear oil), blade inspections and any other necessary maintenance works following any unexpected events (e.g. gearbox failure).

Operational Hours

4.58 The Project for Assessment will be operational 24 hrs a day / 7 days a week, with short-term routine shutdown / maintenance periods when required.

Decommissioning

4.59 The Project for Assessment is expected to operate for 40 years, at which time decommissioning would take place and the turbines removed.

³¹ CAA Policy and Guidelines on Wind Turbines (CAP 764)

³² Lighting of Onshore Wind Turbine Generators in the United Kingdom with a maximum blade tip height at or in excess of 150m Above Ground Level (CAA June 2017)

5. Technical Topics which are Unlikely / Not Significant

Introduction

- 5.1 As part of the EIA process and based on the information available to date, several technical topics have been identified for which a further detailed assessment as part of the EIA is not justified as associated effects are unlikely / not significant. Therefore, these technical topics (and related effects) will not be considered further within the EIA or reported within the ES (i.e. 'scoped out').
- 5.2 These technical topics are as follows:
- Agricultural land;
 - Air quality;
 - Artificial lighting;
 - Aviation and radar;
 - Flood risk;
 - Ground conditions, land contamination and minerals;
 - Major accidents and / or disasters;
 - Socio-economics and human health;
 - Telecommunications; and
 - Waste and resources.
- 5.3 The technical topics listed above are considered in turn below in this Chapter, with a factual evidence base provided. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the Preliminary EMP provided in **Appendix 2.1**.
- 5.4 The other technical topics outlined within this report also identify effects that are unlikely / not significant. These are reported in **Chapters 6 – 15**.

Agricultural Land

Technical Baseline

- 5.5 The National Planning Policy Framework (NPPF)³³ defines 'Best and Most Versatile' (BMV) agricultural land as Grades 1 and 2 and Subgrade 3a. This is the land that is determined to be most flexible, productive and efficient in response to inputs and

³³ DLUHC and MHCLG (2024) NPPF.

which can best deliver future crops for food and non-food uses such as biomass, fibres and pharmaceuticals. Grades 3b, 4, and 5 are used to classify land that is of 'Moderate' quality to 'Very Poor' quality.

- 5.6 Agricultural Land Classification is based on the long-term physical limitations of land for agricultural use. There are a number of factors that affect the grade, the main ones being climate and soil characteristics and the interactions between them.
- 5.7 Grading on Natural England's Agricultural Land Classification Map North West region³⁴ indicates that the land within the Assessment Boundary is classified as Grades 4 ('Poor') and 5 ('Very Poor') or 'urban' (where there is existing infrastructure / highways).

Effects Unlikely / Not Significant

Loss of agricultural land

- 5.8 During the construction stage there will be a permanent loss of land that could be used for agricultural purposes. However, the Assessment Boundary comprises a mix of Grades 4, 5 and urban land. On this basis, there will be no loss of BMV agricultural land.
- 5.9 Therefore, the loss of agricultural land is unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Air Quality

Technical Baseline

Air Quality Management Areas

- 5.10 In accordance with their responsibilities under the Local Air Quality Management regime, the Greater Manchester Combined Authority (GMCA) (which encompasses RMBC) and RBC, have reviewed the ambient air quality within their respective administrative boundaries.
- 5.11 The GMCA has declared one combined Air Quality Management Area (AQMA) which covers areas across Greater Manchester for exceedances of the annual mean NO₂ objective. This is located 1.1km west at its closest point to the Assessment Boundary.
- 5.12 RBC has declared one AQMA in its area for exceedances of the annual mean nitrogen dioxide (NO₂) objective, located at Grane Road, approximately 2.1km north-west from the closest point of the Assessment Boundary.

Air quality local monitoring

- 5.13 RMBC operates a number of monitoring sites across its Metropolitan Borough, although none of these are within 1.5km of the Assessment Boundary³⁵.
- 5.14 RBC does not undertake any automatic monitoring. However, it does monitor concentrations of NO₂ at 20 locations across the Borough using passive diffusion tubes,

³⁴ <https://magic.defra.gov.uk/MagicMap.aspx>.

³⁵ Greater Manchester Combined Authority (2023) 2022 Air Quality Annual Status Report (ASR)

the majority of which are within 1.5km of the Assessment Boundary³⁶. The locations of the monitors within RBC are shown in **Figure 5.1**, whilst annual mean concentrations for 2018 to 2022 are provided in **Table 5.1**:. Exceedances of the annual mean objective are shown in bold.

Table 5.1: Summary of RBC annual mean NO₂ monitoring (µg/m³)

Site ID	Site type	Location	2018	2019	2020	2021	2022
1	Roadside	Front of Casa Tapas Road Rawtenstall	33.3	32.3	23.8	26.2	25.3
3	Roadside	349 Manchester Road Haslingden	31.9	27.3	22.0	24.9	21.4
4	Roadside	Jobcentre 83 Bacup Road Rawtenstall	31.9	27.3	22.0	20.9	21.9
5	Roadside	377 Manchester Road Haslingden	31.8	28.7	22.1	23.7	24.5
6	Roadside	359 Manchester Road Haslingden	31.2	31.1	24.2	27.8	26.7
7	Roadside	366-368 Manchester Road Haslingden	33.5	32.3	26.3	30.0	28.3
8	Roadside	5-7 Rawtenstall Road Haslingden	27.6	25.6	20.4	20.2	19.9
9	Roadside	363 Manchester Road Haslingden	33.6	31.6	25.3	26.9	28.2
11	Roadside	450 Bacup Road Waterfoot	-	-	-	-	29.9
13	Roadside	30-32 Bacup Road Rawtenstall	40.9	32.2	28.4	32.7	31.2
14	Roadside	24-26 Bacup Road Rawtenstall	36.8	31.9	26.2	29.3	30.9
15	Roadside	22 Bacup Road Rawtenstall	39.7	32.2	28.8	31.8	30.8
16	Roadside	2a Bacup Road Rawtenstall	28.4	26.6	24.7	24.1	24.8
17	Roadside	1 Bacup Road Rawtenstall	35.9	34.7	28.6	29.6	29.9
Objective			40 µg/m³				

³⁶ RBC (2023) 2022 Air Quality Annual Status Report (ASR).

- 5.15 Concentrations have been below the annual mean objective in the years 2018 – 2022 at the majority of sites within 1.5km of the Assessment Boundary, with the exception being site '13' which recorded an exceedance in 2018, although concentrations have since been below the objective. Furthermore, presented concentrations are well below 60 µg/m³ at all monitoring sites, which indicates that exceedances of the 1-hour mean objective are unlikely in the vicinity of the Assessment Boundary³⁷. At monitoring sites which have recorded five years of data, there has been an overall downward trend in measured concentrations since 2018.
- 5.16 No monitoring of particulate matter (PM₁₀ or PM_{2.5}) is undertaken within 1.5km of the Assessment Boundary. However, there have been no exceedances of the annual mean and 24-hour mean PM₁₀ objectives or the annual mean PM_{2.5} objective reported at any automatic monitor within the GMCA between 2018 and 2022³⁵.

Exceedances of Limit Value

- 5.17 There are no Automatic Urban and Rural Network (AURN)³⁸ monitoring sites within 1km of the Assessment Boundary with which to identify exceedances of the annual mean NO₂ limit value. Defra's roadside annual mean NO₂ concentrations³⁹, which are used to identify and report exceedances of the limit value, do not identify any exceedances within 1km of the Assessment Boundary. As such, there is considered to be no risk of a limit value exceedance in the vicinity of the Project for Assessment by the time that it is operational.

Background concentrations

- 5.18 Background concentrations have been determined using Defra's 2018-based background maps^{40,41}. These cover the whole of the UK on a 1x1 km grid. Estimated background concentrations in the Assessment Boundary are set out in **Table 5.2**: and are well below the objectives. A range of values is presented as the Assessment Boundary covers multiple 1x1km grid squares.

Table 5.2: Estimated annual mean background pollutant concentrations in 2023 (µg/m³)

Year	NO ₂	PM ₁₀	PM _{2.5}
2023	6.5 – 9.9	8.7 – 11.3	5.9 – 6.7
Objective	40	40	20 ^a

^a The 20 µg/m³ PM_{2.5} objective is not in regulations and there is no requirement for local authorities to meet it.

³⁷ Defra (2022) Review & Assessment: Technical Guidance LAQM.TG22 August 2022 Version.

³⁸ Defra (2024) Defra AURN Archive, [Online], Available: <https://uk-air.defra.gov.uk/interactive-map?network=aurn>.

³⁹ Defra (2024) UK Ambient Air Quality Interactive Map [Online], Available: <https://uk-air.defra.gov.uk/data/gis-mapping>.

⁴⁰ Defra (2024) Local Air Quality Management (LAQM) Support Website.

⁴¹ Defra provides the background concentrations for each grid square, which are available for every year between 2018 and 2030.

Effects Unlikely / Not Significant

Changes in pollution concentrations at designated ecological sites and their supporting features

- 5.19 The Lee Quarry Site of Special Scientific Interest (SSSI) lies adjacent to the north-east boundary of the Project for Assessment. However, the SSSI is designated for geological features and the habitats present are not susceptible to air quality deposition impacts. Therefore, it will not be susceptible to air quality impacts via aerial or deposition pathways. As such, the SSSI does not require further consideration with respect to air quality.
- 5.20 There are no other designated ecological sites (SPAs, SACs, Ramsar sites or SSSIs) within 200m of the road network to be used for construction access within 10km of the Assessment Boundary. There are no Local Nature Reserves within 200m of the affected road network within 5km of the Assessment Boundary.
- 5.21 Therefore, changes in pollutant concentrations at designated ecological sites and their supporting features are unlikely to be significant will not be considered further within the EIA or reported in the ES.

Disturbance from dust soiling from dust and PM₁₀ emissions during construction / decommissioning

- 5.22 Construction activities have the potential to cause dust soiling (and associated nuisance) and impact the human health of sensitive receptors within 250m of the Assessment Boundary and within 50m of roads used by construction vehicles 250m from the site entrance / exit.
- 5.23 The Institute of Air Quality Management (IAQM) construction dust guidance⁴² clearly stipulates that, with appropriate mitigation in place, the residual effect of construction dust will normally be '*not significant*'. Appropriate mitigation measures include (but are not limited to):
- Undertaking daily on-site and off-site inspections where receptors (including roads) are nearby, to monitor dust;
 - Erecting solid screens or barriers around dusty activities or the boundaries of the working areas that are at least as high as any stockpiles on-site;
 - Ensuring all vehicles switch off their engines when stationary – no idling vehicles; and
 - Using enclosed chutes, conveyors and covered skips.
- 5.24 Such measures will ensure there will be no significant effect. A complete set of measures will be determined following the approach set out in the IAQM construction dust guidance and detailed in the CEMP to be agreed with RBC / RMBC prior to construction and can be secured via condition.

⁴² IAQM (2024) Guidance on the assessment of dust from demolition and construction v2.2.

- 5.25 It is anticipated that similar measures will be implemented during the decommissioning stage as part of the DEMP.
- 5.26 Therefore, disturbance from dust soiling from construction dust and PM₁₀ emissions during construction / decommissioning are unlikely to be significant and will not be considered further within the EIA or reported ES. A qualitative assessment of dust effects resulting from construction, alongside the commensurate mitigation, will be presented as part of the Air Quality Assessment that will accompany the Applications.

Changes in pollutant concentrations from Non-Road Mobile Machinery (NRMM) during construction / decommissioning

- 5.27 Emissions from NRMM during the construction / decommissioning stage may impact the human health of sensitive receptors adjacent to the Assessment Boundary. However, the IAQM construction dust guidance states that '*experience from assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) [...] 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*'.
- 5.28 As the Assessment Boundary covers a large area and the majority of the area is located more than 50m away from any sensitive receptors, it is reasonable to conclude that the areas in which NRMM and site traffic will typically operate will be located over 50m from any sensitive properties. Furthermore, NRMM will be switched off when not in use, and will meet any necessary emission standard. This will be captured as part of the CEMP / DEMP.
- 5.29 Therefore, changes in pollutant concentrations from NRMM during construction / decommissioning are unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Changes to local air quality as a result of emissions from construction traffic

- 5.30 Emissions from construction traffic, notably AIL vehicles and Heavy Duty Vehicles (HDVs), may impact the human health of sensitive receptors adjacent to the affected road network, as the necessary materials and staff are delivered to and from the Project for Assessment.
- 5.31 Construction access will be via the existing Scout Moor Quarry access, from the A680 to the west. It is anticipated that turbine parts will be delivered to the Port of Liverpool, and that AIL vehicles will travel along the most logistically appropriate route that is anticipated to be from the north via the M65, A56, A680, B6527, A680 and Scout Road. These routing arrangements will consider the locations of nearby AQMAs, and where possible, minimise volumes of construction traffic passing through nearby AQMAs.
- 5.32 In the first instance, construction traffic generation will be screened against criteria published in guidance from Environmental Protection UK (EPUK) and the IAQM⁴³ (500 Annual Average Daily Traffic (AADT) for LDVs / 100 AADT for HDVs). Where these criteria are not exceeded, it can be concluded that there will be negligible impacts on

⁴³ Moorcroft and Barrowcliffe et al, Land-Use Planning & Development Control: Planning For Air Quality v1.2, IAQM, London. 2017 Available: <http://iaqm.co.uk/guidance/>.

pollutant concentrations from additional traffic generated by the construction of the Project for Assessment.

- 5.33 Whilst the trip generation is currently unknown and subject to detail design, any increase in HDVs is likely to be small in the context of traffic flows on the existing network and given the construction period of two years, the increase in HDVs would be transient. Therefore, it is unlikely there will be any permanent significant effects.
- 5.34 In addition, air quality monitoring in the vicinity of the Assessment Boundary demonstrates that concentrations are below the annual mean NO₂ objective, with the closest monitoring site to the Assessment Boundary, site 11 (see **Figure 5.1**) measuring 29.9 µg/m³ in 2022 (see **Table 5.1**). Furthermore, monitoring shows that it is highly unlikely that the 1-hour mean objective is exceeded. Concentrations are expected to continue to reduce in future, as a result of the implementation of national and local measures, such as the transition to low emission vehicles and encouraging the use of sustainable travel.
- 5.35 Given the existing air quality conditions, the expected continued improvements into the future, the site access being to the west and anticipated routing arrangements, it is unlikely that emissions from construction vehicles will result in a significant effect.
- 5.36 Therefore, changes to local air quality as a result of emissions from construction traffic is unlikely to be significant and will not be considered further within the ES or reported in the ES.

Changes to local air quality from operational traffic

- 5.37 Emissions from road traffic during the operational stage may impact the human health of sensitive receptors adjacent to the affected road network.
- 5.38 As stated in **Chapter 4**, the movements generated by operational activities (i.e. general maintenance, replacing parts, etc.) will generate approximately 15 two way operational trips per turbine annually, totalling 315 two-way movements per year. These traffic flows are well below the EPUK and IAQM screening criteria, such that impacts from operational traffic will be negligible.
- 5.39 Therefore, changes to local air quality from operational traffic is unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Artificial Lighting

Technical Baseline

- 5.40 The Assessment Boundary does not lie within or in proximity to a designated International Dark Skies Park or associated buffer zone. The Assessment Boundary is also not situated within a National Park or National Landscape (formerly Area of Outstanding Natural Beauty), the closest being the Forest of Bowland National Landscape, approximately 14.1km to the north.
- 5.41 There is existing lighting within the Assessment Boundary, including street lighting on Rochdale Road and Market Street / Burnley Road / Bury Road and Holme Road as well as security lighting on premises within the settlements of Edenfield, Townsend Fold,

Waterfoot and Cloughfold. These lighting installations influence the lighting conditions within the parts of the Assessment Boundary near these sources and are representative of Environmental Zones E2 / E3 ('low / medium district brightness')⁴⁴. Away from these roads and settlements, on the moorland, lighting conditions are likely to be darker. In these areas, the lighting conditions are anticipated to be representative of Environmental Zone E1 ('intrinsically dark').

- 5.42 In the area surrounding the Assessment Boundary, there is existing lighting along the road corridors and within the existing settlements, including street lighting and façade mounted lighting associated with properties. Within these areas, residential properties already experience elevated lighting conditions. There are also areas of open moorland and agricultural land. The lighting conditions within the area surrounding are therefore a mix and considered to be representative of a mixture of Environmental Zones E1 ('intrinsically dark') to E3 ('medium district brightness').

Effects Unlikely / Not Significant

Disturbance and nuisance due to obtrusive light during construction / decommissioning

- 5.43 During the construction stage, temporary lighting will be required to support on-site activities, including:

- Health / safety / security lighting associated with access(s), working areas, temporary car parking areas and construction compound/s;
- Vehicular / plant lighting required for particular work tasks; and
- Internal lighting associated with any temporary office units / welfare facilities in the construction compound(s).

- 5.44 Due to site working hours, these sources of lighting would predominantly be during the winter months. It is at this time where there is a potential to cause disturbance / nuisance through light trespass / spill and glare to nearby residential properties.

- 5.45 As noted above, the majority of residential receptors in the surrounding area currently experience elevated levels of lighting and there is unlikely to be a substantial deviation from these baseline conditions due to construction lighting within the Assessment Boundary.

- 5.46 Where construction lighting is required, it is anticipated that these activities will be controlled through the implementation of best practice including the following measures:

- Appropriate positioning and direction of lighting to avoid light spillage / glare to properties;
- Use of accessories, such as hoods or shields to direct light to where it is required;

⁴⁴ Institution for Lighting Professionals (2021) Guidance Note 1 for the reduction of obtrusive light.

- The use of sufficient lighting units for the task in hand to avoid the need for tall, wide beam lighting units;
 - Use of motion-sensor activated lighting, where practicable;
 - The reduction of fixed lighting outside core construction working hours; and
 - Any requirements for ongoing monitoring and liaison with stakeholders.
- 5.47 It is anticipated that these measures will be included as part of the CEMP that will be prepared by the appointed contractor(s) and submitted to RBC / RMBC for approval prior to the commencement of works.
- 5.48 It is anticipated that similar measures will be implemented during decommissioning as part of the DEMP.
- 5.49 Therefore, disturbance and nuisance due to obtrusive light during construction / decommissioning is unlikely to be significant and will not be considered further in the EIA or reported in the ES. The effects of lighting on ecological species will be considered within Ecology and Ornithology (see **Chapters 9 and 10**) and on views / visual amenity will be considered within Landscape and Visual (see **Chapter 11**).

Disturbance and nuisance due to obtrusive lighting during operation

- 5.50 Operational lighting will be required to ensure an appropriate working environment and comply with health and safety guidance, including:
- Aviation warning lighting will be required on wind turbines of 150m or greater tip height. This will include medium intensity (2000 candela) steady red aviation lights on top of the nacelles and low intensity red lights (32 candela) at an intermediate height on the wind turbine towers.
 - External lighting associated with meteorological mast;
 - External lighting associated with substation / control building; and
 - Internal lighting within the wind turbine columns.
- 5.51 The external lighting has the potential to cause disturbance / nuisance through light trespass / spill and glare to nearby residential properties.
- 5.52 As noted above, the majority of residential receptors in the surrounding area currently experience elevated levels of lighting and there is unlikely to be a substantial deviation from these baseline conditions due to operational lighting within the Assessment Boundary.
- 5.53 Aviation warning lighting will be designed and installed in line with relevant legislative requirements⁴⁵. Measures to reduce lighting will be considered, such as reduction in

⁴⁵ Article 222 of the Air Navigation Order (ANO) (SI 2016/765 as amended) and Civil Aviation Authority (CAA) Policy Guidelines and Statement.

the intensity of lights and consideration of directional intensity. The lighting fixtures will also be situated at height and will be situated away from residential properties.

- 5.54 The substation / control building will be equipped with passive infrared sensor-controlled security lighting. These would only illuminate the substation compound when activated.
- 5.55 Therefore, disturbance and nuisance due to obtrusive light during operation are unlikely to be significant and will not be considered further in the EIA or reported in this ES. The effects of lighting on ecological species will be considered within Ecology and Ornithology (see **Chapters 9 and 10**) and on views will be considered within landscape and visual (see **Chapter 11**).

Aviation and Radar

Technical Baseline

- 5.56 The Project for Assessment is located immediately adjacent to Scout Moor I. Currently within the Turbine Development Zones (**Figure 4.1**) there are no wind turbines. New wind turbines will be constructed on the existing terrain within the development zones as part of the Project for Assessment. These wind turbines will be visible to the following aviation primary radars:
- NATS En-route (NERL) radar at St. Annes (49km west);
 - Manchester Airport radar (34km south);
 - Liverpool John Lennon Airport radar (55km west); and
 - MoD Warton Aerodrome radar (43km north-west).
- 5.57 In addition, the wind turbines in the Project for Assessment are expected to be visible to the UK Met Office weather radar at Hameldon Hill (circa 9km north).
- 5.58 The Project for Assessment does not fall within any of consultation zones defined by NATS to protect their communication stations, navigations and Secondary Surveillance Radars as per the self-assessment maps provided by NATS⁴⁶.

Effects Unlikely / Not Significant

Degradation of the performance of aviation primary surveillance radars resulting in an impact on aviation operations

- 5.59 The largest aviation impact of wind farms is on Primary Surveillance Radars as wind turbines can appear like an aircraft to the radar creating unwanted clutter and affecting performance. However, even if there is a technical impact this does not automatically mean there will be an impact on aviation operations and this needs to be assessed separately. If a significant operational impact affecting the safety or efficiency of aviation operations is identified, then it is necessary to identify if there are suitable

⁴⁶ <https://www.nats.aero/services-products/catalogue/n/wind-farms-self-assessment-maps/>.

technical or operational mitigations that can be implemented. CAP 764⁴⁷ and other international documents such as the Eurocontrol Guidelines for Assessing the Potential Impact of Wind Turbines on Surveillance Sensors⁴⁸ provide guidance on how to carry out an assessment of the potential impact of wind turbines on aviation operations together with the typical options for mitigating any impacts.

- 5.60 The wind farm market in the UK (and globally) is mature with many instances of wind farms co-existing alongside aviation where mitigation needed to be agreed to ensure there was no impact on the safety or efficiency of the aviation operations. Typically, this mitigation is based around the procurement of new and improved radar equipment to provide additional surveillance data. All the major radar manufacturers (including Thales⁴⁹, Indra⁵⁰, Hensoldt⁵¹, and Terma⁵²) offer primary surveillance radar products that have improved performance in the presence of wind farms compared to the legacy equipment that is often still in use today.
- 5.61 The Project for Assessment will be visible to aviation Primary Surveillance Radars resulting in a technical impact that is expected to require mitigation. The specific mitigation is to be agreed following consultation with the impacted stakeholders, design freeze and a detailed Aviation Impact Assessment that will be submitted as part of the Applications. The required mitigation will be one of the mitigation options laid out in CAP 764 and the Eurocontrol wind farm assessment guidelines or one of the mitigations already agreed for existing wind farms (e.g. Scout Moor I). Both are tried and tested mitigation options, thereby there is a high confidence in the mitigation reducing or resolving the impact and the agreed mitigation will be implemented as an inherent part of the Project for Assessment. This will be designed to ensure that the safety and efficiency of aviation operations are not materially impacted.
- 5.62 Therefore, degradation of the performance of aviation primary surveillance radars resulting in an impact on aviation operations is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Degradation of the performance of aviation secondary surveillance radars resulting in an impact on aviation operations

- 5.63 As stated in CAP 764 wind turbine effects on Secondary Surveillance Radar are less than those on Primary Surveillance Radars but can lead to physical blanking and diffraction effects depending on the size and location of the wind turbines. These effects are only considered when turbines are very close to the radar (i.e. less than 10km).

⁴⁷ UK CAA (2016) CAA Policy and Guidelines on Wind Turbines. CAP 764. Available at: <https://www.caa.co.uk/our-work/publications/documents/content/cap-764/>.

⁴⁸ EUROCONTROL (2014) Guidelines for Assessing the Potential Impact of Wind Turbines on Surveillance Sensors. Edition 1.2. Available at: <https://www.eurocontrol.int/publication/eurocontrol-guidelines-assessing-potential-impact-wind-turbines-surveillance-sensors> [Accessed: 02/10/2024]

⁴⁹ <https://www.thalesgroup.com/en/windfarm-mitigation>.

⁵⁰ <https://www.indracompany.com/en/airport-route-surveillance-3d-radar-band>.

⁵¹ <https://www.hensoldt.net/products/radar-iff-and-datalink/asr-ng-deployable/>.

⁵² <https://www.terma.com/products/radars/primary-surveillance-radar/>.

- 5.64 The Project for Assessment is not within 10km of any Secondary Surveillance Radars and does not fall within the 15 Nautical Mile (NM) consultation zones that NATS define around their Secondary Surveillance Radars.
- 5.65 Therefore, degradation of the performance of aviation secondary surveillance radars resulting in an impact on aviation operations is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Degradation of the performance of aviation navigation and communications systems resulting in an impact on aviation operations

- 5.66 Wind turbines can affect the propagation of the radio signals used by aviation navigation and communication systems which could potentially affect their performance. However, these effects are only material when the receiver or transmitter is in close proximity to the wind farm. Technical safeguarding zones around each communication and navigation site, as defined in CAP 670⁵³, restrict any development around the site to protect the quality of the radio signal. In addition NATS define a 10km consultation zone around their communications and navigation sites.
- 5.67 The Project for Assessment is not within any technical safeguarding zones as defined by CAP 670 or within a NATS 10km consultation zone.
- 5.68 Therefore, degradation of the performance of aviation navigation and communications systems resulting in an impact on aviation operations is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Obstacle resulting in collision risk for aircraft

- 5.69 Wind turbines act as a physical obstacle, the same as any other tall structure, that could potentially represent a collision risk to low flying aircraft. There are existing processes within aviation to mitigate the risk of collision with tall structures. These include:
- The marking of tall obstacles on aviation maps;
 - Definition of minimum safe altitudes that consider the height of the tallest obstacle within a defined radius;
 - The design of specific flight routes and procedures that ensure minimum separation from nearby obstacles; and
 - Use of lighting to mark tall obstacles making them visible to any aircraft in the vicinity.
- 5.70 Guidance on potential impacts and their mitigation are contained in CAP 764. In particular aviation lighting requirements are also set out in Article 222 of the Air

⁵³ UK CAA (2009) Air Traffic Services Requirements CAP 670.

Navigation Order (ANO) (SI 2016/765 as amended)⁵⁴ and a UK CAA Policy Statement⁵⁵ stating that all wind turbines with a tip height at or above 150m above ground level shall be fitted with aviation lights. As a result, a lighting scheme will be agreed with the CAA and implemented as part of the Project for Assessment.

- 5.71 Therefore, the introduction of an obstacle resulting in collision risk for aircraft is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Degradation of the performance of the Hameldon Hill radar

- 5.72 Wind turbines can affect weather radar by interacting with the electromagnetic pulse that is intended to detect precipitation. This can cause beam blocking, whereby the turbines physically obstruct the radar signal reducing its ability to detect precipitation beyond the wind turbines, and reflection, whereby the emitted electromagnetic pulse is reflected by the turbines. The echo is then displayed on the radar screen where it can look like intense precipitation.
- 5.73 Potential effects on microwave links will be mitigated through wind turbine layout and micro-siting. There are also measures that can be taken to prevent issues, including ensuring the elevation of the blades is below the radar main beam or consideration of in-fill radar. The feasibility of such solutions will be discussed and agreed with the relevant stakeholders.
- 5.74 Therefore, degradation of the performance of the Hameldon Hill radar is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Flood Risk

Technical Baseline

- 5.75 Given the Assessment Boundary's location inland, it is not considered to be subject to tidal sources of flood risk.
- 5.76 The Flood Map for Planning published by the Environment Agency and available online⁵⁶ suggests the Assessment Boundary is predominantly in Flood Zone 1 and is at low risk of flooding from rivers. This is defined as the area at lowest risk from fluvial flooding (1 in 1000 chance in any given year). Small areas of the Assessment Boundary, along the northern and western boundaries, are within Flood Zones 2 and 3, which are defined as an area at 0.1% – 1% chance of fluvial flooding in any given year and >1% chance of fluvial flooding, respectively.
- 5.77 The Environment Agency's Reservoir Flooding Map indicates that the majority of Assessment Boundary is not located in the area indicated to be at risk of flooding from reservoirs. However, the western and northern parts of the Assessment Boundary do lie within an area that would be affected in the event of a catastrophic reservoir failure.

⁵⁴ The Air Navigation Order 2016 2016/765.

⁵⁵ UK CAA (2017) Safety and Airspace Regulatory Group, Policy Statement, Lighting of Onshore Wind Turbine Generators in the United Kingdom with a Maximum Blade Tip Height at or in excess of 150m above ground level.

⁵⁶ <https://www.gov.uk/check-long-term-flood-risk>.

Small portions of the south-western and south-eastern parts of the Assessment Boundary are also identified as being in Flood Zone 3 in the Environment Agency flood maps associated with the Naden and Cowm reservoirs.

- 5.78 Groundwater levels within the Assessment Boundary vary. It is expected that topography and the superficial deposits are fundamental to influencing groundwater flooding. Due to the topography, hydrology, slowly permeable but highly modified peat and peat soils as well as negligible storage capacity of the underlying substrates, it is possible that gently sloping areas and topographic hollows could be affected by localised groundwater flooding.
- 5.79 There is drainage associated with Scout Moor I, and there is the potential that this can cause some localised flooding by increasing runoff rates to the main watercourses within the catchments.
- 5.80 There are limited records of historic sewer flooding across the majority of the Assessment Boundary.

Effects Unlikely / Not Significant

Flood risk from tidal sources

- 5.81 Flood risk from tidal sources is minimal across the Assessment Boundary and this is confirmed through the data sources outlined above.
- 5.82 Therefore, effects related to flood risk from tidal sources are unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Flood risk from fluvial sources

- 5.83 Flood risk from fluvial sources across the majority of the Assessment Boundary is limited, with areas of higher flood risk at the northern and western extents (i.e. where in proximity to the River Irwell) and this is confirmed through the data sources outlined above. Due to the temporary nature of the works in these areas (i.e. the installation of the Electrical Grid Connection), there is unlikely to be any changes to flood risk.
- 5.84 Therefore, effects related to flood risk from fluvial sources are unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Flood risk from reservoirs

- 5.85 Flood risk from reservoir sources is limited across the majority of the Assessment Boundary, with areas of higher flood risk at the northern and western extents (i.e. within the flow paths across reservoirs) and this is confirmed through the data sources outlined above. Due to the temporary nature of the works in these areas (i.e. the installation of the Electrical Grid Connection), there is unlikely to be any changes to flood risk.
- 5.86 Therefore, effects related to flood risk from reservoirs are unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Flood risk from sewers

- 5.87 Flood risk from sewers is limited across the majority of the Assessment Boundary, with previous incidents recorded mainly in the northern and western extents of the Assessment Boundary. Due to the temporary nature of the works in these areas (i.e. the installation of the Electrical Grid Connection), there is unlikely to be any changes to flood risk.
- 5.88 Therefore, effects related to flood risk from sewers are unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Flood risk from groundwater flooding

- 5.89 There is a potential flood risk from groundwater and through earth movements, such flood events significant enough, have the potential to harm on-site workers during the construction / decommissioning stage, particularly if they are working in excavations which have the potential to fill with water, causing temporary or permanent health and safety risks (e.g. injuries).
- 5.90 Management of surface water will take account of industry best practice and guidance (i.e. British Standard 8582:2013 – Code of practice for surface water management for development sites⁵⁷). In addition, the following further measures will be implemented as part of the CEMP / DEMP:
- Procedures for operations in proximity to hollows / slopes are to be adopted to minimise flooding risks; and
 - Checking the weather forecast and works to be postponed in time of severe rainfall events to mitigate potential risk of flooding to construction workers.
- 5.91 Therefore, effects related to groundwater flood risk are unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Flood risk from surface water flooding during construction / decommissioning

- 5.92 There are areas classified as at higher flood risk from surface water (pluvial) within the Assessment Boundary. Currently, the majority of the Assessment Boundary lacks any treatment provisions for surface water runoff.
- 5.93 Flooding events, if significant enough, have the potential to harm on-site workers during the construction / decommissioning stage, particularly if they are working in excavations which have the potential to fill with water, causing temporary or permanent health and safety risks (e.g. injuries).
- 5.94 Activities during these stages also have the potential to result in increased localised flood risk due to earthworks and excavation activities changing overland run-off routes. In addition, any increases in surface water flows will lead to changes run-off volumes and rates discharged to the sewer network. Where surface water rates exceed the

⁵⁷ British Standard 8582:2013 – Code of practice for surface water management for development sites.

capacity of the drainage infrastructure, overland flows onto the surrounding areas will be generated, potentially increasing flood risk to surrounding receptors.

- 5.95 Changes to surface water flood risk during the construction stage will be managed through appropriate drainage strategies, using temporary drainage systems (before the permanent drainage strategy is installed). It is assumed that the drainage system will remain in place during decommissioning.
- 5.96 Management of surface water will take account of industry best practice and guidance (i.e. British Standard 8582:2013 – Code of practice for surface water management for development sites⁵⁸). In addition, the following further measures will be implemented as part of the CEMP / DEMP:
- Storage of all materials appropriately to avoid increasing flood risk off-site;
 - No site accommodation / cabins are to be stored / located in areas at risk of surface water flooding; and
 - Procedures for operations in proximity to watercourses are to be adopted to minimise flooding risks.
- 5.97 Therefore, effects related to surface water flood risk during construction / decommissioning are unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Flood risk from surface water flooding during operation

- 5.98 As noted above, flood risk from surface water (pluvial) has the potential increase with the impermeable areas that will be introduced within the Assessment Boundary. Flooding events, if significant enough, have the potential to harm future site users (i.e. employees and visitors) and adjacent areas and properties.
- 5.99 While the Project for Assessment will introduce new areas of hardstanding, it will also incorporate new surface water drainage systems designed to mitigate uncontrolled runoff. Additionally, the Project for Assessment will include Sustainable Drainage Systems (SuDS) to attenuate / treat runoff, resulting in an overall improvement. The proposed SuDS will incorporate adequate surface water drainage infrastructure designed to modern standards, ensuring safe management of storms with a return period of up to 1 in 100 years, plus an allowance for climate change. The drainage strategy will include filter drains to collect any runoff from hardstanding areas that will convey flow to an attenuation basin with a controlled discharge.
- 5.100 The storage capacity of the drainage strategy will be designed to in line with relevant standards and guidance. The design will account for rates / flows agreed with RMBC and RBC and United Utilities to ensure flooding is not increased off-site. Overland flow mapping and detailed level design will ensure no damage or danger is caused by any exceedance as a result of network failure, or rainfall events above the design criteria.

⁵⁸ British Standard 8582:2013 – Code of practice for surface water management for development sites.

- 5.101 Therefore, effects related to surface water flooding during operation are unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Ground Conditions, Land Contamination and Minerals

Technical Baseline

- 5.102 The Assessment Boundary encompasses an extensive central upland area of peat moorland, largely above 300m Ordnance Datum (mAOD). Approximately 48% of the central area of the Assessment Boundary is situated above 400mAOD. Access routes to the north, west, and south predominantly consist of existing public highways within the River Irwell valley, at elevations ranging from approximately 150m to 240mAOD. Minor roads, including Scout Moor Road to the south and Rooley Moor Road to the north, ascend to the central area of the Assessment Boundary, reaching elevations above 350mAOD.
- 5.103 The earliest available OS mapping from 1851 shows several sandstone quarries, collieries and coal pits within the Assessment Boundary. By the late 1800s, the coal mining appears to have largely ceased on-site. However, sandstone extraction continued, with tramways constructed and several quarries – most notably the named quarries of: Scout Moor Quarry (Scout Delf Sandstone Quarry), Cragg Quarry, Ding Quarry and part of Hallcown Quarries at Ab Top – expanded in the northern part of the Assessment Boundary. Mineral extraction appears to have slowed down on-site from the 1930s onwards and the majority is marked as disused by the late 1960s. A reservoir, constructed in the northern part of the Assessment Boundary in the 1930s, appears to have been partially infilled by 1967. The current Scout Moor Quarry is located immediately adjacent to the western extents of the Assessment Boundary.
- 5.104 The Stacksteads Gorge Local Geodiversity Site extends onto the northern part of the Assessment Boundary. The Lee Quarry SSSI lies adjacent to the north-eastern edge of the Assessment Boundary and is designated for geological interest, exposures in the Upper Carboniferous Haslingden Flags Formation, a unique development within the Millstone Grit of central England, probably of Yeadonian age⁵⁹. Lee Quarry is also designated as a Local Geodiversity Site.
- 5.105 British Geological Survey (BGS) resources⁶⁰ describe the following geological information:
- The superficial deposits within the Assessment Boundary are shown to consist of discontinuous areas of Peat, Till and Alluvium as well as more limited Head and Glaciofluvial Deposits. Peat is shown to cover large areas mainly across the central and north-eastern parts of the Assessment Boundary above 350m AOD elevation, while Till and Alluvium are shown to be widely present within the western and northern parts of the Assessment Boundary along the road corridors below 300m AOD elevation. Superficial deposits are generally absent in

⁵⁹ <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/2000040.pdf>.

⁶⁰ https://geologyviewer.bgs.ac.uk/?_ga=2.75819157.1466358283.1731936209-1890112848.1731936209.

the southern areas of the Assessment Boundary, except for small isolated occurrences of Till, Head and Glaciofluvial Deposits; and

- The solid geology at the north-eastern, southern and locally western areas of the Assessment Boundary are recorded as Pennine Lower Coal Measures. The formation consists of interbedded layers of mudstone, siltstone and sandstone. Underlying the Pennine Lower Coal Measures is the Rossendale Formation, which is shown to outcrop in the western and central areas of the Assessment Boundary as well as peripheral areas towards the boundaries. The Rossendale Formation comprises sandstone beds interbedded with mudstone and siltstone with its upper sections dominated by sandstones such as Rough Rock and Upper Haslingden Flags. The Rossendale Formation is underlain by the Marsden Formation (interbedded layers of sandstone, mudstone, siltstone), which is shown to underlie the superficial Till and Alluvium within the western and north-western parts of the Assessment Boundary within the River Irwell Valley. The Marsden Formation includes various named sandstone beds such as Holcombe Brook Grit, Brooksbottom Grit and Fletcher Bank Grit.

- 5.106 The BGS geological mapping, including 1:50,000 Sheet 76, identifies several faults generally trending south-east to north-west and south-west to north-east within the Assessment Boundary.
- 5.107 BGS artificial ground records show Made Ground and / or Infilled Ground in discrete areas of the Assessment Boundary. Most of these areas are located in the central area of the Assessment Boundary above 300m and have previously been used for mineral extraction and backfilling. It is considered likely that in these areas, quarry spoil was used to infill old quarries and / or to artificially raise the land (e.g. by placing spoil material in heaps). Notable Made Ground Records are also shown along the A681 within the northern part of the Assessment Boundary. It is likely that localised Made Ground and / or Infilled Ground exist in other parts of the Assessment Boundary which are not indicated by BGS records. The source of such material is most likely to share a similar origin (i.e. quarry spoil and similar reworked natural materials).
- 5.108 The significant majority of Made Ground at the Assessment Boundary is considered likely to originate from the mineral extraction and coal mining activities, which are estimated to have occurred within 10% – 15% of the Assessment Boundary. Made Ground of anthropogenic origin is considered likely to be limited but may exist in isolated areas.
- 5.109 The Glaciofluvial Deposits, Pennine Lower Coal Measures and Rossendale Formation are all classified as Secondary A aquifers. The Alluvium Deposits are categorised as a Secondary A aquifer. The Head Deposits are classified as a Secondary B aquifer, while the Till is designated as a Secondary Undifferentiated aquifer. The Peat is classified as Unproductive stratum. A licensed groundwater abstraction for general farming and domestic supply is located at Knacks Farm to the south-east. The Assessment Boundary is not located within 1km of a groundwater Source Protection Zone (SPZ)⁶¹.

⁶¹ <https://magic.defra.gov.uk/>.

- 5.110 Several ponds, springs and small watercourses have been identified within the Assessment Boundary. The watercourses generally drain towards the surrounding reservoirs that are located in close proximity to the north-west, south-west and east including:
- Cragg High Level Tank, Cowpe Reservoir, and Scout Moor High Level Reservoir in the north-west;
 - Naden Reservoirs and Greenbooth Reservoir in the south-west; and
 - Spring Mill Reservoir and Cowm Reservoir in the east.
- 5.111 Other surface waterbodies within the vicinity of the Assessment Boundary include the River Irwell and the River Spodden. A number of small watercourses also drainage towards these watercourses.
- 5.112 A small number of springs are recorded within and close to the Assessment Boundary. Numerous issues and sinks are also mapped suggesting a degree of groundwater surface water interaction. Surface waters on-site may receive some limited groundwater baseflow.
- 5.113 The majority of the reservoirs within the vicinity of the Assessment Boundary are abstracted for drinking water supply by United Utilities.
- 5.114 There are several historical landfill sites within 250m of the Assessment Boundary. Those closest include:
- Scout Moor Quarry, which is located adjacent to the Assessment Boundary to the north of Scout Road in the west. Based on the records available the landfill received inert waste and sludge;
 - Horncliffe Quarry Landfill, which is located south of Rawtenstall in the far west and lies to the east of Bury Road adjacent to the Assessment Boundary. Based on the records available the landfill received household, commercial and industrial wastes;
 - Rakehead Lane Landfill Site located in the north and lies to the east of Rooley Moor Road adjacent to the Assessment Boundary. Based on the records available the landfill received non-biodegradable wastes;
 - Brandwood Reclamation B, which is located in the north and lies to the west of Rooley Moor Road adjacent to Assessment Boundary. No further information on the landfill has been provided; and
 - Brandwood Reclamation A, which is located in the north and lies to the east of Rooley Moor Road within 80m of the Assessment boundary. No further information on the landfill has been provided.
- 5.115 A registered waste management facility operated by Marshalls Mono Limited is present adjacent to the Assessment Boundary. This site is authorised to manage inert or extractive waste.

- 5.116 Based on the Coal Authority's Consultants Coal Mining Report⁶² the Assessment Boundary is located within an area of historical coal mining. Numerous mine shafts and adits have been identified within the Assessment Boundary and in its immediate vicinity.
- 5.117 The Coal Authority's online interactive map viewer⁶³ indicates that parts of the Assessment Boundary lie within Development High Risk Areas.
- 5.118 The Assessment Boundary is located within a Mineral Safeguarding Area. The BGS mineral resources maps⁶⁴ for Greater Manchester and Lancashire indicate that the mineral resources onsite include brick clay and sandstone associated with the Pennine Lower Coal Measures, the Rossendale Formation and the Marsden Formation.

Effects Unlikely / Not Significant

Loss of Geologically Designated Sites

- 5.119 There are no nationally geologically designated sites within the Assessment Boundary.
- 5.120 A Local Geodiversity Site, Stacksteads Gorge, extends across the A681, which forms part of the northern Assessment Boundary. Potential construction stage works in this area will be limited to the A681 alignment and therefore will not impact the Stacksteads Gorge site.
- 5.121 Therefore, the loss of geologically designated sites is unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Contamination risks to workers during construction / decommissioning

- 5.122 Made / Infilled Ground are primarily located in areas of the Assessment Boundary where historical mineral extraction occurred. The main mineral extracted was sandstone and therefore most of the Made / Infilled Ground is likely consist of broken rock fragments and similar materials, which carry a negligible risk of contamination. Colliery waste is expected to be present locally in areas where historical coal mining took place. This waste can contain concentrations of heavy metals and polyaromatic hydrocarbons. Additionally, the former coal mines may also represent a potential source of mine gas.
- 5.123 Available records indicate that the former Scout Moor Quarry in the western part the Assessment Boundary was backfilled with inert wastes and sludge. Additionally several landfill sites have been identified adjacent to the Assessment Boundary. These act as potential sources of contamination and ground gas. Construction workers have potential to come into close contact with contamination present in the soils during the construction / decommissioning stage.
- 5.124 During the construction stage, the appointed contactor(s) will need to implement appropriate health and safety measures to reduce any identified risks to construction workers from potential land contamination, ground gas and mine gas in accordance

⁶² The Coal Authority (2024) Consultants Coal Mining Report. Reference:71009810321002.

⁶³ <https://mapapps2.bgs.ac.uk/coalauthority/home.html>.

⁶⁴ <https://www.bgs.ac.uk/datasets/bgs-mineral-resources/>.

with health and safety legislation, such as the Construction (Design and Management) Regulations 2015. These measures will be detailed within the Construction Phase Plan (that is required to be prepared under the aforementioned legislation). Ground investigation data should be reviewed to inform suitable site working practices, including the use of appropriate Personal Protective Equipment (PPE), the preparation of method statements and provision of environmental awareness training. Monitoring for ground gas / mine gas should be undertaken if piling or work in confined spaces is carried out and relevant measures, such as the use of Respiratory Protective Equipment (RPE), used. With these mitigation measures, risks to construction workers are considered to be low.

- 5.125 Information on risks related to identified ground conditions will be kept within the site health and safety file and referred to by the appointed decommissioning contractor(s). This will ensure that appropriate working practices and PPE are also employed during the decommissioning stage, thereby reducing potential risks to these workers to at least low (noting that remedial works will have been carried out, if required).
- 5.126 Therefore, contamination risks to workers during construction / decommissioning are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Contamination risks to future site users during operation

- 5.127 Risks to future site users are considered to be low or very low as once operational site personnel will be limited and will be unlikely to come into contact with Made Ground. Risks associated with the ground gas / mine gas will be assessed during the ground investigation stage and appropriate mitigation measures will be specified and implemented, where relevant. Any cover layers will also be validated for chemical quality prior to re-use / use on-site and confirmation of the source of all backfill materials provided prior to commencement of backfilling operations. All material brought on-site and re-used will also be tested in accordance with relevant guidance / standards. This will preclude the release / migration of contamination during operation.
- 5.128 Therefore, contamination risks to future site users during operation are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Potential for loss of mineral resources

- 5.129 The Assessment Boundary is located within a Mineral Safeguarding Area for the brick clay and sandstone associated with the Pennine Lower Coal Measures, the Rossendale Formation and the Marsden Formation. Potential for these minerals to be sterilised (i.e. rendered inaccessible) by the Project for Assessment is discussed below.
- 5.130 The current preliminary development plans indicate that the primary elements of the proposed wind farm will be located within the Turbine Development Zones (**Figure 4.1**) with other areas of the Assessment Boundary used for access and other infrastructure. Potential exploitation of mineral resources along the western and northern perimeters of the Assessment Boundary is considered to be constrained by the existing roads and thus change from the baseline is not anticipated. On this basis, mineral resources within these areas will not be discussed further in the sections below.

- 5.131 According to the BGS records superficial deposits within the Turbine Development Zones consist of discontinuous areas of peat. It is estimated that peat covers approximately 50% of the Turbine Development Zones. The peat deposits are generally shown to be underlain by the Pennine Lower Coal Measures in the east and the Rossendale Formation in the west. Both formations are anticipated to outcrop locally where superficial deposits are absent. Made / Infilled Ground is also likely to be present where former mineral extraction has taken place.
- 5.132 The historical maps show the presence of several large sandstone quarries in the Turbine Development Zones from the mid-1800s onwards. These include Cragg Quarry and Ding Quarry in the north-west and Hallcown Quarries in the north-east. The sandstone would have been extracted mainly from the Rossendale Formation. Based on historical mapping, the rate of mineral extraction appears to have slowed on-site from the 1930s onwards and mostly ceased by the 1960s based on no further change in quarry extents.
- 5.133 The historical records also show several small collieries and coal pits in the Turbine Development Zones where bedrock comprises Penning Lower Coal Measures. The collieries and coal pits existed in the area in the mid-1800s; by the late 1800s most of these features are no longer present indicating that major coal mining operations had likely ceased.
- 5.134 Mineral resources, mainly sandstone, have already been partially extracted from the Turbine Development Zones within the historical quarrying operations described above.
- 5.135 Natural England interactive map for Peaty Soils Location (England) indicates a presence of Deep Peaty soils beneath the majority of the Turbine Development Zones.
- 5.136 Peat soils in areas unaffected by historical extraction overlaying the Lower Pennine Coal Measures and the Rossendale Formation are recognised as significant carbon stores. These soils play a critical role in long-term greenhouse gas mitigation, as they sequester carbon when left undisturbed but can become major emissions sources if disrupted. Further mineral extraction that disturbs the peat in these areas would likely be unsustainable, given the need to preserve these habitats for climate change resilience and carbon storage. These considerations are likely to take precedence over the justification for extracting mineral resources beneath the peat within the Assessment Boundary.
- 5.137 Therefore, potential for loss of mineral resources are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Risk to structures and infrastructure from land instability

- 5.138 The natural ground stability hazard records within the Assessment Boundary indicate 'no hazard to very low' hazard ratings for: collapsible deposits, ground dissolution, running sand and shrinking or swelling clay.
- 5.139 With regard to compressible deposits, approximately 70% of the Assessment Boundary is classed as no hazard, but Moderate hazards are recorded in areas of Made Ground and High hazards within areas of peat. Risks from construction over peat will be fully

mitigated by appropriate ground investigation and foundation design targeting the underlying competent bedrock strata which have no hazard.

- 5.140 With respect to landslides, BGS records identify nine landslides within the Assessment Boundary, of which only one is located within the Turbine Development Zones. The BGS landslide hazard mapping and ratings follows the topography and are typical Very Low or Low across > 99% of the upland area of the Assessment Boundary. The hazard ratings only climb to Moderate or High towards the steeper areas at the extreme periphery of the boundary most notably in the south and west where the land is above 300m AOD elevation. Wind turbines or notable infrastructure will not be constructed in these areas and as such risks are considered to be very low.
- 5.141 Coal mining activity is known at the Assessment Boundary. Any issues will be mitigated through appropriate ground investigation and foundation design in accordance with relevant standards and guidance (such as CIRIA's Abandoned mine workings manual (C758D)⁶⁵) and in liaison with the Coal Authority.
- 5.142 Therefore, risks to structures and infrastructure from land instability are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Major Accidents and / or Disasters

Technical Baseline

- 5.143 The Assessment Boundary does not lie within an HSE Consultation Zone.
- 5.144 There are no Control of Major Accident Hazard (COMAH) sites located within the Assessment Boundary. However, there are a number of COMAH sites located in the vicinity of the Assessment Boundary. These are set out in **Table 5.3**.

Table 5.3: COMAH sites within the vicinity of the Assessment Boundary

Operator name	Tier	Activities at establishment	Distance / direction from the Assessment Boundary
Quat-Chem Limited	Lower	Chemicals manufacture / production and / or disposal	4.5km south-east
Makin Metal Powders (UK) Limited	Upper	Processing of non-ferrous metals (foundries, smelting, etc.)	3.45km east
Lanxess Urethanes UK Limited	Upper	Chemicals manufacture / production and / or disposal - general	4.30km north-west

⁶⁵ CIRIA (2019) Abandoned mine workings manual (C758D).

5.145 The Assessment Boundary is considered to be at low risk of Unexploded Ordnance (UXO) being present.

Effects Unlikely / Not Significant

5.146 A qualitative appraisal of major accidents and / or disasters is presented below.

Major accidents

5.147 As part of this appraisal, the factors that have been considered include the understanding of the likelihood of a risk event occurring, the consequence of such an event and the mitigation identified to control / manage risks to be 'As Low as Reasonably Practicable' (ALARP). ALARP describes the level to which stakeholders (e.g. the HSE) expect to see workplace risks controlled, taking account of being 'reasonably practicable' (i.e. weighing a risk against the effort, time and money needed to control it).

5.148 Where ALARP is identified, the effect is unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Major accidents associated with nearby COMAH sites

5.149 There are stringent controls and management regimes in place at the nearby COMAH sites and are already implemented in line with relevant legislative requirements. Therefore, the risk of any major accidents from COMAH sites is considered to be ALARP.

Major accidents associated with major hazard sites or major accident hazard pipelines

5.150 The Assessment Boundary does not lie within an HSE Consultation Zone. Therefore, the risk of any major accidents from such sites / pipelines is considered to be ALARP.

Major accidents associated with utility strikes

5.151 During the construction / decommissioning stage, working areas will be secured with restricted access so only suitably qualified personnel are present. Works to confirm the location of utilities will be undertaken before the commencement of activities in liaison with the relevant operators. Good practice working measures will be put in place in accordance with the Construction (Design and Management) Regulations and other health and safety regulations, such as the preparation of specific method statements and making workers aware of the location of utilities and their easements where works are undertaken close to utilities. In addition, relevant HSE guidance will be adhered to, including Avoiding danger from underground services⁶⁶. These measures will be implemented as part of a CEMP / DEMP. With such measures in place, the risk is considered to be ALARP.

Major accidents associated with UXO

5.152 The Assessment Boundary is located within an area that is identified as being at low risk from UXO. Nevertheless, as part of the CEMP / DEMP, the potential risks of UXO will be communicated to all construction workers, provision of safety training by a competent UXO expert and safety monitoring. With such measures in place, the risk is considered to be ALARP.

⁶⁶ HSE (2014) Avoiding danger from underground services HSG47.

Major accidents associated with road traffic movements

- 5.153 The potential for major transport accidents during the construction stage will be mitigated for within the traffic logistics / management plan as part of the CEMP. This will include measures such as deliveries to be only via the agreed access routes, during prescribed working hours (unless otherwise agreed) and appropriate management in relation to other activities adjacent (e.g. quarry operations) to minimise risk to road users (use of e.g. brake / tug vehicles). During operation, a limited number of additional vehicle movements will be generated by the Project for Assessment. All vehicles will accord with the highway code and where dangerous loads are being transported these would be done in accordance with relevant legislation. With such measures in place, the risk is considered to be ALARP.

Major accidents associated with wind turbine collapse

- 5.154 Wind turbines can collapse due to extreme wind, aeroelastic effects, blade malfunctions as well as issues with the structural integrity of the columns. During extreme gusts of wind, the wind turbines will feather or point into the wind to reduce their surface area and in some circumstances can be locked down / shut down.
- 5.155 As noted in **Chapter 4**, the wind turbines are set back from the Pennine Bridleway based on a topple distance incorporated for safety. The design of the wind turbines will also be informed by detailed analysis to minimise any aeroelastic effects and appropriate measures will be implemented, such as ensuring that there is enough damping for the different modes and that there is no resonance. The wind turbines will be constructed to current engineering standards, including British Standard EN 61400⁶⁷ which relates to turbine structural components. Once completed and operational, there will be regular checks and inspections of the wind turbines. With such measures in place, the risk is considered to be ALARP.

Major accidents associated with subsidence and unstable ground

- 5.156 As noted in **Chapter 4**, the foundation solution is anticipated to comprise gravity foundations (unless geotechnical studies indicate a piled (deep) foundation is more appropriate). All earthworks and foundation design will be in accordance with national standards and guidance, including British Standard 6031:2009: Code of Practice for Earthworks⁶⁸ and Building Regulations Approved Document A – Structure⁶⁹. Appropriate measures to address unstable ground / geotechnical hazards, including temporary works (shoring of excavations, the design of haul roads, piling and crane platforms, etc) will be implemented. With such measures in place, the risk is considered to be ALARP.

Major accidents associated with peat slide

- 5.157 During construction, there is a potential for existing peat deposits to be disturbed and generate a landslide. Further analysis will be undertaken as part of a peat slide assessment and it is anticipated that a number of measures will be implemented, such as peat storage only on areas of low / negligible peat slide risk, controls on peat storage heights, provision of adequate cut-off drainage and suitable outflows and

⁶⁷ British Standard EN IEC 61400-8:2024.

⁶⁸ British Standard 6031:2009: Code of Practice for Earthworks.

⁶⁹ HM Government (2013) Approved Document A - Structure.

routine maintenance and inspection of peat storage areas. these will be detailed within the peat management plan. With such measures in place, the risk is considered to be ALARP.

Major accidents associated with ice throw

- 5.158 Ice throw is the process of ice falling or being launched from the blades of a wind turbine. The wind turbines will have sensors on them to detect the buildup of ice and automatically prevent the turbines spinning when ice has developed. In addition, services crews will be trained regarding the potential for ice throw, ice risk conditions will be monitored during operation and public notices will be displayed at access points, alerting members of the public and staff of possible risk of ice throw under certain weather conditions. With such measures in place, the risk is considered to be ALARP.

Major accidents associated with lightning strikes

- 5.159 The wind turbines will have a lightning protection system. The blade tip is made from aluminium and there are three further receptors near the end of the blade with a lightning cable running through the blade and into the hub / nacelle / tower / foundation. A lightning detection system can also be provided to measure the strength of a lightning strike and aid the detection of potential damage. The design and maintenance of these systems will reduce the likelihood of a fire being initiated by a lightning strike. With such measures in place, the risk is considered to be ALARP.

Major accidents associated with release of chemicals

- 5.160 Small quantities of lubricants, fuel and clean equipment will be stored within the substation / control building. Such facilities will be designed to the relevant regulations and standards, such as the Dangerous Substances and Explosive Atmospheres Regulations 2002⁷⁰ and associated HSE guidance⁷¹. All handling, storage and disposal of chemicals / substances will also be undertaken in accordance with relevant regulations. With such measures in place, the risk is considered to be ALARP.

Major accidents associated with fire

- 5.161 There are potential fire risks during all stages of the Project for Assessment. The moorland location of the wind turbines, which is particularly susceptible to fires, especially in the summer months.
- 5.162 Works during construction will be undertaken in line with relevant guidance, such as Fire Prevention on Construction Sites: Joint Code of Practice⁷² and HSE's Fire safety in construction⁷³, as specified within the CEMP / DEMP.
- 5.163 Potential ignition sources are mainly inside the nacelle where there is fast moving machinery (generators, gearboxes, etc.) which creates heat alongside combustible oil

⁷⁰ Dangerous Substances and Explosive Atmospheres Regulations 2002 No. 2776 (as amended).

⁷¹ HSE (2013) Dangerous Substances and Explosive Atmospheres Regulations 2002. Approved Code of Practice and guidance L138.

⁷² The Fire Protection Association (2023) Fire Prevention on Construction Sites: Joint Code of Practice 9th edition.

⁷³ HSE (2022) Fire safety in construction HSG168.

and solid materials. Fire risk is also associated with the electrical systems and chemicals / substances stored on-site.

- 5.164 Stringent control measures for fire will be implemented where appropriate as part of the Project for Assessment. The wind turbines will be fitted with an active fire protection system, which includes but is not limited to detection (of flames, heat, gas, and smoke), alerting personnel and rescue services, and activating systems for fire suppression or extinguishing.
- 5.165 In addition, all operational plant / infrastructure will be designed, installed and maintained in line with relevant legislation, standards and guidance, including Electrical Equipment (Safety) Regulations 2016⁷⁴ and Electricity Safety, Quality and Continuity (Amendment) Regulations 2006⁷⁵. The control measures for the prevention of fire will be in accordance with legislation, standards and guidance. With such measures in place, the risk is considered to be ALARP.

Major accidents due to malicious attacks caused by war and terrorism

- 5.166 The Project for Assessment is unlikely to attract an increased interest of warfare or terrorist activities. It is also assumed that appropriate emergency planning has been undertaken by RBC and RMBC alongside local emergency services. With such measures in place, the risk is considered to be ALARP.

Major accidents associated with works during construction / decommissioning

- 5.167 All works will be undertaken in accordance with relevant legislation, standards and guidance, including the Construction (Design and Management) Regulations 2015⁷⁶ and HSE's health and safety in construction⁷⁷ and appropriate method statements and risk assessments will be prepared prior to the commencement of specific activities. All plant and equipment, such as cranes and other lifting equipment, will be maintained in line with the manufacturers recommendations and operated by suitably qualified personnel. Appropriate bases will be used for plant (e.g. hardstanding). This will be captured as part of the Construction Phase Plan. Such measures are also applicable to decommissioning. With such measures in place, the risk is considered to be ALARP.

Major accidents associated with works during operation

- 5.168 The operator has a commitment and obligations to manage risks to employees are addressed in the Health and Safety at Work etc. Act⁷⁸. All operational activities will also comply with all relevant health and safety legislation, such as The Work at Height Regulations 2005⁷⁹ and Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1999⁸⁰. In addition, only qualified staff with the appropriate level of training and experience will undertake specific tasks. There will be the appropriate

⁷⁴ Electrical Equipment (Safety) Regulations 2016 No. 1101.

⁷⁵ Electricity Safety, Quality and Continuity (Amendment) Regulations 2006 No. 1521.

⁷⁶ Construction (Design and Management) Regulations 2015 No. 51.

⁷⁷ HSE (2006) Health and safety in construction HSG150.

⁷⁸ Health and Safety at Work etc. Act 1974 c. 37.

⁷⁹ The Work at Height Regulations 2005 No. 735.

⁸⁰ Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1999 No. 1471.

maintenance of equipment and first aid and safety equipment will be available. With such measures in place, the risk is considered to be ALARP.

Natural disasters

- 5.169 The EIA Regulations do not specify the need for the consideration of natural disasters, however, for completeness, this has been considered.
- 5.170 The probability, frequency and likelihood of natural disasters arising from climatic occurrences (i.e. hurricanes) are considered to be very low due to the natural climatic condition of the UK within the global climate system. Specific geological events (i.e. earthquakes, tsunamis, volcanic incidents, etc.) are also considered to be very low due to the general absence of required geological conditions (i.e. area of tectonic plate interaction) within or in close proximity to the UK. Although earthquakes have occurred within the UK, the magnitude of such events has generally been low.
- 5.171 Therefore, effects related to natural disasters are unlikely to be significant and will not be considered further within the EIA or reported within the ES.

Socio-Economics and Human Health

Technical Baseline

- 5.172 The Office for National Statistics (ONS)⁸¹ estimates that the population of the local impact area⁸² totals circa 301,300 residents, expanding to circa 7.6 million at the scale of the wider impact area. Of the total population of both geographies circa 62% are of working age (i.e. aged 16 – 64).
- 5.173 As of 2022 (the latest available data at time of writing), the local impact area accommodated a total of circa 102,000 workforce jobs, which is approximately 3% of the total 3.6 million jobs recorded across the North West region⁸³. The construction sector employs 6,250 people in the local impact area, equating to 6% of total employment, broadly aligning with the sector's 5% contribution to the regional workforce.
- 5.174 Manufacturing accounts for a relatively high proportion (14%) of employment in the local impact area in comparison to the wider region (9%). Conversely, professional, scientific and technical activities account for a lower proportion of employment locally (5%) than regionally (9%). Activities associated with energy supply⁸⁴ employ circa 180 people in the local impact area, expanding to circa 10,000 across the North West.
- 5.175 Over the year to March 2024, the average economic activity rate amongst the working-age resident population of the local impact area (at 77%) was in line with that recorded

⁸¹ ONS via Nomis (2024) Population Estimates – local authority based by single year of age 2023.

⁸² RMBC and RBC local authority areas combine to form the 'local impact area' for the purposes of assessment. Both local authorities are located within the North West region, which forms the 'wider impact area'.

⁸³ ONS via Nomis (2024). Business Register and Employment Survey: 2022.

⁸⁴ Figures include electricity gas, steam and air conditioning supply.

in the wider North West (also 77%)⁸⁵. Working-age employment rates were also slightly higher locally (74%) than regionally (73%).

- 5.176 As of August 2024, there were circa 11,650 people claiming out-of-work benefits in the local impact area principally for the reason of being unemployed⁸⁶. It is noted that the number of claimants in Rochdale accounts for a notably higher proportion (9.6%) of economically active residents than in Rossendale (5.8%) and the North West as a whole (6.2%). Analysis of ONS data regarding Jobseeker's Allowance (JSA) claimants⁸⁷ – a subset of the above – indicates that just over 200 people were specifically seeking employment in construction-related trades in the local impact area in August 2024, rising to circa 4,200 in the North West.
- 5.177 The UK Government's Office for Health Improvement & Disparities⁸⁸ reports on various indicators regarding health outcomes in Rochdale and Rossendale in comparison with the wider region and nationally, including:
- Life expectancies for both men and women in Rochdale (respectively 76.7 and 81.2 years) and in Rossendale (76.6 and 80.8) are lower than those recorded in the North West (77.7 and 81.7);
 - A higher proportion of adults are classified as overweight or obese in Rochdale (73%) than in Rossendale (65%) and the North West (67%); and
 - The proportion of adults who are physically active⁸⁹ in Rochdale (55%) is notably lower than in the North West (66%). By contrast, the physical activity rate in Rossendale is relatively high (72%).
- 5.178 As noted in **Chapter 1**, the Assessment Boundary incorporates Common Land, registered under the Commons Act 2006. Part of the Assessment Boundary is also designated as Green Belt as part of the Liverpool, Manchester and West Yorks Greenbelt.
- 5.179 There are a number of PRoW within the Assessment Boundary, including the Pennine Bridleway (classified as a National Trail) and Rossendale Way. There are wider network of PRoW and National Cycle Routes in the vicinity of the Assessment Boundary.

Effects Unlikely / Not Significant

Employment generated during construction / decommissioning

- 5.180 Employment and income are key determinants of societal and personal socio-economic health, with strong impacts on the physical and mental wellbeing of workers.

⁸⁵ ONS via Nomis (2024). Annual Population Survey: April 2023 – March 2024.

⁸⁶ ONS via Nomis (2024). Claimant Count: July 2024.

⁸⁷ ONS via Nomis (2024). Jobseeker's Allowance by Occupation: July 2024.

⁸⁸ OHID (2024) Local Authority Health Profiles: Rochdale and Rossendale. Note that data is only available individually for the constituent boroughs forming the local impact area.

⁸⁹ Defined as undertaking a minimum of 150 minutes of moderate physical activity (e.g. brisk walking; cycling for travel or leisure; playing individual or team sports; gym exercises; gardening) per week.

Unemployment is known to be a significant contributor to poverty, illness and a reduction in personal and social esteem and therefore reducing unemployment is a key economic objective at all scales of governance.

- 5.181 Indicative economic impact modelling as to the potential scale of construction stage employment that could be supported by the Project for Assessment (informed by application of best-practice guidance⁹⁰ and secondary research regarding the economic impacts of onshore windfarm development⁹¹) has been completed. This analysis suggests that an average of circa 320 direct, indirect and induced full-time equivalent (FTE) net additional jobs could be supported across the UK during the Project for Assessment's construction period. It is estimated that 320 of the total construction stage jobs could be accessed by residents of the wider impact area, inclusive of 110 for residents of the local impact area.
- 5.182 Whilst this would represent a beneficial effect, supporting new, high-quality employment opportunities for local and wider impact area residents, the number of jobs created and the temporary nature of the roles, means that the effect is unlikely to be significant in the context of the existing scale of construction employment in the local and wider impact areas (as outlined above).
- 5.183 While it is not possible to quantitatively estimate the scale of decommissioning employment based on available information, it is understood that decommissioning employment is anticipated to be lower (and supported over a shorter duration) than construction stage employment. Therefore, the impacts related to decommissioning employment do not change the assessment's overall conclusion with regard to the likely significance of construction stage employment.
- 5.184 Therefore, whilst anticipated to be beneficial, employment generated during construction / decommissioning is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Employment generated during operation

- 5.185 As noted above, employment and income are key determinants of health. Operational stage roles will be supported by the Project for Assessment, associated, for example, with ongoing periodic maintenance.
- 5.186 As with construction, indicative economic impact modelling as to the potential scale of operational stage employment that could be supported by the Project for Assessment has been completed. This analysis suggests that circa 440 'person-years' of direct, indirect and induced FTE net additional jobs could be supported across the UK throughout the Project for Assessment's 40-year operational lifetime. This equates to sustaining an ongoing average of circa 10 FTE jobs in the North West, inclusive of 5 for residents of the local impact area.
- 5.187 Whilst this would represent a beneficial effect, supporting new, high-quality employment opportunities for local and wider impact area residents, the number of

⁹⁰ Homes England (formerly the Homes & Communities Agency) (2014) Additionality Guide (4th ed.).

⁹¹ Renewable UK (2015) Onshore Wind: Economic Impacts in 2014.

jobs created means that the effect is unlikely to be significant in the context of the existing scale of employment in the local and wider impact areas (as outlined above).

- 5.188 Therefore, whilst anticipated to be beneficial, employment generated during operation is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Access to training opportunities

- 5.189 New development can provide new skills and training opportunities, both during a project's construction / decommissioning stage and on an ongoing rolling basis once operational, for example, through supporting apprenticeships and other training programmes.
- 5.190 The Project for Assessment is anticipated to deliver opportunities for people to access skills and training opportunities during construction, operation and decommissioning (such as apprenticeships, placements, etc.), the scale and nature of which will be dependent on the appointed construction and operational maintenance contractor(s).
- 5.191 Whilst this will be a beneficial effect, which could help increase skills and opportunities for local people in key sectors such as construction and renewable energy, it is anticipated that such roles are likely to comprise only a limited proportion of the total jobs supported during the construction, operational and decommissioning stages, and therefore of a scale which would be unlikely to be significant.
- 5.192 Therefore, whilst anticipated to be beneficial, access to training opportunities is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Access to open space and recreation resources

- 5.193 Provision of open / green space for recreation and relaxation can lead to increased levels of physical activity and reduced levels of heart disease, strokes and other ill-health problems that are associated with both sedentary occupations and stressful lifestyles. There is also a growing body of evidence to suggest that access to open spaces is important in helping to maintain and / or improve mental health and can be an important means of supporting social cohesion and inclusion within communities⁹².
- 5.194 The Assessment Boundary occupies what is currently largely open space and therefore the Project for Assessment will not result in the displacement of any existing residents or economic activity. A portion of the Project for Assessment is located on land designated as Common Land under the Commons Act 2006 and the Assessment Boundary and surrounds currently provide informal open space and leisure amenity use for public access.
- 5.195 To facilitate the Project for Assessment, all turbine and access track infrastructure, along with a micro-siting allowance within the Common Land, will be deregistered under Section 16 of the Commons Act 2006. In compliance with legal requirements, suitable replacement land will be provided as part of the Project for Assessment to

⁹² NHS Healthy Urban Development Unit (2019) Rapid Health Impact Assessment Tool (4th Edition).

compensate for the loss of Common Land. Additionally, public access rights will be regranted over the access tracks to ensure that access to the Common Land is maintained. This approach balances the needs of the development with the preservation of public rights and common land use.

- 5.196 As such, the proposed mitigation embedded within the Project for Assessment is anticipated to effectively mitigate impacts related to access to open space and recreational resources. This mitigation will also maintain the Assessment Boundary's contribution to local social and community cohesion as an open space asset.
- 5.197 The Project for Assessment has the potential to generate a beneficial effect, through increasing baseline provision of useable open space and recreational resources for local communities (e.g. through new and enhanced routes and improved accessibility and diversified activities). It is, albeit, concluded that any change to baseline conditions would be likely to be small in magnitude, in terms of the nature of enhancements to provision and the number of people impacted. Therefore, whilst beneficial, the effect on operational stage access to open space and recreation infrastructure would be unlikely to be significant.
- 5.198 Therefore, access to open space and recreational resources is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Changes in journey length and amenity of recreational routes

- 5.199 There are a number of PRoW within and in the vicinity of the Assessment Boundary. Due to the relatively rural nature of these routes and the surrounding landscape, there is considered to be a high level of amenity value for users.
- 5.200 During construction / decommissioning, there will be works that necessitate the temporary closure / diversion of these routes for health and safety purposes, creating disruption and potentially increasing journey length. Works associated with these stages will also be undertaken in proximity to these routes. Where users feel intimidated by such activities, traffic, etc., there will be potential temporary effects on amenity value in terms of a reduction in the 'relative pleasantness'.
- 5.201 As set out in **Chapter 4**, replacement Common Land will be provided for the public as part of the Project Assessment. In addition, the following mitigation measures will be incorporated into the CEMP / DEMP:
- The public would be informed of the nature, timing and duration of particular construction / decommissioning activities and the duration of any works by newsletters and liaison with Parish Councils where applicable;
 - For health and safety reasons, plant should be separated from public access points via the use of specific vehicular access points and public access will be redirected away from the area of works wherever possible; and
 - The provision of clear directions for any alternative routes to maintain public access.

- 5.202 Therefore, changes in journey length and amenity of recreation routes are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Access to sustainable transport options

- 5.203 Sustainable travel options for those working at and otherwise using new developments during construction and operation can facilitate healthy and sustainable lifestyles through enabling physical activity and zero / low-emission transport modes, such as walking, cycling and public transport.
- 5.204 The Assessment Boundary's rural location means that access is relatively limited via public transport or active travel infrastructure. The Project for Assessment's construction compound / laydown areas will be accessed via vehicle from the entry-route off the A680. Once operational, vehicular access will be required to access the wind turbines and associated infrastructure for routine maintenance activities.
- 5.205 Due to the location and nature of on-site activities, it is anticipated that the workforce during each stage will travel primarily by commercial vehicle, albeit the option to travel to the entrance of the Assessment Boundary access via public transport and be collected and transported to the Assessment Boundary by co-workers is an option that could be available to the workforce.
- 5.206 The closest public transport stops to the Assessment Boundary are located adjacent to the entrance of the Assessment Boundary's proposed access route (the existing Scout Moor Quarry access via the A680), these being bus stops to the south of the settlement of Edenfield, along the A680. These bus stops are served by the 472, 474, 481, 483 and X41 bus routes, providing services between a number of nearby settlements, such as Bury, Ramsbottom, Rawtenstall, Haslingden, Blackburn, Burnley, Accrington and Manchester. There is a footway running alongside the A680.
- 5.207 As set out above in relation to access to open space and recreation resources, the Assessment Boundary is currently accessed via sustainable and active travel modes (primarily walking) by the public for informal recreation and leisure purposes. These uses and associated access routes (as well as the public transport and active travel infrastructure at the edge of the Assessment Boundary) will be maintained by the Project for Assessment, and therefore there will be no impact on baseline health and wellbeing outcomes for local communities. Overall, there is anticipated to be negligible change in terms of access to sustainable transport options as a result of the Project for Assessment.
- 5.208 Therefore, access to sustainable transport options is unlikely to be significant in terms of socio-economics and human health and will not be considered further in the EIA or reported in the ES. The Project for Assessment's impacts in terms of traffic and accessibility will be considered under transport and access (see **Chapter 6**).

Crime reduction and community safety

- 5.209 Relevant areas of the Assessment Boundary will be kept secure during the construction / decommissioning stages to ensure that the potential for crime and anti-social behaviour is minimised. Site security arrangements during these stages will be in line with relevant legislative requirements, such as those set out in the Construction (Design and Management) Regulations 2015. Temporary fencing and hoarding will be

erected around relevant construction / decommissioning areas (i.e. each wind turbine location) and compound area / laydown areas to prevent unauthorised entry. Additional security measures will include the use of lighting, and appropriate management of the movement of vehicles, plant, equipment and personnel.

5.210 Once operational, the Project for Assessment will incorporate suitable design and site management measures to again minimise the potential for crime and anti-social behaviour. It is acknowledged that there are existing issues within the Assessment Boundary in relation to crime / vandalism, such as wildfires caused by irresponsible and / or anti-social behaviour and illicit use of the moorland by off-road vehicles. It is considered that the Project for Assessment could have a beneficial effect with regard to such issues, through an increase in dedicated management and supervision of the Assessment Boundary. It is, albeit, concluded that any change to baseline conditions would be likely to be small in magnitude, in terms of the potential change of crime / anti-social behaviour incidence rate and the number of people impacted. Therefore, whilst beneficial, the effect on operational stage crime reduction and community safety would be unlikely to be significant.

5.211 Therefore, effects related to crime reduction and community are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Telecommunications

Technical Baseline

5.212 The existing baseline is that the Project for Assessment located adjacent to Scout Moor I. Currently within the proposed Turbine Development Zones (**Figure 4.1**) there are no wind turbines. New wind turbines will be constructed on the existing terrain within the Turbine Development Zones as part of the Project for Assessment.

5.213 There are three links across the Assessment Boundary outlined in **Table 5.4**. The information provided was collected through consultation with the operators by Pager Power.

Table 5.4: Identified telecommunication links

Operator	Type	Link ID / Ref	Frequency / buffer distance	A End ⁹³	B End
Arqiva	Ultra High Frequency (UHF)	Not provided	100m	366050E	391530E
				414460N	417200N
		Not provided			395050E 416640N
JRC	Not provided	Not provided	Not provided	387237E	398339E
				416549N	396370N

⁹³ The JRC and Airwave did not provide any link end information. The information presented has been extrapolated from the Office of Communications (Ofcom) database.

Operator	Type	Link ID / Ref	Frequency / buffer distance	A End ⁹³	B End
BT	UHF	Not provided	100m	315460E 209146N	312740E 204303N

- 5.214 The Arqiva links cross the southern part of the Assessment Boundary and a 500m exclusion zone around the BT link end also covers an area in the southern part of the Assessment Boundary. The southern part of the Assessment Boundary also lies within an initial exclusion zone associated with the Joint Radio Company.

Effects Unlikely / Not Significant

Degradation of the performance of telecommunication infrastructure

- 5.215 Microwave telecommunications use point to point transmission. The signal is likely to be affected if the wind turbines are sited within 100m of the line of sight between telecommunication towers, with the potential for the signal to be degraded by obstructing, reflecting or scattering microwaves by a wind turbine's rotating blades.
- 5.216 Digital television signals are transmitted using UHF and there are two main mechanisms whereby a wind farm could potentially interfere with television reception – 'shadowing' effect and 'reflection / scattering' effects. The wind turbines could interfere with television signals during operation, although this is less likely to occur with digital receivers which are more robust.
- 5.217 Potential effects on microwave links will be mitigated through turbine layout and micro-siting, re-networking by the addition of an extra node on the link path or the replacement of a wireless link with a leased line between the link ends. The feasibility of such solutions will be discussed and agreed with the relevant stakeholders.
- 5.218 Potential effects on UHF telemetry links will be mitigated through micro-siting / layout optimisation, the use of an alternative scanner, increasing link elevation (by raising the receivers / transmitters) or the replacement of the UHF link with a microwave link. As with microwave links, the feasibility of such solutions will be discussed and agreed with the relevant stakeholders.
- 5.219 Therefore, degradation of the performance of telecommunication infrastructure is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Waste and Resources

Technical Baseline

- 5.220 The existing land uses within the Assessment Boundary will generate a limited quantity of waste.

- 5.221 UK Statistics on Waste⁹⁴ show that in 2022, 59.4 million tonnes of non-hazardous construction and demolition (CD&E) waste were generated across the UK. Of this waste, 55.0 million tonnes were recovered, equating to a recovery rate of 92.6%.
- 5.222 The Environment Agency's Waste Data Interrogator⁹⁵ shows that, as of 2023, 2,270,372 tonnes of inert / CD&E waste was removed within the North West region and that the majority of this waste was diverted from landfill through waste management and recovery methods⁹⁶.
- 5.223 Based on the Environment Agency's Waste Interrogator, as of 2023, 16,505,774 tonnes of household, industrial and commercial waste was removed within the North West.
- 5.224 Across the North West, a total of 86,125 tonnes of CD&E hazardous waste were removed in 2022. Based on the Environment Agency's Hazardous Waste Interrogator⁹⁷, 730,076 tonnes of total hazardous waste was removed in the North West and 924,242 tonnes were received as of 2022.
- 5.225 As of 2020, the number / capacity of permitted final treatment facilities across the UK was as follows:
- Recovery other than energy recovery (including backfilling) – 3,279 facilities;
 - Energy recovery – 43 / 12,128 thousand tonnes / yr;
 - Incineration – 100 / 14,499 thousand tonnes / year; and
 - Deposit onto or into land (landfill) – 621 / 427,206 thousand m³ (remaining).
- 5.226 Remaining landfill capacity within the North West and the UK (as of 2023)⁹⁸ is set out in **Table 5.5**.

Table 5.5: Remaining landfill capacity (2023)

Landfill type	North West (000s cubic metres)	UK (000s cubic metres)
Hazardous merchant	3,010	9,680
Hazardous restricted	-	695
Non hazardous with stable non-reactive hazardous waste cell	7,172	45,270

⁹⁴ <https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste>.

⁹⁵ <https://www.data.gov.uk/dataset/59ab8448-3905-49c6-9122-ae762f96f66b/2023-waste-data-interrogator>.

⁹⁶ Based on 2022 Waste Returns.

⁹⁷ <https://www.data.gov.uk/dataset/e8d0b36b-692f-4d4d-a7dd-cbcff44a616e/2022-hazardous-waste-interrogator>.

⁹⁸ <https://www.data.gov.uk/dataset/aa53a313-f719-4e93-a98f-1b2572bd7189/2022-waste-data-interrogator>

Landfill type	North West (000s cubic metres)	UK (000s cubic metres)
Non hazardous	10,488	148,062
Non hazardous restricted	-	-
Inert	5,279	122,249

Notes:

- No existing landfill capacity.

5.227 C&I waste is collected by a large number of private waste companies. Therefore, there is a considerable network of waste facilities that are used to bulk, transfer, treat and dispose of C&I waste.

5.228 A summary of construction material resource availability within the North West and across the UK (as of 2019) is provided in **Table 5.6**.

Table 5.6: Construction material resource availability (2019)

Material type	North West	UK
Sand and gravel*	2.8 million tonnes	(refer to primary aggregate)
Permitted crushed rock*	5.7 million tonnes	
Primary aggregate (comprises sand and gravel and crushed rock)*	-	198.8 million tonnes
Concrete block*	5.3 million m ²	74.2 million m ² (GB)
Recycled and secondary aggregate*	8.6 million tonnes	71.0 million tonnes (GB)
Ready-mix concrete*	1.6 million m ³	24.7 million m ³
Steel ⁺	-	7.2 million tonnes
Asphalt*	2.4 million tonnes	27.4 million tonnes

Notes:

* Sales

⁺ Production

- No data

Effects Unlikely / Not Significant

Waste generated during construction / decommissioning

5.229 Waste will be generated during construction as a result of site clearance, earthworks and general construction activities (e.g. packaging, off-cuts of materials, canisters and containers, etc.). Waste will also be generated during decommissioning, associated with the removal of above-ground structures.

5.230 It is anticipated that will be quantities of material generated by site clearance activities including removal of vegetation, topsoils and hardstanding. There will also be excavation works to enable access and the installation of electric services, foundations,

borrow pits, etc. As outlined in **Chapter 4**, any excavated peat will be appropriately stored and replaced / reinstated or translocated on-site, managed through the OPMP. However, the quantities of such materials that require disposal are anticipated to be a limited in the context of waste generation in the region and existing treatment / disposal capacity (as outlined above).

- 5.231 As part of the Project for Assessment there will be aspects that are manufactured off-site, such as the wind turbines, where they are delivered and erected on-site. This will reduce the waste generated from direct construction works on-site.
- 5.232 It is anticipated that the quantities of material generated during the course of the decommissioning stage will be relatively limited in the context of existing waste generation and disposal / treatment capacities.
- 5.233 Construction / decommissioning waste arisings will be controlled through the implementation of a waste management plan, as part of the CEMP / DEMP. This will be informed by the waste provisions of relevant legislation, including the Environmental Protection Act 1990⁹⁹ and the Environmental Protection (Duty of Care) Regulations 1991¹⁰⁰ and will set out the principles and legal requirements relating to waste. The plan will describe how materials will be managed efficiently and disposed of legally during construction / decommissioning. It will also outline the aims, objectives and ongoing management responsibilities, including management practices, to be implemented during the construction / decommissioning stage and will set targets for the reduction, diversion from landfill and reuse of waste.
- 5.234 Specific controls / management measures to be implemented are as follows:
- Ordering of materials will be on an 'as needed' basis to prevent over supply;
 - Co-ordination with suppliers enabling them to take / buy back surplus stock;
 - Purchase of materials pre-cut to length to avoid excess scrap waste generated on-site;
 - Request that suppliers use least amount of packaging possible on materials to be delivered;
 - Ensuring correct storage and handling of goods to avoid unnecessary damage that would result in their disposal; and
 - Use of reclaimed materials in the construction works.
- 5.235 Construction / decommissioning waste arisings will also be separated to maximise material recycling. The appointed contractor(s) will take responsibility for inspecting and classifying waste materials generated by the works in accordance with relevant

⁹⁹ Environmental Protection Act 1990 c. 43.

¹⁰⁰ Environmental Protection (Duty of Care) Regulations 1991 No. 2839.

guidance, such as Waste Classification: Guidance on the classification and assessment of waste¹⁰¹.

- 5.236 As outlined in **Chapter 4**, waste materials will be removed, handled and disposed of in line with legislative requirement, such as The Hazardous Waste (England and Wales) Regulations 2005¹⁰² (where applicable) and any necessary permits, licenses, or notices would be obtained.
- 5.237 Therefore, waste generated during construction / decommissioning is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Waste generated during operation

5.238 Once operational, the following wastes will be generated:

- Operational activity and maintenance waste, including oils, greases, rages and damaged / worn components and associated packaging of new components (e.g. metals, wood / timber, cardboard, paper and plastics); and
- Organic / green waste from ongoing management.

- 5.239 As the Project for Assessment will be unmanned, with personnel / maintenance engineers only required to visit for maintenance, small amounts of solid C&I waste will be generated. Wastes will be managed in accordance with the general principles of the waste duty of care¹⁰³.
- 5.240 Waste arisings in the operational stage will be also addressed through the completion of Operational Waste Management Strategy. This will set out all waste arisings (including materials that would be classified as hazardous waste) and how each waste stream will be managed, transported and disposed of, including compliance with relevant legislation, regulation or guidance for each waste arising (i.e. detailed responsible persons, necessary carriage certificates / duty of care notification or documentation needing to be implemented).
- 5.241 Therefore, the generation of operational waste is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Use of material resources during construction / decommissioning

- 5.242 Construction will require a quantity of steel, aggregate, cement, concrete, bitumen, wood and plastic. Material resources may also be required during the decommissioning stage. This could deplete the availability of non-renewable resources but is unlikely to affect the regional / national demand / availability of materials (see **Table 5.6**) given the scale of the Project Assessment.
- 5.243 Measures to reduce material resource use will be implemented throughout the design process including a reduction in the material requirements in the design itself. In

¹⁰¹ Environment Agency (2014) Technical Guidance WM3: Waste Classification: Guidance on the classification and assessment of waste.

¹⁰² The Hazardous Waste (England and Wales) Regulations 2005 No. 894.

¹⁰³ Defra (2018) Waste Duty of Care Code of Practice.

addition, the CEMP / DEMP will detail measures to reduce resource use (e.g. the recycling and reuse of materials on-site). This reduces potential effects associated with material resource use during construction.

5.244 Limited quantities of materials are anticipated to be utilised during decommissioning.

5.245 Therefore, the use of material resources during construction / decommissioning is unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Use of material resources during operation

5.246 During the operational stage, it is anticipated that maintenance work (i.e. wind turbine maintenance) will be infrequent and the required material volumes will be small. As such, this is unlikely to affect the regional / national demand / availability of materials (see **Table 5.6**).

5.247 Therefore, the use of material resources during operation is unlikely to be significant and will not be considered further within the ES or reported in the ES.

6. Transport and Access

Technical Baseline

- 6.1 The Assessment Boundary will be accessed via the existing public road access junction used for Scout Moor I, via the existing access junction on the A680 (Rochdale Road). This will form the principal access point for construction material deliveries, staff engaged during the construction stage and for the delivery of AIL access associated with wind turbine components. PE
- 6.2 The access junction will also provide the sole means of access for the operational stage of the Project for Assessment.
- 6.3 Bulk materials for use in the construction stage will likely be sourced locally, potentially from Scout Moor Quarry.
- 6.4 AIL access will likely originate from the north, with access via the M65 corridor, with access to the Assessment Boundary to be taken from the A56, B6527 and A680.
- 6.5 The A56 provides strategic north – south distributor road functions to the wider area, whilst the B6527 and A680 provide local connections to residential and industrial facilities of the surrounding towns and villages.

Proposed Scope of Assessment

- 6.6 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Assessment Boundary, surrounding area and the Project for Assessment (**Chapter 4**). Where environmental effects are considered unlikely to be 'significant', an appropriate evidence base has been provided to justify the 'scoping out' of these effects ensuring the EIA and ES only assess those effects considered 'likely' to be significant, at this stage.

Effects Unlikely / Not Significant

- 6.7 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the PEMP provided in **Appendix 2.1**.

Transport effects related to the Electrical Grid Connection

- 6.8 With regards to the Electrical Grid Connection, these works will occur outwith the peak month of construction and as such, no significant effects are anticipated with this limited element of the Assessment Boundary.
- 6.9 Therefore, effects related to the Electrical Grid Connection are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Transport effects (e.g. severance, delay, amenity, fear and intimidation, accidents and safety and abnormal loads) during operation

- 6.10 Once operational, it is envisaged that the level of traffic associated with the Project for Assessment will be limited to routine maintenance activities. (i.e. statutory inspections, addressing faults, HV maintenance, etc.). The vehicle movements associated with the operation of the Project for Assessment are anticipated to be limited. The vehicles used for these visits are likely to be light goods vehicles (LGV) (e.g. 4x4 vehicles) though there may also be the occasional need for an HGV to access the wind farm for specific maintenance and / or repairs. It is considered that the effects of operational traffic would therefore be negligible.
- 6.11 Therefore, the transport effects associated with the operational stage are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Road safety audits

- 6.12 Whilst included as an effect in modern guidance¹⁰⁴, 'Road Safety Audits' are not considered applicable as an effect in this instance, given the existing nature of the access junction infrastructure. If required, this can be secured via suitably worded planning condition.
- 6.13 Therefore, effects related to road safety audits are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Effects Likely / Significant

- 6.14 **Table 6.1** outlines the effects (and associated receptors) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 6.1: Potential likely significant effects and sensitive receptors

Effect	Receptor(s)	Applicable stage(s) ¹⁰⁵
Severance	Users of the B6527 and A680. Residents of communities living alongside both roads. Users of PRow crossed or interacting with construction traffic	Construction
Driver delay	Users of the B6527 and A680. Residents of communities living alongside both roads. Users of PRow crossed or interacting with construction traffic	Construction
Pedestrian delay	Pedestrian users of the B6527 and A680. Residents of communities living alongside both roads. Users of PRow crossed or interacting with construction traffic	Construction
Non-motorised	Active travellers (pedestrian, cyclists, horse riders, etc) using the B6527 and A680. Users of	Construction

¹⁰⁴ IEMA (2023) Environmental Assessment of Traffic and Movement.

¹⁰⁵ Noting that decommissioning will not be considered for transport and access.

Effect	Receptor(s)	Applicable stage(s) ¹⁰⁵
user amenity	PRoW crossed or interacting with construction traffic	
Fear and intimidation	Users of the B6527 and A680. Residents of communities living alongside both roads. Users of PRoW crossed or interacting with construction traffic	Construction
Accidents and safety	Users of the B6527 and A680. Residents of communities living alongside both roads. Users of PRoW crossed or interacting with construction traffic	Construction
Abnormal loads	Users of the B6527 and A680. Residents of communities living alongside both roads. Users of PRoW crossed or interacting with construction traffic	Construction

Assessment Methodology of Effects Likely / Significant

6.15 **Table 6.2** outlines the background surveys / studies / analysis / evaluations that have been / will be completed.

Table 6.2: Background survey / study / analysis / evaluation

Survey / study / analysis / evaluation	Overview	Date of completion
Pending		
Transport Assessment (TA)	Review of the likely construction impact on the study area network	Winter 2024 / 2025
Baseline data collection	Collection of data to be used in the study	Winter 2024 / 2025
Abnormal Load Route Survey Report	Review of the access route and required mitigation works	Winter 2024/ 2025

6.16 The study area for scoping and the EIA is defined by the construction traffic routes to the Assessment Boundary. The study area for scoping and EIA therefore comprises the following road links:

- M56 between Blackburn and Burnley;
- A56 between the M56 and Ramsbottom;
- B6527 between the A56 and Edenfield; and
- A680 Rochdale Road from Edenfield to the Scout Moor Quarry access junction.

- 6.17 New Automatic Traffic Count (ATC) surveys will be undertaken at the site access junction, on the A680 in Edenfield, on the B6527 in Edenfield and on the B6527 to the north of Ewood Bridge for one week. Additional data for the A56 and M56 will be taken from Department for Transport (DfT), Road Traffic Database. Future traffic flows will be factored from traffic data using Low Growth factors estimated from National Road Traffic Forecasts (NRTF). Further traffic data would be obtained from Crashmap UK for the proposed study area to inform the accident review for the immediate road study area (A680).
- 6.18 A review of active travel routes and facilities will also be undertaken and will include a review of the PRoW map for the Assessment Boundary and Sustrans' National Cycle Route Map.
- 6.19 The main transport impacts will be associated with the movement of general HGV traffic travelling to and from the Assessment Boundary during the construction stage.
- 6.20 The following rules taken from IEMA's Environmental Assessment of Traffic and Movement¹⁰⁶ guidance would be used as a screening process to define the scale and extent of the assessment:
- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%); and
 - Rule 2: Include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.
- 6.21 Increases below these thresholds are generally considered to be not significant given that daily variations in background traffic flow may fluctuate by this amount. Changes in traffic flow below this level predicted because of the Project for Assessment will therefore be assumed to result in no discernible environmental impact and as such no further consideration will be given to the associated environment effects.
- 6.22 Potential impacts that may arise during the assessment may include the following for users of the road and those residents along the delivery routes. The impacts on receptors within the study area will be reviewed during the construction stage, with a peak construction period assessment undertaken. This will review the maximum impact and presents a robust assessment of the effects of construction traffic on the local and trunk road networks.
- 6.23 The estimated traffic generation of the Project for Assessment will be compared with baseline traffic flows, obtained from new and existing traffic survey data, in order to determine the percentage increase in traffic.
- 6.24 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant

¹⁰⁶ IEMA (2023) Environmental Assessment of Traffic and Movement.

effects will be determined following this through professional judgment. Suitable mitigation measures will be proposed, where appropriate.

- 6.25 It is not anticipated that a formal TA will be required as these are not generally considered necessary for temporary construction works. Instead, a reduced scope TA would be provided.
- 6.26 Detailed swept path analysis will be undertaken for the main constraint points on the route from the Port of Entry through to the site access junction to demonstrate that the wind turbine components can be delivered to the Assessment Boundary and to identify any temporary road works which may be necessary. This will be summarised into a Route Survey Report, appended to the TA.

Limitations and Assumptions

- 6.27 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- The assessment of construction traffic will assume the use of standard construction techniques appropriate for the type of works being undertaken. The final techniques, plant selection and programme are expected to be determined by the appointed contractor(s), in consultation with relevant authorities prior to commencement of construction.

7. Noise and Vibration

Technical Baseline

- 7.1 The majority of Project for Assessment is located within a rural location where the predominant noise sources in the area include wind induced noise (wind passing through vegetation and around buildings), local watercourses, agricultural noise and birdsong. At some receptors within / closer to the settlements adjacent near to the Assessment Boundary, the soundscape may include road traffic noise.
- 7.2 There is also noise from existing operational wind turbines, as there are a number of operational wind turbine developments near to the Project for Assessment. These include Scout Moor I located adjacent to the west of the Assessment Boundary, Sheep House Farm to the north, Reaps Moss Wind Farm and Todmorden Moor Wind Farm to the north-east, Crook Hill Wind Farm to the east and the Shawfield Farm Turbine to the south.

Proposed Scope of Assessment

- 7.3 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Assessment Boundary, surrounding area and the Project for Assessment (**Chapter 4**). Where environmental effects are considered unlikely to be 'significant', an appropriate evidence base has been provided to justify the 'scoping out' of these effects ensuring the EIA and ES only assess those effects considered 'likely' to be significant, at this stage.

Effects Unlikely / Not Significant

- 7.4 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the PEMP provided in **Appendix 2.1**.

Increase in road traffic noise

- 7.5 It is anticipated that off-site construction / decommissioning vehicles for the Project for Assessment will amount to small increases of HGV movements per hour over the course of a typical 12-hour shift both in terms of absolute numbers and the percentage change that the flows will represent on the road network. As such, the small temporary increase in traffic is unlikely to have a significant noise impact at any receptors proximate to the Project for Assessment.
- 7.6 During operation, limited numbers of vehicles are anticipated associated with maintenance activities. Such an increase in traffic is unlikely to have a significant noise impact at any receptors proximate to the Project for Assessment.
- 7.7 Therefore, an increase in road traffic noise is unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Vibration during construction / decommissioning

- 7.8 Given the relative distances from the closest residential receptors to the proposed construction / decommissioning activities (approximately 1km), the risk of ground borne vibration impacting on noise sensitive receptors (NSRs) is considered low.
- 7.9 Therefore, vibration during construction / decommissioning is unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Amplitude Modulation during operation

- 7.10 In its simplest form, Amplitude Modulation (AM), by definition, is the regular variation in noise level of a given noise source. This variation (the modulation) occurs at a specific frequency, which, in the case of wind turbines, is defined by the rotational speed of the blades (i.e. it occurs at the rate at which the blades pass a fixed point (e.g. the tower), known as Blade Passing Frequency).
- 7.11 A study was carried out in 2007 on behalf of the Department for Business, Enterprise and Regulatory Reform (BERR) by the University of Salford, which investigated the incidence of noise complaints associated with wind farms and whether these were associated with AM. The study defined AM as aerodynamic noise from wind turbines with a greater degree of fluctuation than normal at blade passing frequency. Its aims were to ascertain the prevalence of AM on UK wind farm sites, to try to gain a better understanding of the likely causes and to establish whether further research into AM is required. The study concluded that AM had occurred at only a small number (4 of 133) of wind farms in the UK, and only for between 7% and 15% of the time. It also stated that, the causes of AM are not well understood and that prediction of the effect was not currently possible.
- 7.12 This research was updated in 2013 by an in-depth study undertaken by Renewable UK, which has identified that many of the previously suggested causes of AM have little or no association to the occurrence of AM in practice. The generation of AM is based upon the interaction of a number of factors, the combination and contributions of which are unique to each site. With the current state of knowledge, it is not possible to predict whether any particular site is more or less likely to give rise to AM and the incidence of AM occurring at any particular site remains low, as identified in the University of Salford study. The report includes a sample planning condition to address AM, although that has not yet been validated or endorsed by the UK Government.
- 7.13 In 2016, the Institute Of Acoustics (IOA) proposed a measurement technique to quantify the level of AM present in any particular sample of wind farm noise. In August 2016 a report written by WSP | Parsons Brinckerhoff was published by BEIS (formerly The Department of Energy & Climate Change). The report sought to build on the conclusions of the IOA study in order to define an appropriate assessment method for AM, including a penalty scheme and an outline planning condition.
- 7.14 In November 2017, an article entitled 'A planning condition for wind farms' was published in Vol 42 No 6 of the Acoustics Bulletin magazine. The article was written collaboratively by a number of noise consultants and suggested a noise planning condition which included consideration of AM. The authors noted in the article that:

‘Whilst local authorities and developers have waited for a planning condition that could be applied to newly consented wind farms, or to those already consented but with a suspensive condition, the report Wind Turbine AM Review (WTAMR) by WSP/Parsons Brinckerhoff for DECC arguably did not provide that. In addition there have been a number of comments on WTAMR that we consider should be addressed.’

- 7.15 The article then went on to propose a draft condition but noted that:

‘This approach is proposed based on the current state of understanding but may be subject to modification in light of new research and further robust information’ and ‘As various people before us have discovered, the derivation of a penalty is not easy. There is not sufficient reliable research to be confident that a penalty system would always provide a fair indication of the impact of AM’.

- 7.16 At the time of writing there has been no official response to those recommendations from the IOA Noise Working Group and, as yet no endorsement from the UK Government. The recommendation to impose a planning condition and the associated penalty scheme is at odds with the advice from the IOA GPG which currently states:

‘7.2.1 The evidence in relation to “Excess” or “Other” Amplitude Modulation (AM) is still developing. At the time of writing, current practice is not to assign a planning condition to deal with AM.’

- 7.17 The WSP BEIS report discusses AM, and states that:

‘At present, it seems evident that reliable predictions of AM in the context of development planning and noise assessment guidance are unlikely to be practically feasible in the near future.’

- 7.18 At time of writing there is no agreed methodology which can be used to predict the occurrence of AM or an agreed methodology which can be used to determine whether the effects of AM, should it occur, are likely to be significant. Therefore, amplitude modulation will not be assessed in the EIA or reported within the ES.

Infrasound and low-frequency noise during operation

- 7.19 During the operation of the Project for Assessment, infrasound and low-frequency noise will be generated.

- 7.20 A study, published in 2006 by acoustic consultants Hayes McKenzie on the behalf of the Department of Trade and Industry (DTI), investigated low frequency noise from wind farms. This study concluded that there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines.

- 7.21 Bowdler et al., (2009) concluded that:

‘...there is no robust evidence that low frequency noise (including ‘infrasound’) or ground-borne vibration from wind farms generally has adverse effects on wind farm neighbours’.

7.22 In February 2013, the Environmental Protection Authority of South Australia published the results of a study into infrasound levels near wind farms. This study measured infrasound levels at urban locations and rural locations with wind turbines close by and rural locations with no wind turbines in the vicinity. It found that infrasound levels near wind farms are comparable to levels away from wind farms in both urban and rural locations. Infrasound levels were also measured during organised shut downs of the windfarms. The results showed that there was no noticeable difference in infrasound levels whether the turbines were active or inactive.

7.23 During a planning Appeal (PPA-310-2028, Clydeport Hunterston Terminal Facility, approximately 2.5km south-west of Fairlie, 9 Jan 2018), the health impacts related to low frequency noise associated with wind turbines were considered at length by the appointed Reporter (Mr M Croft). The Reporter considered evidence from Health Protection Scotland and the National Health Service. In addition, he also considered low frequency noise surveys undertaken by the Appellant and the Local Authority both of which demonstrated compliance with planning conditions and did not identify any problems attributable to the wind turbine operations; some periods with highest levels of low frequency noise were recorded when the turbines were not operating.

7.24 The Reporter concluded that:

- The literature reviews by bodies with very significant responsibilities for the health of local people found insufficient evidence to confirm a causal relationship between wind turbine noise and the type of health complaints cited by some local residents;
- The NHS's assessment is that concerns about health impact are not supported by good quality research; and
- Although given the opportunity, the Community Council failed to provide evidence that can properly be set against the general tenor of the scientific evidence.

7.25 Low-frequency noise and infrasound is considered in the WSP BEIS report. The report considered a number of studies which investigated claimed links between adverse health symptoms and infrasound emissions from wind turbines. The report notes on page 116 that:

'It has been demonstrated in controlled experiments, including the involvement of participants self-reporting to be sensitive to wind turbine infrasound, that exposure to infrasound at levels representative of wind turbine immissions at dwellings is not associated with physiological or psychological health effects, whereas the expectation of effects from being exposed to wind turbine infrasound, and positive or negative messages influencing that expectation, can affect health symptom reporting.

Overall, the findings from the existing evidence base indicate that infrasound from wind turbines at typical exposure levels has no direct adverse effects on physical or mental health, and reported symptoms of ill-health are more likely to be psychogenic in origin.

It is expected that further evidence from ongoing studies into wind turbine infrasound effects will emerge soon, in particular from the NHMRC studies in Australia. However, based on the existing scientific evidence, it does appear probable that the above findings will not be contradicted by newer evidence’.

- 7.26 Since the publication of the WSP BEIS report, the study that was granted funding by NHMRC (the National Health and Medical Research Council of Australia) was published in the Environmental Health Perspectives (EHP) journal which is published by the United States National Institute of Environmental Health. The study¹⁰⁷ aimed to test the effect of exposure to 72 hours of infrasound (designed to simulate a wind turbine infrasound signature) exposure on human physiology, particularly sleep. The study concluded that:

‘Our findings did not support the idea that infrasound causes WTS¹⁰⁸. High level, but inaudible, infrasound did not appear to perturb any physiological or psychological measure tested in these study participants.’

- 7.27 Therefore, infrasound and low frequency noise are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Effects Likely / Significant

- 7.28 **Table 7.1** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 7.1: Potential likely significant effects and sensitive receptors

Effect	Receptor(s)	Applicable stage(s)
Disturbance associated with construction noise	Residential properties: - Approximately 1km to the north, east and south for major construction activities; and - Within close proximity to the Electrical Grid Connection.	Construction / decommissioning
Disturbance associated with operational noise	Residential properties: Approximately 1km to the north and east and 1.2km to the south.	Operation

¹⁰⁷ The Health Effects of 72 Hours of Simulated Wind Turbine Infrasound: A Double-Blind Randomized Crossover Study in Noise-Sensitive, Healthy Adults. Available at The Health Effects of 72 Hours of Simulated Wind Turbine Infrasound: A Double-Blind Randomized Crossover Study in Noise-Sensitive, Healthy Adults - PMC (nih.gov).

¹⁰⁸ WTS stands for Wind Turbine Syndrome which is a term for adverse human health effected related to the proximity of wind turbines.

Assessment Methodology of Effects Likely / Significant

7.29 **Table 7.2** outlines the background survey / study / analysis / evaluation that have been / will be completed.

Table 7.2: Background survey / study / analysis / evaluation

Survey / study / analysis / evaluation	Overview	Date of completion
Pending		
Background noise monitoring	Background noise monitoring will be undertaken at key representational noise monitoring locations around the Assessment Boundary.	January 2025
Operational noise modelling	Modelling of wind turbine noise will be undertaken at noise sensitive receptors located within proximity to the Project for Assessment. This will assess the potential impact of operational noise from the Project for Assessment and cumulative operational noise from the Project for Assessment operating concurrently with other operational, consented and proposed (planning application submitted) wind farms.	Winter 2024 / 2025
Construction noise modelling	Modelling of proposed construction activities will be undertaken to assess the noise impacts at noise sensitive receptors proximate to the Project for Assessment.	Winter 2024 / 2025

- 7.30 The quantitative construction noise assessment will determine the potential noise impacts during the construction of the proposed wind turbines and ancillary infrastructure for the Project for Assessment. The construction noise assessment will be undertaken in accordance with British Standard 5228-1: 2009+A1:2014 Code of practice for noise and vibration control on construction and open sites - Noise¹⁰⁹.
- 7.31 The assessment will consider the temporary noise effects of construction on the nearest identified NSRs. Specifically, the assessment will consider noise arising from the use of borrow pits, concrete batching, construction compounds and laydown areas, vehicle movements within and accessing the Assessment Boundary and activities occurring at the base of the turbines.
- 7.32 The UK Government's online Guidance note on Noise states that the management of the noise associated with wind turbines is considered in the PPG for renewable and low

¹⁰⁹ British Standard 5228-1:2009 (amended 2014) Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.

carbon energy¹¹⁰ and the Assessment and rating of noise from wind farms (ETSU-R-97)¹¹¹.

- 7.33 The online Guidance Note on Renewable and Low Carbon Energy states:

'The report, ETSU-R-97: The assessment and rating of noise from wind farms should be used by local planning authorities when assessing and rating noise from wind energy developments. Good practice guidance on noise assessments of wind farms has been prepared by the Institute of Acoustics¹¹². The Department of Energy and Climate Change accept that it represents current industry good practice and endorses it as a supplement to ETSU-R-97. It is available on the Department of Energy and Climate Change's website'.

- 7.34 In February 2023, a report was published by WSP, produced on behalf of the (former) BEIS; the primary aim of the report was to review current guidance in relation to wind farm noise assessment and make a recommendation as to whether the guidance requires updating. The WSP BEIS report concluded that current guidance would benefit from further review and recommends updates in a number of areas. At present, no official response has been issued by the UK Government. Therefore current guidance remains applicable.
- 7.35 ETSU-R-97 details a methodology for establishing noise limits for proposed wind farm developments and these limits should not be exceeded. ETSU-R-97 states that noise limits should be set relative to existing background noise levels at the nearest receptors and that these limits should reflect the variation in both turbine source noise and background noise with wind speed. Separate noise limits apply for quiet daytime and for night-time periods. Quiet daytime limits are chosen to protect a property's external amenity and night-time limits are chosen to prevent sleep disturbance indoors, with windows open.
- 7.36 ETSU-R-97 recommends that wind farm noise for the quiet daytime periods should be limited to 5 dB(A) above the prevailing background or a fixed minimum level within the range 35 – 40 dB LA90,10min, whichever is the higher. The precise choice of criterion level within the range 35 – 40 dB(A) depends on a number of factors, including the number of dwellings in the neighbourhood of the wind farm (relatively few dwellings suggest a figure towards the upper end), the effect of noise limits on the number of kWh generated (larger sites tend to suggest a higher figure) and the duration and level of exposure to any noise. These factors will be taken into account and a justification for deriving suitable noise limits will be included in the noise assessment. ETSU-R-97 recommends a single value of 43 dB(A) for night-time (or background +5 dB).
- 7.37 An exception to the setting of both the quiet daytime and night-time fixed minimum limit occurs where a property occupier has a financial involvement with the Project for

¹¹⁰ Planning for renewable and low carbon energy. Available at:

<https://www.gov.uk/guidance/renewable-and-low-carbon-energy>.

¹¹¹ The Working Group on Noise from Wind Turbines, (1996). ETSU-R-97, the Assessment and Rating of Noise from Windfarms, Final Report for the Department of Trade & Industry.

¹¹² Institute of Acoustics (2013) A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise.

Assessment. In that case the fixed minimum limit can be increased to 45 dB $L_{A90,10min}$ or the prevailing background noise L_{A90} plus 5 dB, whichever is the greater for both the quiet daytime and night-time periods.

- 7.38 A background noise survey may not be required for situations where predicted wind turbine noise levels at the nearest noise sensitive properties is limited to an $L_{A90,10min}$ of 35dB(A) up to wind speeds of 10m/s at 10m, as the protection of the amenity of those properties can be controlled through a simplified noise condition as detailed in ETSU-R-97. ETSU-R-97 states that:

'For single turbines or wind farms with very large separation distances between the turbines and the nearest properties, a simplified noise condition may be suitable. If the noise is limited to an $L_{A90,10min}$ of 35dB(A) up to wind speeds of 10m/s at 10m height, then this condition alone would offer sufficient protection of amenity, and background noise surveys would be unnecessary'.

- 7.39 The noise assessment for the Project for Assessment will be undertaken in three stages:

- Determine the Total ETSU-R-97 Noise Limits which are applicable to the operation of all schemes in the area;
- Undertake a cumulative assessment (where required) to determine whether predictions from all cumulative schemes meet the Total ETSU-R-97 Noise Limits; and
- Derive a set of Site Specific Noise Limits (for the Project for Assessment) and undertake predictions to determine whether the Project for Assessment can operate within the Site Specific Noise Limits.

- 7.40 In line with the approach taken by other developments in the area, and due to the scale of the Project for Assessment, it is proposed that the Total ETSU-R-97 Noise Limits for the assessment will be based on a 40dB noise limit during the daytime period and a 43dB noise limit during the night time period.

- 7.41 The guidance contained in the IOA document A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (IOA GPG) will be used to establish suitable Site Specific Noise Limits which fully take account of the proportion of the Total ETSU-R-97 Noise Limits which has been allocated too and can realistically be used by existing operational and consented wind farms in the area.

- 7.42 The Project for Assessment is located entirely within the administrative areas of both RBC and RMBC. Further detailed consultation has been undertaken with the Environmental Health Departments at both Councils in order to agree the overall assessment methodology.

- 7.43 The noise assessment will include predictions of likely wind turbine noise levels across a range of wind speeds to demonstrate compliance with the Total ETSU-R-97 and Site Specific Noise Limits. A cumulative noise assessment will also be undertaken in order to consider the operational, consented and proposed (planning application submitted)

wind farms within the vicinity of the Project for Assessment. The assessment will be undertaken in accordance with ETSU-R-97 and the IOA GPG.

- 7.44 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgment.

Limitations and Assumptions

- 7.45 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- A candidate wind turbine will be used for predictions of operational noise from the Project for Assessment. The final model of wind turbine to be used may differ from that which will be used within the EIA and ES. However, the operational noise levels from the Project for Assessment would have to comply with the noise limits imposed within any noise conditions.

8. Shadow Flicker

Technical Baseline

- 8.1 A number of potential sensitive receptors (residential properties) are located within a distance of 10 rotor diameters from the turbines (and therefore may be susceptible to shadow flicker effects).
- 8.2 A number of wind turbine developments are present in the area surrounding the Assessment Boundary, which may have the potential to result in a level of existing shadow flicker effects.

Proposed Scope of Assessment

- 8.3 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Assessment Boundary, surrounding area and the Project for Assessment (**Chapter 4**). Where environmental effects are considered unlikely to be 'significant', an appropriate evidence base has been provided to justify the 'scoping out' of these effects ensuring the EIA and ES only assess those effects considered 'likely' to be significant, at this stage.

Effects Unlikely / Not Significant

Shadow flicker during construction / decommissioning

- 8.4 As the wind turbines would not be operational during construction / decommissioning, shadow flicker would not occur.
- 8.5 Therefore, shadow flicker during construction / decommissioning is unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Effects Likely / Significant

- 8.6 **Table 8.1** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 8.1: Potential likely significant effects and sensitive receptors

Effect	Receptor(s)	Applicable stage(s)
Shadow flicker	Residential properties approximately 1km to the north and east.	Operation

Assessment Methodology of Effects Likely / Significant

- 8.7 The key guidance that will inform the design and assessment approach is the Update of UK Shadow Flicker Evidence Base, published in March 2011 by the Department of Energy and Climate Change (DECC)¹¹³. The report was prepared for DECC by Parsons

¹¹³ DESNEZ (formerly DECC) (2011) Update of UK Shadow Flicker Evidence Base.

Brinckerhoff. The report summarised the findings of research undertaken by Parsons Brinckerhoff with a view to enabling DECC to advance current understanding of the shadow flicker effect. The report:

'Presents an update of the evidence base which has been produced by carrying out a thorough review of international guidance on shadow flicker, an academic literature review and by investigating current assessment methodologies employed by developers and case study evidence'.

- 8.8 The Parsons Brinckerhoff report concludes that an assessment area of 10 rotor diameters, 130 degrees either side of north is appropriate whilst noting that an adjustment may be appropriate for sites with different latitudes. The report found that a worst-case scenario is usually reported but noted that this is sometimes accompanied by a more 'realistic' approximation which takes account of variables like sunshine hours. The report confirms that the industry software packages WindPro, WindFarm and WindFarmer provide similar outputs.
- 8.9 There is no standard for the assessment of shadow flicker in the UK and there are no guidelines which quantify what exposure levels would be acceptable.
- 8.10 A qualitative assessment will be undertaken to determine the potential for the Project for Assessment to cause shadow flicker at the nearest sensitive receptors. This will involve an assessment of all sensitive receptors located within ten rotor diameters from the final turbine locations. Modelling software will be used to model and quantify the level of such effects based on the specific relationship between the wind turbines and properties, along with the characteristics of those properties. In particular, the following parameters will be considered:
- The location and characteristic of the buildings relative to the turbines;
 - The distance from the turbines;
 - The turbine hub-height and rotor diameter;
 - The time of year (which impacts the trajectory of the sun's path across the sky);
 - The frequency of cloudless skies (particularly at low elevations above the horizon); and
 - The wind direction (which impacts on turbine orientation).
- 8.11 In the absence of any applicable limits or guidance in assessing the likely significant effects to sensitive receptors from shadow flicker impacts in England, cognisance will be given to methods of assessment and published acceptable levels of shadow flicker in use globally to determine the level and significance of effects. Where appropriate, this will draw on sensitivity of the receptor and magnitude of impact.

Limitations and Assumptions

8.12 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- None identified.

9. Ecology

Technical Baseline

- 9.1 There are no international or national ecological designations within the Assessment Boundary. There are two SAC within 10km of the Assessment Boundary, both with an underlying SSSI designation¹¹⁴. Information on these sites are available in **Table 9.1**.

Table 9.1: Statutory designated sites within 10km of the Assessment Boundary

Site name	Approximately distance and direction from Assessment Boundary	Description
Rochdale Canal SAC	6.15km south-east	The SAC is primarily designated for supporting a significant population of Annex II species floating water-plantain <i>Luronium natans</i> .
Rochdale Canal SSSI	6.15km south-east	A 24.86ha stretch of canal running through Greater Manchester. Designated as a SSSI for the botanically diverse waterplant community, which also holds a wide range of pondweeds <i>Potamogeton sp.</i> .
South Pennine Moors SAC	8.24km east	The South Pennine Moors SAC is designated for its Annex I qualifying habitats, including northern Atlantic wet heaths, European dry heaths, blanket bogs and transition mires and quaking bogs.
South Pennine Moors SSSI	8.24km east	The South Pennine Moors SSSI occupies part of the SAC and is designated as a SSSI for the mixture of sessile oak woodlands and mire and heath habitats.

- 9.2 There are ten non-statutory designated sites situated within 2km of the Assessment Boundary, including six Sites of Biological Importance (SBI) and four Local Wildlife Sites (LWS). A majority of these sites are of geological significance and are focused 2km from the lower levels of the Assessment Boundary, but a segment of Knowl Moor SBI lies within the Assessment Boundary and is designated for blanket bog habitats and upland bird importance.
- 9.3 The main habitat within the Assessment Boundary is degraded blanket bog (UKHab code f1a6). There are areas of upland acid grassland (g1b6), modified grassland (g4) and continuous bracken (g1c) throughout the Assessment Boundary. The bog habitat is

¹¹⁴ It is noted that there are SPA designations within this search area and these are discussed under Ornithology (see **Chapter 10**).

highly degraded in nature, with signs of historic burning and draining present in all areas.

- 9.4 The majority of the Assessment Boundary comprises M20 *Eriophorum vaginatum* blanket and raised mire and M25a *Molinia caerulea* - *Potentilla erecta* mire, *Erica tetralix* sub-community, with areas of H12 *Calluna vulgaris*-*Vaccinium myrtillus* heath. The blanket bog communities were considered to be highly eroded and were species poor.
- 9.5 A badger sett has been recorded in the south of the Assessment Boundary. This has been classified as a main sett and badger field signs have been recorded throughout the Assessment Boundary¹¹⁵.
- 9.6 eDNA surveys for Great Crested Newt (GCN) have been conducted in all waterbodies within the Assessment Boundary. One waterbody to the south returned positive results for GCN and population class surveys found a small population of GCN to be present in this pond. GCN are not present in any other waterbodies surveyed.
- 9.7 There are streams and watercourses throughout the Assessment Boundary and these would be suitable for commuting or foraging otter. No holts or field signs were recorded during the surveys. No water vole were recorded within the Assessment Boundary and there are limited records within 2km but the ditches present are considered suitable and there is some connectivity to the location of recorded presence outside of the Assessment Boundary.
- 9.8 A preliminary bat roost assessment (PBRA) found limited roosting potential throughout the Assessment Boundary and proposed that the area had moderate to low foraging and commuting potential. Bat static and transect surveys found low to moderate bat activity across the Assessment Boundary, with most activity focused on the habitat features including stone walls, quarries and waterbodies. Most recorded species within the Assessment Boundary have been common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*.

Proposed Scope of Assessment

- 9.9 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Assessment Boundary, surrounding area and the Project for Assessment (**Chapter 4**). Where environmental effects are considered unlikely to be 'significant', an appropriate evidence base has been provided to justify the 'scoping out' of these effects ensuring the EIA and ES only assess those effects considered 'likely' to be significant, at this stage.

Effects Unlikely / Not Significant

- 9.10 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this

¹¹⁵ No further detail is provided in this Scoping Report due to the protection afforded to badgers and the confidential nature of this information.

judgement, the identified mitigation has been captured within the PEMP provided in **Appendix 2.1**.

Pollution of Rochdale Canal SAC

- 9.11 The Rochdale Canal SAC is located 6.15km south-east of the Assessment Boundary and is primarily designated for the Annex II species floating water-plantain. The SSSI designation is due to the diverse populations of waterplant communities, which will not be impacted by the Project for Assessment. The Project for Assessment is situated within the zone of influence for impacts to this SAC and therefore could potentially impact the designated features of this statutory designated site through construction activities or operation.
- 9.12 There is no floating water plantain present within the Assessment Boundary and the watercourses present on-site are not suitable to support this species. There is no functional connectivity or impact pathways between the Project for Assessment and the Rochdale Canal SAC as the watercourses within the Assessment Boundary do not run into the canal and largely are drained into a number of reservoirs. It is considered that the conservation objectives for the SAC will be maintained throughout construction, operation and decommissioning of the Project for Assessment and no impact is anticipated on the integrity of this site.
- 9.13 Therefore, pollution to the Rochdale Canal SAC is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Pollution to Rochdale Canal SSSI

- 9.14 As above, the SSSI occupies the same area as the SSSI and there is no direct functional connectivity between the Project for Assessment and this SSSI. The SSSI designation is due to the diverse populations of waterplant communities, which will not be impacted by the Project for Assessment.
- 9.15 Therefore, pollution to the Rochdale Canal SSSI is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Habitat fragmentation and loss and pollution on the South Pennine Moors SAC

- 9.16 South Pennine Moors SAC is located over 8km from the Assessment Boundary and is designated for the Annex I habitats present across the SAC. There is no direct connectivity to this SAC, the SAC is not connected to the Assessment Boundary via hydrological receptors. The habitat loss as part of the Project for Assessment will result in the loss of similar habitats that are found within the SAC but these are of a degraded condition and are not located within the SAC. It is considered that the conservation objectives for the SAC will be maintained throughout construction, operation and decommissioning of the Project for Assessment and no impact is anticipated on the integrity of this SAC.
- 9.17 Therefore, habitat fragmentation and loss and pollution on the South Pennine Moors SAC are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Habitat fragmentation and loss and pollution on the South Pennine Moors SSSI

- 9.18 As above, the SSSI occupies part of the same area as the SSSI and there is no direct functional connectivity between the Project for Assessment and this SSSI. The SSSI designation is present due to the sessile oak and woodlands and mire habitats, and these designated areas will not be impacted by the Project for Assessment.
- 9.19 Therefore, habitat fragmentation and loss and pollution on the South Pennine SSSI are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Temporary and permanent loss of bracken and modified grassland habitats

- 9.20 There will be minimal loss of some bracken (g1c) and modified grassland habitats (g4) which are present throughout the Assessment Boundary. These habitats are not habitats of importance and are widespread across the area. Any loss of these habitats would be of a less than local value. The habitat enhancements proposed will replace and enhance any lost habitat, which would form part of the Project for Assessment.
- 9.21 Therefore, temporary and permanent loss of bracken and modified grassland habitats are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Disturbance to roosting bats

- 9.22 The Assessment Boundary is open and lacks features that could be used by roosting bats. The areas of woodland on the edges of the Assessment Boundary could support roosting bats but these areas are outside of the extent of construction works and will not be impacted directly. There is to be no loss of woodland or structures that could support roosting bats as part of the Project for Assessment.
- 9.23 Therefore, disturbance to roosting bats is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Effects Likely / Significant

- 9.24 **Table 9.2** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 9.2: Potential likely significant effects and sensitive receptors

Effect	Receptor(s)	Applicable stage(s)
Habitat loss / enhancement	Knowl Moor SBI, Degraded blanket bog habitat, acid grassland and watercourses	Construction / operation / decommissioning
Modification of habitats through hydrological change	Knowl Moor SBI, degraded blanket bog, watercourses and waterbodies	Construction / decommissioning
Altered hydrological pathways	Knowl Moor SBI, degraded blanket bog, watercourses,	Construction / decommissioning

Effect	Receptor(s)	Applicable stage(s)
	waterbodies, GCN, otter and water vole	
Disturbance via noise and light	Otter, foraging and commuting bats, badger and water vole	Construction / operation / decommissioning
Fragmentation of species ranges or habitats	Otter, badger, GCN and foraging and commuting bats	Construction / operation / decommissioning
Injury / mortality from collision	Foraging and commuting bats	Operation
Injury / mortality from construction activities	Otter, badger, GCN and water vole	Construction

Assessment Methodology of Effects Likely / Significant

9.25 **Table 9.3** outlines the background surveys / studies / analysis / evaluations that have been / will be completed.

Table 9.3: Background survey / study / analysis / evaluation

Survey / study / analysis / evaluation	Overview	Date of completion
Completed		
Desk study	Review of data from Magic Maps, Greater Manchester Ecological Records Centre (GMERC) and Lancashire Ecological Records Network (LERN) completed. Review of statutory designated sites within 10km and records of non-statutory and legally protected and notable species within 2km of the Assessment Boundary.	November 2023
PBRA	Completed for Assessment Boundary using Collins (2023) guidance ¹¹⁶ .	April 2023
Bat static surveys	Completed for whole bat season (April – October) for 2022, 2023 and 2024 following changes to Assessment Boundary. Followed guidance for bat surveys on wind farms from NatureScot (2021) ¹¹⁷ . Ten days of continuous recording over three periods (spring, summer and autumn).	April – October 2022, 2023 and 2024
Bat transect surveys	Transect surveys completed as per NatureScot (2021) guidance above. Three dusk walkover	April – October 2024

¹¹⁶ Collins, J. (ed.) (2023). Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.

¹¹⁷ NatureScot (2021). Bats and onshore wind turbines - survey, assessment and mitigation.

Survey / study / analysis / evaluation	Overview	Date of completion
	surveys undertaken in each period for spring, summer and autumn.	
GCN eDNA	eDNA surveys of waterbodies in the Assessment Boundary completed in appropriate seasons across 2023 and 2024. Followed Natural England accepted methodology ¹¹⁸ .	May 2023 and April 2024
GCN population surveys	GCN population surveys completed of the one pond with a positive eDNA survey result. Followed accepted methodology from Froglife (2001) ¹¹⁹ .	May – June 2024
National Vegetation Classification (NVC) Survey	NVC survey undertaken of Assessment Boundary in peak season in 2024. The vegetation was surveyed by a suitably qualified (FISC Level 4) and experienced botanical surveyor in accordance with NVC survey guidelines (Rodwell, 2006) ¹²⁰ . The NVC scheme provides a standardised system for classifying and mapping semi-natural habitats and ensures that surveys are carried out to a consistent level of detail and accuracy.	July – August 2024
UK Habitats Survey and Condition Assessment	UKHab and Condition Assessment undertaken in peak season in 2024. The habitat types were identified and mapped in compliance with the UKHab guidance documents (2023) ¹²¹ and a small minimum mapping unit.	July – August 2024
Protected species surveys (badger, water vole and otter)	Protected species surveys undertaken across Assessment Boundary in 2022 and 2023. Followed methodology from Harris et al. (1989) ¹²² for badgers, NatureScot (2018) ¹²³ for otters and Strachan et al. (2011) ¹²⁴ for water vole.	July 2022 and August 2023

¹¹⁸ Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.

¹¹⁹ Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001), Great Crested Newt Conservation Handbook, Froglife, Halesworth.

¹²⁰ Rodwell, J.S. (2006) NVC Users' Handbook, JNCC, Peterborough, ISBN 978 1 86107 574 1.

¹²¹ UK Habitat Classification Version 2.0 UKHab Ltd (2023)

¹²² Harris S., Cresswell P. and Jefferies D. (1989). Surveying Badgers. Mammal Society. London.

¹²³ NatureScot (2018). Standing advice for planning consultations - otters, NatureScot. Available at: <https://www.nature.scot/doc/standing-advice-planning-consultations-otters>.

¹²⁴ Strachan R., Moorhouse T. and Gelling M. (2011). Water Vole Conservation Handbook (3rd edition). WildCRu, Oxford.

Survey / study / analysis / evaluation	Overview	Date of completion
Pending		
Biodiversity Net Gain (BNG) Calculations	Habitat loss from turbines and associated infrastructure will be calculated and habitat enhancement and creation provided to offset for this loss and achieve the statutory requirement of 10% BNG.	November 2024
River Condition Assessment Surveys	As per BNG requirements all watercourses within the Assessment Boundary are to be assessed by a qualified MoRPH surveyor to input into the BNG calculation.	November 2024

- 9.26 BNG will be considered separately within the relevant reporting, albeit the impacts related to the removal and creation / replacement of habitats will be assessed appropriately in the ES.
- 9.27 The qualitative assessment will be based on the Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018) (the 'CIEEM Guidelines'). The extent of the disturbance and potential effects will be dependent upon a variety of factors including the location of the works, timing, duration and whether permanent or temporary.
- 9.28 In accordance with CIEEM Guidelines, the assessment will comprise an Ecological Impact Assessment (EclA) report which will be included as an Appendix to the ES. The EclA will describe the baseline habitat conditions and protected and notable species present; it will also outline mitigation for impacts which are not significant (as defined above). Only likely significant effects will be reported within the Chapter.
- 9.29 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgment.

Limitations and Assumptions

- 9.30 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- There are no limitations with the validity of the survey data collected at this stage. All surveys were completed in accordance with best practice and in the correct time frame; and
 - Some waterbodies just outside of the Assessment Boundary were unable to be surveyed for eDNA due to access issues. This is not considered a limitation as

these waterbodies were nearby other pond clusters that were surveyed fully and found to have negative results for eDNA. The waterbodies not surveyed were also over 500m from the positive GCN pond.

10. Ornithology

Technical Baseline

- 10.1 There are no international or national ecological designations within the Assessment Boundary. There are three statutory designations with ornithological interest within 10km of the Assessment Boundary, primarily featuring species of breeding upland waders and raptors; including the South Pennine Moors Phase SPA and two SSSIs, Lee Quarry and South Pennine Moors.
- 10.2 Data supplied from local ecological record centres for Lancashire and Greater Manchester revealed several of the designated species were found on and within 2km of the Assessment Boundary. The habitats within the Assessment Boundary were conducive to supporting many of these species, which informed the approach for ornithological assessment.
- 10.3 Vantage Point surveys and Breeding Bird and Raptor walkover surveys were undertaken between April 2022 and August 2024 for the Assessment Boundary and adjacent survey buffer. The surveys within these areas identified breeding waders such as curlew, lapwing, golden plover and dunlin, as well as raptors such as kestrel, barn owl and peregrine, and migratory wildfowl species including pink-footed geese, greylag geese, tufted duck, gadwall and shoveler.
- 10.4 Territory analysis identified potential displacement effects for these four breeding waders, particularly regular breeders, curlew and lapwing. Analysis of Vantage Point flight data identified potential collision risks for breeding kestrel and lapwing as well as non-breeding merlin. Details of methods, results and analysis for the desk study and baseline surveys will be presented in the ES and figures will be supplied in a confidential appendix as part of the ES due to inclusion of locations for sensitive breeding species and Schedule 1 / Annex 1 raptors.

Proposed Scope of Assessment

- 10.5 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Assessment Boundary, surrounding area and the Project for Assessment (**Chapter 4**). Where environmental effects are considered unlikely to be 'significant', an appropriate evidence base has been provided to justify the 'scoping out' of these effects ensuring the EIA and ES only assess those effects considered 'likely' to be significant, at this stage.

Effects Unlikely / Not Significant

- 10.6 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the PEMP provided in **Appendix 2.1**.

Noise, disturbance / displacement and loss of breeding habitat for breeding passerines

- 10.7 It is noted that there will be temporary short-term impacts during the construction / decommissioning stage to breeding passerines, through loss of localised habitat around the turbines, disturbance / displacement and noise¹²⁵. However, studies have shown there are unlikely to be any long-term impacts to passerine populations from windfarm developments¹²⁶, and in some instances windfarms have shown to support population growth of red listed species such as skylark *Alauda arvensis*¹²⁷. NatureScot guidance reflects this in its guidance for at risk-species at wind farms, where all bird species listed are non-passerines¹²⁸ and also states that it is generally accepted that passerine species are not significantly impacted by wind farms.
- 10.8 Good practice measures related to passerines will be provided within the CEMP / DEMP. This will include:
- An outline for timings of works in areas where there are breeding species of high conservation interest (i.e. Birds of Conservation Concern (BoCC) red / amber, Local Biodiversity Action Plan (BAP), UKBAP), particularly where there are high densities or confirmed breeding records;
 - Sensitive methods for carrying out vegetation clearance and / or excavation of the ground during the breeding season; and
 - A phased approach, as to prevent large areas of breeding habitat that may take several years to replenish undergoing excavation and compaction from machinery simultaneously.
- 10.9 The above measures will minimise displacement effects and ensure there is sufficient available habitat during the process to prevent long term population declines.
- 10.10 Therefore, noise, disturbance / displacement and loss of localised breeding habitat to breeding passerines are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Collision risk to migratory wildfowl

- 10.11 Five species of wildfowl were recorded during Vantage Point surveys between April 2022 and August 2024. These were pink-footed geese, greylag geese, tufted duck, gadwall and shoveler. However, the flight activity observed was very low and mostly in the breeding season, indicating the area over the Assessment Boundary is not a

¹²⁵ Pearce-Higgins, J.W., Stephen, L., Langston, R.H.W., Bainbridge, I.P. and Bullman, R. (2009), The distribution of breeding birds around upland wind farms. *Journal of Applied Ecology*, 46: 1323-1331.

¹²⁶ Astiaso Garcia, D., Canavero, G., Ardenghi, F. and Zambon, M. (2015). Analysis of wind farm effects on the surrounding environment: Assessing population trends of breeding passerines. *Renewable Energy*, 80, pp.190–196.

¹²⁷ Pearce-Higgins, J.W., Stephen, L., Douse, A. and Langston, R.H.W. (2012), Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. *Journal of Applied Ecology*, 49: 386-394.

¹²⁸ NatureScot (2018) Wind farm impacts on birds - Use of Avoidance Rates in the NatureScot Wind Farm Collision Risk Model.

regularly used passage route for wildfowl. A single flock of 27 pink-footed geese flew over the Assessment Boundary in September 2023 which indicates passage birds. However, they were not seen at any other time in the survey period suggesting this was an opportunistic route taken by the geese rather than one they rely on every year.

- 10.12 Therefore, collision risk to migratory wildfowl is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Disturbance, loss of foraging habitat and additional mortality for SPA and SSSI bird populations

- 10.13 As noted above, there are three SPA and SSSI sites with qualifying avian features situated within 10km of the Assessment Boundary. However, the Assessment Boundary lies outside of all core breeding ranges for species associated with these statutory designated sites¹²⁹. Whilst the Assessment Boundary was within the maximum foraging ranges for species of gulls and raptors, the overall use of the Assessment Boundary is very low and / or sporadic for these species and not consistent with a dependency on the land within the Assessment Boundary during the breeding season.
- 10.14 The Assessment Boundary is also within the maximum foraging range for golden plover. However, birds observed are more likely to be taken from the breeding population on or within the vicinity of the Assessment Boundary, rather than birds commuting over from the SPA or SSSI populations.
- 10.15 Whilst the Assessment Boundary is within range for an alternative nesting site for breeding peregrine (6.5km), peregrine activity observed during Vantage Points and breeding raptor surveys are likely to be associated with an established nest closer to the Assessment Boundary rather than the West Pennine Moors SSSI.
- 10.16 The Assessment Boundary is not within range of any SPAs, SSSIs or Ramsar sites with wintering bird interest.
- 10.17 Therefore, disturbance and loss of foraging habitat and additional mortality for SPA and SSSI birds are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Effects Likely / Significant

- 10.18 **Table 10.1** outlines the effects (and associated receptors) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

¹²⁹ NatureScot (formerly Scottish Natural Heritage) (2016) Assessing Connectivity with Special Protection Areas (SPAs) Guidance.

Table 10.1: Potential likely significant effects and sensitive receptors

Effect	Receptor(s)	Applicable stage(s)
Increased mortality due to collision	Breeding Kestrel & Lapwing Non-breeding Merlin	Operation
Displacement due to loss and degradation of habitats, and disturbance	Breeding Waders: Curlew, Lapwing, Golden Plover and Dunlin	Construction / operation / decommissioning

Assessment Methodology of Effects Likely / Significant

10.19 **Table 10.2** outlines background surveys / studies / analysis / evaluations that have been / will be completed.

Table 10.2: Background surveys / studies / analysis / evaluations

Survey / study / analysis / evaluation	Overview	Date of completion
Completed		
Desk study	Objective: Review local species records and statutory designations within a suitable buffer to assess potential for sensitive bird species on-site and connectivity to statutory designated sites. Method: Conduct search using MAGIC maps¹³⁰ for statutory designated sites with ornithological receptors within 10km of the Assessment Boundary and extended out to 20km for SPAs designated for grey geese. Also conduct review of existing ecological data on and within 2km of the Assessment Boundary from local ecological records centres.	August 2023
Vantage point surveys	Objective: To assess bird flight activity and distributions over the Assessment Boundary. Method: Vantage Point surveys have been carried out in line with NatureScot's Recommended bird survey methods to inform impact assessment of onshore wind farms guidance¹³¹. Three Vantage Points have been used and each Vantage Point has undergone thirty-six hours of survey per season (a mean of six hours per Vantage Point per month), as per SNH guidance. These surveys commenced in April 2022 and were completed in August	August 2024

¹³⁰ <https://magic.defra.gov.uk/magicmap.aspx>.

¹³¹ SNH (2017) Recommended bird survey methods to inform impact assessment of onshore wind farms.

Survey / study / analysis / evaluation	Overview	Date of completion
	2024 with varied schedules for each Vantage Point due to additions to the Assessment Boundary as the project progressed¹³²: Vantage Points 1 – 4 have had 18 months of surveys, Vantage Point 5 has had 10 months of surveys before the angle of the viewshed was altered to accommodate the introduction of the northern and parcel, 5b which replaced this had a further 12 months from February 2023 and was introduced alongside Vantage Point 6. Vantage Point 6 then had an additional 5 months of Vantage Points between April and August 2024 to ensure all Vantage Points incorporated data from two breeding seasons. Each survey period lasts no more than three hours with a break between surveys. Surveys have been spread across daylight hours to capture flight activity at different times of day. Flights of all target species (i.e. Schedule 1 raptors, owls, wildfowl and waders) are recorded.	
Breeding raptor walkover surveys	Objective: To assess the use of the Assessment Boundary and adjacent areas by breeding raptor species. Method: Surveys were based on methodology described in Hardey et al, 2013¹³³, and on a combined basis with breeding bird surveys, four visits were carried out between April and July in 2022, 2023 and 2024. The study area depends on the species concerned; in this location, given the species present, it included a 2km buffer from the Assessment Boundary for most raptors. Whilst full access was not available in all areas of the buffer, comprehensive coverage of the buffer was obtained through use of strategically sought high points in accessible areas (i.e. from the Assessment Boundary, public footpaths or common land).	August 2024
Breeding bird walkover surveys	Objective: To assess the use of the Assessment Boundary and adjacent areas by breeding bird species. Method: A modified Brown and Shepherd (1993)¹³⁴ method for censusing upland waders was used, which incorporated the recording of other bird species (i.e. passerines). This was adapted in line with relevant	August 2024

¹³² Further details of the locations of the Vantage Points and relevant parcels will be provided in the ES.

¹³³ Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors: a field guide to survey and monitoring (3rd Edition).

¹³⁴ Brown, A. F. and Shepherd, K. B. (1993) A method for censusing upland breeding waders. Bird Study, 40, pp. 189-195.

Survey / study / analysis / evaluation	Overview	Date of completion
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guidance¹³⁵ to increase the number of visits required to four, each comprising a walkover by an experienced ornithologist in which all parts of the assumed development area plus a 500m buffer were walked over to a minimum distance of 100 m (where accessible). Visits were carried out between the end of April and July and all birds seen or heard were recorded within the Assessment Boundary on maps using British Trust for Ornithology (BTO) survey nomenclature. Due to the size of the Assessment Boundary, each survey visit took place over several days.

Pending

Collision risk modelling	Objective: Predicts the number of bird collisions (per species) that might be caused by a wind farm development. Method: SNH guidance for onshore windfarms ¹³⁶ will be used to calculate collision risk mortality of sensitive species identified. This uses Vantage Point data and published biometric data ¹³⁷ .	Winter 2024 / 2025
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- 10.20 The qualitative assessment and reporting process will follow CIEEM guidance¹³⁸, with reference to relevant NatureScot guidance, as appropriate, and draw upon quantitative modelling / data, where undertaken.
- 10.21 The key ornithological impacts relating to the Project for Assessment are the potential to adversely affect the conservation status of bird species with statutory protection (through inclusion in Annex I of the EU Birds Directive and / or Schedule 1 of the Wildlife & Countryside Act 1981 (as amended)) or otherwise those of high conservation concern.
- 10.22 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgment.

¹³⁵ SNH (2017) Avoidance Rates for the Onshore SNH Bird Wind Farm Collision Risk Model.

¹³⁶ SNH (2000) Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action.

¹³⁷ SNH (2017) Avoidance Rates for the Onshore SNH Bird Wind Farm Collision Risk Model.

¹³⁸ Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (Chartered Institute of Ecology and Environmental Management (CIEEM 2022)).

Limitations and Assumptions

10.23 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- Due to additions to the Assessment Boundary and inclusion of an access track after the commencement of ornithological surveys, not all areas of the Assessment Boundary have had equal survey effort and been surveyed in the same seasons. However, as the majority of the Assessment Boundary has had at least two years of survey and buffer zones during breeding bird surveys and breeding raptor surveys have been used throughout, this has reduced the impact that introducing additional areas has had on achieving good coverage and interpretation of results. Further to this, it has been ensured that all additional areas have had one year of ornithological survey to ensure comprehensive coverage has been achieved. Particularly as this has allowed for survey across three breeding seasons there is ample information about use of the Assessment Boundary and adjacent land by bird species, sufficient to inform the EIA; and
- Due to the upland nature of the Assessment Boundary, some surveys have been affected by adverse weather conditions. However, to minimise these impacts, where wind, rain or fog significantly affected ability to undertake surveys or detect birds, the Vantage Point watches were stopped and rescheduled to a later date when conditions were more favourable, sometimes in the following month. However, as surveys were successfully completed within the relevant survey seasons with an overall even spread across months for the full suite of surveys, this dataset is considered robust and representative of bird activity within the Assessment Boundary in all seasons.

11. Landscape and Visual

Technical Baseline

Overview

- 11.1 The Assessment Boundary and surrounding area lies adjacent to Scout Moor I, which comprises of 26 turbines with a tip height of 100m. In general, the Assessment Boundary occupies an area of upland moorland between the urbanised areas of Rochdale, including the town of Whitworth to the south and east, Bury including the town of Ramsbottom to the south and west, and the towns of Bacup, Rawtenstall and Haslingden within Rossendale borough to the north. The Assessment Boundary lies approximately 650m west of Whitworth, 300m south-east of Cowpe and 650m south of Bacup at the closest point. This is illustrated in **Figure 11.1**.
- 11.2 The Assessment Boundary and surrounding landscape is characteristic of upland Pennine landscapes, typically associated with open, flat topped moorland hills incised by narrow valleys of dense settlement and interconnecting road infrastructure. The Assessment Boundary appears contained within the moorlands' broad extents, but affords extensive views, primarily to the south and west, where the topography slopes down to the settled valley floors below. This is illustrated in **Figure 11.4**.
- 11.3 From the upland plateau, Cowpe Lowe, Knowl Hill and Peel Tower atop Holcombe Hill are prominent features on the skyline. Hail Storm Hill, at approximately 476m AOD, comprises the highest point within the Assessment Boundary, situated in the north-west. Extensive historic quarrying activity is evident within the landscape, particularly apparent towards the northern extents of the Assessment Boundary and is visible from Bacup and Boarsgreave to the north and Whitworth to the east.
- 11.4 A series of drainage channels radiate out from the moorland plateau, forming incised valley features and connect to a chain of reservoirs within the wider landscape. The characteristic moorland grass cover is aided by the general accumulation of water and peatland present.
- 11.5 Land use primarily comprises sheep grazing along the extensive areas of open moorland, with some evidence of drystone wall field boundaries and enclosures in areas albeit poorly maintained. Large areas of the Assessment Boundary are managed as Common Land and open access land as defined by the Countryside and Rights of Way Act (2000)¹³⁹ and therefore accessible to recreational users. A network of PROW cross the landscape, with some intersecting the Assessment Boundary, most notably the Pennine Bridleway and Rossendale Way.

Visual Influence

- 11.6 An initial study area of up to 45km has been considered for the purposes of establishing a preliminary evaluation of the likely receptors, based on the preliminary maximum turbine height of up to 180m to blade tip within the Turbine Development Zones (see **Figure 4.1**). This has been determined with reference to the Scottish

¹³⁹ Countryside and Rights of Way Act 2000 c. 37.

guidance, NatureScot (formerly Scottish Natural Heritage) 'Visual Representation of Wind Farms', Version 2.2¹⁴⁰ (the 'NatureScot Guidance').

- 11.7 Zone of Theoretical Visibility (ZTV) maps (**Figures 11.5 – 11.10**) have been generated using GIS to assist in identifying areas where visibility would and would not occur. They have also been used for viewpoint selection and for scoping likely significant effects. Guidance regarding the use of preliminary ZTV studies as well as the selection of viewpoints and visualisations has been taken from the NatureScot Guidance.
- 11.8 The visibility maps in **Figures 11.5** and **11.6** present the theoretical maximum extent of potential visibility on the basis of a 'bare ground' scenario covering a 45km radius from the Turbine Development Zones. **Figures 11.8** and **11.9** present the theoretical extent of potential visibility, which accounts for the effects of screening as a result of intervening features (e.g. buildings, forestry, trees, hedgerows, etc.). Trees and woodlands have been modelled at a height of 10m. As noted in the NatureScot Guidance, ZTVs are a useful tool to identify areas from which a development may be visible and not visible. However, they do have limitations and they do not represent the level of impact.
- 11.9 Analysis of the ZTVs indicate that the Project for Assessment could be theoretically visible from:
- Rooley Moor upland;
 - North of the Assessment Boundary to Bacup, Rawtenstall, Haslingden and beyond in pockets around Blackburn, Preston and the Forest of Pendle;
 - Potential long range visibility near Malham within the Yorkshire Dales;
 - Immediately east at Whitworth;
 - Limited visibility near Heptonstall and Halifax;
 - Intermittent visibility to the west at Ramsbottom;
 - Intermittent visibility near Bolton;
 - Intermittent long distance visibility towards Merseyside;
 - Large swathes of potential visibility to the south at Rochdale and Bury; and
 - Potential long distant visibility southward to Manchester and parts of East Cheshire.

Visual Receptors

- 11.10 Visual effects relate to changes to the composition of available views as a result of changes to the landscape, to peoples' responses to the changes and to the overall

¹⁴⁰ NatureScot (formerly Scottish Natural Heritage) (2017) Visual Representation of Wind Farms (Version 2.2).

effects with respect to visual amenity arising from the introduction of a development. Visual receptors include:

- Residents in settlements;
- Road and railway users;
- Visitors to the local and wider area; and
- Recreational receptors including walkers and cyclists on recreational routes, open access land and PRow and visitors to outdoor tourist destinations where the visitor experience incorporates a focus on the surrounding landscape.

Residents

11.11 The ZTVs indicate theoretical visibility from settlements around the Assessment Boundary. These include Bacup, Cowpe, Rawtenstall, Whitworth, Wolstenholme, Rochdale, Bury and Ramsbottom that lie within 10km of the Turbine Development Zones. Beyond 10km there are more distant views, particularly to the south and south-west towards Manchester, Salford and Bolton and potential long distance views towards Preston, although visibility dissipates as screening is taken into account. Limited or no theoretical visibility is perceived to the east around Bradford, Halifax and Huddersfield, north at Accrington, Burnley and Clitheroe and north-east towards Skipton.

Road and rail users

- 11.12 Most of the key transport routes are within valleys, with a network of minor roads in the lower slopes of the plateau edge or in the adjacent settled landscape.
- 11.13 The M66 and A56 pass 3.3km west of the proposed Turbine Development Zones where site access, during all development stages, will be via the existing Scout Moor Quarry access from the A680. The A58 passes approximately 5.3km south of the Turbine Development Zones as it connects Rochdale to Bury. The A680 lies to the south-west which runs between the Rossendale and Wolstenholme. The A671, within 1km east of the Turbine Development Zones at its closest point runs through Whitworth, connecting Rochdale to the A6066 at Bacup.
- 11.14 Rail routes tend to be concentrated between urban centres within valleys. The Calder Valley Line runs between Leeds and Manchester, passing through Rochdale to the south and Todmorden to the east, within 10km of the Turbine Development Zones. Similarly, the East Lancashire Railway Line, a heritage line, passes within 10km of the Turbine Development Zones moving in a north-south direction connecting Rawtenstall in Rossendale to Haywood in greater Manchester. Beyond this, the concentration of rail and light rail lines increase towards the urban centre of Manchester.

Recreational routes

- 11.15 There are a number of PRow and recreational routes within the vicinity of the of the Assessment Boundary, connecting to a strong network within the wider landscape. Most notably of these are the Rossendale Way and Pennine Bridleway which both intersect the Assessment Boundary.

Landscape Designations

National designations

- 11.16 The Peak District National Park is a nationally designated landscape, safeguarded for its recreational importance and beauty. The National Park lies approximately 17km south-east of the Turbine Development Zones, at its closest point, as illustrated in **Figure 11.3**.
- 11.17 The special qualities of the National Park are noted as:
- *‘Beautiful views created by contrasting landscapes and dramatic geology*
 - *Internationally important and locally distinctive wildlife and habitats*
 - *Undeveloped places of tranquillity and dark night skies within reach of millions*
 - *Landscapes that tell a story of thousands of years of people, farming and industry*
 - *Characteristic settlements with strong communities and traditions*
 - *An inspiring space for escape, adventure, discovery and quiet reflection*
 - *Vital benefits for millions of people that flow beyond the landscape boundary’¹⁴¹.*
- 11.18 The Forest of Bowland National Landscape (formerly Area of Outstanding Natural Beauty) is a nationally designated landscape, safeguarded for its distinctive character and beauty. Large parts of the Forest of Bowland National Landscape lie within the 45km radius of the Turbine Development Zones, the closest part is situated approximately 16km to the north at Pendle Hill, as illustrated in **Figure 11.3**.
- 11.19 The Forest of Bowland is noted as being *‘upland country forming part of the Pennines, sharing many of the characteristics of other upland areas like the Peak District and Yorkshire Dales National Park but its essential landscape character is one of grandeur and isolation. The area is dominated by a central upland core of deeply incised gritstone fells with summits above 450m and vast tracts of heather-covered peat moorland. The fells’ fringe of foothills is dissected by steep-sided valleys which open out into the rich green lowlands of the Ribble, Hodder, Wyre and Lune Valleys. Well-wooded and dotted with picturesque stone farms and villages, these lower slopes, criss-crossed by drystone walls, contrast with and complement the dramatic open sweep of the gritstone heights. On its south-eastern edge, famous Pendle Hill forms the outlier of the Forest of Bowland National Landscape.’¹⁴²*
- 11.20 Further away from the Assessment Boundary, there is the Nidderdale National Landscape and Yorkshire Dales National Park.

¹⁴¹ <https://www.peakdistrict.gov.uk/learning-about/about-the-national-park/the-peak-districts-special-qualities>.

¹⁴² <https://www.forestofbowland.com/Landscape>.

Local designations

- 11.21 The Calderdale Special landscape Area (SLA) lies approximately 3km east of the Turbine Development Zones, at its closest point as illustrated in **Figure 11.3**. The Calderdale SLA is locally designated under the Replacement Unitary Development Plan, 2006 (amended August 2009)¹⁴³ and reviewed in the Calderdale District Landscape Character Assessment and Review of Special Landscape Area Designation (2016)¹⁴⁴.
- 11.22 The policy and explanation underpinning the SLA designation suggests ‘...*In much of Calderdale the countryside is of a very high visual quality; a combination of impressive landscape, buildings of architectural and historical significance and areas of ecological importance. Furthermore, in many places, this landscape is visible and accessible from urban areas. Both culturally and environmentally the landscape to the west of the District also forms an important part of the Southern Pennines, linking the Peak District and Yorkshire Dales National Parks. The most important landscapes of the District need to be safeguarded and have therefore been designated as a Special Landscape Area (SLA)*’.

Policy Designations

- 11.23 Part of the Assessment Boundary is designated as Green Belt as part of the Liverpool, Manchester and West Yorkshire Green Belt.

Landscape Character

- 11.24 The Assessment Boundary, including the Turbine Development Zones, lies wholly within National Character Area (NCA) 36: Southern Pennines¹⁴⁵, as defined by Natural England. The ‘*large scale sweeping landscape of exposed upland moorland and pastures contrast strongly with deeply incised valleys with wooded sides. There is widespread and obvious evidence of man’s activities throughout history, which gives the area a historic richness but reduces its sense of remote wilderness.*’
- 11.25 As illustrated in **Figure 11.2**, the Assessment Boundary lies across four Landscape Character Types (LCTs); A – High Moorland Plateaux, D – Moorland Fringes/Upland Pastures and F – Settled Valleys as defined in the South Pennines Wind Energy Landscape Study (2014)¹⁴⁶ and Open Moorland and Enclosed Upland Fringes (West/South Pennines) as defined in the Greater Manchester Landscape Character and Sensitivity Assessment (2018)¹⁴⁷. It should be noted that the boundary between these two baseline character studies crosses through the Assessment Boundary along the RMBC / RBC boundary.
- 11.26 The northern part of the Assessment Boundary within RBC sits within LCA A1: South Pennine Moors part of Landscape Character Type (LCT) A: High Moorland Plateaux, a large scale sweeping landscape, typically between 300m and 500m AOD, of high

¹⁴³ Calderdale Council (2009) Replacement Unitary Development Plan, 2006 (amended August 2009).

¹⁴⁴ Calderdale Council (2016) Calderdale District Landscape Character Assessment and Review of Special Landscape Area Designation.

¹⁴⁵ Natural England (2014), National Character Area 36: Southern Pennines.

¹⁴⁶ LUC and Julie Martin Associates (2014) South Pennines Wind Energy Capacity Study.

¹⁴⁷ LUC (2018) Greater Manchester Landscape Character and Sensitivity Assessment.

topped moorland including areas of blanket bog, heather moor and grass moor incised by deep valleys.

- 11.27 The southern section of the Assessment Boundary within RBC extends into LCA 24: Knowl and Rooley Moors, Fringes and Foothills part of Landscape Character Type (LCT) Open Moorland and Enclosed Upland Fringes (West/South Pennines), where broad terraces separate the river valleys with the open moorland near Rochdale. This LCT is noted as having long panoramic views afforded by the high elevation and a strong rural, remote continuation of the character of the Pennine uplands. However, *'wind turbines and pylons/overhead lines punctuate the mostly open and undeveloped skylines. Masts are a feature of higher ground and are occasionally found in clusters'*.
- 11.28 Part of the Assessment Boundary, to the north, where the Electrical Grid Connection is proposed, lies within both LCA D4: Scout Moor and Shore Moor Fringe, part of the Open Moorland Fringes/Upland Pastures LCT a continuation of the broad upland terrace landscape incised by valleys and LCA F1: Irwell (Ramsbottom, Rawtenstall, Bacup), which forms part of the wider Landscape Character Type (LCT) F: Settled Valleys, which are common within the valley floor around the South Pennine Moorland. This LCT is noted as being sensitive to wind energy development due to its limited width and the importance of the skyline views of the moorland.
- 11.29 A number of other Landscape Character Assessments lie within 10km of the Turbine Development Zones and will be used to supplement information within those two assessments, such as the Lancashire Landscape Character Assessment (2000)¹⁴⁸, the Oldham Landscape Character Assessment (2009)¹⁴⁹ and the Bolton Landscape Character Appraisal (2001)¹⁵⁰.

Proposed Scope of Assessment

- 11.30 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Assessment Boundary, surrounding area and the Project for Assessment (**Chapter 4**). Where environmental effects are considered unlikely to be 'significant', an appropriate evidence base has been provided to justify the 'scoping out' of these effects ensuring the EIA and ES only assess those effects considered 'likely' to be significant, at this stage.

Effects Unlikely / Not Significant

- 11.31 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the PEMP provided in **Appendix 2.1**.

¹⁴⁸ Lancashire County Council (2000) Landscape Character Assessment.

¹⁴⁹ Oldham Council (2009) Oldham Local Development Framework Landscape Character Assessment Final.

¹⁵⁰ Bolton Metropolitan Borough Council (2001) A Landscape Character Appraisal of Bolton.

Changes to landscape character and visual amenity from the Electrical Grid Connection

- 11.32 The Electrical Grid Connection, connecting the Project to Assessment to the local Rossendale BSP, will comprise an underground grid connection, following existing roads and would not affect the prevailing landscape character or visual amenity / views.
- 11.33 Therefore, changes to landscape character and visual amenity from the Electrical Grid Connection are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Changes to landscape character and features of Landscape Character Types / Areas within 10km

11.34 The following LCAs / LCTs have been considered:

- **LCA D1 Calder Terrace:** This landscape is located 6.4km away to the north-east on both sides of Todmorden. The ZTV indicates no theoretical visibility from LCA D1 south of Todmorden. There would be some intervisibility circa 9km away within the area to the north of Todmorden around Hawks Stones, along the ridge from Coal Clough Wind Farm. Whilst there would be some intervisibility, this is at distance and in the context of the Coal Clough Wind Farm;
- **LCA D3 Forest of Trawden – Worsthorpe Moor Fringe:** This landscape is located 7.75km away to the north-east with intervening valleys between. The ZTV indicates no theoretical visibility from LCA D3;
- **LCA E4 Colne - Nelson – Burnley Fringe:** This landscape is located over 7km away to the north with intervening valleys between. The ZTV indicates no theoretical visibility from LCA E4;
- **LCA G3 Cliviger Gorge:** This LCA sits within a valley landscape approximately 6km away to the north-east, with intervening valleys and hills between. The ZTV indicates no theoretical visibility from LCA G3;
- **LCA F2 Calder:** This LCA sits Todmorden valley and extends south to Littleborough and Wardle. The ZTV indicates limited visibility from this valley, which would be screened by Shore Moor and Inchfield Moor;
- **LCT O Industrial/ Business Parks:** By its nature, this LCT is urbanised and built up, with man-made detractors evident. There are two areas within 10km that are characterised as industrial / business parks. One lies approximately 3.6km south-east of the Assessment Boundary beyond the urban core of Rochdale. The other lies over 6km to the south-west. Views from both these areas likely to be heavily influenced by urban development;
- **LCT U Urban:** By its nature, this LCT is urbanised and built up, with man-made detractors evident. There are eight areas within 10km that are characterised as urban with the majority concentrated to the south around Rochdale, Bury and Oldham. Views from these areas are likely to be heavily influenced by urban development;

- **LCA 2a West Pennine Moors:** This LCA is defined under the Lancashire Landscape Character Assessment (2000). Part of this landscape lies outside the South Pennines Wind Energy Landscape Study (2014) and the Greater Manchester Landscape Character and Sensitivity Assessment (2018), some 6.6km west where the ZTV indicates limited theoretical visibility. Part of this LCA is characterised by existing wind energy development, at Oswaldtwistle;
- **LCA 4c Blackburn Moorland Fringe:** This LCA is defined under the Lancashire Landscape Character Assessment (2000) and lies outside the South Pennines Wind Energy Landscape Study (2014) and Greater Manchester Landscape Character and Sensitivity Assessment (2018). This landscape is located some 5.3km west where the ZTV indicates limited extent of theoretical visibility;
- **LCA 6b West Pennine Foothills:** This LCA is defined under the Lancashire Landscape Character Assessment (2000). This landscape around Edgeworth lies is over 7km west where the ZTV indicates no theoretical visibility;
- **LCA 8a Irwell Settled Valley:** This LCA is defined under the Lancashire Landscape Character Assessment (2000). A small section of this landscape lies some 7.6km north-west where the ZTV indicates extremely limited theoretical visibility;
- **LCA 9b Turton-Jumbles:** This LCA is defined under the Lancashire Landscape Character Assessment (2000). This landscape lies some 5.2km west where the ZTV indicates extremely limited theoretical visibility; and
- **LCA Upland Moorland Hills:** This LCA is defined under the Bolton Landscape Character Appraisal (2001). This landscape lies some 9km south-west of the Turbine Development Zones where the ZTV indicates very limited theoretical visibility.

11.35 Therefore, changes to the landscape character and features of the Character Areas / Types listed above are unlikely to be significant and these will not be considered further within the EIA or reported in the ES. A number of LCA / LCT's within 10km of the Turbine Development Zones will be brought forward for assessment and are documented in **Table 11.1**.

Changes to the character and features of Landscape Character Types / Areas beyond 10km of the Turbine Development Zones

11.36 With reference to the ZTVs, in particular the Screening ZTVs in **Figures 11.8** and **11.9**, beyond 10km the impacts on landscape character are considered unlikely to be significant. To the south, beyond 10km the character becomes much more urbanised around Oldham, Salford and Manchester where views are heavily influenced by urban development. The Screening ZTVs in **Figures 11.8** and **11.9** shows limited theoretical visibility within LCAs to the east where the landscape dips into valley east of Todmorden and Littleborough. To the north, beyond 10km, the character becomes urban around Burnley and theoretical visibility becomes sparse. Similarly, to the west, around the settlements of Blackburn, Preston, Chorley and Bolton the character is more urban in nature with views of urban development influencing the character and theoretical visibility limited as displayed on the Screening ZTVs.

- 11.37 There are a number of locations and LCTs / LCAs where theoretical visibility would be possible beyond 10km, such as Winter Hill to the west, the Forest of Pendle to the north, the Forest of Trawden to the north-east and on the northern edge of the Peak District near Saddleworth to the east. However, due to intervening landform, distance and built-up urban settlement between the Project for Assessment and these landscapes, the changes to landscape character are unlikely to be significant.
- 11.38 Therefore, changes to the character of LCTs / LCAs beyond 10km are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Changes to views / visual amenity from Settlement and Urban centres within 10km of the Turbine Development Zones

- 11.39 With reference to the Screening ZTVs, visibility from several settlements within 10km are likely to be limited due to intervening landform, distance and built environment with views heavily influenced by urban development. This includes Holme Chapel, Cornholme, Todmorden, Walsden, Littleborough and Milnrow that lie within a valley landscape to the east. The screening ZTV also indicates limited the urban centres of Rochdale and Bury to the south and Edgeworth to the west.
- 11.40 Therefore, changes to views / visual amenity from settlements and urban centres within 10km of the Turbine Development Zones are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Changes in views / visual amenity on Settlement and Urban centres beyond 10km of the Turbine Development Zones

- 11.41 With reference to the ZTVs, in particular the Screening ZTV in **Figures 11.8 and 11.9**, visibility from urban centres beyond 10km are likely to be limited due to intervening landform, distance and built environment with views heavily influenced by urban development. This includes Manchester, Ashton-under-Lyne and Salford to the south, Bolton and Wigan to the south-west, Chorley to the west, Blackburn and Preston to the north-west, Burnley to the north and Halifax, Huddersfield and Bradford to the east.
- 11.42 Therefore, changes in views / visual amenity from settlements and urban centres beyond 10km of the Assessment Boundary are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Changes in views / visual amenity for road users of the M65

- 11.43 The M65 passes circa 13km north-west of the Turbine Development Zones. However, the ZTV with screening indicates little, if any theoretical visibility.
- 11.44 Therefore, changes in views / visual amenity for road users of the M65 motorway are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Changes in views / visual amenity for recreational receptors

- 11.45 With reference to the ZTVs, in particular the Screening ZTV in **Figures 11.8 and 11.9**, visibility from recreational receptors along the Burnley Way and Pendle Way to the north are extremely limited, similarly there is limited visibility from the Calder Aire Link and Bronte Way to the east.

- 11.46 Therefore, changes in views / visual amenity for recreational users of these routes are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Changes in views / visual amenity for key routes beyond 20km of the Turbine Development Zones

- 11.47 Users of key routes are transient in nature, visibility from key routes that do not intersect a 20km radius from the Turbine Development Zones is likely to be intermittent, glimpsed and at long distances with intervening vegetation, landform and built up elements limiting views of the Project for Assessment.
- 11.48 Therefore, changes in views / visual amenity for key route users beyond 20km are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Effects Likely / Significant

- 11.49 **Table 11.1** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 11.1: Potential likely significant effects and sensitive receptors

Effect	Receptor(s)	Applicable stage(s)
Changes in landscape character and features	LCA A1: South Pennine Moors	Construction / operation / decommissioning
	LCA D4: Scout Moor and Shore Moor Fringe	Construction / operation / decommissioning
	LCA F1: Irwell (Ramsbottom, Rawtenstall, Bacup)	Construction / operation / decommissioning
	LCA B2: West Pennine Moors	Operation
	LCA C: Enclosed Uplands	Operation
	LCA D5: Oswaldtwistle & Darwen Moor Fringe	Operation
	LCA G6: River Roch & Tributaries	Operation
	LCA I3: Haslingden Grane	Operation
	LCA 20: Affetside and Ainsworth	Operation
	LCA 22: Holcombe to Greenmount and Higher Summerseat	Operation
	LCA 23: River Irwell (north Bury) and Kirklees	Operation
	LCA 24: Knowl and Rowely Moors Fringes and Foothills	Operation
	LCA 25: River Roch	Operation

Effect	Receptor(s)	Applicable stage(s)
	LCA 26: Prettywood, Pilsworth and Unsworth Moss	Operation
	LCA 27: Simster, Slattocks and Healds Green	Operation
	LCA 28: Rochdale and Oldham South Pennine Foothills	Operation
	LCA 29: Rough Hill to Brun Moor	Operation
Changes in views / visual amenity from designated landscapes	Peak District National Park	Operation
	Forest of Bowland National Landscape	Operation
	Calderdale Special Landscape Area	Operation
Changes in views / visual amenity	Settlements within 5km including Rawtenstall, Newchurch, Bacup, Whitworth, Ramsbottom, Haslingden, Wolstenholme, Hooley Bridge and the northern edge of Rochdale	Construction / operation / decommissioning
	Key routes including M60, M61, M62, M66, A56, A58, A6 and A62 roads	Operation
	Recreational routes within 5km including Rossendale Way and Pennine Bridleway	Construction / operation / decommissioning
	Recreational routes within 20km: Pennine Way, Rochdale Way, Calderdale Way, Oldham Way, Witton Weavers Way, National Cycle Route (NCR) 6, NCR 92 and Irwell Sculpture Trail	Operation
	Users of Cowm Reservoir, Greenbooth Reservoir, Naden Lower, Middle and Upper Reservoirs, Ashworth Moor Reservoir	Operation
	Recreational users of Tandle Hill Country Park, Oldham	Operation
	Recreational users of Burrs Country Park, Bury	Operation
	Recreational users of Hollingworth Lake, Hollingworth Country Park, Rochdale	Operation

Effect	Receptor(s)	Applicable stage(s)
	Recreational users of Peel Tower and Holcombe Hill	Operation

Assessment Methodology of Effects Likely / Significant

11.50 **Table 11.2** outlines the background surveys / studies / analysis / evaluations that have been / will be completed.

Table 11.2: Background surveys / studies / analysis / evaluations

Survey / study / analysis / evaluation	Overview	Date of completion
Completed		
Desktop landscape and visual study	Review of national and local character assessments	August 2024
Site visits	Preliminary studies of the Assessment Boundary and relevant viewpoint locations	September 2024
Pending		
Final site photography	Undertake photographic study of the Assessment Boundary and relevant viewpoint locations (subject to agreement of locations)	Winter 2024 / 2025
Figures and visualisations	Production of a suite of figures to accompany the LVIA. Visualisations from agreed viewpoints following Landscape Institute guidance LI TGN 06-19 and NatureScot guidance 2017 Visual Representation of Wind Farms', Version 2.2	Winter 2024 / 2025
Landscape and Visual Impact Assessment (LVIA)	Chapter and appendices documenting the assessment of effects on landscape and visual receptors as a result of the Project for Assessment.	Winter / Spring 2025

- 11.51 The assessment will be undertaken following the approach set out in Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3)¹⁵¹. The assessment will also draw upon current relevant good practice guidance published by Landscape Institute and NatureScot.
- 11.52 Scout Moor I (outside control of the Applicant) is due to be decommissioned in 2033. As such in line with the very recent advice outlined in NatureScot's Pre-application Guidance for Onshore Wind Farms published in February 2024¹⁵², the assessment will consider the effects arising from the addition of the Project for Assessment from the following two different baseline scenarios:
- Existing Baseline Scenario – whereby it is assumed that the current baseline includes Scout Moor I as a baseline feature in the landscape and views; and
 - Restored Baseline Scenario – whereby it is assumed that Scout Moor I is decommissioned (July 2033) and the site restored and therefore is no longer present in the landscape or in views.
- 11.53 A separate set of visualisations to illustrate these two baseline scenarios would not be required to carry out this assessment, as noted in the NatureScot's Pre-application Guidance for Onshore Wind Farms February 2024.
- 11.54 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor and the magnitude of change to determine the level of effect. Sensitivity is judged taking into account the component judgments about the value and susceptibility of the receptor. Scale of effect is the primary factor in determining magnitude; which may be higher if the effect is particularly widespread and / or long lasting, or lower if it is constrained in geographic extent and / or timescale.
- 11.55 The level of any identified landscape or visual effect will be assessed as major, moderate, minor or negligible, or intermediates of those levels. Professional judgement will be applied to ensure that the potential for 'Significant' effects arising has been thoroughly considered and stated clearly for each impact.
- 11.56 Landscape and visual effects can be beneficial or adverse and, in some instances, may be considered neutral. Neutral effects are those which overall are neither adverse nor positive but may incorporate a combination of both. Taking a precautionary stance, changes to rural landscapes involving construction of man-made objects of a large scale are generally considered to be adverse.
- 11.57 Within 10km of Project for Assessment, the assessment focuses on a Local (regional / county) level of character reference. Within 10km local landscape character is covered almost entirely by the Landscape Capacity Study for South Pennines Wind Energy Landscape Study (2014) and Greater Manchester Landscape Character and Sensitivity

¹⁵¹ Landscape Institute and IEMA (2013) Guidelines for Landscape and Visual Impact Assessment (GLVIA) (3rd Edition).

¹⁵² NatureScot (2024) Pre-application Guidance for Onshore Wind Farms.

Assessment (2018). These documents will form the basis of reporting the impacts on landscape character assessment.

- 11.58 The assessment will be supported by a number of representative viewpoints. The list of viewpoint locations proposed for the assessment are detailed in **Table 11.3** and illustrated on **Figures 11.1 – 11.11**. Not all viewpoints have been ‘ground truthed’ at this stage, so grid references are approximate, and locations may be micro-sited to obtain the most representative view or greatest extent of views. Following scoping and agreement with consultees regarding the final selection of viewpoints, site visits will take place to capture landscape and visual photography at the agreed locations.

Table 11.3: Proposed viewpoints

Viewpoint number	Location	Grid reference	Approximate distance and direction of view to Turbine Development Zones	Reason for selection
1	Pennine Bridleway, Rooley Moor Road	385692, 418854	0m (Within Assessment Boundary)	Recreational route through the Assessment Boundary
2	Greenbooth Reservoir Car Park	385983, 416171	0m north	Recreational area
3	Knacks Lane	387555, 416539	400m north-west	Settlement and communities to the south
4	St Nicholas’ Church, Newchurch	383380, 422325	480m south	Settlement and communities to the immediate north
5	Cowpe Recreation Ground	383837, 420830	580m south	Recreational area
6	Haslingden Old Road, Rawtenstall	380523, 423019	50m south-east	Settlement and communities to the north-west and visitors to the Ski centre
7	Crown Reservoir, Whitworth	388150, 418764	800m west	Recreational area and settlement and communities to the east

Viewpoint number	Location	Grid reference	Approximate distance and direction of view to Turbine Development Zones	Reason for selection
8	Coppice Drive, Whitworth	388546, 417393	1.4km west	Settlement and communities to the immediate north
9	Bankside Lane PRow, Bacup	386256, 422073	1.4km south	PRoW and settlement and communities to the immediate north
10	Lobden Golf Course/ Rossendale Way	389247, 417523	2km west	Recreational area
11	Maden Recreational ground, Bacup	386304, 422729	2km south	Recreational area
12	Edenfield Road	383849, 415555	2km north	Recreational route and local road users
13	Moor Road at Holcombe Hill	378197, 417094	3km north-east	Recreational area and routes
14	Todmorden Road	388278, 424311	4.4km south-west	Local Road and Access to Bacup
15	Studley Pike, Pennine Way	397306 , 424147	10.6km south	Recreational Route and Monument
16	Pennine Way, nr Black Moss Reservoir	402968 , 409046	17km south	Peak District National Park and Pennine Way
17	Barley Moor, Pendle Hill	379927, 440616	18km south	Forest of Bowland National Landscape

11.59 The assessment will be supported by a series of photomontages and wirelines from agreed viewpoint locations. Visualisations from each viewpoint will be prepared in accordance with NatureScot guidance which translates to a Type 4 verified photomontage in the Landscape Institute guidance LI TGN 06-19¹⁵³.

¹⁵³ Landscape Institute (2019) Technical Guidance Note 06/19 on the Visual Representation of Development Proposals.

- 11.60 Photomontages will be prepared for viewpoints within a 30km radius or further if it is necessary to include a notable recognised viewpoint. The ground level infrastructure will be included on visualisations with a 5km radius where it would be noticeable, as beyond that distance the impacts of that aspect of the Project for Assessment are unlikely to be significant.
- 11.61 Wind farm developments that include turbines of 150m or greater tip height require visible aviation lighting. An agreed lighting strategy with mitigation will form the basis of the assessment and visual material presented in the landscape and visual assessment. As wind turbines over 150m are proposed, then an assessment of night-time impacts on landscape and visual receptors will be described in the landscape and visual assessment. This will follow NatureScot's Guidance on Aviation Lighting Impact Assessment¹⁵⁴.
- 11.62 The proposed study area for night-time effects is 20km from the outermost wind turbines. The assessment will be supported by a ZTV study illustrating the theoretical visibility of the lights visible. The consideration of night-time effects on receptors will be informed by 'in the field' assessment and any qualities or characteristics that may be susceptible to lighting.
- 11.63 Visualisations will consist of wireline diagrams for all viewpoints indicating the number of lights likely to be visible. As advised by NatureScot guidance, two to three dawn / dusk photomontages will be selected to represent receptor groups most likely to be affected at night. These are considered to be areas where people are likely to be active during hours of darkness (typically around settlements) and represent a range of receptors potentially affected. Proposed night-time viewpoint locations will be agreed with the local planning authorities and consultees.
- 11.64 A residential visual amenity assessment (RVAA) will be undertaken in accordance with Landscape Institute Guidance Technical Guidance Note 2/19 Residential Visual Amenity Assessment¹⁵⁵. The RVAA will assess the potential impacts on all residential properties within 2km of the outermost wind turbines of the Project for Assessment. The RVAA will be presented as a Technical Appendix to the ES and will include ZTV maps, location plans and other graphics as required.
- 11.65 Part of the Assessment Boundary occupies Green Belt land. However, as determined in Landscape Institute Technical Guidance Note LITGN-2024-01¹⁵⁶, Green Belt is related to planning policy and not a landscape designation and any assessment of Green Belt and / or on effects to openness will not be undertaken as part of the landscape and visual assessment.

¹⁵⁴ NatureScot (2024) Guidance on Aviation Lighting Impact Assessment.

¹⁵⁵ Landscape Institute (2018) Residential Visual Amenity Assessment.

¹⁵⁶ Landscape Institute (2024) Notes and Clarifications on Aspects of Guidelines for Landscape and Visual Impact Assessment Third edition (GLVIA3) [Accessed: 18.10.2024].

Limitations and Assumptions

11.66 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- Whilst several site visits have been undertaken to capture baseline landscape and visual information it was not possible to visit every potential receptor location prior to scoping. However, this has been supplemented by thorough desktop analysis. Further site work will be undertaken for the ES; and
- ZTVs show only theoretical visibility and are therefore used only as a guide to determine potential likely impacts.

12. Built Heritage

Technical Baseline¹⁵⁷

History and Development

- 12.1 The Assessment Boundary was historically used for sandstone quarrying and coal mining. Rooley Moor Road, first referred to in Court Record documents dating from 1729, bisects the Assessment Boundary. A single property 'Rooley House' later known as the Moor Cock Inn was located at a junction of the Rooley Moor Road and a second route running further to the south-west. Hennet's Plan of 1828¹⁵⁸ is the first plan to mark industrial activity within the Assessment Boundary, marking a colliery on Rooley Moor at the southern end of the Assessment Boundary. By the mid-19th century, the First Edition OS plan (**Figure 12.1**) shows a number of small collieries or coal pits at the southern end of the Assessment Boundary and a large number of collieries across the Assessment Boundary. This industry expanded rapidly, as shown on the Second Edition and 1913 Editions of the OS plan (**Figures 12.2 and 12.3**), with the individual quarries connected by tramways to aid the movement of stone from the moor.
- 12.2 The quarrying industry declined during the First World War, with many of the tramway tracks lifted during the 1920s. Today many of the routes of the former tramways remain as embankments, many of which have become public footpaths, and there are surviving spoil heaps and other features from the quarrying and mining activity. Change has been ongoing during the later 20th and early 21st centuries. The Whitworth Quarry complex to the east of the Assessment Boundary continues to be excavated today, whilst Cragg Quarry and the northern part of Lee Quarry to the north of the Assessment Boundary have been altered to accommodate mountain biking trails. The steep sided valleys of the Rivers Spodden and Irwell have resulted in settlement being focussed within the flat valley bottoms, where flat land was available, and water power from the streams and reservoirs created at the edge of the moor could be used to power factories. Over time, the valley bottom settlements have expanded resulting in long ribbons of settlement, with little separation between settlements.

Heritage Context

- 12.3 The north-western part of the Catley Lane Head Conservation Area falls within the southern-most part of the Assessment Boundary. There are no other designated heritage assets located within the Assessment Boundary.
- 12.4 There are a large number of other designated heritage assets within the surrounding 15km study area (the 15km study area extends from the Turbine Development Zones), these comprise:
- 88 Conservation Areas;

¹⁵⁷ The technical baseline considers only the baseline within the main part of the Assessment Boundary and excluding the area of the Assessment Boundary which comprises route for the Electrical Grid Connection. Effects from the Electrical Grid Connection upon heritage assets are scoped out of the assessment, as set out in Paragraphs 12.15 – 12.18.

¹⁵⁸ https://commons.wikimedia.org/wiki/File:Lancastria_Atlas.jpg.

- 43 Scheduled Monuments;
 - 2,434 Listed Buildings (comprising 22 Grade I Listed Buildings, 113 Grade II* Listed Buildings, and 2,299 Grade II Listed Buildings); and
 - 20 Registered Parks and Gardens (RP&G).
- 12.5 The Rooley Moor Road which runs through the Assessment Boundary has been identified as a non-designated heritage asset.
- 12.6 There are a number of other non-designated heritage assets located within the Assessment Boundary and wider surrounding 5km study area. A full list of these will be collated through inspection of the RMBC, RBC, Bury Council and Calderdale Council local lists, through review of Historic Environment Records and through consultation with the local authority conservation officers.

Proposed Scope of Assessment

- 12.7 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Assessment Boundary, surrounding area and the Project for Assessment (**Chapter 4**). Where environmental effects are considered unlikely to be 'significant', an appropriate evidence base has been provided to justify the 'scoping out' of these effects ensuring the EIA and ES only assess those effects considered 'likely' to be significant, at this stage.
- 12.8 A 15km study area for the consideration of potential effects on designated heritage assets has been defined following site visits and inspections of relevant heritage assets, undertaken by suitably qualified heritage professionals, and review of Screened Blade and Tip Height Zone of Theoretical Visibility (ZTV) models¹⁵⁹ prepared by Stephenson Halliday (**Figures 11.9 and 11.10**). The extent of the study area has taken into account:
- The nature and scope of the Project for Assessment;
 - The proximity of heritage assets to the Project for Assessment;
 - The degree of inter-visibility between the heritage assets and the Assessment Boundary taking into consideration, for instance, changes in topography as well as interposing townscape and landscape features and seasonal changes; and
 - The heritage significance (sensitivity to change) of the relevant heritage assets and the contribution made by their setting including any historic or functional relationships.

¹⁵⁹ The Screening ZTV to Hub Height (**Figure 11.9**) models those locations where one or more of the turbine hubs would theoretically be visible. The Screening ZTV to Tip Height (**Figure 11.10**) models those locations where one or more of the turbine tips would theoretically be visible. Both Screening ZTVs show the maximum theoretical visibility, taking into account topography and principal areas of woodland and buildings. Buildings have been modelled at an assumed height of 7.5m and woodland at an assumed height of 10m, which represents a conservative estimate of the average heights within the study area.

- 12.9 The potential impact of the Project for Assessment has been considered in relation to all designated heritage assets within the 15km study area.
- 12.10 A 5km study area for the consideration of potential effects on non-designated heritage assets has been defined following site visits and review of Screened Blade and Tip Height Zone of Theoretical Visibility (ZTV) models¹⁶⁰ prepared by Stephenson Halliday (**Figures 11.9 and 11.10**). The extent of the study area has taken into account:
- The limited number of heritage assets which meet the criteria to be considered as non-designated heritage assets¹⁶¹;
 - The nature and extent of their significance (including functional or historic connections); and
 - The characteristics of their existing setting, in which the Project for Assessment would also be experienced.

Effects Unlikely / Not Significant

- 12.11 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the PEMP provided in **Appendix 2.1**.
- 12.12 Built heritage assets can be affected by a broad range of factors causing change, these may be physical changes to them or changes to their setting. The range of effects in relation to built heritage assets, and at which point they may be significant, does not fit the strict outcome of the binary assessment. Whether an effect is significant or not significant is a matter of professional judgement.
- 12.13 The DMRB LA 106¹⁶² states that the effect on the cultural heritage resource is not significant when the impact does not substantially diminish or enhance the heritage interest of the cultural heritage resource.

¹⁶⁰ The Screening ZTV to Hub Height (**Figure 11.9**) models those locations where one or more of the turbine hubs would theoretically be visible. The Screening ZTV to Tip Height (**Figure 11.10**) models those locations where one or more of the turbine tips would theoretically be visible. Both Screening ZTVs show the maximum theoretical visibility, taking into account topography and principal areas of woodland and buildings. Buildings have been modelled at an assumed height of 7.5m and woodland at an assumed height of 10m, which represents a conservative estimate of the average heights within the study area.

¹⁶¹ The PPG provides the following government guidance on the identification of non-designated heritage assets: *'A substantial majority of buildings have little or no heritage significance and thus do not constitute heritage assets. Only a minority have enough heritage significance to merit identification as non-designated heritage assets'*. Paragraph: 039
Reference ID: 18a-039-20190723

¹⁶² Highways England (2020) DMRB (LA 104 Environmental Assessment and Monitoring) and (LA 106 Cultural Heritage Assessment).

- 12.14 Built heritage receptors within the 15km and 5km study areas have been subject to initial appraisal to determine those with potential to experience significant environmental effects. This is provided in **Appendix 12.1**.

Physical (direct) changes to designated and non-designated built heritage assets arising from the Electrical Grid Connection during construction / decommissioning

- 12.15 The Electrical Grid Connection, connecting the Project for Assessment to the local Rossendale BSP, will comprise an underground grid connection, following existing roads. Construction / decommissioning of the Electrical Grid Connection would have no significant direct effects upon the fabric of any designated or non-designated built heritage assets.
- 12.16 Therefore, physical (direct) changes to designated and non-designated built heritage assets arising from construction / decommissioning of the Electrical Grid Connection are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Changes in the setting of designated and non-designated built heritage assets arising from the Electrical Grid Connection during operation

- 12.17 The Electrical Grid Connection, connecting the Project for Assessment to the local Rossendale BSP, will comprise an underground grid connection, following existing roads and would not significantly affect the setting or heritage significance of any built heritage assets.
- 12.18 Therefore, changes in the setting of designated and non-designated heritage assets once the Electrical Grid Connection are operational are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Changes in the setting of designated built heritage assets over 15km from the Assessment Boundary

- 12.19 No significant effects on the heritage significance of designated heritage assets located over 15km from the Assessment Boundary are predicted. The Project for Assessment, when seen within this wider surrounding area would be distanced and experienced as part of a wider varied modern landscape which includes both rural and settled landscapes, including dense urban areas such as Rochdale, Bury and Accrington, the major north-south transport corridor of the M66, and other existing wind farm developments, including Scout Moor I.
- 12.20 Therefore, changes in the setting of designated built heritage assets over 15km from the Assessment Boundary are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Changes in the setting of non-designated heritage assets over 5km from the Assessment Boundary

- 12.21 No significant effects on the heritage significance of non-designated heritage assets located over 5km from the Assessment Boundary are predicted. This is due to the relative heritage significance (sensitivity to change) of these heritage assets, and the contribution made by their setting.

- 12.22 Therefore, changes in the setting of non-designated built heritage assets over 5km from the Assessment Boundary are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Changes in the setting of heritage assets within the 15km study area and non-designated heritage assets within the 5km study area with limited or no predicted visibility of the Project for Assessment

- 12.23 There are large groups of assets located within areas with limited or no predicted visibility of the Project for Assessment, and where therefore no significant impacts upon the setting or heritage significance of heritage assets are predicted. These areas are shown on the Heritage Asset Plans (**Figures 12.5-12.8**) and include Todmorden, Hebden Bridge, Walsden, Timbercliffe, Littleborough and the majority of Ramsbottom and Rawtenstall.
- 12.24 Therefore, changes in the setting of designated built heritage assets within the 15km study area with limited or no predicted visibility of the Project for Assessment are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Changes in the setting of designated heritage assets within the 15km study area and non-designated heritage assets within the 5km study area which are located within urban areas

- 12.25 There are large groups of heritage assets located within urban areas to the south of the Assessment Boundary from which there would be patchy or no visibility of the Project for Assessment due to intervening existing buildings, meaning there would be no significant effects upon their setting or heritage significance. The urbanised area includes Rochdale, Bury, Radcliffe, Middleton and Oldham.
- 12.26 Therefore, changes in the setting of designated built heritage assets within 15km of the Project for Assessment and non-designated heritage assets within 5km study area that are located within urban areas are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Changes in the setting of non-designated heritage assets within the 5km study area which are located within valley bottom settlements with localised settings

- 12.27 Heritage assets are concentrated in valley bottom locations where settlement and industrial activity were historically focussed, resulting in densely packed settlements. Many of these heritage assets have localised settings in relation to the settlements within which they are located and their setting and heritage significance would not be affected by the Project for Assessment. This applies to the majority of listed buildings located within the settlements located along the Irwell and Spodden Valleys, such as Broadley, Whitworth, Facit, Millgate, Shawforth, Rawtenstall, Cloughfold, Waterfoot, New Church and Bacup.
- 12.28 Therefore, changes in the setting of designated built heritage assets located within valley bottom settlements with localised settings are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Effects Likely / Significant

12.29 **Table 12.1** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and which will therefore be assessed within the EIA and reported in the ES.

Table 12.1: Potential likely significant effects and sensitive receptors

Effect	Receptor(s)	Applicable stage(s)
Harm to the heritage significance (character and appearance) of Conservation Areas as a result of change within their setting	Catley Lane Head Conservation Area Broadley Fold Conservation Area Whitworth Conservation Area	Construction / operation / decommissioning
Harm to the heritage significance (special architectural and historic interest) of listed buildings as a result of change within their setting	Smallshaw Farmhouse (Grade II Listed Building 1084252) Prickshaw Cottages (Grade II Listed Building 1346267) Church of St Bartholomew (Grade II Listed Building 1164533) Church of St Saviour, Bacup (Grade II Listed Building 1361954) Church of St John the Evangelist, Facit (Grade II Listed Building 1073548)	Construction / operation / decommissioning
Harm to the heritage significance (special historic interest) of Registered Parks and Gardens (RP&G) as a result of change within their setting.	Whitworth Cemetery (Grade II Listed RP&G 1000475)	Construction / operation / decommissioning
Harm to the heritage significance of non-designated heritage assets as a result of change within their setting.	Rooley Moor Road	Construction / operation / decommissioning

Assessment Methodology of Effects Likely / Significant

12.30 **Table 12.2** outlines the background surveys / studies / analysis / evaluations that have been / will be completed.

Table 12.2: Background surveys / studies / analysis / evaluations

Survey / study / analysis / evaluation	Overview	Date of completion
Completed		
Initial Heritage Appraisal	Provides initial heritage advice. The appraisal, which was informed by site visits, considers the historic development of the Assessment Boundary, the built heritage baseline within the Assessment Boundary and surrounding 15km and 5km study areas and an initial assessment of those heritage assets whose heritage significance may be affected by change within their setting.	October 2024
Pending		
Heritage appraisal and assessment of heritage significance of assets	Heritage appraisal will be ongoing throughout the design development period. The initial appraisal will be reviewed and updated as design development progresses and additional information about the location and height of turbines, and more detailed information about the locations from which they are likely to be visible, becomes available. Additional more detailed assessment of the heritage significance of those heritage assets which may be affected by the Project for Assessment will also be prepared. This ongoing appraisal work will be used to inform iterative and ongoing scoping and consultation with RMBC, RBC, Bury Council and Calderdale Council.	Ongoing
Heritage Assessment ¹⁶³	A full Heritage Assessment will be appended to the ES and will be prepared in light of the statutory duties of the Planning (Listed Buildings and Conservation Areas) Act 1990 ¹⁶⁴ , relevant policies of the National Planning Policy Framework (NPPF) ¹⁶⁵ and PPG ¹⁶⁶ for the historic environment.	Spring 2025

¹⁶³ Note only those assets which are likely to experience significant effects will be carried forward for assessment within the ES.

¹⁶⁴ Planning (Listed Buildings and Conservation Areas) (England) Act 1990. Available online at: <https://www.legislation.gov.uk/ukpga/1990/9>

¹⁶⁵ DLUHC and MCHLG (2023) National Planning Policy Framework (NPPF).

¹⁶⁶ MCHLG (2023) Planning Practice Guidance, Reference ID: 18a-039-20190723.

- 12.31 The methodology will utilise established legislation, national policy, guidance and advice documents, as outlined below. This will frame the assessment process for construction, operation and cumulative effects. The methodology acknowledges how the understanding and appreciation of the heritage values of the heritage assets and its constituent elements can be affected both directly and indirectly through change to setting; not only visually but also as part of a broader experience.
- 12.32 The following study areas will be used for the assessment:
- A 15km study area has been established as a guide and basis for identifying designated heritage assets for assessment, taking into account the factors identified above; and
 - A 5km study area has been established as a guide and basis for identifying non-designated heritage assets for assessment, taking into account the factors identified above.
- 12.33 Designated heritage assets within the 15km study area have been identified from the following sources:
- The National Heritage List for England (NHLE)¹⁶⁷, which identifies designated heritage assets (with the exception of conservation areas); and
 - The websites of local authorities¹⁶⁸ which provide details on the location and extent of conservation areas.
- 12.34 Non-designated heritage assets within the 5km study area will be identified from the following sources:
- The RMBC website which provides details of locally listed assets¹⁶⁹;
 - The Bury Council website which provides details of the Council's draft local list¹⁷⁰;
 - Consultation with RBC and Calderdale Council to confirm details of any non-designated heritage assets within the part of the 5km study area which falls under their jurisdiction;
 - GMAAS HER (which covers the RMBC and Bury area);
 - Lancashire County Council HER (which covers the RBC area); and

¹⁶⁷ <https://historicengland.org.uk/listing/the-list>.

¹⁶⁸ Local Authority Areas which intersect with the 15km Study Area are: RMBC, RBC, Bury Council, Calderdale Council, Oldham Council, Manchester City Council, Bolton Council, Blackburn with Darwen Borough Council, Hyndburn Borough Council and Burnley Borough Council.

¹⁶⁹ <https://www.rochdale.gov.uk/heritage-conservation/non-designated-heritage-assets/2>.

¹⁷⁰ <https://www.bury.gov.uk/planning-building-control/heritage-and-conservation/local-list>.

- West Yorkshire Archaeological Advisory Service HER (which covers the Calderdale area).
- 12.35 Heritage assets within the 15km and 5km study areas have been subject to initial appraisal to determine those with potential to experience significant environmental effects. These are set out in **Table 12.1**.
- 12.36 In the absence of specific prescribed criteria for the assessment of impacts on built heritage¹⁷¹ the methodology for establishing the relative value or importance of heritage assets ('heritage significance'), the magnitude of impact and the level and significance of effect is drawn from the DMRB¹⁷² and Principles of Cultural Heritage Impact Assessment in the UK July 2021¹⁷³. The detail of the methodology will be agreed with RMBC, RBC and Bury Council Conservation Officers.
- 12.37 The assessment will be prepared with reference to other relevant guidance, including:
- Historic England (2015) Good Practice Advice Note 2, Managing Significance in Decision Taking in the Historic Environment¹⁷⁴;
 - Historic England (2017) Good Practice Advice Note 3, The Setting of Heritage Assets¹⁷⁵;
 - Historic England (2019) Advice Note 12, Statements of Heritage Significance¹⁷⁶;
 - Historic England (2008) Conservation Principles, Policies and Guidance¹⁷⁷; and
 - Historic England (2021) Commercial Renewable Energy Development and the Historic Environment¹⁷⁸.
- 12.38 Scout Moor I (outside control of the Applicant) is due to be decommissioned in 2033. Therefore, in line with NatureScot's Pre-application Guidance for Onshore Wind Farms,

¹⁷¹ There is no agreed methodology for assessing the impact on heritage assets for an ES – Historic England, for example, has not provided any guidance. This approach is an accepted methodology and, although the guidance relates to roads and bridges, the principles in relation to assessing impacts of development on heritage assets applies for other types of development.

¹⁷² National Highways (formerly Highways England) (2020) DMRB LA 104 Environmental Assessment and Monitoring and LA 106 Cultural Heritage Assessment.

¹⁷³ CIfA, IHBC and IEMA, (July 2020), Principles of Cultural Heritage Impact Assessment in the UK

¹⁷⁴ Historic England (2015) Historic Environment Good Practice in Planning Note 2: Managing Significance in Decision Taking in the Historic Environment.

¹⁷⁵ Historic England (2017) Historic Environment Good Practice in Planning Note 3: The Setting of Heritage Assets.

¹⁷⁶ Historic England (2019) Advice Note 12, Statements of Heritage Significance: Analysing Significance in Heritage Assets.

¹⁷⁷ English Heritage (2008) Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment.

¹⁷⁸ Historic England (2021) Commercial Renewable Energy Development and the Historic Environment. Historic England Advice Note 15.

the assessment will consider the effects arising from the following two different baseline scenarios:

- Existing Baseline Scenario – whereby it is assumed that the current baseline includes Scout Moor I as a baseline feature in the landscape and views; and
- Restored Baseline Scenario – whereby it is assumed that Scout Moor I is decommissioned (July 2033) and the site restored and therefore is no longer present in the landscape or in views.

- 12.39 The assessment will be supported by a series of photomontages and wirelines for agreed viewpoint locations. Visualisations from each viewpoint will be prepared in accordance with Nature Scot guidance Visual Representation of Windfarms: Version 2.2. The baseline panorama and matching wireline will show Scout Moor I wind turbines in the baseline photograph and the matched wireline. The matched wireline will distinguish between the Scout Moor I wind turbines and those proposed. The ground level infrastructure will be included on visualisations with a 5km radius where it would be noticeable, as beyond that distance the impacts of that aspect are unlikely to be significant.
- 12.40 The built heritage assessment will take into account the findings of the LVIA and ES Chapter to ensure integration of approach and assessment. Where relevant the assessment presented in the Archaeological Desk-Based Assessment and Archaeology ES Chapter will also be taken into account.
- 12.41 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (heritage significance) (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgment, informed by an understanding of the heritage significance (sensitivity to change) of these assets and having regard to the DMRB (which advises that the effect on the cultural heritage resource is not significant when the impact does not substantially diminish the heritage interest of the cultural heritage resource).

Limitations and Assumptions

- 12.42 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- The assessment is based upon the information about the Project for Assessment as set out in **Chapter 4**. Up to 21 wind turbines, with a maximum tip height of 180m are currently proposed, with their precise locations yet to be confirmed. It is recognised that further work to refine and provide greater focus and clarity to the identification of those heritage assets which may be affected by the Project for Assessment will be required as greater detail becomes available. This will be carried out through ongoing consultation with relevant stakeholders (Historic England, RMBC, RBC, Bury Council and Calderdale Council);

- The assessment relies on available data, and best endeavours have been made to ensure that the data is accurate and up to date. HER data was gathered from Greater Manchester HER (who cover RMBC and Bury Council), and the Lancashire HER (who cover RBC) in September 2024. Information from Historic England's National Heritage List for England (NHLE) was downloaded in August 2024. It is assumed that information obtained from, Historic England, the HER database and other sources are accurate; and
- The assessment has been informed by the Screening Blade Tip and Hub Height ZTVs as prepared by Stephenson Halliday (**Figures 11.9 and 11.10**). ZTVs show only theoretical visibility and on the ground sense checking will be required to inform the final assessment.

13. Archaeology

Technical Baseline¹⁷⁹

- 13.1 Each archaeological heritage asset referred to in the text below is listed in the Gazetteer appended to the Preliminary Desk-Based Assessment (**Appendix 13.1**). Heritage assets within the Assessment Boundary are shown on **Figures 13.1 – 13.4**. Each has been assigned an 'Asset Number' unique to this assessment, and the Gazetteer includes information regarding the type, period, grid reference, HER number, protective designation, and other descriptive information, as derived from the consulted sources.
- 13.2 There are 201 known archaeological heritage assets recorded within the Assessment Boundary by the HER, as shown on **Figures 13.1 – 13.4**. The earliest of these are two small flint implements (Assets 351 and 353), thought likely to be of Mesolithic date, and found by chance on Rooley Moor and at Ding Quarry respectively. In the late 19th century, Neolithic flints were also found on Brandwood Moor (Asset 104) and on Hunger Hill / Turnshaw Hill (Assets 514 / 352), where various finds, recorded as '*knives, scrapers, arrowheads, spear tips and very small implements*' were found below the layer of peat. Mesolithic and Neolithic flints have also been recorded from the moorland outside but close to the Assessment Boundary, including Great Ding (Asset 350), Scout Moor (Asset 879) and Knowl Moor (Asset 551). Two possible Bronze Age cairns are located on (Asset 143) and just below (Asset 144) the crest of Bagden Hillocks.
- 13.3 Rooley Moor Road (Asset 828) bisects the Assessment Boundary, running approximately NNW-SSE between Catley Lane Head and Rake Head. This road is described in the GMHER as a '*major landscape feature*' and comprises a track between circa 4.5m and 5.5m wide. Extended sections of the route are surfaced with sandstone setts, with kerbstones along the edges and roadside ditches, banks or terracing of the road into the hillside. The first known documentary reference to it as a formalised and maintained route is from 1729, although it may have functioned as a packhorse route earlier, and it is shown on William Yates's map of Lancashire in 1786¹⁸⁰. It is widely held that improvements to the road were undertaken in the early 1860s as a public works initiative during the Cotton Famine, hence the local names of 'Cotton Famine Road' or 'Famine Road'.

¹⁷⁹ The baseline information presented in this Chapter has been informed by the following resources: Greater Manchester Historic Environment Record (GMHER) (received 23rd September 2024); Lancashire Historic Environment Record (LHER) (received 18th September 2024); The National Heritage List for England (NHLE) held by Historic England; British Geological Survey (BGS)¹⁷⁹; Peat depth surveys¹⁷⁹; A review of online available historic mapping and photography; and Previous archaeological investigations in and around the Assessment Boundary.

¹⁸⁰ Yates (1786) The county Palatine of Lancaster. Held by the National Library of Scotland. Shelfmark: EME.s.55. Available at: <https://maps.nls.uk/joins/10434.html>. [Accessed 02/10/2024].

- 13.4 On the western side of Bagden Hillocks, the ruined remains of the Moor Cock Inn (Asset 639) are located adjacent to Rooley Moor Road. The Inn is marked on post-medieval maps but no longer stands, although the surrounding intake walls and masonry associated with small, mapped outbuildings are identifiable.
- 13.5 The remaining recorded assets within the Assessment Boundary are heavily biased towards post-medieval extraction activities, primarily sandstone quarrying and coal mining, though the surviving assets may have had earlier origins. Much of this evidence has been gathered from historical maps, which cumulatively show the development and decline of these industries over the late 19th and 20th centuries and from which the locations of numerous small and medium-sized quarries, collieries and spoil heaps have been transcribed (see **Appendix 13.1**). The largest disused quarry complexes within the Assessment Boundary, namely Cragg Quarry (Asset 196) and Ding Quarry (Asset 316) have been subject to archaeological survey work (Events 1078 and 1082) and thus incorporate a large number of individually numbered heritage assets (such as spoil heaps, building remains, cranes, leats, tanks and adits) (see **Figures 13.1 – 13.4**). By the late 19th century, many of the quarries were linked to each other and to surrounding transport links, by tramways, sections of which partially survive within the Assessment Boundary, often reused as public footpaths (Assets 27, 59 and 189).
- 13.6 A number of recorded assets within or immediately adjacent to the Assessment Boundary relate to post-medieval farmsteads and related agricultural activity (though these assets also have the potential to have earlier origins). Various historical township, parish and county boundaries converge within the Assessment Boundary and a number of boundary mounds and stones (e.g. Assets 99, 100, 441, 442, 444 and 1150) are recorded, some of which remain extant.
- 13.7 Past archaeological investigations within or extending into the Assessment Boundary include a desk-based study and walkover survey of the section of Rooley Moor Road between Catley Head Lane and Ding Quarry (Event 1118). A number of desk-based assessments and walkover surveys intended to identify, where possible, features shown on historical maps and assess the preservation of above-ground features to inform their future management. These include the surveys of Cragg Quarry (Event 1078) and Ding Quarry (Event 1082) noted above, as well as studies of Bagden Quarry (Event 1139), Ab Top Quarry (Event 1137) and Ragstone Brow Quarry (Event 1134). The study area of archaeological investigations at Whitworth Quarry extends into the eastern part of the Assessment Boundary and included desk-based assessment (Event 1079), walkover survey (Event 1146), borehole survey (Event 1144) and carbon-14 dating (Event 1145) to establish the earliest date of peat formation. Similarly, the study areas relating to archaeological investigations, including evaluation, monitoring and survey of peat erosion scars, in advance of Scout Moor I, extend into the western part of the Assessment Boundary (Events 1124, 1125 and 1070), as do those relating to extension of the Scout Moor Quarry (Events 1126, 1121, 1122 and 1123).

Proposed Scope of Assessment

- 13.8 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Assessment Boundary, surrounding area and the Project for Assessment (**Chapter 4**). Where environmental effects are considered unlikely to be

‘significant’, an appropriate evidence base has been provided to justify the ‘scoping out’ of these effects ensuring the EIA and ES only assess those effects considered ‘likely’ to be significant, at this stage.

Effects Unlikely / Not Significant

- 13.9 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the PEMP provided in **Appendix 2.1**.

Direct disturbance to buried archaeological remains beyond the Assessment Boundary

- 13.10 Groundworks and plant movement required for construction activities have the potential to result in direct disturbance to known and hitherto unknown archaeological remains. All such ground works and plant movements would be restricted to land within the Assessment Boundary and, as such, assets located outside of the Assessment Boundary and within the 1km study area would not be impacted.
- 13.11 Therefore, direct disturbance to buried archaeological remains beyond the Assessment Boundary is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Direct disturbance / loss of the buried archaeological resource during operation

- 13.12 During operation, the Project for Assessment will not include intrusive activities such that it would lead to a disturbance of below ground heritage assets. As such, there are unlikely to be any direct impacts on archaeological remains during operation.
- 13.13 Therefore, direct disturbance / loss of the buried archaeological resource during operation are unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Effects Likely / Significant

- 13.14 **Table 13.1** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 13.1: Potential likely significant effects and sensitive receptors

Effect	Receptor(s)	Applicable stage(s)
Loss / disturbance to known archaeological assets	See Figures 13.1 – 13.4 showing locations of known archaeological assets	Construction / decommissioning
Loss / disturbance to potential / unknown buried archaeological remains	Potential / unknown buried archaeological resource and palaeoenvironmental remains within the Assessment Boundary	Construction / decommissioning

Effect	Receptor(s)	Applicable stage(s)
Loss / reduction in deposits preserving paleoenvironmental remains as a result of dewatering activities	Peat deposits containing paleoenvironmental proxies both within and beyond the Assessment Boundary	Construction / operation / decommissioning

Assessment Methodology of Effects Likely / Significant

13.15 **Table 13.2** outlines the background surveys / studies / analysis / evaluations that have been / will be completed.

Table 13.2: Background surveys / studies / analysis / evaluations

Survey / study / analysis / evaluation	Overview	Date of completion
Completed		
Preliminary Archaeological Desk-Based Assessment (Appendix 13.1)	Review of archaeological baseline and preliminary walkover survey	October 2024
Upland Blanket Bog Peat Surveys	Peat depth probing and peat condition assessment	July 2024
Pending		
Hydrology assessment / review	Review of dewatering activities and assessment of potential to lead to a reduction in groundwater level	Winter 2024 / Spring 2025
Detailed Archaeological Desk-Based Assessment	Detailed baseline assessment including detailed walkover survey, review of archival data, review of previous archaeological fieldwork, historic mapping and aerial imagery	Winter 2024 / Spring 2025

13.16 A core study area, which includes all land within the Assessment Boundary, will be subject to assessment for potential direct effects. This study area will be subject to a detailed walkover survey and archaeological remains that may be directly or indirectly impacted by the Project for Assessment will be identified. In addition, a wider 1km study area will be used to identify all known heritage assets and known previous archaeological interventions, in order to help predict whether any similar hitherto unknown archaeological remains are likely to survive within the Assessment Boundary and thus be impacted by the Project for Assessment.

13.17 Built heritage will be considered separately (see **Chapter 12**).

- 13.18 The qualitative assessment will be carried out in accordance with: Section 16 of the NPPF; Conservation Principles: Policies & Guidance¹⁸¹; Historic Environment Good Practice Advice in Planning Note 2 - Managing Significance in Decision-Taking in the Historic Environment and best practice documents and guidance published by the Chartered Institute for Archaeologists (CiFA)^{182, 183}.
- 13.19 The Chapter will be supported by an Archaeological Desk Based Assessment, which will be appended to the ES. This will describe in detail the historic environment baseline, identify direct impacts on known heritage assets, and outline the potential for archaeological remains by period to survive within the Assessment Boundary. Where necessary, this report will recommend appropriate archaeological mitigation. This will align with the secondary mitigation set out in the Chapter and will be subject to discussions with the relevant archaeological advisors.
- 13.20 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of impact (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgment.

Limitations and Assumptions

- 13.21 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- This assessment deals with known and potential archaeological deposits. All identified archaeological heritage assets within 1km of the Assessment Boundary have been included as they contribute to an understanding of the historic environment baseline;
 - The information contained within the Technical Baseline is based upon data obtained from publicly accessible archives; National Heritage List for England (NHLE) information was downloaded in September 2024 and data from the Greater Manchester and Lancashire HERs was obtained in September 2024. The information presented in the gazetteer regarding known heritage assets is current at the time of writing (September 2024); and
 - The assessment is based on a preliminary walkover survey carried out in September 2024. This will be supplemented by additional detailed walkover survey to be carried out in Winter 2024 / 2025.

¹⁸¹ Historic England (2008) Conservation Principles: Policies and Guidance.

¹⁸² CiFA (2017) Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment.

¹⁸³ CiFA (2017) Standard and Guidance for Historic Desk-Based Assessment.

14. Hydrology, Hydrogeology and Peat

Technical Baseline

Geology, Hydrogeology and Soils

- 14.1 The Peaty Soils Location (England) map by Natural England¹⁸⁴ shows Deep Peaty Soils across the majority of the north of the Assessment Boundary and Shallow Peaty Soils across the entirety of the south of the Assessment Boundary.
- 14.2 The peat shown on the various mapping sources has been superseded by ground investigations undertaken by Penny Anderson Associates on a 75m grid across the main Assessment Boundary (April 2024) and by Fluid Environmental Consulting (October 2024). The peat surveys show a similar distribution to mapping, (albeit a larger coverage due to BGS mapping being based on peat being 0.5m and current surveys for peat presence being based on 0.3m depth) with peat depths identified up to a maximum depth of 3.7m. The peat survey results undertaken to date are present on **Figure 14.1**.
- 14.3 The BGS geological mapping¹⁸⁵ shows that large areas of the Assessment Boundary are absent of superficial deposits but several large areas of peat are shown across the centre of the Assessment Boundary. There are Devensian till deposits in the northern and western areas and to the south, a small area of glaciofluvial deposits in the south, a localised area of head deposits in the south-west and alluvium deposits in the valley bottoms in the northern section of the Assessment Boundary.
- 14.4 Made Ground and / or Infilled Ground is shown in discrete areas of the Assessment Boundary; most likely associated with mineral extraction / backfill and there is a known historical landfill (Scout Moor Quarry – inert waste/sludge) in the western area of the Assessment Boundary.
- 14.5 The BGS geological mapping¹⁸⁶ shows that much of the Assessment Boundary is underlain by Upper Haslingden Flags and Rough Rock formation comprising sandstone bedrock, with minor bands of Rossendale Formation mudstone and siltstone. Predominantly in the south, north-east and western areas there are the Darwen Flags, Woodhead Hill Rock, Ganister Rock Formations comprising sandstones and Pennine Lower Coal Measures Formation comprising mudstone, siltstone, sandstone and coal seams, in some cases which are shown to be shallow or close to the surface.
- 14.6 Eight faults cross cut the Assessment Boundary in the north-west – south-east direction, one of which almost completely transects the Assessment Boundary and two north-east – south-west faults are also present. The geological mapping shows a fold axis south-west to north-east through part of the centre of the Assessment Boundary.
- 14.7 There is evidence of historical quarries (mainly sandstone) and the potential for historical coal mining where the coal measures are present. Numerous mine shafts and

¹⁸⁴ Natural England (2024) Peaty Soils Location.

¹⁸⁵ British Geological Survey (2020) Geology.

¹⁸⁶ British Geological Survey (2020) Geology.

adits have been identified within the Assessment Boundary and in its immediate vicinity.

- 14.8 The BGS Geoindex mapping shows areas of mass movement along the south-western area and within the northern central area of the Assessment Boundary.
- 14.9 The BGS hydrogeology (1:625,000 scale) map shows the bedrock below the Assessment Boundary to be predominately Millstone Grit Group, a moderately productive aquifer with 'Regionally significant multi-layered aquifer up to 900 m thick with yields of 5-10 l/s, rarely 50 l/s, with many springs'¹⁸⁷. The eastern areas of the Assessment Boundary are underlain by Pennine Lower Coal Measures Formation which is also a moderately productive aquifer and is described as 'Regional, cyclic multi-layered aquifer with moderate yields from sandstones and many springs. Mine water quality poor but elsewhere reasonable'¹. The operational aquifer is the Manchester Northern Carboniferous Aquifer¹⁸⁸.
- 14.10 The glaciofluvial and alluvium deposits, Pennine Lower Coal Measures and Rossendale Formation are all classified as Secondary A aquifers. The Head Deposits are classified as a Secondary B aquifer. The Till is designated as a Secondary Undifferentiated aquifer. The Peat is classified as Unproductive stratum.
- 14.11 Assessment Boundary is not located within 1km of a groundwater Source Protection Zone (SPZ).
- 14.12 There are no geologically designated sites within the Assessment Boundary. However, the Lee Quarry SSSI lies adjacent to the north-eastern edge of the Assessment Boundary and is designated for geological interest, exposures in the Upper Carboniferous Haslingden Flags Formation, a unique development within the Millstone Grit of central England.

Surface Hydrology, Drainage and Flooding

- 14.13 The north and north-west of the Assessment Boundary drains to the River Irwell, via Cowpe Reservoir and Scout Moor Reservoir. The west and south-west of the Assessment Boundary drains to Naden Brook, via several reservoirs. Naden Brook discharges to River Roch south of the Assessment Boundary.
- 14.14 The east and south-east of the Assessment Boundary drains to the River Spodden via Cown Reservoir and Spring Mill Reservoir. The River Spodden discharges to the River Roch south-east of the Assessment Boundary. The River Roch discharges to the River Irwell 10km south-west of the Assessment Boundary and the River Irwell discharges to the River Mersey near Irlam, approximately 30km south-west of the Assessment Boundary. Both the Naden Brook and the River Spodden have Moderate Water Quality¹⁸⁹.
- 14.15 Several ponds, springs, wells, issues, sinks and small watercourses have been identified within the Assessment Boundary. The watercourses generally drain towards the

¹⁸⁷ British Geological Survey (2020) Hydrogeology.

¹⁸⁸ Environment Agency (2024) WFD Operational Catchments.

¹⁸⁹ Environment Agency (2022) River Basin Management Plans: maps.

surrounding reservoirs that are located in close proximity to the north-west, south-west and east including:

- Cragg High Level Tank, Cowpe Reservoir, and Scout Moor High Level Reservoir in the north-west;
- Naden Reservoirs and Greenbooth Reservoir in the south-west; and
- Spring Mill Reservoir and Cowm Reservoir in the east.

14.16 A small number springs are recorded beyond the Assessment Boundary and the surface waters on site may receive some limited groundwater baseflow.

14.17 The Environment Agency Flood Risk Mapping shows the following:

- Some surface water flood on flatter areas of the Assessment Boundary and around watercourses and headwaters on steep slopes;
- Reservoirs at risk of flooding from Naden, Greenbooth and Cowm reservoirs; and
- River Irwell to the north and west and Dearden Brook and the River Spodden to the east have a flood risk areas, particularly in the valley bottom and more urban areas.

Water Resources and Drinking Water Protected Areas

14.18 Much of the Assessment Boundary is within Drinking Water Safeguard Zones (Surface Water) and Drinking Water Protected Areas (Surface Water).

14.19 There are seven Drinking Water Protected Areas (DWPA)⁵ within 2km of the Assessment Boundary, including:

- Irwell River;
- Cowpe Reservoir;
- Cowm Reservoir;
- Scout Moor Reservoir;
- Spring Mill Reservoir;
- Middle Naden Reservoir;
- Lower Naden Reservoir; and
- Greenbooth Reservoir.

14.20 All of the reservoirs surrounding the Assessment Boundary are used for drinking water supplies by United Utilities.

14.21 A licensed groundwater abstraction for general farming and domestic supply is located at Knacks Farm to the south-east.

- 14.22 There appears to be only a small number of properties in the area that may be reliant on private water supplies which will be verified.

Proposed Scope of Assessment

- 14.23 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Assessment Boundary, surrounding area and the Project for Assessment (**Chapter 4**). Where environmental effects are considered unlikely to be 'significant', an appropriate evidence base has been provided to justify the 'scoping out' of these effects ensuring the EIA and ES only assess those effects considered 'likely' to be significant, at this stage.

Effects Unlikely / Not Significant

- 14.24 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the PEMP provided in **Appendix 2.1**.

Alteration of surface water and groundwater flow during operation

- 14.25 During the construction stage, infrastructure (e.g. surface water drainage strategy) will be installed to manage the alteration of surface water and ground flow.
- 14.26 Therefore, alteration of surface water and groundwater flow during operation is unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Loss, degradation and disturbance of peatland during operation and decommissioning

- 14.27 The design of the wind turbines and associated infrastructure will avoid high peat slide risk areas and the peat disturbance is mainly associated with the construction activities.
- 14.28 Therefore, loss, degradation and disturbance of peatland during operation and decommissioning are unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Effects on licenced and private water supplies located over 1km from the Assessment Boundary and over 250m from infrastructure associated with the Project for Assessment

- 14.29 Beyond 1km from the Assessment Boundary and 250m from infrastructure associated with the Project for Assessment, licensed and private water supplies are unlikely to be affected.
- 14.30 Therefore, effects on licensed and private water supplies located over 1km from the Assessment Boundary and over 250m from infrastructure associated with the Project for Assessment are unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Effects on GWDTEs located over 250m from infrastructures excavations >1m depth and 100m from excavations <1m depth

- 14.31 Beyond 250m from infrastructure excavations of over 1m in depth and 100m from excavations less than 1m deep, GWDTEs are unlikely to be affected.
- 14.32 Therefore, effects on GWDTEs located over 250m from infrastructure excavations >1m depth and 100m from excavations <1m depth are unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Effects Likely / Significant

- 14.33 **Table 14.1** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 14.1: Potential likely significant effects and sensitive receptors

Effect	Receptor(s)	Applicable stage(s)
Alteration of surface water flow	Drinking water supplies (including United Utilities Reservoirs, licensed abstractions and private water supplies), waterbodies and watercourses	Construction / decommissioning
Alteration of groundwater flow or quality	Groundwater supply linked to drinking water supplies and supporting Groundwater Dependent Terrestrial Ecosystems (GWDTE)	Construction / decommissioning
Alteration of water quality through sediment, peat disturbance or contaminants	Drinking water supplies (including United Utilities Reservoirs, licensed abstractions and private water supplies), waterbodies and watercourses	Construction / operation / decommissioning
Loss, degradation and disturbance of peat resource	Peat resource	Construction

Assessment Methodology of Effects Likely / Significant

- 14.34 **Table 14.2** outlines the background surveys / studies / analysis / evaluations that have been / will be completed.

Table 14.2: Background surveys / studies / analysis / evaluations

Survey / study / analysis / evaluation	Overview	Date of completion
Completed		
Phase 1 Peat Probing	Peat Probing on a 75m grid.	April 2024

Survey / study / analysis / evaluation	Overview	Date of completion
Phase 2 Peat Probing	Peat probing on a 10m grid for infrastructure footprint with a 20m grid completed in a 50m buffer zone.	October 2024
Pending		
Desk-based GWDTE screening	Review of NVC data with hydrogeological regime and topography	December 2024 / January 2025
Desk-based public and private water supply screening	Information request reviews from the Local Authority, Environment Agency and United Utilities	January 2025
Desk-based initial peat slide risk assessment	Review of Peat Survey data	January 2025
Hydrological / Hydrogeological Walkover	Walkover of Assessment Boundary to inspect key water and geological features identified during the mapping phase along with potential GWDTEs.	January / February 2025
Private Water supply Assessment	Inspection of any private water supplies that may be impacted by the Project for Assessment.	January / February 2025
Further Phase 2 probing	Peat probing on a 10m grid for infrastructure footprint with a 20m grid completed in a 50m buffer zone where layout adjustments have occurred.	December 2024 and further date if required
Peat Landslide Hazard Risk Assessment Walkover	Site examination of peat and stability features following geomorphological mapping and initial Factor of Safety assessment	January / February 2025

14.35 The study area will include the Assessment Boundary plus a buffer zone of 1km (noting that features beyond particular distances have been ‘scoped out’ – see above). For hydrological receptors, impacts downstream up to 5km from the Assessment Boundary will also be considered if appropriate, as impacts such as pollution events can be transmitted downstream for greater distances.

14.36 The following data sources will inform further assessments:

- Topographical information at the Assessment Boundary, provided by OS contour mapping;
- 1:25,000 and 1:50,000 scale OS mapping to identify watercourses within the Assessment Boundary;
- Solid and superficial geology information provided by BGS mapping;

- Environment Agency flood maps;
 - Water quality information at and near the Assessment Boundary set out in Environment Agency River Basin Management Plans;
 - Hydrogeology information given by BGS data accessed via Defra Magic Maps;
 - Soil information provided by UK Soil Observatory; and
 - Peat on-site, identified using the Peaty Soils, Natural England mapping and a review of aerial imagery.
- 14.37 Peat probing has been completed on a 75m Grid and further high-density peat depth surveys have been undertaken within the Assessment Boundary in accordance with the relevant guidance (Guidance on Developments on Peatland: Peatland Survey (2017)¹⁹⁰) across the footprint of proposed infrastructure and a micro-siting allowance to inform micro-siting of the layout to seek avoidance of all peat, if possible, with particular emphasis on avoidance of peat >1 m and unmodified peat.
- 14.38 A walkover hydrological survey of the Assessment Boundary will be carried out to identify the existing baseline conditions, including identifying and documenting watercourse crossings (proposed and existing), identification of other water features such as wetlands and springs, undertaking an overview assessment of areas identified as floodplain within the Environment Agency Flood Maps and providing a general overview of landscape and land cover of importance to hydrology and soils including geomorphology.
- 14.39 GWDTEs will be identified based on habitat mapping and ecological surveys and reviewed by the hydrologists in the field, if required¹⁹¹.
- 14.40 A geomorphological walkover will be completed following the completion of a site geomorphological map. This will be used, along with other parameters, to assess the Peat Landslide Hazard Risk (PLHRA)¹⁹².
- 14.41 Private water supply visits will also be undertaken, if required, following consultation with the private water supply owners to verify the source location, the conveyance infrastructure, use, treatment, and any other pertinent details¹⁹³.

¹⁹⁰ Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland.

¹⁹¹ In accordance with UK Technical Advisory Group on the Water Framework Directive Technical report on groundwater dependent terrestrial ecosystem (GWDTE) threshold values and Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems, Land Use Planning System SEPA Guidance Note 31 (Scottish Environmental Protection Agency, 2017).

¹⁹² In accordance with the Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Scottish Government, April 2017).

¹⁹³ In accordance with Private Water Supply Risk Assessment Explanatory Notes for Risk Assessment Lite Tool Version 2.0, DWI November 2018 and the Private Water Supplies Regulations, amended, 2018.

- 14.42 The assessment will be qualitative in nature, drawing upon established best practice guidance and Scottish Guidance where English guidance is not available. Full details of the methodology and approach will be provided in the ES. Where appropriate, consideration will be given to the implications of climate change on the receptors identified.
- 14.43 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgment.

Limitations and Assumptions

- 14.44 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- In the absence of relevant guidelines in relation to wind farm developments the following guidelines will be adopted as they are considered to be the most established and tested guidance to date:
 - Peatland Survey. Guidance on Developments on Peatland (Scottish Government, Scottish Natural Heritage, SEPA 2017);
 - Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Scottish Government, April 2017); and
 - Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems, Land Use Planning System SEPA Guidance Note 31 (Scottish Environmental Protection Agency, 2017).

15. Climate Change

Technical Baseline

Greenhouse Gas (GHG) Emissions

- 15.1 Baseline GHG emissions from total electricity consumption (i.e. industrial, commercial, public sector and domestic) for the most recent period (2022 calendar year) have been obtained from UK local authority and regional greenhouse gas emissions statistics¹⁹⁴ for RMBC and RBC administrative areas, North West England, and England. These are presented in **Table 15.1**.
- 15.2 Existing peat bog that is present within the Assessment Boundary has the potential to result in the release of carbon dioxide (CO₂) emissions from areas that are degraded, and conversely any areas that are not degraded have the potential to result in carbon sequestration through the absorption of atmospheric CO₂. This CO₂ emissions / sequestration relating to peat in the baseline scenario is not known, but CO₂ losses and savings from peat as a result of the Project for Assessment will be estimated as part of the GHG assessment (see Assessment Methodology below).

Table 15.1: Baseline GHG emissions (2022)

Geographical area	Baseline electricity-related GHG emissions (tonnes of CO ₂ equivalent, tCO ₂ e)
RMBC	151,230
RBC	61,476
North West England	5,690,908
England	44,074,773

Climate Change Resilience

Baseline conditions 1981 – 2010

- 15.3 Baseline climatic conditions for the Assessment Boundary area have been established from the Met Office's closest automatic weather station at Rochdale¹⁹⁵, approximately 7km to the south-south-west and at an altitude of 110m above mean sea level.
- 15.4 Given the greater height above mean sea level of the Assessment Boundary (some of which is beyond 400m) relative to this weather station, the following data may not be fully representative of the Assessment Boundary's climatic conditions. Wind speed and direction data is available from Scout Moor I for the period 2009 –

¹⁹⁴ DESNZ (2024) UK local authority and regional greenhouse gas emissions statistics, 2005 to 2022.

¹⁹⁵ Met Office (2024) UK Climate Averages 1981 – 2010 – Rochdale Climate Station (Greater Manchester).

- 15.5 – 2014. However this data is less relevant to climate resilience than temperature and rainfall, as a result the Met Office data is reported as the best available.
- 15.6 Average monthly baseline climate conditions for the period 1981-2010 are summarised in **Table 15.2**.

Table 15.2: Baseline climatic conditions (1981 – 2010 monthly averages)

Month	Max. temp (°C)	Min. temp (°C)	Days of air frost (days)	Sunshine (hours)	Rainfall (mm)	Mean wind speed at 10m above ground level (knots)
January	6.58	1.12	10.27	31.47	112.17	5.10
February	6.82	0.96	11.00	47.01	82.95	5.30
March	9.11	2.60	6.23	91.28	92.24	5.52
April	11.80	3.98	2.87	143.25	70.47	5.25
May	15.27	6.92	0.50	169.90	62.78	4.93
June	17.78	9.60	0.00	143.01	77.85	4.52
July	19.70	11.76	0.00	167.97	79.69	3.85
August	19.45	11.53	0.00	153.08	91.75	3.49
September	16.76	9.55	0.03	115.66	92.57	3.68
October	13.03	6.64	1.50	80.57	119.28	4.13
November	9.26	3.52	5.13	41.82	114.53	4.26
December	6.76	1.11	10.87	27.42	122.27	4.46
Annual	12.72	5.80	48.40	1,212.44	1,118.55	4.54

- 15.7 In summary, **Table 15.2** shows that baseline maximum monthly temperatures during the 1981 – 2010 period ranged from 6.58°C (January) to 19.70°C (July), with an annual average monthly maximum temperature of 12.72°C. Minimum monthly average temperatures ranged from 0.96°C (February) up to 11.76°C (July), with a minimum monthly annual average temperature of 5.80°C.
- 15.8 The number of days of air frost ranged from 0.00 (June to August) to 11.00 (February), with an annual total of 48.40 days. The number of sunshine hours ranged from 31.47 hours (January) to 169.90 hours (May), with an annual total of 1,212.44 hours.
- 15.9 Monthly average rainfall varied from 70.47mm (April) up to 122.27mm (December) and with total annual rainfall of 1,118.55mm. Finally, monthly average wind speed at 10m

AOD varied from 3.49 knots (April) up to 5.52 knots (March), with an annual average wind speed of 4.54 knots.

Baseline conditions 1991 – 2020

15.10 **Table 15.3** presents baseline climatic conditions for the period 1991 – 2020. The future climate projections reported in **Table 15.4** are relative to the 1981 – 2010 baseline reported in **Table 15.2**. However, the 1991 – 2020 data below is helpful as it demonstrates how recorded conditions are changing in advance of these projections.

Table 15.3: Baseline climatic conditions (1991 – 2020 monthly averages)

Month	Max. temp (°C)	Min. temp (°C)	Days of air frost (days)	Sunshine (hours)	Rainfall (mm)	Mean wind speed at 10m above ground level (knots)
January	6.93	1.50	10.16	32.16	119.19	4.54
February	7.45	1.41	9.32	49.83	97.11	4.67
March	9.57	2.51	6.06	98.86	89.91	5.10
April	12.47	4.55	2.33	152.72	68.36	5.14
May	15.60	7.19	0.28	175.45	65.67	4.82
June	18.24	10.13	0.00	152.52	82.87	4.18
July	20.01	11.94	0.00	170.77	96.90	3.61
August	19.55	11.77	0.00	153.52	100.22	3.36
September	17.11	9.55	0.00	116.33	97.80	3.44
October	13.39	6.85	1.07	78.66	116.78	3.88
November	9.70	3.86	5.05	41.64	123.53	4.18
December	7.18	1.50	10.10	42.69	138.88	3.99
Annual	13.13	6.09	44.37	1,265.48	1,197.22	4.24

15.11 In summary, **Table 15.3** shows that baseline maximum monthly temperatures during the 1991 – 2010 period ranged from 6.93°C (January) to 20.01°C (July), with an annual average monthly maximum temperature of 13.13°C, compared to 12.27°C for the 1981 – 2010 period. Minimum monthly average temperatures ranged from 1.41°C (February) up to 11.94°C (July), with a minimum monthly annual average temperature of 6.09°C compared to 5.80°C for 1981 – 2010.

15.12 The number of days of air frost ranged from 0.00 (June to September) to 10.16 (January), with an annual total of 44.37 days compared to 48.40 days in 1981 – 2010.

The number of sunshine hours ranged from 32.16 hours (January) to 175.45 hours (May), with an annual total of 1,265.48 hours compared to 1,212.44 hours in 1981 – 2010.

- 15.13 Monthly average rainfall varied from 65.67mm (may) up to 138.88mm (December) and with total annual rainfall of 1,197.22mm compared to 1,118.55mm in 1981 – 2010. Finally, monthly average wind speed at 10m AOD varied from 3.36 knots (August) up to 5.14 knots (April), with an annual average wind speed of 4.24 knots compared to 4.54 knots in the 1981 – 2010 period.

Climate change projections

- 15.14 Projections of future climatic conditions for the Assessment Boundary area have been obtained from the Met Office's UKCP18¹⁹⁶ climate projections for different future periods for the 25km Ordnance Survey grid square within which the Assessment Boundary is located (262500, 187500) as presented in **Table 15.4**.
- 15.15 These projections comprise predicted changes to baseline conditions for the UKCP18's "high emissions scenario" (known as 'RCP8.5') as recommended by the IEMA guidance. '50th percentile' values are reported meaning there is equal probability of a higher or lower observed value for that projection. As such these projections represent a reasonable worst case for the purposes of considering climate change resilience impacts. Climate projections are provided for the periods 2025 – 35, 2035 – 45, 2045 – 55, 2055 – 65 and 2065 – 75 in order to cover the construction, 40-year operation and decommissioning stages.

Table 15.4: Climate projections (changes relative to 1980 – 2010 Baseline, RCP8.5, 50th Percentile)

Parameter	2025 – 35	2035 – 45	2045 – 55	2055 – 65	2065 – 75
Temperature					
Winter maximum (°C)	+0.63	+0.85	+1.18	+1.49	+1.85
Summer maximum (°C)	+0.89	+1.17	+1.61	+2.17	+2.91
Annual maximum (°C)	+0.73	+0.98	+1.34	+1.75	+2.25
Rainfall					
Winter (%)	+3.40	+4.58	+8.38	+10.30	+13.28
Summer (%)	-4.01	-6.30	-11.11	-16.82	-21.49
Annual (%)	+0.84	+0.54	+0.41	+0.29	+0.97

¹⁹⁶ <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/about/what-is-ukcp>.

- 15.16 In summary, **Table 15.4** shows that for temperature, winter maximum temperatures are projected to increase by 0.63°C by 2025 – 2035 (i.e. project construction and early operational stages) relative to 1981 – 2010 baseline conditions, further increasing by 1.85°C by the end of the operational stage / decommissioning in 2065 – 75. Summer maximum temperatures are projected to increase by 0.89°C by 2025 – 2035 (i.e. project construction and early operational stages), further increasing by 2.91°C by the end of the operational stage / decommissioning in 2065 – 75. Annual maximum temperatures are projected to increase by 0.73°C by 2025 – 2035 (i.e. project construction and early operational stages), further increasing by 2.25°C by the end of the operational stage / decommissioning in 2065 – 75.
- 15.17 Regarding rainfall, variable changes in annual rainfall are projected relative to the 1981 – 2010 baseline of +0.84% during the construction and early operational stages (2025 – 35), between +0.29% and +0.54% during the main operational stage (2035 – 2065) and 0.97% by the end of the operational stage / decommissioning in 2065 – 75.
- 15.18 The changes in annual rainfall mask more significant changes in summer and winter rainfall that are projected. Winter rainfall is predicted to increase by 3.40% by the construction and early operational stages (2025 – 35), increasing to +13.28% by the end of the operational stage / decommissioning in 2065 – 75.
- 15.19 Summer rainfall meanwhile is projected to decrease by 4.01% by the construction and early operational stages (2025 – 35), further decreasing by 21.49% by the end of the operational stage / decommissioning in 2065 – 75.

Proposed Scope of Assessment

- 15.20 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Assessment Boundary, surrounding area and the Project for Assessment (**Chapter 4**). Where environmental effects are considered unlikely to be 'significant', an appropriate evidence base has been provided to justify the 'scoping out' of these effects ensuring the EIA and ES only assess those effects considered 'likely' to be significant, at this stage.

Effects Unlikely / Not Significant

- 15.21 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the PEMP provided in **Appendix 2.1**.

Extreme weather impacts on turbine operation

- 15.22 In the absence of design measures to ensure resilience to extreme weather events such as high winds and lightning (the likelihood of which may increase as a result of climate change), the turbines may become damaged.
- 15.23 Above the maximum operational wind speed for which they are designed, the blades pitch out of the wind and the turbine stops operating. The maximum allowable windspeed (called 'Vref' or 'V50') is calculated during the suitability assessment. If the calculated V50 exceeds the turbine V50, a yaw power back up system can be deployed,

essentially a battery pack to power the yaw motors to ensure the turbine is facing the right direction during a grid outage, a system which extends the V50 by a few m/s.

- 15.24 Additionally, the turbines will have a lightning protection system. The blade tip is made from aluminium and there are three further receptors near the end of the blade with a lightning cable running through the blade and into the hub / nacelle / tower / foundation. A lightning detection system can also be provided to measure the strength of a lightning strike and aid the detection of potential damage.
- 15.25 Therefore, extreme weather impacts to turbine operation is unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Heat stress

- 15.26 Increasing summer temperatures as a result of climate change may increase heat stress risks for construction / decommissioning workers. The CEMP / DEMP will include measures to reduce overheating risks, such as provision of shaded areas, potable water supplies and suitable PPE.
- 15.27 Therefore, the effect of heat stress is unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Increased risk of flooding

- 15.28 Changes to seasonal rainfall patterns as a result of climate change have the potential to increase the risk of flooding at the Assessment Boundary and impact construction / decommissioning workers and activities alongside proposed infrastructure during operation.
- 15.29 As set out in **Chapter 5**, the majority of the Assessment Boundary lies within an area at low risk of fluvial and surface water flooding, with areas at higher risk. As noted, changes in flood risk during construction / decommissioning are unlikely to be significant with the implementation of a temporary drainage strategy and measures within a CEMP / DEMP, including awareness training for construction workers and appropriate storage of materials to avoid increasing flood risk off-site.
- 15.30 Therefore, effects related to increases in flood risk are unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Effects Likely / Significant

- 15.31 **Table 15.5** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 15.5: Potential likely significant effects and sensitive receptors

Effect	Receptor(s)	Applicable stage(s)
GHG emissions, savings and net GHG effect	Global climate system	Construction / operation / decommissioning

Assessment Methodology of Effects Likely / Significant

15.32 **Table 15.6** outlines the background surveys / studies / analysis / evaluations that have been / will be completed.

Table 15.6: Background surveys / studies / analysis / evaluations

Survey / study / analysis / evaluation	Overview	Date of completion
Pending		
Carbon Calculator	Application of Scottish <i>Government's Carbon calculator tool for wind farms on Scottish peatlands</i> ¹⁹⁷ to estimate GHG emissions from windfarm construction, GHG savings from wind farm operation, GHG savings from peat restoration, GHG emissions / savings from project decommissioning, and the project's net GHG effect across its construction, operation and decommissioning stages.	Winter 2024 / 2025

15.33 Onshore wind is recognised as one of the most cost-effective and established renewable energy technologies, and electricity generated from wind power also has one of the lowest carbon footprints compared with other forms of electricity generation¹⁹⁸. By reducing demand from traditional and higher carbon electricity generation technologies such as natural gas combustion, operational wind farms can deliver significant GHG reductions relative to this 'business as usual' scenario. However, the construction of wind farms (and to a lesser extent their operation and decommissioning) can result in the release of significant GHG emissions from the manufacture and transportation of the turbines and other components, as well as from the disturbance of peat deposits.

15.34 The Scottish Government has developed a Carbon Calculator Tool to support the process of determining wind farm developments. The tool's purpose is to assess, in a comprehensive and consistent way, the carbon impact of wind farm developments by comparing the carbon emissions resulting from wind farm developments with the carbon savings attributable to the operational wind farm.

15.35 The tool estimates GHG emissions / savings from the following sources:

- Wind turbine life (including manufacture and transport);
- Back-up generation;

¹⁹⁷ Scottish Government (2022) Carbon calculator for wind farms on Scottish peatlands: Factsheet.

¹⁹⁸ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/48356/5197-onshore-wind-faqs.pdf.

- Bog plants;
 - Soil organic carbon;
 - Dissolved Organic Carbon (DOC) and Particulate Organic Carbon (POC);
 - Any forestry management;
 - Any improved degraded bogs;
 - Any improved felled forestry;
 - Restored borrow pits; and
 - Stopped foundations drainage.
- 15.36 Total GHG emissions from wind farm construction are then divided by annual GHG savings forecast (calculated relative to an average grid mix) from wind farm operation to provide the carbon 'payback period' (in months) at which point GHG emissions are offset by operational GHG savings.
- 15.37 This approach to considering lifecycle GHG emissions and savings and the project's net GHG effect accords with IEMA's EIA Guide to: Assessing GHG Emissions & Evaluating their Significance¹⁹⁹ ('IEMA GHG Guidance').
- 15.38 The following assessment methodology is therefore proposed:
- Review the Project for Assessment details (plans and Development Specification);
 - Establish the context (planning policy and related guidance) for renewable energy generation, decarbonisation of the electricity grid and net zero from the UK, national and local (i.e. RMBC and RBC) perspective;
 - Establish baseline conditions regarding GHG emissions and / or renewable energy generation at various geographic scales (Assessment Boundary, RMBC, RBC, North West England and England);
 - Establish the sensitivity of the receptor to GHG emissions effects (the global climatic system);
 - Liaise with the Applicant and other technical topics to obtain appropriate input data for the Carbon Calculator Tool. This will cover a range of project attributes including: turbine number; turbine power rating (MW), duration of consent (years), type of peatland, average peat depth, peat carbon content, extent of drainage around drainage features on-site (m), average water table depth (m), dry soil bulk density, dry soil bulk density (g/cm³); the time required for the regeneration of bog plants following restoration (years); the number, length, width and depth of borrow pits; foundations and hard-standing area associated

¹⁹⁹ IEMA (2022) EIA Guide to: Assessing GHG Emissions & Evaluating their Significance.

with each turbine; the volume of concrete used in construction of the entire windfarm (m³); details of access tracks including length, width, depth, length of drainage, depth of drainage, average depth of peat excavation; and multiple details regarding the improvement of degraded bog and restoration of the site during decommissioning;

- Complete the Carbon Calculator Tool and prepare a Technical Appendix for the ES to report the applied methodology, input data and any assumptions etc, alongside the assessment findings including forecast GHG emissions / GHG savings, the net GHG effect over the project lifecycle and its carbon ‘payback period’;
- Report Carbon Calculator Tool findings in the context of baseline GHG emissions at the Assessment Boundary, RMBC, RBC, North West England and England levels to establish the magnitude of effect;
- Establish the contribution of the Project for Assessment to UK / England’s net zero carbon 2050 trajectory, as required by the IEMA GHG Guidance, to support the consideration of level and significance of effect;
- Establish the need for / evaluate any measures that are proposed to mitigate adverse effects and / or enhance beneficial effects; and
- Taking account of any such mitigation, conclude on the magnitude, level and significance or residual GHG effects.

15.39 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgment.

Limitations and Assumptions

15.40 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- While developed for use in Scotland, this tool has been applied previously to wind farms in Wales and England, and its application to the Project for Assessment can be ensured through the maximum use of site-specific input data such as the peat type, peat depth, carbon content and dry bulk density etc.

16. Approach to the Assessment of Cumulative Effects

Overview

- 16.1 This Chapter establishes the methodology for the assessment of cumulative effects arising from the Project for Assessment.
- 16.2 The EIA Regulations, through Regulation 4, Paragraph 2 and Schedule 4, Paragraph 5(e), require the consideration of the interaction of effects identified at the project level as well as the culmination of effects with other '*existing and/or approved projects*'.
- 16.3 To accord with the EIA Regulations and best practice guidance, the following types of cumulative effects will be considered within the EIA:
- Effect interactions (to accord with Regulation 4, Paragraph 2): The interactions and combination of environmental effects of the Project for Assessment affecting the same receptor, either within the Assessment Boundary or in the surrounding area; and
 - In-combination effects (to accord with Schedule 4, Paragraph 5(e)): The interaction and combination of environmental effects of the Project for Assessment with other existing²⁰⁰ or approved projects affecting the same receptor ('Cumulative Projects').

Assessment Methodology

- 16.4 There is no widely accepted current methodology or best practice for the assessment of cumulative effects for the EIA process under the Town and Country Planning regime. It is acknowledged that guidance on the approach to the assessment of in-combination effects for projects that fall under the Nationally Significant Infrastructure Project (NSIP) regime has been issued by the Planning Inspectorate²⁰¹ though, as this is focused on NSIPs, it is not necessarily applicable to all projects / sectors.
- 16.5 The proposed assessment methodology set out below is based on the principles of the Planning Inspectorate guidance, an understanding of the receptors to be assessed through the ES, the nature of the Project for Assessment and professional judgement drawing on previous experience and knowledge at Turley.

²⁰⁰ Noting that 'existing' projects may form part of the baseline and where this is the case, these projects have not been considered as part of the assessment of cumulative effects.

²⁰¹ Planning Inspectorate (2019) Advice Note Seventeen: Cumulative Effects assessment relevant to nationally significant infrastructure projects (Version 2). Available online - <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-17/>.

- 16.6 The assessment of cumulative effects, for both effect interactions and in-combination effects, will be largely qualitative in nature. For some technical topics, quantitative data may be available (e.g where modelling work is undertaken) facilitating a quantitative analysis of cumulative effects, which will be fully set out within the assessment reported in the ES. Where information is not available, assumptions will be made based on professional judgement and clearly stated alongside any uncertainty as part of the assessment.

Effect Interactions

- 16.7 The assessment of effect interactions will follow a two-stage process, as follows.

Step 1: Identification of potential effect interactions

- 16.8 The assessment of effect interactions will consider the changes from baseline conditions at common sensitive receptors²⁰² due to overlapping effects arising from the Project for Assessment. The assessment will be focused on residual effects only (i.e. following the implementation of project specific mitigation).
- 16.9 In order to identify where a potential common receptor is present, the receptors assessed through the ES will be categorised into the 'factors' outlined in Regulation 4, Paragraph 2 (and expanded on in Schedule 4, Paragraph 4) of the EIA Regulations. These are as follows:
- Population and human health;
 - Biodiversity (for example fauna and flora);
 - Land (for example land take);
 - Soil (for example organic matter, erosion, compaction, sealing);
 - Water (for example hydromorphological changes, quantity and quality);
 - Air;
 - Climate (for example greenhouse gas emissions, impacts relevant to adaptation);
 - Material assets;
 - Cultural heritage, including architectural and archaeological aspects; and
 - Landscape
- 16.10 A matrix of residual effect interactions will be formulated in the ES corresponding to the construction and operational stages of the Project for Assessment. The construction stage effects will be used as a proxy for the decommissioning stage.
- 16.11 The threshold for inclusion within the matrices will be set at a 'minor' level of effect as this is considered to address the potential for a number of residual effects that are not

²⁰² Common sensitive receptors will be those that are assessed within two or more technical effects assessments provided within the ES.

necessarily considered to be 'Significant' in isolation to become 'Significant' when they are considered collectively on a common sensitive receptor.

- 16.12 Where, through the application of the matrices, potential effect interactions are not identified, in that no specific common receptor(s) is identified, then it will be concluded that there are no effect interactions identified.
- 16.13 Where potential effect interactions are identified, the relevant receptor categories will be taken forward to Step 2 (see below).

Step 2: Qualitative appraisal

- 16.14 The qualitative appraisal of the receptor categories brought forward from Step 1 will include the following:

- Clear identification of specific receptor(s) considered for each effect 'contributing' to a potential effect interaction to understand the common receptor (and their attributes, such as location etc.); and
- An appraisal where there are specific common receptors, considering:
 - Magnitude of change (or impact) of each residual effect;
 - Sensitivity (or value, importance, etc.) of the receptor / receiving environment to change;
 - Duration (of the effects individually and collectively utilising the short / medium / long-term criteria set out in **Chapter 2**) and reversibility of the effect;
 - If the effects are temporary and / or permanent;
 - If the effects are experienced / occur concurrently or sequentially; and / or
 - The geographical / spatial extent of the individual effects.

- 16.15 An overall qualitative assessment of the cumulative effects on the identified receptor categories will then be made using the information contained within this ES and supporting appendices in Volume 2 (where appropriate) and professional judgement.

- 16.16 Where possible, a conclusion on effect interactions will be provided discussing the likelihood of the effect interactions being 'Significant' or 'Not Significant'.

In-Combination effects

- 16.17 The assessment of potential in-combination effects will be undertaken using the methodology outlined below.

Step 1: Identification of projects for consideration

- 16.18 In order to identify Cumulative Projects that could give rise to in-combination effects with the Project for Assessment, a review of the following sources has been undertaken:

- RBC's and RMBC's online register of projects^{203, 204};
- Planning Inspectorate online register of projects²⁰⁵;
- Transport and Works Order Act online register of projects²⁰⁶;
- Parliament Hybrid Bills online register²⁰⁷; and
- The Landstack²⁰⁸ map function to identify planning applications (in particular from RBC and RMBC).

16.19 Where relevant, online register of projects of other nearby / relevant local authorities have also been reviewed in addition to the sources listed above (e.g. Bury Council, Hyndburn Borough Council, etc.). A full list will be provided within the ES.

16.20 In line with the EIA Regulations, this review has focused on 'projects'. Therefore, sites allocated within local plans, core strategy documents or supplementary planning documents have not been considered. This is due to there being insufficient information to undertake a meaningful assessment of in-combination effects.

16.21 Due to the nature of the Project for Assessment, the location of the Assessment Boundary and relevant guidance, the search areas have been defined using relevant topic guidance, as follows:

- Landscape and visual – 45km search area for other wind turbine projects over 50m in height²⁰⁹ and 15km for other types of development²¹⁰; and
- All other technical topics (see **Chapters 6 – 10 and 12 – 15**) – 15km search area.

16.22 In line with Planning Inspectorate Advice Note Seventeen, criteria and professional judgment have been used to determine whether then to include or exclude projects from further assessment, informed by aspects such as temporal scale, nature of development and other factors. The following additional criteria have therefore been used to define the list of Cumulative Projects:

- Applications dating from November 2019 onwards. It is anticipated that applications prior to this date will already have been built out (and therefore form part of the baseline) and / or where subsequent applications have been submitted these would be captured within the search dates;

²⁰³ <https://www.rossendale.gov.uk/planning-building-control/planning>.

²⁰⁴ <https://www.rochdale.gov.uk/planning-permission/search-planning-applications>.

²⁰⁵ <https://infrastructure.planninginspectorate.gov.uk/projects/register-of-applications/>.

²⁰⁶ <https://www.gov.uk/government/collections/twa-inspector-reports-and-decision-letters>.

²⁰⁷ <https://www.parliament.uk/about/how/laws/bills/hybrid/>.

²⁰⁸ Landstack is an interactive mapping tool that displays all planning applications submitted to local planning authorities and automatically updates on a weekly basis.

²⁰⁹ See **Figure 11.11**.

²¹⁰ <https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments>.

- Applications with resolution to grant planning permission;
- Applications with planning permission, either under construction or not yet implemented (unless already considered as part of the baseline scenario);
- Applications submitted, which have the potential to be determined prior to the determination of the Project for Assessment;
- Applications which have been refused but subject to an appeal not yet determined; and
- Projects of a pertinent scale, which has been determined using professional judgment but informed by their scale, perceived impact or complexity. This includes projects that fall under the definitions of Schedule 1 and 2 development set out within the EIA Regulations;

- 16.23 The resulting Cumulative Projects that will be considered and appraised in the assessment of cumulative effects using the methodology and criteria set out above is provided within **Table 16.1** and their locations are shown on **Figure 16.1**.
- 16.24 Given the expected build out period of the Project for Assessment, as part of the search for cumulative projects a number of 'other projects' known to the project team but are yet to be subject to a formal planning application have been identified (e.g. such as projects subject to EIA Screening or EIA Scoping). Such other projects have been identified within **Table 16.2** as 'projects to monitor'. Currently there is insufficient information available to enable a robust appraisal of possible cumulative effects with these projects.
- 16.25 A further review using the sources and criteria outlined above will be undertaken 12 weeks prior to the finalisation of the assessment of cumulative assessment as part of the ES. This is to ensure there is sufficient time for them to be considered and incorporated within any studies / evaluation / modelling that may underpin the assessments within the ES (e.g. visualisations).
- 16.26 Where the identified 'projects to monitor' do not have a submitted application 12 weeks prior to the finalisation of the ES, these will be excluded from the final assessment of cumulative effects presented in the ES.

Table 16.1: Identified Cumulative Projects

Map ID	Application reference / Name / Description	Status	Distance and direction from Assessment Boundary
1	RMBC 2022/0451 Land west of Market Street, Edenfield Full application for the erection of 238 no. residential dwellings (Use Class C3) and all	Awaiting determination	Adjacent to the west

Map ID	Application reference / Name / Description	Status	Distance and direction from Assessment Boundary
	associated works, including new access, landscaping and public open space.		
2	Bury Council 63533 Land at Bevis Green Works (Tetrosyl), Bury Residential development comprising 268 no. dwellings (Class C3) with associated access, car parking, landscaping and open space	Under construction	3.5km south-west
3	RBC 23/00650/HYBR Land At Stakehill, Off Rochdale Road, Middleton Hybrid planning application (EIA development) seeking: Full Planning permission for the erection of residential development of 233 dwellings (Use Class C3) with associated landscaping, means of access, drainage, and other necessary supporting infrastructure Outline planning permission with access (all other matters reserved) for residential development of up to 1147 dwellings (Use Class C3), mixed-use development, land for primary school extension, local centre and MUGA, landscaping, and supporting infrastructure	Awaiting determination	8km south-east
4	RBC 16/01399/HYBR South Heywood Part full/part outline planning application for the development of land at South Heywood, including the demolition of a number of existing on-site buildings and structures. Full consent sought for the construction of a new link road between Junction 19 of the M62 and Pilsworth Road, the widening of part of Pilsworth Road, together with associated junction improvements, landscaping, lighting and other works including the importation of material and engineering works in order to construct the link road. Outline consent (with all matters reserved for future approval except access) sought for a major mixed-use development comprising supporting residential uses comprising up to 1000 dwellings (Class C3); employment uses (Classes B2/B8) comprising up to 135,460m2 Gross Internal Area(GIA); a new primary school (Class D1); Class A1/A2/A3/A5 uses comprising up to 2500m2 GIA	Approved	7.3km south

Map ID	Application reference / Name / Description	Status	Distance and direction from Assessment Boundary
	which includes no more than 499m2 of A1 uses; together with associated landscaping, open space and sports pitches, drainage, ecological enhancements, cycleway and footpath linkages, infrastructure and other works ancillary thereto. (Application accompanied by an Environmental Statement)		
5	RBC 22/01190/FUL Land South Of Cowm Top Lane, Castleton, Rochdale Residential development comprising 495 dwellings with associated access, car parking, landscaping and infrastructure	Awaiting determination	7.5km south-east
6	RBC 22/00588/FUL Crimble Mill, Heywood The restoration of the existing mill, change of use of the upper floors to 33 dwellings and ground floor commercial floorspace (Classes E, F1 or F2), the replacement of the existing road bridge and the removal of the existing footbridge, restoration of the mill pond and leat, the construction of flood alleviation measures; the upgrading of Crimble Lane from Rochdale Road, the improvement of public rights of way, hard and soft landscaping, and other engineering works; the demolition of the other (non-listed) existing buildings, remediation of the site and the formation of a development platform and the construction of 31 dwellings and associated works and engineering operations; the construction of 150 dwellings accessed from Woodland Road and Crimble Lane and the regrading of the site together with associated engineering/retention works, the provision of surface water balancing ponds, open space, and other works; together with other associated works including landscape and ecological improvements	Awaiting determination	5.4km south-east
7	RBC 22/01364/FUL Land to the west of Smithy Bridge Road, Littleborough	Awaiting determination	7km south-east

Map ID	Application reference / Name / Description	Status	Distance and direction from Assessment Boundary
	Residential development: erection of up to 199 dwellings including vehicular access on to Smithy Bridge Road, with internal highways, car parking, footpaths, cycle paths, boundaries, gardens, open space and other associated works		
8	Hyndburn Borough Council 11/21/0657 Former Huncoat Power Station Major Outline: Proposed redevelopment for up to 451 residential units, together with associated landscaping, open space, access and infrastructure'. The plans submitted for specific approval are the three listed on the drawing schedule (attached), ie the parameter plans on land uses, heights and access/movement	Awaiting determination	11.4km north-east

Table 16.2: Identified projects to monitor

Application reference / description	Status	Distance and direction from Assessment Boundary
RBC 21/01531/SCO Scoping opinion in respect of a proposed scheme including 500 dwellings and a sports hub	Pre-planning	3.8km south-east
Bury Council 71262 / RMBC 24/01039/SCO Scoping opinion for proposed for Northern Gateway site (JPA 1.1)	Pre-planning	7.5km south-west

Step 2: Assessment of in-combination effects

- 16.27 Whilst a number of Cumulative Projects have been identified, it does not necessarily follow that there will be in-combination effects with the Project for Assessment as there needs to be an effect on the same receptor for a similar duration.
- 16.28 The assessment of in-combination effects will take into consideration available documentation submitted in support of the application(s) for the above Cumulative Projects, to conclude if common receptors are present between the Project for Assessment and the Cumulative Projects and the extent of any in-combination effect. Where suitable information is not available, either professional judgement will be used to determine the cumulative effects or limitations will be set out.

- 16.29 The in-combination assessment will focus on the technical topics and associated likely significant effects 'scoped in' (i.e. the effects reported within the ES).
- 16.30 The evaluation at the receptor level will consider the following:
- Magnitude of change (or impact) in the relevant technical assessments;
 - Sensitivity (or value, importance, etc.) of the receptor / receiving environment to change; and / or
 - Duration and reversibility of effect.
- 16.31 The nature of the evaluation (e.g. whether qualitative or quantitative) will depend on the methodology adopted to assess the relevant effect. Where relevant, topic specific guidance will be used, such as GLVIA3 and NatureScot's Assessing the Cumulative Impact of Onshore Wind Energy Developments guidance²¹¹. Further details on how each effect has been assessed will be provided within the ES.
- 16.32 Through a combination of the evaluation and mitigation presented, conclusions will be drawn as to the likelihood for in-combination effects, their nature (i.e., adverse or beneficial), whether these are 'Significant' or 'Not Significant' and how such effects differ from those reported for the Project for Assessment. In some cases, how the Project for Assessment contributes to the overall in-combination effect will also be considered.

²¹¹ NatureScot (2021) Assessing the Cumulative Impact of Onshore Wind Energy Developments.

17. Summary

- 17.1 This report has been prepared to inform and support a request for a Scoping Opinion from RBC and RMBC in accordance with Regulation 15 of the EIA Regulations.
- 17.2 The Scoping Opinion is sought on the breadth of the technical topics and associated effects to be considered within the EIA and reported in the ES (alongside methodology and approach for assessment). Therefore, as part of this report, the following has been identified:
- Technical topics for which effects are likely / significant (i.e. 'scoped in' to the EIA and will be reported within the ES²¹²); and
 - Technical topics for which all effects are unlikely / not significant (i.e. 'scoped out' of the EIA and will not be reported in the ES).
- 17.3 A summary of the technical topics considered and whether these are 'scoped in' or 'scoped out' is provided in **Table 17.1**.

Table 17.1: Summary of technical topics 'scoped in' or 'scoped out'

Technical topic	Inclusion in ES	
	Construction / decommissioning	Operation
Agricultural land	✗	✗
Air quality	✗	✗
Artificial lighting	✗	✗
Aviation and radar	✗	✗
Flood risk	✗	✗
Ground conditions, land contamination and minerals	✗	✗
Major accident and / or disasters	✗	✗
Socio-economics and human health	✗	✗
Telecommunications	✗	✗
Waste and resources	✗	✗
Transport and access	✓ 	✗
Noise and vibration	✓	✓
Shadow flicker	✗	✓

²¹² Note that where a technical topic has been 'scoped in', a number of effects may be proposed to be 'scoped out' as these are unlikely / not significant or are not subject to change.

²¹³ Note decommissioning effects are not to be considered for transport and access.

Technical topic	Inclusion in ES	
	Construction / decommissioning	Operation
Ecology	✓	✓
Ornithology	✓	✓
Landscape and visual	✓	✓
Built heritage	✓	✓
Archaeology	✓	✓
Hydrology and peatland	✓	✓
Climate change	✓	✓

Figures

Appendices

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