

Preliminary Environmental Information Report

Calderdale Energy Park

7 April 2026

Volume 1, Chapter 5 : Alternatives and Design Evolution

PINS Reference: EN0110023

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



Table of contents

5	ALTERNATIVES AND DESIGN EVOLUTION	1
5.1	Introduction	1
5.2	Need for the Proposed Development	4
5.3	The ‘Do Nothing’ Alternative	5
5.4	Site Selection Process	6
5.5	Approach to Design Evolution	8
5.6	Alternative Designs	11
	Table 5-1 BRAG appraisal approach for design refinement	10
	Table 5-2: Turbines removed from Scoping layout	14
	Table 5-3: Turbines added following Non-Statutory Consultation and Scoping	15
	Table 5-4: Key Siting Changes to Scoping Turbine Locations	15
	Table 5-5: Changes to Turbine numbering between Scoping Layout (41 turbines) and PEIR Layout (34 turbines)	16

5 Alternatives and Design Evolution

5.1 Introduction

- 5.1.1 In accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations')¹ an important part of the EIA process is to describe the reasonable alternatives considered during the evolution of the Proposed Development, such as design, technology, location, size and scale, and to set out the main reasons for selecting the chosen option. As such, this Chapter describes the reasonable alternatives that have been considered, at this preliminary stage of the Proposed Development. It considers how the Proposed Development has developed throughout the pre-application process to date.
- 5.1.2 As discussed in **Chapter 1: Introduction**, this Preliminary Environmental Information Report (PEIR) presents environmental information at the preliminary stage, which means the assessment and supporting data are still evolving. Further surveys, technical assessments and refinement of environmental measures and additional mitigation measures will be undertaken following consultation, with the findings reported in the Environmental Statement (ES), which will be submitted with the DCO Application. Accordingly, the information contained within this Chapter is preliminary only and may be subject to change prior to the production of the full ES, as assessment work progresses. In accordance with the PINS Scoping Opinion², the ES will also take account of any design changes and the ongoing evolution of the Proposed Development resulting from stakeholder engagement. This further evolution will be documented in the ES.
- 5.1.3 A Site Selection Report setting out the site selection process undertaken by the Applicant to identify the location of the Proposed Development will be appended to the Planning Statement, which will be submitted as part of the DCO Application. For the purposes of the PEIR, details on the methodology used for the Site Selection are presented in **Section 5.4** of this Chapter.

¹ His Majesty's Office (HMSO) (2017) Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

⁴ PINS Advice Note Seven. Available at:

<https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-and-environmental-statements/#8>. Accessed September 2025

² Available at: nsip-documents.planninginspectorate.gov.uk/published-documents/EN0110023-000006-EN0110023 - Scoping Opinion 2017 EIA Regs.pdf

5.2 Review of Relevant Legislation and Policy

5.2.1 A review of relevant legislation and policy has been undertaken to establish the requirements for the consideration and presentation of alternatives within this PEIR.

5.2.2 Regulation 14(2)(d) and Schedule 4, paragraph 2 of the EIA Regulations require that an ES (and, by extension, a PEIR) includes “a description of the reasonable alternatives studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the likely significant effects on the environment.”

5.2.3 The Overarching National Policy Statement for Energy (NPS) EN-1³ paragraph 4.3.9 states “as in any planning case, the relevance or otherwise to the decision-making process of the existence (or alleged existence) of alternatives to a proposed development is in the first instance a matter of law”. From a policy perspective, EN-1 confirms that there is no general requirement to consider alternatives or to demonstrate that a proposal represents the best option.

5.2.4 However, in paragraphs 4.3.15-4.3.17 of NPS EN-1, it is clear that:

- Applicants are obliged to include in their ES, information about the main alternatives studied, including the main reasons for selecting the preferred option, taking into account environmental, social, and economic effects and, where relevant, technical and commercial feasibility;
- In some circumstances, National Policy Statements may impose a specific policy requirement to consider alternatives; and
- Where such policy or legal requirements apply, applicants must describe the alternatives considered in accordance with those requirements.

5.2.5 The Overarching NPS for Renewable Energy Infrastructure EN-3⁴ and the Electricity Networks Infrastructure NPS EN-5⁵, contain limited policy on alternatives. Nevertheless Section 2.12 of EN-3 provides guidance on factors influencing site

³ National Policy Statement (NPS) EN-1 – Overarching NPS for Energy. Available at: Overarching National Policy Statement for energy (EN-1), 2025 (accessible webpage) - GOV.UK

⁴ Department for Energy Security & Net Zero (2025) National Policy Statement for Renewable Energy. Available at: National Policy Statement for Renewable Energy Infrastructure (EN-3)

⁵ Department for Energy Security & Net Zero (2023) National Policy Statement for Electricity Networks Infrastructure (EN-5). (2023) Available at: <https://assets.publishing.service.gov.uk/media/65a78a5496a5ec000d731abb/nps-electricity-networks-infrastructure-en5.pdf>

selection, layout design and the appearance of onshore wind farm infrastructure, all of which are relevant to design evolution and the consideration of alternatives.

5.2.6 The Planning Inspectorate's (PINS) Advice Note Seven⁶ reinforces this approach, confirming that a good ES should '*explain the reasonable alternatives considered and the reasons for the chosen option, taking into account the effects of the proposed development on the environment*'.

5.2.7 Beyond the EIA Regulations and NPS', there are other specific legal and policy frameworks that may require the consideration of alternatives, which are relevant to the Proposed Development. These include:

- The Conservation of Habitats and Species Regulations 2017 and The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (transposing the Habitats Directive)⁷, which require an assessment of alternatives where projects could adversely affect the integrity of European sites;
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017⁸, which may necessitate alternatives where potential deterioration of waterbody status is identified;
- National policy requirements relating to the avoidance of significant harm to biodiversity, flood risk management, and development within nationally designated landscapes (such as National Parks and Areas of Outstanding Natural Beauty);

⁶ Planning Inspectorate (2020) Nationally Significant Infrastructure Projects - Advice Note Seven: Environmental Impact Assessment: process, preliminary environmental information and environmental statements. Available at: <https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-an>

⁷ UK Government (2017) The Conservation of Habitats and Species Regulations 2017 (S.I. 2017 No. 1012), transposing Council Directive 92/43/EEC ("the Habitats Directive") and elements of Directive 2009/147/EC into UK law. Available at: <https://www.legislation.gov.uk/ukxi/2017/1012/contents>

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Available at: The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

⁸ UK Government (2017) The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (S.I. 2017 No. 407), transposing Council Directive 2000/60/EC ("Water Framework Directive") and Directive 2006/118/EC into UK law. Available at: <https://www.legislation.gov.uk/ukxi/2017/407/contents>

- Legal and guidance requirements relating to the use of compulsory acquisition powers, including special category land.

5.2.8 In light of these legal and policy requirements, and reflecting the iterative design process undertaken to date, the following sections of this Chapter describe the reasonable alternatives considered by the Applicant in developing the Proposed Development, as presented within the PEIR.

5.3 Need for the Proposed Development

5.3.1 The case for the need for the Proposed Development is centred on its significant contribution to three important national policy aims of decarbonisation, which are:

- Net Zero and the importance of deploying net zero-carbon generation assets at scale;
- Security of supply through geographically and technologically diverse generators; and
- Affordability by deploying cost-effective renewable energy that reduces reliance on fossil fuels and shields consumers from volatile international fuel prices.

5.3.2 The Proposed Development is for a new onshore wind farm project, which directly supports the UK's legal obligation to achieve net zero greenhouse gas emissions by 2050, as well as the interim carbon budgets set by the Sixth Carbon Budget⁹ and subsequent budgets. It contributes to delivering the clean generation capacity required to displace unabated fossil generation, enhance security of supply, and reduce long-term system costs.

5.3.3 NPS EN-1 recognises that there is an urgent and continuing need for new renewable electricity generation capacity to meet the objectives of the Clean Power 2030 Action Plan¹⁰, which places clean electricity generation at the heart of the UK's decarbonisation agenda. In particular, the Clean Power 2030 Action Plan establishes indicative capacity ranges '*to prioritise projects needed for 2030, while maintain[ing] a robust pipeline beyond 2030*', including 27-29 GW of onshore wind by 2030 and 35-37 GW of onshore wind by 2035. However, as stated in the government's Planning for New Energy Infrastructure Consultation Response⁹, '*Clean Power 2030 is a milestone that reflects the scale of ambition required to*

⁹ DESNZ (2025) Consultation Response |Planning for New Energy Infrastructure. 2025 revisions to National Policy Statements for energy infrastructure. <https://assets.publishing.service.gov.uk/media/69121170bda892e068aa6454/nps-revisions-2025-consultation-government-response.pdf>.

meet our Net Zero 2050 target; it is not a fixed ceiling on technology deployment or project approvals’.

- 5.3.4 NPS EN-1 brings forward the concept of Critical National Priority (CNP) for nationally significant low carbon infrastructure needed to meet the Clean Power 2030 mission, meaning that such projects benefit from a policy presumption in favour of consent. Each application will be decided by the Secretary of State on a case-by-case basis and there are exceptions to the CNP presumption.
- 5.3.5 NPS EN-1 confirms that *“secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar” because “wind and solar are the lowest cost ways of generating electricity, helping reduce costs and providing a clean and secure source of electricity supply (as they are not reliant on fuel for generation)”*.
- 5.3.6 In addition, NPS EN-3 establishes for the first time a dedicated section addressing onshore wind (in England) within the NSIP regime.
- 5.3.7 Accordingly, the Proposed Development is clearly aligned with national policy and contributes to meeting the identified urgent and unprecedented national need for new low carbon generation capacity as set out in the NPSs.
- 5.3.8 NPS EN-1 (paragraphs 3.2.6-3.2.9) confirms that for energy infrastructure falling within the NPS regime, the Secretary of State should assess applications on the basis that there is a demonstrable urgent need and that substantial weight should be given to that need. NPS EN-1 emphasises the *‘level playing field’* for onshore wind within the NSIP regime (England only) by setting a generation threshold of more than 100 MW and re-introducing onshore wind into the NSIP consenting route.
- 5.3.9 A Statement of Need will be presented in the DCO Application and will set out further details on why the Proposed Development is required at the proposed location and scale to contribute towards meeting the unprecedented urgent and continuing national need for new low carbon generation.

5.4 The ‘Do Nothing’ Alternative

- 5.4.1 The consideration of ‘do nothing’ as an alternative to the Proposed Development, which would constitute no development of onshore wind, has not been considered as an alternative as it would not deliver the proposed renewable electricity generation capacity and mix of technologies which are required in order to meet the UK’s net zero statutory targets, provide energy security and reduce emissions that are contributing to climate change. NPS EN-1 paragraph 4.3.27 states that *‘alternative proposals which mean the necessary development could not proceed, for example because the alternative proposals are not commercially viable or alternative proposals for sites would not be physically suitable, can be excluded on*

the grounds that they are not important and relevant to the Secretary of State's decision.'

5.5 Site Selection Process

- 5.5.1 A robust site selection process is being carried out, comprising a number of detailed appraisal stages, to validate the chosen PEIR Boundary for the Turbine Area. The selection and optioneering of the cable corridors and access routes is explained in **Section 5.6: Alternative Designs**.
- 5.5.2 This Chapter does not provide the full Site Selection Assessment including the detailed consideration of alternative sites. A Site Selection Assessment Report will be provided with the DCO Application at submission stage. This Chapter explains the chosen methodology and the process the Applicant has undertaken, which considers environmental, physical, technical and engineering constraints, consistent with the principles of good design and sustainable development set out in NPS EN-1 and NPS EN-3.
- 5.5.3 The overarching objective of the site selection process is to identify locations capable of accommodating onshore wind turbines that:
- Security of Supply: export electricity to the UK National Grid to support UK commitments for onshore wind generation in England and security of supply;
 - Decarbonisation: generate low carbon electricity from an onshore wind farm in England to support decarbonisation of UK electricity supply and in support of the UK target to generate 8.6GW of onshore wind in England and Wales by 2030 and 15.8GW by 2035; and
 - Optimisation: optimise generation and export capacity within the constraints of available sites and transmission infrastructure whilst delivering project skills, employment and investment benefits.
- 5.5.4 The site selection process is being undertaken in accordance with the guidance provided in EN-3 section 2.12, which sets out that applicants should demonstrate how potential sites were identified and assessed, taking account of factors such as wind resource and speed, access to grid connection, topography, accessibility, environmental constraints, resilience to climate change, good design, and proximity to settlements.
- 5.5.5 The key considerations of the site selection process for the Turbine Area within the Proposed Development include:

- Location - the North of England (transmission network T3); North Wales, the Mersey & the Humber (T4) and the Midlands (T5) as referred to in Clean Power 2030¹⁰;
- Wind Speed – initial screening of locations with suitable annual average wind speeds (≥ 7.5 m/s)¹¹ consistent with the requirements of EN-3;
- Proximity to Grid Infrastructure – considerations of areas within approximately 60km of a viable Point of Connection (PoC) to the National Electricity Transmission System (NETS) network or a Distribution Network Operator (DNO) network, ensuring sufficient grid capacity to accommodate the anticipated generation export of approximately 240MW. A 60km threshold has been applied as this represents the maximum cable route length identified for the Proposed Development;
- Land Availability and Scale - identification of developable area that is available, of at least 2,000ha¹², this included the aggregation of two smaller adjacent parcels of 1,000ha within 1km of each other¹³. This included ensuring 50% of the land parcel has a gradient of 20%, to accommodate the turbine layout and associated infrastructure efficiently and safely; and
- Proximity to Settlements – land parcels which are 2km away from built-up areas to reduce potential amenity impacts on local communities. The km buffer is applied to provide an appropriate separation distance that reduces the likelihood of adverse visual, noise, and construction-related effects on residents.

5.5.6 The next phase of the site selection process was to consider environmental and planning constraints of any alternative sites which met the criteria set out above. Consistent with NPS EN-1 and NPS EN-3, the assessment considered the following technical matters for each alternative site using a bespoke BRAG matrix:

- Agricultural Soils;
- Archaeology;
- Biodiversity;

¹⁰ Department for Energy Security and Net Zero (DESNZ) (2025), Clean Power 2030 Action Plan. Available at: <https://www.gov.uk/government/publications/clean-power-2030-action-plan>

¹¹ Global Wind Atlas. Available at: <https://globalwindatlas.info/en/> (Accessed: March 2026).

¹² A 2,000ha search area has been applied as this represents the maximum size of the Turbine Area

¹³ Two 1,000 ha sites were assessed to ensure smaller parcels were considered, with a 1 km spacing applied to minimise the need for a separate substation.

- Built Heritage;
- Flood Risk;
- Human Health;
- Hydrology and Hydrogeology;
- Landscape and Visual;
- Peat; and
- Transport and Access.

5.5.7 The details of the process and sites identified will be presented in the Site Selection Report including the consideration of alternative sites, which will be submitted as part of the DCO Application.

5.5.8 This structured, multi-stage approach is consistent with NPS EN-1, which requires applicants to demonstrate that they have considered '*reasonable alternatives*' and have selected sites that represent the most appropriate balance between environmental, social, and technical factors. It also reflects the Government's expectation in EN-3 that applicants will demonstrate how site selection has sought to maximise renewable generation while avoiding or minimising impacts where practicable.

5.6 Approach to Design Evolution

Consultation and Stakeholder Engagement

5.6.1 As stated above, the PINS Scoping Opinion requests the Applicant's ES take account of any design changes and the ongoing evolution of the Proposed Development resulting from stakeholder engagement¹⁴. The evolution of the Proposed Development has been, and is expected to continue to be, shaped by ongoing stakeholder consultation.

5.6.2 The ES will include a comprehensive account of consultation activities undertaken throughout the pre-application period, together with a clear description of how stakeholder feedback has directly informed the design, layout, and mitigation measures for the Proposed Development. This will be reported within the ES, submitted as part of the DCO Application.

5.6.3 The Proposed Development has started to be guided by engagement with key statutory consultees including Natural England, the Environment Agency, and

¹⁴ PINs Scoping Opinion Reference 2.0.1

Historic England. These discussions have helped refine the study area and identify sensitive environmental receptors. Continued engagement will be undertaken throughout the design process of the Proposed Development. Once further assessment work has been completed, the results will be discussed with the key statutory consultees; where this results in the evolution of the design this will be documented in the ES.

- 5.6.4 Engagement has also included on-site meetings, including with Natural England, to establish the baseline condition of peatland and moorland habitats, to understand site sensitivities, and shape the approach to impact avoidance, mitigation, and enhancement. As above, feedback from these and other consultees has been, and will continue to be, incorporated into the iterative design process to ensure the Proposed Development achieves an appropriate balance between renewable energy delivery and environmental protection.

Constraints Mapping

- 5.6.5 A constraints mapping approach was used to evaluate proposed alternatives for siting infrastructure forming part of the Proposed Development. This involved identifying specific areas for turbines, cable corridors and site access. Constraints data, compiled in a Geographical Information System (GIS) format was presented as distinct layers on maps. This GIS information was obtained from baseline data in the public domain and any available site-specific survey results.

- 5.6.6 These identified infrastructure areas were defined as follows, and shown in **Figure 5-1**:

- Turbine Area - The land designated for wind turbines and all associated onsite ancillary infrastructure, including the onsite substation and interconnecting (onsite) cabling. A Battery Energy Storage System (BESS) was initially considered but has since been discounted (see below). This area explicitly excludes external cable routes to the National Grid substation options and offsite highway works, which are situated outside the Turbine Area boundary;
- Grid Connection Cable Corridor Search Areas – Broad zones for potential cable routes to the PoC, with the National Grid Electricity Transmission (NGET) network or DNO network. The exact alignment of these routes remained flexible within these defined search areas during that design phase (pre-Scoping through to Scoping).
- Site Access Search Areas: Wider zones encompassing potential access route options. Similar to the cable corridors, the exact locations of these routes were still flexible in the design whilst further baseline information and

engineering data was gathered, along with discussions with the relevant statutory consultees at the pre-Scoping stage, and Scoping stage.

- 5.6.7 The environmental constraint layers were combined to create a constraints map and show an initial indication of the spread and concentration of constraints for each of the identified areas as above, which acted as a visual aid.

Environmental Appraisal

- 5.6.8 For the iterative design of the Proposed Development, a BRAG (Black, Red, Amber, Green) appraisal approach was used by the environmental and engineering teams for each of the identified infrastructure areas. For the Turbine Area this included applying the BRAG approach to each of the turbine locations.
- 5.6.9 The BRAG criteria were developed by the Applicant based on experience on other renewable projects (including for onshore wind and DCO scale projects), with the definitions given to black, red, amber and green criteria applied consistently across the identified infrastructure areas.
- 5.6.10 The BRAG approach colour coded ratings are defined in **Table 5-1**. Black constraints are those that have been avoided. Red constraints have been avoided wherever practicable, noting that where they remain, they typically give rise to the need for significant compensation / mitigation. Amber constraints give rise to the need to consider alternatives and where they can't be avoided, typically give rise to the need for appropriate mitigation measures. Green constraints are those that may be more readily minimised or managed by employing appropriate mitigation measures.
- 5.6.11 The overarching requirement of the BRAG is to identify those constraints that require avoidance to reduce the potential impact of the Proposed Development on the environment and community. Where avoidance is not practicable, impacts have been reduced through changes to the proposed design or minimised through the identification and proposed implementation of mitigation measures.
- 5.6.12 As discussed below, the proposed design has evolved following the BRAG appraisal and will continue to evolve as additional environmental data is assessed and stakeholder feedback reviewed in the lead up to the submission of the DCO Application. The BRAG approach will be used for other elements of the Proposed Development as the design progresses.

Table 5-1: BRAG appraisal approach for design refinement

Rating	Description
Black	Potential showstoppers to development

Rating	Description
Red	High potential for the development to be constrained
Amber	Intermediate potential for the development to be constrained
Green	Low Potential for the development to be constrained

Design Commitments

- 5.6.13 As discussed in **Chapter 4: The Proposed Development**, the EIA has adopted the Rochdale Envelope approach. This ensures that the maximum (and where relevant, minimum) parameters of the Proposed Development have been assessed. These parameters are based on the preliminary design parameters as set out in **Chapter 4: The Proposed Development** and reflect the current stage of the design of the Proposed Development. It is noted that these parameters are likely to change with the evolution of the Proposed Development. The final design will be presented in the ES which will be submitted with the DCO Application.
- 5.6.14 As part of the design evolution, the first stage has involved establishing key parameters and setback distances to guide infrastructure siting and avoid significant environmental constraints where it is practicable to do so. Any commitments made in relation to avoidance, mitigation, or design refinements will be captured within a Commitments Register, which will accompany the DCO submission. This register will be prepared in accordance with PINS advice¹⁵ and will detail how each commitment will be secured and implemented. It will support the application of the mitigation hierarchy (which includes avoidance, mitigation, and compensation) as set out in the technical assessments. The Commitments Register is a live document and will be updated throughout the DCO Application examination process to reflect ongoing design refinements and consultation outcomes. The latest version of the Commitments Register is included in **Appendix 3.1**.

5.7 Alternative Designs

Turbine Area

Initial TCPA Scoping Layout – up to 65 Wind Turbines, 2023

- 5.7.1 As detailed in the July 2023 Town and Country Planning Application (TCPA) Scoping Report submitted to Calderdale Borough Council¹⁶, an initial design

¹⁵ Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Commitments Register, non-statutory guidance under section 51 of the Planning Act 2008. Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-commitments-register>

¹⁶ Calderdale Wind Farm Limited (2023) Scoping Report for a Proposed Wind Farm Development and Associated Infrastructure, submitted to Calderdale Metropolitan Borough Council under the

iteration identified a maximum of 65 wind turbines as the upper limit for the Proposed Development. This number was selected to optimise energy output while remaining within the spatial and environmental constraints present. Preliminary feasibility studies indicated that the Turbine Area could theoretically accommodate up to 65 turbines (see **Figure 5-2**), with tip heights ranging from 150m to 175m. This initial configuration provided a platform for identifying zones of suitability and refining the layout in response to environmental, technical, and planning considerations.

- 5.7.2 The selection of 65 turbines was informed by the site's strong wind resource, with average wind speeds exceeding 8 m/s at 109m elevation, making it one of the more productive locations for onshore wind in England. The design also considered the potential contribution of the Proposed Development to national and local renewable energy targets, including Calderdale Council's net zero ambitions by 2038.
- 5.7.3 In addition to the 65 turbines, the Proposed Development included a 50MW BESS and an area of the Turbine Area was identified for solar panels. These panels were proposed as south facing and positioned at an angle of between 20° and 35°. They were proposed at a height of no more than 3m from the ground to the top of panel and fixed into position by steel mounting system fixed onto steel piles.

Non-Statutory Consultation and Scoping Report Layout – up to 41 Wind Turbines, September 2025

- 5.7.4 As the design of the Proposed Development progressed, a series of constraints mapping exercises, BRAG appraisals, and design workshops were undertaken to assess turbine viability. These assessments considered a wide range of factors, including:
- Ecological sensitivities, such as Priority Habitats, protected species, and ornithological / biodiversity designations (Special Protection Area (SPA)/Special Area of Conservation (SAC)/ Site of Special Scientific Interest (SSSI));
 - Hydrological and peatland constraints, including deeper peat, watercourse crossings and flood risk;
 - Noise and vibration, particularly in relation to nearby dwellings;
 - Landscape and Visual Impact Assessment (LVIA), including views from designated routes, and cumulative effects with existing wind farms; as well

Town and Country Planning Act 1990. Available at: <https://www.calderdaleenergypark.co.uk/wp-content/uploads/2025/09/Calderdale-Energy-Park-Scoping-Report.pdf>.

as Residential Visual Amenity Assessment (RVAA) relating to spatial considerations such as enclosure, particularly in relation to nearby dwellings;

- Historic Environment, including impacts on setting and cultural heritage features;
- Aviation and radar interference, including proximity to the Pole Hill navigation beacon and Met Office infrastructure;
- Recreational and planning designations, such as the Pennine Way, Calderdale Green Belt and Special Landscape Area (SLA).

5.7.5 In parallel with the layout refinement, the turbine technology was also reviewed. The Vestas V162 was selected as an indicative candidate turbine, offering a 200m tip height, 119m hub height, and 81m blade length, with a rated capacity of 7.2MW. This model was chosen as the indicative candidate turbine for its ability to maximise energy yield while reducing the overall number of turbines required.

5.7.6 Through iterative refinement the number of proposed turbines was reduced to address those constraints identified at the time of the non-statutory consultation (Phase One Consultation) which was conducted between 29 April and 10 June 2025 and the subsequent Scoping Report submission to the Planning Inspectorate in September 2025. Turbines were removed, repositioned, or adjusted in scale to address identified constraints while maintaining energy generation targets. The outcome of this process was a 41 turbine layout.

5.7.7 As part of this design iteration, the Applicant undertook a review of the inclusion of a solar farm as part of the Proposed Development. Due to the land required for the installation of solar panels at scale and the associated ecological sensitivities of additional land take within the SSSI designation, the proposed solar farm was removed from the scope of the Proposed Development.

5.7.8 A 41 turbine layout, without a solar farm, was submitted as part of the Scoping Report to the Planning Inspectorate in September 2025 (shown visually on **Figure 5-3**).

PEIR Layout – up to 34 Wind Turbines, January 2026

5.7.9 As described in **Chapter 4: The Proposed Development**, the current proposed turbine layout comprises up to 34 turbines. This proposed layout was reached following a series of design workshops that focussed on:

- Non-statutory consultation community feedback, particularly relating to LVIA (including proximity and heritage settings) and noise concerns;

- Statutory body engagement, particularly relating to feedback on aviation, habitat and deeper peat constraints; and
- Updated environmental baseline data from National Vegetation Classification (NVC) surveys and Phase 2 peat probing.

5.7.10 Changes were made during the design reviews to address a combination of constraints, including:

- Impacts on deep areas of peat and pristine blanket bog;
- Landscape and visual impacts, particularly on elevated ridgelines in the southwest and northeast of the Turbine Area;
- Noise constraints due to proximity to residential receptors;
- Potential interference with aviation and Met Office radar infrastructure, including Pole Hill and Hameldon Hill radar sites;
- Ecological and hydrological sensitivities, including Priority Habitats, watercourses, and ornithological features; and
- Proximity to the Pennine Way.

5.7.11 Following consideration of the above constraints, seven turbines were removed and a number of other turbines were repositioned. The proposed turbine layout was refined to comprise 34 turbines, representing a balanced outcome between energy generation potential and environmental, technical, and planning considerations. Details on which turbines were removed from the non-statutory consultation and scoping layout are provided in **Table 5-2**. Details of new turbine locations chosen to replace those removed from the non-statutory consultation and scoping layout are provided in **A visual** representation of the turbines removed from the Scoping Layout can be seen in **Figure 5-5**.

5.7.12 **Table 5-3**. Details of the turbines micro-sited since scoping are provided in **A visual** representation of the turbines added following Non-Statutory Consultation and Scoping can be seen in **Figure 5-5**.

5.7.13 **Figure 5-4** provides a visual representation of the revised 34 turbine layout. **Figure 5-5** provides a visual representation of the turbines which were removed, added and repositioned between the scoping layout (41 turbines) and the PEIR layout (34 turbines)

5.7.14 To ensure clarity and avoid confusion regarding the total number of proposed turbines at this stage in the process, the previous turbine numbering system has been retired, and a new, consistent set of turbine identifiers has been applied

across the layout for the purposes of the PEIR. Details of the new turbine numbers are provided below.

- 5.7.15 The proposed BESS infrastructure was also reviewed as part of the design workshop and is no longer being taken forward as part of the Proposed Development. The proposed substation footprint was amended accordingly.
- 5.7.16 Since Scoping, the infrastructure layout has been updated to include locations for proposed construction compounds and borrow pits. Where practicable, proposed borrow pits have been combined with turbine locations to reduce the impact of earthworks within the Turbine Area.

Table 5-2: Turbines removed from Scoping layout

Scoping Turbine Number	Reason for removal
1, 2, 3 & 4	Potential aviation impacts associated with Pole Hill radar site; potential LVIA impacts on residential properties at Widdop and potential construction and operational noise impacts on residential properties at Widdop. Changes made to address community feedback from non-statutory consultation and concerns raised by aviation consultees.
5	Potential aviation impacts associated with Pole Hill radar site and habitat constraints
23 & 24	Potential impacts on priority habitats and deeper areas of peat.
33 & 34	To address LVIA feedback received during non-statutory consultation.

- 5.7.17 A visual representation of the turbines removed from the Scoping Layout can be seen in **Figure 5-5**.

Table 5-3: Turbines added following Non-Statutory Consultation and Scoping

New Turbine Number	Reason for inclusion
3 & 4	To compensate for removal of the original turbines 2, 3 & 4. New turbine locations were identified in areas that did not impact on deeper peat or bog habitats and did not present aviation risks.

- 5.7.18 A visual representation of the turbines added following Non-Statutory Consultation and Scoping can be seen in **Figure 5-5**.

Table 5-4: Key Siting Changes to Scoping Turbine Locations

Scoping Turbine Number	Reason for Siting Changes
6	Moved east downslope to mitigate potential impacts on Pole Hill and reduce overall aviation radar impacts.
8	Moved out of deeper peat.
10	Moved out of deeper peat and blanket bog.
14	Relocated southeast to avoid blanket bog, deeper peat and to allow for new turbine 4 location.
20	Moved further south downslope and reduced in height to 150m tip height to mitigate potential LVIA setting impacts from Top Withens following feedback received at non-statutory consultation.
21	Moved further south downslope and reduced in height to 150m tip height to mitigate potential LVIA setting impacts from Top Withens following community concerns raised at non-statutory consultation.
22	Moved out of deeper peat and blanket bog.
27	Moved out of deeper peat.
28	Moved west to avoid deeper peat.
30	Moved out of deeper peat.
36	Moved further north to reduce potential LVIA impacts raised at non-statutory consultation. Relabelled for PEIR as Turbine 34.
37	Moved out of deeper peat and to avoid priority habitats. Relabelled for PEIR as Turbine 2.

5.7.19 A visual representation of the turbines repositioned from the Scoping Layout can be seen in can be seen in **Figure 5-5**.

Table 5-5: Changes to Turbine numbering between Scoping Layout (41 turbines) and PEIR Layout (34 turbines)

PEIR numbering	Scoping numbering
1	39
2	37
3	New location

PEIR numbering	Scoping numbering
4	New location
5	40
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	41
24	35
25	25
26	26
27	27
28	28
29	29
30	30
31	31

PEIR numbering	Scoping numbering
32	32
33	38
34	36

5.7.20 A visual representation of the turbines numbering changes can be seen in **Figure 5-5**.

Grid Connection Cable Route

Scoping Report: Grid Connection Cable Route Search Areas, September 2025

5.7.21 The search areas for the cable route options were initially identified based on the location of potential grid connection offers at the existing Electricity Northwest (ENW) 132kV distribution substation at Rochdale and a future NGET 400kV substation in Leeds North, the location of which is yet to be provided by the National Energy System Operator (NESO) or NGET.

5.7.22 Three Cable Corridor Search Areas were developed and identified as part of the Scoping Report, two of which had two preliminary route corridor options. These Cable Corridor Search Areas were identified as follows and are shown visually on **Figure 5-6**:

- Bradford West Cable Corridor Search Area – from the Turbine Area to the PoC to the National Grid transmission network and Northern Power Grid (NPG) distribution network at the Bradford West Substation. It is noted that within this cable search area, two preliminary options were proposed (details provided below);
- Rochdale Cable Corridor Search Area - from the Turbine Area to the PoC to the Electricity North West distribution network at the Rochdale substation. It is noted that within this cable search area, two preliminary options were proposed (details provided below); and
- Leeds North Cable Corridor Search Area - the search area to Leeds North which was included on the basis of the grid connection offer with NESO.

5.7.23 The Bradford West Cable Corridor Search Area and Rochdale Cable Corridor were assessed using an initial BRAG appraisal considering a range of environmental and technical criteria including (but not limited to) biodiversity, ornithology, land and soils (including historic landfills), water, historic environment, landscape and visual, and population factors. It should be noted that the search areas within the Scoping

Report were intentionally broad to allow flexibility at this stage and to enable the future refinement of routes to avoid potential environmental constraints.

- 5.7.24 The Cable Corridor Search Areas and outputs of the BRAG are described further below.

Bradford West Cable Corridor

- 5.7.25 The Bradford West Cable Corridor Search Area presented in the Scoping Report included two preliminary options; the first preliminary option running south of Oxenhope, through Sentry Hill, and north of the settlement of Denholme (Option 1) and a second preliminary option running over Nab Hill to the south of Denholme, towards Thornton (Option 2). There was a possible connection designed between the two routes at about the mid-way point. These options are shown in **Figure 5-7**.
- 5.7.26 Initial appraisal of the Bradford West Option 1 at the time of Scoping identified some potential ecological and landscape sensitivities, including partial overlap with designated habitats within the South Pennine Moors SSSI (limited to the highway corridor either side of the A6033). At Scoping, this route represented the lowest potential overlap with SSSI of the options considered. The corridor option passes through areas of high landscape sensitivity but avoids key national recreational routes. Other environmental factors, such as land quality, historic land use (landfills), flood risk and air quality, presented no major constraints at this stage. As the shortest and most accessible option, construction effects were expected to be limited and manageable through design refinement.
- 5.7.27 The Bradford West Option 2 also intersected parts of the South Pennine Moors SSSI and areas of high landscape sensitivity, with a greater degree of environmental overlap than Option 1. The corridor generally crosses lower-grade agricultural land with limited flood risk and no significant air-quality concerns. Localised effects on access routes and heritage assets are anticipated to be temporary and capable of mitigation through detailed design

Rochdale Cable Corridor

- 5.7.28 The initial assessment of the Rochdale Cable Corridor Search Area (and the two options shown on **Figure 5-8**) identified ecological and access sensitivities, with parts of the search area overlapping sections of the South Pennine Moors SSSI, SAC and SPA, as well as areas of Priority Habitat and Ancient Woodland. The corridor also passes near Healey Dell Local Nature Reserve. As part of consultation on the Scoping Report, the National Trust also identified that this proposed Cable Corridor Search Area potentially intersected inalienable land under the National Trust Act 1907 associated with Hardcastle Crag. These sensitivities indicated that careful route refinement would be required to reduce potential effects on designated sites and habitats.

- 5.7.29 From a landscape and heritage perspective, the Rochdale Cable Corridor Options 1 and 2 crosses areas of high scenic and recreational value, including parts of a Special Landscape Area and Green Infrastructure Zones in Calderdale and Rossendale. It intersects several long-distance trails and local Public Rights of Way, such as the Calderdale Way and Pennine Bridleway. The wider area also includes heritage assets and Conservation Areas, though any effects are expected to be localised and temporary given the underground nature of the connection.
- 5.7.30 The land, soil, and hydrology characteristics present relatively few constraints, with the corridor primarily crossing lower-grade agricultural land (Grades 4–5) and areas of low flood risk. The route crosses several minor and main rivers, though impacts are expected to be manageable through design and standard construction methods.

PEIR Layout: PEIR Grid Connection - Bradford West Cable Corridor, January 2026

- 5.7.31 As shown in **Figure 3-3** and discussed in **Chapter 4: The Proposed Development**, it is now proposed to connect the Proposed Development to a PoC at the Bradford West Substation. This route is still subject to ongoing discussion with network operators (NGET (transmission) and NPG (distribution)) and other relevant stakeholders, including statutory consultees and landowners. A distribution connection application has been lodged with NPG and the Applicant is engaging with NPG to confirm the requirements of this connection.
- 5.7.32 The Bradford West Cable Corridor presented in the PEIR has been developed to avoid specific environmental constraints, including:
- SSSI designated areas, with the exception of the A6033 where the Bradford West Cable Corridor will be located within the existing highway corridor;
 - Areas identified as potential historic landfills and former/existing quarries (including the Thomas Crompton Buck Park Quarry);
 - Woodland areas (where unavoidable, a horizontal directional drill (HDD) (or similar) will be used to install the export cable beneath the woodland);
 - Major watercourse crossings (with the exception of Nab Water which will be crossed using a HDD or similar); and
 - Major highways and A-roads, with the exception of the A6033 where the Bradford West Cable Corridor will be located within the existing highway corridor. A HDD (or similar) will be used to cross Keighley Road and Whalley Lane in Denholme. The proposed grid corridor has also been located parallel to Whalley Lane to avoid the need for temporary closures of the road.

- 5.7.33 The Bradford West Cable Corridor will be refined through detailed engineering design, environmental baseline surveys and further technical assessments to ensure that likely significant effects are assessed and the mitigation hierarchy then applied to minimise any impacts. In this way, the design process will continue to apply the mitigation hierarchy, first seeking to avoid sensitive receptors and designated areas where practicable, and then to reduce and mitigate potential impacts through design refinement and construction management measures.
- 5.7.34 The proposed corridor therefore represents a working assumption and should not be interpreted as a fixed or finalised route.
- 5.7.35 The Proposed Development has secured a Gate 2 Phase 2 prioritisation (i.e. between 2031 and 2035). NESO's Connections Reform timeline shows that the Applicant should expect to be notified by the end of early September 2026 and mid-January 2027 of the details of its revised connection offer.

Access Routes

Scoping Layout: Site Access Route Options, September 2025

- 5.7.36 As shown in **Figure 5-1**, as part of the Scoping layout, two search areas were proposed for construction traffic access to the Turbine Area, as follows:
- The Western Access to accommodate construction traffic arriving from the northwest; and
 - The Eastern Access to accommodate construction traffic arriving from the east.
- 5.7.37 Similarly, to accommodate traffic to the grid connection corridor options, at this stage of the Proposed Development, the site access search areas were intentionally broad to allow flexibility; and to enable the future refinement of routes to avoid potential environmental constraints.

PEIR Layout: Site Access Routes, January 2026

- 5.7.38 The proposed construction accesses to the Turbine Area identified in the Scoping layout have been retained, with a further option proposed for the Western Access Route as noted below.
- 5.7.39 The Western Access Route, off the A6068 is proposed to be used for AIL deliveries associated with wind turbine components, Heavy Goods Vehicles (HGV), delivery vehicles, general construction traffic and construction workforce. The Eastern Access Route off the A6033 is proposed to be used for HGV, general construction traffic and construction staff.

- 5.7.40 As part of the Western Access Route, a new offline (i.e. not within existing highways routes) AIL and HGV route has been proposed off the A6068 to avoid potential impacts to environmental and heritage features on School Lane, Colne. Following a review and update of the initial AIL swept path analysis, a secondary offline route has been proposed as an option on Lancashire Moor Road to avoid potential pinch points identified in the swept path analysis for the AIL route. Both of these offline routes are subject to consultation with relevant landowners and stakeholders including the relevant highway authority.
- 5.7.41 An offline HGV route has also been proposed on the Eastern Access Route between Hill House Edge Lane, Oxenhope and the A6033 south of The Waggon & Horses Inn, Oxenhope to avoid the need for junction changes and associated traffic impacts at the junction of Hill House Edge Lane and the A6033. The existing route of Hill House Edge Lane between the proposed offline HGV route and the A6033 is also identified as unsuitable for HGVs and further road upgrades would have been required to provide access for HGVs on this route.
- 5.7.42 The Western Access Route has been developed to avoid (or where features cannot be avoided, minimise impacts on) specific environmental constraints, including:
- Heritage listed assets on School Lane at Laneshawbridge and Lancashire Moor Road (including the vaccary walls west of the Atom);
 - Trawden Forest Conservation Area;
 - Pendle Council's Atom panopticon exhibit (the additional offline route has been developed as an option to avoid impacts on the Atom carpark);
 - Areas of lowland fen bordering Lancashire Moor Road; and
 - Areas of blanket bog north of Lancashire Moor Road.
- 5.7.43 The Eastern Access Route has been developed to avoid specific environmental constraints, including:
- Areas of SSSI designation east of the A6033 and south of the engineered watercourse connecting to the Thornton Moor Reservoir; and
 - Local (small scale) excavations previously used to source rock for local field boundary walls.
- 5.7.44 The Eastern Access Route uses the existing highways east of the offline access route. The proposed route uses existing highways that were used for the Ovenden Moor Wind Farm development. Minor temporary highways improvements are proposed between Hill House Edge Lane and Cold Edge Road (up to the Halifax

