
CARREG WEN WIND FARM

EIA Scoping Report

February 2026



CARREG WEN WIND FARM SCOPING REPORT

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1 Introduction

1.1 Project Background

- 1.1.1 This Scoping Report is provided in support of a request to the Planning and Environment Decisions Wales (PEDW) (on behalf of Welsh Ministers) for a Scoping Direction in accordance with Section 33 of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (as amended)¹, hereafter referred to as the 'EIA Regulations'.
- 1.1.2 Trydan Gwyrdd Cymru Ltd, 'the Applicant', is seeking to construct, operate and decommission the Carreg Wen Wind Farm ('the Proposed Development') on land ('the Site') located at and around St Gwynno Forest, Aberdare as shown in **Figure 1.1.1**.
- 1.1.3 The Proposed Development is within St Gwynno forest, owned by Welsh Government (WG) and managed by Natural Resources Wales (NRW), and on adjacent third party land and is located within Rhondda Cynon Taf County Borough Council (RCTCBC).
- 1.1.4 The current proposal is for:
- Up to 18 turbines, with a maximum tip height of 230 metres, with an installed capacity of up to 108 MW
 - Crane hardstanding areas at each turbine location, construction compounds and temporary assembly areas;
 - New tracks including pgrades, widening and extension of existing onsite forestry roads to facilitate delivery and installation;
 - A substation to facilitate export to the electricity network (including allowance for battery storage); and
 - Underground onsite cabling connecting turbines to the electricity substation.
- 1.1.5 The layout of the Proposed Development is preliminary and identifies the maximum parameters **Figure 1.1.2**. The proposals will continue to be developed in response to environmental and technical considerations, and stakeholder feedback, including responses to consultation in relation to this Scoping Report.
- 1.1.6 This project qualifies as a Significant Infrastructure Project (SIP) under the Infrastructure (Wales) Act 2024 and will be progressed through the Infrastructure Consent (IC) process, with

¹ [The Town and Country Planning \(Environmental Impact Assessment\) \(Wales\) Regulations 2017](#)

the application submitted to PEDW for examination and final determination by Welsh Ministers.

- 1.1.7 Dulas Ltd as part of a WSP-led consortium has been commissioned by the Applicant to prepare an EIA Scoping Report in line with the requirements of Section 33 of the EIA Regulations, to support a request for an EIA Scoping Direction.

About the Applicant

- 1.1.8 Trydan Gwyrdd Cymru is a registered and limited private company wholly owned by Welsh Government, established in March 2024. Trydan Gwyrdd Cymru's objective is to increase the value to Wales from renewable energy development, starting with the Welsh Government Woodland Estate. Welsh Government owns and manages large areas of land, which includes its Woodland Estate, managed by Natural Resources Wales (NRW), covering more than 126,000 hectares and representing nearly 6% of the country's total land area.
- 1.1.9 Trydan Gwyrdd Cymru's aim is to deliver renewable energy projects predominantly across the public estate, and to optimise the benefits to Wales from a portfolio of wind energy projects, and potentially other smart energy solutions.

1.2 Purpose of the Scoping Report

- 1.2.1 By virtue of the EIA Regulations, the Welsh Ministers have the power to direct when an application requires an EIA. Applicants, such as in this case, may also undertake EIA on a voluntary basis without requesting direction from the Welsh Ministers.
- 1.2.2 Scoping is the process of determining the scope and level of detail of information to be provided in the ES and agreeing where a topic/aspect is unlikely to have significant effects and, therefore, can be excluded. This forms an early stage in the EIA process, enabling the activity of reviewing any environmental studies undertaken to date and identifying those environmental aspects that may be significantly affected / impacted by a Proposed Development.
- 1.2.3 The Scoping Report is to support a request for a Scoping Direction to PEDW under Regulation 33 of the EIA Regulations in respect of applications for planning permission to the Welsh Ministers as an Infrastructure Consent project.
- 1.2.4 Regulation 33 (2) outlines the need for a Scoping Direction to include:
- *"a plan sufficient to identify the land;*
 - *a brief description of the nature and purpose of the development including its location and technical capacity;*
 - *its likely significant effects on the environment;*

- *a statement that the request is made in relation to a development of national significance for the purposes of section 62D of the 1990 Act; and*
- *such other information or representations as the person making the request may wish to provide or make."*

1.2.5 This Scoping Report describes the scope of the technical studies to be undertaken in order to provide a comprehensive assessment of significant effects likely to arise, and to determine suitable mitigation measures for the construction and operational phases of the Proposed Development.

1.2.6 The Scoping Report outlines the proposed scope of the Carreg Wen EIA, providing a mechanism for consulting on and agreeing the content and methodology of the subsequent Environmental Statement (ES) with Local Planning Authority (LPA) officers, statutory consultees, and other stakeholders.

1.3 Structure of the Scoping Report

1.3.1 This Scoping Report is structured as follows:

- Section 1 introduces the requirement for EIA and scoping process;
- Section 2 describes the Policy Context;
- Section 3 describes the Site context and key receptors;
- Section 4 describes the Proposed Development and Embedded Mitigation;
- Section 5 summarises the consultation and engagement activities to date and proposed;
- Section 6 outlines the overall assessment methodology and approach to the EIA;
- Section 7 presents the key environmental topics to be addressed by the EIA;
- Section 8 summarises the issues intended to be scoped out of the EIA;
- Section 9 provides the proposed structure of the ES; and
- Section 10 provides an overall summary and conclusions to the report.

1.4 The EIA Project Team (Competent Experts)

1.4.1 The EIA Regulations, state in Regulation 17(4) An environmental statement must:

- a) *be prepared by persons who in the opinion of the relevant planning authority or the Welsh Ministers, as appropriate, have sufficient expertise to ensure the completeness and quality of the statement;*
- b) *contain a statement by or on behalf of the applicant or appellant describing the expertise of the person who prepared the environmental statement. In accordance with Regulation 17(4) (a) and (b), it is confirmed that this Scoping Report has been prepared, and the EIA will be undertaken and prepared, by competent experts from the below organisations. Their relevant expertise and qualifications will be stated within the ES.*

1.4.2 The EIA project team is comprised of the organisations identified in **Table 1.4.1**

Table 1.4.1: The Proposed Project Team

Topic	Organisation
Project Manager	Trydan Gwyrdd Cymru
EIA Project Manager	Dulas Ltd
Landscape and Visual Amenity	LUC
Ecology and Ornithology	BSG Ecology
Historic Environment – Cultural Heritage	LUC
Hydrology, Hydrogeology, Soil and Peat	Aqua Terra Consulting
Noise	Mott Macdonald
Aviation	WPAC
Telecommunications	Pager Power
Transport and Access	Pell Frischmann
Forestry	Arc Woodlands
Socio-Economics, Tourism and Recreation	Wavehill
Other Issues (shadow flicker, climate change, human health and major accidents and disasters)	Dulas Ltd

2 Consenting Process

2.1 Infrastructure Consent

- 2.1.1 The Infrastructure (Wales) Act 2024² introduced 'Infrastructure Consent Orders' (ICO) which will apply to Significant Infrastructure Projects (SIPs). The application will be submitted to PEDW who will advise on the preparation, submission and examination of ICO applications.
- 2.1.2 The Proposed Development meets the stated SIP criteria and is considered a SIP by the 2024 Act and as such will be determined under the ICO regime which came into force on the 15th of December 2025.

2.2 EIA Regulations

- 2.2.1 The Application will conform to the statutory requirements legislated by the Environmental Impact Assessment (Wales) Regulations 2017. The EIA Regulations require that an EIA be undertaken for the Proposed Development, and that an ES identifying effects and associated mitigation measures must be provided for EIA developments to accompany the planning application.
- 2.2.2 For the purposes of the EIA Regulations, Section 17(3) defines an ES as a statement which includes at least:
- a) *a description of the proposed development comprising information on the site, design, size and other relevant features of the development;*
 - b) *a description of the likely significant effects of the proposed development on the environment;*
 - c) *a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*
 - d) *a description of the reasonable alternatives studied by the applicant or appellant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the significant effects of the development on the environment;*
 - e) *non-technical summary of the information referred to in sub-paragraphs (a) to (d); and*
-

² Infrastructure (Wales) Act 2024

- f) any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected.*

2.2.3 Section 17(4) continues, “an environment statement must –

- a) where a scoping opinion has been adopted, be based on the most recent scoping opinion adopted (so far as the proposed development remains materially the same as the proposed development which was subject to that opinion);*
- b) include the information reasonably required for reaching a reasoned conclusion on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment; and*
- c) where a scoping opinion or direction has been issued in accordance with regulation 14 or 15, be based on the most recent scoping opinion or direction issued (so far as the proposed development remains materially the same as the proposed development which was the subject of that opinion or direction);*
- d) include the information reasonably required for reaching a reasoned conclusion on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment; and*
- e) take into account other relevant environmental assessments required under assimilated law or any other provision of domestic legislation, with a view to avoiding duplication of assessment.*

2.2.4 The Applicant will provide the necessary information to enable the EIA to be undertaken. The ES will ensure that sufficient information is provided to enable PEDW to make a decision about the planning application with due regard to and in the knowledge of any likely significant environmental effects.

Energy Policy

2.2.5 The Environment (Wales) Act 2016³ requires the Welsh Government to reduce emissions of greenhouse gases in Wales to net zero by 2050. Under Future Wales: The National Plan 2040⁴, where development proposals for renewable energy generation from wind technologies come forward the Welsh Government must respond well to their context and contribute to meeting the Welsh Government ambitions.

³ Environment (Wales) Act 2016. Available at: <https://www.legislation.gov.uk/anaw/2016/3/contents>

⁴ Future Wales: the national plan 2040 | GOV.WALES

- 2.2.6 A Planning Statement will accompany the application for consent and assess the Proposed Development in a legal and policy context against the relevant legislation and planning policies in force. This assessment will be undertaken at international, national, regional, and local levels, where relevant.
- 2.2.7 Notwithstanding, there are a number of supporting policy and guidance documents that are relevant to each environmental discipline and will be considered on a topic-by-topic basis within the ES.

3 Site Context and Key Receptors

3.1 Site Location

- 3.1.1 The Site is located approximately 1.5km to the south-west of Aberdare and north of Maerdy and Ferndale in the South Wales Valleys, and is within the Rhondda Cynon Taf County Borough Council (RCTCBC) local authority area, centred approximately on Ordnance Survey Grid Reference (OSGR) SN 98030 00314 (**Figure 1.1.1**).

3.2 Site Description

- 3.2.1 Forming part of the upland plateau on the western flank of the Cynon Valley, the Site covers approximately 2,644 hectares (ha) and largely comprises open grassland, heathland and peatland with large areas of mixed woodland and rotational commercial forest forming part of the Welsh Government Woodland Estate, including St Gwynno Forest. The Site is split into two distinct areas, with the northerly area demarcated by the A4233. The southerly area contains the Mynydd Y Ffaldau ridge and Craig Y Gilvern (both at 420m AOD). The Nant Aman Fawr watercourse and a tributary passes through the northern and central parts of the Site forming part of the Afon Cynon catchment to the east. The River Afon Rhondda Fach forms the western boundary to the Site.
- 3.2.2 The Site includes areas of wet modified bog dominated by purple moor grass *Molinia caerulea*, notably the Castell Nos Habitat Restoration Area that is part of the Lost Peatlands Project. The Site encompasses landform centred on Llanwynno Forest, with its highest point within the northern part of the forestry (440m AOD).
- 3.2.3 There are operational wind farms within the Site's environs, including: Mynydd Bwllfa (nine turbines) and Pen Y Cymoedd (76 turbines) both to the north-west; Maerdy (eight turbines) to the west; and Ferndale (eight turbines) to the south.

3.3 Environmental Context of the Site

- 3.3.1 The Site lies within the central part of National Landscape Character Area (NLCA) 37: South Wales Valleys. NLCA30 Brecon Beacons and Black Mountains is located

approximately 3.55 km north of the Site boundary. The Hirwaun Common, Cwm Dare and Cwm Aman Special Landscape Area (SLA) covers part of the Site.

- 3.3.2 The nearest internationally important site of nature conservation interest is Blaen Cynon Special Area of Conservation (SAC) located approximately 4.2 km to the north-west of the Site boundary. No Sites of Special Scientific Interest (SSSI) are located within 2 km. The entire Site is subject to non-statutory designation via a series of Sites of Importance for Nature Conservation (SINC). The Castell Nos Habitat Restoration Area (HRA) is located within the Site, this is part of the Lost Peatlands Project.
- 3.3.3 The Nant Aman Fawr watercourse and a tributary passes through the northern and central parts of the Site forming part of the Afon Cynon catchment to the east. The River Afon Rhondda Fach forms the western boundary to the site.
- 3.3.4 There are three scheduled monuments located within the Site. The south and southwest of the Site is located within The Rhondda Registered Historic Landscape and there are 69 non-designated entries within the Site. There are no listed buildings located within the Site, however the Core Study Area (4 km) contains the following historic assets:
- 16 scheduled monuments
 - 91 listed buildings (six Grade II*, 85 Grade II)
 - Aberdare Town Centre conservation area (WAL/RCT/CEB4/2A); and
 - Aberdare Park Historic Park and Gardens (Grade II*, Cadw Ref. PGW(Gm)2(RCT))

Summary of Key Receptors

- 3.3.5 The key receptors which are considered potentially sensitive to the construction, operation and decommissioning of the Proposed Development have been identified and are summarised in **Table 3.3.1**

Table 3.3.1: Summary of Key Receptors

Category	Potential Sensitive Receptor / Land Use
Local Communities and Residential	Settlements: Maerdy, Blaenllechau, Cwmaman, Godreaman, Aberaman, Aberdare, Gadlys, Cwmdare, Trecynon, Llwydcoed, Cwmbach, Abercwmbai, Fernhill, Ferndale, Hirwaun and Penywaun. Scattered dwellings
Access and recreation	Llanwyno Forest footpaths National Cycle Networks (NCN) 47, 881, 478, 46 Recreational users of the Open Access land including the Twyn y Bridallt Roman Camp Aberdare Country Park Bannau Brycheiniog National Park

Commercial	NRW active forest management
Transport Infrastructure	Local road network
Ecological / Ornithological	SINC's Protected and Priority Species and Habitats Castell Nos Habitat Restoration Area Bannau Brycheiniog National Park
Heritage Assets	Historic Assets (including Scheduled Monuments, Listed Buildings, Conservation Areas, Registered Historic Landscapes, Registered Parks and Gardens)
Landscape and Visual	National Landscape Designations - Bannau Brycheiniog National Park National Landscape Character Areas - NLCA37 South Wales Valleys, NLCA30 Brecon Beacons and Black Mountains, NLCA30 includes Bannau Brycheiniog National Park.
Hydrology	Peatland Groundwater Dependent Terrestrial Ecosystems (GWDTE) Water abstractions (including Private Water Supplies) Main Rivers Ordinary Watercourses Aquifers

3.4 Potential Key Receptors

- 3.4.1 Key receptors which are considered potentially sensitive, to the construction, operation and decommissioning of the Proposed Development have been identified and are summarised in **Table 3.3.1**.

4 Proposed Development Description

Summary of Development

4.1.1 The main elements of the Proposed Development comprises:

- up to 18 wind turbines with a maximum tip of 230m, each with turbine foundations, crane hard-standing areas at each turbine location and turning heads;
- associated low to medium voltage transformers at each turbine base;
- creation of new transport access entry points to the development site;
- existing track upgrades and new track construction;
- a network of buried electrical cables (likely to follow the route of on-site tracks);
- construction of onsite substation, associated control building and energy storage facility;
- borrow pits (for the extraction of stone on Site); and
- temporary construction compounds.

4.1.2 Further detail on the above components is described in the sections below:

Wind Turbines

4.1.3 The proposed turbines will be three bladed horizontal axis turbines. The turbine towers will be of tapering tubular steel construction, likely to be finished in a light grey semi-matt colour. EIA scoping is based upon a maximum tip height for turbines of 230m, although the maximum turbine heights and turbine specifications in other respects will be considered further through the EIA process.

4.1.4 The worst case scenario candidate wind turbine can differ across the EIA disciplines (for example, noise, ornithology, transport etc.). Therefore, different candidate wind turbines may be specified in the ES, where necessary, to inform assessment of effects. The worst case parameter used for assessment within relevant topic areas will be clearly identified in the ES.

4.1.5 A transformer will be required for each turbine. Depending upon the type of turbine selected, the turbine's electrical transformers may be located within or adjacent to the turbines. For the purposes of this report, it has been assumed that the transformers will be located adjacent to each turbine within the hardstanding areas.

4.1.6 The turbines will be installed on foundations comprising both stone and steel-reinforced concrete. The detailed design, sizing and specification for each foundation

will depend on the final turbine type and the specific ground conditions encountered at each turbine location, which will be confirmed during pre-construction surveys.

- 4.1.7 Adjacent to each turbine, an area of hardstanding will be constructed for use as a crane pad. The exact geometry and position of the crane pads will depend on the turbine supplier's specifications, the crane selected for erection and detailed ground investigations prior to construction. In accordance with the turbine specification for the candidate turbine model, additional laydown and storage areas may be required adjacent to the crane hardstanding. The EIA will be based on indicative maximum crane pad dimensions together with an appropriate micro-siting allowance.
- 4.1.8 **Figure 1.1.2** shows the proposed indicative wind turbine layout and **Table 4.1.1** presents the corresponding wind turbine coordinates for this layout. This layout will be subject to change as part of the iterative EIA process.

Table 4.1.1: Indicative Wind Turbine Co-ordinates

Wind Turbine Number	Easting	Northing
T01	297148	201694
T02	297772	201455
T03	298415	201451
T04	297122	201314
T05	297853	201128
T06	298967	201057
T07	299428	201199
T08	297469	200980
T09	297980	200502
T10	299394	200623
T11	299830	200528
T12	298384	200189
T13	296954	199848
T14	297705	199757
T15	297778	199180
T16	298181	198904
T17	298578	198640
T18	298971	198483

Substation

- 4.1.9 The turbines will be connected to the site sub-station by means of 33kV on-site cabling. These cables will be laid underground in trenches, in most cases running adjacent to the site tracks; in the same manner as the foundations these trenches will be backfilled with excavated material and have the original vegetation reinstated.

Within the forestry area, the route of the cable will be marked with marker posts as per NRW requirements.

- 4.1.10 The 33kV electrical cabling will terminate at the site sub-station compound, comprising switchgear and transformers to increase the voltage to 132kV for export on the electricity network owned by the Distribution Network Operator (DNO).
- 4.1.11 The onsite control building/substation will also serve as welfare, waste storage and car parking. The location of the onsite control building/substation has yet to be determined and will be influenced by a number of factors such as location of the turbines, distance to the National Grid Electricity Transmission substation, access during the operation of the Wind Farm and environmental constraints, all of which will be considered further throughout the iterative design of the Wind farm and EIA process.
- 4.1.12 Battery Energy Storage Systems (BESS) is also proposed within the substation compound. BESS uses groups of batteries to store electrical energy and release at required times. BESS is a fast responding dispatchable source of power to grids, bringing grid stability they can transition from standby to full power rapidly when there are grid failures. BESS are generally designed to output for up to a few hours and are used for short-term term peak power, such as providing operating reserve and frequency control to minimize the chance of power outages. BESS will be incorporated into the development proposal, which will maximise the benefits of delivering clean energy to the grid and contributing towards grid stabilisation.
- 4.1.13 Typically, the BESS will be located adjacent to the on-site substation compound and house battery storage components contained in sealed units, similar to shipping containers, alongside air conditioning systems and an electrical and maintenance room. Storage facilities would be sited on concrete upstands although the area required for the on-site energy storage facility is not yet determined. The storage facilities would require safety fencing to ensure the protection of stock and the public.
- 4.1.14 Details of the energy storage element of the Proposed Development will be set out in the Application and will be addressed within the EIA and included in the pre-application consultation.

Borrow Pits

- 4.1.15 Borrow pits will be required to provide stone for various purposes, but primarily track and hardstanding construction. The number and size of borrow pits will be determined through site investigation and, within the constraints of acceptable environmental impact and available stone quality, the Applicant will endeavour to source adequate stone for construction purposes from within the proposed development boundary.

Access Tracks

- 4.1.16 There is an extensive network of forestry tracks already within the Site and these will be utilised as far as possible, with upgrading works where required.
- 4.1.17 New tracks will provide the required access between the Site entrance, turbines and the other infrastructure. They will typically have a running width of 5m, widening at bends, and will have turning heads and passing places where required. Track verges will be reinstated after construction.

Temporary Construction Compounds

- 4.1.18 Temporary construction compounds will be required to house temporary portacabins to be used for site offices and welfare facilities; store fuels, tools, small parts and materials required during construction; provide parking space for cars and construction vehicles and a receiving area for incoming vehicles; and refuel construction vehicles.
- 4.1.19 The precise size and locations of the temporary construction compounds are yet to be identified, this will be included within the ES and assessed accordingly.

Aviation Lighting

- 4.1.20 A wind farm with tip heights in excess of 150m will need to be illuminated at the hub of selected wind turbines with medium intensity red aviation obstruction lighting. A lighting layout will be designed and agreed with the Civil Aviation Authority (CAA) which minimises the number of lit wind turbines whilst fulfilling flight safety requirements. An infra-red lighting layout to fulfil Ministry of Defence (MOD) requirements will also be designed and approval obtained from the MOD prior to construction.

Habitat Management

- 4.1.21 A Habitat Management Plan (HMP) will be developed to outline mitigation and compensation for biodiversity. The HMP will highlight ways in which the project can deliver a Net Benefit for Biodiversity (NBB).
- 4.1.22 Habitat loss as a result of infrastructure construction will be compensated for where appropriate. This may include, but is not limited to, restoration of native habitats within the Site that are currently of limited ecological value through degradation, compensatory planting and consultation with local and/or regional stakeholders on land use and appropriate management for biodiversity.
- 4.1.23 Sustainable Drainage Systems (SuDS) that may be required within the Site will be managed to promote biodiversity.

Grid Connection

- 4.1.24 The grid connection infrastructure will not be included within the application for planning permission for the Carreg Wen Wind Farm. Separate consents will be required for connection of the scheme to the electricity network.

Site Access

- 4.1.25 A detailed access review is currently underway to confirm most appropriate routes for accessing the Site, with Swansea Docks anticipated to be entry point for the turbine components
- 4.1.26 Investigations of the route to Site for the large components is currently subject to evaluation and full details, along with an outline Transport Management Plan (TMP), will be presented in the ES.

Construction Phase

- 4.1.27 At this stage limited detail is available on the proposed construction methodology; however, the ES will include a chapter describing the proposed construction methodology and timescales.
- 4.1.28 An outline Construction Environmental Management Plan (CEMP) will be submitted as an appendix to the ES. This will be agreed with relevant stakeholders and implemented. This will include measures to protect and mitigate, along with monitoring programmes for all predicted and potential environmental impacts identified. This will be overseen and audited by a suitably qualified Ecological Clerk of Works (ECoW).
- 4.1.29 The Outline CEMP will include but not limited to:
- A construction phase surface water management plan for the management of surface water during the construction phase, including attenuation and settlement of surface water to prevent silt loads entering waterbodies;
 - Proper storage and use of oils, fuels and construction chemicals;
 - Provision of Site-worker accommodation and sanitation facilities; and
 - Management and removal of waste materials.

Operational Phase

- 4.1.30 Planning permission will be requested to allow for an operational period of up to 35 years from first generation. Maintenance work would involve visiting the Site on a weekly basis, to undertake scheduled maintenance and operational checks.
- 4.1.31 Annual servicing would involve the undertaking of non-essential repairs on all infrastructure pertaining to the Proposed Development.

Decommissioning Phase

- 4.1.32 In accordance with best practice guidelines at the time, a decommissioning Method Statement would be agreed with relevant stakeholders in advance of decommissioning. An Outline Decommissioning Plan will be submitted with the application.

4.2 Layout Considerations

- 4.2.1 The current proposed layout has been designed from an iterative process taking into account various environmental and physical constraints. The layout is still subject to change once further assessment develops, and consultation has taken place. It is therefore noted that this layout represents scenario with a maximum number of turbines and height, therefore any further amendments to the design are not anticipated to increase the likelihood of a significant effect. Information on the Site design changes and iterations will be included within the ES and a Green Infrastructure Statement, to show how significant impacts have been mitigated.

5 Consultation and Engagement

Scoping Consultation

- 5.1.1 Consultation is an ongoing process as part of the design development. The process of consultation is important to the development of a comprehensive and balanced ES. Views of the interested and affected parties serve to focus the environmental studies and to identify specific issues that require further investigation.
- 5.1.2 Information and views are being sought from a range of statutory and non-statutory bodies, and the intention is for consultees to be involved in the evolution of the design and assessment of environmental effects. Submission of this Scoping Report will progress the consultation with a number of key consultees and will continue for the duration of EIA process.
- 5.1.3 Key consultees are considered to include, but are not limited to:
- Planning and Environment Decision Wales (PEDW)
 - Cadw
 - Natural Resources Wales (NRW)
 - Land Quality Advice Service (LQAS)
 - Transport Directorate, Welsh Government
 - Rhondda Cynon Taf County Borough Council (RCTCBC)
 - NATS

- Civil Aviation Authority (CAA)
- Defence Estates/MOD

Community Consultation

- 5.1.4 A programme of community consultations are being undertaken by the project team to engage with third parties and stakeholders throughout the planning process.
- 5.1.5 Engagement with the local community surrounding the Site has involved holding public events, in the form of drop-in sessions and exhibitions at accessible local venues. These sessions offered residents the chance to review the plans, ask questions, and share feedback. Bilingual staff (Welsh and English) were available to assist, and materials were provided in both languages to ensure inclusivity.
- 5.1.6 The timing of any future events will be planned to enable meaningful input from the community, allowing any issues or suggestions to be considered as part of the evolving design.
- 5.1.7 An informal consultation on the early-stage plans for the Proposed Development ran from 21st October to 25th October 2025 and included three in-person events where attendees were able to meet the Carreg Wen team, see a digital model of what the wind farm might look like, ask questions and provide feedback. The events took place at:
- Tuesday 21st October - Cwmaman Primary School
 - Wednesday 22nd October - Ferndale Youth Club, Ferndale Community School
 - Saturday 25th October - Sobell Leisure Centre
- 5.1.8 A dedicated project website⁵ has been launched and will be regularly updated to provide the latest information. Contact details, including a project-specific email address, are published on the website and distributed locally to encourage ongoing two-way communication with residents.

Scoping Consultee Questions

- 5.1.9 As part of this scoping report, a number of questions have been raised for each topic for stakeholders and consultees. These are included within Appendix A to this scoping report.

⁵ Carreg Wen | Trydan Gwyrdd Cymru

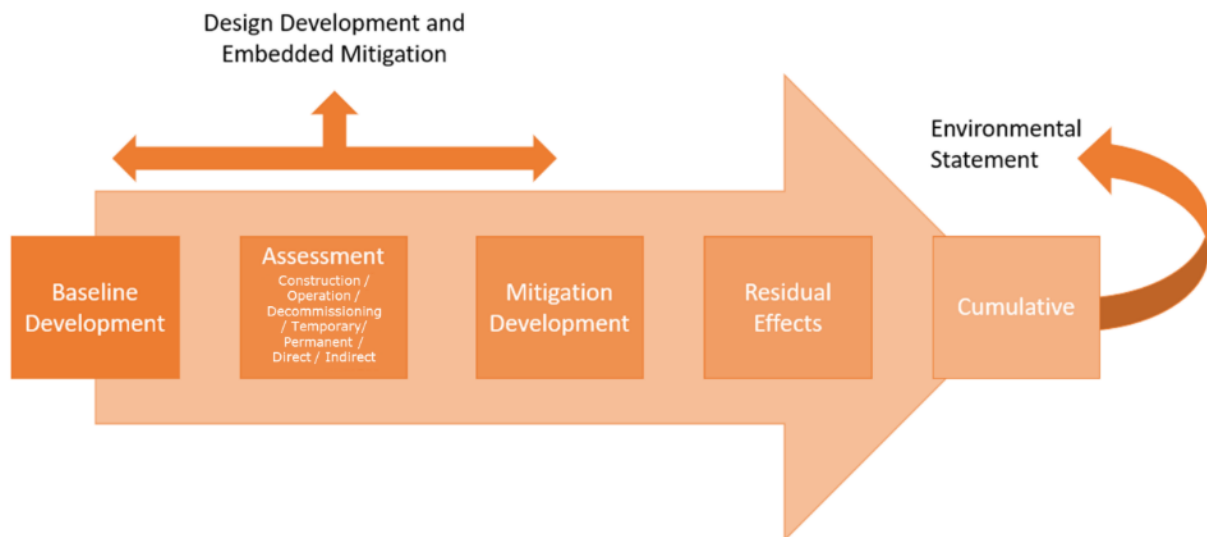
6 EIA Assessment Methodology

6.1 Process and Methodology

6.1.1 The general approach to assessment will be to first establish a baseline for each topic. Receptors and resources will then be identified, and their sensitivity classified. The potential impacts of the Proposed Development on these receptors and resources will be assessed, for the construction, operation and decommissioning of the Proposed Development. Subsequent mitigation of impacts will be considered, along with the identification of likely cumulative and residual effects.

6.1.2 The process that the EIA will take is shown in **Figure 6.1.1** below:

Figure 6.1.1: EIA Assessment Process



6.2 Baseline Conditions

6.2.1 The EIA will primarily describe environmental impacts in terms of the extent of likely change to the baseline environment. The baseline represents the environmental conditions of the Site at the time of the assessment.

Spatial Scope

6.2.2 The Site boundary of the Proposed Development is shown in **Figure 1.1.2**. Assessment study areas will vary by topic areas, according to the baseline information and the nature of likely impacts. These will be determined during the EIA.

Temporal Scope

6.2.3 The ES will assess the environmental impacts of the Proposed Development during the construction, operational and decommissioning stages. **Section 7** of this report sets

out which phase of the Proposed Development each topic proposes to assess based on the predicted impacts and the baseline conditions. The assessment will compare current and future baseline conditions (as appropriate) to those conditions expected during the construction, operational and decommissioning phases of the Proposed Development.

- 6.2.4 For the purposes of the assessment, it is assumed that the construction phase of the Proposed Development would commence in 2030 at the earliest, for a duration of 24 months.
- 6.2.5 The earliest the operational phase of the Proposed Development is anticipated to commence is 2032 for a duration of 35 years.
- 6.2.6 Upon completion of the Operational Phase, the Proposed Development would be decommissioned. For the purposes of the assessment, the earliest the Decommissioning Phase is anticipated to commence is 2067.

Assessment Scenarios

- 6.2.7 The assessment will consider the totality of the Proposed Development from construction through to operation and decommissioning, using the following assessment scenarios:
- existing baseline;
 - future baseline (without Proposed Development);
 - assessment of construction and decommissioning effects; and
 - assessment of operational effects (the Proposed Development fully operational).
- 6.2.8 The point at which construction effects are anticipated varies between assessment topics. For those assessments driven by the effects of traffic, peak construction traffic is likely to lead to peak effects.. Effects related to the sub-surface will be greatest during enabling works, excavation and substructure stages.
- 6.2.9 This assessment of construction effects will assess a worst-case scenario and, therefore, be a conservative assessment of any interim effects; therefore, time-slices or interim construction assessments are not considered necessary for most topics. This will be reviewed on a topic-by-topic basis.

6.3 Assessment of Effects and Defining Significance

Prediction of Impacts

- 6.3.1 Once impacts have been identified, prediction methods will be used to identify the magnitude and nature of changes to the environment resulting from the Proposed Development, compared to the situation without the Proposed Development (i.e. the

baseline conditions). The relative significance of these changes will then be defined using thresholds and criteria, as appropriate.

- 6.3.2 There are a number of methods available for predicting the effects of the Proposed Development, some of which are qualitative and some quantitative. Quantitative methods predict measurable changes resulting from a development, and hence rely on the ability to measure and or model baseline conditions accurately, for example noise assessment. In comparison, qualitative techniques rely on expert judgement; for example, the Landscape and Visual Impact Assessment (LVIA). In these circumstances, a clear distinction will be made between matters of fact and professional judgement.

Evaluation and Assessment of Significance of Effects

- 6.3.3 The definition of significance thresholds and criteria will take account of the:
- Value / sensitivity of the resource (international, national, regional and local level importance);
 - Magnitude of the impact (for example the number of receptors);
 - Duration of the impact; and
 - Reversibility of the effect.
- 6.3.4 Typically, the criteria will be developed from a matrix approach comprising the value / sensitivity of the resource on one axis and the magnitude of the predicted impacts on the other. The classification of effects is shown in **Table 6.3.1**.

Table 6.3.1: Matrix of Magnitude Impact

Value / Sensitivity	Magnitude of Impact			
	Negligible	Minor	Moderate	Major
Negligible	Negligible	Negligible	Negligible	Negligible
Low	Negligible	Minor-negligible	Minor	Moderate-minor
Medium	Negligible	Minor	Moderate-minor	Major-moderate
High	Negligible	Moderate-minor	Major-moderate	Major

- 6.3.5 The following section describes how the criteria of magnitude, sensitivity and significance are interpreted and will be applied throughout the EIA, unless otherwise stated within the technical chapters.

Magnitude of Impact

- 6.3.6 An impact is a change in baseline conditions caused by the Proposed Development. The general criteria and definitions for the magnitude of impact to describe changes arising from the construction or operation of the Proposed Development is shown in

Table 6.3.2. Where applicable, the individual topics have set out their own specific approach to this assessment within **Section 35**.

Table 6.3.2: Magnitude of Impact and Typical Descriptions

Magnitude of Impact		Typical Description
Major	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Moderate	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Minor	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to, or positive addition of, one or more characteristics, features or elements
No Change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Table Source: Adapted from Table 3.4N DMRB LA 104 (2020) Environmental assessment and monitoring⁶

Sensitivity of Receptors

- 6.3.7 A receptor is an entity that may be affected by an impact. Relevant receptors will be identified for each environmental topic and an appropriate baseline developed. The method to achieve this is usually topic-specific and will, therefore, be described in each of the topic chapters of this Scoping Report.

⁶ Highways England; Transport Scotland; Welsh Government; Department for Infrastructure (Northern Ireland) (2020) Design Manual for Roads and Bridges (DMRB): LA 104 Environmental Assessment and Monitoring. Available at: <https://www.standardsforhighways.co.uk/tse/attachments/0f6e0b6a-d08e-4673-8691-cab564d4a60a?inline=true>

- 6.3.8 The value of receptors shall be reported within environmental assessments, the value (sensitivity) of receptors shall be applied.

Mitigation Development

Embedded Mitigation

- 6.3.9 Items that are embedded through the design of the Proposed Development to mitigate potential adverse effects, for example the application of a stand-off distance between a receptor and a part of the Proposed Development.

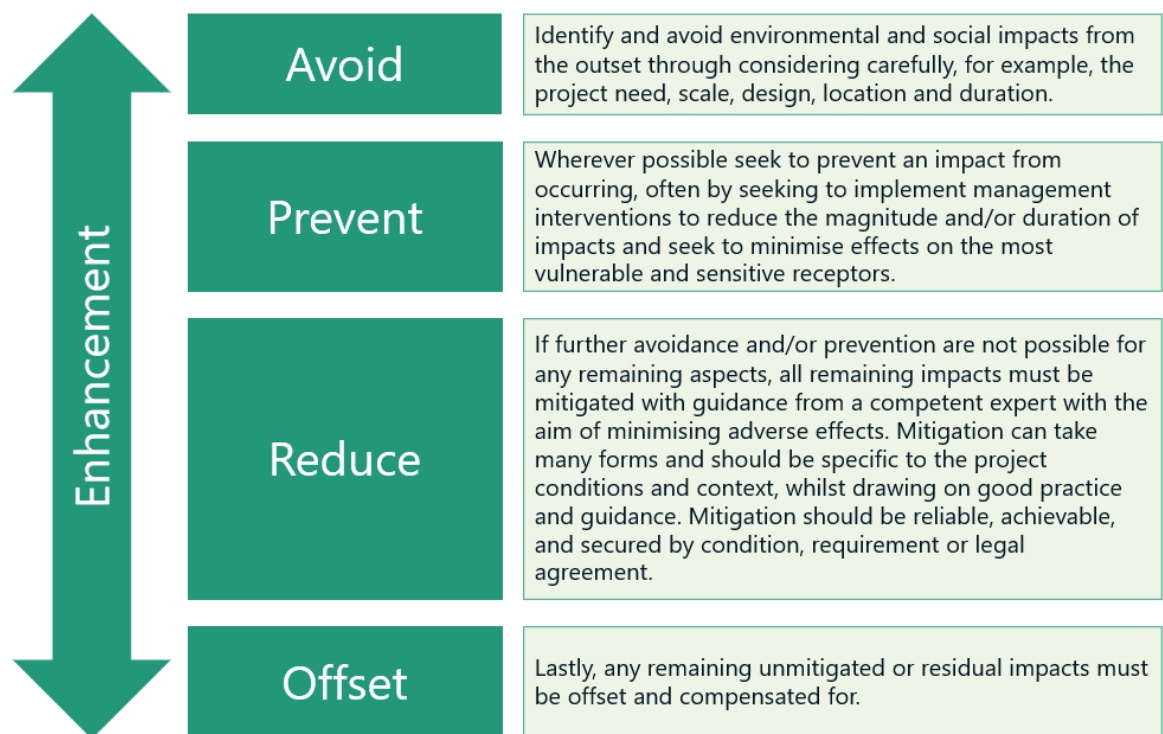
Applied Mitigation

- 6.3.10 These are good practice and industry standard measures which are, by their nature, well understood, and for which there is a high degree of confidence as to their effectiveness. These will be described within the individual topic chapters and will be delivered during the construction process e.g. the CEMP.
- 6.3.11 Applied mitigation also includes compliance with other regimes set out in law, such as the Water Framework Directive (WFD) and Protected Species protection.
- 6.3.12 The first round of the assessment will be undertaken with embedded and applied mitigation in place. If significant effects arise the potential for additional mitigation may be required.

Additional Mitigation

- 6.3.13 Further assessment mitigation measures may be introduced where adverse environmental impacts remain following the culmination of the design process and, in these instances, further mitigation will be proposed where feasible within the relevant technical chapters. A practical example of this (for illustrative purposes only) could be that a construction environment management plan (CEMP) is in place during construction to minimise environmental effects (embedded / primary design mitigation); however, the ornithology assessment may identify that a specific work exclusion zones for a particular species may be required managed through an Ecological Clerk of Works.
- 6.3.14 Proposals for mitigation will follow the following hierarchy set out in **Figure 6.3.1**. Where beneficial effects and or opportunities for enhancement and betterment are identified, measures to maximise these will also be proposed.

Figure 6.3.1: Mitigation Hierarchy



6.3.15 In line with Planning Policy Wales (PPW) the design of the Proposed Development will follow a step-wise approach to maintain and enhance biodiversity, build resilient ecological networks and deliver a net benefit for biodiversity by ensuring that any adverse environmental effects are firstly avoided, then minimised, mitigated, and as a last resort compensated for.

6.3.16 Design mitigation will also include industry good practice, Best Practicable Measures (BPM) and construction environmental management procedures. Design features that have been adapted to reduce or prevent impacts will be described.

6.4 Residual Effects

6.4.1 The residual effects will be assessed using the same system as described above, taking account of any assessment mitigation proposals.

6.4.2 This part of the ES will provide a summary of the remaining impacts associated with all aspects of the proposed project, including its construction, operation, and eventual decommissioning. It will outline all mitigation measures that will be implemented to minimise impacts.

6.4.3 Generally, based on the described classification and professional judgement, effects considered to be moderate or major will be deemed significant, and those considered minor, or negligible, will be deemed not significant.

- 6.4.4 Residual effects will be presented within each individual topic chapter and summarised in a chapter entitled Residual Effects and Conclusions.

6.5 Cumulative Assessment

- 6.5.1 Cumulative effects are described as "Impacts that result from incremental changes caused by other present or reasonably foreseeable actions together with the project", in the Design Manual for Roads and Bridges (DMRB) guidance (LA104).
- 6.5.2 There are two types of cumulative effects; intra-project and inter-project effects defined as follows:
- **Intra-project effects:** relate to effects to a receptor from within the Proposed Development only, for example, the impact of visual amenity changes alongside the impact of noise from the construction and operation of the Proposed Development on a residential property; and
 - **Inter-project effects:** relate to the effects of the Proposed Development alongside the effects of other developments within the Study Area. For example, the construction traffic of the Proposed Development in combination with the construction traffic of other schemes in the area may lead to a temporary increase in traffic on the local road network.

Legislation, Policy and Guidance

- 6.5.3 The EIA Regulations¹ require that an EIA *"must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of proposed development on the following:*
- a) *population and human health;*
 - b) *biodiversity, with particular attention to species and habitats protected under EU-derived domestic legislation which transposed Directive 92/43/EEC and Directive 2009/147/EC as may be amended from time to time;*
 - c) *land, soil, water, air and climate;*
 - d) *material assets, cultural heritage and the landscape; and*
 - e) *the interaction between the factors listed in sub-paragraphs (a) to (d)".*
- 6.5.4 The EIA Regulations (Schedule 4, Paragraph 5) require that the ES should consider the *"direct effects and any indirect secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development."*

- 6.5.5 The following screening criteria has been considered following national guidance on cumulative effects for nationally significant infrastructure projects⁷

Inter-Project Effects

- 6.5.6 The assessment will consider the cumulative effects arising from the construction and operation of the Proposed Development in combination with other developments within the Study Area.
- 6.5.7 The following process will be followed to identify projects to be included in the cumulative assessment

Screening Criteria

- 6.5.8 The following screening criteria have been considered following national guidance on cumulative effects for nationally significant infrastructure projects⁸.

Stage 1 – Establishing the long List

- 6.5.9 The following threshold criteria have been developed to identify a long list of all potential developments to be considered within the cumulative effects assessment.

Zone of Influence

- 6.5.10 Following guidance from NRW on using LANDMAP⁹, for structures over 225m tall the search area should be 34km+. It is recognised that the Zone of Influence (Zol) for each scoped in topic is specific and will be defined within the chapters, but a search area of 34km provides a suitable area for all effects.

Assigning certainty to schemes

- 6.5.11 The long list of developments will include:
- Developments that have been submitted to the relevant authorities but not yet determined, this includes projects that have completed statutory Pre-Application Consultation (PAC) and are listed on the Welsh Government Planning Casework portal and the DNS Application Website);

⁷ [Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK](#)

⁸ [Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK](#)

⁹ [Natural Resources Wales / Using LANDMAP in Landscape and Visual Impact Assessments GN46](#)

- Nationally Significant Infrastructure projects (NSIPs) listed on the Planning Inspectorate's Programme of Projects;
- Developments that have been refused subject to appeal procedures not yet determined;
- Developments that have been consented, and permission has not lapsed;
- Developments that are under construction; and
- Operational Developments

Stage 2 – Establishing a short list

6.5.12 The following threshold criteria have been developed and applied to the long list to ensure proportionality. Those schemes which fall within this criteria have been included.

- Scope out all turbines that are less than 20m to blade tip height across the whole study area;
- Scope out any single turbines of any size beyond 10km; and
- Scope out any turbines that are less than 50m to blade tip height beyond 10km unless they are in groups of 10 or more.

Notes and Exceptions

- Other non-wind committed development schemes may be included if relevant. In these instances, liaison with CCC and other relevant consultees will be undertaken to confirm inclusion within the cumulative assessment;
- Wind farms at the scoping stage will not be included;
- Where other existing and, or approved developments are expected to be completed before construction of the Proposed Development and the effects are fully determined, effects arising from them may be considered as part of the baseline as part of both the construction and operational assessment; and
- Applications which do not have sufficient published environmental data for assessment will be excluded.

6.5.13 Following the agreement of the list of cumulative schemes in the Study Area, the developments that are considered to potentially give rise to significant effects when in combination with the Proposed Development will be assessed. The assessment will outline the likely significant inter-project effects that may arise from the Proposed Development. The significance and magnitude of impact will be determined according to the criteria set out within the environmental topic chapters.

Committed Development List

6.5.14 Following the above screening methodology, the current proposed committed development list is included within **Table 6.5.1**.

Table 6.5.1: Proposed Committed Development List

Application Number and Description	Turbine No.	Blade Height (m)	Status	Distance from Site Boundary to nearest turbine (km)
Llanwonno Energy - DNS CAS-02125-Q0T5P0	8	3 X 150 m 3 X 160 m 1 X 180 m 1 X 200 m	In planning	6
Twyn Hywel - DNS/3272053	14	200	Consented	12.8
Manmoel - DNS/3239181	5	180	Approved	17.5
Abertillery - DNS/3278009	6	200	In planning	23.8
Mynydd Llanhilleth - DNS CAS-03540-M8J8M5	7	180	In planning	23
Mynydd Carn y Cefn	8	180	Consented	19.8
Llwyncelyn Lan	1	45	Operational	5.4
Mynydd Maen - DNS/3276725	13	149.9	In planning	24.3
Trecelyn - DNS CAS-02114-J9X4S6	4	145	In planning	22.5
Mynydd y Glyn - DNS/3280378	7	155	Consented	8.2
Gelli Feddgaer	2	150	Operational	11.3
Nant-Y-Gwyddon	1	121.5	Operational	4.3
Hirfynydd (EDF)	7	200	In planning	14.5
Pant y Wal	9	115	Operational	7.7
Pant Y Wal Extension	9	125	Operational	6.8
Maesgwyn and Extension Phase 2	17	125	Operational	12.1
Abergorki	3	149.9	Consented	1km
Upper Ogmores	7	149.9	Operational	6.8
Foel Trawsant	11	145	Consented	13.9
Melin Court	5	145	Operational	10.8

Application Number and Description	Turbine No.	Blade Height (m)	Status	Distance from Site Boundary to nearest turbine (km)
Mynydd Fforch Dwm - DNS/3255801	6	180 - 220	Consented	13.5
Parc Stormy	2	100 135	Operational	22.8
Pen y Cymoedd	77	145	Operational	1.6
Llynfi Afan Renewable Energy Park	12	118	Operational	6.9
Oakdale Business Park	2	130	Operational	18.6
Maerdy	8	144	Operational	309m
Mynydd Portref (Taf Ely Extension)	11	86	Operational	11.4
Bwllfa Farm	1	76	Operational	5.2
Cruglwyn	2	86.5 26.5	Operational	16.9
Ferndale	8	79	Operational	1.3
Fforch Nest Wind Farm 1 and 2	11	115	Operational	6.3
Ffynnon Oer	15	93	Operational	11.4
Mynydd Brombil	4	100	Operational	20.5
Mynydd Bwllfa (Hirwaun Resubmission)	9	125	Operational	71.7 m
Mynydd y Betws	13	111	Operational	28.4
Mynydd y Gwair (Resubmission)	16	127	Operational	29.9
Mynydd y Gwrhyd (Resubmission)	2	100	Operational	24.8
Newton Down	2	125	Operational	23.3
Pen Bryn Oer	3	110	Operational	14.8
Pengarnddu Industrial Estate	2	77	Operational	10.9
Taf Ely	20	53.5	Operational	11.2
Tir Cook Farm	1	77	Operational	8.2
Trecelyn	4	145	Operational	22.4
Twyn Hywel	14	200	Consented	12.8

6.6 Other Inclusions

Pre-Assessed Areas and Site Alternatives

- 6.6.1 The Site has been chosen due to its technical suitability for a wind farm development, with suitable wind speeds, good site access and access to a suitable grid connection. The majority of the Site lies within a pre-assessed area for wind energy (number 10), outlined in the Future Wales – The National Plan 2040.
- 6.6.2 Details of the alternative designs considered for this Proposed Development, including the location and scale of energy infrastructure, alongside a description of the evolution of the design in response to site-specific, environmental and amenity factors, will be presented in detail in the ES.
- 6.6.3 An outline of the main alternatives considered and the reason for selecting a preferred option is set out below:

Site Boundary

- 6.6.4 The Site boundary has been informed by the boundary of St Gwynno Forest, which is a Welsh Government Woodland Estate block as well as third party land ownership. The ES will include a review of the reasonable alternatives that have been considered along with detail on how ongoing development of the proposals for the Site have informed the final boundary. In accordance with the EIA Regulations this will include environmental and non-environmental reasons for the Applicant's choice.

Wind Turbine Layout

- 6.6.5 The EIA process is an iterative process and the wind turbine layout shown in **Figure 1.1.2** has been informed by initial consideration of the Site constraints.
- 6.6.6 As the EIA progresses and further information is available from the surveys and assessments, the wind turbine and infrastructure layout may be amended and refined as appropriate, taking into account the advice of the EIA team and the emerging assessments.

Associated Infrastructure

- 6.6.7 This will be informed by the wind turbine layout and the Site's topography. Access track routes will be designed to reflect Site surveys and feedback from the environmental topic specialists.

6.7 Design Process

- 6.7.1 The current proposed layout has been designed from an iterative process taking into account various environmental and physical constraints. The layout is therefore still subject to change once further assessment develops, and consultation has taken place. It is therefore noted that this layout represents the maximum number of turbines and height therefore any further amendments to the design is not anticipated to increase the likelihood of a significant effect.

6.8 Construction Methodology

- 6.8.1 The ES will include a chapter describing the proposed construction methodology, the likely phasing of the Proposed Development and the proposed decommissioning and construction timescales. It will indicate the likely plant and equipment to be used, construction traffic access and management, the location and size of any construction welfare facilities, materials and resource use and waste management.

7 Proposed Environmental Topics to be included in the ES

7.1 Topic Sections Scoped In

- 7.1.1 The following topics are proposed to be scoped into the ES and these are further described below:
- Landscape and Visual
 - Ecology
 - Ornithology
 - Cultural Heritage and Archaeology
 - Water and Ground Conditions
 - Noise and Vibration
 - Transport and Access
 - Existing Infrastructure (Aviation)

7.2 Landscape and Visual

Introduction

- 7.2.1 This chapter considers the likely significant effects upon landscape character and visual amenity receptors during the construction, operation and decommissioning phases of the Proposed Development.
- 7.2.2 The primary guidance for undertaking Landscape and Visual Impact Assessments (LVIA) is the Guidelines for Landscape and Visual Impact Assessment 3rd Edition (GLVIA3)¹⁰. In accordance with GLVIA3, the landscape and visual effects of the Proposed Development will be considered separately, with the landscape assessment considering the effects of the Proposed Development on the constituent elements of the landscape and its character (including aesthetic or perceptual qualities) and the visual assessment considering the change to views and visual amenity as experienced by people.
- 7.2.3 The assessment will also cover effects on the residential visual amenity of nearby private properties through a Residential Visual Amenity Assessment (RVAA), which will form an appendix to the LVIA. The LVIA will focus on receptors which are likely to experience significant effects.
- 7.2.4 The assessment of effects on landscape character and visual amenity will be undertaken by LUC.

Design Considerations and Input to date

- 7.2.5 Significant effects upon landscape character and visual amenity will be avoided or minimised where possible as part of the design process. The following design principles have already been embedded into the design to date:
- The Proposed Development is located within larger scale plateaux landscapes;
 - The Proposed Development is located a minimum of 700m from sensitive residential receptors; and
 - The Proposed Development includes evenly spaced wind turbines, located at approximately the same elevation on the ground to provide as visually balanced layout as possible.
- 7.2.6 The following design considerations will be given as part of this process:
-

¹⁰ Landscape Institute and the Institute of Environmental Assessment (2013).

- Locating the wind turbines to avoid the loss of any historic sites and features, including those of the Rhondda Historic;
- Locating the wind turbines to avoid the loss of bog, grassland, heath and relic alpine habitats as far as possible;
- Locating the wind turbines away from breaks of slope to minimise the impact on glacial cirques;
- Ensuring no wind turbine is too dominant or overwhelming in the main view from a property, such that it could result in unacceptable living conditions for nearby communities or individual dwellings;
- Utilising existing tracks where possible, minimising the necessity for new excavation, and keeping tracks and other ancillary features (including borrow pits and the substation) away from the most visible slopes, as far as reasonably possible (including the need for cut and fill operations);
- Minimising the effects of visible aviation lighting through the implementation of mitigation measures to reduce the number, frequency and intensity of visible lighting required;
- Minimising the visibility of ancillary features, such as buildings, walls and fences and using locally characteristic materials where possible;
- Locating the substation and battery storage area within an existing area of tree cover, and enhancing the woodland structure in that area;
- Siting the turbines to avoid any changes to the character of the Coed Morgannwg Way Long Distance Trail; and
- Ensuring that the Proposed Development has no unacceptable adverse impacts on the Bannau Brycheiniog National Park protected landscape by selecting a suitable turbine size and achieving a balanced layout with consistent spacing that maximises energy output while reducing adverse impacts.

Current Baseline Conditions

- 7.2.7 The maximum 'study area' for the LVIA will cover a radius of up to 32 km from the outermost turbine of the Proposed Development¹¹, as shown on **Figure 7.2.1**. This area is based on the guidance from NRW which suggests that the study area for structures 226+ m tall should be 32km. This study area will also be included to identify other

¹¹ Using LANDMAP in Landscape and Visual Impact Assessments GN46, Natural Resources Wales, 2024:

<https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/evidence-to-inform-development-planning/using-landmap-in-landscape-and-visual-impact-assessments-gn46/?lang=en>

developments to be included within the Cumulative Landscape and Visual Assessment (CLVIA). This LVIA will focus on receptors likely to experience potentially significant effects within this radius. In order to write a proportionate assessment and focus on significant effects, individual landscape and visual receptors may require different study areas within the maximum study area. This will be defined and explained in each instance.

- 7.2.8 It is noted that NRW recommends a 'search area' of 34 km from the outermost turbine of a Proposed Development¹¹. This is larger than the study area and used as an additional boundary to provide an evidence base for including or excluding distant, more visible landscapes. In respect of the Proposed Development, the search area is indicated on mapped figures.

Information Sources

- 7.2.9 The following sources of information have been reviewed and used to inform the Scoping Report. Information sources will be considered further in the landscape and visual assessment as part of the ES:

- Bannau Brycheiniog National Park Authority's Landscape Character Assessment¹²;
- Bannau Brycheiniog Management Plan¹³;
- NRW's National Landscape Character Areas (NLCAs)¹⁴;
- NRW's LANDMAP maps and surveys (and associated guidance notes)¹⁵;
- NRW's Dark Skies, Light Pollution and Visual Tranquillity in Wales mapping¹⁶;

12 Brecon Beacons National Park Landscape Character Assessment, Brecon Beacons National Park Authority, 2012, <https://beacons-npa.gov.uk/planning/draft-strategy-and-policy/landscape-character-assessment/>

13 The Future: The Management Plan for the Bannau Brycheiniog National Park 2023-2028, <https://future.bannau.wales/wp-content/uploads/2023/04/Y-Bannau-The-Future-1-1.pdf>

14 National Landscape Character Areas (NLCA), NRW, 2023, <https://naturalresources.wales/evidence-and-data/maps/nlca/?lang=en>

15 LANDMAP – the Welsh Landscape Baseline, NRW, 2025 <https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/evidence-to-inform-development-planning/landmap-the-welsh-landscape-baseline/?lang=en>

16 Dark Skies Mapping, NRW, 2021, <https://naturalresources.wales/about-us/news-and-blogs/news/new-map-casts-light-on-wales-dark-skies/?lang=en>

- NRW's Visible Settings of Designated Landscapes and Key Views¹⁷; and
- Ordnance Survey Maps and readily available aerial photographs.

The Site and Immediate Surroundings

- 7.2.10 The location of the Site and Proposed Development are shown in **Figure 7.2.1**. The Proposed Development is also shown on an aerial base in **Figure 7.2.2**.
- 7.2.11 The Site is located entirely within the Rhondda Cynon Taf County Borough Council (RCTCBC) authority boundary.
- 7.2.12 A description of the Site and surroundings is provided in **Section 3**, and an overview of the Site and surroundings in relation to landscape character and visual amenity is presented in paragraphs **7.2.13** to **7.2.18** below.
- 7.2.13 The Site comprises a large upland area of forest forming part of the wider Llanwynno NRW woodland. Forested areas cover gently rounded glacial hills which slope down via steeply incised valleys to the wider plain of the River Afon Rhondda Fach below. Flat plateaux are present within the forest areas at Panwen Garreg-wen and Pen Foel Aman.
- 7.2.14 The Nant Aman Fawr watercourse and a tributary passes through the northern and central parts of the Site forming part of the Afon Cynon catchment to the east. The River Afon Rhondda Fach forms the western boundary to the Site.
- 7.2.15 The Site mainly comprises commercial forest, with tracks, cuttings, clear fells, and coniferous woodland blocks of varying ages. However, there is evidence of previous agricultural use¹⁸ (Irregular Fields) with field boundaries, old farms and track ways contributing to a sense of time depth. The forest comprises mostly conifer plantation but there is also some broadleaved and mixed mainly broadleaf on some steeper slopes. There are no areas of ancient woodland within the Site boundary. There are small upland farmed areas within the eastern part of the Site, with fields defined by hedgerows and drystone walls in various condition. Areas of upland heathland and blanket bog (priority habitats) are located within the northern central and northern eastern parts of the Site.
- 7.2.16 The adjacent valleys and containing slopes consist mostly of woodland and pasture on elevated plateaux with transportation corridors and linear settlements along the

¹⁷ Visible Settings of Designated Landscapes and Key Views, NRW, 2023, https://landmap-portal.naturalresources.wales/visual_settings_and_key_views_list.php

¹⁸ LANDMAP Historic Landscapes, NRW, https://datamap.gov.wales/layers/inspire-nrw:NRW_LANDMAP_Historic_Landscape

narrow valley floors. Notably, the large forest areas of Rhondda Mid West, Glyncoirwg and Cwm Parc are located to the west of the Site.

7.2.17 There are a number of operational wind farms within the study area including:

- Mynydd Bwlfa (nine turbines) is a 22.5MW development, directly bordering the northwestern Site boundary;
- Pen Y Cymoedd wind farm (76 turbines) is a 228MW development, which has been operational since 2017 and located to north west of the Site;
- Maerdy wind farm (8 turbines) is a 24MW development, commissioned in 2013, located on private land between the Rhondda West and Rhondda East blocks, immediately south of Pen y Cymoedd. A neighbouring three turbine wind farm (Abergorki) is consented immediately south of this development;
- Ferndale wind farm is a small 800kW development with a 6.4MW total capacity. Operational since 2011 and located between two of the smaller woodland blocks that form part of Rhondda West;
- Pant y Wal (10 turbines) and Pant y Wal Extension (eight turbines), commissioned in 2011 and 2016 respectively are located to the south west of the Site boundary, alongside Fforch Nest Wind Farm Parts 1 and 2 (11 turbines in total) commissioned in 2013; and
- Llynfi Afan wind farm (12 turbines), operational since 2017, operated by JLEN to the west of Rhondda West near Abergwynfi.

7.2.18 The Site is not located with an International Dark Skies Reserve, but does have a sense of relative remoteness from settlement, and experiences dark night skies as indicated by the NRW map of Dark Skies and Light Pollution in Wales (see **Figure 7.2.12**).

Landscape Character

National Landscape Character Areas (NLCAs)

7.2.19 A series of NLCAs have been published by NRW which form a broad landscape character assessment across Wales. The National Landscape Character Areas within 10 km of the Site boundary are shown in **Figure 7.2.3**. Beyond 10 km it is not anticipated that there will be significant effects upon character, and considering those within 10 km will ensure a proportionate assessment and one that focusses on significant effects that will influence the planning decision.

7.2.20 The Site lies within the central part of NLCA37 South Wales Valleys which is an area of deep, urbanised valleys that dissect an extensive upland area. Extensive ribbon development fills many valley bottoms and lower slopes and their urban and industrial character is juxtaposed with dramatic upland settings with steep hillsides, open moors or forests.

- 7.2.21 NLCA30 Brecon Beacons and Black Mountains is located approximately 3.55 km north of the Site boundary. NLCA30 includes Bannau Brycheiniog National Park and a landscape which is dominated by elevated peaks up to 886m AOD, characterised by distinct open moorland, smooth ridges alongside deep wooded river gorges containing a number of waterfalls.

Local Landscape Character - LANDMAP

- 7.2.22 Published by NRW, LANDMAP provides an all-Wales landscape resource where landscape characteristics, qualities and influences are recorded and evaluated. LANDMAP divides the landscape into five aspect layers as shown on **Figure 7.2.4 – Figure 7.2.8**.
- 7.2.23 LANDMAP data was used as the basis for the identification of LCA boundaries as part of Bannau Brycheiniog National Park Authority's Landscape Character Assessment, informed by the geographic extents of the Visual and Sensory aspect layer. Although LANDMAP information has already been used to inform this landscape character assessment, descriptive and evaluative LANDMAP information will be used as part of the LVIA to supplement the landscape character information.
- 7.2.24 For areas within 10 km of the proposed wind turbines where LCAs do not exist (i.e. within the county of Rhondda Cynon Taf), the 'reporting units' will be based on the Visual & Sensory aspect areas (VSAA) of LANDMAP, with information from the Geological Landscape, Landscape Habitats, Historic Landscape and Cultural Landscape aspect layers feeding into the descriptions and evaluations of the reporting units.
- 7.2.25 According to the NRW LANDMAP guidance note 46 the process for working out which LANDMAP aspects areas to include in the assessment should follow a filtering process as follows:
- Geological Landscape, Landscape Habitats and Cultural Landscape Services
- Filter 1: Identify all LANDMAP aspect areas that overlap fully or partially or are adjacent to the development site boundary, these are most likely to undergo change.
 - Filter 2: Identify Geological Landscape aspect areas from filter 1 that record a special relationship with other aspect areas in the LANDMAP survey question 2. Include any extra aspect areas identified.
 - Filter 3: If a Zone of Theoretical Visibility (ZTV) map is available, retain all filtered aspect areas that are visible with the development.
 - Filter 4: Retaining all aspect areas in which the development is located irrespective of their evaluation, also identify and retain those aspect areas that are visible and are evaluated as outstanding or high in:

- Geological Landscape survey question 33 and/or rarity/uniqueness question 31; and
 - Landscape Habitats survey question 45 and/or connectivity/cohesion question 42.
- N.B. Cultural Landscape Services does not include landscape evaluation information, so retain all aspect areas identified from Filter 1 or 3.

Visual & Sensory and Historic Landscape

- Filter 1: Identify all LANDMAP aspect areas within the study area (32 km)¹⁹.
- Filter 2: If a ZTV map is available, retain all filtered aspect areas that are visible with the development up to the limit of the study area (32 km).
- Filter 3: Retaining all aspect areas in which the development is located irrespective of their evaluation, also identify and retain filtered aspect areas that are evaluated as outstanding or high in:
 - Visual & Sensory overall evaluation (survey question 50), and/or scenic quality (question 46) and/or character (question 48) if the overall evaluation is moderate; and
 - Historic Landscape overall evaluation (survey question 40).
- Also identify and retain filtered aspect areas that are evaluated as moderate or low in:
 - Visual & Sensory overall evaluation (survey question 50) and there is potential for a large magnitude of change and opportunities for restoration and enhancement; and
 - Historic Landscape overall evaluation (survey question 40) and there is potential for a large magnitude of change and opportunities for restoration and interpretation.
- Filter 4: Retain all filter 3 aspect areas that are within the study area (32 km) plus those aspect areas outside the study area but might contain highly sensitive visual receptors within the search area (up to 34 km).

7.2.26 The following aspect areas are those with an outstanding or high evaluation within the 32 km study area that could be affected directly by the Proposed Development:

¹⁹ NRW's GN46 indicates that a 'search area' can be used during the early desk search stage to help to identify the extent of study area needed for the detailed LVIA. However, it states that the study area is where a full, detailed LVIA is completed.

- **Landscape habitats area CYNONLH073:** this area which occupies the southern forested half of the Site has a 'high' evaluation and is described (at LH_24 of the collector record) as "Varied conifer plantation with open sheltered areas and blocks of semi-natural woodland including some beech. Good for butterflies and birds." The justification is described (at LH_45a of the collector record) as "A normally relatively low ecological value habitat is increased in value by the presence of a number of areas of Priority habitat and the presence of a number of valuable key species". Currently 11 turbines are proposed in this area. Consult with the project ecologist regarding any proposals affecting this area.
- **Landscape habitats area CYNONLH068:** this area which occupies the northern unforested part of the Site has a 'high' evaluation and is described (at LH_24 of the collector record) as "Bilberry dominated mixed relic upland heath with molinia, mires, wet heath/acid grassland mosaic and bracken/dry heath towards edges". The justification is described (at LH_45a of the collector record) as "Good quality, Priority habitats that have declined". Currently 4 turbines are proposed in this area. Consult with the project ecologist regarding any proposals affecting this area.
- **Historic landscape area CYNONHL687 Rhondda Uplands:** this area covers most of the Site and has an 'outstanding' evaluation. It is described (at HL_4 of the collector record) as "This aspect area of dramatic escarpments of Pennant Sandstone cliffs, glacial cwms or corries, and extensive open upland ridges and mountain is a landscape of some importance recognised by its inclusion within the Rhondda Historic Landscape on the Cadw/ICOMOS Register. It is characterised as a relict upland agricultural landscape, chiefly mountain sheepwalk, though partially forested with post-medieval industrial incursion typically extraction related". The justification for its outstanding evaluation is described (at HL_41 of the collector record) as "The outstanding value assigned to this area is based on the fact that it represents a remarkably well preserved multi-period upland landscape, containing evidence of human activity dating back to the Mesolithic era, including sites of national importance such as the extensive settlement site of Hen Dre'r Mynydd, the largest undefended Iron Age settlement in SE Wales". Currently all turbines and upper reaches of the access track are proposed in this area.
- **Geological landscape area CYNONGL020 Upper Cynon valley - W:** this has a 'high' evaluation which is justified (at GL_34 in the collector record) as a "Landscape with important glacial features of at least regional importance (including RIGS site), including cirques in Pennant sandstones (Cwm Dare & Craig y Bwlch) and glacial lake at Hirwaun". The advice for this area (GL_21 in the collector record) is "Ensure that no significant features of geological or geomorphological significance are lost/damaged due to development and protect RIGS sites using Local Plan policies and constraint mapping". This area currently has 6 turbines proposed within it – it will be important to minimise

impact on features or natural systems of geological or geomorphological significance.

- **Geological landscape area CYNONGL018 Aman valley:** this has a ‘high’ evaluation which is justified (at GL_34 in the collector record) as a “Geomorphological importance: Glacial cirques in Pennant sandstone”. The advice for this area (GL_21 in the collector record) is “ensure that no significant features of geological or geomorphological significance are lost due to future development including through RIGS designation”. This area currently has 9 turbines proposed within it – it will be important to minimise impact on features or natural systems of geological or geomorphological significance.
- **Cultural landscape services area CYNONCLS068 St Gwynno:** Q24 of the collector record notes “Approximately 79% of people in the area identify as Welsh.” and Q25 “Approximately 23% of people in the area speak Welsh”. Most of the turbines are located in this area. There is no clear advice in the collector record to respond to.
- **Cultural landscape services area CYNONCLS110 rhos-gwawr:** Q24 of the collector record notes “Approximately 79% of people in the area identify as Welsh” and Q25 “Approximately 23% of people in the area speak Welsh”. Three turbines are located in this area. There is no clear advice in the collector record to respond to.

7.2.27 It is noted that no visual and sensory areas have a high or outstanding evaluation in reference to the Site itself.

Landscape Designations

National Landscape Designations

7.2.28 Nationally designated landscapes are shown in **Figure 7.2.9**. The nearest part of the Bannau Brycheiniog National Park is situated approximately 3.9 km from the outermost wind turbine of the Proposed Development. Special qualities of the nationally important landscape are highlighted within the Bannau Brycheiniog Management Plan which are as follows:

- **Sweeping grandeur & outstanding natural beauty:** The National Park’s sweeping grandeur and outstanding natural beauty observed across a variety of harmoniously connected landscapes, including marvellous gorges and waterfalls, classic karst geology with limestone pavement, caves and sink holes, contrasting glacial landforms such as cliffs and broad valleys carved from old red sandstone and prominent hilltops with extensive views in all directions. A landscape that provides a sense of time depth and timelessness.
- **Contrasting patterns, colours & textures:** A working, living “patchwork” of contrasting patterns, colours and textures comprising well-maintained farmed

landscapes, open uplands, lakes and meandering rivers, punctuated by small-scale woodlands, country lanes, hedgerows and stone walls and scattered settlements.

- **A sense of place & cultural identity:** A sense of place and cultural identity - “Welshness” - characterised by the indigenous Welsh language, religious and spiritual connections, unique customs and events, traditional foods and crafts, relatively unspoilt historic towns and villages, family farms and continued practices of traditional skills developed by local inhabitants to live and earn a living here, such as common land practices and grazing.
- **An intimate sense of community:** An intimate sense of community where small, pastoral towns and villages are comparatively safe, friendly, welcoming and retain a spirit of cooperation.
- **Enjoyable & accessible:** Enjoyable and accessible countryside with extensive, widespread and varied opportunities to pursue walking, cycling, fishing, water-based activities and other forms of sustainable recreation or relaxation.
- **Sounds, sights, smells & tastes:** A feeling of vitality and wellbeing that comes from enjoying the National Park’s fresh air, clean water, rural setting, open land and locally produced foods.
- **Sense of discovery:** A sense of discovery where people explore the National Park’s hidden secrets and stories such as genealogical histories, prehistoric ritual sites, relic medieval rural settlements, early industrial sites, local myths and legends and geological treasures from time immemorial.
- **Peace, tranquillity & darkness:** A National Park offering, dark, night-time skies, peace and tranquillity with opportunities for quiet enjoyment, inspiration, relaxation and spiritual renewal.
- **Mosaic of diversity:** The geology and climate vary greatly across the Park creating an elaborate patchwork landscape rich in biodiversity. The Park hosts heathlands, grasslands and woodlands, with uplands and lowlands, natural lakes and riparian habitats. The Park contains limestone pavement and blanket bogs of international and national importance. Several endangered species survive in the Park, including some for which the Park is their furthest extent of their natural range.
- **Living landscape:** An abundance of wildlife thrives in semi-natural habitats that have been lived in and shaped by human settlement for millennia. The landscape is interlaced with ancient hedgerows bustling with life, enclosing wildlife-rich hay meadows, and primeval woodlands that cloak some steep-sided valleys. Veteran trees adorn the landscape, carrying the scars of centuries of changing dependency on their resources. Heather-dominated uplands maintained through grazing by horses, sheep and cattle are a testament to the intimate relationship between biodiversity and farming.

- 7.2.29 The National Park is also designated as an International Dark Sky Reserve. **Figure 7.2.12** shows dark skies information across the 32 km study area.
- 7.2.30 Bannau Brycheiniog National Park Authority's Landscape Character Assessment also includes information about the special qualities of the National Park and this would be used to inform the assessment of effects on special qualities. The assessment will list out the relevant special qualities and assess the Proposed Development against each, as well as provide overall commentary on how the Proposed Development would affect the designation as a whole.

Local Landscape Designations

- 7.2.31 Special Landscape Areas (SLA) are designated at a local level by RCTCBC and are considered to be landscapes of the greatest importance within the administrative area.
- 7.2.32 There are parts of eight locally designated SLAs within 5km of the Proposed Development (see **Figure 7.2.11**). Seven of these SLAs are described in Document EB48²⁰ as part of the evidence base for the Rhondda Cynon Taf Local Development Plan and one SLA is described in the Merthyr Tydfil County Borough Council Replacement Local Development Plan (2016 - 2031) background paper on special landscape areas (2018)²¹ as follows:
- **Hirwaun Common, Cwm Dare and Cwm Aman** covers part of the Site and extends north-west onto Hirwaun Common. The primary landscape qualities and features include the steep glacial cirques, dramatic scenery, spectacular views, intervisibility with the Bannau Brycheiniog National Park, Westphalian stratigraphy at Craig-yLlyn SSSI, backdrop to the Tower Colliery, the open common land with grassland and heath habitats, cairns and ancient monuments, presence of Coed Morgannwg Way and areas of broadleaf woodland on lower slopes around Dare valley. The management aims are to enhance views and access to this specially scenic part of the county, preserve geomorphological features, conserve relic alpine flora, conserve the commons and associated habitats, conserve the skylines and views, ensure that major development in valley bottoms integrates with surrounding hillsides, managing of forestry and

²⁰ Development of Criteria for Special Landscape Area Designation for South East Wales Local Authorities, Rhondda Cynon Taf County Borough Council, 2007, <https://www.rctcbc.gov.uk/EN/Resident/PlanningandBuildingControl/LocalDevelopmentPlans/LDPEvidenceBaseLibraryandAnnualMonitoringRe/RelateddocumentsEvidenceBase/EB48.pdf>

²¹ Merthyr Tydfil County Borough Council Replacement Local Development Plan (2016 - 2031), 2018, <https://www.merthyr.gov.uk/media/4434/sd26-special-landscape-areas-background-paper-june-2018.pdf>

woodlands to provide variety and controlling off-road access to forestry and plateau tops.

- **Brecon Beacons Edge at Llwydcoed** located approximately 3km north of the nearest proposed turbine. The primary landscape qualities and features include south-facing gentle slopes and small side valleys of the head of the Cynon Valley, the bleak and open upper north eastern parts of the area, its role as a buffer zone to the Brecon Beacons National Park, the reclaimed and well wooded land alongside Cynon and edge of Penywaun, and the areas of broadleaf ancient woodland on valley sides. The management aims are to safeguard the edges of Bannau Brycheiniog National Park, safeguard the land adjacent to A465, conserve and manage broadleaf woodland areas, and seek opportunities to enhance the landscape.
- **Cynon Valley Northern Slopes** located approximately 3km east of the nearest proposed turbine. The primary landscape qualities and features include the habitats and variety provided by the mosaic of open grassland and common, forestry, broadleaf woodland, fields of improved and unimproved grassland, reclaimed and planted tips and un-reclaimed tips; the prominence of the valley side, the narrow ridge separating the Cynon from the upper part of the Taf valley, the prominence of the ridge, the hidden quality of the valley of Nant Pennar and the fine views up and down the Cynon from the elevated land. The management aims are to retain variety of land uses, manage the broadleaf and coniferous woodlands, protect the skyline (as seen from both Cynon and Taf valleys) and keep development to the lower side of main road.
- **Cwm Orci** is located approximately 1.3km southwest of the nearest proposed turbine and mostly faces away from the turbines so that there is only visibility of the turbines from the top (eastern) edge. The primary landscape qualities and features include the glacial small hanging valley, the steep craggy sides with screes, the open ffridd and dry heath, the areas of unreclaimed tips spill down steep sides which add to visual variety and habitats, and the tiny fields of marshy grassland in valley bottom. The management aims are to retain the hidden character and general air of remoteness, the mosaic of valuable habitats and ensure development of Treorchy outskirts to do intrude into valley;
- **Rhondda Fawr Northern Cwm & Slopes** approximately 3.5km southwest of the nearest proposed turbine. The primary landscape qualities and features include the series of well-defined steep glacial cirques at the head of Rhondda Fawr, the dramatic scenery, spectacular views from the Rhigos road to north and Bwlch over to Afan valley, the Blaenrhondda road cutting geological SSSI, the rare relic alpine flora of particular significance on Pen-ych and the cairns and other ancient monuments. The management aims are to enhance views and access, conserve the geomorphological features, conserve the relic alpine flora, conserve skylines and views, ensure that major development site in valley

bottom integrates with surrounding hillsides, manage forestry and woodlands to provide variety and control offroad access to forestry and plateau tops;

- A small part of **Cwm Clydach** is located approximately 4km to the southeast of the nearest proposed turbine. The primary landscape qualities and features include the secluded and hidden valley sides around Ynysybwll; pattern of quiet farmland with irregular fields, small woods, and streams, linked by winding lanes; hedges and stone walls on upper slopes; wooded slopes including those to Taf Vale that form a backdrop above Pontypridd; cairns overlooking the Cynon valley. The management aims are to conserve and manage the wooded slopes and skyline from Taf Vale, conserve hedges and small woods throughout, retain the quiet secluded farmed character within valley and conservation hilltop historic sites. Only patchy visibility according to the Zone of Theoretical Visibility (ZTV) (**Figure 7.2.14**);
- Part of **Mynydd Troed y Rhiw Slopes** is located approximately 3.7km to the south. The primary landscape qualities and features include the prominent hillsides, mix of open common land and small fields on steep sides, fridd habitats of dry heath, the pilgrim site of St Mary's Well on upper slopes to north and cairn on Mynydd Brith-weunydd. The management aims are to retain open hillsides and skylines, restrict encroachment of developments up hillsides, conserve historic sites and conserve priority habitats, including control of bracken; and
- A small part of **Merthyr West Flank** is located approximately 5km to the north-east of the proposed turbines (in Merthyr Tydfil County Borough Council area). The valued landscape qualities and features, as set out in the Merthyr Tydfil County Borough Council Replacement Local Development Plan (2016 - 2031) background paper on special landscape areas (2018)²², include the habitats of marshy grassland, species rich neutral grassland, lowland acid grassland and native woods; the intact upland pastoral fieldscape; remains of 19th century extractive industry and historic associations with the Crawshay family and Robert and Lucy Thomas (pioneers of the 'steam coal' industry). This SLA is not located within the ZTV (**Figure 7.2.13 and 7.2.14**).
- There are 11 additional SLAs that have patchy visibility according to the ZTV (**Figure 7.2.13 and 7.2.14**) and are located between 5km and 10 km of the Proposed Development. There is one SLA within the study area with no

²² Merthyr Tydfil County Borough Council Replacement Local Development Plan (2016 - 2031), 2018, <https://www.merthyr.gov.uk/media/4434/sd26-special-landscape-areas-background-paper-june-2018.pdf>

predicted visibility. If the proposed turbines are likely to be visible from parts of these areas, their presence is not likely to adversely affect the special qualities of these designated landscapes.

Registered Historic Landscapes

- 7.2.33 The Rhondda Registered Landscape of Outstanding and of Special Interest in Wales is within the western part of the Site, and Merthyr Tydfil, East Fforest Fawr and Mynydd-y-Glog, and Gelli-Gaer Common Landscapes of Outstanding and of Special Interest in Wales are within 15km of the Site (see **Figure 7.2.9**). Effects on registered historic landscapes will be covered in **Section 7.5: Cultural Heritage** assessment.

Registered Historic Park and Gardens

- 7.2.34 Registered Historic Parks and Gardens, including the Grade II* Listed Aberdare Park, are shown on **Figure 7.5.2**. and Effects on these historic landscapes and their setting will be addressed within the Cultural Heritage assessment (see **Section 7.5: Cultural Heritage**).

Visual Receptors

- 7.2.35 Visual receptors are the people who would be affected by changes in views, and they are usually grouped by what they are doing at those places, for example:
- people within settlements (local communities) surrounding the Site;
 - people travelling on roads around the Site;
 - people using open access land, Public Rights of Way (PRoW) and cycle routes in and around the Site for recreational purposes;
 - people visiting particular attractions, promoted viewpoints (such as those depicted with a blue viewpoint symbol on the 1:50,000 OS map base) or popular hill summits; and
 - people visiting and using the Bannau Brycheiniog National Park for recreational purposes.
- 7.2.36 The proposed wind turbines would have the most widespread visual impact, but proposed ancillary infrastructure including the substation, battery storage area, primary access route, tracks between wind turbines and hard standing areas could also affect views and will be assessed within the landscape and visual chapter of the ES.
- 7.2.37 The Proposed Development is located within an area of substantial commercial forestry where felling and crop rotation is likely to affect judgements within the visual assessment. Forest management plans will be used to inform the visual assessment to understand where woodland loss could result in future visibility from certain receptors.

- 7.2.38 **Figure 7.2.13 and 7.2.14** indicate the ZTV for the Proposed Development with a maximum turbine blade tip height of 230 m. **Figure 7.2.15 and 7.2.16** show the ZTV for the turbines with a hub height of 149 m. These show theoretical visibility of the proposed turbines from areas of high ground to the north including the southern range of the Brecon Beacons mountains, and the rolling hills surrounding the Afon Rhondda Fawr valley. There will also be theoretical visibility of turbines from the elevated land around Aberdare, Merthyr Common to the northeast, the northern slopes of Mynydd Eglwysilan and the eastern parts of Mynydd William Meyrick and Mynydd Blaenrhondda to the west.
- 7.2.39 The ZTVs indicate theoretical visibility from the southern extents of the Bannau Brycheiniog National Park, located approximately 3.9 km north from the outermost wind turbine of the Proposed Development at its nearest point, affecting the mid and southern parts of the Brecon Beacon hills including but not limited to Pen y Fan, Mynydd-y-glog, Cefn Sychbant, Y Gyrn and Fforest Fawr Open Access (**Figure 7.2.13 – 7.2.16**).

People within Settlements (Local Communities)

- 7.2.40 The LVIA will consider visual effects on the following settlements within 10 km from the outermost wind turbine of the Proposed Development (that fall wholly or partially within the ZTV of the proposed wind turbines):

Settlements within 5km (starting clockwise from north):

- Aberdare (including the joined conurbations of Cwmdare, Trecynon, Aberdare, Aberaman and Cwmaman);
- Llwydcoed;
- Cwmbach;
- Abercwmboui and Fernhill;
- Ferndale;
- Maerdy;
- Hirwaun; and
- Penywaun.

- 7.2.41 A number of local communities are located in the valleys surrounding the Proposed Development where the turbines will not be visible. Such settlements therefore outside of, or on the edge of, the ZTV. The ZTV also doesn't take into consideration the role of intervening features such as buildings and vegetation. A review of views in Google Earth indicates that the presence of built form and vegetation provides substantial screening. The following local communities located between 5 km and 10 km from the outermost wind turbine of the Proposed Development will not experience significant

effects and are therefore proposed to be scoped out of the LVIA (starting clockwise from north):

- Merthyr Tydfil. The Bareground ZTV (**Figure 7.2.13**) shows some visibility from the northeastern outskirts of this settlement but in reality buildings and vegetation will screen most views. The tops of proposed turbines may be glimpsed from upper storeys of some areas of Pant, Dowlais Top and Merthyr Common.
- Tonypany and Penygraig. The Bareground ZTV (**Figure 7.2.13**) shows some visibility from Penygraig, but in reality buildings and vegetation will screen most views and only the tops of proposed turbines would be visible.
- Penderyn (in the Bannau Brycheiniog National Park). Although this settlement is indicated as having theoretical visibility in the Bareground ZTV (**Figure 7.2.13**), in reality vegetation and buildings will screen views of the proposed turbines.

Recreational Receptors: People Using Open Access Land, PRowS, Promoted Walking Routes, Promoted Viewpoints, Visitor Attractions and Cycle Routes

7.2.42 The LVIA will consider visual effects experienced by users of open access land, promoted walking routes and cycle routes within 21 km from the outermost wind turbine of the Proposed Development where theoretical visibility is indicated by the ZTV. This includes the summits in mid and southern parts of Bannau Brycheiniog National Park, including Pen y Fan, the highest peak in Wales and summits to the north of Cardiff to encompass sensitive recreational receptors.

Recreational Receptors within 5km (starting from clockwise from north):

- Recreational users of the open access land, car parks and footpaths within the Site including the Twyn y Bridallt Roman Camp which is a potential visitor attraction located within open access land. Users will experience intermittent and varying views including proximity views of turbines;
- Recreational users of the open access land, car parks and footpaths surrounding the Site;
- Promoted recreational routes within the study area, including the Coed Morgannwg Way which utilises PRow immediately north of the Site boundary, the Cistercian Way (Wales) approximately 1.1 km south of the Site boundary and the Sky to Sea Walk approximately 850m west of the Site boundary;
- A number of National Cycle Network (NCN) Routes are located within or close to the Site including NCN 47 which runs through the Site linking Llest-wen Reservoir to the northwest with St.Gwynno Forest to the southeast, NCN 881 which passes through and along the western boundary of the Site along the banks of the Afon Rhondda Fach. NCN 478 and NCN 46 are all located northeast of the Site linking into the Cynnon Vale.

- Visitors to Dare Valley Country Park, including cyclists, walkers and campers. Proposed turbines will be clearly visible on the adjacent skyline from open areas, especially those north of the Dare River;
- Visitors to Aberdare Park Grade II* Registered Park and Garden approximately 1.5km northeast of the Site boundary;
- PRoW and open access land on the eastern slopes of the Cynon Vale;
- Rhondda Fach ridge open access land and footpaths. Proposed turbines will be seen prominently and at close proximity, in the context of other turbines; and
- Hirwaun Common Open Access land. Proposed turbines will be clearly seen from the eastern part of the common, although the Pen y Cymoedd turbines are available in closer proximity views than the Proposed Development.

Recreational Receptors between 5 km and 10 km (starting from clockwise from north):

- Open access land in the East Fforest Fawr and Mynydd-y-Glog historic landscape and Bannau Brycheiniog National Park from where the proposed turbines will be seen to the left of existing turbines at Pen y Cymoedd;
- Mynydd Pen-y-graig and Carn y Celn to the south from where the turbines will be seen, but behind the existing Ferndale wind farm;
- Bwlch Mountain viewpoint – a promoted viewpoint and parking place with views of the proposed turbines to the right of the existing Mynydd Bwllfa, Maerdy and Pen y Cymoedd wind farms; and

Recreational Receptors between 10 km and 20 km (starting from clockwise from north):

- Visitors to the Bannau Brycheiniog National Park including walkers on the Cambrian Way visiting some of the highest and most dramatic summits such as Pen y Fan, the highest summit and the Cambrian Way at Y Gyrn; and
- Visitors to open summits including Mynydd Eglwysilan, Garth Hill, and Mynydd Garthmaetwg.

People Travelling on Roads

- 7.2.43 Motorists travelling on roads are typically considered to be of lower sensitivity due to their transitory nature and with their attention focused on the road rather than on their surroundings. Significant effects are considered unlikely where motorists will experience brief, glimpsed or incidental views of the Proposed Development. Therefore, the ES will consider the sequential views experienced by road users on key roads within 5 km from the outermost wind turbine of the Proposed Development, with clear open stretches and prolonged views towards the Site. There do not appear

to be any roads within the study area identified as 'scenic drives' on the Visit Wales website²³.

7.2.44 The LVIA will consider visual effects on the following road receptors (that fall wholly or partially within the ZTV of the wind turbines):

- Road users of the A4059 – passes within 2km northeast of the Site and links settlements along the Cynon Vale;
- Road users of the A4061 – runs through elevated upland within 5km northeast of the Site, before traversing south to the east of the Site;
- Road users of the A465 – runs north of the Site connecting the settlement of Hirwaun with the A4059;
- Road users of the A4233 – passes through the central part of the Site;
- Road users of the B4275 – runs roughly parallel to the A4059 approximately 2km northeast of the Site ; and
- Road users of the B4276 – runs north of the Site across elevated ground near Llwydcoed.

7.2.45 There are some local roads identified with theoretical visibility. However, in reality views towards the Site will be limited by roadside vegetation and intervening buildings such that any views would be glimpsed at most in passing. Such routes can be scoped out and will not be considered further for assessment in the ES as significant effects are unlikely to occur.

Representative Assessment Viewpoints

7.2.46 Assessment viewpoints provide a representation of a viewing experience from the range of receptors who will experience changes to views, including views from settlements, points of interest and sequential views along routes are set out below in **Table 7.2.1**. The viewpoints are all publicly accessible and have been chosen to cover the following:

- locations selected to represent the experience of different types of receptors;
- locations at different distances to provide a representative range of viewing angles and distances (i.e. short, medium and long distance views);
- locations which represent a range of viewing experiences (i.e. static views and points along routes); and

²³ <https://www.visitwales.com/inspire-me/short-breaks/best-roads-wales>

- specific viewpoints selected because they represent promoted views or viewpoints within the landscape.
- illustrative viewpoints chosen specifically to demonstrate a particular visual effect or specific issue (which could include restricted visibility in particular locations).

7.2.47 The proposed assessment viewpoint locations and the proposed type of visualisation are set out below in **Table 7.2.1** and are mapped on **Figures 7.2.13 – 7.2.16**. Potential visual receptors of the Proposed Development, and which viewpoints these are represented by, are shown in **Table 7.2.2**.

Table 7.2.1: Provisional LVIA Viewpoint Locations

VP no.	Viewpoint Location	X	Y	Distance from nearest wind turbine (km)	Reason for selection	Proposed type of visualisation
1	Aberdare Park, Cwmdare	299435	203227	2	Represents views experienced by the local community at Aberdare - one of the closest settlements to the Proposed Development. Represents views experienced by visitors to Aberdare Park Grade II* Registered Park and Garden. Landscape context: located in the CYNONVS522 Aberdare Landmap urban area, within the South Wales Valleys NCA.	Photomontage
2	Llwydcoed	299340	204751	3.4	Represents views experienced by the local community at Llwydcoed. Landscape context: in the CYNONVS522 Aberdare Landmap urban area, within the South Wales Valleys NCA.	Photomontage
3	Cwmbach	302301	201941	2.8	Represents views experienced by the local community at Aberdare - one of the closest settlements to the Proposed Development.	Photomontage

VP no.	Viewpoint Location	X	Y	Distance from nearest wind turbine (km)	Reason for selection	Proposed type of visualisation
					Landscape context: in the CYNONVS522 Aberdare Landmap urban area, within the South Wales Valleys NCA.	
4	Brookfield Play Area, Maerdy	298063	197627	1.2	Represents views experienced by the local community at Ferndale - one of the closest settlements to the Proposed Development. Landscape context: in the CYNONVS337 Treherbert Landmap urban area, within the South Wales Valleys NCA. Representative of views from the Rhondda Special Historic Landscape, one of the largest and best known mining conurbations and coalfield communities in Britain.	Photomontage
5	Castle Nos Car Park	297289	200004	0.4	Represents views experienced by users of Open Access Land and PRow. Landscape context: in the CYNONVS580 St Gwynno Landmap Wooded Upland & Plateaux, within the	Photomontage

VP no.	Viewpoint Location	X	Y	Distance from nearest wind turbine (km)	Reason for selection	Proposed type of visualisation
					South Wales Valleys NCA.	
6	Dare Valley Country Park (visitor centre car park)	298564	202546	1.4	Represents views experienced by visitors to Dare Valley Country Park, a focus for recreational activity. Landscape context: in the CYNONVS797 Dare Valley Open/Wooded Mosaic Upland Valleys Landmap area, within the South Wales Valleys NCA.	Photomontage
7	Eastern slopes of Cynon Vale above Cwmbach	303081	202076	3.6	Represents views experienced from Open Access Land and PRow from elevated land on the eastern slopes of Cynon Vale. Landscape context: in the CYNONVS140 Cefnpennar Hillside & Scarp Slopes Mosaic Landmap area, within the South Wales Valleys NCA. Representative of views from the Special Landscape Area: Cynon Valley Northern Slopes.	Photomontage
8	Rhondda Fach ridge	297495	197363	1.9	Represents views experienced from Open Access Land	Photomontage

VP no.	Viewpoint Location	X	Y	Distance from nearest wind turbine (km)	Reason for selection	Proposed type of visualisation
					and PRow from elevated land above the Rhondda Valley. Landscape context: in the CYNONVS738 Cefn y Rhondda Hillside & Scarp Slopes Mosaic Landmap area, within the South Wales Valleys NCA. Representative of views from the Rhondda Special Historic Landscape, one of the largest and best known mining conurbations and coalfield communities in Britain.	
9	Cadair Fawr	297792	212313	10.6	Represents views experienced by users of Common Land and PRow, and a particular viewpoint at a prehistoric cairn on the south facing slopes of the Bannau Brycheiniog National Park. A number of routes lead to this vantage point, suggesting it is a place people visit to observe the view. Landscape context: in the CYNONVS735 Cadair Fawr Upland Grazing Landmap area, within the Brecon Beacons and	Photomontage

VP no.	Viewpoint Location	X	Y	Distance from nearest wind turbine (km)	Reason for selection	Proposed type of visualisation
					Black Mountains NCA. Representative of views from within the East Fforest Fawr and Mynydd-y-Glog special historic landscape which has widespread survival of archaeological remains.	
10	Cambrian Way at Y Gyrn	298841	221000	19.4	Typical view from the central dramatic and well visited part of the Bannau Brycheiniog National Park, on the Cambrian Way long distance footpath and within an area of open country (open access land). Landscape context: in the BRCKNVS833 Brecon Beacons Upland Moorland Landmap area, within the Brecon Beacons and Black Mountains NCA.	Photomontage
11	Bwlch Mountain Viewpoint	293947	194602	6.4	A promoted viewpoint with parking, a sign board and benches providing an opportunity to stop and appreciate the view. Landscape context: in the CYNONVS113 Cwm Dar Landmap	Photomontage

VP no.	Viewpoint Location	X	Y	Distance from nearest wind turbine (km)	Reason for selection	Proposed type of visualisation
					area, within the South Wales Valley NCA. Representative of views from within the Rhondda Fawr Northern Cwm & Slopes SLA.	
12	Hirwaun Common Open Access Land	295662	203550	2.4	Representative of views from recreational receptors using Hirwaun Common Open Access Land and PRow. Landscape context: in the CYNONVS430 Hirwaun Common Upland Grazing Landmap area, within the South Wales Valleys NCA.	Photomontage
13	Cwmaman	299827	199700	0.82	Represents views experienced by the local community at Cwmaman - one of the closest settlements to the Proposed Development to the south. Landscape context: in the CYNONVS876 Rhos-Gwawr Hillside & Scarp Slopes Grazing Landmap area, within the South Wales Valleys NCA.	Photomontage

VP no.	Viewpoint Location	X	Y	Distance from nearest wind turbine (km)	Reason for selection	Proposed type of visualisation
14	Rhigos (A4061)	292695	203098	4.7	Represents a promoted viewpoint on the A4061, the winding Rhigos Road, across the Rhigos Valley. Landscape context: in the CYNONVS580 St Gwynno Wooded Upland & Plateaux Landmap area, within the South Wales Valleys NCA.	Photomontage
15	Sky to Sea Trail	294824	199493	3	Represents views from the Sky to Sea Trail within the Mynydd Tynewydd, a promoted long distance footpath over the Bwlch. Landscape context: in the CYNONVS580 St Gwynno Wooded Upland & Plateaux Landmap area, within the South Wales Valleys NCA.	Photomontage
16	Mynydd-y-Glog summit	298876	208818	7.4	Representative of recreational users of the PRow accessing the elevated Mynydd-y-Glog summit at approximately 389 AOD. Landscape context: in the CYNONVS735 Cadair Fawr Upland Grazing Landmap area, within the Brecon Beacons and	Photomontage

VP no.	Viewpoint Location	X	Y	Distance from nearest wind turbine (km)	Reason for selection	Proposed type of visualisation
					Black Mountains NCA.	
17	Coed Morgannwg Way	296397	201759	0.76	Represents views from the Coed Morgannwg Way promoted Long Distance Footpath near Berw-ddu Waterfall at approximately 400m AOD. Landscape context: in the CYNONVS797 dere valley Open/Wooded Mosaic Upland Valleys Landmap area, within the South Wales Valleys NCA.	Photomontage
18	Penderyn (on A4059)	295111	208399	7	Represents views experienced by the local community at Penderyn – an elevated settlement to the north. View is taken from the most elevated northern part of the settlement on the A4059. Landscape context: in the CYNONVS833 Penderyn Hillside & Scarp Slopes Mosaic Landmap area, within the Brecon Beacons and Black Mountains NCA.	Photomontage
19	Hirwaun (on NCN 478)	295991	206217	4.7	Represents views experienced by the local community at	Photomontage

VP no.	Viewpoint Location	X	Y	Distance from nearest wind turbine (km)	Reason for selection	Proposed type of visualisation
					Hirwaun – an elevated settlement to the north. View is taken from the most elevated northern part of the settlement on a minor road with direct links to the local PRow network. Landscape context: in the CYNONVS833 Penderyn Hillside & Scarp Slopes Mosaic Landmap area, within the Brecon Beacons and Black Mountains NCA.	
20	Pen-y-Graig Cairn summit	298691	191258	7.2	Represents recreational users accessing the PRow network in and around the Pen-y-Graig summit at approximately 416m AOD. Landscape context: in the CYNONVS142 Mynydd y Glyn Hillside & Scarp Slopes Mosaic Landmap area, within the South Wales Valleys NCA,	Photomontage
21	Mynydd Eglwysilan summit	310523	192030	13.2	Represents recreational users accessing the elevated PRow network including the Rhymney Calley Ridgeway Walk in and around the	Wireline – due to remoteness of the location and open nature of view (no baseline photograph).

VP no.	Viewpoint Location	X	Y	Distance from nearest wind turbine (km)	Reason for selection	Proposed type of visualisation
					Mynydd Eglwysilan summit east of Pontypridd. Landscape context: in the CYNONVS317 Mynydd Eglwysilan & Mynydd Meio Upland Grazing Landmap area, within the South Wales Valleys NCA,	
22	Mynydd Garthmaelwg summit	301112	185139	13.5	Represents recreational users accessing the elevated PRow network in and around the Mynydd Garthmaelwg summit south of Tonyrefail. Landscape context: in the CYNONVS436 mynydd gaer Hillside & Scarp Slopes Mosaic Landmap area, within the South Wales Valleys NCA.	Wireline – due to remoteness of the location and open nature of view (no baseline photograph).
23	Garth Hill summit	310345	183493	13.2	Represents recreational users accessing the elevated PRow network in and around the Garth Hill northwest of Cardiff. Landscape context: in the CYNONVS436 Garth Hill Hill & Lower Plateau Moorland Landmap area, within the	Wireline – due to remoteness of the location and open nature of view (no baseline photograph).

VP no.	Viewpoint Location	X	Y	Distance from nearest wind turbine (km)	Reason for selection	Proposed type of visualisation
					South Wales Valleys NCA.	
24	Brecon Beacons Way Long Distance Footpath at Fforest Fawr Open Access within Bannau Brycheiniog National Park	291865	215835	15	Represents recreational users accessing the Brecon Beacons Way Long Distance Footpath within Bannau Brycheiniog National Park. Landscape context: in the BRCKNVS876 Nedd Fechan and Mellte Valleys Open/Wooded Mosaic Upland Valleys Landmap area, within the Brecon Beacons and Black Mountains NCA.	Wireline – due to remoteness of the location and open nature of view (no baseline photograph).
25	Pen y Fan within Bannau Brycheiniog National Park	301229	221585	20.3	Represents recreational users accessing the elevated PRow network in and around the Pen y Fan, the highest summit in Wales. Landscape context: in the BRCKNVS833 Brecon Beacons Upland Moorland Landmap area, within the Brecon Beacons and Black Mountains NCA.	Wireline – due to remoteness of the location and open nature of view (no baseline photograph).
26	Pen Pych	291793	199695	5.15	Represents a promoted viewpoint at Pen Pych Waterfall near Blaenrhondda.	Wireline – due to remoteness of the location and open nature of view (no

VP no.	Viewpoint Location	X	Y	Distance from nearest wind turbine (km)	Reason for selection	Proposed type of visualisation
					Landscape context: in the CYNONVS580 St Gwynno Wooded Upland & Plateaux Landmap area, within the South Wales Valleys NCA.	baseline photograph).
27	Penywaun (NCN 46 and NCN 478 junction)	298704	204619	3.2	Represents recreational users accessing NCN 46 and NCN 478 north of Aberdare. Landscape context: in the CYNONVS522 Aberdare Landmap urban area, within the South Wales Valleys NCA.	Photomontage
28	Rhondda Fach Ridge (Cistercian Way)	300363	195649	3.1	Represents recreational users accessing the elevated PROW network including the Cistercian Way in and around the Rhondda Fach Ridge. Landscape context: in the CYNONVS738 cefn y rhondda Hillside & Scarp Slopes Mosaic Landmap, within the South Wales Valleys NCA.	Photomontage

Table 7.2.1: Relationship between visual receptors and representative viewpoints

Visual Receptor Group	Visual Receptor (the community of, users of or visitors to)	Representative Viewpoint(s)
Local Communities (within 10 km)		

Visual Receptor Group	Visual Receptor (the community of, users of or visitors to)	Representative Viewpoint(s)
Local Communities within 5 km	Aberdare including Cwmdare, Trecynon, Aberaman and Cwmaman	VP1, VP6, VP
	Llwydcoed	VP2
	Cwmbach	VP3, VP7
	Abercwmboi and Fernhill	No representative VP
	Ferndale	No specific representative VP, but similar viewing distance and angle to VP4 (Maerdy)
	Maerdy	VP4
	Hirwaun	VP19
	Penywaun	VP27
Local Communities between 5 km and 10 km	Merthyr Tydfil	No representative VP
	Tonypandy and Penygraig	No specific representative VP, but similar viewing distance and angle to VP 20 (Pen-y-Graig Cairn)
	Penderyn	VP18
Recreational Receptors: People Using Open Access Land, PRoWs, Promoted Walking Routes, Promoted Viewpoints, Visitor Attractions and Cycle Routes		
Recreational Receptors within 5 km	Recreational users of the open access land, car parks and footpaths within the Site.	VP5
	Recreational users of the open access land, car parks and footpaths surrounding the Site.	VP7, VP8
	The Coed Morgannwg Way	VP17
	The Cistercian Way (Wales)	VP28
	The Sky to Sea Walk (part of route shared with The Coed Morgannwg Way)	VP15 and VP17
	NCN 47	VP5
	NCN 881	No representative VP

Visual Receptor Group	Visual Receptor (the community of, users of or visitors to)	Representative Viewpoint(s)
	NCN 478	VP19
	NCN 46	VP27
	Dare Valley Country Park	VP6
	Aberdare Park Grade II* Registered Park and Garden	VP1
	Rhondda Fach ridge open access land and associated PRow	VP28
	Hirwaun Common Open Access land and associated PRow	VP12
Recreational Receptors between 5 km and 10 km	Open access land at Fforest Fawr	VP24
	Mynydd-y-Glog historic landscape	VP9 and VP16
	Mynydd Pen-y-graig	No representative VP
	Bannau Brycheiniog National Park at Carn y Celn	No representative VP
Recreational Receptors beyond 10 km	The Cambrian Way Long Distance Footpath within Bannau Brycheiniog National Park	VP10
	Mynydd Eglwysilan summit	VP21
	Garth Hill summit	VP23
	Mynydd Garthmaelwg summit	VP22
People Travelling along Roads		
Road users of minor roads (within 5 km)	The A4059	VP18
	The A4061	No representative VP
	The A465	No representative VP
	The A4233	VP5
	The B4275	No representative VP
	The B4276	No representative VP

Residential Receptors

- 7.2.48 There are 1382 residential properties contained in the OS residential property data within 1 km of the proposed wind turbines and a further 11,339 within 1-2 km, as shown on **Figure 7.2.17**. The closest property is 853m from the nearest proposed turbine. Properties within 2 km include limited scattered properties on urban

peripheries and clusters of properties within small settlements such as Aberdare, Cwmaman and Ferndale and roadside clusters. The outlook from properties varies, owing to their individual orientation, adjacent landform and intervening features such as vegetation and other built form.

Proposed Assessment and Methodologies

Legislation and Guidance

7.2.50 The Proposed Development will be prepared in accordance with current best practice within the industry. The following will inform the approach to the design and assessment of the Proposed Development:

- Landscape Institute and Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment 3rd Edition (GLVIA3)²⁴;
- Landscape Institute (2024) Notes and Clarifications on aspects of the 3rd Edition Guidelines on Landscape and Visual Impact Assessment (GLVIA3) - LITGN-2024-01²⁵;
- Landscape Institute (2019) Residential Visual Amenity Assessment (RVAA) Technical Guidance Note 2/19²⁶;
- Landscape Institute (2019) Visual Representation of Development Proposals Technical Guidance Note 06/19²⁷;
- Natural Resources Wales (Last updated March 2024) Using LANDMAP in Landscape and Visual Impact Assessments GN46²⁸;
- NatureScot (2021) Assessing the cumulative landscape and visual impact of onshore wind energy developments²⁹;

²⁴ Landscape Institute and Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment (3rd Edition)

²⁵ [Landscape Institute \(2024\) Notes and Clarifications on aspects of the 3rd Edition Guidelines on Landscape and Visual Impact Assessment \(GLVIA3\) - LITGN-2024-01](#)

²⁶ [Landscape Institute \(2019\) Technical Guidance Note 2/19: Residential Visual Amenity Assessment \(RVAA\)](#)

²⁷ [Landscape Institute \(2019\) Technical Guidance Note 06/19: Visual Representation of Development Proposals](#)

²⁸ Natural Resources Wales (Last updated March 2024) LANDMAP Guidance Note 46: Using LANDMAP in Landscape and Visual Impact Assessments. Available at: <https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/evidence-to-inform-development-planning/using-landmap-in-landscape-and-visual-impact-assessments-gn46/?lang=en>

²⁹ [NatureScot \(2021\) Guidance – Assessing the cumulative landscape and visual impact of onshore wind energy developments](#)

- Design Commission for Wales (2023) Designing for Renewable Energy in Wales³⁰;
- Scottish Natural Heritage (2017) (now NatureScot) Siting and Designing Windfarms in the Landscape. Version 3a³¹;
- Scottish Natural Heritage (2017) (now NatureScot) Visual Representation of Wind Farms Guidance. Version 2.2³²; and
- The Planning Inspectorate (Last updated March 2025) Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment³³.

7.2.51 The following policy documents will be reviewed as part of the LVIA:

- Future Wales: The National Plan 2040;
- Planning Policy Wales (PPW) Edition 12;
- Rhondda Cynon Taf Local Development Plan 2006 – 2021;
- Rhondda Cynon Taf Revised Local Development Plan 2022-2037; and
- Rhondda Cynon Taf: Making Rhondda Cynon Taf Carbon Neutral by 2030.

Proposed Assessment Methodologies

7.2.52 The assessment in the ES will determine the significance of landscape and visual effects with reference to the nature of the receptor, which is commonly referred to as the sensitivity of the receptor, and the nature of the effect, which is commonly referred to as magnitude.

³⁰ [Design Commission for Wales \(2023\) Designing for Renewable Energy in Wales](#)

³¹ [NatureScot \(2017\) Siting and designing wind farms in the landscape \(Version 3a\)](#)

³² [NatureScot \(2017\) Visual representation of wind farms: Guidance \(Version 2.2\)](#)

³³ The Planning Inspectorate (Last updated March 2025) Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment. Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-cumulative-effects-assessment>

Landscape Sensitivity

7.2.53 The sensitivity of a landscape receptor to change will combine professional judgements on susceptibility and value, using the principles set out in **Table 7.2.3**.

Table 7.2.3: The principle of judging landscape sensitivity

	Higher	↔	Lower
Susceptibility	The landscape is less able to accommodate wind energy development without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape offer very limited opportunities for the accommodation of change without key characteristics being fundamentally altered by wind energy development, leading to a different landscape character.	↔	The landscape is more able to accommodate wind energy development without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape are more resilient to being changed by wind energy development.
Value	Landscapes with higher scenic quality, conservation interests, recreational value, cultural associations or rarity or uniqueness. Areas designated at a national level e.g. National Parks or National Landscapes (formerly AONBs) with national policy level protection. LANDMAP aspect areas with higher overall evaluation scores.	↔	Landscapes of limited aesthetic qualities, low conservation interest, little recreational value, few cultural associations or of character that is frequent/widespread. Areas or features that are not formally designated. LANDMAP aspect areas with lower overall evaluation scores.

Landscape Susceptibility

- 7.2.54 Susceptibility means “the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular type or area, or an individual element and/or feature, or a particular aesthetic and perceptual aspect) to accommodate the Proposed Development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies” (GLVIA3 paragraph 5.40).
- 7.2.55 For wind energy development, a series of criteria are used to evaluate susceptibility of landscape character types or areas to wind energy development as set out in **Table 7.2.4**. These criteria are drawn from a range of published sources relating to wind farm development, including Siting and Designing Windfarms in the Landscape (SNH, 2017) and GLVIA3.

Table 7.2.2: Criteria to determine susceptibility to wind energy development

Characteristic/Attribute	Aspects Indicating Lower Susceptibility to Wind Energy Development	↔	Aspects Indicating Higher Susceptibility to Wind Energy Development
Scale	Large scale.	↔	Small scale.
Landform	Absence of strong topographical variety, featureless, convex or flat.	↔	Presence of strong topographical variety or distinctive landform features.
Land Cover and Landscape Pattern/Complexity	Simple. Regular or uniform.	↔	Complex. Rugged and irregular.
Historic Landscape/Time Depth	Absence of time depth and historic features.	↔	Presence of historic landscapes with great time depth with a high density of historic landscape features.
Settlement and Manmade Influences	Presence of contemporary structures e.g. utility, infrastructure or industrial elements.	↔	Absence of modern development. Presence of small scale, historic or vernacular settlement.

Characteristic/Attribute	Aspects Indicating Lower Susceptibility to Wind Energy Development	↔	Aspects Indicating Higher Susceptibility to Wind Energy Development
Skylines	Non-prominent/screened skylines or skylines that are less important in views. Presence of existing modern man-made features.	↔	Distinctive, undeveloped skylines. Skylines that are highly visible over large areas or exert a large influence on landscape character. Skylines with important historic landmarks.
Visibility from Adjacent Landscapes	Little visibility from adjacent designated landscape or promoted viewpoints.	↔	Visible from nationally designated landscapes. Forms an important part of a view from promoted viewpoints.
Perceptual Aspects	Presence of visible or audible signs of human activity and development. Lacking in naturalness. Threatening; unattractive; noisy. High levels of light pollution/doesn't experience dark skies.	↔	Remote from visible or audible signs of human activity and development. High levels of naturalness evident. Particularly tranquil; wild; spiritual; attractive; peaceful. Low levels of light pollution/experiences dark skies.

7.2.56 Information contained within the landscape character assessment and in LANDMAP will be used, alongside field survey, to inform susceptibility. Landscape susceptibility will be defined as **high**, **medium** or **low**, as set out in **Table 7.2.3**.

Table 7.2.5: Definition of landscape susceptibility

Landscape Susceptibility	Description
High	The landscape is less able to accommodate the type of development proposed without undue negative consequences to the baseline situation, e.g. this may include: • Landscapes that are smaller in scale or exhibiting some complexity, perhaps with some distinctive topographical features; • General absence of modern development and/ or presence of historic landscape with a degree of time depth; • Relatively undeveloped skylines and/or skylines that are visible and exert an influence on landscape character (which may include some historic landmarks); • May be inter-visible with sensitive landscapes or forms an important part of a view; and • Has a sense of remoteness/tranquillity with few visible or audible signs of human activity and development, and experiences dark skies.
Medium	The landscape is able to accommodate the type of development proposed to some extent without undue negative consequences to the baseline situation, e.g. this may include: • Medium scale landscapes which may have some topographical variety or features present; • May be some man-made features and/or contemporary structures present; • Skylines may be present but not likely to be the most important skylines in a region – there could be some visibility of the skyline from sensitive landscapes or views; • Some visible or audible signs of human activity and development, but may also be some sense of tranquillity and experiences some dark skies; and • Medium can also be a balance of indicators associated with high and low susceptibility.
Low	The landscape is more able to accommodate the type of development proposed without undue negative consequences to the baseline situation, e.g. this may include:

Landscape Susceptibility	Description
	• Large scale landscapes with absence of strong topographical variety and a simple form; • Regular or uniform landcover patterns; • Presence of man-made features and/ or contemporary structures e.g. utility, infrastructure or industrial elements; • Skylines that are not prominent or less important in views; • Less visible from sensitive landscapes or views; • Presence of visible or audible signs of human activity and development, and doesn't experience dark skies; and • Lack of tranquillity.

Value of the Landscape Receptor

7.2.57 Landscape value, for the purposes of the LVIA, will be determined with reference to:

- A review of designations and the level of policy importance that they signify (such as landscapes designated at international, national or local level);
- The application of criteria that indicate value (such as condition/ intactness, scenic quality, rarity, recreational value, representativeness, conservation interests, perceptual aspects and artistic associations) as described in GLVIA3, paragraphs 5.44 – 5.47 alongside the functional value of the landscape as noted within LI TGN 0/21: Assessing Landscape Value Outside National Designations³⁴; and
- A review of the relevant LANDMAP evaluation information for the Visual and Sensory aspect layer (predominantly relating to the 'overall evaluation' score but also a consideration of 'scenic quality' and 'character' which influence the 'overall evaluation' score).

³⁴ Landscape Institute Technical Guidance Note (TGN) 02/21: Assessing Landscape Value Outside National Designations, 2021, <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2021/05/tgn-02-21-assessing-landscape-value-outside-national-designations.pdf>

7.2.58 Landscape value will be recorded as **high, medium** or low as per **Table 7.2.6**.

Table 7.2.6: Definition of landscape value

Landscape Value	Description
High	This may include: - Landscapes designated at national level (e.g. National Parks, National Landscapes) or Registered Landscapes of Special Historic Interest; - Landscapes that are in good condition, have high scenic quality, are rare, have high recreational value, high conservation interest, are remote/tranquil and/or have high/nationally recognised associations with artists, writers or events in history that contribute to perceptions of the natural beauty of the area; and - Landscapes that have an 'outstanding' or 'high' LANDMAP overall evaluation for the Visual & Sensory aspect layer where the reason provided is relevant to this assessment. NB Not all landscapes with a 'high' LANDMAP score would automatically fall into this category, but when combined with the other indicators above may do so.
Medium	This may include: - Landscapes designated at local level e.g. Special Landscape Areas; - Landscapes that are in a moderate condition, that have a moderate scenic quality, may have some rarity value at a local level, have some recreational value, some conservation interest, have a degree of rurality (but not a great sense of tranquillity/remoteness) and/or have locally recognised associations with artists, writers or events in history that contribute to perceptions of the natural beauty of the area; and - Landscapes that have a 'moderate' LANDMAP overall evaluation for the Visual & Sensory aspect layer where the reason provided is relevant to this assessment. NB This category may include landscapes with higher or lower LANDMAP scores where other indicators indicate a 'medium' value overall.
Low	This may include: - Non designated landscapes; - Landscapes that are in less good condition, have a low scenic quality, are not rare, lacking recreational value or conservation interest, unlikely to exhibit a sense of tranquillity/remoteness and have no notable associations with artists, writers or events in history that contribute to perceptions of the natural beauty of the area; and

Landscape Value	Description
	Landscapes that have a 'low' LANDMAP overall evaluation for the Visual & Sensory aspect layer where the reason provided is relevant to this assessment.

Combining Landscape Susceptibility and Value Judgements

- 7.2.59 An overall judgement of landscape sensitivity will be derived by combining the separate judgements on landscape susceptibility and landscape value, as per the 'sequential combination' approach referred to in GLVIA 3 (para 5.55). The process of combining the judgements of susceptibility and value is one of professional judgement. The starting point is an even weighting given to susceptibility and value, but each situation is different and there may be instances where susceptibility or value has more influence. In each case the judgement will be clearly explained.
- 7.2.60 Landscape sensitivity of a landscape receptor to change will be expressed as **high**, **medium** or **low** (or the intermediate levels of **low-medium** and **medium-high**).

Visual Sensitivity

- 7.2.61 Visual sensitivity will combine professional judgements on susceptibility and value using the principles set out in **Table 7.2.7**.

Table 7.2.7: The principle of judging visual sensitivity

	Higher	↔	Lower
Susceptibility	Viewers whose attention or interest is focused on their surroundings including communities/ individual residential receptors/ people engaged in outdoor recreation/ visitors to heritage assets or other attractions where views of the surrounding area are an important contributor to experience.	↔	People whose attention is not on their surroundings (and where setting is not important to the quality of working life) such as commuters/ people engaged in outdoor sports/ people at their place of work.
Value	Views recorded in management plans or guidebooks. Views associated with nationally designated landscapes; notable views from a National Trail or promoted route; or designed views (vistas) recorded in citations for historic parks, gardens/scheduled monuments etc.	↔	Views which are not documented or protected. Views which are more incidental, and less likely to be associated with somewhere people travel to or stop.

Susceptibility of the Visual Receptor

- 7.2.62 The susceptibility of visual receptors to changes in views/visual amenity is a function of the occupation or activity of people experiencing the view and the extent to which their attention is focused on views (GLVIA3, paragraph 6.32).
- 7.2.63 The susceptibility of visual receptors will be defined as **high, medium** or **low**, as set out in **Table 7.2.8**.

Table 7.2.8: Definition of visual susceptibility

Susceptibility	Receptor Group
High	Viewers whose attention or interest is focused on their surroundings, including: - Communities where views contribute to the landscape setting enjoyed by residents; - People engaged in outdoor recreation (for example users of rights of way including national trails and promoted routes, whose interest is likely to be focused on the landscape, views from promoted viewpoints, or views from nationally/locally designated landscapes); - Visitors to heritage assets or other attractions where views of surrounding are an important contributor to experience; and - People travelling on scenic routes and tourist routes, where attention is focused on the surrounding landscape.
Medium	Viewers whose attention or interest is focused on their surroundings to some extent, including: - People travelling on local road routes, where attention may be focused on the surrounding landscape, but is transitory; and - People at their place of work whose attention is focused on the surroundings and where setting is important to the quality of working life.
Low	Viewers whose attention or interest is less focused on their surroundings, including: - People travelling more rapidly on major road, rail or transport routes (not recognised as scenic routes); - People engaged in outdoor sport or recreation which does not involve or depend upon appreciation of views of the landscape; and - People at their place of work whose attention is not on their surroundings (and where setting is not important to the quality of working life).

Value of the Views Experienced by the Visual Receptor

7.2.64 Recognition of the value of views experienced from the visual receptor will be determined with reference to:

- Planning designations specific to views;
- Whether views are recorded as an important part of designated landscapes, for example views being specifically mentioned within the special qualities of a National Park or National Landscape;
- Whether they are notable views from a National Trail;
- Whether views are recognised as important within citations, for example designed views within Registered Parks and Gardens, or views recorded as important within Conservation Area appraisals;
- The value attached to views by visitors, for example as indicated by designated viewpoints advertised on OS maps and in tourist information, or significant destinations such as popular hill summits, or viewpoints which have facilities for enjoyment of the view, or views made famous by photographs or paintings; and
- The 'attractiveness' of views, as referenced in existing information, such as LANDMAP/judged on site.

7.2.65 The value of views experienced from the visual receptor will be recorded as **high**, **medium** or **low** in accordance with **Table 7.2.9** below.

Table 7.2.9: Definitions of value attached to views

Value of Views Experienced from the Visual Receptor	Description
High	This may include: • High quality views associated with nationally/locally designated landscapes (perhaps identified in management plans), or high-quality views from National Trails; • Designed views recorded in citations for historic parks and gardens; • Valued views from heritage assets (conservation areas, scheduled monuments or listed buildings) that are highlighted in the citation for the designation or, in the case of conservation area, in the conservation area appraisal; and • High quality views that have facilities provided for the enjoyment of the view by visitors (such as parking places, sign boards and interpretative material for the views).

Value of Views Experienced from the Visual Receptor	Description
Medium	This may include: - Non-designated views, which may be noted as attractive in landscape character assessments or within LANDMAP evaluative information (i.e. if views/visual qualities are mentioned in the overall evaluation); and - Views that are 'attractive'/scenic (as judged on site).
Low	This may include: Other non-designated views that are not noted as attractive in landscape character assessments or within LANDMAP evaluative information (i.e. if views/visual qualities are not mentioned in the overall evaluation), and are not notably scenic (they may nevertheless be valued by the local community who experience them).

Combining Visual Susceptibility and Value Judgements

7.2.66 An overall judgement of visual sensitivity will be derived by combining the separate judgements on visual susceptibility and the value of views experienced from the visual receptor, as per the 'sequential combination' approach referred to in GLVIA 3 (para 6.43). The starting point for combining the judgements of susceptibility and value is an even weighting given to susceptibility and value, but each situation is different and there may be instances where susceptibility or value has more influence. If an even weighting is not applied, the reason for this will be explained.

7.2.67 Visual sensitivity of a visual receptor to change will be expressed as **high**, **medium** and **low** (or the intermediate levels of **low-medium** and **medium-high**).

Magnitude

7.2.68 The nature of the effect is commonly referred to as magnitude and is driven by the size and scale of change with, duration, reversibility and geographical extent also reported.

7.2.69 In GLVIA3 geographical extent is considered as forming part of the magnitude (when combined with the size/scale of effect, duration and reversibility). However, the inclusion of geographical extent can distort the aim of identifying significant effects. For example, a high magnitude of change based on size or scale may be reduced to a lower rating if it occurs in a localised geographical area. This might mean that a potentially significant effect would be overlooked if effects are diluted down due to their limited geographical extents. Therefore, the geographic extent of effects will be

reported alongside the effect. The key objective is to communicate the location of effects.

Size and Scale of Landscape Effect

- 7.2.70 For landscape elements/features this depends on the extent of existing landscape elements that will be lost or changed, the proportion of the total extent that this represents and the contribution of that element to the character of the landscape.
- 7.2.71 In terms of landscape character, this reflects the degree to which the character of the landscape will change by removal or addition of landscape components, and how the changes will affect key characteristics.
- 7.2.72 The assessment of size/scale will be described as being **large, medium, small** or **barely perceptible** according to **Table 7.2.10**.

Table 7.2.10: Size/scale of landscape change

Size/Scale	Definition
Large	Loss or modification of landscape elements and features, or addition of new elements and features, which result in a large change to the key characteristics and character of the landscape (including perceptual character).
Medium	Loss of landscape elements and features, or addition of new ones, which result in discernible changes to landscape characteristics and character (including perceptual character).
Small	A perceptible but small change to landscape characteristics and character (including perceptual character) as a result of the loss of landscape elements and features or addition of new ones.
Barely Perceptible	A barely perceptible change to landscape characteristics and character.

Duration of Landscape Effect

- 7.2.73 GLVIA3 (paragraph 5.51) states that duration of effect “can usually be simply judged on a scale such as short term, medium term or long term”. For the purposes of the LVIA, duration will be determined in relation to the length of phases of the development, as follows:
- **Short-term** with effects generally lasting 0-5 years e.g. resulting from construction activities or presence of temporary structures;
 - **Medium-term** with effects generally lasting 5-10 years e.g. resulting from longer construction periods or operational effects that may cease on growth of planting mitigation; and

- **Long-term** with effects generally lasting over 10 years e.g. resulting from the presence of turbines or other operational structures lasting more than 10 years.

Reversibility of Landscape Effect

7.2.74 In accordance with the principles contained within GLVIA3, reversibility will be reported as **reversible, partially reversible** or **not reversible**, and is related to whether the change can be reversed at the end of the phase of development under consideration (i.e. at the end of the construction or at the end of the operational lifespan of the development).

Combining the Magnitude of Landscape Change Judgements

- 7.2.75 An overall judgement for the magnitude of landscape change will be made. This is driven by the size and scale of change with, duration, reversibility and geographical extent also reported.
- 7.2.76 The magnitude of landscape change will be expressed as **high, medium, low or barely perceptible**.

Table 7.2.11: Definitions of magnitude of landscape change

Magnitude of Landscape Change	Definition
High	An obvious (large scale) change in landscape features, characteristics and character potentially resulting in the creation of a new landscape character type.
Medium	Discernible (medium scale) changes to landscape features, characteristics and character.
Low	A perceptible but small change to landscape features, characteristics and character.
Barely Perceptible	An imperceptible/barely perceptible change to landscape features, characteristics and character.

Size and Scale of Visual Effect

- 7.2.77 The size/scale of visual effect depends on:
- The scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the development;

- The degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristics in terms of form, scale and mass, line, height, colour and texture; and
- The nature of the view of the development, in terms of whether views will be fully open, partially open, glimpsed or oblique.

7.2.78 The assessment of size and scale will be described as being large, medium, small or barely perceptible, as set out in **Table 7.2.12** below.

Table 7.2.12: Size/scale of visual change

Size/Scale	Description
Large	Large change in the available view, perhaps where the development is in relatively close proximity in a direct line of vision, or affecting a substantial part of the view, or providing contrast with the existing view.
Medium	Clearly perceptible change in the available view, perhaps where the development is relatively close but at an oblique angle or further away in the direct line of vision, creating a distinct new element in the view.
Small	Small change in the available view, perhaps where the development is at a distance or oblique angle, or where the scale of the landscape absorbs the development well.
Barely Perceptible	Change in the available view which is barely perceptible, or the change may go unnoticed.

7.2.79 Effects will be judged to be during winter when a 'worst case' situation is present due to minimal screening by vegetation.

Duration of Visual Effect

7.2.80 Duration will be reported as **short term**, **medium term** or **long term**, as defined for landscape.

Reversibility of Visual Effect

7.2.81 Reversibility will be reported as **reversible**, **partially reversible** or **not reversible** (i.e. permanent) and is related to whether the change can be reversed at the end of the phase of development under consideration (i.e. at the end of the construction or at the end of the operational lifespan of the development).

Combining Magnitude of Visual Change Judgements

7.2.82 An overall judgement for the magnitude of visual change will be derived by combining the judgements on size/scale and duration. In most cases, size/scale of change tends to have the largest influence on overall magnitude. Reversibility does not tend to

influence the magnitude but will be recorded for clarity. The geographical extent over which the visual effect will occur will be recorded for each visual receptor, focussing on the largest scale of visual change experienced by the receptor. The magnitude of visual change will be expressed as **high**, **medium**, **low** or **barely perceptible** in **Table 7.2.13** below.

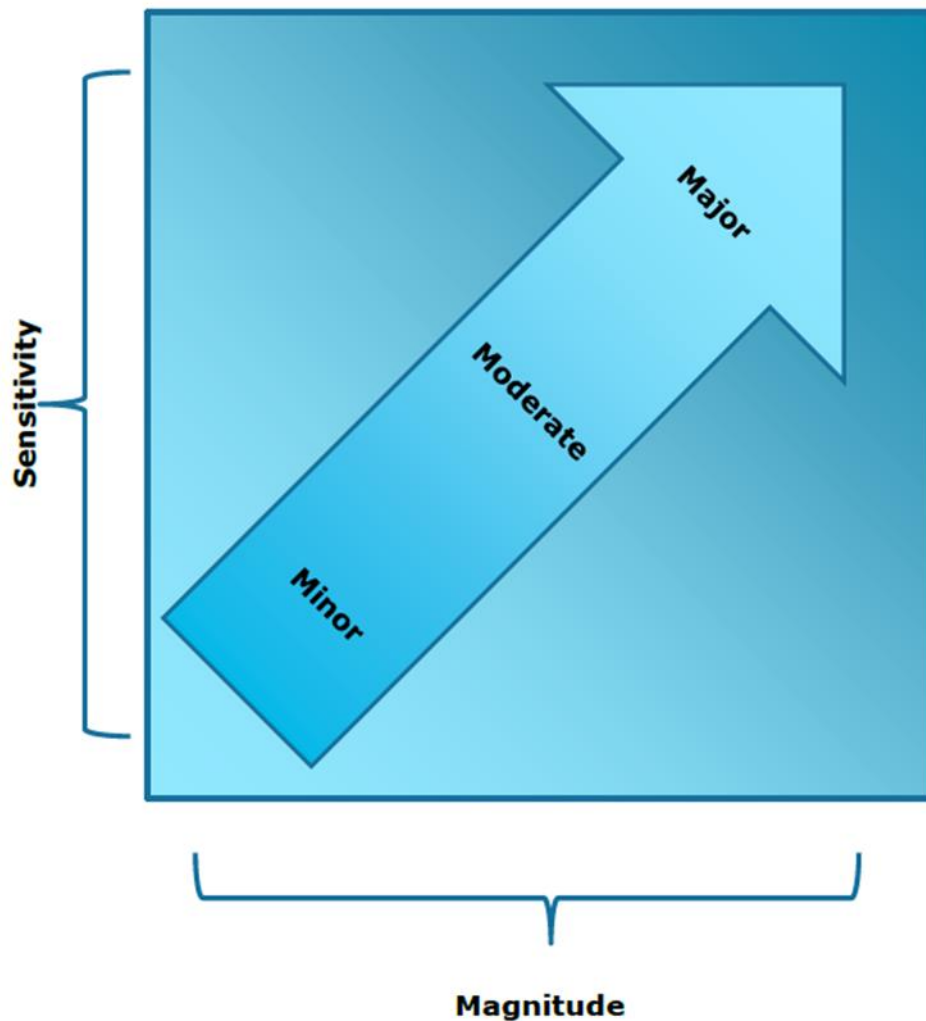
Table 7.2.13: Definitions of magnitude of visual change

Magnitude of Change	Definition
High	A large change in available views, perhaps where the development is in close proximity in a direct line of vision, or affecting a substantial part of the view, or providing contrast with the existing view.
Medium	A clearly perceptible change in view, perhaps where the development is relatively close but at an oblique angle or further away in the direct line of vision, creating a distinct new element in the view.
Low	A small change in view, perhaps where the development is at a distance or oblique angle, or where the scale of the landscape absorbs the development well.
Barely Perceptible	A change in view which is barely perceptible or may go unnoticed.

Significance

- 7.2.83 Judgements on sensitivity and magnitude will be combined to assess the overall significance of each effect. A numerical or formal weighting system will not be applied, therefore enabling consideration of the relative importance of each aspect to feed into the overall decision. This determination requires the application of professional judgement and experience to take on board the many different variables which need to be considered. Judgements will be made on a case-by-case basis, guided by the approach set out in **Diagram 7.2.1** below. A rigid matrix-type approach, which does not allow for the application of professional judgement and experience, and where the level of effect is defined simply based on the level of sensitivity (nature of receptor) combined with the magnitude of change (nature of effect), will not be used.
- 7.2.84 Levels of effect will be identified as **negligible**, **minor**, **moderate** or **major** (or the intermediate levels of **minor-moderate** and **moderate-major**) where effects of 'moderate' and above are considered significant in the context of the EIA Regulations.

Diagram 7.2.1: Principal of judging levels of effect using sensitivity and magnitude



Proposed Approach to Cumulative LVIA

- 7.2.85 Existing wind energy developments and those under construction will form part of the LVIA as they already form part of the baseline landscape.
- 7.2.86 The cumulative LVIA will assess the additional cumulative effects that would arise when adding the Proposed Development to a baseline containing Tier 1 and Tier 2 projects that have been reviewed and shortlisted according to the process set out in **Section 6.5** of this report.
- 7.2.87 The criteria for which wind turbines and wind farms will be included in the cumulative LVIA are as follows:
- Start with all operational, under construction, consented schemes and schemes for which planning applications have been submitted within 32km (those on the 'long list' as defined in guidance from the Planning Inspectorate);
- 7.2.88 The 'short list' will then be refined from the long list as follows:

- Scope out all turbines that are less than 20 m to blade tip in height across the whole study area;
- Scope out any single turbines of any size beyond 10km;
- Scope out any turbines that are less than 50m to blade tip height beyond 10km unless they are in groups of 10 or more.

7.2.89 All operational wind energy developments under construction, consented, undergoing determination and those in the pre-application process, within the 32km study area, filtered as per the criteria above, are shown on **Figure 6.5.1** and set out in **Table 6.5.1**. Other wind energy projects on the Welsh Government's register of DNS that have not yet been submitted (i.e. 'Tier 2' projects) but are likely to be submitted before the Proposed Development will also be reviewed for inclusion.

Assessing Additional Cumulative Effect Across Two Scenarios

7.2.90 In accordance with NatureScot guidance³⁵ the LVIA cumulative assessment will consider two scenarios:

- Scenario A is a more certain scenario (which adds consented schemes to those included in the LVIA baseline); and
- Scenario B is a less certain scenario (which also adds undetermined planning applications and consented schemes to those included in the LVIA baseline).

7.2.91 The susceptibility and value of the landscape and visual receptors in the cumulative assessment will remain the same as for the LVIA. The magnitude of change will be judged using the same criteria as for the LVIA but against the two cumulative baselines (Scenario A and Scenario B).

7.2.92 The cumulative landscape assessment will consider the following:

- the position of the wind farms within the landscape, e.g. in similar landscape or topographical context;
- the relationship between the scale and layout of the wind farms, including turbine size/proportion/number of turbines;
- the distances between wind farms, and their distance and direction from the receptor; and
- the cumulative effect of ancillary development, e.g. access tracks.

³⁵ NatureScot (2021) Assessing the cumulative landscape and visual impact of onshore wind energy developments.

7.2.93 The cumulative visual assessment will consider the following:

- the arrangement of wind farms in the landscape or view e.g. developments seen in one direction or part of the view (combined views), or seen in different directions (successive views in which the viewer must turn) or developments seen sequentially along a route;
- the relationship between the scale and layout of the wind farms, including turbine size/proportion/number of turbines;
- the position of the wind farms within the landscape, e.g. in similar landscape or topographical context; or within the view, e.g. on the skyline, against the backdrop of land;
- the distances between wind farms, and their distance and direction from the viewer; and
- in the case of routes, the relative duration of views of wind farms from routes.

7.2.94 Intervisibility of the Proposed Development and other existing and future wind farms, as well as other types of development (if relevant), within the 32 km study area will be illustrated through combined ZTV (CZTV) maps demonstrating the key relationships with existing or proposed wind farms close to the Site. The CZTVs will then be used to assess the cumulative visual effects, alongside computer-generated wirelines.

7.2.95 Judging the significance of cumulative landscape and visual effects requires consideration of the sensitivity (nature of the receptor) and the magnitude of effect on those receptors (nature of the effect), guided by the same principles as set out in the LVIA methodology.

7.2.96 Cumulative landscape and visual effects will be described as **negligible**, **minor**, **moderate** or **major** (or the intermediate levels of **minor-moderate** and **moderate-major**) where cumulative landscape or visual effects of 'moderate' and above are typically considered significant in the context of the EIA Regulations. The assessment will subsequently conclude whether the effects identified against the projected baseline in Scenario A and Scenario B are different from the effects recorded in the LVIA against the existing baseline for each receptor.

Total (Combined) Cumulative Effect

7.2.97 The assessment of total (also referred to as combined) cumulative effect (i.e. the effect on landscape and views if all current, and future proposals, including the Proposed Development, are implemented when compared to the existing baseline) will be addressed through a commentary. It is not up to one developer to assess all other developers' projects (this is recognised in paragraph 7.13 of GLVIA3: 'the assessor will not have assessed the other schemes and cannot therefore make a fully informed

judgement'), but the total effect will be judged in broad terms for both landscape and visual amenity.

Proposed Approach to the Visualisations to Accompany the LVIA and Cumulative LVIA

- 7.2.98 Wirelines and photomontages (collectively known as 'visualisations') will illustrate the predicted change to views.
- 7.2.99 Photomontages will be produced by overlaying computer-generated perspectives of the Proposed Development on photographs of the existing baseline. Viewpoint photography will be undertaken in accordance with Landscape Institute (2019) guidance³⁶. All visualisations will also be prepared in accordance with the 2019 LI guidance as well as SNH (2017) visualisation guidance³⁷. Wirelines will include existing and proposed wind farms identified within the cumulative LVIA to provide a representation of the cumulative effects of wind energy development within the 32 km study area.

Proposed Approach to Residential Visual Amenity Assessment

- 7.2.100 Views from houses and individual properties are a matter of private amenity. However, the effects on residential visual amenity become a public rather than a private matter when properties become regarded as unattractive places to live because of a development.
- 7.2.101 A RVAA will be undertaken for all properties within a 2 km radius from the proposed wind turbine locations (grouping properties where views are similar) in accordance with the Landscape Institute's Technical Guidance Note³⁸ to determine whether visual effects on the property are considered to breach the 'residential visual amenity threshold'.
- 7.2.102 For each property or group of properties, the RVAA will be informed by ZTVs, aerial photography, wirelines and field work undertaken from publicly accessible locations within the vicinity to determine the scale of visual effects.
- 7.2.103 The methodology can be summarised as follows:

³⁶ Landscape Institute Technical Guidance Note 06/19 (2019) Visual Representation of Development Proposals

³⁷ Scottish Natural Heritage (2017) Visual Representation of Wind Farms Guidance. Version 2.2

³⁸ Landscape Institute (2019) Residential Visual Amenity Assessment (RVAA) Technical Guidance Note 2/19

- Step 1: Identification of properties to be considered (defining the study area and scope);
- Step 2: Evaluation of baseline visual amenity from each property/ property group;
- Step 3: Assessment of likely change to visual amenity of properties; and
- Step 4: Forming the RVAA judgement (the Residential Visual Amenity Threshold).

Proposed Approach to the Aviation Lighting Assessment

7.2.104 Structures, including wind turbines, that are greater than 150 m require visible aviation lighting³⁹. This typically consists of 2000 candela red lights mounted onto the wind turbine's nacelle and intermediate 32 candela lights mounted on the wind turbine tower. As the proposed wind turbine model for the Proposed Development is a 230 m to tip height model, a night-time visual assessment of visible turbine lighting will be undertaken. This will be carried out in accordance with the approach advocated by Scottish Government and NatureScot⁴⁰. It will include preparation of a lighting ZTV and two night-time visualisations. Night-time baseline photographs will be taken in low light conditions from two viewpoints. The location of the viewpoints will be subject to the final lighting design and will be informed by the lighting ZTV. One of the viewpoints will be from Bannau Brycheiniog National Park (an International Dark Sky Reserve) and is proposed from VP9 on Cadair Fawr. The other would likely be a closer viewpoint to represent a local community (location dependent upon lighting ZTV).

7.2.105 Night-time photomontages including wind turbine lighting from the two viewpoints will be presented in the ES in accordance with the industry standard guidance prescribed in SNH (now NatureScot)⁴¹ and Landscape Institute guidance.

Assessment of Effects

7.2.106 Effects of the wind turbines' lighting on landscape character and visual amenity will be assessed using professional judgement of what the naked human eye can reasonably perceive in the context of the baseline situation with regard to existing sources of artificial lighting, supported by the lighting ZTV and visualisations, drawing on the

³⁹ Civil Aviation Authority (2016) CAA Policy and Guidelines on Wind Turbines – CAP 764

⁴⁰ [Scottish Government and NatureScot \(2024\) Guidance on Aviation Lighting Impact Assessment](#)

⁴¹ Visual Representation of Wind Farms Guidance - Version 2.2. (February 2017) Scottish Natural Heritage

lighting Technical Appendix that will be produced as part of the assessment of effects on aviation (see **Section 7.9**).

Proposed Approach to Assessing Implications for Landscape Designations

- 7.2.107 Any implications for the published special qualities of the nationally designated Bannau Brycheiniog National Park will be considered and presented in the ES. The Bannau Brycheiniog National Park is also designated as an International Dark Sky Reserve and so impact of lighting on the dark skies of the Bannau Brycheiniog National Park will also be a consideration in the assessment.
- 7.2.108 The assessment will also consider any implications for the primary landscape qualities and features of locally designated Special Landscape Areas (SLAs) within 10 km from the outermost wind turbine of the Proposed Development

Key Issues and Potential Likely Significant Effects

- 7.2.109 The below sections set out the key issues which relate to landscape character and visual amenity. It includes whether the potential effects are proposed to be scoped in or scoped out of the assessment for the construction, operational and decommissioning phase of the Proposed Development, as well the basis for these judgements:

Construction Phase

- 7.2.110 At this stage in the design of the Proposed Development the requirements of the construction contractor are not yet known. However, it is likely that operational visual impacts will be greater than those of the construction phase in so far that any crane will not be greater in height than the tip height of an operational wind turbine. The assessment of the operational phase of the Proposed Development therefore constitutes a worst-case scenario and therefore construction phase impacts are being scoped out except where the location of temporary features would give rise to likely significant effects greater than those experienced during operation.
- 7.2.111 At this stage in the design of the Proposed Development, the location of temporary features is uncertain but will be reviewed during the assessment process Should their location give rise to likely significant effects greater than those experienced during operation, then the ES will include an assessment following the same methodology as the assessment for the operational phase.

Operational Phase

Landscape Effects

7.2.112 The following list summarises the potential landscape effects that will be scoped into the assessment:

- Direct effects on the landscape features and character of the Site;
- Indirect effects on the landscape character within 10 km radius;
- Indirect effects on the primary landscape qualities and features of locally designated Special Landscape Areas (SLAs) within 10 km radius (i.e. the Hirwaun Common, Cwm Dare and Cwm Aman SLA); and
- Indirect effects on the special qualities of the Bannau Brycheiniog National Park and Dark Sky Reserve up to 32 km.

Visual Effects

7.2.113 The following list summarises the potential visual effects that will be scoped into the assessment (see **Table 7.2.2** for the specific visual receptors that will be assessed):

- Visual effects on people in individual properties / groups of properties within 2 km of the wind turbines (through the RVAA);
- Visual effects on local communities within 10 km;
- Visual effects on road users with clear open stretches and prolonged views towards the Site within 5 km;
- Visual effects on recreational receptors within 10 km;
- Visual effects on visitors to attractions and promoted viewpoints within 21 km; and
- Visual effects on visitors to the Bannau Brycheiniog National Park up to 32 km of the turbines.

Decommissioning Phase

7.2.114 At the end of the operational phase, the Proposed Development would either be decommissioned, its operational lifetime extended, or the wind turbines would be replaced. Decommissioning would involve the removal of all the above ground infrastructure, including the wind turbines. Access tracks would likely remain in place; however, this would be subject to agreement with landowners. Decommissioning effects are likely to be greater than those considered in the construction phase, but if significant adverse effects are anticipated after the application of the measures set out in the CEMP, it would be appropriate to carry forwards into a Decommissioning

Environmental Management Plan (DEMP) following the application of the DEMP these will be assessed.

Approach to Mitigation

7.2.115 The key principle for the mitigation of landscape and visual effects of the Proposed Development will be the iterative design of the wind turbine layout and associated infrastructure. The Proposed Development's design will draw on guidance provided in:

- The Design Commission for Wales (2023) Designing for Renewable Energy in Wales; and
- Scottish Natural Heritage (2017) Siting and Designing Windfarms in the Landscape. Version 3a.

7.2.116 The aim of the mitigation, from a landscape and visual perspective, will be to apply the design considerations set out at the start of this section – 'Design Considerations and Input to date'. In addition:

- Look at options such as utilising a 'smart' transponder-based demand-controlled aviation lighting system that only switches on when aircraft are detected within a particular airspace around the wind farm (known as an Aircraft Detection Lighting System, or ADLS), to reduce the occurrence of impacts from lighting. If this is not possible, seek to control nacelle lights by visibility sensors to reduce the intensity of the lights to approximately 10% of the minimum peak intensity in times of clear meteorological conditions (where visibility exceeds 5 km), which would substantially reduce the perceptibility of the proposed nacelle lights.
- Follow an agreed 'Construction Method Statement' and 'Construction Environmental Management Plan' which will include arrangements for implementation of various aspects of the works such as turf and soil removal, storage and replacement. The statement will also set out restoration of landscape earthworks, soils and surface vegetation e.g. alongside tracks, around turbine bases, around borrow pits, and along cable routes once the construction phase is complete.

Summary of Scope

7.2.117 A summary of the scope is included in Table 7.3.2: Summary of Scope below:

Table 7.2.14: Summary of Scope

Receptor	Impact	Geographical Scope	Scoped in or out
Construction Phase			
Landscape and visual effects during construction	The assessment of the operational phase of the Proposed Development constitutes a worst case scenario and construction phase impacts are unlikely to be any greater.	Up to 32 km from turbines	Out (except where the location of temporary features would give rise to likely significant effects greater than those experienced during operation)
Cumulative effects during construction.	The cumulative assessment of the Proposed Development during its operational phase constitutes a worst case scenario and cumulative effects of the Proposed Development during its construction phase are unlikely to be any greater.	n/a	Out
Operational Phase			
Landscape Effects			
Direct effects on the landscape features and character of the Site	Potential for significant effects arising from the Proposed Development.	Site level	In
Indirect effects on the landscape character outside of the Site	Potential for significant effects arising from the Proposed Development.	10 km radius from turbines	In

Receptor	Impact	Geographical Scope	Scoped in or out
Indirect effects on landscape character beyond a 10 km radius from the proposed wind turbines	Indirect significant effects arising from the Proposed Development are unlikely to occur on the landscape beyond 10 km.	n/a	Out
Indirect effects on the primary landscape qualities and features of locally designated Special Landscape Areas (SLAs)	Proposed Development is likely to be visible from the locally designated Hirwaun Common, Cwm Dare & Cwm Aman SLA and potential to indirectly affect some of its primary landscape qualities and features.	10 km radius from turbines	In
Indirect effects on the primary landscape qualities and features of locally designated Special Landscape Areas (SLAs) beyond a 10 km radius from the proposed wind turbines	Indirect effects on the primary landscape qualities and features of the Hirwaun Common, Cwm Dare & Cwm Aman SLA arising from the Proposed Development are unlikely to occur beyond 10 km.	n/a	Out
Indirect effects on the special qualities of the Bannau Brycheiniog National Park and Dark Sky Reserve	Proposed Development is likely to be visible from this nationally designated landscape and potential to indirectly affect some of its special qualities.	Up to 32 km from the nearest turbine	In

Receptor	Impact	Geographical Scope	Scoped in or out
Indirect effects on the special qualities of the Bannau Brycheiniog National Park and Dark Sky Reserve beyond 32 km from the proposed wind turbines	Indirect effects on the special qualities of this nationally designated landscape arising from the Proposed Development are unlikely to occur beyond 32 km.	n/a	Out
Visual Effects			
Visual effects on people in individual properties / groups of properties	Potential for a breach of the Residential Visual Amenity Threshold arising from the Proposed Development.	2 km radius from turbines	In
Visual effects on people in individual properties / groups of properties beyond 2 km	A potential breach of the Residential Visual Amenity Threshold is unlikely to occur beyond 2 km.	n/a	Out
Visual effects on local communities	Potential for significant effects arising from the Proposed Development.	10 km radius (see Table 7.2.2 for the specific visual receptors that will be assessed)	In
Visual effects on local communities beyond a 10 km radius from the proposed wind turbines	Significant visual effects on local communities are unlikely to occur beyond 10 km.	n/a	Out
Visual effects on road users	Potential for significant effects arising from the Proposed Development.	5 km for roads with clear open stretches and prolonged views towards the Site. (see Table 7.2.2 for the specific visual receptors that will be assessed)	In

Receptor	Impact	Geographical Scope	Scoped in or out
Visual effects on road users beyond a 5 km radius from the proposed wind turbines	Significant visual effects on road users are unlikely to occur beyond 5 km.	n/a	Out
Visual effects on recreational receptors	Potential for significant effects arising from the Proposed Development.	21 km radius (see Table 7.2.2 for the specific visual receptors that will be assessed)	In
Visual effects on recreational receptors beyond a 32 km radius from the proposed wind turbines	Significant visual effects on recreational receptors are unlikely to occur beyond 15 km.	n/a	Out
Visual effects on visitors to attractions and promoted viewpoints	Potential for significant effects arising from the Proposed Development.	21 km radius to include Pen y Fan (see Table 7.2.2 for the specific visual receptors that will be assessed)	In
Visual effects on visitors to attractions and promoted viewpoints beyond a 32 km radius from the proposed wind turbines	Significant visual effects on visitors to attractions and promoted viewpoints are unlikely to occur beyond 20 km.	n/a	Out
Visual effects on visitors to the Bannau Brycheiniog National Park	Potential for significant effects arising from the Proposed Development.	Up to 32 km from the nearest turbine (see Table 7.2.2 for the specific visual receptors that will be assessed)	In
Visual effects on visitors to the Bannau Brycheiniog National Park beyond 32 km from the proposed wind turbines	Significant visual effects on visitors to the Bannau Brycheiniog National Park are unlikely to occur beyond 32 km.	n/a	Out

Receptor	Impact	Geographical Scope	Scoped in or out
Effects on receptors outside the visual envelope as indicated by the ZTV (Figure 7.2.13) of the Proposed Development.	The Proposed Development would not be visible and therefore would not result in any significant visual effects.	Outside the ZTV	Out
Effects of decommissioning the Proposed Development at the end of its operational life.	Decommissioning effects are unlikely to be greater than those considered in the operational assessment.	Up to 32 km	In (if significant adverse effects anticipated after the application of the measures set out in the CEMP which would be appropriate to carry forwards into a DEMP).
Cumulative effects arising from wind turbines included in the assessment	Potential for significant effects arising from the Proposed Development.	Up to 32 km	In

Consultees

7.2.118 The main consultees which will be consulted throughout the development of the proposals are detailed below:

- Rhondda Cynon Taf County Borough Council (RCTCBC)
- Natural Resources Wales (NRW)
- Bannau Brycheiniog National Park Authority (BBNPA)

Questions for Consultees

1. Is the proposed approach and scope for the assessment of effects on physical landscape features considered to be appropriate and proportionate?
2. Is the proposed approach and scope for the assessment of effects on landscape character considered to be appropriate and proportionate?
3. Is the proposed approach and scope for the assessment of effects on designated landscapes considered to be appropriate and proportionate?
4. Is the proposed approach and scope for the assessment of visual effects appropriate and proportionate?

5. Do consultees consider that the proposed viewpoints are appropriate to inform the visual assessment, and that the suggested presentation of visualisations is appropriate and proportionate?
6. Can Rhondda Cynon Taf County Borough Council (RCTCBC) advise on their preference of representative viewpoints for the local community of Aberdare (**VP1** and **VP 2**), Hirwaun (**VP19**), Cwmaman (**VP13**) and Maerdy (**VP4**) (see **Table 7.2.2**)?
7. Is the approach to inclusion of schemes within the cumulative assessment appropriate?
8. Is the approach to the assessment of effects on residential visual amenity appropriate?
9. Do consultees consider the effects to be scoped in and out appropriate?
10. Is the approach to the aviation lighting assessment and night-time photography appropriate and proportionate?
11. Does NRW and BBNPA agree with the proposed night-time viewpoint at **Cadair Fawr** within the Bannau Brycheiniog National Park (i.e. **VP9** in **Table 7.2.2**)?
12. Are there any other relevant parties who should be included within the post-scoping consultation process for the LVIA?

7.3 Ecology

Introduction

7.3.1 This chapter considers the likely significant effects associated with ecology during the construction, operation and decommissioning phases of the Proposed Development. Effects on birds are considered in Chapter 7.4.

7.3.2 The assessment of effects on ecological features will be undertaken by BSG Ecology.

Design Considerations and Input to date

7.3.3 Significant effects upon ecological features will be avoided or minimised where possible as part of the design process. The following principles are embedded in the design:

- The developing design will be informed by the outcome of ecological survey work at the Site and will take a step-wise approach to avoiding ecological impacts and in securing net benefit for biodiversity (as required by Chapter 6 of Planning Policy Wales).
- The design will incorporate buffers from potential bat roosting habitat (woodland edge, and trees with bat roost potential within the plantation and elsewhere on-Site as applicable and known or likely commuting routes (such as watercourses). Felling of conifers may be needed locally to achieve appropriate buffer distances. This will reduce the potential for collision and disturbance of bats emerging from / re-entering roosts and for potential siltation and pollution events to freshwater habitats and disturbance of the species that use them.
- Watercourse crossings, where required to facilitate the construction of access tracks, will be designed in such a way as to minimise impacts to and maintain habitat connectivity along the watercourse.
- Design measures to avoid or minimise impacts on the following will also be implemented as they are identified:
 - any areas of deep peat and associated priority habitats.
 - groundwater dependent terrestrial ecosystems (GWDTEs).
 - other priority habitats in Wales; and
 - places of shelter used by protected species (such as otter *Lutra lutra* holts or badger *Meles meles* setts).

- Construction phase measures to minimise impacts on habitats, protected and priority species will also be detailed in the outline Construction Environmental Management Plan (CEMP).
- Habitat loss as a result of the Proposed Development will be compensated. This may include, but is not limited to, restoration of native habitats within the Site that are currently of limited ecological value, compensatory planting and consultation with local and/or regional stakeholders on land use and appropriate management for biodiversity. Any compensation or enhancement will include measures to benefit (and complement existing management plans relating to) the Lost Peatlands Project, which takes in part of the Site boundary. An outline Habitat Management Plan (HMP) will be developed to set out the scope of mitigation and habitat and biodiversity enhancement proposals, and demonstrate how a net benefit for biodiversity and ecosystem resilience will be achieved by the Proposed Development. This will include a clear demonstration of how the project addresses the individual components of the DECCA (Diversity, Extent, Condition, Connectivity and Aspects of ecosystem resilience) Framework.

Current Baseline Conditions

Habitats

- 7.3.4 The Site is characterised by upland commercial coniferous plantation, extensive areas of bracken, modified bog and mosaics of dry heath and acid grassland. Streams are a feature of the area, typically occurring in steep valleys adjoining the relatively gently sloping ground that characterises those parts of the Site with the potential to accommodate turbines. The whole area is subject to non-statutory designation (as a series of SINCs).
- 7.3.5 Habitats associated with peat, some of which may be considered irreplaceable due to their inherent quality and the significant time and complexity it would require to recreate them, are likely to be among the key ecological features associated with the Site. Water vole *Arvicola amphibius* is known to occur in damp grassland and wetland areas locally (from monitoring work relating to wind farms and the Lost Peatlands Project), and there is potential for a range of other protected species to be present. Roosting resources for bats are likely to be limited given the lack of buildings and mature broad-leaved trees on Site, but bats may forage over it or follow topographical features when commuting through the area. It is possible that otter use the streams for commuting and lying up, and there is the potential for pine marten *Martes martes*, which is spreading in Wales, to have colonised the area. Other key considerations may emerge from desk study and stakeholder consultation.
- 7.3.6 The study area for habitat survey will cover the entire Site boundary, ensuring a considerable perimeter area around all turbine locations is surveyed. The initial layout

indicates a design that is evolving to avoid and minimise impacts on bog, and detailed consideration will be given to potential groundwater dependent habitats as the project moves forward, minimising the potential for impacts on off-Site as well as on-Site habitats. For protected species the study area will evolve as the developable area becomes more apparent and in accordance with industry standard survey guidance for the species concerned. It is likely that it will extend to several hundred metres around infrastructure for water vole and otter, for example. For bats the indicative turbine locations will be sampled for bat activity (if these are accessible), or habitat representative of the post construction baseline will be sampled if not (typically accessibility will only be limited in areas of dense plantation). More extensive areas will be surveyed with regard to potential bat roosts (extending to approximately 300 metres from proposed turbine locations).

Protected and Priority Flora and Lichens

7.3.7 Data was obtained from South East Wales Biodiversity Records Centre (SEWBRc). A search area out-with of the Site boundary of 2km for protected species other than bats that encompassed a 10km search area from the Site boundary.

7.3.8 Data obtained indicates that:

- The Section 7⁴² herb stag's-horn club-moss *Lycopodium clavatum* has been recorded within the plantation in the northern part of the Site. It is often associated with track edges.
- The Section 7 lichen *Usnea articulata* has been recorded from a location just to the east of the Site boundary. It is a species that is recovering in South Wales following historical declines (it is pollution sensitive).
- Common wintergreen *Pyrola minor*, which is endangered in Wales, has been recorded in the southern part of the Site.

Protected and Priority Species

7.3.9 Data obtained from SEWBRc indicates that:

- Otter has been recorded at various locations in the area, with the closest record being just to the west of the Site boundary.
- Water vole records held by SEWBRc are limited to a few observations to the west and north-west of the Site boundary on Maerdy Bog and close to Llest-

⁴² This refers to species of principal importance for the conservation of biodiversity in Wales listed under Section 7 of the Environment (Wales) Act, 2016.

wen Reservoir. The nearest of these records is approximately 2 km from the Site, but similar habitat appears to be present within the Site boundary.

- A minimum of 12 species of bat have been recorded within 2 km of the Site boundary (some bat records did not refer to species, only referring to order (*Chiroptera*, i.e. all bats) or genera (e.g. *Plecotus* (long-eared bat species)). A proportion of these records have been generated by survey associated with the Lost Peatlands Project and originate from the Castell Nos area of the Site. Records were returned for five species considered to be at high risk of population level effects through additional fatality (at wind turbines); noctule *Nyctalus noctula*, Leisler's bat *Nyctalus leisleri*, serotine *Eptesicus serotinus*, Nathusius' pipistrelle *Pipistrellus nathusii* and barbastelle *Barbastella barbastellus*. Noctule is the only one of these species to have been regularly recorded in the search area. Records were also returned for a range of species considered to be at medium or low risk of population level effects including; common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*, lesser horseshoe bat *Rhinolophus hipposideros*, brown long-eared bat *Plecotus auritus* and several species of *Myotis* bats. Roosts of common pipistrelle *Pipistrellus pipistrellus* of up to 85 bats have been recorded (mainly from houses) in surrounding towns and villages including Aberdare, Ferndale, Blaengwawr and Cwmaman, of soprano pipistrelle *Pipistrellus pygmaeus* in Aberaman and Cwmbach, and of lesser horseshoe bats in the Dare Valley Country Park (this latter in 2005). In the wider area, lesser horseshoe bat roosts have been associated with mine adits.
- There is no evidence of colonisation of the area by pine marten from the data. One record of the species was returned (from 2004).
- No records were returned of hazel dormouse *Muscardinus avellanarius* or red squirrel *Sciurus vulgaris*.
- Several records of the priority species polecat *Mustela putorius* and a larger number of hedgehog *Erinaceus europaeus* records were also returned by the data search. There were also records of badger for areas outside the Site boundary; the species is protected on welfare as opposed to conservation grounds.
- A range of reptile and amphibian species are likely to use the Site, as habitats are suitable to support them. Data returned is summarised as follows:
 - There are numerous records of common lizard *Zootoca vivipara* and slow-worm *Anguis fragilis* within 2 km of the Site, and of adder *Vipera berus* within 3-4 km of it. Four grass snake *Natrix helvetica* records were returned by the data search. All were from the edges of Aberdare and Aberaman in the Cynon Valley (east of the Site) and appeared to be associated with damp grassland and wetland habitats close to the Aberdare Canal and Aman River.

- There are also previous records of common frog *Rana temporaria*, common toad *Bufo bufo* and palmate newt *Lissotriton helveticus* within 2 km of the Site and of smooth newt *Lissotriton vulgaris* within 3 km of it. No records of great crested newt *Triturus cristatus* were returned by the data search.
- Fish species such as salmon *Salmo salar* and brown trout *Salmo trutta* occur in local watercourses, albeit there were no records of either returned for the minor watercourses on Site.
- Priority invertebrate species that have been recorded in the local area include small pearl-bordered fritillary *Boloria selene*, brown-banded carder bee *Bombus humilis* and a wide variety of moths that are typically attracted to light. These latter are predominantly common and widespread species that have been afforded priority status due to apparent population declines or range contractions, or due to the fact that very little is currently known about their status and research is needed.

Invasive Non-native Species (INNS)

- 7.3.10 Records of a variety of INNS were returned by SEWBRc. These were mainly plant species, and included Himalayan balsam *Impatiens glandifera*, Japanese knotweed *Fallopia japonica*, Montbretia *Crocsmia pottsii x aurea*, several cotoneaster species (*Cotoneaster simonsii*, *C. bullatus* and *C. horizontalis*) and Canadian waterweed *Elodia canadensis*. There is some potential for all of these INNS to be present within the Site boundary.
- 7.3.11 Records of the North American grey squirrel *Sciuris carolinensis* were also returned.

Proposed Assessment and Methodologies

Legislation and Guidance

- 7.3.12 The Proposed Development will be prepared in accordance with industry standard guidance and good practice. The following will inform the approach to the design and assessment of the Proposed Development:
- Industry standard guidance on baseline data collection wherever this is available and applicable to the Site. For example: the Phase 1 habitat survey has been undertaken in accordance with the Joint Nature Conservation Committee (JNCC)

Handbook (2010)⁴³ guidelines and all habitats attributed to National Vegetation Classification community types; the otter survey will follow Chanin (2003⁴⁴); and the bat survey will be designed in accordance with the principles set out in wind farm specific guidance (NatureScot *et al.*, 2021⁴⁵).

- Particular consideration will be given to habitats and species listed under Annexes 1 and 2 of the Habitats Directive (92/43/EEC) (as transposed by the Conservation of Habitats and Species Regulations 2017), Schedules 5, 8 and 9 of the Wildlife and Countryside Act 1981 ('1981 Act') and Section 7 of the Environment (Wales) Act 2016 in deriving the detailed approach to the work. Of particular relevance is the duty, placed on all public bodies under Section 6 of the Environment (Wales) Act 2016, to maintain and enhance biodiversity and ecosystem resilience in Wales through the exercise of their functions (including planning).
- The assessment will consider relevant national planning policy (including Planning Policy Wales (PPW; currently at edition 12), Future Wales: The National Plan 2040, and Technical Advice Note (TAN) 5 Nature Conservation and Planning) and local policy and planning guidance documents including the Rhondda Cynon Taf Local Development Plan (LDP)⁴⁶ and Supplementary Planning Guidance on Nature Conservation.
- The approach to the ecological impact assessment will be based on Chartered Institute for Ecology and Environmental Management (CIEEM) guidance (2024).

Proposed Assessment Methodology

Assessment of Likely Significant Effects

- 7.3.13 The assessment will be completed in accordance with CIEEM (2024) guidance and will involve:

⁴³ JNCC (2010). *Handbook for Phase 1 habitat survey. A technique for environmental audit*. Joint Nature Conservancy Council. Peterborough.

⁴⁴ Chanin, P. (2003). *Monitoring the otter *Lutra lutra**. Conserving Natura 2000 Rivers Monitoring Series No 10. Peterborough, English Nature.

⁴⁵ NatureScot, Natural England, Natural Resources Wales, Renewable UK, Scottish Power Renewables, Eccentricity Ltd, the University of Exeter and the Bat Conservation Trust. (2021). *Bats and onshore wind turbines: survey, assessment and mitigation*. SNH, Inverness.

⁴⁶ The revised LDP (2022-2037) is not expected to be adopted until May 2026.

- Determining important ecological features that require detailed impact assessment through evaluation of desk study and field survey data by:
 - defining the ecological zone of influence of the Proposed Development; and
 - considering the importance of ecological features within a defined geographical context (e.g. whether populations are important at the national, regional, county, local or Site levels).
- Characterising and quantifying effects and assessing their significance through consideration of whether effects are:
 - Beneficial, adverse or neutral; their extent, magnitude, duration, reversibility, timing and frequency; and whether there is potential for their significance to be increased cumulatively as a result of other plans or projects; and
- Determining the significance of both beneficial and adverse effects will be completed in relation to the conservation status of each species at the geographical level at which it has been valued.

7.3.14 The potential of the Proposed Development to affect the Favourable Conservation Status (FCS) of species will be considered, taking account of available data on their Current Conservation Status (CCS) at the national and local level.

7.3.15 The value of any feature that will be significantly affected will then be used to draw conclusions as to what the implications of development are in legislative terms and any additional measures needed to ensure policy compliance (CIEEM, 2024).

Cumulative Effects

7.3.16 Consideration and assessment of cumulative effects with other developments, in particular wind and solar farm sites, within the vicinity of the Proposed Development will be undertaken as part of the EIA.

7.3.17 The effects of the Proposed Development on most protected species and habitats are likely to be relatively localised, however, the assessment of impacts on bats will need to consider all wind farms (and other developments with the potential to impact on bats) within 10 km of the Site (in accordance with NatureScot *et al* (2021) guidance).

7.3.18 There will also be opportunities for various schemes within the wider landscape to deliver habitat restoration initiatives that complement each other and those of conservation-driven projects in the area, including the Lost Peatlands Project.

Key Issues and Potential Likely Significant Effects

- 7.3.19 The below sections set out the key issues relating to ecology. The rationale for whether the potential effects are proposed to be scoped in or scoped out of the assessment for the construction, operational and decommissioning phases of the Proposed Development, as well the basis for these judgements, are also included.

Construction Phase

- 7.3.20 It is assumed that direct loss of peatland habitats and effects on the hydrology of peatland habitats will be avoided or minimised through the design process. Notwithstanding this there is the potential for significant effects to result from any residual loss or degradation, permanent or temporary, of peatland and other semi-natural habitats resulting from construction phase works. The assessment will also need to consider the potential for significant effects on on-Site and off-Site habitats resulting from pollution incidents, erosion or sedimentation of watercourses and nutrient deposition relating to heavy plant presence and exposure of soils to weather.
- 7.3.21 Potential construction phase impacts that could result in significant effects on protected species include:
- Habitat loss for protected species (such as water vole, which is known to occur away from waterbodies in the local area (burrowing in damp grassland and moorland habitats) or hazel dormouse should this species be present).
 - Killing and injury of species that include water vole, reptiles and amphibians.
 - Disturbance leading to displacement of otter and other protected mammals.
 - Habitat degradation through pollution events or sedimentation, resulting in impacts on riparian mammals, fish and freshwater invertebrates.

Operational Phase

- 7.3.22 Potentially significant operational phase effects of the wind farm will be:
- Potential killing of bats through collision with turbine blades.
 - Disturbance of protected species as a result of site maintenance vehicles.

Decommissioning Phase

- 7.3.23 Decommissioning is likely to result in similar potential significant effects to construction, although any impacts are likely to be of lower magnitude due to the shorter duration of the work and the likelihood that some infrastructure (such as tracks and hardstanding) will remain in situ.

- 7.3.24 Potentially significant effects on ecological features will need to be considered in the context of legislation, policy and industry standard guidance in place at that time.

Assessment Methodology

- 7.3.25 The anticipated scope of works and methodology required to accompany the EIA and produce the ES chapter is outlined below:

Determination of the Baseline

Protected Sites

- 7.3.26 There are no statutory designated sites within 2 km of the Site boundary.
- 7.3.27 The nearest internationally important site of nature conservation interest is Blaen Cynon Special Area of Conservation (SAC) located approximately 4.2 km to the north-west of the Site boundary. The SAC was designated as it contains an extensive complex of damp pastures and heaths supporting a large metapopulation of marsh fritillary butterfly *Euphydryas aurinia*. The SAC also comprises the Cors Bryn-y-gaer SSSI which is of special interest for its lowland bog and for areas of soligenous flush, marshy grassland, dry neutral grassland and lowland acid grassland. These habitats occur in a complex with wet heath, swamp and semi-improved grassland. The site is also of special interest for the marsh fritillary butterfly.
- 7.3.28 The entire Site is subject to non-statutory designation via a series of SINC. These are:
- Mynydd y Ffaldau SINC. Ecological interest includes remnant upland heath, bog, acid and marshy grassland within the plantation, which has been planted on an ancient woodland site.
 - Cwm Dare South SINC. A large site containing a diverse range of habitats within the Dare Valley Country Park and surrounding hillsides including Craig Rhiw-ddu. Features include wooded stream valleys, marshy grassland, wet heath, acid flush, acid grassland and areas of bracken slope. Species associated with the SINC include the chimney sweeper *Odezia atrata* (a day-flying moth which is scarce and range restricted in the county and favours south-facing slopes), small pearl-bordered fritillary butterfly and the grassland coral fungus *Clavulina amethystina*.
 - Garn Wen and Panwen Garreg-wen SINC. Areas of remnant blanket bog, modified bog, wet and dry heath and marshy grassland among coniferous plantation habitat.
 - Rhos Gwawr SINC. Extensive upland wet and dry heath, marshy and acid grassland and valley side ffridd that occur in complex mosaics and grade into large blocks of upland oak woodlands, some of which are ancient woodland sites.

- Cefn Craig Amos SINC. An extensive area of ffridd along the eastern valley side of the Rhondda Fach. Large areas of dry heath and scree dominate the steeper mid and upper slopes, while lower slopes support mosaics of dry and wet heath, flushed marshy grassland and bracken.

Habitats

- 7.3.29 Habitat survey was informed by an initial exercise undertaken by WSP UK Limited (WSP). This involved using a Geographical Information System (ArcGIS), in combination with Feature Manipulation Software (FME) and multi-criteria analysis (MCA) modelling to broadly categorise habitats across the Site. The use of OS MasterMap, National Forest Inventory, Natural Resources Wales (NRW) Phase 1 data, National Tree Map and aerial imagery NDVI analysis were used to provide this initial baseline. The purpose of this exercise was to identify priority areas for survey and to increase the overall efficiency of survey work.
- 7.3.30 A Phase 1 Habitat Survey of the Site was completed in accordance with industry standard guidance (JNCC, 2010) in April 2025. The Site boundary (which is the Phase 1 habitat survey area) is shown on **Figure 1.1.1** and results in **Figures 7.3.1 and 7.3.2 Phase 1 Habitat**. The Site boundary changed following the Phase 1 Habitat Survey.
- 7.3.31 Phase 1 habitat types are set out in order of extent in Table 7.3.1 below.

Table 7.3.1 Phase 1 habitat types within the Survey Area

Phase 1 Habitat	Hectares	Percentage of Survey Area
Coniferous woodland - plantation	315.88	29.92
Dry heath / acidic grassland mosaic	194.06	18.38
Bracken - continuous	187.21	17.73
Wet modified bog	117.71	11.15
Acidic dry dwarf shrub heath	49.39	4.68
Marsh/marshy grassland	37.49	3.55
Coniferous woodland - recently felled	27.89	2.64
Acid grassland - semi-improved	19.08	1.81
Improved grassland	17.22	1.63
Scrub - dense/continuous	13.96	1.32
Mixed woodland - plantation	12.54	1.19
Acid grassland - unimproved	8.76	0.83
Built up areas (e.g. hardstanding)	8.69	0.82
Scrub - scattered	8.59	0.81
Semi-improved neutral grassland	7.89	0.75
Scree - acid/neutral	5.48	0.52
Bare ground	5.12	0.48
Wet dwarf shrub heath	4.73	0.45
Poor semi-improved grassland	4.52	0.43
Broadleaved woodland - plantation	4.32	0.41
Broadleaved woodland - semi-natural	2.97	0.28
Running water	1.55	0.15

Fen	0.38	0.04
Blanket sphagnum bog	0.08	0.01
Cultivated/disturbed land - ephemeral/short perennial	0.07	0.01
Neutral grassland	0.04	0.00
Buildings	0.02	0.00
Total	1055.64	100

- 7.3.32 National Vegetation Classification (NVC) will be completed of the semi-natural habitats within the Site in accordance with the methods set out by Rodwell (2006). During the survey, sufficiently detailed botanical information (including species lists and information on habitat condition) will be collected, such that NVC communities can be attributed to mapped polygons through comparison of field data with published floristic tables. We will also determine whether the communities present conform to priority habitat types. In making this assessment, consideration will be given to whether the habitats are of sufficient quality to meet either Section 7 (Environment (Wales) Act, 2016) or Local Wildlife Site criteria. The purpose of this work will be to both inform design and impact assessment and to identify (in combination with peat and hydrological data) opportunities for habitat restoration that is coherent with the aims and objectives of the Lost Peatlands Project (with which the Site boundary overlaps).

Protected Species

- 7.3.33 The Phase 1 survey considered the potential of the Site to support protected species, and informed the scope and detail of wider ecological survey work set out below. This wider ecological work is due to commence in Spring 2026.

Bats

- 7.3.34 Industry standard guidance (Nature Scot, 2021) puts a great deal of emphasis on the use of static acoustic detectors to characterise the use of sites by bats. It notes that detectors should be deployed at all turbine locations at wind farms of ten turbines or less, with an additional detector allocated for every three turbines over and above this. It follows that for Carreg Wen (at which 18 turbines are proposed), 13 detectors will be used.
- 7.3.35 Full spectrum detectors will be deployed at potential turbine locations for a minimum of ten nights per season during spring, summer and autumn. These units can record for periods of ten nights without the need for batteries to be replaced. Complementary weather data will be recorded using a weather station. This will allow bat activity and weather data to be correlated.

- 7.3.36 Guidance recommends structures and trees in close proximity to potential turbine locations are assessed for their potential to support roosting bats (defined as 200 m plus rotor radius from turbine locations).
- 7.3.37 We are not aware of any buildings or other man-made structures on Site with potential to support roosting bats. Most woodland on Site comprises commercial coniferous plantation, but deciduous woodland is present in the valley at the north-eastern edge of the Pen Foel Aman Plantation and may offer roosting opportunities for bats.
- 7.3.38 As the project design is outline at this stage, we propose completing a broad assessment of the bat roost potential of all coupes / woodland parcels within the red line boundary (based on various factors including maturity, tree species present, evidence of disease, areas of wind-blow etc). A more detailed assessment will be needed of some trees once the design has been further developed. Once the proposed layout of the scheme has progressed further, detailed Ground-Level Tree Assessment (GLTA) of trees within 200 m (plus blade length of turbines) of the proposed layout with potential to support roosting bats (based on the findings of the initial survey) will be completed.

Water Vole and Otter

- 7.3.39 The approach to otter survey will be based on Chanin (2003), while water vole survey will follow Dean *et al* (2016). Surveys will be completed in spring and autumn 2026.
- 7.3.40 Numerous minor watercourses are present on Site, particularly in the areas of Castell y Mawn and Mynydd y Ffaldau. All of these streams have some potential to support otter and / or water vole, and the latter are known to occur fossorially⁴⁷ in areas of damp ground, particularly that around Castell y Mawn, from discussion with local NRW staff.
- 7.3.41 The extent of the survey area is likely to evolve in conjunction with emerging Site design. Initial survey may include all watercourses within the Site boundary, but if the design progresses significantly ahead of the second survey visit, work will focus on an area within 200-300 m of infrastructure.

Hazel Dormouse

- 7.3.42 Hazel dormouse have been recorded using coniferous plantation elsewhere in Wales, including at Clocaenog Forest (Conwy and Denbighshire).

⁴⁷ Underground. Not necessarily in the immediate vicinity of water.

- 7.3.43 Approximately 340 ha of plantation woodland is present at the Site. This is well connected to extensive woodland (including deciduous woodland) in the wider landscape, particularly to the south-east of the Site. Dormouse survey will therefore be completed based on Mammal Society (2025) guidance and will commence in spring 2026. Both nest boxes and tubes will be used. An initial deployment visit will be followed by five or six further visits completed over approximately nine months. If at the end of this period dormouse has not been recorded, the species will be assumed to be absent from the Site.

Pine Marten and Red Squirrel

- 7.3.44 Given the extent of well-connected forest present on Site there is clear potential for pine marten (which is extending its range in Wales) and some limited potential for red squirrel to be present (there are anecdotal records for the general area that may prove erroneous).
- 7.3.45 A walkover survey targeting habitats suitable for den / drey creation, foraging or shelter (such as forest rides, woodland edge, along streams and around lifted root plates) to search for signs of red squirrel and pine marten is proposed in early spring 2026.
- 7.3.46 The survey will be supplemented by deployment of trail cameras, red squirrel hair tubes (as recommended in Gurnell *et al.*, (2009) and a NRW research series report (Shannon *et al.*, 2022)) and feeding stations at suitable locations identified during the walkover. Three camera units, six baited hair tubes and three feeding stations will be deployed. The cameras and feeding stations will be moved on three occasions during the survey period to sample up to nine locations within the Site. The hair tubes will also be moved on three occasions to sample up to 18 locations.
- 7.3.47 If any scats (droppings) are found during the walkover survey, or any hair samples are collected by hair tubes, they will be collected and sent for DNA analysis to confirm species.

Amphibians and Reptiles

- 7.3.48 Areas of moorland habitat, open plantation and woodland edge within and around the site are likely to have potential to support reptiles, including adder. An experienced reptile specialist will complete a walkover habitat assessment to determine suitability and quality in greater detail and identify potential mitigation and enhancement opportunities.
- 7.3.49 Five ponds have been identified on or within 250 m of the site using OS mapping and aerial imagery. Two are located in open ground at Castell y Mawn, and three on track sides at Mynydd y Ffaldau.

- 7.3.50 An environmental DNA (eDNA) survey will be completed of these ponds in April 2026 to gain presence / absence data for great crested newt. Samples will be sent to an accredited laboratory for analysis and determination of presence or likely absence of great crested newt. A Habitat Suitability Index (HSI) survey of each pond and supplementary torching, egg searching or terrestrial search will be undertaken in conjunction with the eDNA sampling in order to provide further confidence in results.
- 7.3.51 Additional surveys to determine great crested newt population size will be completed if positive eDNA results are returned and / or if great crested newts or their eggs are found.

Prediction Methodology

- 7.3.52 The assessment will be completed in accordance with CIEEM (2024) guidance and will involve:
- Determining important ecological features that require detailed impact assessment through evaluation of desk study and field survey data by:
 - defining the ecological zone of influence of the Proposed Development; and
 - considering the importance of ecological features within a defined geographical context (e.g. whether populations are important at the national, regional, county, local or Site levels).
 - Characterising and quantifying effects and assessing their significance through:
 - consideration of whether effects are: beneficial, adverse or neutral; their extent, magnitude, duration, reversibility, timing and frequency; and whether there is potential for their significance to be increased cumulatively as a result of other plans or projects; and
 - determining the significance of both beneficial and adverse effects. This will be completed in relation to the conservation status of each species at the geographical level at which it has been valued.
- 7.3.53 The potential of the Proposed Development to affect the FCS of species will be considered, taking account of available data on their CCS at the national and local level.
- 7.3.54 The value of any feature that will be significantly affected will then be used to draw conclusions as to what the implications of development are in legislative terms and any additional measures needed to ensure policy compliance (CIEEM, 2019).

Construction Phase

- 7.3.55 Construction phase activities will include:

- Tree felling.
- Ground clearance.
- Excavation and construction of crane pads and turbine bases.
- Erection of the turbines.
- Construction of other infrastructure, including laying down of tracks.

7.3.56 The work will result in an increase in vehicle movements and personnel on Site. Liaison with civil engineers, hydrologists and other specialists within the EIA team will be vital to understand and characterise impacts, inform mitigation and assess likely residual significance in accordance with CIEEM (2024) guidelines.

Operational Phase

7.3.57 The operational wind farm will result in very little land take in the context of the Site. Operational phase activities are likely to be limited to turbine maintenance.

7.3.58 The principal potentially significant effect will be bat fatality resulting from wind farm operation. The following approach will be employed:

- NatureScot guidance will be used to determine those species at principal risk of population level effects as a result of wind farm fatality.
- Bat activity recorded during the baseline survey work will be analysed for each turbine in each season. This will identify whether there are any indicative turbine locations with consistently elevated levels of bat activity (which may indicate the local presence of a roost or a preferred foraging or commuting route).
- Site-specific weather data will be interrogated to determine whether there is any clear correlation between bat activity and weather variables (such as wind speed and temperature).
- Levels of bat activity (bat passes per hour) will be input to the Mammal Society's Ecobat tool, which enables consideration of whether sites have low, moderate or high bat use at the regional and national levels.

7.3.59 In combination, the above will inform as to whether operational phase mitigation over and above feathering at idle is required.

Decommissioning Phase

7.3.60 Decommissioning phase activities are likely to be similar in their effects to those during the construction phase, and will result in an increase in vehicle movements and personnel on Site, but are likely to occur over a shorter time period.

Approach to Mitigation

- 7.3.61 The step-wise approach, which involves ensuring that any adverse environmental effects are firstly avoided, then minimised, mitigated and as a last resort compensated for, is being and will be applied through the design evolution of the Proposed Development.

Embedded Mitigation

- 7.3.62 Design phase measures ('embedded mitigation') will include:
- Avoidance (wherever possible) of any development infrastructure in areas likely to affect the hydrology or condition of priority peatland habitats.
 - A stand-off (likely to be 50 m) from all watercourses to reduce the potential for effects on riparian mammals, fish and invertebrates associated with freshwater habitats.
 - A buffer of at least 50 m from all bat potential features (including woodland, lines of trees and hedgerows) from the turbine blade tips.
 - Avoidance of known areas of high quality semi-natural habitat for infrastructure placement.
 - Feathering of turbines at idle.

Applied Mitigation

- 7.3.63 Construction phase mitigation will principally be delivered through input to the CEMP. This will be an integral part of the Proposed Development. Ecological objectives of the CEMP will include:
- Appointment of an ecologist tasked with ensuring compliance with all relevant regulatory and other requirements, method statements and plans, and reporting to the principal contractor and statutory consultees concerning ecological issues. This ecologist may also act as the ecological clerk of works for the project.
 - Identification of the scope and timing of pre-construction ecological survey work (to be informed by existing data and reconnaissance), and how this will potentially inform the approach to construction work.
 - Ecological input to method statements for all components of the work. This should set out to demonstrate how the potential for offences, pollution events and mobilisation of sediment will be avoided.
 - The identification of appropriate ecological awareness training for site staff and contractors in respect of the presence of protected and sensitive species and the importance of species-specific mitigation measures.

Additional Mitigation

- 7.3.64 If required, additional mitigation measures to reduce bat fatality could include the adjustment of turbine cut-in speeds to minimise potential for killing and injury and associated monitoring to determine the effectiveness of the measures implemented.
- 7.3.65 General measures, such as on-site speed limits for maintenance vehicles will also be implemented, both to reduce risk to the public and to protected and priority species using the Site.

Enhancement

- 7.3.66 In conjunction with the ecological assessment, a policy-compliant biodiversity enhancement plan will be produced and will form part of the Habitat Management Plan (HMP) for the Proposed Development. The HMP will aim to deliver a net benefit for biodiversity drawing from the five key principles of achieving biodiversity resilience set out in the DECCA Framework (PPW 12) and, in a local context, building on the aims and objectives of the Lost Peatlands Project. The HMP will be implemented over the operational life of the Proposed Development and may include monitoring requirements.

Summary of Scope

- 7.3.67 A summary of the scope is included in Table 7.3.2.

Table 7.3.2: Summary of Scope

Receptor	Impact	Geographical Scope	Scoped in or out
Construction Phase			
Statutory designated sites	None anticipated	2 km	Out
Non-statutory designated sites	Loss of extent (temporary and permanent) and condition	Within and adjacent to Site boundary / proposed infrastructure	In
Priority habitats	Loss and degradation (permanent and temporary) through construction work	Within and adjacent to Site boundary / proposed infrastructure	In
Protected and Priority Flora and Lichens	Reduction in number / localised extinction	Within Site	In

Receptor	Impact	Geographical Scope	Scoped in or out
Bats	Habitat loss and degradation; displacement due to noise and human activity.	Within and adjacent to Site	In
Water vole	Habitat loss and degradation; displacement due to noise and human activity.	Within and adjacent to Site	In
Otter	Habitat loss and degradation; displacement due to noise and human activity.	Within and adjacent to Site	In
Hazel dormouse	Habitat loss and degradation; displacement due to noise and human activity.	Within and adjacent to Site	In (based on reasonable assumption of presence)
Pine marten	Habitat loss and degradation; displacement due to noise and human activity.	Within and adjacent to Site	Out (likely) due to current understanding of distribution
Red squirrel	Habitat loss and degradation; displacement due to noise and human activity.	Within and adjacent to Site	Out (likely) due to current understanding of distribution
Reptiles and amphibians	Habitat loss and degradation; killing and injury.	Within and adjacent to Site	In
Hedgehog, polecat	Habitat loss and degradation; killing and injury.	Within and adjacent to Site	In
Badger (legislative compliance only)	Disturbance, loss of setts and access to setts.	Within and adjacent to Site	In (in the context of legislative compliance as opposed to impacts on populations).

Receptor	Impact	Geographical Scope	Scoped in or out
Fish	Habitat loss, pollution and siltation of watercourses during construction.	Within Site and in linked watercourses.	In
Priority Invertebrates	Habitat loss and degradation	Within and adjacent to Site	In
Non-native invasive species	Inadvertent spread through construction process.	Site	In (in the context of control measures being required).
Operational Phase			
Bats	Killing and injury through collision with operational turbines.	Site	In
Decommissioning Phase			
All ecological features considered during construction, and any other features that have received statutory protection or priority status over the intervening period.	All impacts considered at construction stage.	Within and adjacent to Site	In

Consultees

7.3.68 The main consultees which will be consulted throughout the development of the proposals are NRW and the Rhondda Cynon Taf County Borough Council ecologist. Attempts will be made to secure pre-application consultation meetings to discuss:

- The adequacy of the desk study and field survey proposed / completed.
- The main issues in terms of ecological impact assessment (under the EIA Regulations) and the parallel Habitats Regulations Assessment process.
- How effects can be most effectively mitigated through design and other measures.
- How the Proposed Development might deliver a net benefit for biodiversity in line with principles set out in Planning Policy Wales Chapter 6 (February 2024).

Questions for Consultees

1. Do consultees consider the scope of work outlined in this chapter appropriate?

2. Are consultees aware of any data sets that would inform the assessment with regard to the proposed wind farm?
3. Are there any nature conservation stakeholders, special interest groups or individuals who should be consulted with regard to terrestrial ecology?
4. Is the approach to the assessment of effects, including those effects scoped in and out and the cumulative assessment, appropriate?
5. Are consultees content with the proposed approach to scope out the topics from ES, which are presented in the "Summary of Scope" in this chapter.

7.4 Ornithology

Introduction

- 7.4.1 This chapter considers the likely significant effects associated with ornithology during the construction, operation and decommissioning phases of the Proposed Development. Effects on ecological features are considered in Chapter 7.3.
- 7.4.2 The assessment of effects on ornithology will be undertaken by BSG Ecology.

Design Considerations and Input to date

- 7.4.3 Significant effects upon ornithological features will be avoided or minimised where possible as part of the design process. The following principles are embedded in the design:
- The developing design will be informed by the outcome of ornithological survey work at the Site, and take a step-wise approach to avoiding impacts and in securing a net benefit for biodiversity (as required by Chapter 6 of Planning Policy Wales).
 - The most likely features for avoidance (and the incorporation of buffers) might include habitually used nest sites (particularly of raptors) or flight corridors (e.g. of waterfowl moving between features such as lakes or reservoirs).
 - Construction phase measures to minimise impacts on birds breeding on Site or within its zone of influence will also be detailed in the outline CEMP.
 - Habitat loss as a result of the Proposed Development will be compensated. This may include, but is not limited to, restoration of native habitats within the Site that are currently of limited ecological value, compensatory planting and consultation with local and/or regional stakeholders on land use and appropriate management for biodiversity. They may include specific measures to benefit birds.

- Any compensation or enhancement will include measures to benefit (and complement existing management plans relating to) the Lost Peatlands Project, which takes in part of the Site boundary. An outline Habitat Management Plan (HMP) will be developed to set out the scope of mitigation and habitat and biodiversity enhancement proposals, and demonstrate how a net benefit for biodiversity and ecosystem resilience will be achieved by the Proposed Development. This will include a clear demonstration of how the project addresses the individual components of the DECCA (Diversity, Extent, Condition, Connectivity and Aspects of ecosystem resilience) Framework.

Current Baseline Conditions

Habitats

- 7.4.4 The Site is characterised by upland commercial coniferous plantation, extensive areas of bracken, modified bog and mosaics of dry heath and acid grassland. Streams are a feature of the area, typically occurring in steep valleys adjoining the relatively gently sloping ground that characterises the potentially developable parts of the Site. The whole area is subject to non-statutory designation (as a series of Sites of Importance for Nature Conservation (SINCs)).
- 7.4.5 Land surrounding the Site includes mosaics of grassland, scrub and broadleaved woodland (particularly within the Dare Valley Country Park to the north), areas of moorland (to the west and north-west) and further extensive commercially managed coniferous plantation (the Site forms the northernmost part of the St Gwynno Forest). Castell Nos and Llest-wen Reservoirs are located adjacent to the western Site boundary and to the north-west of the Site respectively; both are on the line of the Afon Rhondda Fach.
- 7.4.6 Built wind farms are a feature of the landscape to the west and north-west of the Site, with Pen-y-Cymoedd, Maerdy and Mynydd Bwlfa being the nearest operational sites. Areas of coal spoil and quarrying are also present on the valley sides of the Afon Rhondda Fach, as are villages and towns within the Rhondda and Cynon valleys.

Study Area

- 7.4.7 The study area for bird survey covers the entire Site boundary and appropriate perimeter areas (in accordance with industry standard guidance (NatureScot, 2025) for onshore wind farms). These extend, for example, up to 2 km around proposed wind farms for most breeding raptor species likely to occur locally.

Protected and Priority Bird Species

- 7.4.8 Data obtained from South East Wales Biodiversity Records Centre (SEWBRc) indicates that:

- s likely to breed within the plantation habitats locally, and the data returned includes reference to pairs, display and young birds. There are numerous records of the species in the data set. Peregrine *Falco peregrinus* also breeds locally, with eyries in both the Rhondda Fach and Cynon Valleys. R , conversely, has numerous records (including of multiple birds), but there is no clear indication of known nest sites or productivity from the data set. Kestrel *Falco tinnunculus* also features prominently in the data, suggesting the species is well-established and breeds in the local landscape.
- Records of other raptors in the data set are limited. There are a small number of records of winteri a mixture of breeding season and non-breeding season records of merlin *Falco columbarius* (the former suggesting breeding occurs / may have occurred locally in the past) and a number of records of (which include a bird associated with Llest-wen Reservoir).
- Barn owl *Tyto alba* has been recorded widely in the local landscape, while short-eared owl *Asio flammeus* has been noted occasionally outside the breeding season and there are a few records of long-eared owl *Asio otus* (including in the plantation at Pen-y-Cymoedd wind farm in 2014).
- Evidence of use of the area by waders is limited to:
 - A number of records of common sandpiper *Actitis hypoleucos*. These may refer to both passage and locally-breeding birds associated with watercourses and still waterbodies.
 - Occasional winter records of curlew *Numenius arquata* and lapwing *Vanellus vanellus*.
 - A few records of golden plover has been recorded using areas of moorland (e.g. around Llest-wen Reservoir and the Mynydd Bwlfa wind farm) in winter.
- Common irds, with most records from Llest-wen. Species include cormorant *Phalacrocorax carbo* (which has also been noted on Castell Nos Reservoir), goldeneye *Bucephala clangula*, red-breasted merganser *Mergus serrator* and mallard *Anas platyrhynchos*.
- Both h and lesser black-backed gull *Larus fuscus* have been recorded widely within the data search area. There is no indication from the data of significant roosts on the reservoirs.
- s *europaeus* records were returned from various areas of plantation habitat in the area.
- s been recorded in the plantation on Site. Priority passerine and near passerine species that feature in the data include a variety of

other species that are typically found in moorland, ffridd and plantation habitats including linnet *Linaria cannabina*, skylark *Alauda arvensis*, meadow pipit *Anthus pratensis*, tree pipit *Anthus trivialis*, whinchat *Saxicola rubetra*, willow warbler *Phylloscopus trochilus*, bullfinch *Pyrrhula pyrrhula* and cuckoo *Cuculus canorus*.

- Declining passerines with a more localised distribution in South Wales that were returned by the data set were willow tit *Poecile montanus* and ring ouzel *Turdus torquata*. Both appear to have bred in the area in the past.

Invasive Non-Native Species (INNS)

- 7.4.9 The only INNS bird species returned by the SEWBRc data that appears to occur regularly is Canada goose *Branta canadensis*. The data indicate breeding has been proven at Llest-wen Reservoir and a variety of other locations.

Proposed Assessment and Methodologies

Legislation and Guidance

- 7.4.10 The approach to ornithological survey has been based on NatureScot (2025) guidance for bird survey at onshore wind farms, which represents industry standard guidance for the UK. Survey work began prior to this guidance being updated (from Scottish Natural Heritage 2017 guidance which it supersedes), but these updates did not influence the scope or specification of the work.
- 7.4.11 Particular consideration has been given to those species listed under Annex 1 of the Birds Directive (2009/47/EC) (transposed to UK law under the Conservation of Habitats and Species Regulations 2017), Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and Section 7 of the Environment (Wales) Act (2016) in deriving the detailed approach to the work.
- 7.4.12 Consideration has also been given to national and local policy, including Planning Policy Wales (PPW) 12, Technical Advice Note (TAN) 5 Nature Conservation and Planning, Future Wales (The National Plan 2040) and local policy and planning guidance documents including the Rhondda Cynon Taf Local Development Plan (LDP) and Supplementary Planning Guidance on Nature Conservation in informing the proposed scope of the assessment.
- 7.4.13 The approach to the ornithological impact assessment will be based on Chartered Institute for Ecology and Environmental Management (CIEEM) guidance (2024) and informed by Collision Risk Modelling using the Band Model derived by NatureScot (previously known as SNH).

Proposed Assessment Methodology

Assessment of Likely Significant Effects

- 7.4.14 The assessment will be completed in accordance with CIEEM (2024) guidance and will involve:
- Determining important ornithological features that require detailed impact assessment through evaluation of desk study and field survey data by:
 - defining the ornithological zone of influence of the Proposed Development; and
 - considering the importance of ornithological features within a defined geographical context (e.g. whether populations are important at the national, regional, county, local or Site levels).
 - Characterising and quantifying effects and assessing their significance through consideration of whether effects are:
 - beneficial, adverse or neutral; their extent, magnitude, duration, reversibility, timing and frequency; and whether there is potential for their significance to be increased cumulatively as a result of other plans or projects.
 - Determining the significance of both beneficial and adverse effects. This will be completed in relation to the conservation status of each species at the geographical level at which it has been valued.
- 7.4.15 The assessment process will be informed by Collision Risk Analysis. This will involve extrapolation of flight-data obtained during Vantage-Point (VP) surveys, to calculate the number of flights likely to occur through the rotor swept area when the Proposed Development becomes operational. Following the application of avoidance rates, predicted fatalities per year and over the life of the wind farm (by each focal species) will be determined.
- 7.4.16 The value of any feature that will be significantly affected will then be used to draw conclusions as to what the implications of development are in legislative terms and any additional measures needed to ensure policy compliance (CIEEM, 2024).

Cumulative Effects

- 7.4.17 Consideration and assessment of cumulative effects with other developments, in particular wind and solar farm sites, within the vicinity of the Proposed Development will be undertaken as part of the Ornithology Impact Assessment (OIA).

- 7.4.18 The scope of the assessment of cumulative effects will take into account all proposed renewable developments and any other relevant schemes or initiatives within the ranging distance of species breeding within or close to the Site.

Key Issues and Potential Likely Significant Effects

- 7.4.19 The below sections set out the key issues relating to ornithology. The rationale for whether the potential effects are proposed to be scoped in or scoped out of the assessment for the construction, operational and decommissioning phases of the Proposed Development, as well the basis for these judgements, are also included.

Construction Phase

- 7.4.20 There is potential for significant effects resulting from displacement of breeding birds to occur during construction works. Destruction of the active nests of breeding birds may also occur during site preparation works.
- 7.4.21 Disturbance leading to displacement or nest failure in protected raptors breeding within and close to the Site boundary will be the principal issue during construction. Consideration will also need to be given to other breeding birds nesting within clearfell and pre-thicket and more mature plantation as well as on open ground. Examples of these species are nightjar and crossbill.
- 7.4.22 The potential for off-Site effects on species such as barn owl will need to be considered if minor roads or tracks adjacent to buildings or trees that are suitable for breeding are used as haulage routes.

Operational Phase

- 7.4.23 The main potentially significant effect during operation will be:
- Collision of breeding raptors with turbines. This has the potential to affect both forest-nesting species such as goshawk, and those breeding within the wider landscape and using the airspace above the Site when commuting or foraging such as
 - Collision of other species that commute through the local landscape, including gulls, waders and waterfowl.
 - Displacement of forest (and potentially cliff) nesting raptors from areas close to operational turbines.
 - The potential for significant operational phase effects on nightjar are considered to be very limited. This is based on an understanding of the results of long-term monitoring of nightjar at various Welsh wind farms (Nicklin *et al.*, in lit).

- 7.4.24 The potential for collision and operational displacement of other species, such as barn owl and cavity-nesting passerines during operation is considered minimal. This is based on site-specific survey data and empirical evidence from monitoring across Europe.

Decommissioning Phase

- 7.4.25 Decommissioning is likely to result in similar potential significant effects to construction, although the magnitude of the impact is likely to be of lower magnitude due to the shorter duration of the work and the likelihood that some infrastructure (such as tracks and hardstanding) will remain in situ.
- 7.4.26 Potential significant effects on ornithological features will need to be considered in the context of legislation, policy and industry standard guidance in place at that time.

Assessment Methodology

- 7.4.27 The anticipated scope of works and methodology required to accompany the OIA and produce the ES chapter is outlined below:

Determination of the Baseline

Protected Sites

- 7.4.28 There are no Special Protection Areas (SPAs) or Ramsar Sites within 10 km of the Site, and no Sites of Special Scientific Interest (SSSI) within or adjacent to the Site Boundary. The nearest SSSI is located approximately 2.6 km to the west of the Site Boundary and is a SSSI designated for its geomorphology.
- 7.4.29 The entire Site is subject to non-statutory designation via a series of SINCs. Ornithological interest mentioned in the SINC citations is included below where relevant:
- Mynydd y Ffaldau SINC. The citation notes that the plantation represents significant woodland bird habitat for conifer specialists, including crossbill, siskin *Spinus spinus*, redpoll *Acanthis cabaret*, and goshawk as well as typical native woodland species, such as chaffinch *Fringilla coelebs*, robin *Erithacus rubecula*, song thrush *Turdus philomelos* and blackbird *Turdus merula*. There are now large areas of clear-felled areas supporting breeding nightjar.
 - Cwm Dare South SINC. A large site containing a diverse range of habitats within the Dare Valley Country Park and surrounding hillsides including Craig Rhiw-ddu. Features include wooded stream valleys, marshy grassland, wet heath, acid flush, acid grassland and areas of bracken slope. Bird species noted as occurring in the SINC citation are redstart *Phoenicurus phoenicurus*, reed bunting *Emberiza*

schoeniclus, tree pipit, passage ring ouzel, wintering hen harrier, kestrel and peregrine (which are noted as nesting).

- Garn Wen and Panwen Garreg-wen SINC. The SINC supports areas of remnant blanket bog, modified bog, wet and dry heath and marshy grassland among coniferous plantation habitat. The citation notes that there is *"a diverse plantation/woodland bird fauna, including crossbill, siskin, redpoll, cuckoo, song thrush, blackbird, and chaffinch. There is potential goshawk and merlin habitat. Both species have been recorded. More open ground supports skylark, meadow pipit and whinchat."*
- Rhos Gwawr SINC. Extensive upland wet and dry heath, marshy and acid grassland and valley side ffridd that occur in complex mosaics and grade into large blocks of upland oak woodlands, some of which are ancient woodland sites. The citation notes that *".... the SINC supports good upland/ffridd bird habitat with skylark, wheatear, whinchat and stonechat all present. The woodlands and lower slopes support diverse woodland bird communities."*
- Cefn Craig Amos SINC. An extensive area of ffridd along the eastern valley side of the Rhondda Fach. Large areas of dry heath and scree dominate the steeper mid and upper slopes, while lower slopes support mosaics of dry and wet heath, flushed marshy grassland and bracken. No bird interest noted in the SINC citation.

Ornithology Survey

7.4.30 Survey work was initially completed by WSP UK Ltd (late October 2024 – mid-March 2025) and has latterly been completed by BSG Ecology Ltd (mid-March 2025 onward). All survey effort followed NatureScot (2025) guidance unless other methods are referenced below. The intention is to undertake two years of survey work, with Year 1 methods replicated in Year 2 unless otherwise stated.

7.4.31 The scope of work has involved:

- VP survey from six locations during the non-breeding (October 2024 to mid-March 2025) and breeding seasons (mid-March 2025 to August 2025 inclusive), with a minimum of 36 hours of data collected from each location during both periods. VP locations and modelled viewsheds are shown on **Figure 1: VP Locations** and an example flight line figure **Figure 2: Flights**.
- Monthly walked transects between October 2024 and March 2025 inclusive. Two routes were used. The survey is not being repeated in winter 2025 / 26 due to the minimal additional information on bird use of the Site it resulted in during the previous year.

- Breeding raptor surveys. These have been completed on accessible land within 1-2 km of the Site boundary⁴⁸. Eighteen days of survey were completed between March and July 2025. These included early season surveys for displaying (prior to trees 'leafing up') and to check for occupancy of known peregrine eyries.
- Breeding wader surveys. Four survey visits were completed to areas of open moorland towards the western boundary of the Site between April and July 2025 inclusive. The approach was in line with the Brown and Shepherd (1993)⁴⁹ method as modified by Calladine *et al* (2009)⁵⁰.
- Breeding nightjar surveys. Following reconnaissance to identify suitable habitat and appropriate transect routes visits were completed in June and July in accordance with the method set out by Gilbert *et al* (1998)⁵¹. Three transects were undertaken in each month.
- Willow tit surveys were completed in late winter / early spring to understand whether the species was present on Site. Surveys were undertaken on two dates in February and March in accordance with national survey methods⁵².

Results

7.4.32 Five focal species⁵³ were recorded during winter VP work; goshawk,

- was the most frequently recorded species, with an exceptional count of six birds soaring together during one of the watches, and display apparent during February and March 2025.

⁴⁸ For goshawk industry standard guidance (NatureScot, 2025) recommends a 1 km perimeter search area, while for other raptors including merlin, peregrine and hen harrier a 2 km perimeter is recommended. There is no guidance with regard to kestrel; a 1 km perimeter has been applied for that species at Carreg Wen.

⁴⁹ Brown, A. F. & Shepherd, K. B. (1993) A method for censusing upland breeding waders. *Bird Study*, 40: 189-195.

⁵⁰ Calladine, J., Garner, G., Wernham, C. & Thiel, A. (2009) The influence of survey frequency on population estimates of moorland breeding birds. *Bird Study*, 56: 3, 381-388.

⁵¹ Gilbert, G., Gibbons, D. W & Evans, J. (1998). *Bird monitoring methods*. RSPB, Sandy.

⁵² (https://www.rbbp.org.uk/wp-content/uploads/2020/11/Willow_Tit_national_survey_methods_2020.pdf).

⁵³ The release of updated bird survey guidance (NatureScot, 2025) resulted in some species, including gulls, being treated as focal species during the 2025 breeding season that had not been considered focal species during the WSP work. The levels of gull activity in winter 2024/25 were very low. Grey heron was also treated as a focal species by BSG Ecology but not by WSP; however only one flight of grey heron was recorded in winter 2024/25.

- were recorded frequently, with most observations of both species coming from moorland areas around the north-eastern edge of the Site.
- grine was recorded on five occasions during VP work; there were four records of flights, all involving singletons, and a further record of a bird perched on a larch.
- The r observation was of a bird in flight over moorland habitat.

7.4.33 Winter transect surveys recorded a range of passerine species typically associated with both open moorland and plantation habitats and more occasional sightings of focal raptor species.

7.4.34 Nine focal species were recorded during the breeding season VP work (breeding raptor survey information is also summarised in the bullet point list below); r
k

- was the most frequently recorded target species during VP survey work, with evidence of a probable territory within the Site. Late winter work in 2025/26 is likely to confirm the location more precisely (on the assumption the pair is in the same area in 2026).
- as frequently recorded, mainly over open ground around the eastern and north-eastern edges of the Site. No evidence of breeding was noted within the wider raptor survey area.
- were recorded occasionally during VP work. One active nest was noted within the 2 km perimeter raptor survey area.
- was also noted breeding within 1 km of the Site boundary and on an infrequent basis over the Site.
- Low levels of gull activity were noted, with most records referring to herring gull. There was no indication of a local regularly-used roost.

7.4.35 Nocturnal and crepuscular surveys found nightjar to be widely distributed in suitable habitat across the Site. Tawny owl was also recorded during the work, but there were no records of other owl species.

7.4.36 A hobby flight was recorded incidentally during walkover raptor survey work. There were no records of the species during VP watches.

7.4.37 Wader surveys recorded common snipe albeit there was no evidence of breeding and the records are likely to refer to passage birds. A passage green sandpiper was recorded in August 2025. No breeding wader territories were noted.

7.4.38 as noted breeding adjacent to the Site boundary. Occasional commuting flights were recorded.

7.4.39 were not recorded during the targeted survey work on Site; however the species was recorded incidentally within the perimeter survey area to the east, indicating a population remains present in the local area.

Prediction Methodology

7.4.40 The assessment will be completed in accordance with CIEEM (2024) guidance and will involve:

- Determining important ornithological features that require detailed impact assessment through evaluation of desk study and field survey data by:
 - defining the ornithological zone of influence of the Proposed Development; and
 - considering the importance of ornithological features within a defined geographical context (e.g. whether populations are important at the national, regional, county, local or Site levels).
- Characterising and quantifying effects and assessing their significance through consideration of whether effects are:
 - beneficial, adverse or neutral; their extent, magnitude, duration, reversibility, timing and frequency; and whether there is potential for their significance to be increased cumulatively as a result of other plans or projects; and
- Determining the significance of both beneficial and adverse effects. This will be completed in relation to the conservation status of each species at the geographical level at which it has been valued.

7.4.41 The potential of the Proposed Development to affect the Favourable Conservation Status (FCS) of species will be considered, taking account of available data on their Current Conservation Status (CCS) at the national and local level.

7.4.42 The value of any feature that will be significantly affected will then be used to draw conclusions as to what the implications of development are in legislative terms and any additional measures needed to ensure policy compliance (CIEEM, 2024).

Construction Phase

7.4.43 Construction phase activities will include:

- Tree felling.
- Ground clearance.

- Excavation and construction of crane pads and turbine bases.
- Erection of the turbines.
- Construction of other infrastructure, including laying down of tracks.

7.4.44 The work will result in an increase in vehicle movements and personnel on Site.

7.4.45 Liaison with civil engineers and other specialists within the EIA team will be vital to understand and characterise potential impacts on ornithological features, inform mitigation and assess likely residual significance in accordance with CIEEM (2024) guidelines.

7.4.46 The main potential effects will be disturbance of forest-nesting raptors and of breeding nightjars in areas of clearfell and pre-thicket plantation.

Operational Phase

7.4.47 The operational wind farm will result in very little land take in the context of the Site. Operational phase activities are likely to be limited to turbine maintenance.

7.4.48 The main potentially significant effects during operation will be:

- Collision of focal species, particularly raptors (as there is little evidence from baseline work to date of other species overflying the Site), with turbines. This has the potential to affect both forest-nesting species such as goshawk, and those breeding within the wider landscape and using the airspace above the Site when commuting or foraging such as .
- Empirical evidence of fatality will be considered, in conjunction with information on national and local population sizes and trends when assessing the likely magnitude of effects. Collision risk analysis will be completed based on NatureScot's Band Model (Band, 2024) using Site-specific data.
- Operational phase displacement of breeding forest-nesting raptors from areas of plantation close to turbines.

7.4.49 The potential for collision and operational displacement of other species, such as nightjar during operation is considered minimal. This is based on an understanding of the results of monitoring at various Welsh wind farms (Nicklin *et al.*, in litt).

Decommissioning Phase

7.4.50 Decommissioning phase activities are likely to be similar in their effects to those during the construction phase, and will result in an increase in vehicle movements and personnel on Site, but are likely to occur over a shorter time period.

Approach to Mitigation

- 7.4.51 The step-wise approach, which involves ensuring that any adverse environmental effects are firstly avoided, then minimised, mitigated and as a last resort compensated for, is being and will be applied through the design evolution of the Proposed Development.

Embedded Mitigation

- 7.4.52 Design phase measures ('embedded mitigation') may include (should the need be identified):
- Stand-offs from active or recently occupied raptor eyries on cliffs or other features in the local landscape.

Applied Mitigation

- 7.4.53 Construction phase mitigation will principally be delivered through input to the CEMP. This will be an integral part of the Proposed Development. Ornithological objectives of the CEMP will include:
- Appointment of an ecologist tasked with ensuring compliance with all relevant regulatory and other requirements, method statements and plans, and reporting to the principal contractor and statutory consultees concerning ornithological issues.
 - Identification of the scope and timing of pre-construction ornithological survey work (to be informed by existing data and reconnaissance), and how this will potentially inform the approach to construction work.
 - Ornithological input to method statements for all components of the work. This should set out to demonstrate how the potential for offences will be avoided.
 - The identification of appropriate ecological awareness training for site staff and contractors in respect of the presence of protected and sensitive bird species and the importance of species-specific mitigation measures.

Enhancement

- 7.4.54 In conjunction with the ecological assessment, a policy-compliant biodiversity enhancement plan will be produced and will form part of the Habitat Management Plan (HMP) for the Proposed Development. The HMP will aim to deliver a net benefit for biodiversity drawing from the five key principles of achieving biodiversity resilience set out in the DECCA Framework (PPW 12) and, in a local context, building on the aims and objectives of the Lost Peatlands Project. The HMP will be implemented over the operational life of the Proposed Development and may include monitoring requirements.

Summary of Scope

7.4.55 A summary of the scope is included in Table 7.4.1

Table 7.4.1: Summary of Scope

Receptor	Impact	Geographical Scope	Scoped in or out
Construction Phase			
Statutory designated sites	None anticipated	2 km	Out
Non-statutory designated sites	Loss of extent (temporary and permanent) and condition	Within and adjacent to Site boundary / proposed infrastructure	In
	Disturbance of breeding birds, leading to displacement or nest failure. Loss of nesting habitat.	Site and perimeter of approximately 500 m (based on Goodship & Furness, 2022).	In
			n
	Disturbance of breeding birds, leading to displacement or nest failure	Site and perimeter of approximately 750 m (based on Goodship & Furness, 2022).	In
	Disturbance of breeding birds, leading to displacement or nest failure	Site and perimeter of approximately 200 m (based on Goodship & Furness, 2022).	In
Other breeding raptors	Disturbance of breeding birds, leading to displacement or nest failure	Site and perimeter of approximately 500 m is relevant for most species that could conceivably occur locally (based on Goodship & Furness, 2022).	Out (based on results to date: no other breeding raptors identified)

Receptor	Impact	Geographical Scope	Scoped in or out
Breeding waders	Disturbance of breeding birds, leading to displacement or nest failure	Site and perimeter of 800 m based on studies by Pearce-Higgins et al (2012).	Out (based on results to date: no breeding wader present)
	Disturbance of breeding birds, leading to displacement or nest failure. Loss of nesting habitat.	Site. Perimeter distance to be determined through liaison with Natural Resources Wales (NRW) forest operations team and review of arrangements for construction of other afforested sites (e.g. Alwen Forest, Clocaenog and Pen y Cymoedd wind farms). Likely to be c. 300 m.	In
	Habitat loss or degradation.	Site	In (principally in the context of opportunity for biodiversity net benefit).
Other protected and priority bird species (e.g. crossbill)	Disturbance of breeding birds (most relevant to those on Schedule 1 of Wildlife and Countryside Act 1981), leading to displacement or nest failure. Loss of nesting habitat.	Site	In (principally in the contexts of legislative compliance and opportunity for a net benefit for biodiversity).
Operational Phase			
Locally breeding and wintering raptors, gulls, waders and wildfowl	Collision with turbine blades; displacement of locally breeding birds	Site	In
Decommissioning Phase			

Receptor	Impact	Geographical Scope	Scoped in or out
All ornithological features considered during construction, and any other features that have received statutory protection or priority status over the intervening period.	All impacts considered at construction stage.	Within and adjacent to Site	In

Consultees

7.4.56 The main consultees which will be consulted throughout the development of the proposals are NRW and the Rhondda Cynon Taf County Borough Council ecologist. Attempts will be made to secure pre-application consultation meetings to discuss:

- The adequacy of the desk study and field survey proposed / completed.
- The main issues in terms of ornithological impact assessment (under the EIA Regulations) and the parallel Habitats Regulations Assessment process.

Questions for Consultees

1. Do consultees consider the scope of work outlined in this chapter appropriate?
13. Are consultees aware of any data sets that would inform the assessment with regard to the proposed wind farm?
14. Are there any nature conservation stakeholders, special interest groups or individuals who should be consulted with regard to ornithology?
15. Is the approach to the assessment of effects, including those effects scoped in and out and the cumulative assessment, appropriate?
16. Are consultees content with the proposed approach to scope out the topics from ES, which are presented in the "Summary of Scope" in this chapter.

7.5 Cultural Heritage

Introduction

7.5.1 This chapter considers the likely significant effects associated with Cultural Heritage (the 'historic environment' in policy and guidance terms) during the construction, operation and decommissioning phases of the Proposed Development.

7.5.2 The assessment of effects on the historic environment will be undertaken by LUC.

7.5.3 Welsh planning policy defines the historic environment as "*all the surviving physical elements of previous human activity and illustrates how past generations have shaped the world around us...The historic environment is made up of individual historic features*

which are collectively known as historic assets".⁵⁴ A historic asset can be a building, monument, site, place, archaeological remains, townscape or landscape. Some historic assets are designated as World Heritage Sites, scheduled monuments, listed buildings, conservation areas, historic parks and gardens, battlefields, registered historic landscapes, or locally designated through policies in the Local Plan. Non-designated historic assets may be recorded in Historic Environment Records (HER), while many other assets are currently unrecorded. Historic assets may also derive some, or all, of that interest from their 'setting'.

7.5.4 In Welsh planning policy, the setting of a historic asset is defined as *"the surroundings in which it is understood, experienced and appreciated, embracing present and past relationships to the surrounding landscape"*.⁵⁵

7.5.5 The purpose of the assessment will be to identify the likely significant effects of the Proposed Development on the historic environment and heritage significance of the area in which the Site is located and highlight where mitigation measures may be required.

Design Considerations and Input to date

7.5.6 Significant effects upon the historic environment will be avoided or minimised where practicable as part of the design process. The key design principle embedded to date is the avoidance of physical interactions between turbine locations and known historic assets.

7.5.7 The following design considerations will be applied as part of this process:

- Avoid physical interactions between the construction footprint, including micro-siting allowances, and historic assets; and
- Avoid and reduce infrastructure in locations that could adversely affect the contribution setting makes to the heritage significance of historic assets.

Current Baseline Conditions

Scoping Study Areas

7.5.8 The following study areas were used for data gathering to inform scoping:

⁵⁴ Welsh Government (2024) *Planning Policy Wales 12*. Available at: <https://www.gov.wales/sites/default/files/publications/2024-07/planning-policy-wales-edition-12.pdf>

⁵⁵ Welsh Government (2017) *Technical advice note (TAN) 24: the historic environment*. Available at: <https://www.gov.wales/sites/default/files/publications/2018-09/tan24-historic-environment.pdf>

- The Site – the potential for direct and indirect physical effects and effects related to setting change for historic assets;
- Core Study Area – land within 4 km of the nearest turbine over which the potential for significant effects related to setting change to all historic assets; and
- Wider Study Area – land between 4 km and 10 km of the nearest turbine over which the potential for significant effects related to setting change to designated historic assets.

7.5.9 The extent of the Site and study areas are shown on **Figure 7.9.1** and **Figure 7.9.2**.

Information Sources

7.5.10 The following sources of information have been reviewed during desk-based research to inform this scoping report:

- Data on designated historic assets comprising:
 - Scheduled monuments;
 - Listed buildings;
 - Conservation areas;
 - Registered Historic Parks and Gardens (RHPG);
 - Registered Historic Landscapes (RHL)⁵⁶;
- Heneb Historic Environment Record (HER) data (received 27/05/2025);
- Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW);
- National Monuments Record of Wales (NMRW)⁵⁷;
- Available reports from recent archaeological work undertaken in the area ('grey literature');
- Publicly available Ordnance Survey (OS) mapping (principally First and Second Edition 25-inch and 6-inch to the mile mapping where available for the Site); and
- Recent digital aerial photography (available via online sources).

⁵⁶ There are no World Heritage Sites or Historic battlefields recorded on the Inventory of Historic Battlefields in Wales within the scoping study areas.

⁵⁷ RCAHMW and NMRW data is held online at Clofein. Available at: <https://coflein.gov.uk/en/>

Archaeological and historical contextual background

- 7.5.11 The earliest evidence of activity recorded within the Site comprise flints recovered on Cefnrhos-gawar which are believed to date to the Mesolithic period (Henef Ref. GGAT3616m; GGAT3617m). Isolated finds such as these are typical evidence of Mesolithic activity and suggest limited activity of hunter-gatherers in the immediate area. Similarly, evidence of the earliest farming communities, is limited to two flint artefacts which potentially represent Neolithic activity (Henef Ref. GGAT01644m; GGAT01778m).
- 7.5.12 Evidence suggests that the Bronze Age witnessed an increase in ritual and funerary activity and practices. The Bronze Age period within the Site and its environs conforms to this understanding of Bronze Age archaeology in Wales. A large funerary complex in the form of a cairn cemetery is located in the north of the Site on the summit of the Rhos Gwawr (Cadw Ref. GM404), while numerous other examples of prehistoric funerary assets can be found in the wider landscape. Of the prehistoric funerary assets located outside of the Site, the nearest are Carn-y-Pigwn round cairn, Tarren Maerdy cairn (West) and Tarren Maerdy cairn (East) (Cadw Refs. GM372; GM576; GM575) located approximately 880m east, 1.2 km southwest and 1.2 km southwest of the Site respectively. An appropriate understanding of the Bronze Age funerary assets within the Site and beyond, and their relationships, will be required to inform the need for a design response to reduce effects to their heritage significance. The setting of these assets is characterised by their location on high ground and at the end of ridgelines.
- 7.5.13 There is no evidence of Iron Age activity recorded within the Site; however, beyond the Site, activity dating from this period shows a strong territorial expression within the landscape. This is evidenced by the construction of hillforts, such as Mynydd Maendy and Craig y Ddinas (Cadw Refs. GM099; BR178), as well as the cross ridge dyke of Ffos Toncenglau (Cadw Ref. GM118) located c. 3.5 km southwest, c. 8 km northwest and c. 4.1 km northwest of the Site respectively. This reflects the type of surviving Iron Age activity typically seen across Wales, that shows a shift away from the ritual and funerary activity to activity generally of a settlement or defensive in nature.
- 7.5.14 The Roman period in Wales is characterised by its conquest and eventual occupation and inclusion into the province of Britannia. Evidence of these military campaigns can be found throughout Wales in the form of marching camps and a system of forts connected by an extensive road network. An example of this military activity is located in the southwest of the Site at the Twyn y Bridallt marching camp (Cadw Ref. GM259). The only other evidence of Roman activity within the wider landscape derives from three chance finds of two gold rings (Henef Ref. GGAT3256m; GGAT3257m) and a bead (Henef Ref. GGAT3258m) which were recovered c. 1.5 km south, c. 2.2 km southwest, and c.4 km southwest of the Site respectively.

- 7.5.15 The early medieval period in Wales is often characterised by significant social, political and cultural changes following the end of Roman administration. The early part of the period saw the emergence of competing independent Welsh Kingdoms, monasticism and the spread of Christianity. Evidence from the early medieval period in Wales is generally sparse, and comparatively poorly-understood. Within the Site, only one historic asset has been identified that potentially relates to this period, that being a non-designated cross dyke (Heneb Ref. GGAT02266.0m) in the southwest of the Site. Excavations, however, suggest a later, possibly even post-medieval, origin for this asset.
- 7.5.16 The medieval period in Wales is associated with the emergence of a new, charged, political environment, caused by the power struggles that ensued after the Norman conquest and the Welsh Wars of Independence. The Norman influence across Wales created new territorial divisions, physically expressing the imposition of the feudal system, which resulted in the construction of strategically placed earth and timber castles. These were located to defend land, impose and maintain control of a territory and of movement through the landscape. They acted as garrisons and places of refuge. Within the Site, Castell Nos Motte (Cadw ref. GM408) provide an example of such a defensive structure on the eastern slope of the head of the Rhondda Fach Valley.
- 7.5.17 A number of potentially medieval building platforms and field boundaries have been recorded to the centre of the Site at Hafod-wen (Heneb Refs. GGAT2508m; GGAT2510m; GGAT2511m). A review of publicly available LiDAR imagery during the feasibility stage of the Proposed Development has also identified associated areas of cultivation ridges.
- 7.5.18 Most features recorded within the Site are of post-medieval date. These relate to farms, farmsteads and groups of traditional farm buildings, as well as their associated field systems. These include sheepfolds, small unnamed structures/buildings, fords and evidence of the operation of quarries such as that of Craig Rhiw Ddu (Heneb Refs. GGAT9804m; GGAT9816m; GGAT9809m; GGAT9817m).
- 7.5.19 There is a strong retention of standing buildings from this period in the environs of the Site, many of which are listed. These are largely characterised by domestic, commercial and industrial buildings associated with the post-medieval development of settlements along the Rhondda Valley, Aberdare and Merthyr Tydfil. The nearest listed buildings beyond the Site boundary include the single-track bridge of Pont Lluest-Wen (Cadw Ref. 10873; Grade II) located c. 415 m northwest of the Site, as well as the Welsh Independent Chapel (Cadw Ref. 14556; Grade II) and Calvinistic Methodist Chapel (Cadw Ref. 17658; Grade II) located c. 550 m and 770m southeast of the Site respectively. Within the Core Study Area there is a notable cluster of listed buildings within the Aberdare Town Centre conservation area.
- 7.5.20 This period also saw the development of parks and gardens which were designed in line with contemporary artistic, social and economic trends for the purposes of leisure.

Although often associated with private country houses, Aberdare Park (Cadw Ref. PGW(Gm)2(RCT); Grade II*), which dates to the mid-1800s and is situated c. 1.1 km north of the Site, provides an example of such a landscape which was designed for public benefit.

- 7.5.21 Comparison of historic OS mapping (first and second editions) show very little change within the Site and its immediate environs, from modern OS mapping and satellite imagery until the establishment of blocks of plantation conifer forest. This 20th century alteration of the landscape obscures much of the Site to its south, centre and northwest.

Preliminary Baseline

- 7.5.22 There are three scheduled monuments located within the Site:
- Rhos-Gwawr Cairn Cemetery (Cadw Ref. GM404) comprising five groups of small Neolithic to Bronze Age funerary mounds in the northeast of the Site on Rhos-Gwawr;
 - Twyn y Bridallt Roman Camp (Cadw Ref. GM259) comprising the well-preserved upstanding earthworks of an irregularly planed Roman military camp in the southeast of the Site; and
 - Castell Nos (Cadw Ref. GM408), a medieval castle located in the far west of the Site, overlooking the Rhondda Fach Valley.
- 7.5.23 The south and southwest of the Site is located within The Rhondda Registered Historic Landscape, a landscape of special historic interest (Cadw Ref. HLW (MGI) 5). This RHL occupies the Rhondda Fawr and the Rhondda Fach which are two narrow, steep-sided valleys featuring narrow undulating valley floors as well as upland ridges and plateaus.
- 7.5.24 There are 69 non-designated entries within the Site. These include evidence of prehistoric through to modern activity but is primarily characterised by evidence of post-medieval infrastructure, agriculture and industry.
- 7.5.25 The location of historic assets identified within the Site are shown on **Figure 7.9.1**
- 7.5.26 The Core Study Area contains the following historic assets:
- 16 scheduled monuments
 - 91 listed buildings (six Grade II*, 85 Grade II)
 - Aberdare Town Centre conservation area (WAL/RCT/CEB4/2A); and
 - Aberdare Park Historic Park and Gardens (Grade II*, Cadw Ref. PGW(Gm)2(RCT))
- 7.5.27 There are 1,138 HER data entries with the Core Study Area.

7.5.28 The following designated historic assets are located within the Wider Study Area:

- 84 scheduled monuments;
- 285 listed buildings (four Grade I, 19 Grade II*, 262 Grade II);
- Ten conservation areas; and
- Three RHPGs comprising
 - Aberfan: Cemetery, Garden of Remembrance and Former Tip and Slide Area (Grade II*, Cadw Ref. PGW(Gm)69(MER));
 - Cyfarthfa Castle (Grade II*, Cadw Ref. PGW(Gm)1(MER)); and
 - Cefn Coed Cemetery & Jewish Burial Ground (Grade II, Cadw Ref. PGW(Gm)70(MER))
- Three Registered Historic Landscapes comprising:
 - Merthyr Tydfil (Cadw Ref. HLW (MGL) 2);
 - East Fforest Fawr and Mynydd-y-Glog (Cadw Ref. HLW (MGL) 3); and
 - Gelli-Gaer Common (Cadw Ref. HLW (MGL) 4)

7.5.29 The location of designated historic assets within the Core and Wider Study Areas are shown on **Figure 7.9.2**.

Proposed Assessment and Methodologies

Legislation and Guidance

7.5.30 The assessment of likely significant effects of the Proposed Development will be carried out in accordance with the principles contained in the following:

- Welsh Government (2024) Planning Policy Wales (PPW);⁵⁸
- Historic Environment (Wales) Act 2003;⁵⁹
- Welsh Government (2021) Future Wales: The National Plan 2040;⁶⁰

⁵⁸ Welsh Government (2024) *Planning Policy Wales 12*. Available at: <https://www.gov.wales/sites/default/files/publications/2024-07/planning-policy-wales-edition-12.pdf>

⁵⁹ Historic Environment (Wales) Act 2023. Available online at: <https://www.legislation.gov.uk/asc/2023/3/contents>

⁶⁰ Welsh Government (2021) *Future Wales: The National Plan 2040*. Available online at: <https://www.gov.wales/future-wales-national-plan-2040>

- Welsh Government (2017) Technical advice note (TAN) 24: the historic environment;⁶¹
- Cadw (2011) Conservation Principles for the sustainable management of the historic environment in Wales;⁶²
- Cadw (2017) Setting of Historic Assets in Wales;⁶³
- Cadw (2017) Heritage Impact Assessment in Wales;⁶⁴
- Cadw (2017) Managing Change to Registered Historic Parks and Gardens in Wales⁶⁵
- Chartered Institute for Archaeologists (CIfA) (2014; updated 2020) Standard and guidance for historic environment *desk-based assessment*;⁶⁶
- Institute of Environmental Management and Assessment (IEMA), CIfA and Institute of Historic Building Conservation (IHBC) (2021) Principles of Cultural Heritage Impact Assessment in the UK;⁶⁷ and
- Cadw (2017) Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process (2nd edition) ('ASIDOHL2').⁶⁸

7.5.31 The design of the Proposed Development is at an early stage of development and currently proposes to place turbines within The Rhondda Registered Historic

⁶¹ Welsh Government (2017) *Technical advice note (TAN) 24: the historic environment*. Available at: <https://www.gov.wales/sites/default/files/publications/2018-09/tan24-historic-environment.pdf>

⁶² Cadw (2011) *Conservation Principles for the sustainable management of the historic environment in Wales*. Available at: <https://cadw.gov.wales/advice-support/historic-assets/conservation-principles>

⁶³ Cadw (2017) *Setting of Historic Assets in Wales*. Available at: <https://cadw.gov.wales/sites/default/files/2019-05/Setting%20of%20Historic%20Assets%20in%20Wales%20EN.pdf>

⁶⁴ Cadw (2017) *Heritage Impact Assessment in Wales*. Available at: <https://cadw.gov.wales/sites/default/files/2019-05/20170531Heritage%20Impact%20Assessment%20in%20Wales%2026917%20EN.pdf>

⁶⁵ Cadw (2017) *Managing Change to Registered Historic Parks and Gardens in Wales*. Available at: <https://cadw.gov.wales/sites/default/files/2022-04/Managing%20Change%20to%20Registered%20Historic%20Parks%20and%20Gardens%20in%20Wales-2022.pdf>

⁶⁶ CIfA (2014; updated 2020) *Standard and guidance for historic environment desk-based assessment*. Available at: <https://www.archaeologists.net/sites/default/files/2023-11/CIfA-SandG-DBA-2020.pdf>

⁶⁷ IEMA, CIfA and IHBC (2021) *Principles of Cultural Heritage Impact Assessment in the UK*. Available at: <https://www.ihbc.org.uk/brighton2021/resources/Principles-of-CHIA-V2%5B4%5D.pdf>

⁶⁸ Cadw (2017) *Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process (2nd edition)*. Available at: https://cadw.gov.wales/sites/default/files/2019-05/LandscapesRegisterGoodPractice_EN_0.pdf

Landscape, a landscape of special historic interest (Cadw Ref. HLW (MGI) 5). Should these, or any meaningful aspects of infrastructure (e.g., access tracks), be proposed for siting within The Rhondda RHL, an 'ASIDOHL2' assessment may be required. The requirement for an 'ASIDOHL2' assessment will be the subject to further post-scoping consultation with Cadw.

Determination of the Baseline

Proposed ES Study Area

- 7.5.32 Informed by a high-level review of the scoping baseline, the following study areas are proposed for the historic environment assessment for the Proposed Development:
- The Site – the potential for direct physical effects and effects related to setting change in all historic assets (i.e. designated and non-designated) will be considered;
 - Core Study Area – land within 2 km from the Site over which the potential for effects related to setting change to all historic assets will be considered; and
 - Wider Study Area – land beyond 2 km but within 10 km from the Site over which the potential for effects related to setting change to designated historic assets will be considered.
- 7.5.33 Consideration will also be given to historic assets beyond 10 km where there is a potential for significant effects resulting from setting change.

Desk-based Study

- 7.5.34 The desk-based study will identify the key characteristics of the Site and surrounding area and will collate baseline information from available sources to inform the subsequent field survey. The desk-based study will involve review of:
- Updated data on known historic assets and a review of the desk-based sources identified in the Information Sources section above;
 - Published sources on the archaeological and historical background of the area (including information on RHLs);
 - Historic mapping, including archival sources such as tithe maps;
 - Aerial photography – both recent digital and historic coverage (historic aerial coverage is held by RCAHMW and Welsh Government);
 - Publicly accessible LiDAR data;
 - Zone of Theoretical Visibility (ZTVs) and visualisations; and
 - Findings of other topics.

Field Studies

- 7.5.35 The field survey will comprise a walkover survey of the Site and visits to those historic assets identified as likely to experience effects due to setting change. The walkover survey will be informed by the desk-based study, including a review of LiDAR data to identify above ground archaeological remains. The walkover survey will be focused on known historic assets, infrastructure locations and micro-siting tolerances. Should any previously unrecorded historic assets be identified during the walkover survey an appropriate record (i.e. location, extent, apparent form of and significance of the asset) will be made.
- 7.5.36 The results of the assessment process will be reported as a Historic Environment Assessment (HEA). The Environmental Statement (ES) chapter will include an appropriate summary of the conclusions of the HEA, plus any other supporting surveys/studies, and detail the likely significant effects of the Proposed Development upon the historic environment.
- 7.5.37 Consultation will be undertaken with Cadw, Heneb, and the local planning authority's historic environment team as appropriate, post-scoping. This will establish the requirement for and scope of any archaeological field survey, such as targeted geophysical survey, that may be required to aid the design evolution and to provide appropriate baseline information in the ES, the need for and locations of visualisations in support of the assessment, and any other relevant matters arising.

Assessment Method

- 7.5.38 In historic environment policy and guidance, the significance, hereafter referred to as 'heritage significance' to disambiguate from the EIA concept of 'significance', of a historic asset comprises a series of qualities, known as 'heritage values'. The heritage significance of assets would be articulated using Conservation Principles. Informed by Cadw's setting guidance, this would include assessment and discussion of how a historic asset's setting contributes to its heritage significance.
- 7.5.39 Whilst heritage values help describe the heritage significance of historic assets, they do not articulate the relative importance of assets. For the purposes of the ES, the 'importance' of historic assets will be ascribed using the following criteria, informed by the designation criteria and the Research Framework for the Archaeology of Wales:⁶⁹

⁶⁹ Available at: <https://archaeoleg.org.uk/>

- **High** – historic assets of national and international importance, comprising designated historic assets and non-designated assets of demonstrably equivalent importance.
- **Medium** – historic assets of regional importance identified with reference to regional priorities from the Research Framework for the Archaeology of Wales (RFAW).
- **Low** – historic assets of local importance.

- 7.5.40 All effects will be assessed in terms of the way in which the Proposed Development will, either physically or through change in setting, affect the heritage significance of the historic asset. This will be articulated with reference to Cadw's Conservation Principles (2011). In articulating effects, a judgement will be made on the level of harm or benefit a historic asset will experience as a result of the Proposed Development, supported by an appropriate narrative linking this to how the asset will have its heritage significance changed. Assessment of effects related to setting change will be undertaken using the staged approach laid out in the Cadw's 2017 setting guidance. In articulating effects, a clear statement will be made as to whether the effect is significant in EIA terms.
- 7.5.41 There is currently no relevant professional guidance covering what constitutes an effect which is significant in EIA terms. In the absence of such guidance, this judgment will be made based on the level of direct physical and other effects to each historic asset. Although this will be evaluated on an asset-by-asset basis it is expected that an effect to a historic asset of at least medium importance and results in either its total removal or very much reduces its heritage significance, will be significant effects. This does not rule out significant effects arising as a result of other levels of effect to historic assets of lower levels of importance. The potential for such effects to be significant in EIA terms will be kept under review during the course of the assessment.
- 7.5.42 There is no industry-wide accepted methodology for the assessment of cumulative effects to historic assets within EIA. The assessment of cumulative effects will review the agreed list of cumulative schemes for the Proposed Development and identify whether any further effects (i.e., effects that will not be caused solely by the Proposed Development itself) will arise. This assessment will be undertaken and articulated in the same terms as the assessment of the effects of the Proposed Development in its own right.
- 7.5.43 Where relevant, asset-based ZTVs and visualisations will be prepared to support the assessment and articulation of effects. This may include visualisations to support the cumulative assessment. The need for asset-based ZTVs and visualisations will be agreed in consultation with relevant consultees.

Key Issues and Potential Likely Significant Effects

- 7.5.44 The below sections set out the key issues which relate to the Historic Environment. It includes whether the potential effects are proposed to be scoped in or scoped out of the assessment for the construction, operational and decommissioning phase of the Proposed Development, as well the basis for these judgements:

Construction Phase

- 7.5.45 The key effects relating to the construction phase of the Proposed Development which have been scoped into the assessment are:

- Direct physical effects to historic assets arising from construction.

- 7.5.46 The following effects resulting from the construction phase of the development have been scoped out of the assessment:

- Direct physical effects to assets beyond the land required for construction, as direct effects can only occur within areas where construction activity will take place;
- Effects resulting from change in the setting of assets during construction, due to the temporary nature of construction activities; and
- Indirect physical effects resulting from construction, as physical effects are not expected to occur beyond the areas where construction activity will occur.

Operational Phase

- 7.5.47 The key effects relating to the operational phase of the Proposed Development which have been scoped into the assessment are those related to change in the setting of assets during operation.

- 7.5.48 Direct physical effects to historic assets during operation and maintenance (since direct physical effects would only occur during construction) have been scoped out of the assessment.

Decommissioning Phase

- 7.5.49 Decommissioning of the Proposed Development will be carried out in line with the legislation and guidance current at the time of Decommissioning. Access tracks, hardstandings and foundations are considered likely to remain in situ, as such, there will be no impacts associated with their removal. Deconstruction of turbine blades, nacelles, generators and towers will essentially be a reverse process of construction and will require no additional land-take or ground-breaking. Decommissioning is therefore scoped out of the assessment.

Approach to Mitigation

- 7.5.50 In the first instance the Proposed Development will seek to avoid and minimise effects by design. Where interaction cannot be completely avoided, good practice mitigation measures to prevent, reduce, and, where practicable, offset these effects will be proposed. This is likely to include control measures within the Construction Environmental Management Plan.
- 7.5.51 The approach to mitigation would be guided by industry common practice and appropriate procedures as laid out in the relevant guidance standards and guidance documents such as the relevant ClfA standards and guidance documents.⁷⁰

Summary of Scope

A summary of the scope is included in Table 7.3.2: Summary of Scope below:

Table 7.5.1: Summary of Scope

Receptor	Impact	Geographical Scope	Scoped in or out
Construction Phase			
Direct physical effects to historic assets arising from construction activities	Construction activity has the potential for Likely Significant Effects on historic assets within the Site.	The Site	In
Direct physical effects to assets beyond the land required for construction	There will be no direct physical effects to historic assets beyond the land required for construction as direct physical effects can only occur within the areas where construction will take place.	N/A	Out

⁷⁰ Available at: <https://www.archaeologists.net/work/standards>

Receptor	Impact	Geographical Scope	Scoped in or out
Effects resulting from change in the setting of assets during construction	Construction activity could result in direct effects resulting from setting change, however these effects would be temporary due to the nature of the construction activities.	N/A	Out
Indirect physical effects resulting from construction	Given the nature of the receiving environment and the Proposed Development indirect physical effects are not predicted to occur to historic assets beyond the land required for construction.	Area beyond the construction footprint	Out
Operational Phase			

Receptor	Impact	Geographical Scope	Scoped in or out
Effects resulting from change to the setting of assets during operation	The Operational phase of the Proposed Development has the potential for Likely Significant Effects on historic assets due to changes to the setting of assets.	There is no set distance over which changes to setting can affect the heritage significance of a historic asset. However, designated assets out to 15km will be screened against the ZTV and scoped in where likely significant effects are identified as a consequence of intervisibility or in-combination visibility. Beyond this distance, designated assets with particular sensitivity will be scoped in where necessary. Non-designated assets will be similarly screened out to 2km.	In
Direct physical effects to historic assets during operation	There will be no impact as direct physical effects will only occur during the construction phase.	N/A	Out

Receptor	Impact	Geographical Scope	Scoped in or out
Cumulative effects	Cumulative effects during the Operational phase of the Proposed Development have the potential for Likely Significant Effects on historic assets due to changes to the setting of assets.	There is no set distance over which changes to setting can affect the heritage significance of a historic asset. However, designated assets out to 15km will be screened against the cumulative ZTV and scoped in where likely significant effects are identified as a consequence of intervisibility or in-combination visibility. Beyond this distance, designated assets with particular sensitivity will be scoped in where necessary. Non-designated assets will be similarly screened out to 2km.	In
Decommissioning Phase			
Effects of decommissioning the Proposed Development at the end of its operational life	Decommissioning of the Proposed Development will be carried out in line with the legislation and guidance current at the time of decommissioning. Access tracks, foundations and hardstandings are likely to remain in situ, as such, there will be no impacts associated with their removal.	The Site	Out

Consultees

7.5.52 The main consultees which will be consulted throughout the development of the proposals are detailed below:

- Cadw
- Heneb
- Rhondda Cynon Taf County Borough Council

Questions for Consultees

1. Do consultees consider the ES study areas appropriate?
2. Are there any other relevant consultees or non-statutory stakeholders who should be consulted about this topic?
3. Are consultees aware of any other supplementary guidance of relevance to assessment of effects to historic assets?
4. Is the approach to the assessment of effects, including those effects scoped in and out – including the decommissioning phase – and the cumulative assessment, appropriate?
5. Is the approach to field survey considered appropriate?
6. Are consultees content with the proposed approach to 'Likely Effects Scoped Out' from the ES?

7.6 Water and Ground Conditions

Introduction

7.6.1 This chapter presents the proposed scope of work for the assessment of likely significant effects upon the hydrology, hydrogeology, ground conditions, soil and peat of the Site. Together, these are referred to as the Water and Ground Conditions. The Water and Ground Conditions Chapter of the ES will include an assessment of flooding and of water resources, including consideration of spring lines, flushes and groundwater dependent terrestrial ecosystems (GWDTes), as well as public and private water abstractions. The Chapter will also assess soils (including peat), land stability, mining, geo-conservation and geodiversity.

7.6.2 The assessment of effects on water and ground conditions will be undertaken by Aqua Terra Consultants Ltd.

Design Considerations and Input to date

7.6.3 Significant effects upon water and ground conditions will be avoided or minimised where possible as part of the design process. The following surveys and design principles have already been undertaken to inform the design to date:

- Peat depth data has been collected and collated, providing an approximate 100m primary grid across the Site (Phase 1). During this survey, gouged cores were taken and soil descriptions were collected at every probing location.
- The collated peat data has been used to create an interpolated peat depth map.
- Turbine locations have been positioned to avoid areas of peat deeper than 30 centimetres (cm) in thickness, as indicated by the interpolated peat depth map.
- Turbines have not been placed on mapped landslides.

7.6.4 The following design considerations will be given as part of this process:

- Seek to avoid locating turbines or infrastructure on peat deeper than 30cm.
- Seek to avoid locating turbines or infrastructure within 250metres (m) of GWDTEs.
- Seek to avoid locating turbines or infrastructure within 250m of licenced and/ or private water abstractions.
- Seek to avoid locating turbines or infrastructure within 50m of surface water features.
- Consider peat and soil hydrology in the location and design of turbines and infrastructure.
- Assess land stability and coal mining related instability to inform and constrain design where required.

Current Baseline Conditions

7.6.5 The study area comprises the area that could be directly affected by the Proposed Development with a 250m buffer within which potential effects may occur. Specific features of interest that lie outside of the buffer zone may be included where required for example, if there is a particular hydraulic catchment of interest. The study area (which is the red line boundary) is shown on **Figure 1.1.1**.

Information sources

7.6.6 The following sources of information have been reviewed during the desk-based research for this Scoping Report and will be considered in the assessment in the ES:

- Peat probe data from previous peat probing work⁷¹;
- Peat probing undertaken by Trydan to inform the initial scoping layout;
- Welsh Peatlands Data Portal⁷²;
- Topographical information at the Site is provided by OS mapping and LiDAR data⁷³;
- Designated nature and conservation sites have been identified using information from NRW's mapping database⁷⁴;
- Solid and superficial geological information is provided by British Geological Survey (BGS) mapping⁷⁵ and the UK Soil Observatory Map viewer⁷⁶;
- Information relating to aquifers is provided by BGS Geoindex³;
- Flood risk at the Site is indicated by the Natural Resources Wales (NRW) online flood maps⁷⁷;
- Information pertaining to water quality at and near the Site is given by NRW river basin management plans, NRW Water Watch Wales map gallery and Cycle 3 rivers and waterbodies mapping⁷⁸.
- Information on documented historical coal mining is provided by the Mining Remediation Authority interactive mapping⁷⁹.

⁷¹ Blanket bog restoration scoping study, Castell Nos (Rigare 1660_r1_v2_Dec 2018)

⁷² <https://smnr-nrw.hub.arcgis.com/apps/d18ef8c74ecc4dc4a0cbf71ab6935ba0/explore>

⁷³ <http://lle.gov.wales/GridProducts#data=LidarCompositeDataset>

⁷⁴ <https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-land-and-seas/find-protected-areas-of-land-and-sea/?lang=en>

⁷⁵ <https://mapapps2.bgs.ac.uk/geoindex/home.html>

⁷⁶ <https://mapapps2.bgs.ac.uk/ukso/home.html>

⁷⁷ <https://flood-risk-maps.naturalresources.wales/>

⁷⁸ <https://naturalresourceswales.gov.uk/evidence-and-data/research-and-reports/water-reports/river-basin-management-plans/?lang=en>

⁷⁹ <https://datamine-cauk.hub.arcgis.com/>

Geology and soils

- 7.6.7 The study area and Site are largely covered by the 1:50,000 scale British Geological Survey (BGS) Sheet 248 (Pontypridd)⁸⁰, with the northern portion of the Site being on Sheet 231 (Merthyr Tydfil)⁸¹. The solid geology beneath the entire study area comprises the Upper coal Measures. The oldest rocks are located on the lower slopes in the incised valley of the Afon Aman and comprise the Llynfi Beds and are predominantly mudstones. The majority of the Site is underlain by sandstones of the Rhondda Beds. The highest ground on Mynydd y Ffaldau are the Brithdir Beds, which comprise predominantly mudstones. Coal seams crop out within the Site boundary. The No.2 Rhondda Rider seam forms the boundary between the Rhondda and Llynfi Beds, and traces the topographical contours around the Aman valley. The No.1 Rhondda Rider and associated seams are located in the Mynydd f Ffaldau area.
- 7.6.8 Glacial Till superficial deposits are mapped by the BGS as present in the base of the Cynon and Rhondda valleys to the north-east and south-west of the Site respectively. Within the Site boundary, till is mapped present in the base of the Aman valley between the peaks of Mynydd y Ffaldau, Pen Foel Aman and Rhos-gwawr. These peaks are mapped as largely lacking in superficial deposits, with the exception of localised bodies of peat. The BGS and the NRW Peatlands of Wales maps both show a large area of peat as present in the Castell y Nos area. Peat probing proves the presence of deep peat (up to 4m thick) covering this area. Elsewhere on Site, peat probing has located small peat bodies in a number of isolated areas, primarily on Rhos-gwawr, but also to a lesser extent on Mynydd y Ffaldau and Pen Foel Aman.
- 7.6.9 Soils on Site are mapped by the UK Soil Observatory (UKSO) as primarily very acid upland loamy soil with a wet peaty surface. Blanket bog peat is mapped in the west of the Site in the vicinity of Garn Wen and Castell Y Mawn. On the steep slopes of the Site as it descends down into the Cynon and Rhondda valleys, soils are described as freely draining acid soils over rock. Outside of urban areas, the soils beneath the Llynfi beds and till on the valley bottoms are classed as slowly permeable, seasonally wet acid loamy and clayey soils.
- 7.6.10 The over-steepened valley sides within the Amman, Cynon and Rhondda valleys are characterised by slope instability, with the BGS mapping mass movement deposits (landslides). There are nine such landslides mapped as present on Site.

⁸⁰ <https://largeimages.bgs.ac.uk/iip/mapsportal.html?id=1001739>

⁸¹ <https://largeimages.bgs.ac.uk/iip/mapsportal.html?id=1001724>

- 7.6.11 The Site has a history of coal mining. Nine mine shafts are mapped by the Mining Remediation Authority as present within the Site boundary, all in the Pen Foel Aman and Rhos-gwawr area. A single adit is also shown on the flanks of Pen Foel Aman. A large number of adits are shown as present within the Site boundary on Mynydd f Ffaldau. The entire Site is shown as being subject to historical mining at depth.
- 7.6.12 There are no Regionally Important Geological Sites (RIGS), Geological Conservation Review (GCR) sites or Sites of Special Scientific Interest (SSSI) with geodiversity interest within the study area.

Hydrology

- 7.6.13 The Site straddles the watershed between the Afon Rhondda Fach to the south-west and the Afon Cynon to the north-east. The central portion of the Site drains to the Afon Aman, a tributary of the Afon Cynon. The north of the Site drains towards the Afon Dare, also a tributary of the Cynon.
- 7.6.14 The Afon Aman is assessed as of Good status by NRW under the WFD Cycle 3 assessment in 2024. The Cynon downstream of the Aman confluence is also assessed as Good. The Dare and upper Cynon form the *Afon Cynon - source to conf Aman R* waterbody. This is of Moderate status with the driving element for not achieving Good being fish. The chemistry and ecology of this waterbody is assessed as High and Good respectively, and the hydromorphology as Not High. The Afon Rhondda Fach is assessed as Moderate. The driving element for not achieving Good is fish and Ecology – biology, both of which are Poor. The hydromorphology is Not High and is described as heavily modified.
- 7.6.15 As is to be expected in an upland setting, there are numerous springs, seeps and flushes on Site, which feed the headwaters of the Afon Aman, and a number of tributaries that descend the steep slopes to the Cynon and Rhondda Fach.
- 7.6.16 The area of Castell Nos is a topographical, peat filled basin which drains towards the headwaters of the Afon Aman to the south-east. The drainage in this area has been artificially altered by the construction of drainage ditches and the ploughing of land to create forestry furrows.

Flooding

- 7.6.17 Data available from NRW indicates that the majority of the Site is within Flood Zone 1 (low risk). Several small watercourses flowing across Site are classified as at high risk of flooding (Flood Zones 2 and 3) associated with both fluvial and pluvial (surface water) flooding. However, in all cases these areas are constrained to the channel itself and its immediate vicinity.

- 7.6.18 Downstream of the Site, areas of Aberdare, Cwmaman, Godreaman and Cwmbach are shown as within Flood Zones 2 and 3.

Hydrogeology

- 7.6.19 The bedrock across the Site is classified by NRW as a Secondary A Aquifer. These are defined as “permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers”.
- 7.6.20 The superficial Glacial Till deposits across Site are classified by NRW as Secondary Undifferentiated Aquifers. These are aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type, and they have only a minor value. Peat on Site is classed as an Unproductive Stratum.
- 7.6.21 Several springs are present on Site, forming headwaters to the streams that drain the upland areas. These springs are likely formed via a combination of groundwater seepage and soil throughflow.
- 7.6.22 Several man-made drains are present onsite, particularly in the Castell Nos area, capturing springs, redirecting natural watercourses and attempting to drain waterlogged and boggy land for forestry use.
- 7.6.23 According to the BGS, groundwater vulnerability across the Site is classified as medium to high.
- 7.6.24 Data is currently not held on the location of GWDTEs, public (licenced) or private water supplies. This data will be gathered as part of the assessment.

Proposed Assessment and Methodologies

Legislation and Guidance

- 7.6.25 The Proposed Development will be prepared in accordance with current best practice within the industry. The following will inform the approach to the design and assessment of the Proposed Development:

Legislation

- Control of Pollution Act 1974⁸²;

⁸² <https://www.legislation.gov.uk/ukpga/1974/40>

- Environmental Protection Act 1990⁸³;
- Environment Act 1995⁸⁴;
- Flood and Water Management Act (2010)⁸⁵;
- Water Environment (Water Framework Directive) (England and Wales) Regulations 2017⁸⁶;
- The Groundwater (England and Wales) Regulations (2009)⁸⁷;
- UK Water Quality (Water Supply) Regulations 2010⁸⁸;
- The Water Framework Directive⁸⁹;
- The Contaminated Land (Wales) (Amendment) Regulations 2012 and associated Contaminated Land Statutory Guidance for Wales (2012)⁹⁰;

Policy

- Future Wales – The National Plan 2040 (February, 2021)
- Planning Policy Wales, Technical Advice Note (TAN)15 Development and Flood Risk (2025)⁹¹;
- Planning Policy Wales, particularly Chapter 6 (2024)⁹²;
- Rhondda Cynon Taf Borough Council, Local Development Plan (2006 – 2021)⁹³.

⁸³ <https://www.legislation.gov.uk/ukpga/1990/43/contents>

⁸⁴ <https://www.legislation.gov.uk/ukpga/1995/25/contents>

⁸⁵ <https://www.legislation.gov.uk/ukpga/2010/29/contents>

⁸⁶ <https://www.legislation.gov.uk/uksi/2017/407/contents/made>

⁸⁷ <https://www.legislation.gov.uk/uksi/2009/2902/contents/made>

⁸⁸ <https://www.legislation.gov.uk/wsi/2010/994/contents/made>

⁸⁹ <https://www.legislation.gov.uk/uksi/2017/407/contents/made>

⁹⁰ <https://www.legislation.gov.uk/wsi/2012/283/made>

⁹¹ <https://www.gov.wales/sites/default/files/publications/2025-03/technical-advice-note-15-development-flooding-and-coastal-erosion.pdf>

⁹² <https://www.gov.wales/planning-policy-wales>

⁹³

<https://www.rctcbc.gov.uk/EN/Resident/PlanningandBuildingControl/LocalDevelopmentPlans/LocalDevelopmentPlan20062021.aspx>

Guidance

- RCTCBC Local Flood Risk Management Strategy and Action Plan (2024)⁹⁴;
- Sustainable Drainage Systems: Non-statutory technical standards for sustainable drainage systems (DEFRA, March 2015)⁹⁵;
- Land Use Planning System SEPA Guidance Note 31 Version 3 Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (2017)⁹⁶;
- Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems (Welsh Government 2018)⁹⁷;
- RCTCBC Guidance for Pre-Application Approval and Full Application Approval of SuDS on new developments (2018)⁹⁸;
- Sustainable Drainage Systems (SuDS) Statutory Guidance (Welsh Government 2019)⁹⁹;
- Land Contamination Risk Management Guidance pages, the Land Contamination Technical Guidance pages and on the Land Affected by Contamination Pages of gov.uk¹⁰⁰; and,
- Contaminated land risk assessment. A guide to good practice. CIRIA C552, 2001.

⁹⁴ <https://www.rctcbc.gov.uk/EN/Resident/ParkingRoadsandTravel/Roadspavementsandpaths/FloodAlleviation/FloodRiskManagement/Relateddocs/FloodandWaterManagementActRCTCBCLocalFloodRiskManagementStrategyActionPlan.pdf>

⁹⁵ <https://assets.publishing.service.gov.uk/media/5a815646ed915d74e6231b43/sustainable-drainage-technical-standards.pdf>

⁹⁶ <https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions.pdf>

⁹⁷ <https://www.gov.wales/sites/default/files/publications/2019-06/statutory-national-standards-for-sustainable-drainage-systems.pdf>

⁹⁸

<https://www.rctcbc.gov.uk/EN/Resident/ParkingRoadsandTravel/Roadspavementsandpaths/FloodAlleviation/FloodRiskManagement/SustainableDrainage/Sustainabledrainage.aspx>

⁹⁹ <https://www.gov.wales/sites/default/files/publications/2019-06/statutory-guidance.pdf>

¹⁰⁰ <https://www.gov.uk/guidance/land-affected-by-contamination>

- Groundwater protection: Groundwater protection guides covering: requirements, permissions, risk assessments and controls¹⁰¹

7.6.26 Wales does not have specific guidance on the interaction of energy park developments and the water environment or peat. In addition to the above general guidance, reference has also been made to guidance from the Scottish Environment Protection Agency (SEPA) on the matter, specifically;

- Land Use Planning System SEPA Guidance Note – Planning guidance on-shore windfarm developments¹⁰²
- Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions¹⁰³
- Guidance on Assessing the Impacts of Development Proposals on Groundwater Dependent Terrestrial Ecosystems¹⁰⁴
- Advising on peatland, carbon-rich soils and priority peatland habitats in development management¹⁰⁵
- Peatland Survey Guidance¹⁰⁶
- Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste. ¹⁰⁷
- Peat Landslide Hazard and Risk Assessments: Best Practice Guide¹⁰⁸

¹⁰¹ Defra and EA, 2017. Groundwater protection: Groundwater protection guides covering: requirements, permissions, risk assessments and controls

¹⁰² SEPA, 2017. Planning guidance on on-shore windfarm developments

¹⁰³ SEPA 2024. Guidance on Assessing the Impacts of Developments on Groundwater Abstractions

¹⁰⁴ SEPA 2024a. Guidance on Assessing the Impacts of Development Proposals on Groundwater Dependent Terrestrial Ecosystems

¹⁰⁵ <https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management>. November 2024.

¹⁰⁶ Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland, on-line version only.

¹⁰⁷ Scottish Renewables & SEPA, 2012. Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste

¹⁰⁸ Scottish Government, 2017. Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments. Prepared for Energy Consents Unit Scottish Government Second Edition, April 2017

Key Issues and Potential Likely Significant Effects

- 7.6.27 The below sections set out the key issues which relate to water and ground conditions. It includes whether the potential effects are proposed to be scoped in or scoped out of the assessment for the construction, operational and decommissioning phase of the Proposed Development, as well the basis for these judgements:

Construction Phase

Hydrology and water quality

- 7.6.28 Good practice standard mitigation measures within the outline CEMP will minimise as far as reasonably practical the risk of pollution to hydrology, hydrogeology (including Private Water Supplies (PWS)) and land drainage receptors during construction by removing the pathway between the source and the receptors for most of the working environment.
- 7.6.29 The most sensitive sites regarding pollution risk are where works involve watercourse crossings and/or where ground-based infrastructure are located in close proximity to watercourses. Works within watercourses and the construction of access tracks across watercourses, will be undertaken with the conditions set out within the consents and permits from the relevant authorities (e.g. Flood Risk Activity Permit or Ordinary Watercourse Consent).
- 7.6.30 Notwithstanding this, there is a large peat body on Site, and there is currently insufficient information on PWS and GWDEs on site to properly define the sensitivity of receptors and baseline. It is proposed to scope hydrology and water quality into the assessment for the construction phase.

Drainage and flood risk

- 7.6.31 During the construction phase there is the potential for the Proposed Development to increase flood risk through the formation of compounds, storage of materials and other temporary works e.g. construction of access tracks and temporary watercourse crossings.
- 7.6.32 The Proposed Development will be accompanied by a Flood Consequence Assessments (FCA) which is considered to be standard mitigation and best practice on a project of this scale. The FCA will assess potential flood risk from all sources and provide suitable mitigation where required. In addition, the Proposed Development shall consider the presence of flood zones in relation to the siting of infrastructure and will be undertaken with the conditions set out within consents and permits from the relevant authorities (e.g. Flood Risk Activity Permit or Ordinary Watercourse Consent), where required. Notwithstanding the above, at present, with the potential for a

temporary loss of floodplain storage and/or impediment to flood flows, flood risk from all sources during construction is proposed to be scoped into the assessment.

Hydrogeology including GWDTEs and PWS

- 7.6.33 During the construction phase there is the potential for the alteration of groundwater flows and aquifer properties including from the introduction of foundations including piles. This may impact sensitive receptors including GWDTEs and water abstractions including PWSs. Therefore, it is proposed to scope construction effects upon hydrogeology and water abstractions into the assessment.

Land Instability and Mining

- 7.6.34 There are landslides and coal mining related adits, shafts and workings mapped as present on Site. Therefore, Land Instability and Mining is proposed to be scoped into the assessment.

Peat and soil resource

- 7.6.35 Areas of deep peat are known to be present on Site. There will be an unavoidable impact on soils during the construction phase. Construction phase impacts on soils and peat are proposed to fall within the scope of the assessment.

Contaminated land Including Landfills

- 7.6.36 The mining history of the Site presents the potential for contaminated land (colliery spoil, acid-mine drainage, landfills) to be present on Site. There is therefore potential for the Proposed Development to interact with such features. It is therefore proposed to scope contaminated land into the assessment.

Operational effects

Hydrology and water quality

- 7.6.37 During operation of the Proposed Development, pollution impact pathways to surface watercourses will not be present as land will be reinstated following completion of the construction phase and there will be no operational discharges. Physico-chemical elements supporting WFD water body status will therefore be safeguarded.
- 7.6.38 All maintenance activities will be undertaken in accordance with best practice and manufacturer's requirements. Therefore, no likely significant effects on water quality including groundwater and, where present, PWSs are anticipated, and it is proposed that this aspect is scoped out of the ES.

Drainage and flood risk

- 7.6.39 With the implementation of recommended flood risk and drainage controls during the construction phase, there will be no significant effects on existing water receptors including PWSs when the project is operational. Therefore, it is proposed to scope out this aspect from the ES.

Hydrogeology including GWDTEs and PWS

- 7.6.40 Based on the nature of the Proposed Development, permanent infrastructure will be relatively limited e.g. wind turbines, a substation, access tracks and cable runs. However, the placement of foundations and other below ground requirements may have a permanent effect on groundwater flows and/or levels. Therefore, in the absence of further data and assessment, the potential effects on hydrogeology and water abstractions including associated sensitive receptors as identified above is proposed to be scoped into the assessment of the operational phase.

Mineral Reserves

- 7.6.41 The Site is situated within the South Wales Coalfield and hence there is potential for extant coal reserves to be present beneath the Site. At present, there is insufficient evidence to characterise the potential or otherwise of such a reserve. Subject to full assessment it is assumed that there is the potential to sterilise mineral resources and therefore it is proposed to scope mineral reserves into the assessment.

Land Instability and Mining

- 7.6.42 There are landslides and coal mining related adits, shafts and workings mapped as present on Site. The Proposed Development represents a permanent alteration to landform and land use. Therefore, Land Instability and Mining is proposed to be scoped into the assessment for the operational phase.

Peat and soil resource

- 7.6.43 Areas of deep peat are known to be present on Site. The Proposed Development represents a permanent change to the drainage and landform on Site, which may in turn affect peat and soil hydrology. Operational phase impacts on soils and peat are proposed to fall within the scope of the assessment.

Decommissioning

- 7.6.44 Decommissioning is considered to result in similar potential effects to construction, although the magnitude of the impact is likely to be lower and therefore effects are likely not to be significant. This is based on the access tracks and hardstanding's likely

remaining in situ so there will be no impacts associated with their removal. Decommissioning is therefore scoped out of the assessment.

Assessment Methodology

7.6.45 The anticipated scope of works and methodology required to accompany the EIA and produce ES chapter is outlined below:

Determination of the Baseline

7.6.46 A desk-based assessment will be carried out to establish the baseline hydrological, hydrogeological, geological and peat conditions of the Site. The desk-based review of baseline information will comprise:

- the determination of Site hydrogeology, geology and hydrology from maps and data published by BGS, Soilscales, Defra and NRW (already progressed and findings summarised in this Scoping Report);
- a review of existing sources of data, including NRW water quality and flood risk, abstraction licences and identification of other water uses;
- review of data from RCTCBC and NRW on private water supplies, consultation with NRW with respect to water resource issues within the catchments and, a private water supply assessment; and,
- a review of the Proposed Development and reports from other technical studies being undertaken, including ecological surveys which may identify areas of GWDTEs.
- A Flood Consequence Assessment (FCA) which will include:
 - obtaining NRW flood risk and model data for the Site which will include information on the risks associated with surface water run-off and groundwater flood risk;
 - review all data in the context of the Site topography and Proposed Development;
 - consider the effects of Climate Change in accordance with current guidance; and
 - undertake a review of the local Strategic Flood Risk Assessment (SFRA) to understand any local flooding issues, including evidence of flooding from sewers.

7.6.47 The FCA will consider potential risks to the Proposed Development arising from all sources of flooding. Advice will be given on the impact of flooding on the Proposed Development, where relevant. The main focus of the FCA will be demonstrating lack of detrimental impact to the catchment however, it is not envisaged that flooding will be

a constraint to the Proposed Development's infrastructure itself. Therefore, it is not intended to undertake any detailed modelling to inform the FCA.

7.6.48 An Outline Sustainable Drainage Strategy will be prepared which will consider the Proposed Development's layout and recommend suitable sustainable urban drainage systems (SuDS) in line with the SuDS hierarchy. The strategy will provide an assessment of the following aspects:

- Collation of details of the Proposed Development and Site layout in the context of the local water environment;
- Consider infiltration potential (desk based);
- Access and feasibility of connection to local surface water features and, if required, sewers;
- A review of the hydrological and hydrogeological context of the Site including proximity to SSSIs, SPA and Source Protection Zones (SPZs);
- Analysis of rainfall intensity data using the latest UK environmental datasets;
- Surface water runoff calculations undertaken using Institute of Hydrology (IH) 124 and rational methods in-line with guidance, including the effects of climate change; and,
- A watercourse crossing schedule will be included.

7.6.49 The outline sustainable drainage strategy will present a plan of measures to be employed across the Proposed Development. The assessment will take into account the design storm period and intensity; methods to delay and control the surface water discharged from the Site; and measures to prevent pollution of the receiving groundwater and/ or surface waters. Clear recommendations for a drainage strategy specific to the Proposed Development's layout and topography will be incorporated into the drainage assessment detailing the mitigation measures for the attenuation of storm water runoff through the use of sustainable drainage techniques, following national guidance. Whilst not part of the planning or EIA process, the above shall be presented to the SuDS Advisory Board (SAB) to ensure it meets with current best practice and policy.

7.6.50 A screening phase Water Framework Directive (WFD) assessment will be undertaken and included within the ES to present the potential impacts on the affected River Basin Management Plans and, if required, how these will be mitigated.

7.6.51 A Preliminary Risk Assessment (Desk Study) will be undertaken for the Site including consideration of all ground-related topics covered in this Chapter including:

- Geology (including RIGS/GCR sites);
- Mineral reserves, mining and landfills;

- Contaminated land; and,
- Land instability.

7.6.52 The Desk Study will utilise all existing and proposed available data and consider potential risks to sensitive receptors in accordance with the methodology outline in CIRIA C552. The report will be appended to the ES. A preliminary assessment of land instability risk and coal mining instability risk will be prepared and appended to the ES.

7.6.53 A soil type and soil depth map will be created using the Phase 1 probing data already collected. An outline Soil Management Plan (SMP) will be prepared for all surficial soils. A peat depth contour map will be created using the combined Phase 1 (existing) and Phase 2 (to be collected) datasets. An outline Peat Management Plan (PMP) and Peat Landslide Hazard Risk Assessment (PLHRA) will be prepared. These documents will be appended to the ES.

Field Surveys

7.6.54 In order to inform the baseline surveys, a programme of field surveys have been undertaken. Surveys undertaken in order to inform preliminary layout design include:

- mapping the Site for slope stability/ geomorphological features;
- undertaking a water features survey, mapping springs, flushes, watercourses, potential GWDTEs and other relevant salient water features;
- a private water supply survey, and;
- Phase 2 peat and soil probing and auger survey.

7.6.55 The assessment of GWDTEs will also be informed by the National Vegetation Classification survey that will be undertaken in support of Chapter 7.3 Ecology.

Prediction Methodology

7.6.56 The following criteria have been defined for use in assessing the sensitivity of receptors, the magnitude of anticipated change to receptors in the context of ground conditions caused by the development and the resulting magnitude of effect that is created.

Sensitivity

7.6.57 The following table provides the framework for defining the sensitivity of receptors. We have not included a negligible sensitivity classification for ground conditions as this is not considered appropriate

Table 7.6.1 Classification of sensitivity

Classification	Definition	Example Receptors
High	The receptor has little ability to absorb change without fundamentally altering its character, is of high environmental value, or of international importance.	Main Rivers SSSI or SAC GWDTEs that are highly dependent on groundwater and local infiltration Private water supplies or private abstractions that supply more than 25 people or 100 livestock Principal aquifers Active floodplain that protects residential properties Deep peat (>30cm thick), including the hydrology thereof
Medium	The receptor has moderate capacity to absorb change without significantly altering its character, has some environmental value, or is of regional or national importance.	Active floodplain protecting industrial properties Construction workers GWDTEs which are moderately dependent on groundwater and local infiltration. Private water abstractions supplying less than 25 people or 100 livestock. Secondary aquifers Wider catchment area of a SSSI or SAC Peaty soils (<30cm thick), including the hydrology thereof
Low	The receptor has high capacity to absorb change without significantly altering its character, has low environmental value, or is of local importance.	Active floodplain in a low risk flood zone GWDTEs that are moderately dependent on groundwater but independent of local infiltration Groundwater that is of low quality or permeability and unexploited. Mineral soils

Magnitude of Change

- 7.6.58 The potential changes brought about by the Proposed Development are identified and classified according to their magnitude of change. These changes are adverse unless specifically labelled as being beneficial. The categories of the magnitude of change are defined below.

Table 7.6.2 Classification of magnitude of change

Classification	Example definitions
Large	Activities result in a major pollution release (Category 1) or create / remove a pollutant linkage with a substantial pollutant source.

Classification	Example definitions
	The Proposed Development could result in a significant change in terms of flooding, surface water drainage, hydrology, hydromorphology, water quality, hydrogeology, soils, peat or other ground conditions which will cause irreversible or long term (over 10 years) changes to the receptor.
Medium	Activities result in a moderate pollution release (Category 2) or create / remove a pollutant linkage with moderate pollutant source. The Proposed Development could result in moderate changes to flooding, surface water drainage, hydrology, hydromorphology, water quality, hydrogeology, soils, peat or other ground conditions, which will recover over a medium period of time (5 to 10 years).
Small	Activities result in a minor pollution release (Category 3) or create / remove a pollutant linkage with a minor pollutant source. Temporary pathway or receptor is introduced or removed during construction phase. The Proposed Development could result in a slight change in terms of flooding, surface water drainage, hydrology, hydromorphology, water quality, hydrogeology, soils, peat or other ground conditions in the short term (1 to 5 years). Conditions will recover within a short period of time (1 to 5 years).
Negligible	There would be no perceptible changes.

Significance

- 7.6.59 The predicted significance of the effect was determined through a standard method of assessment based on professional judgement, considering both sensitivity and magnitude of change as detailed below. Major and moderate effects are considered significant in the context of the EIA Regulations.

Table 7.6.3 Matrix for assessment of significance of effects

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

Approach to Mitigation

- 7.6.60 Embedded mitigation will include:
- The FCA and Outline Sustainable Drainage Strategy;
 - The Outline SMP, PMP and PLHRA;
 - An Outline Borrow Pit Restoration Plan;

- As part of the detailed post consent, pre-construction design, the findings of the Desk Study will inform a suitable environmental and geotechnical site investigation will be undertaken in accordance with current best practice including BS5930 , BS10175 and Eurocode 7 which will inform, if required, a site remediation strategy, slope stability assessments, mine stabilisation requirements and piling risk assessments where appropriate.
- If required, a Foundation Works Risk Assessment will be undertaken for permanent ground-based infrastructure to understand potential impacts on hydrogeology including GWDTEs and PWSs (where it has not been possible to avoid these through design). Where required, this will include suitable mitigation measures to minimise potential effects.
- The construction of the Proposed Development will be managed by use of the CEMP. This document will set out the requirements of all contractors working on the Proposed Development in adhering to environmental statutory requirements, guidance and best practice. The CEMP will include the following measures:
 - Management of surface water during the construction phase, including attenuation and settlement of surface water to reduce silt loads entering waterbodies;
 - Proper storage and use of oils, fuels and construction chemicals;
 - Provision of Site-worker accommodation and sanitation facilities;
 - A construction phase surface water management plan; and,
 - Management and removal of waste materials.
- Works within or in close proximity to watercourses will be undertaken in accordance with relevant consents/ permits including Ordinary Watercourse Consent/ Flood Risk Activity Permit.

Summary of Scope

7.6.61 A summary of the scope is included in Table 7.3. below.

Table 7.6.4: Summary of Scope

Receptor	Impact	Geographical Scope	Scoped in or out
Construction Phase			
Main Rivers Ordinary watercourses Aquifers GWDTEs & PWSs	Impact on water quality (leaks, spills, silt etc.) Potential impact from contaminated land and/or landfills	Study Area. Downstream 1km buffer.	In
Main Rivers Ordinary watercourses Aquifers GWDTEs & PWSs	Alteration to hydrology, hydrogeomorphology	Study Area Downstream 1km buffer.	In
Main Rivers Ordinary watercourses Property in Flood Zones 2 & 3	Alteration to drainage and flood risk	Study Area Downstream 1km buffer.	In
Aquifers, GWDTEs, PWSs	Alteration to groundwater behaviour	Study Area. Downstream 750m buffer for PWS with surface water supply.	In
Proposed Development Other on Site infrastructure and property. Property and site users downslope	Alteration to land stability/ coal mining instability risk	Study Area.	In
Peat and soil resource	Direct impact to soils and peat. Impact to soil and peat hydrology. Impact to associated habitat Potential impact from contaminated land and/or landfills	Study Area	In

Receptor	Impact	Geographical Scope	Scoped in or out
Site users. Proposed Development Wider environment (aquifers, watercourses, ecosystems)	Disturbance of/ alteration to contaminated soils and groundwater. Potential impact from contaminated land and/or landfills	Study area	In
Operational Phase			
Main Rivers Ordinary watercourses Aquifers GWDTEs & PWSs	Impact on water quality (leaks, spills, silt etc.)	Study Area. Downstream 1km buffer.	Out. Good practice in operational and maintenance activities safeguards against this impact.
Main Rivers Ordinary watercourses Property in Flood Zones 2 & 3	Alteration to drainage and flood risk addressed by design and construction in Construction Phase	Study Area Downstream 1km buffer.	Out.
Aquifers, GWDTEs and PWSs	Alteration to groundwater behaviour	Study Area. Downstream 750m buffer for PWS with surface water supply.	In
Mineral reserves	Sterilisation of reserves	Study Area	In.
Proposed Development Other on Site infrastructure and property. Property and site users downslope	Alteration to land stability/ coal mining instability risk	Study Area.	In
Peat and soil resource	Ongoing impact to soil and peat hydrology. Impact to associated habitat	Study Area	In
Decommissioning Phase			
Scoped out.			

Consultees

7.6.62 The main consultees which will be consulted throughout the development of the proposals are detailed below:

- NRW
- Soil, Peat, Agriculture and Land Use Planning Unit, Welsh Government.
- Rhondda Cynon Taf County Borough Council Contaminated Land Officer
- Rhondda Cynon Taf County Borough Council in their role as Lead Local Flood Authority

Questions for Consultees

1. Do consultees consider the study areas appropriate?
2. Are there any other relevant consultees who should be consulted about this topic?
3. Are consultees aware of any other supplementary guidance of relevance to assessment of effects to historic assets?
4. Is the approach to the assessment of effects, including those effects scoped in and out and the cumulative assessment, appropriate?
5. Are consultees content with the proposed approach to scope out the topics from ES, which are presented in the "Summary of Scope" presented in this chapter.

7.7 Noise and Vibration

Introduction

7.7.1 This chapter considers the likely significant effects associated with noise and vibration during the construction, operation and decommissioning phases of the Proposed Development.

7.7.2 The assessment of effects on noise and vibration will be undertaken by Mott MacDonald.

Design Considerations and Input to date

7.7.3 Significant effects upon noise and vibration sensitive receptors will be avoided or minimised where possible as part of the design process. The following design principles have already been embedded into the design to date:

- Selection of turbines with low noise emissions; and

- Siting and orientation of plant and equipment (i.e. battery storage compound) to maximise distance and screening effects.

7.7.4 The following design considerations will be given as part of this process:

- Construction mitigation measures required to prevent significant adverse effects and minimise adverse impacts due to noise and vibration; and
- Measures to reduce operational noise from proposed wind turbines during operation (e.g. type, location, operating modes).

Current Baseline Conditions

Study Area

- 7.7.5 In accordance with BS5228-1 guidance¹⁰⁹, the study area for construction noise impacts is 300 m from construction works areas, including but not exclusively wind turbine locations, battery storage compounds, grid connections, haul roads and construction compounds.
- 7.7.6 The study area for construction vibration impacts will include all sensitive receptors within 100 m of construction activities which have the potential to generate high vibration levels. Empirical data from BS5228-2¹¹⁰ indicates vibration from construction activities beyond this distance is unlikely to result in significant adverse effects in terms of disturbance to building occupants or cosmetic or structural damage to buildings and structures.
- 7.7.7 In accordance with DMRB LA111 'Noise and Vibration'¹¹¹ assessment of construction traffic noise will consider noise sensitive receptors within 50m of the closest kerb line of construction traffic routes using the public highway with the potential to change the Basic Noise Level (BNL) by 1dB or more due to construction traffic.

¹⁰⁹ British Standards Institution (2009+A1:2014) BS 5228 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise'.

¹¹⁰ British Standards Institution (2009+A1:2014) BS 5228 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration'.

¹¹¹ Highways England et al (2020) Design Manual for Roads and Bridges LA 111 'Noise and Vibration' Revision 2

- 7.7.8 Guidance from ETSU-R-97¹¹² and the IOA GPG¹¹³ states the study area for background noise surveys and noise assessment for wind turbines should, as a minimum, be the area within which noise levels from the proposed, consented and existing wind turbine(s) may exceed 35 dB L_{A90} at up to 10 m/s wind speed.
- 7.7.9 For operational noise, cumulative wind turbine sites (including individual turbines) have been considered within an area 5 km from the Proposed Development site boundary. There are a number of existing and planned wind farm developments this area which are summarised in **Table 7.7.1** and shown in **Figure 7.7.1**.

Table 7.7.1: Cumulative Wind Turbine Sites

Name	Status	WT Number and Type	Description
Ferndale	Operational	8 x WTs Enercon E48/800	Approximately 1.5 km south of the nearest Proposed Development WT.
Maerdy	Operational	8 x WTs Vestas V90-3MW	Approximately 1 km west of the nearest Proposed Development WT.
Mynydd Bwlfa	Operational	9 x WTs Vestas V90-3MW	Approximately 0.8 km west of the nearest Proposed Development WT.
Pen-y-Cymoedd	Operational	18 x WTs Simens SWT-3.0-108	Approximately 2.5 km northwest of the nearest Proposed Development WT.
Abergorki	Consented	3 x WTs Vestas V117-4.2MW	Approximately 1 km southwest of the nearest Proposed Development WT.

- 7.7.10 Noise impacts from all other new noise sources during operation (e.g. battery storage and onsite substation) will be assessed at selected locations representative of the closest affected receptors to new noise sources. Locations will be selected within an area up to 1 km from new noise sources. Beyond this distance noise impacts are unlikely to result in significant adverse effects.

¹¹² Department of Trade and Industry (1996) ETSU-R-97 'The Assessment & Rating of Noise from Wind Farms'.

¹¹³ Institute of Acoustics (2013) 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise'.

Sensitive Receptors

- 7.7.11 Noise and vibration effects of the Proposed Development are considered on people and communities. Sensitive receptors within the study area primarily include residential dwellings however also include relevant non-residential receptors (e.g. schools and community facilities).
- 7.7.12 Sensitive receptors include:
- Villages and communities in the areas surrounding the Proposed Development such as Maerdy, Blaenllechau, Cwmaman, Godreman, Aberaman, Aberdare, Gadlys and Cwmdare.
 - Isolated properties in the areas surrounding the Proposed Development.
- 7.7.13 Noise and vibration effects on ecological receptors are considered within **Ecology** and **Ornithology**.
- 7.7.14 There are no statutory or non-statutory designations relevant to noise and vibration associated with the Proposed Development.

Baseline Conditions

- 7.7.15 No noise measurements have been undertaken to date to determine baseline noise conditions. Noise measurements will be required to determine representative ambient and background noise levels for assessment purposes.
- 7.7.16 The Proposed Development site is located in a predominantly rural area including agricultural land and wooded areas. Existing ambient noise sources include local road traffic, commercial/agricultural activities, noise from existing wind farm developments and other environmental sources (e.g. birdsong and noise from wind in trees).

Proposed Assessment and Methodologies

Legislation and Guidance

- 7.7.17 The Proposed Development will be prepared in accordance with current best practice within the industry. The following will inform the approach to the design and assessment of the Proposed Development

Legislation

- The Environmental Noise (Wales) Regulations 2006¹¹⁴
- Land Compensation Act 1973¹¹⁵
- Noise Insulation Regulations 1975¹¹⁶
- Well-being of Future Generations (Wales) Act 2015¹¹⁷
- Control of Pollution Act 1974¹¹⁸
- The Environment (Wales) Act 2016¹¹⁹

National and Local Policy

- Future Wales – the National Plan (2021)¹²⁰
- Planning Policy Wales, Edition 12 (2024)¹²¹
- Noise and Soundscape Plan for Wales 2023 – 2028 (2023)¹²²
- Rhondda Cynon Taf County Council, SPG (2011)¹²³

Proposed Assessment Methodologies

- 7.7.18 The following standards and guidance documents specific to noise and vibration have been considered and inform the methodology and significance criteria for assessment of noise and vibration impacts due to construction and operation of the Proposed Development.

¹¹⁴Her Majesty's Stationery Office (2018). *The Environmental Noise (Wales) (Amendment) Regulations 2018*

¹¹⁵Her Majesty's Stationery Office (1973). *Land Compensation Act*.

¹¹⁶Her Majesty's Stationery Office (1988). *Noise Insulation Regulations*.

¹¹⁷Her Majesty's Stationery Office (2015), *Well-being of Future Generations (Wales) Act 2015*

¹¹⁸Her Majesty's Stationery Office (1974), *Control of Pollution Act*.

¹¹⁹Her Majesty's Stationery Office (2016), *The Environment (Wales) Act 2016*.

¹²⁰ [Future Wales: the national plan 2040 | GOV.WALES](#)

¹²¹Welsh Government (2024), Planning Policy Wales Edition 12. Available at: [Planning Policy Wales - Edition 12](#)

¹²² Welsh Government (2023), *Noise and Soundscape Plan for Wales 2023-2028*. Available at: [Noise and Soundscape Plan for Wales 2023 to 2028](#)

¹²³ Rhondda Cynon Taf County Council (2011), *SPG LDP*. Available at: [Supplementary Planning Guidance | Rhondda Cynon Taf County Borough Council](#)

Guidance and Standards

- TAN 11: Noise (Welsh Government, 1997)¹²⁴
- Designing for Renewable Energy in Wales (Design Commission for Wales, 2023)¹²⁵
- Pre-Assessed Areas for Wind Energy identified in Future Wales, 2017¹²⁶
- The Assessment and Rating of Noise from Wind Farms (ETSU-R-97) (Department of Trade and Industry, 1996)¹²⁷
- A good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise (IOA GPG) (Institute of Acoustics)¹²⁸
- BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound (The British Standards Institution, 2019)¹²⁹
- BS 7445-2:1991 Description and measurement of environmental noise – Part 2: Guide to the Acquisition of Data Pertinent to Land Use (The British Standards Institution, 1991)¹³⁰
- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (The British Standards Institution, 2014)¹³¹

¹²⁴ Welsh Government (1997), *TAN 11: Noise*.

¹²⁵ Design Commission for Wales (2023), *Designing for Renewable Energy in Wales*.

¹²⁶ Pre-Assessed Areas for Wind Energy identified in Future Wales, 2017

¹²⁷ Department of Trade and Industry (1996), *The Assessment and Rating of Noise from Wind Farms (ETSU-R-97)*.

¹²⁸ Institute of Acoustics (2013), *A good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise*.

¹²⁹ The British Standards Institution (2019), *BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound*.

¹³⁰ The British Standards Institution (1991), *BS 7445-2:1991 Description and measurement of environmental noise – Part 2: Guide to the Acquisition of Data Pertinent to Land Use*

¹³¹ The British Standards Institution (2014), *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*

- BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration (The British Standards Institution, 2014)¹³²
- ISO 9613-2:1996 Acoustics. Attenuation of sound during propagation outdoors – Part 2: General method of calculation¹³³
- DMRB LA111: Noise and Vibration (DMRB, 2020) ¹³⁴

Key Issues and Potential Likely Significant Effects

7.7.19 The below sections set out the key issues which relate to noise and vibration. It includes whether the potential effects are proposed to be scoped in or scoped out of the assessment for the construction, operational and decommissioning phase of the Proposed Development, as well the basis for these judgements.

Construction Phase

7.7.20 During construction, works have the potential to alter the noise and vibration baseline for sensitive receptors for a temporary period during the programme of construction activities. Adverse impacts and potential significant adverse effects are likely to be restricted to locations relatively close to the physical works associated with the Proposed Development. However, adverse impacts also have the potential to occur at locations adjacent associated activities such as construction traffic routes and construction compounds.

Operational Phase

7.7.21 New noise sources during operation of the Proposed Development include wind turbines, battery storage and the substation. New noise sources have the potential to result in changes to baseline noise conditions at noise sensitive receptors. Significant adverse effects have the potential to occur at sensitive receptors which are located near to new noise sources. Significant adverse effects have the potential to occur due to the cumulative effect of noise from existing and proposed wind turbines.

¹³² The British Standards Institution (2014), BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration

¹³³ International Organization for Standardization (1996), ISO 9613-2:1996 Acoustics. Attenuation of sound during propagation outdoors – Part 2: Engineering method for the prediction of sound pressure levels outdoors

¹³⁴ Highways England (2020), The Design Manual for Roads and Bridges LA 111: Noise and Vibration, Revision 2

- 7.7.22 The Proposed Development does not include any significant sources of vibration. Operational Vibration is scoped out from assessment.
- 7.7.23 The Proposed Development is not expected to result in significant increases or changes in road traffic during operation as there would only be occasional maintenance vehicles. Operational road traffic noise is scoped out from assessment.

Decommissioning Phase

- 7.7.24 Decommissioning is considered to result in similar potential significant effects to construction, although the magnitude of the impact is likely to be lower. This is based on the access tracks and hardstanding's likely remaining in situ so there will be no impacts associated with their removal. If, following the application of the DEMP, there remains the potential for significant adverse effects, these will be assessed in the ES.

Assessment Methodology

- 7.7.25 The anticipated scope of works and methodology required to accompany the EIA and produce the ES chapter is outlined below.
- 7.7.26 Significance criteria have been selected based on key policy and guidance for relevant aspects. In all cases where impacts have the potential to result in a significant adverse effect professional judgement is used to determine the final significance accounting for the Site context and other relevant factors (e.g. the specific location of sensitive receptors/facades, the extent of exceedance of relevant thresholds, absolute noise levels, changes in the acoustic context, and non-acoustic factors).

Determination of the Baseline

- 7.7.27 A baseline noise monitoring survey will be undertaken to determine existing ambient and background sound levels at the nearest noise sensitive receptors for consideration within the construction and operational noise assessments.
- 7.7.28 The baseline noise surveys would be conducted, and data processed in a way which is consistent with requirements of relevant assessment methodologies including: ETSU-R-97, IOA GPG, BS 4142:2014+A1:2019, BS 5228-1:2009+A1:2014 and BS 7445-2:1991.
- 7.7.29 Wind speed, wind direction and rainfall data will also be recorded during noise measurement surveys. Weather data will be recorded and analysis completed in accordance with ETSU-R-97 and IOA GPG guidance. Specific details of methodology for recording weather information will be agreed with the local planning authority prior to undertaking measurements.
- 7.7.30 Measurement locations will be selected to be representative of the nearest noise sensitive receptor locations to the Proposed Development. In order to identify

measurement locations for assessment of wind turbine noise, preliminary calculations have been undertaken based on the proposed turbine layout, worst case candidate turbine information and information available relating to relevant cumulative wind farm sites (summarised in **Table 7.7.1**).

7.7.31 Preliminary calculations follow the guidance of ETSU-R-97, the IOA GPG and apply the procedures of the ISO 9613-2 (1996) standard implemented with DataKustik CadnaA software version 2025 and are based on worst case assumptions for the purpose of identifying noise measurement locations. The assumptions of noise calculations are:

- Hub Height of 149m and sound power level of 112 dB(A), based on a 6.2MW power output per turbine;
- Ground absorption factor of $G = 0.5$;
- Topography data, barrier attenuation and concave ground profile correction are excluded;
- A calculation uncertainty correction of +2 dB has been applied to the wind turbine sound power levels data;
- A correction of -2 dB has been applied to convert L_{Aeq} levels to L_{A90} levels;
- Atmospheric conditions of 10°C and 70 % humidity are assumed; and
- No further upwind and downwind correction is considered.

7.7.32 Results from preliminary calculations including 35 dB $L_{A90,T}$ contour lines are shown in **Figure 7.7.1**.

7.7.33 Based on preliminary calculation results proposed measurement locations are shown in **Figure 7.7.2** and summarised in **Table 7.7.2**. These measurement locations may be subject to amendment as the scheme evolves, or if proposed measurement locations are unavailable or unsuitable.

Table 7.7.2: Proposed Noise Measurement Locations

ID	Location	Description
ML1	Maerdy Farm, Maerdy	Isolated residential receptor, located at the south of the development boundary
ML2	Park Place, Maerdy	Representative residential area at the south of the development boundary
ML3	Aberdare Road, Blaenllechau	Isolated residential receptor located at the southeast of the development boundary
ML4	Forest Lodge, Cwmaman	Representative residential area at the east of the development boundary of Glynhafod Street and Glanrhyd Street
ML5	Blaengwawr Farm, Aberaman	Isolated residential receptor, located at the northeast of the development boundary

ID	Location	Description
ML6	Llwyn Helyg Farm, Aberdare	Isolated residential receptor, located at the north of the development boundary
ML7	Bwllfa Farm, Cwmdare	Isolated residential receptor, located at the northwest of the development boundary
ML8	Cwmneol Lodge, Cwmanan	Representative residential area at the east of the development boundary of Treneol Street and Fforchneol Row
ML9	Tonllwyd Farm, Godreaman	Isolated residential receptor, located at the northeast of the development boundary
ML10	School House, Ferndle Community School, Maerdy	Representative residential area at the east of the development boundary of Glynhafod Street and Glanrhyd Street

Prediction Methodology

- 7.7.34 This section outlines the methodology adopted to assess potential environmental impacts associated with the Proposed Development during the construction, operational and decommissioning phases. The assessment will include predictions of construction noise, construction vibration, and construction traffic impacts expected during the construction phase. For the operational phase, the methodology will consider noise emissions from fixed plant installations and wind turbines. Each aspect will be evaluated in accordance with relevant standards and guidance.

Construction Phase

Construction Noise

- 7.7.35 The assessment of noise from construction activity, including borrow pit working, will be carried out at the closest noise sensitive receptors using BS 5228-1:2009+A1:2014 methodology and guidance and will encompass all relevant construction activities. Construction noise impacts will be assessed over the proposed programme of works for relevant daily working periods in accordance with BS 5228 guidance. Evaluation of predicted construction noise levels will follow BS 5228-1 Annex E.3.3 Example method 2. BS 5228-2 Annex I includes guidance on air overpressure due to blasting and provides indicative sound pressure levels at which damage to property may occur. The control of air overpressure (and ground-borne vibration) due to blasting is typically set out within a blasting management plan prepared by the blasting contractor based on their working method.
- 7.7.36 An adverse effect arises when the total noise (baseline plus construction noise) exceeds the baseline by 5dB or more and the lower cut-off value from site noise alone is exceeded (as described in BS5228-1 Section E3.3).

7.7.37 A significant adverse effect due to construction noise arises when all three of the following criteria are met:

- Predicted construction noise $L_{Aeq,T}$ exceeds the thresholds* shown in **Table 7.7.3** which originates from BS 5228-1 Table E.2.

Table 7.7.3: Summary of construction noise thresholds

Time of Day	Threshold	Assessment Period
Daytime	75dB $L_{Aeq,T}$ Façade (72dB $L_{Aeq,T}$ Free field)	07:00 to 19:00 weekdays, 07:00 to 13:00 Saturdays
Evening	65dB $L_{Aeq,T}$ Façade (62dB $L_{Aeq,T}$ Free field)	19:00 to 23:00 weekdays, 13:00 to 19:00 Saturdays, 07:00 to 19:00 Sundays
Night-time	55dB $L_{Aeq,T}$ Façade (52dB $L_{Aeq,T}$ Free field)	Any 1 hour 23:00 to 07:00 weekdays and from 19:00 to 07:00 Saturdays and Sundays

- Construction noise added to pre-construction ambient noise level is at least 5dB higher than pre-construction ambient noise level (i.e. 5dB change with construction).
- Duration of noise generating works is 10 or more days in any 15 consecutive days or a total number of days exceeding 40 in any 6 consecutive months.

Construction Vibration

7.7.38 The assessment of construction vibration would be undertaken using BS 5228-2:2009+A1:2019 methodology and guidance. Construction vibration impacts will be assessed for relevant activities which have the potential to generate high levels of vibration (e.g. ground works, vibratory roller, etc.). Predicted construction vibration levels will be compared with values of human perception to vibration in residential environments described in BS 5228-2 Table B.1.

7.7.39 An adverse effect due to construction vibration arises when vibration exceeds 0.3mm/s PPV (Peak Particle Velocity) at the receptor location.

7.7.40 A significant adverse effect due to construction vibration is identified where vibration is predicted to exceed 1.0mm/s PPV for a duration exceeding 10 or more days or nights in any 15 consecutive days or nights; or a total number of days exceeding 40 in any six consecutive months.

Construction Traffic Noise

7.7.41 The assessment of noise due to construction traffic using the wider road network will be undertaken in accordance with DMRB LA111 at relevant receptors using a comparative approach of Basic Noise Levels (BNL) values.

- 7.7.42 The DMRB LA111 'Noise and Vibration' describes a methodology for the assessment of highways projects in the UK and best reflects EIA methodology as applied to highways. The assessment of construction traffic will be carried out using DMRB LA111.
- 7.7.43 An adverse effect arises when the Basic Noise Level (BNL) of closest public road to relevant receptors increases due to construction traffic by 3dB or more.
- 7.7.44 A significant adverse effect arises when the BNL of closest public road to relevant receptors increases due to construction traffic by 3dB or more for a period of 10 or more days in any 15 consecutive days or for 40 days in any consecutive six months.

Operational Phase

Noise from Fixed Plant

- 7.7.45 The assessment of operational noise from fixed plant items (i.e. battery storage and onsite substation) will be carried out at receptor locations representative of the nearest noise sensitive receptors using BS 4142:2014+A1:2019 methodology and criteria. Noise predictions will be undertaken to determine the level of noise from the Proposed Development during operation at the nearest sensitive receptors. The difference between the rating level (equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location plus any adjustment for the characteristic features of the sound) and the representative background noise level to determine the magnitude of impact and significance of effects:
- A potentially significant adverse effect arises when there is a difference of +10dB or more, depending on the context.
 - A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
 - The lower the rating level is relative to the background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

Wind Turbine Noise

- 7.7.46 The assessment of operational noise from the proposed wind turbines will be carried out in accordance with methodology and guidance of ETSU-R-97 and the IOA GPG.
- 7.7.47 Noise limits will be established using ETSU-R-97 guidance at the nearest sensitive receptor locations which are applicable to the cumulative operation of all wind turbines (proposed, existing and planned) in the surrounding area. Limits will be based on background noise measurement data over a range of wind speeds for receptors which are likely to exceed the ETSU lower fixed limit due to the Proposed Development.

- 7.7.48 Calculations will be undertaken to determine noise levels during operation of the Proposed Development and cumulative sites at sensitive receptor locations. Exceedance of noise limits is assessed to be a potential significant adverse effect.
- 7.7.49 Mitigation measures will be considered to prevent significant adverse effects and minimise adverse impacts where reasonably practicable. Final significance will be determined based on additional factors such as the degree of exceedance and absolute noise levels.
- 7.7.50 The IOA GPG guidance will be used to determine site specific noise limits taking into account the contribution from cumulative wind turbine sites.
- 7.7.51 It is noted that the Department for Energy Security & Net Zero (DESNZ) commenced consultation in July 2025 on proposed updates to technical guidance for the assessment of noise from onshore wind turbines¹³⁵. It is expected this consultation will result in updated guidance that will replace ETSU-R-97. Assessment methodology will be amended to account for this new guidance if published prior to submission of the ES.

Approach to Mitigation

- 7.7.52 The approach to mitigation will be guided by industry common practice and appropriate procedures as laid out in the relevant guidance standards and guidance documents.
- 7.7.53 Mitigation measures for construction noise and vibration impacts would be incorporated within the CEMP for implementation during works by the contractor. Measures to prevent and minimise adverse impacts would include the application of best practicable means (BPM). Measures would be developed that could include the following:
- The use of acoustic screening around construction working areas or compounds;
 - Restrictions of construction working hours to avoid more sensitive time periods including evenings, night-times or weekends;
 - Measures to mitigate noise and vibration to include good practice and the application of BPM as defined by the Control of Pollution Act 1974 and described by BS 5228;
 - The selection of quiet and low vibration equipment; and

¹³⁵ Available at: [Assessment and rating of wind turbine noise guidance: proposed updates - GOV.UK](#)

- Altering construction methodology to avoid high impact activities where practicable.

7.7.54 Mitigation measures for operational noise will be reviewed with the aim to prevent significant adverse effects and minimise adverse noise effects where reasonably practicable. Measures would be developed which could include:

- Selection of low noise generating wind turbines, plant and equipment;
- Use of reduced noise operational modes for proposed wind turbines;
- Implementation of noise reduction to specific plant items (e.g. attenuators or enclosures);
- Siting and orientation of plant such to maximise distance and screening effects; and
- Provision of acoustic barriers or bunds for battery storage and substation equipment.

Summary of Scope

7.7.55 A summary of the scope is included in **Table 7.3.** below:

Table 7.7.4: Summary of Scope

Receptor	Impact	Geographical Scope	Scoped in or out
Construction Phase			
Human receptors (dwellings, other sensitive receptors)	Construction Noise	Study Area 300 m from construction works	In
Human receptors (dwellings, other sensitive receptors)	Construction Vibration	Study Area 100 m from construction works	In
Human receptors (dwellings, other sensitive receptors)	Construction Traffic	Noise sensitive receptors within 50m of the closest kerb line of construction traffic routes using the public highway	In
Operational Phase			

Receptor	Impact	Geographical Scope	Scoped in or out
Human receptors (dwellings)	Operational Noise	Study Area as defined by ETSU-R-97 and IOA GPG for noise from wind turbines Study Area up to 1 km from other operational noise sources.	In
Human receptors (dwellings)	Operational Vibration	N/A	Out
Human receptors (dwellings, other sensitive receptors)	Operational Traffic	N/A	Out
Decommissioning Phase			
Human receptors (dwellings, other sensitive receptors)	Decommissioning Noise and Vibration	N/A	Out

Consultees

7.7.56 Rhondda Cynon Taf County Borough Council will be the main consultees which will be consulted throughout the development of the proposals.

Questions for Consultees

1. Do consultees consider the study areas appropriate?
2. Do consultees consider the proposed baseline noise measurement locations and methodology suitable?
3. Are there any other relevant consultees who should be consulted about this topic?
4. Is the approach to the assessment of effects, including cumulative assessment, appropriate?
5. Are consultees content with the proposed approach to scope out the topics from ES, which are presented in the "Summary of Scope" presented in this chapter.

7.8 Transport and Access

Introduction

- 7.8.1 This chapter considers the likely significant effects associated with Transport and Access during the construction, operation and decommissioning phases of the Proposed Development.
- 7.8.2 The assessment of effects on Traffic and Transport will be undertaken by Pell Frischmann.

Current Baseline Conditions

Site and its Immediate Surroundings

- 7.8.3 The Site is located within a forested area 2km south of Aberdare and north of Maerdy and Ferndale in the South Wales Valley within the Rhondda Cynon Taf Local Authority boundary. The forest is managed for timber production, recreation and wildlife.

Proposed Study Area

- 7.8.4 The proposed Study Area is based on those roads that are expected to experience increased traffic flows associated with the Proposed Development. The geographic scope was determined through a review of the other developments in the area, Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.
- 7.8.5 The proposed extents of the Study Area would be as follows:
- A465 between Neath and Merthyr Tydfil;
 - A4061 from the A4061 / A4059 interchange for 3km;
 - Unnamed road off the A4061 to Site; and
 - Rhigos Mountain Road from the A4061 roundabout to the site access junction
- 7.8.6 It is currently anticipated that construction traffic access for the Proposed Development will be taken from the Rhigos Mountain Road, potentially using the Pen y Cymoedd Wind Farm. Loads will then proceed to the proposed turbine locations using upgraded forestry, wind farm and new access tracks.
- 7.8.7 It is expected that Abnormal Indivisible Loads (AIL) for turbine components may use the same access route to enter the site. A detailed Route Survey Report will support the application and will identify the necessary access improvements that will be required to enable loads to access the Site (from Swansea Docks to site via the A483, M4 and A465).

- 7.8.8 Locally sourced material will be used where feasible, and traffic will avoid impacting on local communities as far as is possible.

Information Sources

- 7.8.9 Information sources that have been utilised to establish current baseline conditions include:

- DataMapWales¹³⁶;
- Crashmap¹³⁷;
- Rhondda Cynon Taf PRow Map¹³⁸;
- Walk Wheel Cycle Trust Map of the National Cycle Network¹³⁹; and
- Ordnance Survey Mapping.

Proposed Sensitive Receptors

- 7.8.10 Likely sensitive receptors have been identified to be:

- Users of the road network within the study area;
- Residents and businesses within the study area;
- Users of PRow within the study area; and
- Users of the Registered Common Land, Open Country Land and Other Statutory Access Land in relation to the Countryside and Rights of Way (CROW) Act 2000 within the study area: walkers, cyclists and horse riders.

¹³⁶ Welsh Government DataMapWales. Available at: <https://datamap.gov.wales>

¹³⁷ Crashmap. Available at: <https://www.crashmap.co.uk/>

¹³⁸ Rhondda Cynon Taf County Borough Council. PRow Interactive Map. Available at: <https://www.rctcbc.gov.uk/EN/Resident/PlanningandBuildingControl/Countryside/PublicRightsofWay/PublicRightsofWayMap.aspx>

¹³⁹ Walk, Wheel, Cycle Trust Interactive Map. Available at: <https://explore.osmaps.com/?lat=51.9168&lon=-4.20535&zoom=10.2128&overlays=os-ncn-layer&style=Standard&type=2d>

Proposed Assessment and Methodologies

Legislation and Guidance

7.8.11 The Proposed Development will be prepared in accordance with current best practice within the industry. The following will inform the approach to the design and assessment of the Proposed Development:

- *Environmental Assessment of Traffic and Movement (Institute of Environmental Management and Assessment (IEMA), now known as the Institute of Sustainability and Environmental Professionals (ISEP), 2023)¹⁴⁰ ;*
- *Planning Policy Wales Technical Advice Note (TAN) 18 Transport;*
- *Pulling Together, Best Practice for Transporting Abnormal Loads in Wales; and*
- *Active Travel Act Guidance 2021¹⁴¹;*

Key Issues and Potential Likely Significant Effects

7.8.12 The below sections set out the key issues which relate to Traffic and Transport. It includes whether the potential effects are proposed to be scoped in or scoped out of the assessment for the construction, operational and decommissioning phase of the Proposed Development, as well the basis for these judgements.

Construction Phase

7.8.13 The construction phase of the Proposed Development has the potential to cause the following effects:

- Temporary changes in traffic flow along the delivery route to Site potentially causing temporary effects on residents and users of the highway network and access tracks within the forest; and
- Effects associated with the physical mitigation associated with the delivery of abnormal loads.

7.8.14 The construction phase is therefore scoped in to the assessment.

¹⁴⁰ Institute of Environmental Management and Assessment (IEMA) (2023): Environmental Assessment of Traffic and Movement. Available online at <https://www.iema.net/media/5mrnquib/iema-report-environmental-assessment-of-traffic-and-movement-rev07-july-2023.pdf>

¹⁴¹ Welsh Government. (2021). Active Travel (Wales) Act Guidance. Welsh Government.

Operational Phase

- 7.8.15 Once operational, it is envisaged that the level of traffic associated with the Proposed Development will be minimal. Regular monthly or weekly visits would be made to the wind farm for maintenance checks. The vehicles used for these visits are likely to be 4x4 vehicles and 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 be negligible and therefore no detailed assessment of the operational phase of the development is proposed.

Decommissioning Phase

- 7.8.16 The traffic generation levels associated with the decommissioning phase will be less than those associated with the development phase as some elements such as access roads will be left in place on the Site. As such, the construction phase is considered the worst-case assessment to review the impact on the Study Area. An assessment of the decommissioning phase will therefore not be undertaken, although a commitment to reviewing the impact of this phase will be made immediately prior to decommissioning works proceeding.

Assessment Methodology

- 7.8.17 The anticipated scope of works and methodology required to accompany the EIA and produce the ES chapter is outlined below:

Determination of the Baseline

- 7.8.18 The determination of the baseline will comprise of:
- A review of planning policy relevant to transport in the area;
 - A review of Personal Injury Collision data from the online resource www.crashmap.co.uk;
 - A review of Google Earth to assist in establishing any access concerns.
- 7.8.19 Baseline traffic count data will be obtained from new Automatic Traffic Count (ATC) surveys located on the A4061 and Rhigos Mountain Road. Traffic count data will be collected for a 7 day period.
- 7.8.20 National Road Traffic Forecast (NRTF) Low Traffic Growth assumptions will be used to provide a common future year baseline to coincide with the expected construction traffic peak.
- 7.8.21 Traffic accident data will be obtained from www.Crashmap.co.uk for the study network to inform the accident review for the immediate road Study Area. Five years of data will be collated for the roads within the Study Area.

Prediction Methodology

- 7.8.22 The Environmental Assessment of Traffic and Movement (IEMA, 2023) sets out a methodology for assessing potentially significant environmental effects. In accordance with this guidance, the scope of assessment will focus on:
- Potential impacts (of changes in traffic flows) on local roads and the users of those roads; and
 - Potential impacts (of changes in traffic flows) on land uses and environmental receptors fronting these roads, including the relevant occupiers and users.
- 7.8.23 The following rules taken from the guidance will 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.
- 7.8.24 Increases below these thresholds are generally considered to be insignificant given that daily variations in background traffic flow may fluctuate by this amount. Changes in traffic flow below this level predicted as a consequence of the Proposed Development 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.
- 7.8.25 The estimated traffic generation of the Proposed Development will be compared with baseline traffic flows, obtained from existing traffic survey data, in order to determine the percentage increase in traffic.
- 7.8.26 Potentially significant environmental effects will then be assessed where the thresholds are exceeded. Suitable mitigation measures will be proposed, where appropriate.
- 7.8.27 It is not anticipated that a formal Transport Assessment will be required as these are not generally considered necessary for temporary construction works. A reduced scope Transport Assessment is therefore proposed, considering road link impacts.
- 7.8.28 The effects to be considered in the assessment will be based upon percentage increases in traffic flow and reviewed against the impacts noted above.
- 7.8.29 The effects on receptors identified within the Study Area will be reviewed for the construction phase, with a peak construction period assessment undertaken. This will include a review of the maximum potential impact and therefore it is considered to provide a robust assessment of the effects of construction traffic on the local and trunk road networks.

- 7.8.30 Each turbine is likely to require between 11 and 14 abnormal loads to deliver the components to site. The components will be delivered on extendable trailers which will then be retracted to the size of a standard HGV for the return journey.
- 7.8.31 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 turbine components can be delivered to site and to identify any temporary road works which may be necessary.

Construction Phase

- 7.8.32 The assessment categories proposed to be scoped into the EIA are as follows:
- Severance;
 - Driver delay;
 - Non-motorised user delay;
 - Non-motorised user amenity;
 - Fear and intimidation;
 - Accidents and safety; and
 - Large loads.

Cumulative Assessment

- 7.8.33 The assessment will review committed developments that have publicly available traffic flows that coincide on the study area network.

Approach to Mitigation

- 7.8.34 Standard mitigation measures that are likely to be included in the assessment are:
- A Staff Travel Plan;
 - Enhanced temporary construction warning and direction signage;
 - A Framework Abnormal Load Transport Management Plan; and
 - Design of the Site access junction to ensure that approved access routes are adhered to.
- 7.8.35 Additional mitigation will be included should the assessment reveal criteria that are significant following the application of standard mitigation measures.
- 7.8.36 Site specific mitigation, based upon experience of other schemes in the surrounding area, will include:
- Production of a detailed Construction Traffic Management Plan (CTMP); and

- “Wear and Tear” Agreement to protect the public road against abnormal road damage in the Study Area;

7.8.37 Details of these measures will be detailed in the Transport Assessment

Summary of Scope

7.8.38 A summary of the scope is included in Table 7.3.2: Summary of Scope below:

Table 7.8.1: Summary of Scope

Receptor	Impact	Geographical Scope ¹⁴²	Scoped in or out
Construction Phase			
Users of the road network such as vehicle drivers and passengers, cyclists and pedestrians	Increase in HGVs and Abnormal loads	Study Area	In
Residents and businesses	Increase in HGVs and Abnormal loads	Study Area	In
Users of PRow within the study area	Increase in HGVs and Abnormal loads	Study Area	In
Users of the forest such as walkers	Increase in HGVs and Abnormal loads	Study Area	In
Operational Phase			
As per construction phase	Vehicles associated with maintenance of development	Study Area	Out
Decommissioning Phase			
As per construction phase	Increase in HGVs and Abnormal loads	Study Area	Out

¹⁴² The two broad rules of thumb within the ISEP Guidelines states that in determining the scale and extent of the environmental assessment to “include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)” and “include highway links of high sensitivity where traffic flows have increased by 10% or more”. However, these ‘criteria’ may not be appropriate for the ‘road safety’ and ‘driver delay’ categories.

Consultees

- 7.8.39 The main consultees which will be consulted throughout the development of the proposals are detailed below:
- Welsh Government (as trunk road authority); and
 - Rhondda Cynon Taf (as local authority).
- 7.8.40 Further consultation will be undertaken via the Electronic Service Delivery for Abnormal Loads (ESDAL) weight review for structures on the proposed AIL access route from Swansea to the Site via the strategic trunk road and local road networks

Questions for Consultees

- 7.8.41 Feedback is sought through this ES Transport Scoping Report as to the following:
1. Do consultees consider the study areas appropriate?
 2. Is the assessment approach and methodology appropriate?
 3. Can the consultees please confirm the committed developments that should be included in the assessment?.

7.9 Aviation

Introduction

- 7.9.1 This chapter considers the likely significant effects associated with aviation and radar during the construction and operation phases of the Proposed Development.
- 7.9.2 The assessment of effects on aviation and radar will be undertaken by Wind Power Aviation Consultants (WPAC) Ltd (note that this section for Scoping has been prepared by LUC).

Design Considerations and Input to date

- 7.9.3 WPAC prepared an initial project review in 2024. This included initial radar modelling to identify any potential radar interference issues and found that a wind farm at this location had the potential to create radar clutter and potential obscuration on radar displays. However, it was noted that technical or operational mitigation should be capable of managing any impacts.
- 7.9.4 Wind farms with tip heights in excess of 150m will need to be illuminated at the hub of selected wind turbines with medium intensity red aviation obstruction lighting. A lighting layout will be designed and agreed with the Civil Aviation Authority (CAA) which minimises the number of lit wind turbines whilst fulfilling flight safety requirements. An infra-red lighting layout to fulfil Ministry of Defence (MOD)

requirements will also be designed and approval obtained from the MOD prior to construction.

Current Baseline Conditions

- 7.9.5 The Site is located approximately 33km north west of Cardiff International Airport , 7km to the south-west of a small airstrip at Rhigos and 64km to the north-west of Bristol Airport.
- 7.9.6 The Site lies underneath Class G unregulated airspace which extends upwards to Flight Level (FL) 75 (approximately 12500ft) and is under the main airways system which runs east/west and designated as the Strumble control area (CTA). The Site is also close to the confluence of two major airways, which cross at Brecon controlled airspace, which is managed by the Brecon Beacons Air Traffic Control Centre (BCN) 15km to the north-east. The closest military unit is at MOD St Athan, 35km to the south, however Automatic Traffic Count radar services are provided from Cardiff Airport. The only other MOD facilities are the ranges at Pembrey and Manorbier, well to the west. In airspace terms, this is a very complex and busy area.
- 7.9.7 Clee Hill NATS En Route Ltd (NERL) is located approximately 100km to the northeast and will not be affected by the Proposed Development

Proposed Assessment and Methodologies

Legislation and Guidance

- 7.9.8 The aviation and radar assessment will be prepared in accordance with current best practice within the industry. The following will inform the approach to the design and assessment of the Proposed Development:
- Civil Aviation Authority (2016) *Policy and Guidance on Wind Turbines Version 6 CAP 764*;
 - Civil Aviation Authority (2022) *Licensing of Aerodromes, Version 12 CAP 168*;
 - Civil Aviation Authority (2019) *ATS Safety Requirements Version 3 CAP 670*;
 - Civil Aviation Authority (2017) *UK Flight Information Services, CAP1434*;
 - Civil Aviation Authority (2020) *Safeguarding of Aerodromes Version 3 CAP738*;
 - Civil Aviation Authority (2010) *Safe Operating Practices at Unlicensed Aerodromes Ed 1 CAP 793*;
 - Civil Aviation Authority (2025) *Manual of Air Traffic Services Part 1 Version 12 CAP 493*;
 - Civil Aviation Authority (2020) *Parachuting Ed 5 CAP660*;

- *Ministry of Defence (2022) Military Aviation Authority Regulatory Article 2330 (Low Flying) MOD;*
- *Civil Aviation Authority (2017) CAA Policy Statement: Lighting of Onshore Wind Turbine Generators in the United Kingdom with a maximum blade tip height at or in excess of 150 m Above Ground Level CAA; and*
- *Future Wales – The National Plan 2040 Policy 18.7.*

Proposed Assessment Methodologies

7.9.9 The assessment of effects in the ES will consider the following:

Non-military airfields and Aerodromes

7.9.10 The assessment of effects of the Proposed Development will be informed by the guidance laid down in CAA Publication CAP 764 Policy and Guidelines on Wind Turbines Version 6 dated February 2016¹⁴³. The following distances inform the size of the study area and include:

- Airfield with a surveillance radar – 30km;
- Within 17 km of a non-radar equipped licensed aerodrome with a runway of 1100 m or more;
- Within 5 km of a non-radar equipped licensed aerodrome with a runway of less than 1100 m;
- Licensed aerodromes where the wind turbines would lie within airspace coincidental with any published Instrument Flight Procedure (IFP);
- Within 4 km of a non-radar equipped unlicensed aerodrome with a runway of more than 800 m;
- Within 3 km of a non-radar equipped unlicensed aerodrome with a runway of less than 800 m;
- Gliding sites – 10km; and
- Other aviation activity such as parachute sites and microlight sites within 3km – in such instances developers are referred to appropriate organisations.

7.9.11 CAP 764 states that these distances are only a guide and are intended as a prompt for further discussion between developers and aviation stakeholders.

¹⁴³ <https://www.caa.co.uk/publication/download/14561>

Military Receptors

- 7.9.12 The assessment will consider the aviation and air defence activities of the MOD as safeguarded by the Defence Infrastructure Organisation (DIO). The types of issues and receptors that will be addressed in the ES include:
- Ministry of Defence Airfields, both radar and non-radar equipped;
 - Ministry of Defence Air Defence Radars;
 - Meteorological Radars; and
 - Military Low Flying.

Aviation Radar

- 7.9.13 The assessment will consider the possible effects of wind turbines upon the National Air Traffic Services En Route Ltd (NERL) communications, navigation and surveillance (CNS) systems – a network of primary and secondary radars and navigation facilities around the country.
- 7.9.14 As well as examining the technical impact of wind turbines on Air Traffic Control (ATC) facilities, the assessment will also consider the physical safeguarding of ATC operations using the criteria laid down in CAP 168 Licensing of Aerodromes to determine whether the Proposed Development will breach obstacle clearance criteria.

Key Issues and Potential Likely Significant Effects

- 7.9.15 There is no agreed definition of significance for assessing effects on aviation and radar. This is because operational and flight safety effects can be subjective and are often challenged by third parties. It is not considered to be appropriate for a wind farm developer to make an assessment of significance of an effect in relation to aviation interests. It is also often the case that different Air Navigation Service Providers (ANSP) can take a different view of the same scenario and may disagree with the assessment findings leading to the need for further consultation to confirm the findings of the assessment and/or agree to the need for and extent of mitigation.

Approach to Mitigation

- 7.9.16 The approach to mitigation will be guided by industry common practice and appropriate procedures as laid out in the relevant guidance standards and guidance documents such as CAP 764, as well as consultation with key stakeholders.
- 7.9.17 Aviation lighting will be required, as a wind farm with tip heights in excess of 150m will need to be illuminated at the hub of selected wind turbines with medium intensity red aviation obstruction lighting.

Consultees

7.9.18 The main consultees which will be consulted throughout the development of the proposals are detailed below:

- Ministry of Defence (MoD)
- National Air Traffic Services (NATS)

Questions for consultees

1. Do consultees agree with the approach to how Aviation has been scoped in to the ES?
2. Do consultees agree with the assessment of which aviation will be scoped in to the ES?
3. Are there any other relevant consultees who should be consulted about this EIA topic assessments?

8 Proposed Environmental Topics to be scoped out of ES

8.1 Topic Sections Scoped Out

- 8.1.1 The purpose of this Scoping Report is to identify the scope of the EIA, the findings of which will be presented in the ES. Therefore, certain topics and/or effects associated with a particular environmental topic may be 'scoped out' or covered using an alternative approach where significant effects are considered unlikely, based on the nature of the Proposed Development and assessment undertaken to date.
- 8.1.2 This chapter provides details of the topics and effects that are proposed to be 'scoped out' of the ES, provides information to justify this reasoning and outlines proposed alternative approaches where being considered. Additional to whole topics being scoped out there may be effects which are proposed to be scoped out within individual topics, this is outlined within the individual topic chapters.
- 8.1.3 During the course of the assessment and preparation of the ES, it may be necessary to revise and revisit the scope of the EIA as further detail on the Proposed Development, and the baseline environment emerges. Should additional information identify a need to include, or justify the removal, of topics from the scope of the ES, the justification for doing so will be clearly presented along with any supporting information. These topics are as follows:
- Telecommunications
 - Utilities
 - Shadow Flicker
 - Forestry
 - Climate Change
 - Common Land
 - Socio-Economics
 - Air Quality
 - Materials and Waste Management
 - Risk of Major Accidents and/or Disasters; and
 - Public Health and Safety

8.2 Telecommunications

- 8.2.1 Wind farm developments have the potential to impact telecommunication operations and infrastructure. There are many forms of telecommunications infrastructure in the UK. The most relevant aspect in the context of potential restrictions/mitigation requirements for wind farm developments is the presence of wireless fixed links between radio antennae and masts, which broadly fall into two categories. The first is 'microwave links', which provide high-frequency data transfer between antennae and are utilised by mobile phone operators and the emergency services to support their communications network. The second is 'Ultra High Frequency' (UHF) links, which are utilised by operators including utility companies. Wind turbines can impact on links either by blocking or diffracting existing link paths or interacting with antennas masts if a wind turbine is located too close.
- 8.2.2 It is common practice for wind developers to assess these potential impacts and, where necessary, mitigate them. Such mitigation can take the form of technical solutions associated with the links themselves and/or amendments to the wind turbine layout.
- 8.2.3 The issue of wireless telecommunication fixed links and infrastructure is one of industry best-practice more than it is one of legislation and policy. The following are the most relevant sources of best-practice guidance:
- International Telecommunications Union (1992) Assessment of impairment caused to television reception by a wind turbine, Recommendation ITU-R BT805;
 - International Telecommunications Union (2010) ITU-R BT.2142-1;
 - Bacon (2002)., A proposed method for establishing an exclusion zone around a terrestrial fixed radio link outside of which a wind turbine will cause negligible degradation of the radio link performance; and
 - Joint Radio Company (2014)., Calculation of Wind Turbine clearance zones for JRC ultra-high frequency (UHF) (460MHz) Telemetry Systems when turbine sizes and locations are accurately known – Issue 4.2.
- 8.2.4 Pager Power completed an initial Telecommunications Impact Assessment for the Site in 2023 which included consultation with the following:
- Arqiva
 - Atkins / Dwrcy Mru
 - BT
 - Cellnex
 - Joint Radio Company (JRC)
 - Mobile Broadband Network Limited (MBNL)

- MLL Telecom
- Virgin Media O2
- Spectrum Licensing
- Vodaphone

- 8.2.5 Arqiva, Atkins, BT Group, MBNL, MLL Telecom and Virgin Media O2 have confirmed they do not operate any communication links within close vicinity of the proposed development and therefore have no objections with regards to the proposed development. Cellnex and Joint Radio Company (JRC) have yet to reply.
- 8.2.6 Vodafone have provided the details of their link infrastructure in proximity to the proposed development. The turbines, as per the current turbine layout, are clear of the links by a minimum of 1220.5m and 1195.5m based on Fresnel zone calculations (Ofcom recommended methodology).
- 8.2.7 This consultation with the same operators as set out above will be repeated in late 2025 to identify if there are any new or different links which require consideration in the design of the Proposed Development. If impacts are identified that cannot be avoided, mitigation measures will therefore be required for potential effects caused by turbine locations. Therefore, significant effects upon telecommunications will be avoided or minimised as part of the design process.

Justification for scoping out

- 8.2.8 If a potential impact is identified, an assessment of the link or infrastructure will be carried out to determine whether there is an impact and its magnitude of effect. Technical link data will be used to model 2-D exclusion zones of each link and to calculate the clearance/infringement of the proposed wind development. If it cannot be established whether the Proposed Development is affecting the link using a 2-D model, a 3-D analysis can be carried out.
- 8.2.9 If wind turbines are located close to UHF telemetry links, an assessment of reflection effects will be carried out. Reflection effects occur when the transmitted signal from one link end is reflected by the wind turbine towards the other link end. This causes interference to the signal. As such, reflection calculations will be undertaken to quantify the carrier to interference ratio in accordance with the JRC's published methodology.
- 8.2.10 In the first instance the location of any wind turbines affecting links will be reviewed to ascertain whether the wind turbine can be relocated to remove the interference. Failing this, re-networking the links via existing telecommunications sites or replacing the wireless link with a leased line may need to be investigated. These options will be discussed with the relevant stakeholders and mitigation agreed.

- 8.2.11 Given that effects upon telecommunications will be avoided or minimised as part of the design process, it is proposed that this topic can be scoped out of EIA. A Telecommunications Report will be appended to the ES to set out the measures taken to avoid impacts in telecommunications infrastructure.

8.3 Utilities

Justification for Scoping out

- 8.3.1 Utilities infrastructure (water, gas and electricity) may potentially be affected by the Proposed Development either due to disturbance during construction, or in the very unlikely event of wind turbines components falling onto this infrastructure when the Proposed Development is in its operational stage. Utilities operators impose appropriate separation distances between wind turbines and infrastructure to mitigate the latter risk in particular.
- 8.3.2 A detailed review of utilities infrastructure on and adjacent to the Site will be undertaken, covering all known utilities providers. This will cover overhead power lines as well as below ground infrastructure. If below ground infrastructure is present then these will be considered as constraints to development during design evolution. To ensure that significant effects are not likely to occur, infrastructure will be designed to avoid direct contact.
- 8.3.3 If overhead electricity lines are present on Site, these will also be considered as constraints to development during design evolution, with the inclusion of an appropriate buffer. The Health and Safety Executive provides guidance on avoiding danger from overhead power lines and refers to the Energy Networks Associated (ENA) Technical Specification which sets out vertical passing clearances on sites where vehicles will pass under the lines and where work will be undertaken beneath the lines. The relevant grid operators will be consulted regarding appropriate set-back and topple distances.
- 8.3.4 Through careful design and best practice construction methods, it is considered that significant effects are not likely to occur. As such it is proposed that an assessment of potential effects on below ground utilities and overhead lines can be scoped out of the ES.

8.4 Shadow Flicker

Baseline

- 8.4.1 Shadow flicker occurs when a certain combination of conditions prevail at a certain geographical location, time of day and year. It firstly requires the sun to be at a certain level in the sky. The sun then shines onto a window of a building from behind the wind turbine rotor. As the wind turbine blades rotate, this causes the shadow of the wind

turbine to flick on and off. This may have a negative effect on the amenity of residents and occupants of affected properties. If shadow flicker cannot be avoided through design, technical mitigation solutions are available, such as shutting down wind turbines when the relevant conditions prevail.

8.4.2 In the UK, shadow flicker is only likely to occur in a building located within a distance of ten times the rotor diameter of a wind turbine and within 130 degrees either side of north. However, if a property at 10 rotor diameters is experiencing significant effects, this will be extended until no property experiences significant effects."

8.4.3 Where properties are within or close to the recommended distance a figure is produced using a combination of Windfarm Resoft and ArcGIS. This figure provides a more accurate picture as to which (if any) properties will receive shadow flicker. It takes into consideration dimensions of the turbines and topography as well as the motion of the sun throughout the year.

Justification for scoping out

8.4.4 The layout design will ensure that no residential properties will lie within the shadow flicker area. The shadow flicker effect will be calculated using Windfarm Resoft, due to complexities of modelling houses, a window of a large size pointing directly at the wind farm is assumed at each property as a worst-case scenario. The assessment will identify days per year, maximum hours, and total hours per year they are affected by shadow flicker, as well as the specific turbine(s) that are causing the shadow flicker for each property.

8.4.5 The ES will include consideration of the mitigation measures that may be applied in order to ensure that there are no significant residual effects subject to the imposition of an appropriate planning condition. This could include shutting down turbines when shadow flicker effects are predicted to occur.

8.4.6 Once the Applicant determines the candidate turbine used for assessment, and further defines the siting of these turbines, the potential shadow flicker range of the turbines will be calculated. If any residential properties fall within a distance of ten times the rotor diameter of a wind turbine and within 130 degrees either side of north, the potential shadow flicker effects will be assessed in the ES and consideration given to suitable mitigation measures, if required. Should there be several properties near each other, such as a village or hamlet, then a number of properties at these locations will be selected and assessed as representative of the shadow flicker effects that could be experienced at these locations.

8.4.7 If no properties are located within the shadow flicker range, it is proposed to scope out a shadow flicker assessment from the ES, with a robust rationale provided in the ES for scoping it out.

8.5 Forestry

Introduction

- 8.5.1 This section considers the likely effects associated with forestry during the construction, operational and decommissioning phases of the Proposed Development. Much of the Site boundary is within the afforested area that lies between Treherbert to the west and Aberdare to the east. The Forest area is part of a larger area known as Llanwynno which is managed by Natural Resources Wales (NRW) on behalf of the Welsh Government (WG) as part of the Welsh Government Woodland Estate (WGWE).
- 8.5.2 The Site boundary contains approximately 918 ha of land including approximately 227 ha of agricultural land that is privately owned and managed. Some of the areas of open agricultural land are proposed to contain wind farm infrastructure and they will be excluded from area figures given in this section of the Scoping Report.
- 8.5.3 The Forestry study area contains approximately 692 ha of forest land, as derived from the National Forest Inventory 2020¹⁴⁴ and is illustrated in Figure 8.5.1
- 8.5.4 The forest area is actively managed by NRW and includes areas managed through clear felling, continuous cover systems and areas of minimum intervention. The management objectives of NRW, as well as timber production, include diversifying the tree stock, the restoration of Ancient Woodland Sites, the protection of rare species and habitats, protecting heritage and landscape and the management and restoration of deep peat areas.
- 8.5.5 The assessment of effects on Forestry will be undertaken by ARC Woodlands Ltd and outlines the information which currently exists, as well as the baseline conditions associated with forestry in the area surrounding the Proposed Development. Forestry will include all woodland that appears in the National Forest Inventory (NFI) 2020 within the Site boundary.
- 8.5.6 In the UK, there is a strong presumption against permanent deforestation unless it can be justified by other environmental concerns.
- 8.5.7 The baseline data that is presented below consists primarily of geographic information that is available from the Welsh Governments DataMap Wales website¹⁴⁵.

¹⁴⁴ National Forest Inventory 2020. Available at: https://datamap.gov.wales/layers/geonode:nfi_wales_2020

¹⁴⁵ Datamap Wales. Available at: <https://datamap.gov.wales/>

Legislation, Guidance and Policy

- 8.5.8 The Forestry Assessment will be prepared with reference to current Industry legislation, policy, best practice and guidance, as set out below.

Legislation and Guidance

- 8.5.9 NRW regulates forestry through the Forestry Act 1967¹⁴⁶ and the Agriculture (Wales) Act¹⁴⁷ 2023 which includes provision for further conditions to be added to the existing Forestry Act 1967. The Forestry Act 1967 charges appropriate forestry authorities with promoting the interest of forestry through afforestation and the production and supply of timber products. The conditions that are provided by the Agriculture (Wales) Act 2023 give NRW further power to add environmental conditions to felling licences.
- 8.5.10 The UK Forest Standard¹⁴⁸ (UKFS) is founded upon internationally recognised principles of sustainable forest management, adapted to reflect the UK's specific environmental conditions and climate obligations. The UKFS is applied by all forestry governing bodies across the UK to evaluate forestry projects in both public and private woodlands, as well as to oversee regulatory compliance and enforcement.
- 8.5.11 Woodlands can achieve sustainable management certification through two principal organisations: the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC). The forests managed by NRW on behalf of the WG are certified under both schemes.

Policy

- 8.5.12 In Wales, national forestry policy is established by the WG through its Woodlands for Wales strategy¹⁴⁹ (Welsh Government, 2018), which is further supported by the Woodlands for Wales: action plan¹⁵⁰. The Strategy, first published in 2001, sets out a 50-year vision and was developed with reference to the Well-being of Future

¹⁴⁶ Forestry Act 1967. Available at: <https://www.gov.uk/ukpga/1967/10/contents>

¹⁴⁷ Agriculture (Wales) Act 2023. Available at: <https://www.legislation.gov.uk/asc/2023/4/contents>

¹⁴⁸ The UK Forestry Standard 5th edition. Available at: <https://www.gov.uk/government/publications/the-uk-forestry-standard>

¹⁴⁹ Woodlands for Wales: strategy. Available at: <https://www.gov.wales/woodlands-wales-strategy>

¹⁵⁰ Woodlands for Wales: action plan. Available at: <https://www.gov.wales/woodlands-wales-action-plan>

Generations Act 2015¹⁵¹ and the Environment (Wales) Act 2016¹⁵². The strategy is underpinned by four themes-

- Responding to climate change;

‘Coping with climate change and helping to reduce our carbon footprint: helping make Wales an innovative, productive, and low carbon society which recognises the limits of the global environment’

- Woodlands for People;

‘serving local needs for health, education, and jobs: enabling Wales to be a society in which peoples physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood: that enables people to fulfil their potential no matter what their background or circumstances; and that we enjoy attractive, viable, safe and well connected communities’

- A competitive and integrated forest sector; and

‘innovative, skilled industries supplying renewable products from Wales; helping Wales to develop a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work’

- Environmental quality.

‘making a positive contribution to biodiversity, landscapes and heritage, and reducing other environmental pressures; so that we are a nation which maintain and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change)’

8.5.13 In 2021, a further consultation led to the creation of the Trees and Timber Task Force¹⁵³ whose recommendations can be summarised as follows:

- Making tree planting guidance clearer and providing additional resources from the Welsh Government;

¹⁵¹ Well-being of Future Generations (Wales) Act 2015. Available at: <https://www.legislation.gov.uk/anaw/2015/2/contents>

¹⁵² Environment (Wales) Act 2016. Available at: <https://www.legislation.gov.uk/anaw/2016/3/contents>

¹⁵³ Trees and Timber Task Force: recommendations. Available at: <https://www.gov.wales/trees-and-timber-task-force-recommendations>

- Introducing new funding streams and improving integration with the Sustainable Farm Scheme, with a more straightforward application procedure;
- Creating an Industrial timber strategy and reviewing the NRW timber strategy;
- Providing support for forestry skills and the tree nursery sector; and
- Assessing the management of existing woodlands and ways to promote improved stewardship.

8.5.14 In July 2025 the WG launched its Timber Industrial Strategy¹⁵⁴ which aims to grow the forestry and timber sectors in the following areas:

- Increasing timber supply;
- Increasing forest resilience;
- Resource efficiency;
- Creating confidence in demand for wood products; and
- Developing sector capacity.

8.5.15 National Policy identified in Planning Policy Wales¹⁵⁵ (PPW) states that Ancient Woodland Sites (AWS) are irreplaceable natural resources and should be afforded protection unless there are exceptional and clearly defined public benefits.

8.5.16 PPW also states that permanent removal of trees will only be permitted where public benefits can be defined, and it specifies that replacement planting should be carried out at a scale reflective of that tree cover lost.

Current Baseline Conditions

8.5.17 A baseline desktop survey was carried out in November 2025. The primary source of information used was a Geographic Information System (GIS) database that NRW operates to record and maintain its forest inventory. The data used in the GIS work is shown in **Table 8.5.1** below. The Woodland sub-compartment data ¹⁵⁶ (SCDB) is a live dataset that is used to support management decision making, monitoring and analysis of WG owned forests. A copy of the database is available to the public through the

¹⁵⁴ Timber Industrial Strategy. Available at: <https://www.gov.wales/timber-industrial-strategy>

¹⁵⁵ Planning Policy Wales. Available at: <https://www.gov.wales/planning-policy-wales>

¹⁵⁶ NRW Woodland sub-compartment data. Available at: https://datamap.gov.wales/layers/inspire-nrw:NRW_PRODUCTISED_SCDB_LLE

DataMapWales website. The version of the database used for this report is dated 27 November 2025. A Site survey is scheduled for Autumn 2025 to sample some of the data in key locations.

Table 8.5.1 Data for Desktop Study

Data	Source/type of data	Details
Topography	1:10,000 OS Raster Data 1:25,000 OS Raster Data	Used to understand site context and land formation
Woodland extent	National Forest Inventory 2020. National Forest Estate Wales Sub compartment data	Welsh extract of national inventory and woodland spatial information
Designated Woodland	NRW Nitrogen sensitive woodland Ancient Woodland Inventory 2021	Details and location of designated woodland within the site boundary

- 8.5.18 The forest is managed by NRW on behalf of the WG. The forest within the study area is part of the wider Llanwynno Forest and is a part of a NRW Forest Resource Plan (FRP)¹⁵⁷ that extends over 2644 ha. The tree planting that became part of the Llanwynno FRP is thought to have started in 1937 although the areas within the study area originate from the 1960's onwards. Prior to the modern plantings it is thought that the area was primarily grazing land¹⁵⁸.
- 8.5.19 The forest can be characterised as a mainly coniferous plantation forest with Sitka spruce as the dominant species with large areas of other species including areas of broadleaved trees and other conifers. **Figure 8.5.1** shows the location of the larger forest land use types. Within the forest there are large areas of permanent open ground, felled areas awaiting replanting or natural regeneration, areas that are being felled currently, areas of continuous cover management where tree canopy cover is permanently maintained and areas where trees have blown down in storm events

¹⁵⁷ Llanwynno Forest Resource Plan 2018. Available at: [Natural Resources Wales / Llanwynno Forest Resource Plan - Approved 22 August 2018](#)

¹⁵⁸ The Forestry Commission (1961) Glamorgan Forests, Forestry Commission Guide.

(Windthrow). There are also areas that the FRP indicates will be restored to open habitat.

8.5.20 Parts of the Forest study area appear on the Ancient Woodland Inventory (AWI). The AWI is a dataset that identifies the boundaries of Woodlands that are presumed to be ancient. **Figure 8.5.1** shows the extent of the AWI within the study area. The status of AWI woodlands was determined by its Authors using Ordnance Survey (OS) 1st series maps from 1880 to 1960 with cross referencing with earlier OS 1st Edition maps from 1805 and other field survey data.

8.5.21 NRW maintains a GIS dataset¹⁵⁹ that provides the locations and status of the AWS. NRW classify the woodlands as per **Table 8.5.2** below:

Table 8.5.2 Ancient Woodland Categories

Abbreviation	Definition
ASNW	Ancient Semi Natural Woodland
RAWS	Restored Ancient Woodland Site
PAWS	Plantation on Ancient Woodland Site
AWSU	Ancient Woodland of Unknown Category

Approach to Assessment

8.5.22 It is proposed that Forestry is scoped out of the EIA assessment and is presented as a factual account of the baseline and a description of the changes required from the incorporation of the Proposed Development.. This will be presented as a technical appendix to the Ecology chapter.

8.5.23 Forestry does not align well with conventional EIA frameworks as natural events such as windthrow, pest and diseases can rapidly alter the composition and structure of forests. Forest management, in response to economic forces and good forest management, regularly changes the forest through felling, thinning and replanting.

8.5.24 The adherence to the PPW requirement for replacement tree planting will mean that any trees lost permanently to the Proposed Development will be replaced leading to no net loss of forestry land.

8.5.25 A forestry baseline will be prepared from Site visits, aerial photography and GIS datasets available at the time of the ES preparation. The baseline will identify the

¹⁵⁹ Ancient Woodland Inventory 2021. Available at: https://datamap.gov.wales/layers/inspire-nrw:NRW_ANCIENT_WOODLAND_INVENTORY_2021

character of the forestry and its species, and age. The existing NRW FRP will be used to identify areas of the forest under different management types and activity zones.

- 8.5.26 A Forestry appendix will illustrate any existing or expected forest management that may occur without the Proposed Development and go on to specify where any loss or change to forestry is required to locate the Proposed Development within the forest. The ages and species of forest crops lost will be detailed also in relation to the wider forest. The appendix will also identify where replanting is possible once the Proposed Development is completed.
- 8.5.27 Indicative preliminary designs show that the very small amount of ancient woodland within the site boundary will not be impacted by the Proposed Development. Where arboricultural issues need to be addressed they will be presented as part of the Ecology chapter of the ES.

Key Issues and Potential Likely Significant Effects

- 8.5.28 The below sections set out the key issues which relate to the Proposed Development and Forestry.

Construction Phase

- 8.5.29 During the construction phase tree felling will be required to produce open areas suitable for the proposed infrastructure such as turbine foundations and crane hardstandings, the excavation of quarries, construction compounds, control building compounds and cable routes. Additional felling may be required to widen existing access roads and create new ones. The nature of the tree removal will depend on the tree cover at each location. In some cases, the locations may have very young trees which will require alternative methods of tree removal such as mulching.

Operational Phase

- 8.5.30 The operational phase will require that the areas cleared around turbine bases (key-holed areas) during construction will remain free of any subsequent natural tree growth and tree growth control. This will involve the removal of any saplings. Access roads may also need to have tree growth controlled if large replacement parts are required during maintenance operations.

Decommissioning Phase

- 8.5.31 Decommissioning is considered to result in a similar requirement for tree removal to the operational phase. New access tracks constructed for the Proposed Development are likely to remain in situ, for use by NRW in normal forest management, so there will be no impacts associated with their removal. Some tree felling/trimming may be required to remove larger components from the site.

Approach to Mitigation

- 8.5.32 The approach to mitigation will be guided by industry common practice and appropriate procedures as described in **Table 8.5.3** and **Table 8.5.4** below. Additionally, there will be forestry input into the Outline Habitat Management Plan (oHMP) which will be submitted with the planning application
- 8.5.33 The primary means of embedded mitigation is the design of felling areas to be as small as possible around individual turbine components. Assessment of the crops surrounding proposed infrastructure will indicate the best method to reduce felling and reduce the risk of windthrow. Where wider felling is necessary to avoid windthrow, replanting will take place back to the minimum required area. In some cases, it may be desirable to leave unplanted areas for habitat reasons.

Table 8.5.3: Embedded Mitigation

Mitigation Measure	Justification
Felling designed to windfirm edges and or "keyholed"	Felling to incorporate the proposed development will seek to reduce the potential effects of this felling on the wider forest by using either "keyhole" felling or felling to windfirm edges.
Placement of infrastructure in areas of forest with young trees or open space.	To reduce the amount of tree felling required.
Cable route crossing points within WG forest	Where underground cable routes pass through the forest there may be a requirement to provide crossing points for forestry harvesting equipment to ensure access can be maintained to all parts of the forest

Table 8.5.4: Additional Mitigation

Mitigation Measure	Justification
Compensatory tree planting to replace trees/woodland felled for infrastructure	PPW states that where unavoidable loss of trees occurs as part of a development then compensatory planting is required at a scale appropriate to that of the woodland lost.

Consultees

- 8.5.34 During the production of the ES, consultation with stakeholders will take place to seek information as presented in **Table 8.5.5**.
- 8.5.35 The statutory forestry consultee is NRW and the local authority will be consulted on Tree Preservation orders.

Table 8.5.5: Consultees

Topics	Consultee	Outcome
Forest management	NRW	Opinion from NRW
Protected Trees and Woodlands	Local Authority – Rhondda Cynon Taf County Borough Council	The presence of any protected trees/woodlands is confirmed with spatial data.

8.6 Socioeconomic

Introduction

- 8.6.1 This section considers the likely significant effects associated with socio-economics, tourism and recreation during the construction and operation phases of the Proposed Development.

Legislation, Guidance and Policy

Wales

- 8.6.2 The Welsh Government is committed to achieving net zero by 2050, in line with the UK target, and aims for 100% of energy consumption from renewable sources by 2035. Meeting these goals will require significant onshore wind development, with the UK estimated to need 35 GW of onshore wind capacity by 2035.
- 8.6.3 Future Wales: The National Plan 2040,¹⁶⁰ builds on the Well-being of Future Generations Act 2015.^{161, 162} It sets out a vision for sustainable growth, focusing on job creation (especially in rural areas), reducing pollution, decarbonisation, and climate resilience. These ambitions underpin policies on rural economic regeneration, natural resource use, and renewable and low-carbon energy infrastructure.
- 8.6.4 Planning Policy Wales (PPW) complements Future Wales by prioritising low-carbon objectives in decision-making. Beyond planning, Prosperity for All: A Low Carbon Wales, based on the Environment (Wales) Act 2016, outlines how Wales can transition to a low-carbon economy, delivering benefits such as clean growth, quality jobs, improved health, and environmental sustainability. Onshore wind development

¹⁶⁰ Future Wales: The National Plan 2040, Welsh Government, February 2021

¹⁶¹ Future Wales: The National Plan 2040, Welsh Government, February 2021

¹⁶² Well-being of Future Generations (Wales) Act, Welsh Government, 2015

directly supports these aims by creating high-value jobs, reducing emissions, and diversifying the economy.

- 8.6.5 The Welsh Government's green jobs strategy, *Capturing the Potential*, positions the low-carbon sector as a driver of economic development. Following the Covid-19 pandemic, Welsh Government has reinforced its commitment to a Green Recovery, focusing on sustainable businesses, clean energy investment, innovation, and skills development in a low-carbon economy. Onshore wind projects contribute to these goals and foster positive attitudes toward clean energy, unlocking further opportunities.

Cardiff Capital Region

- 8.6.6 The Cardiff Capital Region Energy Strategy, commissioned by Welsh Government and supported by its Energy Service, sets a framework for scaling up renewable energy in South Wales. It identifies onshore wind as a key technology for decarbonisation, aiming to meet at least 50% of regional energy demand from local renewables by 2035. The Valleys, including Merthyr Tydfil and Rhondda Cynon Taf, are highlighted for strong wind potential, supporting Wales' net zero target by 2050.
- 8.6.7 The wider policy context is shaped by the Cardiff Capital Region Industrial and Economic Growth Plan, which aligns renewable energy expansion with sustainable economic development. The plan prioritises clean energy innovation, infrastructure investment, and job creation—objectives directly supported by wind farm projects. By leveraging wind resources and industrial land, these developments advance decarbonisation, energy security, and green employment, particularly in former coal and steel communities. They also attract private investment and position the region as a leader in low-carbon technology, reinforcing ambitions for a resilient, future-ready economy

Rhondda Cynon Taf and Merthyr Tydfil

- 8.6.8 The Local Area Energy Plans (LAEPs) 2024 for Merthyr Tydfil and Rhondda Cynon Taf emphasise renewable energy infrastructure as a driver of local economic growth and decarbonisation. Both plans propose installing 40 MW in Merthyr Tydfil and 210 MW in Rhondda Cynon Taf of onshore wind capacity to achieve net zero by 2050, contributing to the well-being goals of the Well-being of Future Generations Act 2015.
- 8.6.9 Merthyr Tydfil's Decarbonisation Plan 2023–2030 commits to net zero by 2030, prioritising renewable energy generation, including onshore wind farms. It sets six themes, starting with Council buildings and estate planning, integrating renewable technologies to cut emissions, and includes land management strategies to support energy projects.

- 8.6.10 Rhondda Cynon Taf's approach combines the "Think Climate RCT" Strategy (2022–2025) and Decarbonisation Strategy (2023–2025). The former outlines the vision for a carbon-neutral authority by 2030, focusing on emissions reduction, renewable energy, and sustainable land use, alongside community engagement. The latter provides a detailed action plan across five areas: Transport, Buildings, Supply Chain, Renewables, and Land Use, ensuring a clear pathway to carbon neutrality.

Baseline

- 8.6.11 In 2022, approximately 11,000 people in Wales were employed in the Low Carbon and Renewable Energy Economy (LCREE), a similar proportion to the UK (~1%). This figure has remained fairly constant since 2015, despite the drive from the Welsh Government to expand green jobs as part of its strategy to transition to a low-carbon economy. Turnover for businesses in the low carbon economy in Wales has increased however, pointing to the capital nature of much of the activity in Wales.
- 8.6.12 There are currently ~9,200 onshore wind turbines in the UK across 2,656 sites. These supply 15.7 Gigawatts of operational capacity, supplying clean energy for the equivalent of 13.5 million typical UK households. Onshore wind supports 6,600 jobs in the UK, 400 of which are in Wales. Turnover in the sector is estimated at £6.8bn in 2022 across the UK, of which £277m is in Wales.

Local area

- 8.6.13 To determine the scope of the economic context, a local socio-economic study area has been identified for the Site. This uses an approximate 15km radius from the site to identify communities and local economic units which are likely to be affected by proximity to the site. This local socio-economic study area provides geographic areas for which socio-economic data is available. In this case the local authorities (LAs) of Merthyr Tydfil and Rhondda Cynon Taf have been used as they provide a reasonable alignment with the 15km radius and have more data available than other output areas.
- 8.6.14 **Figure 8.2.1** below shows the identified local socio-economic study area for the Site, with the corresponding LAs. Socio-economic statistics for these LAs have then been gathered and compiled to create a composite region.

- 8.6.15 The local socio-economic study area is compared to Wales to contextualise the socio-economic position in the following sections.

Population

- 8.6.16 The local socio-economic study area has a population of 299,771, representing 9.5% of Wales' total. Working-age residents (16–64) make up 62%, slightly above the Welsh

average of 61%, while those aged 65+ account for 20%, below 22% across Wales as a whole. There is also a marginally higher proportion of children (0–15) at 18% compared to 17% nationally, indicating a slightly younger demographic profile.

- 8.6.17 The area is densely populated relative to Wales, with residents per km² averaging 560.3/km² in Rhondda Cynon Taf and 528.2/km² Merthyr Tydfil, exceeding the Welsh average of 149.9/km². Key urban centres locally include Merthyr Tydfil (39,537), Aberdare (37,691), and Pontypridd (31,914).

Qualifications

- 8.6.18 Within the Carreg Wen local socio-economic study area, 33% of those of working age hold level 4 qualifications or above. This is lower than Wales, where 43.2% of the working age population hold level 4 qualifications or higher. A slightly higher proportion of the local socio-economic study area hold no qualifications relative to Wales (9.3% vs 8.6%).

Employment

- 8.6.19 The local socio-economic study area has an employment rate of 68.8% and an economic activity rate of 71.6%, both below Welsh averages (72.1% and 74.4%). Unemployment stands at 3%, substantially lower than Wales (5.6%). Fewer economically inactive residents want a job locally (10% vs. 15% in Wales), down from 16.6% in 2019.
- 8.6.20 In 2024, economic activity rate in the local socio-economic study area was 72.7%, below Wales (75.5%) and England (78.9%). Economic inactivity is 27.4%, higher than Wales (24.5%) and Great Britain (21.6%), though its increase since 2019 (+0.75 pp) is smaller than Wales (+1.1 pp).
- 8.6.21 Job density remains low at 0.63, compared to 0.78 in Wales, despite rising from 0.57 in 2017. The area hosts 115,000 jobs, but persistent gaps between job availability and population, combined with high inactivity, present ongoing challenges for Rhondda Cynon Taf and Merthyr Tydfil.
- 8.6.22 **Figure 8.2.2** below shows the business units based within postcodes in the local socio-economic study area by the number of people each employ.

Earnings

- 8.6.23 The average total household income for the local socio-economic study area (2020) is £36,092. This is 6% below the average for Wales (£38,372). Median average earnings for full time residents in the local socio-economic study area are £32,873 compared to

£34,915 in Wales. It should also be noted that there is a large gender pay gap in Merthyr Tydfil of 16.7% compared to 9.5% in Wales.

Sector composition

- 8.6.24 There are 9,660 businesses listed on Data City within the local socio-economic study area of Rhondda Cynon Taf and Merthyr Tydfil. The largest share is in construction (17%), followed by wholesale and retail (14%), and professional, scientific and technical activities (11%).
- 8.6.25 In terms of employment, manufacturing and wholesale/retail trade are the leading sectors, each accounting for 16% of jobs. Construction, professional services, health and social work, and administrative support each represent approximately 9% of local employment.
- 8.6.26 ONS data presents a slightly different picture due to sector classification differences. It identifies health as the largest employer, with 21,000 individuals (20% of total employment), followed by manufacturing (13.5%), wholesale and retail (12.4%), education (10.5%), and administrative support (7.6%). Overall, the sectoral composition aligns closely with the broader Welsh economy, where health, wholesale/retail, and manufacturing are also dominant.

Output

- 8.6.27 Total business turnover in the local socio-economic study area is £30.5 billion. The wholesale and retail trade sector accounts for the largest share (29%), followed by manufacturing (14%), transportation and storage (12%), and construction (10%).
- 8.6.28 Gross Value Added (GVA) across the area totals £6.5 billion. Manufacturing is the largest contributor, generating £1.3 billion (20% of total GVA). Financial and insurance activities contribute £1.1 billion (17%), while wholesale and retail (£768 million) and construction (£760 million) each represent around 12%.
- 8.6.29 ONS data for Rhondda Cynon Taf highlights manufacturing (£1.2bn), construction (£574m), health and social work (£516m), real estate (£412m), and wholesale/retail (£398m) as the leading sectors. Sector growth between 2018 and 2022 has been driven by public administration and other service activities.
- 8.6.30 In Merthyr Tydfil, the largest sectors in 2022 include health and social work (£207m), manufacturing, construction, and real estate. The arts, entertainment and recreation sector saw the highest growth over the period, while administrative and support services experienced the most significant decline.

Productivity

- 8.6.31 Productivity, measured as Gross Value Added (GVA) per hour worked, serves as an indicator of economic efficiency. These figures are available at the local authority level only.
- 8.6.32 In Rhondda Cynon Taf, GVA per hour worked is £34.90; closely aligned with the Wales average of £35.20. Merthyr Tydfil falls below the national average at £31.00 GVA per hour worked. Since 2017, productivity has increased by 8% in Rhondda Cynon Taf and 10% in Merthyr Tydfil.

Deprivation

- 8.6.33 The map in **Figure 8.2.3** illustrates relative deprivation in the local socio-economic study area, based on the latest Welsh Index of Multiple Deprivation. Deprivation is measured using a basket of indices from health to social and economic factors. It is set out as a ranked scale covering all Lower Super Output Areas (LSOAs)¹⁶³ relative to others in Wales, from the most deprived to the least deprived.
- 8.6.34 Several of the most deprived LSOAs in Wales are located within the study area, notably around Tylorstown and Ystrad in Rhondda, and the northern parts of Merthyr Tydfil. In Rhondda Cynon Taf, 18% of LSOAs fall within the most deprived 10% nationally, and 29% within the top 20%. In Merthyr Tydfil, 22% are in the top 10%, and 31% in the top 20%, making it the second most deprived local authority in Wales after Newport.
- 8.6.35 In total, 50 LSOAs in the study area are among the 10% most deprived in Wales. While deprivation is relative, many parts of the area face persistent, intergenerational challenges across multiple indicators.

Justification for scoping out

- 8.6.36 Socio-economic impacts from the development of onshore wind farms in Wales and the UK are regarded as positive through the creation of jobs and supply chain expenditure. The priority for Trydan Gwyrdd Cymru developments is to unlock the renewable energy potential of Wales, maximise the economic, social and environmental benefits for those living and working in Wales and future generations.

¹⁶³ A LSOA is a geographic unit representing a population group of approximately 1,500 residents.

- 8.6.37 Assessment of the anticipated effects for renewable energy sites typically involves modelling the effect of the investment on the local economy and reviewing social effects on recreational users and tourism. The socio-economic assessments are net positive while the impacts on recreation and tourism are neutral, with some temporary minor negative effects arising from disruption during the construction phase and potential minor to moderate positive effects from improved access and any community benefit delivered by the developer.
- 8.6.38 A review of evidence from available literature and high-level assessment of the site on recreation or economic receptors is provided below to justify the proposal to scope out socio-economics and tourism from the EIA for Carreg Wen.

Tourism & Recreation Impacts

- 8.6.39 Literature evidence suggests that the effects of wind farms on tourism to an area is limited. A report to Welsh Government demonstrated that there had been limited impact of completed wind farms on tourism. Though it is recognised this research was completed prior to the completion of many sites across Wales visitor numbers show tourism in Wales continues to grow with both overnight visitors and international visitors expanding despite increases in numbers of onshore wind farms in the last ten years (although this does not control for other factors).
- 8.6.40 A more recent study in Scotland showed that 75% of tourists were either positive or neutral about wind farms in the landscape. Other structures, including pylons, mobile phone masts and power stations received greater amounts of negative response. The proportion of tourists who were visiting an area for outdoor activities who held a negative attitude towards wind farms was lower (19%) than the overall figure (25%). Importantly, only 2% of visitors were unlikely to revisit an area because of wind farms, and the impact on tourism expenditure was estimated to be less than 2% for all sites reviewed.
- 8.6.41 There are a few tourism-related businesses and sites in the immediate vicinity of the Site. Those identified include Double Dares family bike park, Dare Valley trout fishery and two historical landmarks (Castell Nos Motte and Tyn Y Briddallt). Disruption to these sites and businesses from the development of the wind farm is likely to be minimal and temporary during construction phase.
- 8.6.42 There are several PRoW that cross the Site. ONS maps show ~3 public footpaths that cross through the site as well as the A4233. Any disruption to PRoW access will be temporary during construction with all PRoW available for use following the completion of the Proposed Development.
- 8.6.43 Given the distance of the Proposed Development from any principal attractions, the potential impact on tourism is likely to be very small. The development of Carreg Wen will look to undertake recreational improvements to support access to areas around

the Site, in consultation with RCTCBC and Merthyr Tydfil County Council, NRW and other stakeholders and local users.

Economic Impacts

- 8.6.44 The Proposed Development will represent a sizeable investment into the local socio-economic study area which will bring jobs and associated income, direct business activity and supply chain benefits, as well as induced effects from workers spending locally during construction. However, much of the investment will come at a Wales or UK level as much of the manufacture and construction cannot be fulfilled by local suppliers. During operation, there will be some socio-economic impacts, but again these will only affect small numbers of individuals and companies involved in maintenance. The result is that there will be some minor socio-economic impacts for people and businesses in the local socio-economic study area. As these are not considered significant it is suggested that economic effects are scoped out from the EIA. Social, tourism and recreation impacts are not expected to be significant and are therefore scoped out of the assessment. A stand-alone Economic Benefits Report will be submitted with the planning application.

Questions for consultees

1. Can consultees confirm they agree to scope out socio-economics and tourism from any EIA and that instead a standalone assessment will show the potential effects of the Proposed Development?
2. Can the consultees identify any relevant stakeholders who should be included in our consultation exercise regarding the development of the socio-economic impact assessment?

8.7 Air Quality

Baseline

- 8.7.1 In response to breaches of the Air Quality Objectives for Nitrogen Dioxide (NO₂), RCTCBC declared six Air Quality Management Areas via Order under Section 83 (1) of the Environment Act 1995¹⁶⁴, the Local Authority has adopted Air Quality Action Plans (AQAPs) for each of its AQMAs. These are:

- Cymmer Air Quality Management Area
- Ferndale Air Quality Management Area

¹⁶⁴ [Environment Act 1995](#)

- Mountain Ash Town Centre Air Quality Management Area
- Nightingales Bush Air Quality Management Area
- Pontypridd Town Centre Air Quality Management Area
- Tylorstown Air Quality Management Area

- 8.7.2 In order to oversee air pollutant levels within the county, RCTCBC has established a monitoring network consisting of four automatic monitoring sites and 54 non-automatic (passive) samplers. At all automated monitoring sites within the AQMA's the annual mean for NO₂ continue to exceed or may be at risk of exceeding the annual mean UK air quality objectives¹⁶⁵ (AQOs). The level of NO₂ outside of the current AQMAs and levels of PM₁₀ throughout Rhondda Cynon Taf are below their relevant AQOs of 40µg/m³ annual mean. In September 2025, RCTCBC published the annual progress report on air quality¹⁶⁶
- 8.7.3 Estimated background data are available from the United Kingdom Air Information Resource (UK-AIR) website operated by DEFRA¹⁶⁷. The website provides estimated annual average background concentrations of NO₂, PM₁₀ and PM_{2.5} on a 1km² grid basis.
- 8.7.4 It has been shown that the vast majority of Rhondda Cynon Taf experiences compliant air quality, which is likely to remain so into the future. With the expectation that air quality may continue to marginally improve into the near future and, with the gradual adoption of new transport technologies, there is the potential for further sustained improvement to at least some air pollutants in the longer-term.

Justification for scoping out

- 8.7.5 The main activities that could have potential impacts will be limited to construction works (e.g., dust from soil stripping and earthworks, from excavation, potentially including occasional blasting, and from vehicles 'trackout' running over unsurfaced ground) and exhaust emissions from fixed and mobile construction plant and construction vehicles.
- 8.7.6 Construction works would be localised, short term, intermittent and controllable through the application of good construction practice. Fixed and mobile plant would

¹⁶⁵ Available at: https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update_20230403.pdf

¹⁶⁶ [RCTCBC2025ProgressReport.pdf](#)

¹⁶⁷ Available at: [Background Mapping data for local authorities - 2021 - DEFRA UK Air - GOV.UK](#)

be limited in size and number and would operate for short periods. Measures to manage air quality during construction, such as dust management, will be included in the outline CEMP to be included as a technical appendix and agreed with RCTCBC prior to construction.

- 8.7.7 Even with the contributions of exhaust emissions from construction vehicles (NO₂ and PM₁₀), it is considered likely that the monitoring sites would not exceed the AQOs.
- 8.7.8 Once operational, the only source of emissions would be from occasional maintenance vehicles, and accordingly any impacts would be negligible. There is potential for equipment/infrastructure to require replacement within the 35-year timeframe of the Proposed Development, however associated traffic is unlikely to be above the detailed assessment criteria, and so significant effects are not anticipated. Any significant dust generating activities associated with these replacements are also expected to be covered within the CEMP.
- 8.7.9 It is understood that the Proposed Development will potentially include a Battery Energy Storage System (BESS). There is the potential for the unplanned release of emissions as a result of an unlikely fire to the BESS, however there will be management plans to prevent this from happening. Given the unlikely nature of this event and distance between the Site and sensitive receptors, significant effects are not anticipated.
- 8.7.10 With regards to air quality and dust, decommissioning is considered to result in similar effects to construction.
- 8.7.11 Therefore, given the above the Proposed Development is not considered likely to give rise to significant impacts on air quality and is proposed to be scoped out of the EIA.

8.4 Climate Change

GHG Emissions

- 8.4.1 The Proposed Development will have a positive contribution to Wales and the UK in meeting their targets for carbon reduction and net zero through the production of low carbon renewable energy with a corresponding net reduction in carbon emissions compared to more carbon intensive energy generation sources.
- 8.4.2 The Proposed Development will still give rise to Green House Gas (GHG) emissions associated with its construction. It is proposed that a carbon balance assessment will be prepared and submitted as a technical appendix to the ES, to provide a transparent account of lifecycle carbon emissions. This assessment will include a calculation comparing the potential effects of GHG emissions (CO₂e) from construction against the total potential lifetime carbon savings attributable to the Proposed Development.

- 8.4.3 Similar windfarm developments in Wales have undertaken carbon balance assessments in accordance with the Scottish Government's Carbon Calculator Tool and Methodology¹⁶⁸, which provides guidance on net carbon saving calculations for wind farm developments across the UK. We will use the Scottish Government tool, or a similar calculation methodology, agreed with any relevant consultees to conduct the carbon balance assessment.
- 8.4.4 The carbon balance assessment will present the carbon emissions associated with construction of the Proposed Development and associated assets (cabling etc), including demolition/earthworks, enabling works, foundation excavations, materials used on-site, the transportation of materials, components and personnel to Site, plant and equipment energy and water use, and other carbon losses due to land use change (e.g. through the degradation of peat or peaty soils).
- 8.4.5 The potential lifetime carbon savings of the Proposed Development will be assessed compared to a more carbon energy generation source, and this will then be balanced against the total construction emissions to provide the net emissions.
- 8.4.6 Primary (embedded) mitigation measures to reduce the embodied GHG emissions from construction may include resource efficient design and construction. The use of low-carbon materials, sourcing local materials and using recycled or reused materials will also be explored at detailed design with targets set where practicable. These will be recorded within the outline CEMP submitted as an appendix to the ES.

Climate Change Resilience

- 8.4.7 The vulnerability of the Proposed Development to climate change will be considered as part of the design process, which will review and respond to the potential consequences of climate change (this includes increased flood risk potential, increased heatwaves and more extreme storm conditions).
- 8.4.8 The resilience and response of the Proposed Development to climate change risks will be provided in the introductory chapters of the ES and the description of the Proposed Development. The development of the design will provide embedded mitigation measures for construction, operational and decommissioning phases that are considered best practice, and these will mitigate the anticipated climate change risks, to ensure that the Proposed Development is resilient and adapted to a changing

¹⁶⁸ Nayak et. al., (2010) Scottish 'Calculating Carbon Savings from Wind Farms on Scottish Peatlands – A New Approach'. Available at: <https://www.gov.scot/publications/calculating-carbon-savings-wind-farms-scottish-peat-lands-new-approach/> [Accessed October 2025]

climate. The topics that are scoped into the ES that are likely to be impacted by climate change will consider the specific climate-related risks within the respective chapters.

- 8.4.9 Key climate change risks for the Proposed Development and the Site are presented in **Table 8.4.1**, along with a brief summary of how they will be addressed for the Proposed Development.

Table 8.4.1 - Climate Risks and Project Response

Climate Risk	Response
Increased risk of extreme rainfall events and drought	Considered within design development (asset location, foundation design)/CEMP/OEMP
Increased risk of extreme temperatures	Considered within design development (material selection and output effectiveness)
Increased risk of storms/high wind	Considered within design development (asset location, turbine design, automatic shutdown)
Changes to hydrology/hydrogeology and flooding	Considered within design development (asset location) /CEMP/OEMP/Hydrology and Hydrogeology and Flood chapter
Risks to biodiversity as a result of a changing climate	Considered within the Ecology and Biodiversity chapter

- 8.4.10 With adoption of a climate resilient design and the assessment of key environmental risks associated with climate change as an integral part of the 'scoped in' environmental topics, it is proposed to scope out a standalone assessment of climate resilience from the EIA.

8.5 Materials and Waste

- 8.5.1 EIA Regulations set out requirements for the assessment of natural resources, and the disposal and recovery (including reuse and recycling) of waste. The Institute of Sustainability and Environmental Professionals (ISEP, formerly IEMA) has provided a guide to the proportionate assessment of Materials and Waste in EIA (IEMA guide to: Materials and Waste in Environmental Impact Assessment, 2020¹⁶⁹).
- 8.5.2 Materials are defined as "substances used in each lifecycle stage of a development, with a particular focus on the construction, operation and maintenance, and decommissioning or 'end of first life' (deconstruction, demounting, demolition and disposal) phases" (ISEP, 2020). Materials are physical resources that are used across the lifecycle of a development, for example concrete, aggregate and steel. The guidance

¹⁶⁹ [iema-materials-and-waste-in-eia-march-2020.pdf](#)

also considers 'excavated arisings' i.e. soil, rock, or similar resources generated by excavations either from within the Site boundary or from another source, such as a donor site.

- 8.5.3 Waste is defined by Article 3(1) of the Waste Framework Directive 2008 (as last amended by Directive (EU) 2018/851) as 'any substance or object which the holder discards or intends or is required to discard'. This definition was transposed into English and Welsh law by the Waste (Circular Economy) (amendment) Regulations 2020. The definition includes any substance or object that is discarded for disposal or that has not been subject to acceptable recovery (including reuse and recycling).
- 8.5.4 The potential for impacts and significant adverse environmental effects from the consumption of materials, and the generation and disposal of waste relating to the Proposed Development are presented in **Table 8.5.1**.

Table 8.5.2 Impacts and effects of material consumption and waste disposal

Element	Direct Impacts	Adverse Effects
Materials	Consumption of resources	Depletion of resources, resulting in the temporary or permanent degradation of the natural environment
Waste	Generation and disposal of waste	Reduction in landfill capacity Unsustainable use or loss of resources to landfill that results in the temporary or permanent degradation of the natural environment

- 8.5.5 These impacts and effects relate to the construction, decommissioning and operational maintenance phases of development.
- 8.5.6 Indirect impacts (e.g. Greenhouse gas (GHG) emissions from transportation and management, water consumption, visual impacts, ecological impacts) would be assessed, where applicable, in the relevant ES topic.
- 8.5.7 Similarly, the indirect impacts of any off-site waste management and material production facilities would be assessed (and where necessary, mitigated) under the relevant planning and permitting regime for those sites. It is assumed that during the decommissioning phase, any infrastructure and waste requiring removal from site will be recycled or disposed of in accordance with good practice and legislative requirements at that time.

Justification for scoping out

- 8.5.8 The Proposed Development of up to 18 wind turbines with associated electrical and electronic equipment, foundations, hardstanding, Battery Energy Storage System, access tracks and other temporary and permanent infrastructure
- 8.5.9 The majority, by weight, of materials used in construction are readily available bulk materials and recyclable. This includes steel and concrete used for the wind turbine generators and their foundations, and the metals and components of the BESS, which can be reused, refurbished or recycled. A CEMP will be submitted and agreed with stakeholders on the management and disposal of any waste.
- 8.5.10 Primary (embedded) mitigation for materials and waste on the Proposed Development include the resource efficient design and modern methods of construction that will be followed as good practice used in windfarm development. Wind turbines are constructed off-site before being transported to the Site and installed, as are the electrical and electronic components of the Proposed Development, such as the BESS. This will reduce the amount of waste that will be generated during construction
- 8.5.11 This off-site construction is also complemented by wind turbines being designed for disassembly at the end of their design life, with most of the bulk materials being readily recyclable. Wind turbine blades are generally of composite construction, usually containing fibreglass or carbon fibre material, as such they are hard to recycle although efforts are underway to improve their recyclability. Given the growing market secondary markets are expected to be in place and available by the time decommissioning occurs.
- 8.5.12 Material use in on-site construction will primarily be from bulk building materials such as concrete, aggregates and some steel for infrastructure beyond that used in off-site construction. Concrete is likely to be the material used in the largest quantities, for example in turbine foundations. Best practice measures would be used to reduce material use and wastage through design and construction methods. These will be recorded within an outline CEMP and Site Waste Management Plan (SWMP) that will be produced for the Proposed Development and opportunities to implement lower-carbon alternatives will be explored as part of this process.
- 8.5.13 Waste generation within the Site itself would be limited to that associated with the construction of foundations, access tracks, and some other infrastructure. This will also be limited as existing on-site access tracks and infrastructure are to be reused where possible, with some limited requirement to build new tracks to access turbine positions. Significant quantities of waste arisings are not anticipated to require removal from the Site during construction (no demolition works are proposed).

- 8.5.14 It is not anticipated that contaminated land or soil requiring specialist investigation and disposal will be encountered. Where practical, soil arisings will be balanced through a cut and fill exercise to retain volumes on Site.
- 8.5.15 A description of the potential streams and volumes of construction materials and waste disposal will be described in the introductory chapters of the ES, as will a description of any relevant impact avoidance and best practice measure considerations.
- 8.5.16 In addition to this, tertiary mitigation measures such as the outline CEMP will set out how construction materials and waste will be managed on-site and opportunities to reduce and recycle waste will be explored in line with the waste hierarchy. Where possible, development-specific commitments for sustainable resource management will be presented within the ES. Any waste arising will be managed in accordance with the relevant legislation and permitting requirements, including the Environmental Protection Act 1990, the Environment Act 2021, the Waste (England and Wales) (Amendment) Regulations 2014, and The Environmental Permitting (England & Wales) Regulations 2016 (EPR)
- 8.5.17 As part of any detailed CEMP prepared in response to any consent that is granted, there would be a requirement to develop and implement a Site Waste Management Plan (SWMP) and Materials Management Plan (MMP) in advance of the construction work and a commitment to developing a DEMP ahead of project decommissioning.
- 8.5.18 As a result of the primary and tertiary mitigation measures outlined above, which will reduce the amount of resources consumed and waste generated across the construction, operation and decommissioning phases in line with best practice, it is considered unlikely that there will be significant adverse environmental effects relating to consumption of resources and the generation and disposal of waste

8.6 Risk of Major Accidents and/or Disasters

- 8.6.1 A standalone chapter will not be included as part of the ES and is being scoped out. However,, an assessment of major accidents and disasters considers the potential impacts of a development on the environment as a result of its vulnerability to, or introduction of, risks of major accidents and/or disasters will be undertaken. For the remainder of this section the term 'major event' has been used to cover natural and man-made hazards that have the potential to cause both accidents and disasters.
- 8.6.2 A review has been undertaken to identify those major events that the Proposed Development is vulnerable to, and which have a realistic chance of happening due to the location and characteristics of the Proposed Development. This has drawn on the following desktop sources:

- Google Earth¹⁷⁰;
- Climate conditions¹⁷¹;
- UK Seismic hazard map¹⁷²;
- UK subsidence hotspots¹⁷³;
- Utility information¹⁷⁴;
- Mining activity¹⁷⁵;
- Control of Major Accidents Hazards (COMAH) sites¹⁷⁶;
- Unexploded ordnance¹⁷⁷;
- Europe tsunami hazard map¹⁷⁸;
- Lightning strikes UK¹⁷⁹; and
- Wildfires¹⁸⁰

8.6.3 The Proposed Development is vulnerable to the following major events:

- High intensity rainfall potentially leading to ground instability;
- High winds potentially resulting in damage to wind turbines;
- Road traffic collisions from the transportation of turbine components to and from the Site during the construction and decommissioning phases;
- Fires;

¹⁷⁰ https://www.google.co.uk/intl/en_uk/earth/

¹⁷¹ <https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine.denbigh-clwyd-gb,United-Kingdom>

¹⁷² https://earthquakes.bgs.ac.uk/hazard/uk_hazard_map.html;

¹⁷³ [Maps show the real threat of climate-related subsidence to British homes and properties - British Geological Survey](#)

¹⁷⁴ <https://www.nationalgrid.com/uk/electricity-transmission/network-and-infrastructure/network-route-maps>

¹⁷⁵ <https://mapapps2.bgs.ac.uk/coalauthority/home.html>

¹⁷⁶ <https://notifications.hse.gov.uk/COMAH2015/Search.aspx>

¹⁷⁷ <https://zeticauxo.com/downloads-and-resources/risk-maps/>;

¹⁷⁸ <https://www.preventionweb.net/english/professional/maps/v.php?id=3831>

¹⁷⁹ [Major map of lightning strikes produced by Portsmouth experts | University of Portsmouth](#)

¹⁸⁰ [Geo explainer: The growing problem of UK wildfires - Geographical](#)

- Landslides and coal mining related adits, shafts and workings; and
- Aircraft collision with turbines.

- 8.6.4 With respect to potential ground instability, the geotechnical design of the permanent infrastructure would take into account geotechnical risks from unstable slopes and peat. A Peat Slide Risk Assessment would be completed and reported in the hydrogeology and soils chapter of the ES.
- 8.6.5 Winds speeds would be monitored, and turbines would be shut down in the event of storm events to ensure that structural damage to components is minimised.
- 8.6.6 A Construction and Decommissioning Traffic Management Plan would be prepared to ensure that Abnormal Indivisible Loads (AILs) have minimal impact on existing highway users including pedestrians and vehicle users. Further information would be provided in the traffic and access chapter of the ES.
- 8.6.7 There is a small risk of turbine components or the BESS catching fire, but this would be managed through standard control measures such as the installation of lightning rods to direct the discharge towards the ground without affecting the structure. Passive features e.g. fire-resistant barriers and container separation, and active systems such as early detection and aerosol-based suppression would also be used to minimise fire risk as detailed within the project description and relevant appendices.
- 8.6.8 As the tip height of the blades will be greater than 150m, medium intensity aviation obstruction lighting would be included on some of the turbines to minimise the potential for aircraft collisions. Further information would be included in the aviation ES chapter.
- 8.6.9 The construction, operation and decommissioning of the Proposed Development would be undertaken under relevant health and safety regulations including the requirements of the Construction (Design and Management) Regulations 2015¹⁸¹. A risk assessment process would be followed by the Principal Designer during the design stage, which would ensure that all potential risks are identified at an early stage and appropriate mitigation is implemented.

¹⁸¹ Available at: <https://www.legislation.gov.uk/uksi/2015/51/contents/made> [Accessed: October 2025].

8.7 Public Health & Safety

Population and Human Health

- 8.7.1 The ES will inherently consider human health in terms of the following potential impacts:
- Impacts on human health from noise, as part of the Noise assessment (**Chapter 7.7**);
 - Impacts on pedestrian amenity and safety, as part of the Transport assessment (**Chapter 7.8**); and
 - Impacts on amenity associated with visual impacts, as part of the LVIA (**Chapter 7.2**).
- 8.7.2 Appropriate control measures to ensure that potential construction effects on air, noise and water quality are managed appropriately will be addressed through an outline CEMP which will form a Technical Appendix to the ES. A similar decommissioning management plan would be prepared for the decommissioning phase in line with the relevant guidance requirements at that time.
- 8.7.3 As such, a separate human health impact assessment and population impacts assessment Chapter will not be presented in the ES

Ice Throw

- 8.7.4 Blade icing is a rare occurrence that will only happen when the blades of a turbine are stationary and subject to zero or less than zero temperatures with relatively high humidity of the air.
- 8.7.5 Modern turbines have blade sensors incorporated that detect ice on a blade and link to system operator to ensure that, under these climatic conditions, either turbines are shut down when rotating, or prior to turbine start-up blade rotation is kept slow and avoids the 'throw' of ice beyond the radius of the blade itself.
- 8.7.6 Wind farm design will seek to locate turbines a sufficient distance from receptors as to negate any potential impact, including to residences and public rights of way. This design avoidance will be sufficient to avoid potential impacts should icing occur. A permanent warning sign at the Site entrance is proposed to alert the public to the unlikely issue of ice throw.
- 8.7.7 On the basis of the above understanding it is proposed that ice throw will not be assessed in the ES.

Questions for consultees

1. Do consultees have any comments regarding scoping out risk of major accidents and/or disasters, population and human health, shadow flicker, ice throw, health & safety from the ES?

9 Proposed Structure of the Environmental Statement

9.1 Structure of the Assessment Chapters

9.1.1 The proposed structure for the individual technical assessment chapters is as follows:

- Scope of Assessment;
- Key Legislation, Policy and Guidance Considerations;
 - Legislation and Regulations;
 - Planning Policy;
 - Technical Standards and Guidance;
- Assessment Methodology;
 - Determination of the Baseline;
 - Prediction Methodology;
 - Limitations and Assumptions;
- Baseline Assessment and Identification of Key Receptors;
 - Baseline Assessment;
 - Conclusions Regarding Baseline Environmental Quality and Key Receptors;
- Identification and Description of Changes Likely to Generate Effects;
 - Construction Phase;
 - Operational Phase;
 - Decommissioning Phase.
- Assessment of Likely Significant Effects;
 - Embedded Construction Mitigation Measures;
 - Anticipated Effects During the Construction and Decommissioning Phase;
 - Embedded Operational Mitigation Measures;
 - Anticipated Effects During the Operational Phase;
- Scope for Additional Mitigation Measures;
 - Potential Additional Mitigation Measures;
 - Likely Effectiveness of Additional Mitigation Measures;
- Residual Effects;

- Significant Residual Effects;
- Cumulative Effects; and
- Summary and Conclusion

9.2 Structure of the ES

9.2.1 The ES will comprise the following set of documents:

- ES Volume 1: Non-Technical Summary NTS: this document will provide a clear and concise summary of the Proposed Development, alternative designs that were considered, environmental impacts and mitigation measures;
- ES: Volume 2: Main Text: this will contain the main body of the EIA with the proposed chapter headings as set out below;
- ES Volume 3: Technical Appendices: these will provide supplementary details of the environmental studies conducted during the EIA including relevant data tables, figures and photographs.
- ES Volume 4: Supporting Figures and Visualisations

9.2.2 It is currently envisaged that the ES Volume 2: Main Text will be structured with the following chapter headings:

- Chapter 1: Introduction;
- Chapter 2: The Site;
- Chapter 3: EIA Methodology;
- Chapter 4: Alternatives Considered and Design Evolution;
- Chapter 5: The Proposed Development;
- Chapters 6: Landscape and Visual Impact Assessment
- Chapter 7: Ecology
- Chapter 8: Ornithology
- Chapter 9: Cultural Heritage
- Chapter 10: Water and Ground Conditions
- Chapter 11: Noise and Vibration
- Chapter 12: Existing Infrastructure (Aviation)
- Chapter 13: Transport and Access
- Chapter 15: Summary of Effects

Appendices

Appendix A - Abbreviations and Glossary of Terms

Term	Definition
Above Ordnance Datum (AOD)	Ordnance Datum is the vertical datum used by Ordnance Survey as the basis for deriving altitudes on maps. Topography may be described using the level in comparison or 'above' ordnance datum.
AONB	Area of Outstanding Beauty
Air pollutants	Amounts of foreign and/or natural substances occurring in the atmosphere that may result in adverse effects on humans, animals, vegetation and/or materials.
Air Quality Management Area (AQMA)	A defined area by virtue of Section 82(3) of the Environment Act 1995, where it appears that the air quality objectives prescribed under the UK Air Quality Strategy will not be achieved. In these areas, a Local Authority must designate Air Quality Management Areas, within which an Action Plan can be proposed to secure improvements in air quality so that prescribed air quality objectives can be achieved.
Air Quality Objectives (AQO)	Criteria for the assessment of local air quality expressed in terms of a concentration threshold to be achieved by a certain date. The thresholds are established at concentrations considered acceptable in the light of what is known about the effects of each pollutant on health or ecosystems.
Air quality sensitive receptors	People, property or designated sites for nature conservation that may be at risk from exposure to air pollutants that could potentially arise as a result of the Proposed Development.
Annual mean concentration	The average (mean) of the hourly pollutant concentrations measured or predicted for a one year period.
Baseline	Environmental conditions at specific periods of time, present on, or near a site, against which future changes may be measured or predicted.
Best Practicable Measures (BPM)	Most effective and feasible actions that can be taken to minimise negative impacts in environmental management and construction.
BGS	British Geological Society
COMAH	Control of Major Accident Hazards
Concentration (air quality)	The amount of a (polluting) substance in a volume (of air), typically expressed as a mass of pollutant per unit volume of air (for example, micrograms per cubic metre, $\mu\text{g}/\text{m}^3$) or a volume of gaseous pollutant per unit volume of air (parts per million, ppm).
Committed development	Planning application of development schemes which have been approved by the relevant local authority, and will be used in the cumulative assessment within the EIA
Conservation Area	An area of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance. Designation by the local authority often includes controls over the demolition of buildings;

Term	Definition
	strengthened controls over minor development; and special provision for the protection of trees.
Cumulative effects	The summation of effects that result from changes caused by a development in conjunction with other reasonably foreseeable committed developments that is either consented but not yet constructed or is in the process of seeking permission.
DCWW	Dŵr Cymru Welsh Water
Designated Heritage Asset	A World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated as such under the relevant legislation.
Desk Based Assessment (DBA)	Research based primarily on database and internet data gathering methods.
Direct effect	An effect that is directly attributable to the Proposed Development.
DNS	Development of National Significance
Dust	Fine particles of solid materials in the size fraction $1\mu\text{m}$ - $75\mu\text{m}$ in diameter, as defined in BS 6069:1994 capable of being re-suspended in air and settling only slowly under the influence of gravity where it may cause nuisance.
EIA Regulations	The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017.
Emission	A material that is expelled or released to the environment. Usually applied to gaseous or odorous discharges to the atmosphere.
Enhancement	Landscape improvement through various methods such as restoration and reconstruction.
Environmental effect	The consequence of an impact on the environment.
Environmental impact	A physical or measurable change to the environment attributable to the Proposed Development.
Environmental Impact Assessment (EIA)	A systematic means of assessing a development project's likely significant environmental effects undertaken in accordance with EIA Regulations.
Environmental Statement (ES)	A statement that includes the information that is reasonably required to assess the environmental effects of the development and which the applicant can, having regard to current knowledge and methods of assessment, reasonably be required to compile, but that includes at least the information referred to in the EIA Regulations.
Exceedance	A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate Air Quality Objective.

Term	Definition
Flood Zone	There are four classifications for flood zones as defined in the Planning Policy Wales (PPW), Technical Advice Note 15: Development, flooding and coastal erosion: Zone 1: Less than 1 in 1000 (0.1%) (plus climate change) chance of flooding in a given year Zone 2: Less than 1 in 100 (1%) but greater than 1 in 1000 (0.1%) chance of river and surface water and small watercourses flooding in a given year, including climate change or less than 1 in 200 (0.5%) but greater than 1 in 1000 (0.1%) chance of sea flooding in a given year, including climate change. Zone 3: Greater than 1 in 100 (1%) chance of river and surface water and small watercourses flooding in a given year, including climate change or greater than 1 in 200 (0.5%) chance of sea flooding in a given year, including climate change. TAN 15 Defended Zones: Areas where flood risk management infrastructure provides a minimum standard of protection against flooding from rivers of 1:100 (plus climate change and freeboard) and areas where flood risk management infrastructure provides a minimum standard of protection against flooding from the sea of 1:200 (plus climate change and freeboard).
Hectare (ha)	A unit of area (10,000 m ² /2.471 acres).
Heritage Asset	A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage assets include designated heritage and assets identified by the local planning authority (including local listing).
Historic Environment	All aspects of the environment resulting from the interaction between people and places through time including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora. Those elements of the historic environment that hold significance are called heritage assets.
HSE	Health and Safety Executive
IAQM	Institute for Air Quality Management
IC	Planning permission and other consents granted by an Infrastructure Consent Order pursuant to the Infrastructure (Wales) Act 2024
ISEP	Institute of Sustainability and Environmental Professionals (Formerly IEMA - Institute of Environmental Management and Assessment)
Impact	A physical or measurable change to the environment attributable to the Proposed Development.
Indirect effects	Effects that result indirectly from the proposed project as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or time from the source of the effects.
Kilometre (km)	Measurement of distance (1000 metres)
Land Use	The primary use of land, including both rural and urban activities.
L10	The noise level just exceeded for 10% of the measurement period

Term	Definition
L90	The noise level exceeded for 90% of the measurement period
Leq	'Equivalent Continuous Sound Level': The sound level in decibels equivalent to the total sound energy measured over a stated period of time
Listed Building	The Welsh Ministers are responsible for maintaining this list in Wales, in accordance with Section 76 of the Historic Environment (Wales) Act 2023. Buildings are graded as follows: Grade I – Buildings of exceptional interest; Grade II* - Particularly important buildings of more than special interest; and Grade II – Buildings of special interest.
Lmax	'Maximum Sound Level' - Maximum Sound Level during a measurement period or a noise event
Local Nature Reserve (LNR)	A statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949 (as amended), by principal local authorities.
Local Plan	A detailed district or borough-wide land-use plan, prepared and adopted by a district planning authority, which is part of the statutory development plan. Consists of a written statement which sets out the district planning authority's development control policies and proposals for land use and transport over a period of about 10 years and an Ordnance Survey-based proposals map.
Lost Peatlands Project	Lost Peatlands Project is an initiative aimed at restoring and preserving the peatland habitats in the South Wales uplands. Funded by the National Lottery Heritage Fund, the initiative focuses on restoring areas of historic peatland between Neath Port Talbot and Rhondda Cynon Taf.
Magnitude	A combination of the scale, extent and duration of an effect.
Methodology	The approach and techniques used for the study
Mitigation Measures	Actions proposed to avoid, prevent, reduce and where possible offset significant adverse environmental effects arising from the whole or specific elements of a development.
NGR	National Grid Reference
NRW	Natural Resources Wales
NRW statutory consultee	Natural Resources Wales Development Planning Advice team who provide environmental advice.
NRW land manager	Natural Resources Wales team who oversee forest operations and management.
NNR	National Nature Reserve
Operational	When the Proposed Development is constructed on the Site and is in or ready for use
OS	Ordnance Survey

Term	Definition
Particulate Matter	Fine particles are composed of a wide range of materials arising from a variety of sources including combustion sources (mainly road traffic), and coarse particles, suspended soils and dust from construction work. Particles are measured in a number of different size fractions according to their mean aero-dynamic diameter. Most monitoring is currently focussed on PM ₁₀ (less than 10 microns in aero-dynamic diameter), but the finer fractions such as PM _{2.5} (less than 2.5 microns in aero-dynamic diameter) is becoming of increasing interest in terms of health effects.
PEA	Preliminary Ecological Appraisal
PEDW	Planning and Environment Decisions Wales
Phase 1 Habitat Survey	An ecological survey technique that provides a standardised system to record vegetation and wildlife habitats. It enables a basic assessment of habitat type and its potential importance for nature conservation.
PM ₁₀	Particulate matter with a mean aerodynamic diameter of less than 10m.
Post-medieval	AD 1500 – present.
PPW	Planning Policy Wales
Pre-Historic	The period of human history preceding written records.
Receptor	A component of the natural, created or built environment such as humans, water, air, a building, or a plant that has the potential to be affected by the Proposed Development.
Registered Historic Parks and Gardens	Parks and Gardens of special historic interest in Wales. Registered parks and gardens are designated heritage assets and subject to the planning policies within the PPW.
Residual Effects	Those effects of a development that cannot be mitigated following implementation of mitigation proposals.
RCTCBC	Rhondda Cynon Taf County Borough Council
Scheduled Monument	A monument included in the schedule maintained by the Welsh Ministers in accordance with section 3 of the Historic Environment (Wales) Act 2023
Scoping	An exercise undertaken to determine the topics to be addressed within the Environmental Statement.
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor.
Setting of a heritage asset	The surroundings in which the asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.
SFRA (or FRA)	Strategic Flood Risk Assessment
Significance (effect)	A measure of the importance or gravity of the environmental effect defined by significance criteria specific to the environmental topic.

Term	Definition
Site of Special Scientific Interest (SSSI)	A site statutorily designated under the Wildlife and Countryside Act 1981 (as amended) as being of special nature conservation or geological interest. SSSIs include wildlife habitats, geological features and landforms.
Special Area of Conservation (SAC)	A site designated under the EU's Habitats Directive which is transposed into UK law by the Conservation of Habitats and Species Regulations 2017.
Special Protection Area (SPA)	A designation under the European Union Directive on the Conservation of Wild Birds which is transposed into UK law under the Conservation of Offshore Marine Habitats and Species Regulations 2017, and are part of the UK's national site network. SPA's are intended to safeguard the habitats of migratory birds and certain particularly threatened birds.
SPG	Supplementary Planning Guidance
Study Area	Defined area surrounding the Proposed Development in which archaeological data is collected and analysed in order to set the site into its archaeological and historical context.
Susceptibility	The ability of a defined landscape or visual receptor to accommodate the specific Proposed Development without undue negative consequences.
Sustainable Drainage System (SuDS)	Sustainable management practices designed to control the rate and quality of surface water runoff into receiving waters, for example the use of swales and wetlands as buffers, as opposed to conventional drainage practices.
Temporary or permanent effects	Environmental effects may be considered as temporary (limited duration and reversible) or permanent (irreversible). Some development may also be reversible.
Transport Assessment (TA)	A quantitative assessment of transport effects of construction and completed development phases of the Proposed Development.
Type or Nature of Effect	Whether an effect is direct or indirect, temporary or permanent, positive (beneficial), neutral or negative (adverse) or cumulative.
UKCP	United Kingdom Climate Projections
Visual receptors	Individuals and/or defined groups of people who have the potential to be affected by a proposal.
Visualisation	A computer simulation, photomontage or other technique to illustrate the appearance of a Proposed Development.
Worst-case situation/scenario	Principle applied where the environmental effects may vary, for example, seasonably to ensure that the most severe potential effect is assessed.
$\mu\text{g}/\text{m}^3$	Micrograms per cubic metre of air: A measure of concentration in terms of mass per unit volume. A concentration of $1 \mu\text{g}/\text{m}^3$ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.

Appendix B - Scoping Consultee Questions

Consultation and Engagement

1. Do consultees have any comments in relation to the proposed approach to statutory and community consultation?
2. Are there any groups that consultees would like to see included in the consultation?

EIA Assessment and Methodology

1. Do consultees have any existing data that would inform the assessment?
2. Do consultees agree with the extent of technical surveys?
3. Do consultees agree with the assessment scope (noting that it is not the purpose of an EIA to demonstrate legal compliance)?
4. Notwithstanding the need for further data, do consultees have suggestions for biodiversity enhancement measures they wish the applicant to consider?

Scoped In Topics

Landscape and Visual

1. Is the proposed approach and scope for the assessment of effects on physical landscape features considered to be appropriate and proportionate?
3. Is the proposed approach and scope for the assessment of effects on landscape character considered to be appropriate and proportionate?
4. Is the proposed approach and scope for the assessment of effects on designated landscapes considered to be appropriate and proportionate?
5. Is the proposed approach and scope for the assessment of visual effects appropriate and proportionate?
6. Do consultees consider that the proposed viewpoints are appropriate to inform the visual assessment, and that the suggested presentation of visualisations is appropriate and proportionate?
7. Can Rhondda Cynon Taf County Borough Council (RCTCBC) advise on their preference of representative viewpoints for the local community of Aberdare (**VP1** and **VP 2**), Hirwaun (**VP19**), Cwmaman (**VP13**) and Maerdy (**VP4**) (see **Table 7.2.2**)?
8. Is the approach to inclusion of schemes within the cumulative assessment appropriate?
9. Is the approach to the assessment of effects on residential visual amenity appropriate?

10. Do consultees consider the effects to be scoped in and out appropriate?
11. Is the approach to the aviation lighting assessment and night-time photography appropriate and proportionate?
12. Does NRW and BBNPA agree with the proposed night-time viewpoint at **Cadair Fawr** within the Bannau Brycheiniog National Park (i.e. **VP9** in **Table 7.2.2**)?
13. Are there any other relevant parties who should be included within the post-scoping consultation process for the LVIA?

Ecology

1. Do consultees consider the scope of work outlined in this chapter appropriate?
2. Are consultees aware of any data sets that would inform the assessment with regard to the proposed wind farm?
3. Are there any nature conservation stakeholders, special interest groups or individuals who should be consulted with regard to terrestrial ecology?
4. Is the approach to the assessment of effects, including those effects scoped in and out and the cumulative assessment, appropriate?
5. Are consultees content with the proposed approach to scope out the topics from ES, which are presented in the "Summary of Scope" in this chapter.

Ornithology

1. Do consultees consider the scope of work outlined in this chapter appropriate?
2. Are consultees aware of any data sets that would inform the assessment with regard to the proposed wind farm?
3. Are there any nature conservation stakeholders, special interest groups or individuals who should be consulted with regard to ornithology?
4. Is the approach to the assessment of effects, including those effects scoped in and out and the cumulative assessment, appropriate?
5. Are consultees content with the proposed approach to scope out the topics from ES, which are presented in the "Summary of Scope" in this chapter.

Cultural Heritage

1. Do consultees consider the ES study areas appropriate?
2. Are there any other relevant consultees or non-statutory stakeholders who should be consulted about this topic?
3. Are consultees aware of any other supplementary guidance of relevance to assessment of effects to historic assets?

4. Is the approach to the assessment of effects, including those effects scoped in and out and the cumulative assessment, appropriate?
5. Is the approach to field survey considered appropriate?
6. Are consultees content with the proposed approach to 'Likely Effects Scoped Out' from the ES?

Water and Ground Conditions

1. Do consultees consider the study areas appropriate?
2. Are there any other relevant consultees who should be consulted about this topic?
3. Are consultees aware of any other supplementary guidance of relevance to assessment of effects to historic assets?
4. Is the approach to the assessment of effects, including those effects scoped in and out and the cumulative assessment, appropriate?
5. Are consultees content with the proposed approach to scope out the topics from ES, which are presented in the "Summary of Scope" presented in this chapter.

Noise and Vibration

1. Do consultees consider the study areas appropriate?
2. Do consultees consider the proposed baseline noise measurement locations and methodology suitable?
3. Are there any other relevant consultees who should be consulted about this topic?
4. Is the approach to the assessment of effects, including cumulative assessment, appropriate?
5. Are consultees content with the proposed approach to scope out the topics from ES, which are presented in the "Summary of Scope" presented in this chapter.

Transport and Access

1. Do consultees consider the study area is appropriate?
2. Is the assessment approach and methodology appropriate?
3. Can the consultees please confirm the committed developments that should be included in the assessment?

Aviation

1. Do consultees agree with the approach to how Aviation has been scoped in to the ES?
2. Do consultees agree with the assessment of which aviation will be scoped in to the ES?
3. Are there any other relevant consultees who should be consulted about this EIA topic assessments?

Scoped Out

1. Do consultees agree with the approach to these assessments, including those elements to be scoped out?
2. Do consultees consider the Forestry study area appropriate?
3. Are consultees in agreement with the proposed methodology for the forestry assessment?
4. Can consultees confirm they agree to scope out socio-economics and tourism from any EIA and that instead a standalone assessment will show the potential effects of the Proposed Development?
5. Can the consultees identify any relevant stakeholders who should be included in our consultation exercise regarding the development of the socio-economic impact assessment?
6. Do consultees have any comments regarding scoping out risk of major accidents and/or disasters, population and human health, shadow flicker, ice throw, health & safety from the ES?

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