Wind 2 Project 2 Limited

Parc Ynni Banc y Celyn

Information to support a EIA Scoping Direction request

663563

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RSK GENERAL NOTES

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1 INTRODUCTION

1.1 Background

1.1.1 Parc Ynni Banc y Celyn Cyfyngedig (hereafter, the 'Applicant') has commissioned RSK Environment Limited (hereafter, 'RSK') to prepare an Environmental Impact Assessment (EIA) Scoping Report to accompany a request for a Scoping Direction from Planning and Environment Decisions Wales (PEDW) (prepared on behalf of Welsh Minister) for the proposed Parc Ynni Banc y Celyn (hereafter, the 'Proposed Development' or the 'Site'). Parc Ynni Banc y Celyn Cyfyngedig, is part of a joint venture between Wind2 Limited and companies managed by Octopus Generation.

1.1.2 The Proposed Development site is located approximately 5 km south of Builth Wells in mid Wales, within the administrative area of Powys County Council (a site location plan is provided in **Appendix A**).

1.1.3 The Planning (Wales) Act 2015 and the Developments of National Significance (Wales) Order 2016 (as amended) and subsequent regulations, provides the statutory basis for a Development of National Significance (DNS). Any proposal to construct or operate an onshore wind development with a capacity over 10 mega-watts (MW) falls under the DNS system and requires Welsh Ministers' consent.

1.1.4 The Proposed Development will be classed as a DNS as the combined installed capacity of the power generating elements will be greater than 10MW.

1.1.5 The Proposed Development, subject to the DNS Application, comprises the construction and operation of up to twenty-seven (27) wind turbines, an electrical substation and control building, underground power cables, site access tracks and habitat management. Photovoltaic (PV) solar panels and battery energy storage system (BESS) may be included as part of the Proposed Development, subject to further technical studies.

1.1.6 In advance of the submission of the DNS Application it should be noted that a separate application will be submitted to Powys County Council as the Local Planning Authority (LPA) for installation of a temporary meteorological mast. This application is considered to be outside of the scope of the DNS Application.

1.1.7 Other works including off-site highways improvements, where necessary are also considered to be outside of the scope of the DNS Application and therefore will be subject to separate consents. The grid connection

infrastructure will not be included within the application for planning permission for the Proposed Development. Separate consents will be required for connection of the scheme to the electricity network. Currently, there is some uncertainty over the future of national transmission upgrades in the mid-Wales area, and as such, insufficient details upon which to prepare a detailed environmental impact assessment are available and any such assessment would likely be inaccurate. Accordingly, the Applicant proposes to include indicative information on the grid routing and likely infrastructure, along with a high-level evaluation of effects.

1.1.8 It is recognised that the application boundary contains areas of registered common land, and that exchange of common land is subject to its own consenting process as set out in the Commons Act 2006. As per Section 16 of the Commons Act, a secondary consent will be submitted as part of the DNS Application to Welsh Ministers for the registered common land to be released from registration and exchanged with proposed replacement common land.

1.1.9 The purpose of this EIA Scoping Report is to establish the scope of the Environmental Statement that will be prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (hereafter, the 'EIA Regulations'), and will accompany the Applicant's DNS Application. In line with EIA Regulation requirements, the request for an EIA Scoping Direction is made in relation to a DNS for the purposes of section 62D of the Town and Country Planning Act 1990.

1.2 Definition of an EIA

1.2.1 The term EIA describes a procedure that must be followed for certain types of project before they can be given 'consent'. The procedure is a means of drawing together, in a systematic way, an assessment of a project's likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for avoiding, preventing, reducing or, if possible, offsetting them are properly understood by the public and the authority granting consent (the 'determining authority') before it makes its decision.

1.3 Requirement for EIA

1.3.1 The EIA Regulations require that, before consent is granted for certain types of development, an EIA must be undertaken. The EIA Regulations set out the types of development which must be subject to an EIA (referred to as Schedule 1 development) and other developments, which may be subject to

an EIA depending on certain parameters and/or their potential to give rise to significant environmental effects (referred to as Schedule 2 development).

1.3.2 The Proposed Development does not fall under any of the types of development set out in Schedule 1 of the EIA Regulations. However, the Proposed Development is of a type and scale described in Schedule 2 of the EIA Regulations, as follows:

"Energy industry

a) Industrial installations for the production of electricity, steam and hot water (projects not included in Schedule 1 to these Regulations);

(i) Installations for the harnessing of wind power for energy production (wind farms);"

1.3.3 For the purposes of the EIA Regulations, the Applicant considers the Proposed Development to be an EIA development. Therefore, the Applicant is notifying PEDW (under Regulation 5(2)(a) of the EIA Regulations) of the intention to prepare and submit an Environmental Statement (ES) in support of the DNS Application without prior request for a Screening Opinion.

1.4 Purpose of the report

1.4.1 In accordance with Regulation 33 of the EIA Regulations, a person who is minded to make an EIA application may ask PEDW to state in writing their opinion as to the scope and level of detail of the information to be provided in the ES.

1.4.2 There is no obligation to request a Scoping Direction, but the Applicant has opted to conduct such an exercise in order to ensure that the public are aware of and are engaged on the Proposed Development, and to provide for the accuracy of the EIA in assessing those effects that have the potential to be significant.

1.4.3 The purpose of this EIA Scoping Report is to ensure that the subsequent EIA is focused on the key impacts likely to give rise to significant environmental effects, and to obtain agreement on the EIA approach and scope. As well as identifying matters to be considered in the EIA, this EIA Scoping Report also identifies those matters that are not considered necessary to assess further. This approach is in line with the general aim to undertake proportionate EIA, as advocated by industry best practice.

1.4.4 Therefore, this EIA Scoping Report has been prepared in accordance with Regulation 33(2) of the EIA Regulations and PEDW's DNS Guidance (Appendix 3: EIA).

1.4.5 Whilst this EIA Scoping Report seeks to establish the overall framework for the EIA in relation to the environmental factors and associated effects, the exact scope of the EIA will be influenced by the Scoping Direction received, the on-going design evolution of the Proposed Development, and through on-going baseline data collection (e.g. field surveys etc.). In this regard, a list of 'scoping questions' is presented within **Chapter 7** of this EIA Scoping Report, the aim of which is to assist the determining authority and its consultees in forming the Scoping Direction.

1.4.6 Where further evidence justifies a change to the scope of the EIA, this will be explained in the ES along with confirmation of whether the change has been agreed with relevant consultees.

1.4.7 Paragraph 3.14 and 3.15 of PEDW's DNS Guidance (Appendix 3: EIA) sets out what should be provided within the Scoping Report. This guidance document draws on Regulation 33(2) of the EIA Regulations and any additional information which needs to be provided in the Scoping Report. In accordance with the EIA Regulations and PEDW Guidance, **Table 1.1** sets out the information requirements and where this information can be found in this EIA Scoping Report.

Table 1.1: Information required to accompany a request for a Scoping Direction

Information Required	Location within Scoping Report
EIA Regulations	
A plan sufficient to identify the land.	Appendix A
A brief description of the nature and purpose of the development, including its location and technical capacity.	Chapter 2
An explanation of the likely significant effects of the development on the environment.	Chapter 7
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	Chapter 1
Appendix 3 (DNS Guidance)	
An outline of the main alternatives considered and the reasons for selecting a preferred option.	Chapter 4

Information Required	Location within Scoping Report
Results of desktop and baseline studies, where available.	Chapters 6 and 7
A record of consultation undertaken with relevant bodies (including any public engagement) to date.	Chapters 6 and 7
Referenced plans presented at an appropriate scale to convey clearly the information and all known aspects associated with the proposal.	Appendix B
Guidance and best practice to be relied upon, and whether this has been agreed with the relevant bodies (for example the statutory nature conservation bodies or local authorities) together with copies of correspondence to support these agreements.	Chapters 6 and 7
Methods used or proposed to be used to assess impacts and the significance criteria framework used.	Chapters 7
Any mitigation proposed and the extent to which these are likely to reduce impacts.	Chapter 5
Where impacts from consequential or cumulative development have been identified, how applicants intend to assess these impacts in the ES (for example, a high level assessment of the grid connection where this does not form part of the Proposed Development for a power station).	Chapter 5 and 8
An indication of any European designated nature conservation sites that are likely to be significantly affected by the Proposed Development and the nature of the likely significant impacts on these sites.	Chapter 2 and 7
Key topics covered as part of applicants' scoping exercise.	Chapter 5, 6 and 7
An outline of the structure of the proposed ES.	Appendix D

1.4.8 In accordance with the EIA Regulations, the ES will be based on the Scoping Direction received.

1.5 References

- Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (as amended). Available at: The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (legislation.gov.uk)
- Planning and Environment Decisions Wales. (December 2024). Development of National Significance Procedural Guidance: Appendix 3 – Environmental Impact Assessment. Available via: https://www.gov.wales/developments-national-significance-guidance-environmental-impact-assessment

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Introduction

2.1.1 This chapter provides a description of the Site (and surrounding area) and Proposed Development for the purposes of identifying and reporting the potential environmental effects in this EIA Scoping Report. The description of the Proposed Development represents the current understanding of the design parameters. However, as part of an ongoing design process, the detail provided in this chapter will be further refined for the ES.

2.1.2 The final built form and layout of the Proposed Development, as well as the installation and construction methods to be utilised will, eventually, be determined by a chosen contractor. However, all works will be required to be undertaken within the parameters assessed for the Proposed Development. With this in mind, the EIA will represent a reasonable scenario ensuring a robust assessment of the likely significant effects.

2.2 Purpose of the Development

2.2.1 The Proposed Development will include the construction and operation of up to 27 wind turbines, and may include installation of PV solar panels and BESS subject to further technical studies (see **Section 2.5** for further details).

2.2.2 The aim of the Parc Ynni Energy Project is to increase renewable energy generation in Wales and assist in meeting the relevant targets including UK's net-zero by 2030 climate ambitions, and Wales's ambition for 100% renewable electricity by 2035[1].

2.3 The Application Site

2.3.1 For the purposes of this Scoping Report, the Site boundary shown on **Appendix A** is the area (approximately 1,211 hectares (ha)) within which the Proposed Development would be located (Grid reference: 304297, 242637).

2.3.2 The design of the Proposed Development is not yet complete, and will be subject to an iterative design process. As such, some details that will be provided in the DNS Application are yet to be determined. Where possible, all

[1] Welsh Government (2023) Available at (online): https://www.gov.wales/wales-aims-meet-100-its-electricity-needs-renewable-sources-2035 [Accessed September 2023].

potential effects from reasonably anticipated development and construction activities have been considered within the Scoping Report.

2.4 The Site and surrounding area

2.4.1 The Site is located approximately 5 km south of Builth Wells in Powys, mid Wales (a site location plan is provided in **Appendix A**). The Site lies in close proximity to the settlements of Upper Chapel, Gwenddwr, Crickadarn, and Erwood. The Sennybridge Tactical Training Area (TTA) is located immediately west of the Site.

2.4.2 The landform of the Site is varied from approximately 472 m Above Ordnance Datum (AOD) to approximately 310 m AOD. The majority of the Site is registered as common land (Common Land Units – CL51, CL102, CL106, and CL110). The remaining areas of the Site are made up of privately owned agricultural land. The landcover of the Site is a mixture of lowland pasture bounded by hedgerows with areas of open hill grazing. It also consists of a mix of unimproved moorland, comprising for the most part a mixture of acid grassland, and heather dominated heath, potentially with small areas of peat.

2.4.3 The Site is not located within any nationally or locally designed landscapes. The closest nationally designated landscape is the Bannau Brycheiniog National Park, located approximately 8 km south of the Site.

2.4.4 The Site is crossed by several minor watercourses, including Nant yr Offeiriad and Cletwr Brook. Nant Gwenddwr drains westwards towards the B4520 while both Nant yr Offeiriad and Cletwr Brook drain eastwards into the Afon Gwy (River Wye), located approximately 900 m east of the Site (at its nearest point). Nant yr Offeiriad and Cletwr Brook, along with the Afon Gwy itself, are designated as part of the River Wy / Afon Gwy Special Area of Conservation (SAC) and River Wye (Tributaries) / Afon Gwy (Isafonydd) Site of Special Scientific Interest (SSSI). Nant Gwenddwr also drains westwards towards the B4520.

2.4.5 The A470 runs in north-south direction to the east of the Site and the B4520 runs in a north-south direction west of the Site. An unnamed C-Class standard road crosses the Site, connecting into the B4520 to the west, and A470 to the east. A number of Public Rights of Way (PRoW), including footpaths and bridleways, cross the Site. In addition, a large proportion the Site is Open Access Land and is therefore used by members of the public for recreational activities such as walking, cycling and horse-riding.

2.5 Description of Proposed Development

Summary of key components

2.5.1 The main elements of the Proposed Development would comprise:

- Up to 27 wind turbines and associated infrastructure, including; transformers, foundations, crane pads, and laydown / storage areas.
- An on-site electrical substation and control building.
- Underground power cables linking the wind turbines and on-site substation and control building.
- New site entrances and internal access tracks.
- Permanent anemometer mast(s) for monitoring wind speeds and wind turbine performance.
- Borrow pit(s) where feasible.
- One or more temporary construction and storage compounds.
- Off-site works (where necessary) to facilitate the transport of abnormal loads.

2.5.2 PV solar panels will be included in the Application if it is deemed a viable option at the Site, following completion of further technical studies. The PV solar panels would be mounted on frames fixed to the ground with associated inverters, security fencing, and CCTV systems. The finalised PV solar design layout will be determined following site surveys and a design iteration process, and the final design submitted will include an on-site substation, inverters, transformers, storage containers, fencing and CCTV for security purposes and access tracks across the Site.

2.5.3 Panels containing Per- and polyfluoroalkyl substances (PFAS) will not be used to construct the solar element, thereby limiting their impact on the local soils and watercourses. All cabling associated with the PV solar panels will be underground within trenches.

2.5.4 BESS facilities up to 50MW capacity will be included in the Application if it is deemed a viable option at the Site, following the completion of further technical studies. The batteries would store excess power generated by the Proposed Development and release the power to the grid when the output from the Proposed Development falls due to decreased wind speed or solar exposure. The energy storage infrastructure is likely to take the form of containerised battery units, with some external ancillary infrastructure to store electricity generated by the Proposed Development, allowing this electricity to be exported and imported when required.

2.5.5 The BESS and associated infrastructure would be constructed on an area of hardstanding and also include a control building, on-site substation including

transformers and switchgear. This area of hardstanding is anticipated to form the location of the construction compound during construction of the Proposed Development.

Wind turbines

2.5.6 Based on known environmental and technical constraints, the Site can accommodate up to 27 wind turbines; refer to **Appendix B** for an indicative layout and **Table 2.1** for indicative turbine locations. The proposed turbines would be three bladed horizontal axis turbines. The turbine towers would be of tapered tubular steel construction, likely to be finished in a light grey semi-matt colour. The turbines proposed for the development would have a maximum power output of between 6.8 MW and 7.2 MW dependent on final commercial choice, and therefore a combined rated output of approximately 200 MW of electrical power.

2.5.7 This Scoping Report has been prepared based upon a maximum tip height for wind turbines of 200 m, although the maximum turbine heights and turbine specifications in other respects will be considered further through the EIA process. The worst-case candidate turbine can differ across the EIA disciplines (for example noise, ornithology, transport etc.) therefore different candidate turbines may be specified in the ES where necessary to inform a worst-case assessments of effects.

2.5.8 The wind turbines would be installed on foundations likely comprising both aggregate and concrete. The detailed design specification for each foundation will depend on the type of turbine procured and the specific ground conditions, loadings and drainage design at the location of each wind turbine.

2.5.9 A crane pad would be required for each turbine and would consist of an area of hardstanding adjacent to the turbine. The exact specification and position of the crane pad will depend on the turbine supplier's specifications, the crane selected for erection, and specific ground conditions. Subject to design evolution, there is potential for areas to be dressed back with topsoil and landscaped into the surrounding area upon completion of turbine erection.

2.5.10 The EIA will be based on indicative maximum crane pad dimensions together with appropriate micro-siting allowance.

Table 2.1: Indicative turbine coordinates

Turbine No.	Easting	Northing
T1	305153	246615
T2	304469	246620
T3	304888	246039

T4	303942	246102
T5	303774	245522
T6	303850	244994
T7	304113	244477
T8	303098	244648
T9	302859	244036
T10	302559	243445
T11	302933	243105
T12	302189	242900
T13	303404	242808
T14	302614	242533
T15	303351	242146
T16	302578	241957
T17	302837	241381
T18	303581	241248
T19	304182	241076
T20	303464	240652
T21	304101	240524
T22	303373	240105
T23	301872	241980
T24	302025	241256
T25	302260	240551
T26	302621	240114
T27	302790	239537

Aviation lighting

2.5.11 The UK statutory requirements for the lighting of en–route obstacles (i.e., those away from the vicinity of a licensed aerodrome) are set out in Article 222 of the Air Navigation Order 2016. This article requires medium intensity (2000 candela) steady red aviation warning lights to be mounted as close as possible to the top of all structures at or above 150 m above ground level (AGL).

2.5.12 In terms of the requirement for lighting wind turbines in accordance with the Air Navigation Order 2016, the Civil Aviation Authority (CAA) considers the top of a wind turbine to be the maximum blade tip height. In terms of the positioning of aviation obstruction lighting on onshore wind turbine generators with a maximum height of 150 m AGL or above, the CAA interprets 'as close as possible to the top of the obstacle' as the fitting of lights on the top of the supporting structure (the nacelle) rather than the blade tips.

2.5.13 The anticipated height of the wind turbines means there will be a statutory requirement for aviation obstacle lighting (AOL). Any required lighting scheme will be agreed with relevant consultees (including the CAA) and assessed in the ES.

On-site electrical substation and control building

2.5.14 The proposed wind turbines would produce electricity at typically up to 1,000 Volts. The electricity would then be transformed to 33,000 Volts (33 kV) via a transformer, located either internally or immediately adjacent to the tower of each turbine, depending on the final turbine model used. Cables from each turbine and transformer would be connected underground to a purpose-built electrical substation and control building, which would include switchgear and metering equipment. Detailed construction and trenching specifications would depend on the ground conditions encountered at the time, but typically cables would be laid in a trench routed along the side of the access tracks wherever practicable.

2.5.15 The dimensions and the location of the electrical substation and control building are not yet finalised. The location of the substation would be influenced by factors such as the distance to the point of connection, access during the operation of the Proposed Development, and environmental constraints, all of which will be considered further throughout the iterative design process.

Access and vehicle movements

2.5.16 The Proposed Development will be accessed from the A470 as it passes through the village of Erwood on the way North. The track will wind up to the Site through fields to run parallel with the private track associated with Maescletwr Farm and then along the ridge to the Site. This route will be

hereafter referred to as the 'main access track'. Construction vehicles will also make use of the B4520 to the west of the Site.

2.5.17 The size and/or weight of the turbine components and transformers require specialist lorries to carry them to Site – these are classed as abnormal loads. It is anticipated that abnormal load vehicles carrying turbine components will travel to the Site from the Port of Swansea. The route from port to Site is likely to be via the A483, M4, A465, and A470, but this will be formalised through the EIA process. The Applicant will look to agree the route to Site with relevant consultees and will ensure that it meets the requirements of appropriate guidelines (such as visibility, construction materials, surface water drainage, gradient and safety of other road users).

2.5.18 The Proposed Development will include a new network of on-site access tracks to enable construction and maintenance, once operational. This will include a main site access track running from the new access junction. These tracks are anticipated to have a maximum running width of approximately 6.5 m (widening at bends). The design of the new access tracks will follow the topography of the Site, avoiding steep gradients and environmental constraints (e.g. valuable areas of terrestrial habitat and peat), where possible. These access tracks will hereafter be referred to as the 'internal access tracks / routes'.

On-site cabling

2.5.19 It is anticipated that electric cabling connecting the wind turbines (and potentially the PV solar panels and BESS) and the control building will be laid in underground trenches running alongside the new internal access tracks. The dimensions of the trenches will vary depending on the number of ducts they contain and are assumed to be up to approximately 2 m in width and up to approximately 1 m in depth.

2.5.20 Open-cut trenching methods would be used for the majority of the cable routing. However, subject to on-going engagement with utility providers and other stakeholders, there may be a requirement for specialist trenchless techniques (e.g. Horizontal Directional Drilling) for crossings of roads, environmental receptors, and other existing infrastructure.

Permanent anemometer mast (s)

2.5.21 Permanent steel tower anemometer mast(s) will be required to provide ongoing monitoring of the wind conditions after commissioning of the Proposed Development. The height of the anemometer mast(s) would align with the chosen wind turbine model. Further detail on the location and size of the anemometer mast(s) will be provided in the ES.

Temporary construction compounds and working areas

2.5.22 The construction works will require one or more temporary construction compound(s). The main construction site office and compound would comprise: temporary cabins to be used for the site offices (including welfare facilities for site staff); parking for construction staff, visitors and construction vehicles; and security fencing around the compound.

2.5.23 The temporary construction compound will likely be located close to the site access point to control all access onto the Site. A typical compound will be in the region of 120 m x 50 m to give flexibility for dedicated storage and parking areas, improving site safety through vehicle/pedestrian segregation.

2.5.24 The construction disturbance associated with the temporary construction compound is expected to be minimal. Typically, surface soils will be stripped and stockpiled, and the surface then capped with geofabric and aggregate. It is anticipated that best practice soil handling techniques will be followed. Once construction is complete the stone is lifted, geofabric removed and the surface soils re-spread allowing the area to regenerate.

2.5.25 The major structural components of the turbines would be delivered directly to Site. Temporary lay-down areas will be provided onsite for parking and unloading delivery vehicles and, in particular, abnormal loads.

Stone and aggregate

2.5.26 The Proposed Development will require crushed stone to construct the new access tracks, turbine foundations, crane pads and laydown areas. Suitable stone would be sourced from on-site borrow pits, a local quarry, or a combination of the two.

2.5.27 The potential benefit of including borrow pits as part of the Proposed Development include:

- Allows extracted aggregate to be transported to construction locations (largely via internal site access tracks) within the Site.
- Generates significantly lower levels of Heavy Goods Vehicle (HGV) movements on the local highway network than importation of aggregate from commercial quarries.
- Reduces cost risks arising from double handling, importation from commercial quarries and landfill disposal.

2.5.28 The benefit of using borrow pits will be carefully considered against any potential environmental impacts. If borrow pits are included as part of the Proposed Development, further detail on the approach to identifying suitable borrow pit locations, and justification for their inclusions as part of the

Proposed Development will be provided as part of the ES along with details on the size, extent, location, and after-use.

Construction phase

2.5.29 It is expected that the construction of the Proposed Development will be completed over a period of approximately 18–24 months and will consist of the following principal activities:

- Public road improvements and upgraded access junction.
- Construction of main site access track.
- Construction of temporary construction compound(s).
- Opening of one or more onsite borrow pits and extraction of stone (if viable).
- Construction of all other onsite internal access tracks.
- Design and construction of temporary and permanent drainage measures and cable trenches.
- Laying of electricity and communications cables in trenches.
- Construction of turbine foundations, crane hardstandings and laydown areas.
- Construction of electrical substation and control building.
- Delivery, installation, testing and commissioning of wind turbines, PV solar panels, BESS and permanent meteorological mast(s) and ancillary equipment.
- Installation of external turbine transformers and switchgear in enclosed kiosks.
- Removal of all temporary facilities and restoration of temporary construction areas and borrow pits.

2.5.30 This will be followed by reinstatement.

Construction Environmental Management Plan

2.5.31 An Outline Construction Environmental Management Plan (CEMP) will be submitted in support of the DNS Application and will set out the key measures to be employed during construction to control and minimise impacts on the environment. It is anticipated that the details and implementation of the CEMP will be secured by a planning condition. The purpose of a CEMP is:

- To ensure nuisance levels as a result of construction and operation activities are kept to a minimum.
- To comply with relevant regulatory requirements and environmental commitments.

- To ensure procedures are put into place to minimise environmental effects during construction.

Construction Traffic Management Plan

2.5.32 An Outline Construction Traffic Management Plan (CTMP) will be developed as part of the EIA which will propose measures to control the delivery of materials and staff onto the Site during the construction phase. It is anticipated that the details and implementation of the CTMP will be secured by a planning condition.

2.5.33 The principles of the CTMP will be available for comment as part of the statutory consultation process to ensure that the comments of local residents and stakeholders are taken into account in its development.

Operational phase

2.5.34 The Proposed Development is likely to be operational for a limited period of up to 40 years. Maintenance works are expected to occur throughout the operating life of the Proposed Development and may include the replacement of key components. It is assumed that routine inspections will be carried out and will access the Site via the previously built construction roads.

Decommissioning phase

2.5.35 At the end of the operational period, the Proposed Development would be decommissioned. Any above ground infrastructure would be dismantled and removed in accordance with industry best practice at the time. The use of decommissioned materials would follow the waste hierarchy such that they would be reused where possible before recycling and disposal are considered.

2.5.36 At the time that decommissioning would take place, the regulatory framework, good industry practices and the future baseline could have altered. The Applicant would design and implement a Decommissioning Environmental Management Plan (DEMP) taking account of good industry practice, its obligations to landowners under the relevant agreements and all relevant statutory requirements.

2.5.37 The proposed scope of each chapter's decommissioning assessment is defined in **Chapter 7**. In general, it is not expected that decommissioning activities would generate any new or different effects that would not be expected from the construction phase. Therefore, the decommissioning phase is to be assessed as part of the construction assessment.

2.5.38 There may be potential to extend the life of the Proposed Development or replace the turbines and other electricity infrastructure, which would be subject to a new application, and subject to the requirements of the planning regime at that time.

Grid connection

2.5.39 The grid connection infrastructure will not be included within the application for planning permission for the Proposed Development. Separate consents will be required for connection of the scheme to the electricity network. Currently, there is some uncertainty over the future of national transmission upgrades in the mid-Wales area, and as such insufficient details upon which to prepare a detailed environmental impact assessment are available and any such assessment would likely be inaccurate. Accordingly, the Applicant proposes to include indicative information on the grid routing and likely infrastructure, along with a high-level evaluation of effects.

2.6 Approach to addressing uncertainty

2.6.1 In order to define the Proposed Development and determine where detail is to be included at the DNS Application stage, and where it may be deferred until after consent is granted, the Applicant will identify the level of flexibility required (e.g. in relation to the size of the wind turbines or construction methods).

2.6.2 Many promoters of renewable energy projects seek to maximise flexibility in their consents, given the long lead-in times to consent and subsequent engagement of EPC (engineering, procurement, and construction) contractors. It is typical for large infrastructure projects to contain the ability to alter the final design of a scheme by having limits of deviation, such as maximum turbine height, or including for a micro-siting allowance based on a worst-case scenario.

2.6.3 Furthermore, flexibility may be useful where a change in the design or capacity of the Proposed Development is anticipated, but not yet certain. Therefore, it may be possible that a particular element of the design will be subject to on-going technological advancements. It will be important that a lack of flexibility in the DNS Application does not unduly hinder the Applicant's ability to consider and adopt such future technological advancements. This is of particular importance to maintaining flexibility due to the rapid pace of change in renewable energy technologies.

2.6.4 It is therefore necessary to define some limited parameters including maximum turbine height and micro-siting allowance to ensure that 'likely significant effects' are identified in the context of a reasonable worst-case scenario, rather than unrealistically amplified effects, which could be deemed unlikely. These parameters will be considered in detail by the technical authors in the ES to ensure the realistic 'worst-case' effects of the Proposed Development are assessed for each potential receptor.

3 PLANNING POLICY

3.1 Introduction

3.1.1 This section provides an overview of relevant UK legislation and energy policy, devolved Welsh planning policy and the relevant planning policies of the Powys County Council's Local Development Plan (LDP).

3.1.2 The scoping of the topic specific effects set out within the remainder of this report includes a summary of the relevant legislation, planning policies at national and regional /local levels. Planning policy will be used to guide the scope of the assessment and to inform the value ascribed to receptors.

3.1.3 The ES will identify all the relevant policies which will be used to inform the scope and assessment of each environmental topic. The extent to which the Proposed Development complies with development plan policy will be presented within a separate Planning Statement that will accompany the DNS Application.

3.2 Legislative Context

3.2.1 Relevant Welsh primary legislation on sustainability and climate change includes:

- The Wellbeing of Future Generations (Wales) Act 2015[2] - requires all Wales' based public bodies to put long-term sustainability at the forefront of thinking and actions.
- The Environment (Wales) Act 2016 (as amended)[3] - sets in place an obligation on Welsh Government to reduce greenhouse gas emissions by 100% against 1990 levels by 2050.

3.3 Development plan

3.3.1 In accordance with the Planning and Compulsory Purchase Act 2004, planning applications should be determined in accordance with the Development Plan, unless material considerations indicate otherwise.

[2] Well-being of Future Generations (Wales) Act 2015 [online]. Available at: https://www.legislation.gov.uk/anaw/2015/2. [Accessed September 2023].

[3] The Environment (Wales) Act 2016 [online]. Available at: https://www.legislation.gov.uk/anaw/2016/3/contents. [Accessed February 2025].

3.3.2 The Site is located within the administrative boundary of Powys County Council (PCC). The adopted Development Plan relevant to the proposal comprises:

- Future Wales: The National Plan 2040
- Planning Policy Wales (2024), and
- Powys Local Development Plan 2011–2026.

Future Wales: The National Plan 2040

3.3.3 Future Wales: The National Plan 2040 (published February 2021) is the Welsh Government's National Development Framework and is the highest tier of the Development Plan in Wales, considered to have primacy in the planning policy hierarchy. It states that proposals for large scale energy developments are considered Developments of National Significance (DNSs), which, as set out in legislation, "*must be determined in accordance with Future Wales*".

3.3.4 Future Wales provides the spatial direction for development in Wales and the policy framework for Spatial Development Plans and Local Development Plans at the regional and local level. These plans are required to conform to Future Wales and planning decisions at every level must be taken in accordance with the Development Plan.

3.3.5 It is considered that policies 17 and 18 of Future Wales are particularly pertinent to the determination of renewable energy proposals qualifying as Developments of National Significance.

3.3.6 Policy 17 – Renewable and Low Carbon Energy and Associated Infrastructure and Policy 18 – Renewable and Low Carbon Energy Developments of National Significance, provide the strategic spatial and detailed criteria-based policies for renewable and low carbon energy developments.

3.3.7 Policy 17 expresses the Welsh Government's support for the principle of developing renewable and low carbon energy from all technologies and scales to meet future energy needs. It identifies ten 'Pre-Assessed Areas for Wind Energy', with a presumption in favour of large-scale wind energy development in these areas; subject to the criteria in Policy 18. It is noted that the Proposed Development is not located within one of the Pre-Assessed Areas (PAAs), however the National Plan notes that "*Outside of these areas a positive policy framework still exists, subject to policy 18*".

3.3.8 It states that, in determining planning applications for renewable and low carbon energy development, "decision makers must give significant weight to the need to meet Wales's international commitments and the target to generate electricity by renewable means in order to combat the climate emergency". It also makes it clear that proposals should ensure that there is no unacceptable detrimental impact on the surrounding natural environment.

3.3.9 It should be noted that the specific wording in Future Wales makes reference to a generation target of the equivalent of 70% of consumed electricity by renewable means by 2030 in order to address the climate emergency. This target was increased in the late summer of 2023 to 100% by 2035. This change in the target position is considered to be an important material consideration.

3.3.10 Policy 18 develops further on Policy 17, outlining the criteria DNS schemes should meet in order to be permitted. Supporting text to Policies 17 and 18 sets out that Wales is abundant in its opportunities to generate renewable energy. Page 96 states that "*the Welsh Government is committed to maximising this potential"* going on to note that *"generating renewable energy is a key part of our commitment to decarbonisation and tackling the climate emergency*".

3.3.11 It is noted that national policy does not preclude wind farms outside of the pre assessed areas, subject to acceptable impacts on the environment and acceptable cumulative impacts.

Planning Policy Wales: Edition 12

3.3.12 While DNS Applications must be determined in line with policies set out in Future Wales, it is noted that Planning Policy Wales (PPW) has substantial weight as a material planning consideration. The updated document was adopted as national policy in February 2024, notably introducing changes to Chapter 6: Distinctive and Natural Places specifically in relation to Green Infrastructure, Net Benefit for Biodiversity and the step-wise approach, protections for SSSIs, and updated policy around trees and woodlands. In particular, further clarity is provided on securing net benefit for biodiversity through the application of the step-wise approach, including the acknowledgement of off-site compensation measures as a last resort and the need to consider enhancement and long-term management at each stage of the step-wise approach. PPW also places strengthened focus of the application of the step-wise approach to avoid important environmental features, including peatlands.

3.3.13 PPW sets out the land use policies of the Welsh Government, supplemented by a series of documents including Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters. These, in conjunction with PPW, provide the overall national planning policy framework for Wales.

3.3.14 The document recognises the importance of renewable energy in the context of international targets, identifying the abundance of resource and the benefits that renewable energy development can bring, setting out a series of national policy objectives designed to support growth, protect the environment, and ensure that decisions are made at the local level.

3.3.15 At paragraph 3.30, the document states that *"the planning system plays a key role in tackling the climate emergency through the decarbonisation of the energy system and the sustainable management of natural resources"* recognising the significant role of planning in securing a renewable and low carbon future. It goes on to set out at paragraph 3.33 that the planning system plays a significant role in managing the risks of climate change.

3.3.16 Chapter 5 'Productive and Enterprising Places' goes on to address renewable and low carbon energies, with paragraph 5.7.1 advocating for the transition to a low carbon future', stating "*The Welsh Government's highest priority is to reduce demand wherever possible and affordable, low carbon electricity must become the main source of energy in Wales*".

3.3.17 Paragraph 5.7.7 goes on to state the planning system should "*maximise renewable and low carbon energy generation*", recognising the benefits of renewable energy generation and its role in tackling the climate emergency.

3.3.18 With regards to renewable energy targets, PPW also notes that The Welsh Government has set targets for the generation of renewable energy, including:

- For 70% of electricity consumption to be generated from renewable energy by 2030;
- For one gigawatt of renewable energy capacity to be locally owned by 2030; and
- For renewable energy projects to have at least an element of local ownership from 2020.

3.3.19 Further, paragraph 5.9.1 states that *"Local authorities should facilitate all forms of renewable and low carbon energy development and should seek cross-department co-operation to achieve this. In doing so, planning authorities should seek to ensure their area's full potential for renewable and low carbon energy generation is maximised and renewable energy targets are achieved."*

3.3.20 It is noted that for large scale wind energy development, set out at page 98, *"Wales has an abundant wind resource, and that wind energy forms a key part of meeting the Welsh Government's vision for future renewable energy production".*

3.3.21 Paragraph 5.9.20 goes on to place a requirement on planning authorities to identify opportunities to *"avoid, mitigate or compensate adverse impacts of renewable and low carbon energy development throughout all life stages of the development".* This should include consideration of the following:

- *"The need to minimise impacts on local communities, such as from noise and air pollution, to safeguard quality of life for existing and future generations;*
- *The impact on the natural and historic environment;*
- *Cumulative impact;*
- *The capacity of, and effects on the transportation network;*
- *Grid connection issues where renewable (electricity) energy developments are proposed; and*
- *The impacts of climate change on the location, design, build and operation of renewable and low carbon energy developments. In doing so, consider whether measures to adapt to climate change impacts give rise to additional impacts."*

3.3.22 Paragraph 5.9.21 follows this with a requirement for developers to *"wherever possible, consider how to avoid, or otherwise minimise, adverse impacts through careful consideration of location, scale, design and other measures."*

3.3.23 Section 6.2 addresses Green Infrastructure, with recent updates introducing the requirement for a Green Infrastructure Statement (GIS) to be submitted with all planning applications. It is noted this is to be proportionate to both the scale and nature of the Proposed Development, setting out how green infrastructure has been incorporated into the development and how the step-wise approach has been implemented.

3.3.24 Section 6.3 addresses Landscape considerations, with paragraph 6.3.3 recognising the importance of Wales's natural landscapes, stating that "*All the landscapes of Wales are valued for their intrinsic contribution to a sense of place, and local authorities should protect and enhance their special characteristics*".

3.3.25 Section 6.4 goes on to address Biodiversity and Ecological Networks, noting that biodiversity underpins the structure and functioning of ecosystem. Paragraph 6.4.3 sets out the key role of the planning system to help reverse the decline of biodiversity, in turn increasing the resilience of ecosystems. Implementation of the step-wise approach outlines the steps taken towards securing enhancement measures and a net benefit for biodiversity.

3.3.26 These enhancement measures could include on-site, locally relevant, habitat creation and/or could be biodiverse nature-based solutions such as SUDS, green roofs, grassland management for wildflowers or reptile refugia, woodland expansion, and wetland creation.

3.3.27 Paragraph 6.4.5 states that "*Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions*", going on to highlight

that development should not lead to any significant loss of habitats or species populations.

3.3.28 At paragraph 6.4.40, PPW recognises the significance of existing trees, woodland and hedgerows and states "*their retention, protection and integration should be identified within planning applications".* Where such loss is unavoidable, replacement planting will be subject to relevant ratios outlined in PPW.

Powys Local Development Plan (2011–2026)

3.3.29 The Powys Local Development Plan 2011–2026 was adopted in April 2018. Work has started on a Replacement Local Development Plan 2022–2037 which is anticipated for adoption in September 2027.

3.3.30 It should be noted that the Local Development Plan was adopted prior to the publication of the most recent Welsh National Policy: Planning Policy Wales (Edition 12, Feb 2024) and Future Wales: The National Plan 2040 (Feb 2021). National policy takes precedence over the Powys Local Development Plan (2011–2026).

3.3.31 The overarching policy within the Powys Local Development Plan comprises Policy RE1 Renewable Energy,, which states in full that:

"Proposals for renewable and low carbon energy development will be permitted subject to the following criteria:

1. *Within or close to the Strategic Search Areas (SSAs), proposals for wind energy greater than 25MW will be permitted subject to criteria 3-5, all other proposals for renewable and low carbon energy will only be permitted where they can demonstrate they would not prejudice the purpose of the SSA.*
2. *Within the Local Search Areas (LSA), proposals for the solar PV between 5-50MW will be permitted subject to criteria 3-5; all other proposals for renewable and low carbon energy will only be permitted where they can demonstrate they would not prejudice the purpose of the LSA.*
3. *Proposals for all types of renewable and low carbon energy development and associated infrastructure either on their own, cumulatively or in combination with existing, approved or proposed development, shall comply with all other relevant policies in the LDP.*
4. *Satisfactory mitigation shall be in place to reduce the impact of the proposal and its associated infrastructure. Proposals shall make provision for the restoration and after-care of the land for its beneficial re-use.*
5. *Where necessary, additional compensatory benefits will be sought by agreement with applicants in accordance with Policy DM1 – Planning Obligations."*

3.3.32 This Policy refers to Strategic Search Areas for wind generation, which relates to previous national policy. It is therefore considered that this part of the policy

is out of date and as such can be disregarded; reference should be made to Policies 17 and 18 of Future Wales instead. Confirmation of this is sought from Powys County Council.

3.3.33 Further policies from the Powys Local Development Plan (2011–2026) that are considered relevant to the Proposed Development and will be taken into account in the preparation of the planning application are set out below at **Table 3.1.** Confirmation is sought from PCC as to whether there are any other relevant policies which require consideration.

Table 3.1: Relevant Powys Local Development Plan Policies

Policy Number	Policy Title
Strategic Policy SP7	Safeguarding of Strategic Resources and Assets
DM2	The Natural Environment
DM4	Landscape
DM5	Development and Flood Risk
DM6	Flood Prevention Measures and Land Drainage
DM7	Dark Skies and External Lighting
DM8	Minerals Safeguarding
DM13	Design and Resources
T1	Travel, Traffic and Transport Infrastructure

3.3.34 A review of adopted proposals maps identified the following designations located within the Site area:

- Special Area of Conservation (Policy SP7, Policy DM2)
  - River Wye / Afon Gwy (Wales) Special Area of Conservation;
- Site of Special Scientific Interest (Policy SP7, Policy DM2)
  - River Wye (Tributaries) / Afon Gwy (Isafonydd) SSSI;
- Scheduled Ancient Monument (Policy SP7)
  - Cefn Clawdd Cairn (East)
  - Cefn Clawdd Cairn
  - Gwaun Ymryson Round Cairn I and II
  - Banc y Celyn Stone Circle;

- Sand and Gravel Category 2 Resource Safeguarding Area (Policy SP7, Policy DM8).

3.3.35 Confirmation is sought from PCC as to whether there are any other policy designations across the Site.

3.4 Local material considerations

Supplementary planning guidance

3.4.1 The Renewable Energy Supplementary Planning Guidance (SPG) was adopted in 2019 and provides general guidance on the application of the policies of the Powys Local Development Plan. However, this is based on the now superseded TAN8 areas and therefore it is considered little weight can be given to this SPG. Confirmation of this is sought from PCC.

3.4.2 It is also considered the following SPGs are also relevant:

- Biodiversity and Geodiversity
- Landscape
- Archaeology
- Historic Environment

3.4.3 Confirmation is sought from PCC as to whether there are any other relevant SPGs which require consideration.

Powys County Council Climate Emergency

3.4.4 In September 2020, PCC declared a climate emergency which included an ambition to reduce its carbon emissions to net zero, in line with the Welsh public sector target of 2030.

3.4.5 The Climate Change Strategy document 'A Strategy for Climate Change- Net positive Powys 2021-2030' states that "By formally declaring the emergency, the Council are saying that the work that we are doing to tackle climate change needs to grow and speed up".

3.4.6 One of the high-level key aims of the strategy is to work in partnership to overcome barriers to the development of renewable energy across the county for local energy networks and to promote the sustainable and appropriate use of renewable resources from air, land and water.

3.4.7 This declaration is considered to constitute a material consideration in the determination of the application.

Technical Advice Notes

3.4.8 In addition to the key themes set out through PPW, a series of Technical Advice Notes (TANs) supplement the overarching document. Those considered to be of relevance to the application include:

- TAN 5: Nature Conservation and Planning (2009);
- TAN 11: Noise (1997);
- TAN 12: Design (2016);
- TAN 15: Development and Flood Risk (2021);
- TAN 18: Transport (2007); and
- TAN 24: The Historic Environment (2017).

Building Better Places

3.4.9 Building Better Places 'The Planning System Delivering Resilient and Brighter Futures – Placemaking and the Covid-19 Recovery' was published July 2020, pinpointing the most relevant policy priorities contained in PPW that will aid in the recovery from the Covid-19 crisis. This document recognises the climate change emergency declared by the Welsh Government.

3.4.10 The document states at page 11, regarding climate change and decarbonisation, that this is directly relevant to the climate emergency, with "*PPW setting out an ambitious and comprehensive policy framework for planning authorities to address the causes and effects of climate change*". It adds that other relevant PPW policy areas relating to tackling climate change and making more resilient places include ensuring biodiversity enhancement and the requirement for local authorities to establish renewable energy targets.

Welsh Climate Emergency

3.4.11 The Welsh Government declared a Climate Emergency on the 29th April 2019, with the Senedd becoming the first Parliament in the world to declare the Climate Emergency in response to commitments under the Paris Agreement. The Welsh Government is committed to achieving net zero emissions against the 1990 baseline no later than 2050, with interim targets including an 89% reduction in emissions by 2040. The Welsh Government is also committed to achieving a carbon neutral public sector by 2030 and to coordinating action to help other areas of the economy to make a decisive shift away from fossil fuels, involving academia, industry and the third sector.

3.5 References

- Powys County Council, (2018). Powys Local Development Plan 2011 – 2026. Available at: https://en.powys.gov.uk/article/4898/Adopted-LDP-2011---2026
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- Addressing the nature emergency through the planning system: update to Chapter 6 of Planning Policy Wales [online]. Available at: https://www.gov.wales/addressing-nature-emergency-through-planning-system-update-chapter-6-planning-policy-wales [Accessed April 2024].

4 REASONABLE ALTERNATIVES CONSIDERED

4.1 Introduction

4.1.1 Regulation 17(3)(d) of the EIA Regulations states that an ES should include: "A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) 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 selecting the chosen option, including a comparison of the environmental effects."

4.1.2 The reasonable alternatives assessment will focus on; the Site selection process, design layouts / opportunities within the Site, the sizing and scale of infrastructure, and alternative technologies.

4.1.3 The location has been identified by the Applicant as suitable for renewable energy development through initial technical and environmental surveys, and negotiations with landowners. A 'no development' alternative would not deliver additional energy generation capacity therefore it will not be considered further.

4.1.4 The consideration of alternatives and design evolution will be undertaken with the aim of avoiding and/or reducing adverse environmental effects, maintaining operational efficiency and cost-effective design solutions, and with consideration of other relevant matters such as available land and planning policy.

4.2 Alternatives studied to date

Introduction

4.2.1 The Applicant has a well-established process for selecting sites and identifying land for wind farm development throughout the UK. The overall approach to wind farm site selection is to identify areas of land where the siting of a wind farm would result in minimal environmental effects, be free from overriding technical constraints, and be economically viable. This initial site identification exercise involves:

- A review of current and emerging planning policy (at the National and Local level) (see Chapter 3).
- Geographical Information System (GIS) constraints analysis.
- A review of suitable site access points and related transportation issues.

GIS constraints analysis

4.2.2 The GIS constraints analysis involves identifying and mapping environmental, technical, and engineering constraints to wind farm development (**Appendix C**). Constraints that were considered as part of the site selection exercise for the Proposed Development included:

- Aviation interests: include visibility to radars (both military and civilian) and Ministry of Defence (MoD) facilities and operations.
- Landscape designations: including National Parks and local landscape designations.
- Ecological designations: including International designations (e.g., Special Protection Areas), National designations (e.g., Sites of Special Scientific Interest), and Local designations (e.g., Local Nature Reserves).
- Cultural heritage designations: including Registered Gardens and Designed Landscapes, Registered Battlefields, World Heritage Sites, Listed Buildings, Conservation Areas, and Scheduled Ancient Monuments.
- The pattern of settlement and land use: include residential properties and settlements, use of the Site, and existing infrastructure.
- Other sensitive environmental receptors including public rights of way, habitats of principal importance, peatlands, ground water dependant terrestrial ecosystems, watercourses, surface flood risk areas, potential noise sensitive residential properties and telecommunications links.

4.2.3 The predicted wind resource in any given location is an important consideration in identifying potentially suitable wind farm sites. The electricity that can be generated by a wind farm is directly linked to wind speed. Wind speed generally increases with height above ground level. The amount of electricity generated increases disproportionately with increases in wind speed, this in turn affects the carbon emission savings and the commercial viability of a site. Potential wind farm sites are therefore reviewed in relation to a number of publicly available data sources in the first instance, including the NOABL and other wind speed databases.

Suitable access considerations

4.2.4 Given the size and scale of abnormal indivisible loads (AILs) associated with wind farm development, a site must demonstrate that it is accessible for construction traffic. The Applicant has conducted a Route Survey Report (RSR) to help inform the likely issues associated with the development of the Proposed Development with regards to off-site transport and access for AIL traffic. The report identified the key issues associated with AIL deliveries and notes any requirement for remedial works, either in form of physical works or

as traffic management interventions, will be required to accommodate the predicted loads.

5 APPROACH TO EIA

5.1 Introduction

5.1.1 This chapter sets out the overall approach that will be taken to the EIA for the Proposed Development. The ES will contain the information specified in Regulation 17 and Schedule 4 of the EIA Regulations. The approach to the assessment has also been informed by current best practice guidance where applicable.

5.1.2 The environmental factors listed under Regulation 4(2) and Schedule 4 (Paragraph 4) of the EIA Regulations are presented below:

- Air quality.
- Biodiversity.
- Climate.
- Cultural heritage.
- Population.
- Human health.
- Land and soil (factors combined for the purposes of reporting)
- Landscape and visual.
- Material assets.
- Water.

5.1.3 It should be noted that although not listed as specific environmental 'factors' under Regulation 4(2) and Schedule 4 (Paragraph 4) of the EIA Regulations, the following are also considered as topics for assessment within this EIA Scoping Report:

- Aviation.
- Glint and glare.
- Heat and radiation.
- Major accidents and disasters.
- Noise and vibration.
- Shadow flicker.
- Telecommunication and utilities.
- Traffic and movement.

5.1.4 An overview of the guidance and methodology adopted for each environmental factor is provided within the relevant section of **Chapter 7**.

5.1.5 The proposed structure of the ES is set out in **Appendix D**.

5.2 Consultation

5.2.1 Consultation alongside the EIA process is critical to the development of a comprehensive and proportionate ES. The views of statutory and non-statutory consultees are important to ensure that the EIA focuses on specific issues where significant environmental effects are likely, and where further investigation to determine this is required.

5.2.2 Ongoing consultation enables embedded and additional mitigation measures to be incorporated into the Proposed Development to limit adverse environmental effects and optimise environmental benefits. Early and ongoing engagement with consultees will be important to influence the design process of the Proposed Development by seeking an appropriate level of feedback from consultees, to ensure that comments are considered in the evolving design.

5.2.3 As part of the pre-application consultation (PAC) process, consultation will be undertaken with a range of statutory and non-statutory consultees. It is anticipated at this stage that consultees will include (but is not limited to):

- Powys County Council.
- Erwood Community Council.
- Duhonw Community Council.
- Merthyr Cynog Community Council.
- Graziers and Commons Associations
- Heneb Clwyd-Powys Archaeology
- Welsh Government.
- Natural Resources Wales.
- Bannau Brycheiniog National Park Authority.
- Cadw.
- North and Mid-Wales Trunk Road Agency.

5.2.4 The purpose of this consultation will be to brief consultees on the Proposed Development, seek feedback on the approach to assessment, and obtain baseline data. A summary of consultation will be included within the ES and technical consultation will be summarised within the individual technical chapters.

5.2.5 The Applicant intends to carry out community consultation, with public exhibitions and mailshots. The outcome of the consultation process will be compiled into a Consultation Report to accompany the Application, detailing the consultation undertaken and any changes made to the proposal as a result of feedback received.

5.3 Defining the study area

5.3.1 Study areas have been defined individually for each environmental factor, taking into account the geographic scope of the potential impacts relevant to that factor and the information required to assess those impacts. The proposed study areas are described within **Chapter 7** of this EIA Scoping Report.

5.3.2 As part of the EIA process it is necessary to collect data from within a topic specific zone of influence, which may fall within or outside of the proposed Site boundary. Where it is not possible to access land either due to health and safety or other access restrictions, data will be collected from the nearest accessible land or using remote sources.

5.4 Establishing baseline conditions

5.4.1 Likely significant environmental effects of the Proposed Development will be described in the ES in relation to the extent of changes to the existing baseline environment as a result of the construction, operation and/or decommissioning of the Proposed Development. The baseline environment will comprise the existing environmental characteristics and conditions, based upon desk-top studies, field surveys undertaken and information available at the time of the assessment.

5.4.2 Baseline conditions will be established by:

- site visits and surveys
- desk based studies and
- modelling.

5.4.3 The baseline conditions for each environmental factor are set out within the respective assessment chapters of this Scoping Report (see **Chapters 7**).

5.4.4 The baseline conditions used in the ES will vary depending on the timing of surveys or the date at which data sources have been produced / assessed. It is anticipated that information required to inform the baseline environment for the assessments will be based on data obtained or surveys completed between 2021 and 2024. Where appropriate, existing baseline data collected prior to this may be used to inform the assessment if it is deemed to remain relevant.

5.4.5 Data obtained from third party sources may be older, but the origin of all third-party data will be clearly outlined, alongside any limitations and assumptions.

5.4.6 Baseline data which is deemed to be confidential in nature, such as that relating to protected species, will be provided in separate confidential appendices to the ES, due to the sensitivity of such species records.

5.4.7 The period of validity for each set of baseline data collected will be set out in the ES and, where appropriate, the requirement for any repeat surveys will be specified.

5.5 Establishing future baseline conditions

5.5.1 Schedule 4(3) of the EIA Regulations requires consideration of the likely evolution of the current state of the environment (baseline scenario) in the absence of the Proposed Development, as far as natural changes from the baseline scenario can be assessed with reasonable effort based on the availability of environmental information and scientific knowledge (the 'future baseline').

5.5.2 Whilst there are considerable limitations to the predictions that can be made about natural baseline conditions at a future point in time, reasonable effort will be made to characterise the future baseline in the absence of the Proposed Development in each topic assessment. Where possible these predictions would be quantified as projections to account for future change within the assessment of likely significant effects associated with the Proposed Development.

5.6 Approach to mitigation

5.6.1 Mitigation can be relied on to reduce any potential significant effects from the Proposed Development. The Institute of Environmental Management and Assessment (IEMA) 'Impact Assessment Guidelines: Implementing the Mitigation Hierarchy from Concept to Construction' (2024) refers to the sequential steps of the mitigation hierarchy are as follows:

- Avoid – Identify and avoid potential environmental and social impacts from the outset through considering carefully, for example, the project need, scale, design, location and duration.
- Prevent – Where impacts from a proposal still pose risk of significant adverse effects to receptor, seek to prevent those effects from occurring by taking action(s) to either remove the impact at source or intervene in its pathway to prevent it affecting the receptor.
- Reduce – If further avoidance and/or prevention are not possible for any remaining aspects, all remaining impacts must be mitigated with guidance from a competent expert with the aim of minimising adverse effects. Mitigation can take many forms and should be specific to the project conditions and context, whilst drawing on good practice and guidance. Mitigation should be reliable, achievable and secured by condition, requirement or legal agreement.

- Offset – Lastly, any remaining unmitigated or residual impacts should be offset and compensated for.

5.6.2 IEMA (2024) refers to three types of mitigation as follows:

- Primary: An intrinsic part of the project design.
- Secondary: Typically described within the environmental factor chapters of the ES, but often are secured through planning conditions and/or management plans.
- Tertiary: Required regardless of any EIA, as it is imposed, for example, as a result of legislative requirements and/or standard sectoral practices.

5.6.3 For the purposes of this EIA Scoping Report and the ES, embedded 'primary' mitigation measures will form part of the Proposed Development for which development consent is sought. **Table 5.1** describes the currently known embedded environmental mitigation measures that are considered to be an inherent part of the Proposed Development i.e., the project design principles adopted to avoid or prevent adverse environmental effects, based on the design of the Proposed Development to date. It should be noted that these will likely evolve over the course of the design evolution, up to submission of the DNS Application.

5.6.4 These embedded environmental mitigation measures should not be confused with additional (secondary and tertiary) mitigation measures proposed in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment, which are described under the 'Additional (Secondary and Tertiary) Mitigation Measures' section within each environmental factor assessment chapter (see **Chapters 7**).

Table 5.1: Embedded environmental mitigation measures

Environmental Factor to which the Embedded Environmental Mitigation Measure Relates	Embedded Environmental Mitigation Measure and Associated Benefit
• Landscape and visual • Land, soils and water • Ecology • Ornithology • Noise • Access, traffic, and transport • Cultural Heritage	Locating turbines to avoid sensitive environmental receptors The indicative turbine layout presented in **Appendix B** has considered and/or avoided the following features: • Residential properties (at least 700 m from properties which are not financially involved). • At least 50 m from watercourses. • At least 80 m from PRoW crossing the Site. • At least 200 m from Scheduled Monuments located on the Site. • Avoidance of areas of blanket bog and wet modified bog identified through an Extended Phase 1 Habitat Survey. • Avoidance of areas of peat (>0.3 m) identified through Phase 1 Peat Surveys. • At least 50 m from Afon Gwy (River Wye) SAC. • At least 50 m from River Wye (Tributaries) / Afon Gwy (Isafonydd) SSSI.

Environmental Factor to which the Embedded Environmental Mitigation Measure Relates	Embedded Environmental Mitigation Measure and Associated Benefit
• Telecommunications and utilities • Access, traffic, and transport	Locating turbines to avoid existing infrastructure, engineering constraints and land use features The indicative turbine layout presented in **Appendix B** has considered and/or avoided the following features: • Telecommunication links within 2 km of the Site. • Slopes of greater than 19 degrees. • At least 200 m from the local highway network. • At least 200 m from existing overhead power lines crossing the Site.

5.7 Assessment of likely significant effects

5.7.1 The ES will report on the likely significant environmental effects for the Site preparation, earthworks and installation (hereafter referred to as 'construction'), operational (i.e., once completed and open to use), and decommissioning (i.e., once the development has reached its end of life) phases of the Proposed Development.

5.7.2 The design of the Proposed Development will continue to be progressed and there will be a need to continue refining the design up to the detailed design stage, requiring a certain level of flexibility to be maintained (e.g., micro-siting of wind turbines and other infrastructure). However, the assessment will be based on a likely 'worst-case' approach and the level of information provided will ensure that likely significant effects are identified.

5.7.3 The following criteria will be taken into account when assessing significance:

- Likelihood of occurrence.
- Adherence of the Proposed Development to legislation, planning policy, international, national, and local standards.
- The receptors / resources (natural and human) which would be affected and the pathways for such effects.
- The geographic importance, sensitivity or value of receptors / resources.

- The duration (short-term, medium-term or long-term); permanence (permanent or temporary) and changes in significance (increase or decrease).
- Reversibility - e.g., whether the change is reversible or irreversible, permanent or temporary.
- Environmental and health standards (e.g., local air quality standards) being threatened.

5.7.4 The method for assessing significance of effects varies between environmental factors but, in principle, will be based on the environmental sensitivity (or value / importance) of a receptor / resource and the magnitude of change from the baseline conditions. The approach to assessing the significance of effects for each individual factor is outlined within **Chapter 7**.

5.7.5 Summary likely significant effect tables associated with each of the environmental factors will be provided at the end of each factor assessment chapter of the ES. These tables will outline sensitive receptors, additional mitigation measures and residual effects. A distinction will be made between direct, indirect, secondary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects. Cumulative effects will be considered as a single coordinated assessment.

5.8 Opportunities for enhancing the environment

5.8.1 Where possible, there will be a commitment to identifying opportunities for enhancement within the relevant environmental factor assessments. Enhancement is defined as '*a measure that is over and above what is required to mitigate the adverse effects of a project*'. Therefore, any identified enhancement measures will not be taken into account when determining the significance of effects.

5.8.2 Enhancement measures will be assessed in accordance with steps set out in PPW and may include off-site planning, Net Benefit for Biodiversity (NBB) and other measures to be determined.

5.9 References

- IEMA (2024). Impact Assessment Guidelines: Implementing the Mitigation Hierarchy from Concept to Construction'. Available at: https://www.iema.net/media/oone2qce/iema-mitigation-in-eia-guidance-final.pdf .
- Welsh Government. (2024). Planning Policy Wales. [Online]. Available at: https://www.gov.wales/sites/default/files/publications/2024-07/planning-policy-wales-edition-12.pdf.

6 ENVIRONMENTAL FACTORS PROPOSED TO BE SCOPED OUT

6.1 Introduction

6.1.1 As part of the EIA process and based on the information available to date, there are a number of environmental factors, as listed under **Section 5.1**, for which assessment as part of the formal EIA process (i.e. presented as an ES chapter) is not considered justified. The reasons for this are discussed below. Reference is also made to where further information will be provided, if required, either presented elsewhere in the ES or as part of the wider planning application.

6.2 Air quality

6.2.1 There are no Air Quality Management Areas (AQMAs) located within 2 km of the Site boundary. In addition, there are no AQMAs located in close proximity to the proposed off-site access route for any Abnormal Indivisible Load (AIL) deliveries.

6.2.2 Given the nature of the Proposed Development, any potential impacts on air quality are only likely to occur during the construction and decommissioning phases. It is anticipated that any emissions, associated with site activities and off-site traffic, would be localised and therefore unlikely to give rise to likely significant effects on the environment. Furthermore, it is proposed that an Outline CEMP would be produced as part of the DNS Application, and this would be used as a basis for a full CEMP secured by condition to be produced to safeguard against likely significant effects in the construction phase of the development.

6.2.3 For example, limited localised construction dust from site activities and road traffic emissions would be controlled by the adoption of construction best practices, with all relevant procedures to be documented in the Outline CEMP.

6.2.4 As no significant air quality impacts are predicted it is proposed that air quality is scoped out of the ES.

6.3 Aviation

Introduction

6.3.1 Renewable energy developments which include onshore wind turbines have the potential to affect aviation interests, either by presenting a physical obstruction or collision risk to aircraft, or by interfering with the operation of surveillance and navigational equipment.

Initial assessment and consultation

6.3.2 An initial feasibility assessment has been carried out by Coleman Aviation Ltd. with consideration to the potential impact of the Proposed Development on civil and military aviation interests and the relevant aviation stakeholders. The assessment was undertaken by means of a desktop study, including a review of the relevant aviation policy and legislation documents, and data sources (including aviation flying charts and other flight information publications). In addition, Coleman Aviation drew upon prior experience of dealing with statutory aviation bodies. The assessment considered the following aviation receptors:

- Civil airport Instrument Flight Procedures (IFPs).
- Military aerodrome IFPs.
- Civil Air Traffic Control (ATC) radar.
- Military ATC radar / Air Defence (AD) radar.
- Local minor aerodromes.
- Military low flying.
- Local airspace restrictions (Prohibited/Restricted/Danger Areas and Military Exercise and Training Areas).
- Meteorological (Met) Office radar.

6.3.3 The airspace over the vast majority of the Site is Class G (uncontrolled) which is established from ground level up to Flight Level (FL) 195 (19,500 feet (ft)). Above FL 195 is Class C controlled airspace which forms part of the London Upper Information Region.

6.3.4 The eastern portion of the Site lies underneath the western edge of a portion of Class A controlled airspace, known as the Niton Control Area, which is established from FL 125 (12,500 ft) up to FL 195. This airspace is used by commercial airliners transiting between the Cardiff and Liverpool / Manchester areas and is controlled by National Air Traffic Services (NATS) controllers based in the London ATC Centre at Swanwick in Hampshire. The nearest NATS radar to the Site is the Clee Hill ATC radar located approximately 34 nautical miles (nm) (63 kilometres (km)) to the east-north-east.

6.3.5 The western portion of the Site abuts the boundary of the Sennybridge Danger Area D203. This extends from ground level up to 23,000 ft above mean sea level. Activities within the danger area include use of munitions and explosives; parachute dropping; helicopters, fast jets and tactical transport aircraft operating at low level; and use of unmanned aircraft systems (UAS). Due to the nature of these operations, Sennybridge Danger Area D203 is also classified as a Tactical Training Area known as Low Flying Area 7(T) in which military aircraft can operate down to 100 ft above ground level (agl).

6.3.6 The remainder of the Site is entirely within Low Flying Area 7 which is classified by the Ministry of Defence (MoD) as a lower priority area in which military aircraft can operate down to 250 ft agl. Both Low Flying Area 7 and Low Flying Area 7(T) are of strategic importance to the MoD in training fast-jet aircrews, in particular, to operate at the ultra-low levels that may be required in operational theatres.

6.3.7 The Site is located a sufficient distance from civil airports, minor aerodromes or military aerodromes for the Proposed Development to have any potential impact on their patterns and procedures. In addition, that there are no military ATC or AD radars that could be affected by the Proposed Development. Equally, the nearest Met Office radar is located 66 km from the Site, which is well beyond the 20 km consultation zone for such facilities.

6.3.8 The initial assessment highlighted that the Proposed Development could have a potential impact on the operation of the NATS Clee Hill ATC radar and military low flying operations within Low Flying Area 7 and Low Flying Area 7(T).

Consultation

6.3.9 Coleman Aviation have initiated pre-application discussions with both the MoD and NATS on behalf of the Applicant to understand the requirement for mitigation as part of the Proposed Development.

6.3.10 At the time of writing, the MoD has confirmed that any adverse impact on military low flying operations can be mitigated by installation of appropriate aviation lighting which will be included in a Lighting Plan (LP) that will be presented as an appendix to the ES.

Detailed assessment

6.3.11 A standalone technical report, based upon the guidance in CAP 764 Policy and Guidelines on Wind Turbines Version 6 (2016) (CAA, 2016), will be prepared by Coleman Aviation to present an analysis of the aviation and radar issues pertinent to the Proposed Development. This will be undertaken outside of the EIA process but will be submitted in support of the Application.

6.3.12 The requirement for aviation lighting as part of the Proposed Development will be assessed in the Landscape and Visual Impact Assessment (refer to **Section 7.5**).

6.4 Glint and glare

6.4.1 As described in **Section 2.5**, the Applicant is considering PV solar panels as part of the Proposed Development. If PV solar panels are included as part of the Proposed Development, then the Applicant will need to consider the potential for glint and glare from the PV solar panels.

6.4.2 PV solar panels are specifically designed to absorb light rather than reflect it. Light reflecting from PV solar panels results in the loss of energy output. PV solar panels are dark in colour due to their anti-reflective coatings and are manufactured with low-iron, ultra-clear glass with specialised coatings and textures to enable maximum absorption. The combination of these factors significantly increases electrical energy production of the panels and at the same time significantly reduces reflected rays.

6.4.3 There are no guidelines setting out a particular methodological approach to delivering a glint and glare assessment. The draft National Policy Statement EN-3 states in Section 2.52.4: "*Solar PV panels are designed to absorb, not reflect, irradiation. However, the Secretary of State should assess the potential impact on glint and glare on nearby homes and motorists*".

6.4.4 If PV solar panels are to be included as part of the Proposed Development, further consultation will take place following confirmation of the PV solar panel locations to confirm the requirement for a Glint and Glare assessment. If deemed required, a detailed standalone glint and glare assessment will therefore be undertaken and submitted in support of the DNS Application, considering ground-based (residential dwellings, road, and rail) and airborne (airfields, Air Traffic Control Towers, and approaching aircrafts) receptors. Detailed geometric analysis will be undertaken using a bespoke glint and glare model for all receptors potentially affected by the Proposed Development.

6.4.5 A description of any relevant impact avoidance measures and safety considerations of the Proposed Development will be included within the Description of the Proposed Development chapter of the ES.

6.5 Heat and radiation

6.5.1 The requirement to consider heat and radiation in UK EIA practice was introduced via the EIA Regulations 2017. Schedule 4(5)(c) of the EIA Regulations requires that an ES includes: *'A description of the likely significant effects of the development on the environment resulting from, inter alia:*

(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste.'

6.5.2 Due to the scale and nature of the Proposed Development, it is not anticipated that there will be any significant sources of heat or radiation during construction, operation, or decommissioning. Heat and radiation emissions is therefore scoped out of the EIA.

6.6 Major accidents and disasters

6.6.1 Guidance on the consideration of major accidents and disasters is provided in 'Major Accidents and Disasters in EIA: A Primer' (IEMA, 2020). The guidance recommends focusing on the consideration of low likelihood / high consequence events with the potential to result in serious harm or damage to environmental receptors, and which could encompass risks exacerbated by climate change. This includes accidents or disasters originating from a proposed development as well as external events (man-made or natural).

6.6.2 In considering the potential for significant effects from the vulnerability of the Proposed Development to risks of accidents and disasters, it is important to note that the UK already has a structured framework of risk management legislation in place. Vulnerability to major accidents and/ or disasters for infrastructure and other built environment developments is covered by a wide range of other safety and non-safety-related legislation, as detailed below:

- Health and Safety at Work Act 1974.
- Construction (Design and Management) Regulations 2015.
- The Construction (Health, Safety and Welfare) Regulations 1996.
- Electricity Safety, Quality and Continuity Regulations 2002.

6.6.3 The risk of major accidents and disasters will be considered throughout the design process of the Proposed Development and any mitigation measures will be included within the Outline CEMP, Outline Operational Environmental Management Plan (OEMP), Outline DEMP and Battery Safety Commitments (if required).

6.6.4 Potential for types of major accidents and/or disasters to arise during the construction, operation and decommissioning phases of the Proposed Development are considered with respect to various potential receptors in **Table 6.1**. A description of relevant safety features of the Proposed Development is provided in the comments column of the table, and will be detailed within the project description chapter of the ES.

Table 6.1: Potential major accidents and disasters.

Major Accident and/or Disaster	Potential Receptor	Comments
Fire	• Properties • Local residents • Local	As described in **Section 2**, the Applicant is considering energy storage facilities as part of the Proposed Development. There is a potential fire risk associated with it. This will be managed by a cooling system, which will

Major Accident and/or Disaster	Potential Receptor	Comments
	habitats and species	form part of the facility, which is designed to regulate temperatures to safe conditions to minimise the risk of fire. The Fire and Rescue Service will be consulted as part of the DNS process if a battery storage facility is brought forward. A Plume Assessment would also be undertaken and submitted in support of the Application and will be appended as a separate report to the ES. This will assess the potential impact were a fire event to occur. A Battery Safety Management Plan will be produced and submitted as part of the Application to account for the potential safety risks and the relevant mitigation and management procedures.
Flooding	• Properties • Local residents	The majority of the Site is located within Flood Zone 1 and is at low risk of surface water flooding. Therefore, the Site is not considered to be at significant risk of river flooding or surface water flooding. The vulnerability of the Proposed Development to flooding and its potential to exacerbate flooding will be set out in a Flood Consequence Assessment, which will be submitted in support of the Application.
Aircraft disasters	• Pilots/ aviation	The potential for solar elements of the Proposed Development to cause glint and glare impacts on aircraft will be considered within the glint and glare assessment which will form a technical appendix to the ES, if deemed to be required.
Peat Slide	• Habitats	As described within **Section 7.4**, there may be a requirement to consider the risk of peat slide if peaty soils (i.e. areas of peat greater than 30-40 cm) cannot be avoided. In such

Major Accident and/or Disaster	Potential Receptor	Comments
		a case, a Peat Slide Risk Assessment will be prepared in support of the Application.
Topple risk	• Residential properties • Strategic highways • Public rights of way (PRoW)	Turbines will be located at least 700 m away from the nearest residential properties. As such this would remove topple risk to residential property. UK Government guidance for strategic road network and sustainable development[4] recommends wind turbines should not be located where motorists need to pay particular attention to the driving task, such as the immediate vicinity of connections, sharp bends, and crossings for pedestrians, cyclists and horse-riders. To mitigate the risks to the safety of road users arising from structural or mechanical failure, wind turbines should be sited a minimum distance of the height of the turbine to blade tip + 50 metres or height x 1.5 (whichever is the lesser) from the highway boundary of the strategic road network. However, for the Proposed Development, no turbines will be located within these distances to the A470 strategic highway. The indicative turbine layout has sought to avoid oversail on PRoW. The Powys Council Public Rights of Way Officer will be consulted on the Proposed Development with respect to impacts on PRoW.

6.6.5 Measures required under the existing safety and non-safety regimes will be sufficient to manage vulnerabilities to major accidents and/or disasters without the need for additional mitigation. It is not expected that inclusion of major accidents and disasters in the EIA scope would add any greater level of safety

[4] Strategic road network and the delivery of sustainable development - GOV.UK https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development/strategic-road-network-and-the-delivery-of-sustainable-development#special-types-of-development

performance to that already established by the existing safety legislation and regulation. No significant effects in relation to major accidents and disasters are therefore anticipated during the construction, operation and decommissioning phases. It is therefore proposed that major accidents and disasters are scoped out of the EIA.

6.7 Material assets and waste

6.7.1 Material assets can be defined as "substances used in each lifecycle stage of a development, with particular focus on the construction, operation and maintenance, and decommissioning or 'end of first life' (deconstruction, demounting, demolition and disposal) phases" (IEMA, 2020). Material assets can include 'material' (i.e. physical resources that are used across the lifecycle of a development) and 'excavated arisings' (i.e. soil, rock, or similar resource generated by excavations).

6.7.2 Waste is defined as '*any substance or object which the holder discards or intends or is required to discard*' (IEMA, 2020). The Waste Framework Directive definition includes "*any substance or object that is discarded for disposal or that has not been subject to acceptable recovery (including reuse and recycling)".*

6.7.3 The main impacts (changes) and effects (consequences) of materials consumption and waste disposal relevant to the Proposed Development are presented in **Table 6.2**.

Table 6.2: Impacts and effects of material consumption and waste disposal relevant to the Proposed Development

Matter	Direct Impacts	Adverse Effects	Applicable Development Phase
Materials	Consumption of resources	Depletion of resources, resulting in the temporary or permanent degradation of the natural environment for example peat	Construction / decommissioning
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.	Construction / decommissioning

6.7.4 The indirect impacts associated with materials consumption and waste disposal (e.g. release of greenhouse gas emissions, water consumption, amenity impacts, ecological impacts, etc.) will be assessed elsewhere within the EIA. Similarly, the indirect impacts of any off-site waste management facilities and material production facilities are expected to be assessed (and where necessary, mitigated) under the planning and permitting regime for those sites and thus do not form part of an EIA for a development that uses such facilities for material supply or waste management.

6.7.5 A description of the potential streams and volumes of construction materials and waste disposal will be described within the Description of the Proposed Development Chapter of the ES. In addition to this, the outline CEMP will set out how construction materials and waste will be managed on-site, and opportunities to recycle waste will be explored. Where possible, development-specific commitments for sustainable resource management will be presented within the ES.

6.7.6 As part of the detailed CEMP (following the submission of the DNS Application), 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 works.

6.7.7 Significant quantities of waste arisings are not anticipated to require removal from the Site during construction (there are currently no demolition works proposed, for example). Given the nature of the Site and Proposed Development, it is not anticipated that contaminated land or soil requiring specialist investigation and disposal will be encountered. Where possible, soil arisings will be balanced through a cut and fill exercise to retain volumes on Site.

6.7.8 There will be relatively little waste produced during the operation phase and the requirement for material assets will be limited to maintenance and replacement parts, as required. Towers and blades can be expected to last for the lifespan of the energy park with repairs and maintenance.

6.7.9 It is assumed that during the decommissioning phase, any infrastructure and waste requiring removal from the Site will be recycled or disposed of in accordance with good practice and legislative requirements at that time.

6.7.10 A description of any relevant impact avoidance and best practice measures considerations will be included within the Description of the Proposed Development chapter of the ES.

6.8 Population and human health

Socio-economics

6.8.1 It is common practice for potential socio-economic effects of renewable energy parks to be considered within the EIA process and reported in the ES. However, the outcome of these assessments is routinely that any such effects identified fall below the threshold of significance set out in the EIA Regulations. Nevertheless, there is still an expectation at a national and local level for planning decisions to consider the social and economic aspects.

6.8.2 Whilst it is widely accepted that socio-economic benefits are not material considerations under the land-use planning system, decision-making authorities such as the Welsh Ministers and local authorities are required to take these into account as part of their mandate to ensure sustainability and well-being.

6.8.3 In the interests of focussing the ES on likely significant effects, it is proposed to scope out all socio-economic effects from the ES. However a Socio-economics Benefit Statement will be completed that describes how the Proposed Development's socio-economic impacts are expected to benefit the local and wider community.

Land use and public access

6.8.4 As described in **Section 2.4**, the landcover of the Site is a mixture of lowland pasture bounded by hedgerows with areas of open hill grazing. The majority of the Site is registered as common land, the remaining areas of the Site are made up of privately owned pasture.

6.8.5 The general public has the right to take air and exercise over the registered common land pursuant to s193 of the Law of Property Act 1925. There are additional rights for identified holdings and registered people or 'commoners', which go beyond the right to take air and exercise and extend, in the case of this common, to grazing sheep, cattle and horses, taking fern, or rushes, and/or stone. The common land is grazed and the public exercise their rights over the common land.

6.8.6 Whilst impacts on public access to common land will be assessed in the ES, any impacts on the rights of commoners as a result of the Proposed Development will be addressed as a secondary consent under Sections 16 and 38 of the Commons Act 2006 to deregister and exchange common land and to undertake restricted works on common land.

6.8.7 There are a number of PRoW which cross the Site. Where possible, the Proposed Development will be designed to avoid direct impacts on any PRoW. It is anticipated that during operation of the Proposed Development, PRoW will continue to remain open. Any temporary impacts on PRoW during

construction and decommissioning of the Proposed Development would be managed at the time of works taking place as a separate consent.

6.8.8 The Proposed Development has the potential to give rise to visual effects on users of the PRoW and common land. Visual effects have therefore been considered within the Landscape and Visual Impact Assessment of this EIA Scoping Report (**Section 7.5**) and therefore will not be repeated in this section.

Human health

6.8.9 Potential effects of the Proposed Development with respect to human health will be considered with respect to human health receptors in the noise, shadow flicker (where potential for this is identified), and traffic and transport ES chapters.

6.8.10 As described above in relation to Major Accidents and Disasters, relevant safety considerations informing the design of the Proposed Development will be described in the Description of the Proposed Development ES chapter.

6.9 Shadow flicker

6.9.1 Rotating wind turbine blades can cause brightness levels to vary periodically at locations where they obstruct the Sun's rays. This can result in a nuisance when the shadow is cast over the windows of residential properties. This intermittent shadow is described by the term 'shadow flicker'.

6.9.2 The likelihood and duration of shadow flicker depends upon:

- The orientation of a residential property's windows relative to the proposed wind turbines – in the UK, only residential properties within 130 degrees either side of north, relative to the proposed wind turbines, can be affected, as wind turbines do not cast long shadows on the southern side.
- Distance from the proposed wind turbines – the further the observer is from the proposed wind turbine, the less pronounced the effect would be.
- The proposed wind turbine height and rotor diameter.
- The time of year and time of day.
- Weather conditions.

6.9.3 Once the design of the Proposed Development has taken account of all known environmental and technical constraints (including the proximity of the proposed wind turbines to residential properties), a technical assessment of the potential for shadow flicker will be undertaken, with reference to the above criteria, focussing on the operational effects of the Proposed Development.

6.9.4 The technical assessment will determine whether there will be any shadow flicker effects on properties which lie within ten rotor diameters and 130° either side of north from each of the proposed turbines.

6.9.5 There is no formal limit on the amount of shadow flicker that is considered acceptable within the UK. A typical limit, which has been utilised in Northern Ireland, Germany and Belgium, is 30 hours per year with a maximum of 30 minutes per day. If shadow flicker effects are predicted beyond this limit, mitigation may be required to eradicate the occurrence of shadow flicker.

6.9.6 In the event that it is not possible to completely remove shadow flicker effects on residential properties, the Proposed Development will include mitigation measures to reduce any effects to the limits specified above.

6.9.7 Mitigation could include a shutdown scheme which defines the times between which a wind turbine should be shut down to eliminate (or reduce to acceptable limits) shadow flicker effects on each receptor, assuming clear sunny skies. The term 'shutdown' means that the rotating blade is completely still and does not move for the period of time specified.

6.9.8 As the potential impacts relating to shadow flicker will be assessed in a technical appendix outside of the EIA process, it is not considered necessary to include a chapter specific to shadow flicker and therefore it is proposed to scope this out of the ES.

6.10 Telecommunications

6.10.1 Wind turbines have the potential to cause interference to telecommunication systems, including terrestrial fixed microwave links, terrestrial radio telemetry links, and television broadcasts.

6.10.2 With respect to terrestrial television services, any impacts can be mitigated through the simple repositioning / reorientation of antenna or the installation of alternative satellite or cable infrastructure. Given the above, it is considered that effects upon television signals do not require further consideration as part of the EIA.

6.10.3 A feasibility assessment of terrestrial fixed microwave links and terrestrial radio telemetry links has been completed for the Site (**Appendix E**). The assessment identified that, at the time of writing, there are no communication links in the vicinity of the Site that would require any form of mitigation. The review included consultation with link operators including Ofcom, Arqiva, Atkins, BT, MBNL, The Joint Radio Company, Virgin Media/O2, and Vodafone.

6.10.4 Notwithstanding this, consultation with relevant link operators will continue until the design has been fixed. If no objection is received, it is proposed that

the ES will simply describe any restrictions which have arisen as part of the design process. If objections are received, the process for mitigation is to engage with the stakeholder managing the link to discuss a mitigation strategy. This process can be undertaken outside of the EIA process and therefore it is proposed to scope out further consideration of telecommunications.

6.11 References

- CAP 764 – CAA Policy and Guidelines on Wind Turbines (Version 6), Civil Aviation authority. [February 2016]. Available online: 14561 (caa.co.uk)
- Draft National Policy Statement for Renewable Energy Infrastructure (EN3), Department for Business, Energy and Industrial Strategy, September 2021. Available online: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015236/en-3-draft-for-consultation.pdf
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) (1998) ICNIRP Guidelines: For limiting exposure to time-varying electric, magnetic and electromagnetic field (up to 300GHz), Health Physics 74 (4): 494-522. Available online https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf
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- UK Government. 2015 (updated 2023). Guidance on renewable and low carbon energy. Available online: https://www.gov.uk/guidance/renewable-and-low-carbon-energy#particular-planning-considerations-for-hydropower-active-solar-technology-solar-farms-and-wind-turbines

- UK Government. 2022. Guidance on Strategic road network and the delivery of sustainable development. Available online: https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development/strategic-road-network-and-the-delivery-of-sustainable-development
- Institute of Environmental Management and Assessment (IEMA) (2020). Guide to: Materials and Waste in Environmental Impact Assessment – Guidance for a proportionate approach.

7 ENVIRONMENTAL FACTORS PROPOSED TO BE SCOPED IN

7.1 Introduction

7.1.1 As part of the EIA process and based on the information available to date, there are a number of environmental factors, as listed under **Section 5.1**, for which it is considered an assessment as part of the EIA is required, and therefore a standalone chapter will be presented in the ES. The environmental factors **scoped in** are:

- Climate (**Section 7.2**);
- Cultural heritage (**Section 7.3**);
- Land, soil and water (**Section 7.4**);
- Landscape and visual (**Section 7.5**);
- Noise and vibration (**Section 7.6**);
- Biodiversity (**Section 7.7**); and
- Traffic and movement (**Section 7.8**).

7.1.2 Each of these sections is set out in the following structure to ensure consistency of approach to consideration of the scope of the different factors of the environment:

- Consultation;
- Study area;
- Data sources to inform the EIA baseline characterisation;
- Surveys to inform the EIA baseline characterisation;
- Baseline conditions;
- Additional mitigation measures;
- Description of likely significant effects;
- Receptors / matters to be scoped into further assessment;
- Receptors / matters to be scoped out of further assessment;
- Opportunities for enhancing the environment;
- Proposed assessment methodology;
- Difficulties and uncertainties;
- References; and
- EIA scoping questions for consultees.

7.2 Climate

7.2.1 Consultation

No consultation to inform the climate assessment has been undertaken to date and no specific consultation in relation to climate change is envisaged, over and above the consideration of comments received to this EIA Scoping Report.

7.2.2 Study area

Aligning with the greenhouse gas (GHG) protocol, this assessment will consider Scope 1 (direct) emissions, Scope 2 (indirect) emissions, and any relevant Scope 3 emissions. Scope 1 GHG emissions will include those emitted directly from all facilities and infrastructure as part of the Proposed Development (e.g., fuel use during construction), and likely within the Site boundary. Scope 2 and any relevant Scope 3 GHG emissions are indirect GHG emissions and thus may occur outside the proposed Site boundary. These include the embodied GHG emissions from wind turbine manufacture and transport.

The receptor to GHG emissions is the global climate, and so when assessing the impact and significance of GHG emissions, the national (Climate Change Act 2008 and associated Carbon Budgets) and global context (Paris Agreement) will be considered.

7.2.3 Data sources to inform the EIA baseline characterisation

The proposed GHG assessment will be prepared in accordance with:

- IEMA Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022).
- GHG Protocol.
- Royal Institute of Chartered Surveys (RICS) Whole life carbon assessment for the built environment (2023).

Standard emission factors, sourced from reputable agencies such as Defra UK Government GHG Conversion Factors for Company Reporting (2023), will be applied.

The assessment will consider the Powys Country Council's declarations regarding climate change: with a climate emergency being declared as of 24th September 2020 which was accompanied by an ambition to reduced carbon emissions to net zero by 2050, in line with the Welsh public sector target of 2030.

7.2.4 Surveys to inform the EIA baseline characterisation

No surveys have been undertaken to date, and none are expected to be undertaken to inform the climate assessment.

7.2.5 Baseline conditions

The baseline conditions describe the conditions in the 'business-as-usual' or 'do minimum' approach and is not compatible with the UK's net zero trajectory (IEMA, 2022). In the case of GHG emissions, the sensitive receptor is the stability of the global climate.

The landcover of the Site is a mixture of lowland pasture bounded by hedgerows with areas of open hill grazing. It also consists of a mix of unimproved moorland, comprising for the most part a mixture of acid grassland, and heather dominated heath, potentially with smaller areas of peat. Given these baseline characteristics, it is likely that the Site presently sequesters carbon.

7.2.6 Additional (secondary and tertiary) mitigation

Construction

The generation of GHG emissions is inevitable due to construction activities. Embodied GHG emissions will also be present due to the production of wind turbines and associated infrastructure, potentially including the PV solar development and BESS.

A Construction Environmental Management Plan (CEMP) will be implemented to identify good working practices in line with appropriate standards, including low carbon practices. Some mitigation measures that are anticipated to be taken into account are:

- Embed carbon reduction practices as a core principle for the design team. Where reduction ideas are suggested, they should be recorded and potential impact quantified. Earlier engagement with carbon reduction allows for the greatest returns.
- Where technical specifications allow, maximise the recycled content of construction materials such as concrete and steel.
- Maximise the specification of materials with an environmental product declaration with the aim of reducing embodied carbon emissions.
- Incentivise use of local suppliers with a view to shorten project supply chains and environmental footprint.
- On-site mobile and non-mobile plant should conform to the latest emissions

standards, with mobile vehicles conforming to EURO 6 standards as a minimum. All plant should investigate the option of using hydrotreated vegetable oil (HVO) fuels or electric versions where possible.

- Require main contractors to report on energy data, water usage and waste disposal and their GHG emissions as part of the CEMP.

Operation

The operation of the Proposed Development is anticipated to have a positive effect on the climate. Nonetheless, there is scope to further improve the Site in terms of ecological enhancements and habitat creation, which can have a positive effect in terms of carbon sequestration. Opportunities for ecological enhancement will be explored and, if appropriate, documented in the Habitat Management Plan which will be prepared in support of the Application.

Decommissioning

The decommissioning process is likely to result in GHG emissions, particularly from waste disposal relating to the removal or renewal of turbines. Additional mitigation can be employed that aligns with the hierarchy for managing project-related emissions (avoid, reduce, substitute and compensate). These will be detailed in the ES.

7.2.7 Description of likely significant effects

The receptor, in this case, is not confined to the immediate vicinity of the Site. Instead, it is the global atmosphere. As such, the receptor is highly sensitive, in view of the cumulative contribution of all emissions towards climate change. With this in mind, the emissions associated with the manufacture, construction and decommissioning phases of the Proposed Development, including limiting the sequestration capacity of the land, is likely to have a significant negative effect upon the climate. However, during the operational phase of the Proposed Development, the effect of producing renewable close-to-zero emissions electricity, in place of emissions-intensive sources derived from fossil fuel, is likely to offset a large proportion of emissions. For this reason, the overall net effect of the Proposed Development upon the climate is likely to be significantly beneficial.

7.2.8 Receptors / matters to be scoped into the assessment

The following receptors/matters are proposed to be scoped into the assessment.

Receptor / matter	Phase	Justification
GHG emissions	Construction	Embodied carbon of PV solar panels can be

		relatively high when comparing against other renewable technologies (which, for this project, include the wind turbine components). It is important to include construction-related emissions when considering the overall lifecycle emissions of the Proposed Development, to determine an accurate 'carbon-payback' time.
GHG emissions	Operation	Aligned with IEMA guidance, a project that causes GHG emissions to be avoided has a beneficial effect that is significant.
GHG emissions	Decommissioning	The decommissioning process of the Proposed Development is likely to result in GHG emissions. It is important to include all emissions when considering the overall lifecycle emissions of the Proposed Development, to determine an accurate 'carbon-payback' time.

7.2.9 Receptors / matters to be scoped out of the assessment

The following receptors / matters are proposed to be scoped out.

Receptor / matter	Phase	Justification
Climate resilience	Construction, Operation and Decommissioning	UKCP18 projections suggest that climate change will lead to hotter drier summers, warmer wetter winters, increased likelihood of extreme weather events (e.g., heat waves, high rainfall events) and sea-level rise of up to 1.15 m (by 2070 in London, assuming a high-emissions scenario). Due to the embedded resilience of wind turbines (and PV solar modules) to high heat and wind speeds, low risk of flooding at the Site and the distance of the Site from coastline; these factors are not expected to significantly impact on the construction, operation, or decommissioning of the

		Proposed Development.

7.2.10 Opportunities for enhancing the environment

The Proposed Development is expected to have a net beneficial impact on the climate, in that it will reduce GHG emissions associated with electricity consumption on a national scale. Opportunities exist to further increase the environmental benefit of the Proposed Development by ensuring that GHG emissions associated with the construction and decommissioning process are kept to a minimum. This can be ensured by the adoption of various additional mitigation measures, as detailed above.

7.2.11 Proposed assessment methodology

The assessment of the effects of GHG emissions arising from the Proposed Development will be carried out in accordance with:

- The Institute of Environmental Management and Assessment Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022 edition).
- PAS 2080:2023 Carbon Management in Infrastructure.
- Royal Institute of Chartered Surveys (RICS) Whole life carbon assessment for the built environment (2023).
- The Scottish Government's carbon calculator tool (based upon Nayak et al., 2010 and Smith *et al.*, 2011).

The assessment will quantify applicable Kyoto Protocol GHGs as measured in tonnes of carbon dioxide equivalence (tCO_2e), where equivalence means having the same warming effect as CO_2 over 100 years.

The Scottish Government's carbon calculator tool is considered the best available method to assess GHG emissions from wind farms within the UK. The tool provides for the calculation CO_2 emissions savings against:

- Carbon loss due to turbine manufacture, construction, operation, and decommissioning.
- Loss due to backup power generation.
- Loss of carbon from the soil.
- Loss associated with runoff of dissolved and particulate organic carbon.
- CO_2 gain associated with habitat improvements at the Site.

In doing this, the tool provides for a determination of the net carbon impact of the

Proposed Development and its subsequent carbon payback period.

Where possible, site-specific data will be used and inputted into the tool. Where this data is not available, default values, as set out in associated guidance, will be used. Where required, input from relevant hydrology, ecology and peatland specialists will be used. A record of all data used, and for what purpose, will be maintained throughout the assessment, and included within the appendices to the ES. At present, the latest version of the carbon calculator tool is V1.8.1 (as of March 2024).

The assessment of effects will follow the significance criteria in **Appendix F**.

7.2.12 Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- The accuracy of a GHG assessment depends on the quality of the data provided. Primary data should always be used where available. Where it is not possible to collect this data, in view of the fact that this assessment represents a forecast of emissions and some information may not yet be known, secondary data (such as estimates, extrapolations, benchmarks and proxy data such as distance travelled) will be used. Assessments such as this, based largely on secondary data should only be viewed as an estimate of GHG emissions impact, and actual emissions may vary significantly.

7.2.13 References

- BEIS. (2022). UK local authority and regional greenhouse gas emissions national statistics: 2005-2020.
- Defra and BEIS. (2022). UK Government GHG Conversion Factors for Company Reporting.
- IEMA. (2022). Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance.
- Powys County Council. (2020). A Strategy for Climate Change: Net Positive Powys 2021 – 2030. https://powys.moderngov.co.uk/documents/s68654/Climate%20Change%20Strategy%20Appendix%20A.pdf
- PAS 2080:2023. (2023). Carbon Management in Infrastructure.
- RICS. (2023). Whole life carbon assessment for the built environment. Royal Institute of Chartered Surveys (RICS).

- The Greenhouse Gas. (GHG). Protocol, A Corporate Accounting and Reporting Standard (Revised Edition) https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf. [Accessed November 2022].
- Nayak D.R., Miller D., Nolan A., Smith P., and Smith J. (2010). Calculating carbon budgets of wind farms on Scottish peatlands; Mires and Peat (Article 09), 4, 1-23. Available at: http://mires-and-peat.net/pages/volumes/map04/map0409.php
- Nayak, D.R., Miller, D., Nolan, A., Smith, P., and Smith, J. (2008, revised 2010). Calculating carbon savings from wind farms on Scottish peat lands: a new approach. Available at: https://www.gov.scot/publications/calculating-carbon-savings-wind-farms-scottish-peat-lands-new-approach/
- Smith, J.U., Graves, P., Nayak, D.R., Smith, P., Perks, M., Gardiner, B., Miller, D., Nolan, A., Morrice, J., Xenakis, G., Waldron, S., and Drew, S. (2011). Carbon implications of windfarms located on peatlands – Update of the Scottish Government Carbon Calculator tool. Final Report, RERAD Report CR/2010/05.

7.2.14 Scoping questions

- Do you agree with the components proposed to be scoped in (GHG emissions of construction, operation, and decommissioning) of the EIA?
- Do you agree with the components proposed to be scoped out (climate resilience of all phases of the project) of the EIA?
- Do you agree with the methodology and approach to the GHG assessment (including the documents referenced)?

7.3 Cultural heritage

7.3.1 Consultation

Heneb (Clwyd-Powys) Historic Environment Record (HER) has been consulted in the preparation of the EIA Scoping Report for data on known historic assets. Further consultation with Heneb will confirm the requirement for additional survey effort.

Pre-application advice and consultation will be sought from the following consultees regarding the scope and extent of cultural heritage and archaeology assessment as part of the EIA. This will include agreement of viewpoint photography locations.

- Cadw
- Heneb (Clwyd Powys)
- Powys County Council Conservation Officer.

The consultation bodies presented above will also be contacted to discuss any potential mitigation requirements (and opportunities for enhancement) associated with the Proposed Development.

7.3.2 Study area

Overlapping study areas are proposed for the identification of heritage assets that may be affected by the Proposed Development.

The Site boundary (presented in **Appendix A**), also referred to as the Inner Study Area (ISA) for the purposes of the Cultural Heritage Assessment, will be used to identify known and potential historic assets that may experience direct (physical) construction effects.

An Outer Study Area (OSA) will extend up to 10 km from the Site within which historic assets will be considered based on their importance and distance from the Site in order to focus the assessment on likely significant effects (**Appendix G**)**:**

- Up to 2 km from, and including, the Site: all designated historic assets and non-designated historic assets for which the wider setting makes a positive contribution to their significance and there is theoretical intervisibility with the Proposed Development based on the zone of theoretical visibility (ZTV).
- Up to 5 km from the Site: all Scheduled Monuments, Listed Buildings, Registered Historic Parks and Gardens and Conservation Areas (there are no World Heritage Sites, Designated Wrecks or Registered Historic Landscapes within 5 km) and non-designated assets of recognised regional importance where there is theoretical intervisibility with the Proposed Development based

on the ZTV.

- Up to 10km from site: Registered Historic Landscapes, World Heritage Sites, grade I and II* Listed Buildings, Scheduled Monuments and non-designated assets of national importance.
- Up to 20 km from the Site based on the ZTV: designated historic assets which are considered exceptionally important, and where long-distance views from or towards the asset are thought to be particularly sensitive, in the opinion of the assessor or consultees. Beyond 10km, the baseline will be screened (and agreed with consultees) in order to identify any assets of particular sensitivity or importance.

An archaeological desk-based assessment (DBA) will require a 1 km study area around and within the Site to identify all known historic assets and will seek to identify areas of archaeological potential for consideration within the EIA.

7.3.3 Data sources to inform the EIA baseline characterisation

The principal sources of information will be the HER, supplemented by relevant published documentary and cartographic material as appropriate, including sources of aerial photography. Various sources will be consulted for the collation of data including, but not limited to:

- Cadw data on designated historic assets downloaded as a digital data extract from the Welsh Government's GeoPortal web site.
- Heneb HER data on non-designated historic assets within 1 km of the Site supplied as a digital data extract on 26th February 2024.
- Conservation Areas downloaded as a digital data extract from the Welsh Government's GeoPortal web site.
- Natural Resources Wales (NRW) LiDAR data.
- LANDMAP datasets.
- Maps and plans held in the local archives.
- Relevant internet sources including National Library of Wales.
- Aerial photos held by the Central Register for Aerial Photography Wales (CRAPW) and the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW).
- Readily available published sources and unpublished archaeological reports.
- Portable Antiquities Scheme (PAS) data.

The following locations are initially proposed for visualisations (wirelines or viewpoint photography) if the ZTV predicts visibility of the Proposed Development:

- Banc y Celyn Stone Circle (BR206) scheduled monument within the Site boundary.
- Castle Earthwork (BR179) scheduled monument 190 m from the Site boundary.
- Gaer Fawr Hillfort (BR052) scheduled monument 400 m from the Site boundary.
- Capel Beili Heulog (19376) listed chapel 770 m from the Site boundary.

Additional viewpoints (initially wirelines only) will also be used in the assessment of effects on the rural churches and chapels where the ZTV indicates theoretic visibility from locations where these are appreciated. The follow potential assets have been identified:

- Church of St Teilio (8767)
- Church of St Cewydd (8803)
- Church of St David (23522)
- Hepzibah Baptist Chapel (25652)
- Church of St Dubricius (25668)
- Church of St Maritius (6704)
- Church of St Mary (6707)
- Bethel Baptist Chapel (83671)

7.3.4 Surveys to inform the EIA baseline characterisation

The following surveys are proposed to inform the EIA:

- A targeted walkover of the Site will be carried out. This will seek to confirm the location and state of preservation of previously recorded assets within the Site, confirm the nature of any features detected in LiDAR survey (if data is available for the Site) and aerial photography, and will seek to identify currently unrecorded archaeological remains in areas of potential impact.
- Historic assets within the OSA which the Stage 1 desk-based study identifies as potentially drawing significance from their wider setting will be viewed from publicly accessible locations to confirm their baseline setting and to identify locations for visualisations to assist with the assessment of impacts in the EIA.

- Subsequent detailed setting assessment visits to assets identified (through the above stages of assessment) as potentially experiencing significant effects will also be carried out following design freeze and receipt of wireline visualisations in order to more fully assess potential impacts.
- The need for, scope, and timing of intrusive evaluation will be negotiated and agreed with the statutory consultees following completion of the desk-based assessments and site surveys.

7.3.5 Baseline conditions

There are four designated historic assets within the Site boundary, they are all scheduled monuments (**Appendix H, Part 1, Figure 1**):

- Cefn Clawdd Cairn (BR204).
- Cefn Clawdd Cairn (East) (BR402).
- Gwaun Ymryson Round Cairn I and II (BR205).
- Banc y Celyn Stone Circle (BR206).

There are 100 non-designated historic assets within the Site (**Appendix H, Part 1, Figure 2**), ranging in date from the Bronze Age to the Modern period, including bomb craters from World War II. More than two thirds of the known assets are from the Post Medieval or Modern periods and are mainly related to agriculture including structures and clearance cairns. There are also a number of quarries. There are 741 non-designated assets within 1 km of the Site, more than three quarters being Post Medieval or Modern in date.

There are 34 scheduled monuments within 5 km of the Site mainly comprising monuments, Prehistoric or Medieval in date, including two hillforts, seven cairns and barrows, a ring cairn, three standing stones, a stone circle, a cist burial, six mottes, two deserted settlements, a castle, a pillbox, a longhouse and two rectangular huts, a platform house, three enclosures and a ringwork.

There are 166 listed buildings within 5 km of the Site. There is one Grade I listed building, a 16th century gentry house. There are also 14 Grade II* listed buildings, including four churches and one watermill, the remaining 9 are 15th to 16th century gentry and farm houses or associated structures. The Grade II listed buildings include domestic, commercial, and agricultural buildings, memorials, signposts, milestones, churches and chapels, bridges, telephone kiosks and letter boxes.

There is one conservation area within 5 km of the Site at Builth Wells. There is one registered park and garden within 5 km of the Site, that is Llangoed Hall (PGW(Po)12(POW)) listed Grade II, an Edwardian country house and garden.

Historic assets within 5 km are shown in **Appendix H, Part 1, Figure 3**.

Up to 10 km from the Site are 85 more scheduled monuments. They include castles, a tower, mottes and moated sites, cross marked stones, deserted settlements, house platforms, cross ridge dyke, hillforts, prehistoric funerary and ritual monuments including stone circles and a stone row.

There are 31 listed buildings of Grade II* and above, including a castle, castle houses, workshops, gatehouses, churches, chapels, mills, farmhouses and agricultural buildings and domestic houses.

There are six Registered Historic Parks and Gardens within 10 km (Penoyre and Glyn Celyn, Pencerrig, Bronllys Hospital, Maesllwch Castle listed grade II*, Old Gwernyfed and Gwernyfed Park listed grade II*).

There are two Registered Historic Landscapes within 10 km of the Site. No ASIDHOL assessment will be undertaken on landscapes this far from the Proposed Development. (**Appendix H, Part 1, Fig. 4**).

There are no World Heritage Sites within 20 km of the Site. The type of listed buildings beyond 10 km is similar to the range encountered within 10 km and located mainly in the settlement areas along valleys. The scheduled monuments at this range also reflect a similar pattern to those within 10 km and are widely distributed. At this point no exceptionally sensitive assets between 10 km and 20 km have been identified.

7.3.6 Additional (secondary and tertiary) mitigation

Construction

Where archaeological remains within the Site do not require preservation *in situ* and cannot be avoided through embedded mitigation, it is anticipated that additional mitigation to off-set adverse impacts will take the form of a programme of archaeological investigation and recording.

Such a programme may include pre-commencement phases of archaeological excavation and/or archaeological “watching brief” during construction. The need for, and scope of such mitigation, will be agreed with Heneb, the archaeological advisors to Powys County Council and Cadw where necessary. The scope and methodology of the mitigation will be set out in a Project Design in line with Chartered Institute for Archaeologists Standards and Guidance for archaeological field evaluation, monitoring and recording and excavation as appropriate.

Precautionary mitigation to avoid accidental direct impacts on heritage assets within the Site during construction may include demarcating their presence using physical barriers, if appropriate, with a suitable buffer from the asset established.

7.3.7 Description of likely significant effects

Potential significant effects of the Proposed Development can arise from direct or indirect physical effects during construction or from changes to the setting of historic assets during operation i.e., indirect or secondary effects may also arise during operation.

Direct physical effects describe those development activities that directly cause damage to the fabric of a historic asset. Typically, these activities are related to construction works and will only occur within the Site of the asset.

Indirect effects describe secondary processes, triggered by the development, that lead to the degradation or preservation of historic assets. For example, changes to hydrology may affect archaeological preservation; or changes to the setting of a building may affect the viability of its current use and thus lead to dereliction.

An effect on the setting of a historic asset occurs when the presence of a development changes the surroundings of a historic asset in such a way that it affects (positively or negatively) the heritage significance of that asset. Visual changes are most commonly encountered but other environmental factors such as noise, light or air quality can be relevant in some cases. Effects may be encountered at all stages in the life cycle of a development from construction to decommissioning but they are only likely to lead to significant effects during the prolonged period which is the operational life of the development.

Potential effects on unknown historic assets will be discussed in terms of the risk that a significant effect could occur. The level of risk depends on the level of archaeological potential combined with the nature and scale of disturbance associated with construction activities and may vary between ‘High’ and ‘Negligible’ for different elements or activities associated with a development, or for the development as a whole.

The layout of the Proposed Development is still being designed and surveys to establish the archaeological resource of the Site are ongoing. As such, there remains uncertainty regarding both the direct physical impacts on historic assets as a result of construction, and the extent of visual change within the setting of historic assets within the wider area. This has therefore resulted in assets being “scoped in” which may, following detailed design, be scoped out of the assessment as effects will have been avoided. The justification for scoping out any historic assets will be presented in the ES.

7.3.8 Receptors / matters to be scoped into the assessment

The list of receptors outlined below are groups of historic assets which will be

considered during the assessment but not all are likely to experience significant effects. Assets that have been scoped out at this stage (see **Section 7.3.9**) are those where their particular characteristics, and the contribution made by setting to their significance, will be unaffected by the Proposed Development regardless of its final layout.		
Receptor / Element	Phase	Justification
Buildings and monuments recorded in the HER within the Site	Construction and operation	Construction activity has the potential to directly impact on these assets and the operation of the Proposed Development may impact on the contribution that setting makes to their significance, with potential for significant effects to occur.
Designated historic assets with the Site	Construction and operation	Construction activity has the potential to directly impact on these assets and the operation of the Proposed Development may impact on the contribution that setting makes to their significance, with potential for significant effects to occur.
Scheduled Monuments within the 5 km and 10 km OSAs (except those scoped out in **Section 7.3.8**)	Operation	Depending on the layout of the Proposed Development, these assets may experience visual change in their setting during operation which could result in significant adverse effects on their cultural significance.
Listed Buildings within 5 km and 10 km OSAs (except those scoped out in **Section 7.3.8**)	Operation	Depending on the layout of the Proposed Development, these may experience visual change in their setting during operation which could result in significant adverse effects on their cultural significance.
Builth Wells Conservation Area	Operation	Depending on the layout of the Proposed Development, the conservation area may experience visual change in its setting during operation which could result in

		significant adverse effects on its character.
Llangoed Hall Registered Park and Garden Grade II	Operation	Depending on the layout of the Proposed Development, this asset may experience visual change in its setting during operation which could result in significant adverse effects on any designed views which are present.
Registered Historic Parks and Gardens within between 5 km and 10 km	Operation	Will be included where the stage 1 setting assessment identifies that they are sensitive to changes in views out of, to or across the registered area, unless the "bare earth" ZTV indicates no visibility of the Proposed Development.
Middle Usk Valley and Middle Wye Valley Registered Historic Landscapes	Operation	Will be included where the stage 1 setting assessment identifies the potential for long distance views to contribute to the significance of these landscapes, unless the "bare earth" ZTV indicates no visibility of the Proposed Development".
Currently unknown historic assets within the Site	Construction and Operation	There remains uncertainty about the extent and significance of historic assets within the Site and therefore the potential for significant effects is unknown. These potential assets are scoped in as a precaution until further information is known.

7.3.9 Receptors / matters to be scoped out of the assessment

It is not proposed that cultural heritage issues in general would be scoped out of the EIA, but where, for example, the "bare earth" ZTV indicates no visibility of the Proposed Development from a historic asset or from areas where the asset's significance can be appreciated, this would allow the asset to be scoped out early in the assessment process. All such instances where a historic asset is scoped out of further assessment will be clearly explained within the ES.

Designated assets (such as scheduled monuments and listed buildings) and non-

designated assets of the types described below will be scoped out unless otherwise stated in the assessment.		
Receptor / matter	Phase	Justification
Setting effects on all historic assets within the Site and OSAs.	Construction	Construction phase effects resulting from changes in the setting of historic assets will be temporary and no worse than the operational phase effects. Therefore, it is not considered necessary to repeat the settings assessment for the construction phase.
Small structures such as mileposts, commemorative monuments, telephone kiosks, boundary stones, signposts, water tanks, wells etc.	Operation	These assets are not considered to draw significance from their wider landscape setting and therefore will be unaffected by the Proposed Development.
Bridges and leats	Operation	These assets will draw significance from their relationship with the transport network and relevant watercourse which will be unaffected by the Proposed Development.
Bomb craters	Construction and Operation	These assets have negligible importance and significant effects upon them are therefore unlikely.
Sites of former extractive pits including quarries	Construction and Operation	These assets have negligible importance and significant effects upon them are therefore unlikely.
Find spots	Construction and Operation	As findspots, these have been removed from the Site and the heritage significance of their former locations will not be harmed by the Proposed Development. They will still be considered in the DBA to inform the

		assessment of archaeological potential.
All historic assets within the Site and OSAs.	Decommissioning	Decommissioning will not result in impacts to any additional historic assets not already mitigated during construction and operation. Decommissioning phase effects resulting from changes in the setting of historic assets in the surrounding area will be no worse than the construction or operational phase effects. Decommissioning will reverse any adverse effects resulting from changes to the setting of historic assets during operation.

7.3.10 Opportunities for enhancing the environment

Potential enhancement opportunities include replanting of lost hedgerow boundaries and reinstatement or repair of historic walled boundaries within the Site.

Where residual effects remain during operation, measures to enhance the significance of historic assets not affected by the Proposed Development would provide additional beneficial effects to be counted in the planning balance.

7.3.11 Proposed assessment methodology

The assessment will be carried out with reference to the following:

Legislation

- The Historic Environment (Wales) Act 2023 as the primary statutory tool for protecting historic assets and sustainable management of the historic environment in Wales.

Policy

- Planning Policy Wales (PPW) Edition 12, February 2024.

Guidance

- Technical Advice Note 24: The Historic Environment (May 2017).
- Cadw guidance documents: Heritage Impact Assessment in Wales (May 2017) and the Setting of Historic Assets in Wales (2017).

- Cadw's Conservation Principles (March 2011).
- Natural Resources Wales (NRW) Guide to using the Register of Landscapes of Historic Interest.
- Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists (CIfA 2020).
- Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (CIfA 2020).

The Proposed Development would result in a change to the existing baseline, which may result in impacts to heritage significance. In accordance with the EIA Regulations, the assessment would identify impacts and effects as direct or indirect, adverse or beneficial, and short-term, long-term or permanent.

Direct impacts are those which physically alter an asset and therefore its heritage significance.

Changes within the setting may alter the heritage significance of an asset by causing visual or sensory change that affects the ability to understand, experience or appreciate the asset's cultural significance. The assessment of effects resulting from change within the setting of historic assets will follow the four-stage process set out in Cadw's 'Managing Setting of Historic Assets in Wales'.

The assessment of effects will follow the significance criteria in **Appendix F**.

The residual effect is a product of the importance of the historic asset and the magnitude of impact following mitigation. The importance of a historic asset reflects any statutory or non-statutory designation or in the case of undesignated assets the professional judgement of the assessor with reference to regional research frameworks. Conclusions of the assessed magnitude of impacts is a product of the consideration of the elements of an asset and its setting that contribute to its cultural significance and the degree to which the Proposed Development would change these contributing elements. The assessment therefore reflects the varying degrees of sensitivity of different assets to change brought about by different types of development.

7.3.12 Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- Existing records for the historic environment do not record all historic assets. This will be addressed through the desk-based assessment and aerial investigation and mapping survey to identify previously unrecorded assets and assess the potential for below ground archaeological remains. The

geophysical survey will also further investigate the potential for below ground archaeological remains.

- Any limitations as a result of inaccessibility of sources will be discussed in the ES.
- Any limitations experienced during the surveys will be discussed in the DBA and ES.

7.3.13 References

- Cadw. (2011). Conservation Principles for the sustainable management of the historic environment in Wales.
- Cadw. (2017a). Heritage Impact Assessment in Wales.
- Cadw. (2017b). Managing Setting of Historic Assets in Wales.
- Chartered Institute for Archaeologists. (2023). Standards and Guidance series.

7.3.14 Scoping questions

- Do consultees agree with the scope and approach of the Cultural Heritage and Archaeology Assessment?
- Do consultees agree with the proposals for 'Receptors / matters to be Scoped Out of the assessment' in this Scoping Report?
- Are consultees content with the proposed Outer Study Area buffers presented in this Scoping Report?
- Do consultees wish to request any specific historic assets to be assessed in the ES?

7.4 Land, soils, and water

7.4.1 Consultation

Consultations have not yet been carried out; however, they will be carried out with the following stakeholders and organisations:

- Natural Resources Wales
- Powys County Council
- Heneb Clwyd-Powys Archaeology
- Dŵr Cymru Welsh Water
- Canal and Rivers Trust Wales
- The Welsh Government
- Local landowners.

Post-scoping consultation would be undertaken with Natural Resources Wales, if possible, to discuss any matters relating to peat.

7.4.2 Study area

The area assessed will include the Site plus a buffer zone of 2 km around the boundary **(Appendix G).**

For hydrological receptors, impacts downstream up to 5 km from the boundary would be considered, as impacts such as pollution events can be transmitted downstream for greater distances.

7.4.3 Data sources to inform the EIA baseline characterisation

The assessment will involve a desk study, to gather available data concerning the existing geological, hydrogeological, hydrological and soil/peat conditions in the project area. Datasets anticipated to be used include:

- Geological maps, including both bedrock and superficial geology.
- Hydrogeological maps, including productivity and groundwater vulnerability.
- Cranfield University Soilscapes digital mapping.
- High-resolution aerial or satellite imagery of the project area and its immediate surroundings.
- Natural Resources Wales water quality and flood risk data for the project area.

- Vegetation mapping.
- Borehole records, where available. These will be sourced from records held by the British Geological Survey (BGS) and other sources as available.
- Local authority private water supply (PWS) records.
- Any available utilities and Dŵr Cymru Welsh Water investigations and details of public water supplies and assets.
- Previous assessments carried out in relation to neighbouring wind farm projects and previous studies undertaken within the development area.
- Data gathered from site visits, including peat depth and vegetation surveys and any material arising from future surveys that may be relevant.

7.4.4 Surveys to inform the EIA baseline characterisation

Phase 1 peat depth data from the project area was undertaken in October 2022.

Planned surveys to inform the assessment are:

- A hydrological and geological walkover survey to obtain site-specific detail on ground conditions and water environment features within the Site and immediate surroundings (including confirmation of private water supply locations and water course crossings)
- A Phase 2 peat survey focusing on locations where infrastructure is proposed, including peat condition assessment.
- Agricultural Land Classification (ALC) surveys on the land set aside for solar infrastructure.

7.4.5 Baseline conditions

Land use within and around the Site boundary

Within the Site boundary, there are dwelling houses, areas of woodland, agricultural land including pasture, and open moorland. An area of commercial forestry is located adjacent to the southern edge of the Site boundary. There are also a number of settlements adjacent to the Site boundary.

Resources and receptors within study area

Geology

The Site is underlain by bedrock from four formations, the Aberedw Formation, Cae'r-Mynach Formation, Temeside Mudstone Formation and Raglan Mudstone Formation, all of Silurian age. These formations consist mainly of sandstone, siltstone and

mudstone (BGS, 2024).

There are two main faults within the Site boundary. Both trend north to south and are located in the northern half of the study area. Five faults, trending approximately north-east to south-west, cut across the eastern half of the Site Access between Cefn-Hirwaun and Erwood. There are no dykes or major igneous intrusions recorded in the area (BGS, 2024).

The superficial geology coverage is patchy with no widespread coverage. Diamicton till is present in some areas, with alluvium and alluvial fan deposits focused along river channels. Minor deposits of head (a mix of gravel, sand and silt) are noted in some areas and there is a small area of glaciofluvial sheet deposits (consisting of Devensian sand and gravel) at Erwood, where the Site Access meets the A740 (BGS, 2024).

Peat is present in small patches, mainly within the western half of the Site (BGS, 2024).

Lead is identified as occurring near the south-eastern Site boundary. There is no evidence of mineral exploitation associated with this (BGS, 2024).

There are no active mines within the Site. Two ceased mines are present along the Site Access; they do not appear on present day OS maps but are marked on historical maps from the 1800s as Old Quarries (BGS, 2024; National Library of Scotland, 2024).

Soils and peat

Site soils are dominated by loamy and clayey soils, sometimes with a peaty surface (Cranfield University, 2024; UK Soil Observatory, 2023). The superficial deposits layer of the BGS Online GeoIndex (BGS, 2024) identifies some areas of blanket peat in the northern and southern parts of the Site, near Pant y Llyn, Cefn Gledwen and Upper Chapel, although these are not shown on soils mapping of the area.

There are areas of peatland present within the Site boundary. These areas are mainly considered to be Evidence Score 1 and 2 peatlands with some areas of Evidence Score 3 and 4 peatlands in the middle sections (**Appendix I**). The Evidence Score defines the level of confidence in the presence of peat in any given grid cell on a scale of 1-10 (1 being the least and 10 being the highest) (NRW, 2022).

Hydrogeology

The groundwater bodies associated with the Site are Přídolí Rocks (Undifferentiated) and Ludlow Rocks (Undifferentiated). They are considered to be low productivity aquifers with flows through fractures, highly indurated and largely argillaceous rocks with limited groundwater (BGS, 2024). The Přídolí Rocks are designated as a secondary A aquifer, whereas the Ludlow Rocks are designated as a secondary B aquifer.

Groundwater-dependent terrestrial ecosystems

Groundwater-dependent terrestrial ecosystems (GWDTE) are areas of wetland or marshy ground that are dependent on groundwater to maintain their function as a wetland or marsh area. Although vegetation mapping is not currently available for the study area, potential GWDTE have also been identified in similar habitats on other sites.

There is therefore potential for GWDTE to be present within the study area.

Designated sites

Natural Resources Wales (2023) indicates that there are three designated sites with relevance to land, soil and water within the Site boundary: the Afon Gwy (Isafonydd)/River Wye (Tributaries) Site of Special Scientific Interest (SSSI), Afon Gwy/River Wye Special Area of Conservation (SAC) and Erwood Dingle (SSSI).

Two additional designated sites are located within 5 km of the Site boundary: Mynydd Epynt SSSI and SAC, to the west of the Site, and the Afon Wysg (Isafonydd)/River Usk (Tributaries) SSSI and Afon Wysg/River Usk SAC. A risk screening would be undertaken to determine any possible impact of the linkage between the Site and the designated areas.

Hydrology

The Site lies within two catchments, the Wye Catchment and the Usk Catchment. Within the Site, four main tributaries to the River Wye (the Nant Gwenddwr, Fernant, Nant yr Offeiriad and Cletwr Brook), drain the northern and central section of the Site. The southern section of the Site is drained by the Honddu River which flows south to the River Usk.

Water Watch Wales (2022) indicates that the Cletwr Brook (which drains into the River Wye) has moderate overall status. However, the River Wye and River Usk have good overall status and good water quality status.

Private water supply

Powys County Council requires the Private Water Supply (PWS) register to be purchased. While efforts are being made to obtain the PWS register, it is important to note that PWS within 2 km and 5 km of the Site boundary will be assessed. A PWS risk screening would be undertaken to determine if any of the identified supply sources would be at risk from the Proposed Development.

Flood risk

Flood risk is indicated to be relatively low from watercourses within the Site, with areas of flood risk confined to the main watercourse channels. A few areas within the Site are noted to have high risk of surface water flooding (Data Map Wales, 2023) but these are mainly confined to areas around waterbodies, areas mapped as boggy

ground, and minor watercourses.

Flood risk downstream, particularly within the larger river valleys of the Rivers Wye and Usk, is extensive in some areas.

7.4.6 Additional (secondary and tertiary) mitigation

Construction

Key additional mitigation during the construction phase includes:

- Surface water and sediment management.
- Pollution prevention.
- Watercourse crossing and drainage design.
- Peat management and peat handling.
- Peat slide risk factors and management.
- Downstream flood risk.

Operation

The main operational mitigation includes:

- Ongoing monitoring of water quality, drainage infrastructure and track status.
- Sediment management during maintenance.
- Pollution prevention.
- Decommissioning
- Key additional mitigation during the decommissioning phase includes:
- Surface water and sediment management
- Pollution prevention
- Peat management and peat handling
- Peat slide risk factors and management

7.4.7 Description of likely significant effects

Construction

There is potential for significant effects on the following receptors:

- Peat, peat soil and peatland.
- Water pollution arising from sediment release, spillages or pollution incidents.

- Changes to surface water or groundwater flow paths.
- Increase in downstream flood risk arising from development infrastructure and drainage.

Operation

The potential for significant effects is considerably reduced during operation. Potential significant effects are:

- Water pollution arising from sediment release, spillages or pollution incidents.
- Increase in downstream flood risk arising from poor management and maintenance of drainage infrastructure.
- Decommissioning
- The potential for significant effects is considered to be small scale due to the temporary removal of turbines and solar panels and the restoration of habitats, however could impact the following receptors:
- Peat, peat soil and peatland.
- Water pollution arising from sediment release, spillages or pollution incidents.
- Increase in downstream flood risk arising from poor management and maintenance of drainage infrastructure.

7.4.8 Receptors / matters to be scoped into the assessment

The following receptors / matters are proposed to be scoped into the assessment.

Receptor / matter	Phase	Justification
Surface water	Construction, operation and decommissioning	There are a number of watercourses and waterbodies within and adjacent to the Site boundary. It is anticipated that some watercourse crossings would be required in order to construct supporting access tracks. There may be potential for impacts to water quality from sediment release, spillages or pollution incidents. Surface water flow paths may be disrupted by access track construction and drainage infrastructure.
Groundwater	Construction, operation and	It is likely that shallow groundwater is present in the near-subsurface within the

GWDTE and PWS	decommissioning	Site boundary. Deep excavations for turbine foundations and borrow pits may encounter groundwater and could alter groundwater flow paths to sensitive receptors such as PWS and GWDTE. They could also provide a direct pathway for contamination to enter the aquifer. Spillages and pollution incidents could also impact on groundwater quality.
Peat, peat soil and peatland	Construction and decommissioning	Some areas of peat are present within the Site, and much of the Site has soils with a peaty surface layer. Construction activity would have a direct impact on peaty soils and may also affect areas of peat and peatland habitats. Impacts during decommissioning would be similar but on a smaller scale. Effects on peat would be potentially significant in a Welsh context.
Flood risk	Construction, operation and decommissioning	Although flood risk within the Site is relatively low, there are areas downstream where flood risk is significant. Water and drainage management within the Site could have consequences for flood risk in areas downstream of the Site.
Agricultural Land	Construction, and decommissioning	Initial review suggests that ALC within the Site boundary is of low grade (4 and 5). Should prime agricultural land be present within the Site, it will be assessed for potential for significant effects.

7.4.9 Receptors / matters to be scoped out of the assessment

The following receptors / matters are proposed to be scoped out of the assessment.

Receptor / matter	Phase	Justification
Mining and mineral extraction	Construction, operation and	Although lead has been identified as occurring within the Site, there is no

	decommissioning	evidence of mining and no indication that future mining is considered. No records of other current potential mining activity or significant mineral extraction have been identified in the area. Mining risks to the Proposed Development would be negligible and there is limited chance that the development would sterilise any mineral reserves.

7.4.10 Opportunities for enhancing the environment

The areas of peat present within the Site boundary indicate that peatland restoration may be feasible in certain areas and could help to reconnect isolated peat bodies, helping to extend the areas of peat and peaty soil. It is likely that previous attempts have been made to drain areas of boggy and/or peaty ground, and these areas would be an excellent focus for this work. There may also be opportunities for extending wetland areas through vegetation and grazing management. These would be discussed with the terrestrial ecology team as there would be overlap with habitat management and potential net gains from a coordinated approach.

7.4.11 Proposed assessment methodology

The proposed assessment method involves a combination of desk-based data gathering, site visits and site-specific data collection followed by data analysis to determine the potential significance of effects.

Key legislation and policy include:

- Environmental Permitting (England and Wales) Regulations 2010 (SI 2010/675).
- Environment Act 1995.
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 (SI2003/3242).
- Planning Policy Wales (PPW) Edition 12, February 2024.
- Future Wales: The National Plan 2040.
- Planning: Guidance on Environmental Impact Assessments (Circular 11/99).
- NatureScot and Historic Environment Scotland's Environmental Impact Assessment Handbook (2018).

- Flood and Water Management Act 2010.
- The Flood Risk Regulations 2009.
- Environment Agency Guidance to Protect Groundwater and Prevent Groundwater Pollution 2017 adopted by NRW.
- Private Water Supplies (Wales) Regulations 2017.
- Pollution Prevention & Control (England & Wales) Regulations 2000.
- The Powys Local Development Plan (2011–2026).
- NRW's Guidance for Pollution Prevention, including GPP1, GPP2, GPP5 and GPP21.

Significance of effect is assessed using a matrix based on the sensitivity of the receptor, magnitude of effect and likelihood of effect. Four levels of significance are applicable: 'Negligible', 'Minor', 'Moderate' and 'Major'. 'Moderate' and 'Major' are considered to be significant in terms of the EIA Regulations. Details of the significance criteria are provided in **Appendix F**.

Effects considered likely to require assessment for construction and operation are:

- Physical changes to overland drainage and surface water flows
- Particulates and suspended solids
- Water contamination from fuels, soils, concrete batching or foul drainage
- Changes in or contamination of water supply to vulnerable receptors
- Increased flood risk
- Physical removal of bedrock
- Modification to groundwater flow paths
- Soil erosion and compaction
- Peat instability.

7.4.12 Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- Weather conditions during site surveys can affect the geographical coverage and quality of data collected. For example, under some circumstances weather conditions can make it too dangerous to access certain areas; preceding weather conditions can influence the appearance of watercourses and ground

conditions – e.g. very wet weather may lead to over-estimation of ground wetness or watercourse size. Use of professional judgement and field experience can help to mitigate this; also scheduling site visits outside the main winter period (November to February) reduces the risk of dangerously stormy weather.

- Private water supply data rely on information held by the Powys County Council. This record is supplied by property owners and may be incomplete. Property owners / tenants may not be aware of details of their own supplies. Attempts will be made to verify supply details. Where this is not possible, a worst-case scenario will be assessed, and contingency mitigation measures provided.

7.4.13 References

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- Water Watch Wales. (2022). WFD Cycle 3 Rivers and waterbodies. Available at: https://waterwatchwales.naturalresourceswales.gov.uk/en/. Accessed March 2024.
- Welsh Government. (2022). Production of the Peatlands of Wales Map: Soil Policy Evidence Programme 2020-21 (Report code: SPEP2020-21/03, March

2022).

7.4.14 Scoping questions

- Do you agree with the proposed list of consultees?
- Do you agree with the proposed study areas?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Do you agree that the surveys proposed to inform the EIA baseline characterisation are appropriate?
- Do you agree that targeting ALC surveys on potential areas identified for solar PV is sufficient?
- Are any receptors / assets / resources not identified that you would like to see included in the EIA?
- Are there any known flooding concerns downstream that could be affected by the Proposed Development?
- Is the proposed peat assessment scope acceptable?

7.5 Landscape and visual

7.5.1 Consultation

No consultation to inform the landscape and visual assessment has been undertaken to date. Following the response to this EIA Scoping Report, consultation will be undertaken with NRW and Powys County Council and Bannau Brycheiniog National Park Authority to agree the list of representative viewpoints.

7.5.2 Study area

An initial study area of 35 km from the proposed turbines (extending from the outermost turbines) within the Site is proposed (**Appendix G**). This would assess the relationship between the Proposed Development and the wider area for potential significant effects on landscape character and visual amenity. This is in line with NatureScot guidance on Visual Representation of Wind Farms: Version 2.2 (2017) and GN046.

The proposed study area for night-time effects is 15 km from the turbines.

The study area for the Residential Visual Amenity Assessment (RVAA) will be 2 km from the proposed turbines.

For the purpose of identifying, mapping and assessing the likely significant effects of the Proposed Development on the landscape of the Site and its immediate surroundings, a 'detailed study area' from the outer turbines will be defined. This detailed study area will be informed through on-going assessment work but is proposed, at this stage, to include areas of potential visibility up to 20 km from the outermost wind turbines.

The Site access corridor is not anticipated to give rise to any potentially significant landscape and visual effects but relevant localised impacts will be identified within the assessment.

A detailed assessment of the proposed grid connection would form part of a separate grid connection application and will not therefore be considered in this LVIA. With the exception of the grid connection, the LVIA will consider all components of the Proposed Development including the solar array and the energy storage system, if these are to be pursued.

7.5.3 Data sources to inform the EIA baseline characterisation

The following data sources are of relevance to this scoping report and/or the LVIA:

- Landscape Institute (LI) and the Institute for Environmental Management and

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

- Landscape Institute (2019) Technical Guidance Note 2/19 Residential Visual Amenity Assessment.
- Landscape Institute (2019) Technical Guidance Note 6/19 Visual Representation of Development Proposals.
- Technical Guidance Note 02/21 Assessing landscape value outside national designations. Landscape Institute 2021.
- NatureScot (2024) General pre-application and scoping advice for onshore wind farms.
- NatureScot (2021) Assessing the Cumulative Landscape and Visual Impact of Onshore Wind energy developments.
- Scottish Natural Heritage (2017) Visual Representation of Wind Farms (Version 2.2).
- Scottish Natural Heritage (2017) Siting and Designing Wind Farms in the Landscape (Version 3).
- Natural Resources Wales (2021) Guidance Note 046 Using LANDMAP in LVIA
- Natural Resources Wales (2014) National Landscape Character.
- Natural Resources Wales LANDMAP.
- Powys County Council (2018) Local Development Plan 2011-2026
- Powys County Council (2019) Renewable Energy Supplementary Planning Guidance
- Powys County Council (2019) Landscape Supplementary Planning Guidance
- Powys County Council (2022) Landscape Character Assessment Report
- Powys County Council (2022) Landscape Character Assessment Report Non-Technical Summary and User Guide
- Bannau Brycheiniog National Park Management Plan 2023-2028.
- Bannau Brycheiniog Landscape Character Assessment (2012).
- NatureScot (January 2025) Special Landscape Qualities – Guidance on Assessing Effects;
- NatiureScot (November 2024) Guidance on Aviation Lighting Impact Assessment

- Civil Aviation Authority (2016) CAP 764: Policy and Guidelines on Wind Turbines;
- Institute of Lighting Professionals 2021 Guidance Note 1 for the Reduction of Obtrusive Light
- Institute of Lighting Professionals (2019) Guidance Note 10 Night-time Photography

7.5.4 Surveys to inform the EIA baseline characterisation

A preliminary site visit to the landscape surrounding the Site was undertaken in January 2023. The site visit, informed by the Zone of Theoretical Visibility (ZTV), in addition to desk based studies, has enabled the identification of a proposed selection of viewpoints for the LVIA. The proposed viewpoints are listed below and shown on **Figures J.1 to J.4** in **Appendix J**.

Following scoping and agreement with consultees regarding the final selection of viewpoints, further surveys will be undertaken within the detailed study area and any locations in the wider search area where significant landscape and visual effects may occur. Viewpoint photography will be undertaken to record the baseline landscape and views towards the Site. A 360 degree sweep of photography will be taken at each viewpoint location.

VP	Location	OS Grid Reference		Distance/ Direction	Receptors
		Easting	Northing		
1	OS Viewpoint on B4519 (Public Bridleway 069/57/1)	299782	242916	2.3 km West	Recreational visitors to promoted viewpoint (which includes a small car park) and walkers on PRoWs in the vicinity
2	Aberedw	307522	247503	2.4 km Northeast	Settlement, road users, footpath users
3	Erwood Bridge (B4567) crossing River Wye, Wye Valley Walk	308952	243763	4.6 km East	Settlement, road users, footpath users, recreational – walkers on Wye Valley Walk and PRoW in Wye Valley
4	Builth Wells Royal Welsh Showground	304394	251616	5 km North	Settlement, road users, footpath users, Showground visitors

5	B4159/Heart of Wales Line	296416	246666	6.9 km West	Road users, Recreational – walkers on Heart of Wales Line Trail
6	Carneddau (Public Bridleway 139/1732/2/ Open Access Land)	306785	253933	7.5 km North	Recreational – walkers on PRoWs
7	Llyn Dŵr (Public Bridleway 043/9/1)	295667	236420	7.8 km Southwest	Recreational – walkers on PRoWs
8	Pen-Y-Crug (Middle Usk Valley: Brecon and Llangorse Registered Park and Garden)	303054	230454	9.1 km South	Visitor to the hill fort (heritage significance) on the northern edge of Bannau Brycheiniog National Park (BBNP)
9	Little Hill (Public Footpath 120/1590/3)	314070	253742	11.3 km Northeast	Recreational – walkers on PRoWs
10	B4358, Llanafan-fawr	296711	255355	11.8 km Northwest	Road users, dispersed settlements, recreational – walkers on PRoWs
11	B4358, Newbridge on Wye	302268	258749	12.3 km North	Road Users, Settlement, Recreational – Walkers on PRoWs

12	Three Rivers Ride, (Restricted Byway 081/89/1)	316077	228384	17.1 km Southeast	Road users, dispersed settlements, recreational – walkers on long-distance trails and PRoWs
13	Pen-Y-Fan on Beacons Way (Public Footpath 070/17/1)	301204	221554	18.1 km South	Recreational - walkers to hill summit along the ridge to the south of Brecon, in BBNP
14	Car Park for Hay Bluff (Middle Wye Valley Registered Park and Garden, Three Rivers Ride)	323974	237353	20 km East	Recreational – cyclists, walkers on the long-distance trail and PRoW in the north-eastern extents of the BBNP
15	Fan Hir (Beacons Way/Cambrian Way, Open Access Land)	282568	221808	29.9 km Southwest	Recreational – walkers on the long-distance trail and PRoW in the western extents of the BBNP

7.5.5 Baseline conditions

In general, the Site occupies an area of exposed upland landscape with landcover being a mixture of lowland pasture bounded by hedgerows with areas of open hill grazing. It also consists of a mix of unimproved moorland, comprising for the most part a mixture of acid grassland, and heather dominated heath, potentially with smaller areas of blanket bog.

The wider landscape to the west is characterised by smaller upland valleys and undulating moorland plateau. To the south, the land comprises of spurs of high ground incised by river valleys. To the north lies the settlement of Builth Wells approximately 5 km from the Site. To the east is the valley of the River Wye with steep wooded slopes.

The Site is not in a Pre-Assessed Area for Wind, as identified in Future Wales.

Landscape character context

The Site lies within National Landscape Character Area (NLCA) 28: Epynt Plateau and Valleys. The area is broadly described as being 'defined by the windswept, sandstone plateau of Mynydd Epynt, which is intersected by pastoral valleys and fast flowing streams.'

The Site is also located primarily within LCA 57: Mynydd Epynt/SENTA and in part within LCA 58: Eastern Mynydd Epynt Hills and LCA 59: Southern Mynydd Epynt Valleys within the Powys County Council Landscape Character Assessment.

Visual amenity

The Site is in a sparsely settled area. Effects on the adjacent valleys are a key consideration as the valleys are where communities are mainly found.

Settlements within 5 km of the Site include Aberedw, Builth-Wells, Upper Chapel, Gwenddwr, Crickadarn, Erwood and Lower Chapel. Dispersed farms and individual dwellings occur occasionally throughout the area.

One main road, the A470, passes approximately 1.9 km to the east of the Site.

National Cycle Network Routes 8, 42 and 43 pass through the study area. Long distance walking trails passing close to the Site include the Heart of Walks Line Trail which passes within 3.7 km (northwest) of the closest turbine before continuing north into Builth Wells. Offa's Dyke National Trail runs to the east of the Site passing within approximately 16.7 km.

A review of the Powys County Council Interactive Map and OS mapping shows that there are numerous Public Rights of Way within the Site and in the surrounding area. The majority of the Site is registered as Common Land. Refer to **Figure J.3** in **Appendix J**.

Landscape designations

Bannau Brycheiniog National Park is the nearest nationally designated landscape and is located approximately 8.5 km south of the Site. As illustrated in **Figure J.3** in **Appendix J**, there would be pockets of visibility on higher ground from this designated landscape.

Landscapes designated for their heritage interest within 20 km of the Site include three landscapes of outstanding or special historic interest. The closest is Middle Wye Valley approximately 8.3 km to the southeast of the Site. There are several Registered Historic Parks and Gardens including Pencerrig, located approximately 6.8 km to the north of the Site.

7.5.6 Additional (secondary and tertiary) mitigation

The primary form of mitigation for landscape and visual effects is through iterative design of the layout of the turbines and infrastructure. Design development will be set out in detail in the design strategy that will form part of the ES.

Opportunities for additional second and tertiary mitigation measures within the Site boundary are likely to be limited mainly to the construction phase.

7.5.7 Description of likely significant effects

In line with national policy and EIA best practice, it is proposed that the scope of assessment focuses only on those effects likely to be significant. The definition of what is significant is discussed below in **Section 7.5.11**.

Figure J.4 in **Appendix J** shows the proposed turbine locations, the character areas and the ZTV. It is judged that significant effects may arise on the host character area LCA 57. It is judged that significant effects may also arise on character areas LCA 38, 40, 43, 44, 47, 50, 51, 53, 54, 55, 56, 57, 57, 59, 60 within the Powys County Council Landscape Character Assessment (PCCLCA) and LCAs 3, 5, 6, 7, 11, 13 and 14 within the Bannau Brycheiniog National Park Landscape Character Assessment (BBNPLCA)

It is judged that LCA 46 and 48 are not likely to receive significant effects as there would be limited theoretical visibility.

Figure J.3 in **Appendix J** shows the proposed turbine locations, the national landscape designations and the ZTV. Bannau Brycheiniog National Park is located within a 10 km distance and there is potential for significant effects on its special qualities where there is theoretical visibility of the Proposed Development.

There would be very limited theoretical visibility from the majority of the Registered Historic Park and Gardens within 20 km of the Site. However, for Old Gwernyfed and Gwernyfed Park, Trefecca Fawr, Treberfydd and Penpont, significant effects may arise due to theoretical visibility from these designated areas.

It is judged that significant effects may arise on the Historic Landscapes of Middle Wye Valley and Middle Usk Valley: Brecon and Llangorse.

7.5.8 Receptors / matters to be scoped into the assessment

Taking account of the findings of the work undertaken to date whilst still adopting a precautionary approach at this preliminary stage, the potential visual, landscape and cumulative effects that will be assessed in the EIA are described below.

Receptor / matter	Phase	Justification
Landscape Character Areas in PCCLCA: LCA 57: Mynydd Epynt/SENTA (Host Character Area) LCA 38: River Dulas Hills & Valleys LCA 40: Llanbister - Penybont Uplands LCA 43: Radnor Forest LCA 44: Wye Valley (Rhayader to Builth Wells) LCA 47: Bryn Glas Uplands LCA 50: Aberedw Uplands LCA 51: Painscastle Uplands LCA 53: Irfon Valley LCA 54: Aberedw Valley LCA 55: Wye Valley (Builth Wells to Haye-on-Wye) LCA 56: Northern Mynydd Epynt LCA 58: Eastern Mynydd Epynt Hills LCA 59: Southern Mynydd Epynt Valleys LCA 60: Llanfilo/Bronllys Farmlands	Construction, operation and decommissioning	Potential for significant effects on landscape character.
Landscape Character Areas in BBNPLCA:	Construction, operation and	Potential for significant effects on landscape

LCA 3: Fforest Fawr LCA 5: Western Usk Tributaries LCA 6: Middle Usk Valleys LCA 7: Central Beacons LCA 11: Eastern Usk Valley LCA 13: The Black Mountains LCA 14: Wye Valley Foothills	decommissioning	character.
Bannau Brycheiniog National Park	Construction, operation and decommissioning	Potential for significant effects on special qualities of designated area.
Registered Historic Park and Gardens: Old Gwernyfed and Gwernyfed Park Trefecca Fawr Treberfydd Penpont	Construction, operation and decommissioning	Potential for significant effects on designated areas.
Historic Landscapes: Middle Usk Valley: Brecon and Llangorse Middle Wye Valley	Construction, operation and decommissioning	Potential for significant effects on designated areas.
Local residents (including local farmsteads and residential properties within 2km	Construction, operation and decommissioning	Potential for significant effects on visual amenity of local residents.
Residents of Builth-Wells, Upper Chapel, Gwenddwr, Crickadarn, Erwood and	Construction, operation and decommissioning	Potential for significant effects on visual amenity of people in settlements.

Lower Chapel settlements and others within 10km		
Local road users within 10km of the proposed turbines	Construction, operation and decommissioning	Potential for significant effects on visual amenity of road users in the surrounding area.
Users of recreational resources (e.g. cyclists on the National Cycle Network, walkers using the long distance routes / national trails of Heart of Walks Line Trail and Offa's Dyke; and users of public rights of way and open access land within 10 km of the proposed turbines)	Construction, operation and decommissioning	Potential for significant effects on visual amenity of users of recreational resources in the surrounding landscape.

7.5.9 Receptors / matters to be scoped out of the assessment

On the basis of the work undertaken to date, the national policy context, the professional judgement of the assessment team and experience from similar projects and consultation responses, it is proposed that the following receptors and effects can be scoped out.

Receptor / matter	Phase	Justification
LCA 46: Dulas Valley (PCCLCA) LCA 48: Tywi Forest Uplands	Construction, operation and decommissioning	As illustrated in **Figure J.4** in **Appendix J**, there would be limited visibility of the Site from these character areas.
Registered Historic Park and Gardens: • Llandrindod Wells Public Parks	Construction, operation and decommissioning	As illustrated in **Figure J.3** in **Appendix J**, there would be limited visibility of the Site from these designated landscapes.

• Pencerrig • Doldowlod • Llangoed Hall • Maesllwch Castle • Bronllys Hospital • Penoyre • Ffrwdgrech • Abercynrig • Glyn Celyn • Buckland House		
Cumulative – small developments	Construction, operation and decommissioning	Turbines below 50 m are scoped out of the assessment.
Cumulative – small developments	Construction, operation and decommissioning	Single turbines of any size beyond 10 km of the Proposed Development are scoped out of the assessment.

7.5.10 Opportunities for enhancing the environment

There may be opportunities to enhance the PRoW network within the Site, through the repair and maintenance of the existing network or enhancement through the addition of gates and stiles or new sections of path.

There may be opportunities to contribute to habitat enhancement design and the landscape team will liaise with the ecology team to identify any such opportunities.

7.5.11 Proposed assessment methodology

The LVIA will inform modifications and refinements to the layout design and will be undertaken following the approach set out in Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3).

The significance of any identified landscape or visual effect will be assessed as major, major/moderate, moderate, moderate/minor, minor or negligible. Where the

effect is classified as Major or Major / Moderate this is considered to be equivalent to likely significant effects referred to in the EIA Regulations. Where 'Moderate' effects are predicted, professional judgement will be applied to ensure that the potential for significant effects arising has been thoroughly considered. The significance criteria that will be applied has been set out in **Appendix F**.

Landscape character assessment

Given the varied information sources available it is proposed that the character areas included within the Powys County Council (2022) Landscape Character Assessment Report are treated as the landscape character receptors, supplemented with information from survey observations.

Value and Sensitivity judgements will be informed by LANDMAP.

In line with national policy, as discussed in **Section 7.6.5** above, it is proposed that the scope of assessment focuses only on those effects likely to be significant. Clear and transparent justification will be provided for those receptors scoped out i.e. non-significant effects.

LANDMAP

The LANDMAP findings for the areas identified for assessment above will be used to inform considerations of sensitivity. The filtering approach recommended by GN046 will be applied to areas within or nearby the pre-assessed area and this will use the Powys Landscape Character Assessment in addition to LANDMAP data.

Visual assessment

The assessment will be a receptor group-based assessment. The assessment will include potential effects on settlement areas and routes, including roads, railway lines, walking and cycle routes within the detailed study area where potential visibility is indicated by the Zone of Theoretical Visibility (ZTV) (see **Figures J.1 to J.4**). The assessment will focus on those receptors where there may be the potential for significant effects, which is likely to be those within the detailed study area, though outlying receptors may be selected due to their importance.

Viewpoints

The list of viewpoint locations is shown in the table in **Section 7.5.4** and illustrated on **Figures J.1-J.4**.

Some viewpoints, particularly those beyond 20 km, may be illustrated with wireframes only. Grid references are indicative at this stage, viewpoints will be subject to on-field survey verification and may be moved slightly to obtain a clearer or more representative view, whilst remaining as close as possible to the receptor group and location proposed in the viewpoint table.

Visualisations

The assessment will be supported by a series of photomontages and wireframes from agreed viewpoint locations. Visualisations from each viewpoint will be prepared in accordance with NatureScot (formerly Scottish Natural Heritage (SNH) guidance Visual Representation of Windfarms: Version 2.2 (2017)) and Landscape Institute Technical Guidance Note 06/19 Visual Representation of Development Proposals.

Photomontages will be prepared for viewpoints mainly within a 20 km radius or further if it is necessary to include a notable recognised viewpoint. Ancillary elements such as tracks, sub-station and control buildings will only be shown from close viewpoints where these will be discernible and have a bearing on the assessment of effects. From more distant viewpoints, ancillary elements are likely to be visible as minor elements.

Cumulative assessment

In line with the EIA Regulations and NatureScot guidance (Assessing the Cumulative Impact of Onshore Wind Energy Developments (2021)), the assessment will consider other wind farms within the detailed LVIA study area including those which are operational, consented and those for which a planning application has been submitted but which are yet to be determined. Schemes that have submitted an EIA Scoping Report at the time the LVIA is being written and visualisations produced are not normally included as the turbine layout of such schemes is likely to change.

An initial cumulative search will be undertaken for a 35 km study area and all other wind farm developments within this area identified. Turbines under 50 m in height will only be included where they lie within 5 km of the proposed turbines. The proposed scope of the cumulative assessment will focus on likely significant effects which may influence the outcome of the consenting process. It is therefore likely that the cumulative assessment will focus on sites within 20 km of the Proposed Development.

Operational and consented sites will form part of the baseline and future baseline respectively for the assessment. Sites in planning will be considered as separate potential cumulative scenarios.

Night-time assessment

Turbines of 150 m or greater tip height would require visible aviation lighting. The agreed Lighting Strategy will form the basis of the assessment and visual material presented. An assessment of night-time impacts on landscape and visual receptors will be carried out and included in the LVIA.

The assessment will be supported by a ZTV study illustrating the extent of visibility of the lights and the number of lights visible. The consideration of night-time effects on landscape receptors will be informed by in the field assessment and satellite mapping of existing light levels and the character and special qualities of the

landscape receptors at night. Visualisations will consist of wireline diagrams indicating the number of lights likely to be visible and by photomontages from receptor groups most likely to be affected. These are considered to be areas where people are likely be during hours of darkness (typically around settlements) and nearby Dark Sky Reserves or Dark Sky Discovery Sites.

Within the 15 km study area, key night receptors include the settlements identified in **Section 7.6.5** and the Bannau Brycheiniog National Park which is also identified as a Dark Sky Reserve.

Wireline diagrams will be prepared from selected viewpoints likely to be visited at night, within 15 km of the turbines and included in the LVIA.

Previous work has established that night photomontages are of limited value in representing effects due to the difficulties of fully representing the brightness of lights on paper / screen. Up to three night photomontages will be provided representing the most affected receptors in a range of distances and directions. These will be confirmed with consultees once initial assessment work has been completed.

Residential visual amenity assessment

A separate assessment of the effects on residential visual amenity will be undertaken as a standalone appendix / document. This will be undertaken in line with Landscape Institute Technical Guidance Note 2/19: Residential Visual Amenity Assessment (RVAA) and will be included as a technical appendix to the ES.

7.5.12 Difficulties and uncertainties

No difficulties or uncertainties regarding the landscape and visual assessment have been identified at this stage.

7.5.13 References

- Landscape Institute and Institute of Environmental Management & Assessment. (2013). Guidelines for Landscape and Visual Impact Assessment, Third Edition.
- LUC. (2022). Local Landscape Character Assessment for the Powys Local Development Plan Area - Landscape Character Assessment Report. Available at: https://en.powys.gov.uk/article/13408/Replacement-Local-Development-Plan-Latest-Evidence. https://en.powys.gov.uk/article/13413/Landscape-Character-Assessment-Profiles. [Accessed 04 March 2024].
- Natural Resources Wales. (2023a). NLANDMAP. Available at: https://smnr-

nrw.hub.arcgis.com/. [Accessed 04 March 2024].

- Natural Resources Wales. (2023b). National Landscape Character Areas. Available at: https://smnr-nrw.hub.arcgis.com/apps/c7770d2881394c899123bae210afe370/explore. [Accessed 04 March 2024].
- Natural Resources Wales. (2013). Using LANDMAP in Landscape and Visual Impact Assessments GN46. 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. [Accessed 04 March 2024].
- Powys County Council. (2018). Adopted Powys Local Development Plan 2011-2026. Available at: https://en.powys.gov.uk/article/4898/Adopted-LDP-2011---2026. [Accessed 04 Mach 2024].
- Powys County Council. (2019). Powys LDP – Landscape SPG. Available at: https://en.powys.gov.uk/article/4907/LDP-Supplementary-Planning-Guidance-SPG-and-Supporting-Policy. [Accessed 04 March 2024].
- Powys County Council. (2023). Public Rights of Way Map. Available at: https://en.powys.gov.uk/article/13184/Public-Rights-of-Way-Map. [Accessed 04 March 2024].
- NatureScot (2024) General pre-application for onshore wind farms. Available at: https://www.nature.scot/doc/naturescot-pre-application-guidance-onshore-wind-farms. [Accessed 31 October 2024].
- NatureScot (2021) Assessing the cumulative landscape and visual impact of onshore wind energy developments. Available at: https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments#Introduction+and+scope+of+this+guidance. [Accessed 21 October 2024].
- Scottish Natural Heritage. (2017). Visual Representation of Wind Farms (Version 2.2). Available at: https://www.nature.scot/doc/visual-representation-wind-farms-guidance. [Accessed 31 October 2024].
- Scottish Natural Heritage (2017) Siting and designing wind farms in the landscape version 3a. Available at https://www.nature.scot/doc/siting-and-designing-wind-farms-landscape-version-3a. [Accessed 31 October 2024].

7.5.14 Scoping questions

- Do you agree with the proposed consultees listed? Are there any other relevant parties who should be included within the post-scoping consultation process for the LVIA?
- Do you consider the size of the detailed 20 km radius study area to be appropriate?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Do you agree that the surveys proposed to inform the EIA baseline characterisation are appropriate?
- Is the proposed scope for the assessment of effects on landscape character considered to be proportionate and adequate to consider all potentially significant effects?
- Is the proposed scope for the assessment of effects on designated landscapes considered proportionate and adequate to consider all potentially significant effects?
- Do you consider that the proposed viewpoints are appropriate to inform the visual assessment, and that the suggested presentation of visualisations is proportionate? If not, please identify any alternative or additional locations which you consider sensitive and requiring assessment.
- Is the approach to inclusion of schemes within the cumulative assessment appropriate?
- Is the scope of the assessment of effects on residential visual amenity appropriate?
- Is the scope of the night-time impact assessment proportionate and adequate to consider all potentially significant effects?
- Do you have any suggestions (taking account of the ZTV study shown in Figures J.1-J.4) for night-time viewpoints that merit photomontages? These should be publicly accessible locations at which people may be present during hours of darkness, and sensitive to changes in the lighting environment.
- Do you have any specific concerns regarding potential landscape and visual impacts that are not covered by the proposed scope of assessment?
- Do you agree with the proposed receptor-group specific assessment approach?

7.6 Noise and vibration

7.6.1 Consultation

At this stage no consultation with respect to noise and vibration has been undertaken. Consultation will be undertaken with Powys County Council to discuss the assessment methodology (including baseline noise monitoring locations) following the submission of this EIA Scoping Report.

7.6.2 Study area

The study area for the construction phase assessments will consider noise and vibration sensitive receptors that are located within 300 m of the Proposed Development (**Appendix G**). This has been determined based on the guidance set out in British Standard (BS) 5228-1, BS 5228-2 and using professional judgement. At distances of more than 300 m, noise predictions have to be treated with caution due to the increasing importance of meteorological effects. The study area defined is based on daytime working only. This would be subject to refinement should the working hours of the construction phase change.

The study area for the operational phase of the wind turbines has been determined in accordance with ETSU-R-97 and the Institute of Acoustics Good Practice Guide. A preliminary noise prediction model has been generated to identify the potential for noise sensitive receptors to be exposed to noise levels above 35 dB LA90 at up to 10 m/s wind speed from all proposed turbines. Final selection of a candidate turbine is in progress therefore, the model has been based on an indicative turbine sound power level of 106 dB(A) at 10 m/s wind speed, with a hub height of 118.5 m in each location. The initial study area based on these assumptions is indicated by the 35 dB LA90 contour shown in the figure provided in **Appendix K**.

The study area for the operational phase of any fixed plant associated with the Proposed Development (substation transformers, solar photovoltaic-system inverter(s) and battery storage cooling fan system) will extend to the nearest or most exposed noise sensitive receptors surrounding the Proposed Development.

7.6.3 Data sources to inform the EIA baseline characterisation

The datasets used to determine the proposed assessment scope include:

- Aerial imagery and mapping.
- AddressBase Plus data.
- Defra Lidar terrain data.

- BEIS Renewable Energy Planning Database.
- Noise action plans.
- Baseline noise surveys representative of the nearby noise sensitive receptors will be undertaken to establish the pre-development acoustic environment (as defined in **Section 7.6.4**).
- Traffic flow data

7.6.4 Surveys to inform the EIA baseline characterisation

A baseline noise survey was undertaken across seven monitoring positions between Tuesday 13th June 2023 and Wednesday 13th September 2023. The baseline survey comprised of unattended measurements taken over a period sufficient to acquire valid data over the range of wind speeds and directions required for the ETSU-R-97 noise assessment procedure. The survey was undertaken in conjunction with site-based weather monitoring. The resulting dataset will subsequently be used to inform the operational phase assessment Prior to monitoring, neither a pre-application or PPA had been submitted, therefore Powys County Council were unable to comment on the methodology.

For receptors in proximity to the other fixed plant associated with the Proposed Development, baseline surveys will be undertaken with reference to the requirements of BS 4142:2014+A1:1019.

All measurement equipment to be used will comply with BS EN 61672-1 and BS EN 60942.

No other noise surveys have been carried out to date.

Monitoring locations associated with the baseline noise survey are identified in **Appendix K**.

7.6.5 Baseline conditions

Typical examples of receptors sensitive to noise and vibration include dwellings, hospitals, healthcare facilities, education facilities, community facilities, international and national or statutorily designated sites and cultural heritage assets. The receptors within the study area primarily comprise isolated farmhouses, roadside dwellings, and holiday camps.

The baseline acoustic environment surrounding the Site will vary significantly depending on proximity to prominent noise sources. These sources include agricultural activities, road and rail infrastructure, industrial facilities, and commercial premises / activities. The background noise environment in and around the Proposed

Development is likely to be characterised by noise sources such as wind-swept vegetation, birdsong, watercourses, farm animals and traffic from local roads, which vary in influence according to weather conditions and time of day.

There are no known permitted or operational wind farm schemes in the surrounding area which would require cumulative assessment.

7.6.6 Additional (secondary and tertiary) mitigation

Construction

Following the outcome of the construction phase assessment, tailored mitigation will be proposed where the predicted noise and vibration levels have the potential to exceed the threshold significance criteria. These additional measures would be recommended where conventional Best Practicable Means (as defined by the Control of Pollution Act) would not be sufficient.

Operation

Mitigation of operational noise of wind turbines will primarily be achieved through the iterative design process of the Proposed Development, such that the relevant ETSU-R-97 noise limits can be met at the nearest properties to the Site with commercially available wind turbines.

If deemed necessary, following the outcome of the initial assessment, mitigation of operational noise levels from other fixed plant associated with the Proposed Development would be implemented. At this stage, these mitigation measures may comprise alternative site layouts, noise barriers, acoustic enclosures, and attenuators.

7.6.7 Description of likely significant effects

Construction

The Proposed Development has the potential to result in construction phase noise and vibration impacts, as a result of the following activities:

- Formation of temporary construction compound.
- Site preparation (topsoil strip, vegetation clearance and civils works such as levelling).
- Forming access roads within the Site boundary (and off-site improvements to the existing highway).
- Substructure works to proposed turbines and other equipment installations.
- Turbine erection and equipment installations.

- Making good and reinstatement works
- Construction traffic on the public highway.

Given the separation distances to offsite receptors, the construction phase activities that will need to be considered as part of the assessment may be limited i.e. only certain works will fall within the defined study area. The extent of these works would be determined when further information is made available regarding the construction methodology.

Operation

The operation of the Proposed Development has the potential to result in noise impacts at the surrounding sensitive receptors. This is due to the introduction of various items of noise emitting plant and equipment including substation transformers, solar photovoltaic-system inverter(s), and battery storage cooling fan systems.

During their operation, wind farms have the potential to create noise effects through both aerodynamic noise and mechanical noise. Aerodynamic noise would be caused by the interaction of the turbine blades with the air. Mechanically generated noise would be caused by the operation of internal components, such as, the gearbox and generator, which are housed within the nacelle of the turbine. However, the level of mechanical noise radiated from current technology wind turbines is generally engineered to a low level. Given the proximity of noise sensitive receptors within the defined study area, there is potential for noise impacts to occur and therefore a detailed assessment will be undertaken to determine potential impacts and the requirement for acoustic mitigation measures.

The equipment installations associated with the Proposed Development are expected to be appropriately isolated so that the transmission of ground-borne vibration is not significant.

7.6.8 Receptors / matters to be scoped into the assessment

The following receptors / matters are proposed to be scoped into the assessment.

Receptor / matter	Phase	Justification
Human receptors affected by noise	Construction and decommissioning	Potential for significant adverse noise effects on nearby human receptors resulting from construction traffic and the construction activities associated with the Proposed Development.

Human receptors affected by vibration	Construction	Potential for significant adverse vibration effects on nearby human receptors resulting from construction activities associated with the Proposed Development.
Human receptors affected by noise	Operation	Potential for significant adverse noise effects due to turbines and other noise emitting plant and equipment associated with the Proposed Development.

7.6.9 Receptors / matters to be scoped out of the assessment

The following receptors / matters are proposed to be scoped out of the assessment.

Receptor / matter	Phase	Justification
Human receptors affected by operational traffic flows	Operation	Due to the limited number of vehicles that are expected to be introduced as a result of the Proposed Development and the nature of highway links adjacent to the Site, the influence of operational phase vehicle movements is not expected to give rise to significant effects.
Human receptors affected by operational vibration	Operation	Significant ground borne vibration resulting from the Proposed Development is not anticipated due to low levels of vibration from equipment installations or through inclusion of appropriate vibration isolation.

7.6.10 Opportunities for enhancing the environment

No opportunities for enhancement in relation to noise and vibration have been identified at this stage.

7.6.11 Proposed assessment methodology

The following relevant standards, guidance and industry best practice will inform the noise and vibration assessment:

- BS 4142:2014+A1:2019 ‘Methods for rating and assessing industrial and commercial sound’.
- BS 5228-1:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites: Noise’.
- BS 5228-2:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites: Vibration’.
- Calculation of Road Traffic Noise Memorandum (CRTN).
- Design Manual for Roads and Bridges (DMRB), LA 111 ‘Noise and Vibration’.
- ETSU-R-97 ‘The Assessment and Rating of Noise from Wind Farms’.
- Institute of Acoustics ‘Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise.
- ISO 9613-2:2024 - Acoustics. Attenuation of sound during propagation outdoors. Part 2: General method of calculation.
- Technical Advice Note (TAN, Wales) 11: Noise 1997.

Construction

An assessment of construction noise levels associated with the onsite works will be undertaken using the assessment methodology and significance criteria set out in BS 5228-1:2009+A1:2014. The assessment will consider the primary phases of works. The assessment will determine if exceedances of the defined acoustic criteria are predicted to occur and will identify potential mitigation measures to minimise adverse effects.

The noise arising from construction traffic flows on local roads will be predicted using the calculation methods set out in the Calculation of Road Traffic Noise publication, which will be assessed against the criteria in Design Manual for Roads and Bridges LA 111.

Where considered applicable based on the proximity of sensitive receptors from the works, a construction vibration assessment will be undertaken using the assessment methodology and significance criteria set out in BS 5228-2:2009+A1:2014.

Operation

Current best practice calls for the control of wind turbine noise by the application of noise limits at the nearest noise sensitive properties. It is considered that absolute noise levels applied at all wind speeds are not suited to wind turbine developments and therefore best practice is to adopt noise limits relative to background noise levels in the vicinity of the noise sensitive locations. Therefore, one critical aspect of the noise assessment of wind energy proposals relates to the identification of baseline

noise levels through onsite noise surveys.

On the assumption that some receptors will be within the 35 dB(A) noise contour, the following will apply:

- Continuous baseline noise monitoring will be carried out at representative noise sensitive locations for a suitable period and should capture a representative sample of wind speeds in the area (i.e., cut in speeds to wind speed of maximum sound power of the proposed turbine).
- Background noise measurements (i.e., LA90,10 min) will be carried out in light of guidance contained within the Institute of Acoustics Good Practice Guide to the Application of ETSU-R-97 and related to wind speed measurements that are collated at the site of the wind turbines of the Proposed Development.
- Regression analysis is then applied to this data set to derive background noise levels at various wind speeds, and from this, the appropriate day and night time noise criterion curves can be established.

Noise emissions associated with the wind turbines are predicted in accordance with ISO 9613: Acoustics – Attenuation of sound outdoors, Part 2: General method of calculation (2024) and considering guidance contained within the Institute of Acoustics Good Practice Guide. This is a noise prediction standard that considers noise attenuation offered, amongst others, by distance, ground absorption, directivity and atmospheric absorption. Noise predictions and contours are typically prepared for various wind speeds and the predicted levels are compared against the relevant noise criterion curve to demonstrate compliance with the guidelines.

An operational phase assessment of the other noise emitting infrastructure associated with the Proposed Development (substation transformers, solar photovoltaic-system inverter(s), and battery storage cooling fan system) will be undertaken to the requirements of BS 4142:2014+A1:2019. Noise predictions of the proposed infrastructure will be derived from computer noise modelling or spreadsheet calculations as appropriate and will be compared with the measured prevailing background sound level (LA90) at the nearest or most exposed receptors to determine the magnitude of impacts and significance of effects.

The significance criteria proposed for the noise and vibration assessment is presented in **Appendix F**.

7.6.12 Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- This EIA Scoping Report has been prepared on the basis of the current design

of the Proposed Development and data available at the time of writing.

- The construction assessment will assume the use of standard construction techniques commensurate for the type of works being undertaken. The final techniques, plant selection and programme are expected to be determined by the appointed contractor, in consultation with relevant authorities prior to commencement of works.
- Details of noise emitting plant / equipment associated with the Proposed Development have not been defined at this stage.
- The extent of the study area is indicative only at this stage and may vary following refinement of the candidate turbine selection.

References

- British Standards Institution. (2019). British Standard 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound. London: British Standard Institution.
- British Standards Institution. (2018). British Standard EN IEC 60942:2018, Electroacoustics – Sound calibrators. London: British Standard Institution.
- British Standards Institution. (2014a). British Standard 5228:2009+A1:2014, Code of practice for noise and vibration control on construction and open sites (Part 1: Noise). London: British Standard Institution.
- British Standards Institution. (2014b). British Standard 5228:2009+A1:2014, Code of practice for noise and vibration control on construction and open sites (Part 2: Vibration). London: British Standard Institution.
- British Standards Institution. (2013). British Standard EN 61672-1:2013, Electroacoustics - Sound level meters (Part 1: Specifications). London: British Standard Institution.
- British Standards Institution. (2003). British Standard 7445:2003, Description and measurement of environmental noise (Part 1: Guide to quantities and procedures). London: British Standard Institution.
- Department of Transport. (1988). Calculation of Road Traffic Noise. Surrey: Her Majesty's Stationary Office.
- Highways England. (2020). Design Manual for Roads and Bridges, LA 111 Noise and Vibration.
- International Organization for Standardization. (1996). ISO 9613-2:2024(E): Acoustics. Attenuation of sound during propagation outdoors - Part 2: General method of calculation. Geneva, Switzerland: International Organization for

Standardization.

- Planning Guidance, Wales. (1997). Technical Advice Note 11. Wales: Welsh Government. Available at Technical advice note (TAN) 11: noise | GOV.WALES. [Accessed 10 February 2025].
- Secretary of State. (1974). The Control of Pollution Act. Available at Control of Pollution Act 1974. [Accessed 10 February 2025].

7.6.13 Scoping questions

- Do you agree with the proposed list of consultees?
- Do you agree with the proposed study areas?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Do you agree that the surveys proposed to inform the EIA baseline characterisation are appropriate?
- Are any receptors / assets / resources not identified that you would like to see included in the EIA?
- Do you agree with the receptors / matters that are proposed to be scoped in and out of the EIA?

7.7 Biodiversity

7.7.1 Consultation

No pre-scoping consultation has yet been carried out with relevant stakeholders.

Post-scoping consultation will be undertaken with Natural Resources Wales (NRW) and Powys County Council (PCC) to provide them with a detailed baseline to inform comments on the proposed assessment and mitigation methodologies.

If required, NRW will also be consulted to agree a suitable licensing and mitigation strategy for protected species and/or important habitats during the construction and operation phases, including whether existing data will be sufficient to inform a licence application or modification.

7.7.2 Study area

The Site is proposed to consist of wind turbines, access road and potentially PV solar panels and BESS. A background data search (BDS) for information relating to ecology (e.g., statutory and non-statutory designated sites and protected species records) was undertaken. This included a search for international and national statutory designated sites (10 km) such as Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar sites and Sites of Special Scientific Interest (SSSI) on the Site and surrounding area.

Protected species records obtained from the local record centre for the Site and extended to 2 km beyond the Site boundary. The BDS was also made for non-statutory designated (often important in a local context) on the Site and within 2 km of the Site boundary as well as ancient woodlands within 1 km.

The assessment will use the findings of ecological surveys undertaken at and surrounding the Site. The study area that has been used varies per receptor as per below **(Appendix G**):

- A Preliminary Ecological Appraisal (PEA) of turbine locations and infrastructure areas was undertaken plus the surrounding 250 m.
- A PEA was also completed for the indicative PV solar area in July 2023 which covered the full extent of the boundary as provided by the client based on initial design proposals.
- Habitat and protected species appraisals for the proposed route of the access road from the east of the Site down to the A470, completed in November 2024.
- A National Vegetation Classification (NVC) survey of habitats up to 250 m

from proposed turbine locations and indicative infrastructure layout.

- The survey area for habitat assessments for eels (*Anguilla Anguilla*) and white-clawed crayfish (WCCF) (*Austropotamobius pallipes*), included all watercourses and waterbodies predicted to be directly impacted by the Proposed Development. Surveys initially focused on identifying suitable habitat within the works area and extending 250 m upstream and downstream.
- A 250 m survey area for great crested newts (GCN) (*Triturus cristatus*) was applied to the wind farm, solar and access road to identify suitable terrestrial habitats and potential breeding ponds. A 500 m buffer is widely accepted as the maximum distance that GCN can travel up to from a breeding pond (providing suitable connectivity is present) during the terrestrial phase of their lifecycle, however the majority of adults usually stay within 250 m of a breeding pond. A radius of 250 m was deemed appropriate due to the anticipated scale of GCN habitat to be impacted.
- The survey area for a reptile habitat suitability assessment was undertaken within a 250 m buffer for the wind farm turbine locations and infrastructure and within the boundary of the indicative PV solar area to identify areas of suitable habitat that could support reptiles with the potential to be impacted by the Proposed Development.
- The survey area for the ornithological surveys was the wind farm Site boundary plus a 500 m buffer for breeding wader surveys and within 2 km for breeding raptor surveys . Surveys were carried out over a two year period between September 2021 to August 2022 and September 2022 to August 2023. Surveys took the form of vantage point surveys to inform a collision risk modelling (CRM) assessment for turbine locations.
- The survey area for badger (*Meles meles*) included the works area plus the surrounding 100 m for turbine locations and infrastructure. For the solar farm and access road, the survey area extended to the redline boundary plus an additional 30 m. A 30 m buffer is typically recommended to protect a badger sett during construction (Williams, 2018; Natural Resources Wales, 2018; English Nature, 2002). Any setts within this distance may therefore be affected by the Proposed Development and will need to be considered in the assessment.
- The wind farm survey area for the preliminary roost assessment for bats included all trees within 280 m of the indicative works area and turbine locations, including rotor swept radius. The assessment included the identification of key features for roosting bats with the aim of identifying important roost sites, such as maternity roosts, significant hibernation and/or

swarming sites (NatureScot, 2016).

- Bat statics detector surveys were deployed between May and October 2023, and April to May 2024 (due to static device recording failures), at 16 locations across the wind farm area within a 250 m buffer from turbines and indicative infrastructure locations.
- Bat statics detectors were used to carryout surveys of the indicative PV solar area between July and October 2023 at four locations. Detectors were installed in or adjacent to suitable bat foraging and commuting habitat within the boundary for the solar development.
- A preliminary roost assessment (trees and buildings) was undertaken in July 2024 along the proposed route of the access road plus an additional 20 m either side.
- Bat activity surveys were also completed in 2024 for the proposed route of the access road, which included the use of nine static detectors at key locations and night-time walkover (transect) surveys across the route.
- The survey area for water vole (*Arvicola amphibius*) surveys included all watercourses that may be impacted by the wind farm and PV solar elements plus up to 200 m upstream and downstream (where accessible). A distance of 200 m upstream and downstream has been used as works are likely to directly impact watercourses on a permanent basis. This survey buffer would account for any local water vole population that could commute further along the watercourse and into the Site boundary (Dean *et al.,* 2016).
- The survey area for otter (*Lutra lutra*) surveys were carried out alongside the water vole surveys for all watercourses and waterbodies in, and adjacent to, the Proposed Development.
- Surveys for dormice (*Muscardinus avellanarius*) were carried out between June and November 2023 where impacts from the wind farm (i.e. infrastructure) were predicted to occur on suitable dormouse habitat (i.e., scrub or hedgerows that provides structure, composition and connectivity). Surveys included the area of habitat to be impacted (Bright *et al.,* 2007) plus a 100 m of surrounding habitat.
- Dormouse survey were also carried out in relation to the access route, with 150 tubes deployed along the proposed route and surveyed between May and October 2024 .
- Habitat assessments for brown hare, polecat and hedgehog were undertaken within the 250 m buffer used for the PEA and reptile habitat assessment.

The survey extent for the wind farm area, which is the location where most of the

ecology surveys have been focused on is *c.*1,145 ha, and included all known works areas (i.e. development footprint) plus a 250 m radius.

The extent of the survey area for the indicative PV solar area used the Site boundary where all works would be located. Surveys extended beyond the boundary where appropriate for the survey methodology i.e. badger, water vole and otter etc.

Surveys for the access road included the proposed route, extending into adjacent habitats. The size of this survey area was dependent on the survey methodology (as described above).

Overall, the Site and 2 km surrounding it is considered to be the Zone of Influence (ZoI) for the majority of ecological receptors; extending to 10 km to consider International statutory sites for birds and bats. The ZoI is the area encompassing all predicted ecological effects from the Proposed Development, including all ancillary, associated temporary and permanent works.

7.7.3 Data sources to inform the EIA baseline characterisation

The proposed assessment scope has been based on:

- A background data search from Aderyn records centre which included a search for designated sites and protected species records within 2 km of the Site, extended to 10 km for SPAs, SACs and Ramsar sites.
- The Multi-Agency Geographic Information website (MAGIC) to view statutory designated nature conservation sites.
- DataMapWales: https://datamap.gov.wales/.

The assessment (post-scoping) will also be based on the surveys undertaken by the Project Team in 2022, 2023, and 2024 (see **Section 7.7.4** for more details).

7.7.4 Surveys to inform the EIA baseline characterisation

The proposed assessment scope has been informed by the data sources described above alongside the following surveys undertaken by the Project Team in 2022, 2023, and 2024.

Wind farm

- PEA (August 2022, of original design layout) and updated in June 2023, Banc-y-Celyn Windfarm.
- NVC botanical survey of key habitat types (October to November 2022 and April 2023).
- Reptile habitat assessment (June 2023).

- Ornithological surveys Years 1 & 2 (September 2021 to August 2023).
- Water vole survey (October 2022 and May to June 2023).
- Otter survey (October 2022 and May to June 2023).
- Badger survey (October 2022).
- Brown hare, hedgehog and polecat habitat assessments (June 2023).
- GCN surveys, HSI assessment and eDNA (May to June 2023 and April 2024).
- Aquatic habitat assessments for European eel and White Clawed Crayfish (April 2023).
- Preliminary Roost Assessment surveys of bat roosts in trees (April 2023) and Potential Roost Feature (PRF) inspection surveys (March to April 2024).
- Dormice surveys (May to November 2023).
- Bat activity surveys (May to October 2023 and April to May 2024).

Indicative PV solar area

- PEA (July 2023).
- Bat activity surveys (July to October 2023).
- Water vole survey (August 2023).
- Otter surveys (August 2023).

Access road

- NVC Habitat and Desk Study Report (July to August 2024).
- Protected Species Report (May to October 2024) – GCN, badger, dormice, water vole and otter.
- Bat Activity and Preliminary Roost Assessment Report (April to October 2024).

Post-scoping will also be informed by the following additional surveys:

- PEA survey for the main access road.
- Fungi Wax Cap eDNA surveys, within areas of suitable acid grassland in the Site boundary for both the wind farm and PV solar area.
- Pearl border fritillary habitat assessment and presence or absence surveys (if required), within the wind farm and PV solar area boundary.
- Bat roost presence or absence surveys (if required), for the wind farm and access road, this is likely to be preconstruction once those trees to be directly

affected are known.

- Breeding bird survey, PV solar area.

7.7.5 Baseline conditions

The existing ecological baseline is based on both desk and field-based studies as part of the PEA and other ecological surveys undertaken to date (see **Appendix L** for figures).

The majority of the wind farm survey area comprises a mixture of acid grassland, wet heath and dense bracken (*Pteridium aquilinum*) or gorse (*Ulex sp.*) in an sheep grazed common. Occasional areas of blanket bog or modified bog are present which grade into acid flushes and streams. The western section of the wind farm area comprises pastoral land dominated by improved grassland for grazing sheep.

Several tributaries for the River Wye (Afon Gwy) and River Usk cross or border the Site boundary, two of these watercourses are designated as SSSIs and SACs due to the important aquatic habitats and species they directly support and as part of the larger Wye river catchments.

The indicative PV solar survey area is made up of sheep grazed improved grassland, as well as wetter areas of marshy or acid grassland and dense stands of bracken. Hedgerows delineated the majority of the fields, however, the majority are defunct and in very poor condition. Two wooded valleys were present in the west and east portions of the Site, with the western woodland being considerably larger.

The proposed route for the access road follows the existing road to the east of the Site, before diverting into adjacent agricultural fields consisting of sheep grazed fields of improved grassland and hedgerows.

Designated and non-designated sites

There are up to 15 statutory designated sites located on the Site (wind farm and solar area combined) or within a 10 km radius. Details of these are provided below:

- River Wye / Afon Gwy (Wales) SAC*
- River Wye (Tributaries) / Afon Gwy (Isafonydd) SSSI*
- Upper Chapel Pastures SSSI*
- Elenydd-Mallaen SPA
- River Usk / Afon Wysg SAC
- Afon Wysg (Isafonydd) / River Usk (Tributaries) SSSI
- Mynydd Epynt SAC

- Drostre Bank SAC
- Upper Chapel Pastures SSSI
- Mynydd Epynt SSSI
- River Wye (Upper Wye) / Afon Gwy (Gwy Uchaf) SSSI
- Llandeilo, Rhulen and Llanbedr Hills SSSI
- Allt Cynhelyg SSSI
- Coed Aberedw SSSI
- Duhonw SSSI

*Denotes designations located on the Site.

There are 13 non-statutory designated sites within 2 km of the Site. The closest of these are Bryn-Gogo Road Verge Nature Reserve (RVNR) and the Old Bedw Local Wildlife Site (LWS) and Site of Importance for Nature Conservation (SINC) located on Site, and Old Bedw 2 LWS (SINC), and Old Bedw GCN pond (SINC) which are located 100 m east of the Site.

The 13 non-statutory designated sites are as follows:

- Bryn-Gago (RVNR)*
- Old Bedw LWS (SINC)
- Old Bedw 2 LWS (SINC)
- Old Bedw GCN pond LWS (SINC)
- Allt Mawr Uchaf LWS (SINC)
- Gwenddwr RVNR
- Little Hill RVNR
- Llwyn Llwyd RVNR
- Mynydd Epynt RVNR
- Llaneglwys Farm Meadows LWS (SINC)
- Cefn-Perfedd Meadows LWS (SINC)
- Cwm-Bwch-Fawr Meadows LWS (SINC)
- Gwenddwr Road Verge Nature Reserve RVNR

*Denotes designations located on the Site

Protected and noteworthy habitats

For the Site, broad habitat types were recorded and mapped during the Phase 1 habitat surveys as part of the PEA. This identified priority habitats present on the Site listed on the Powys Nature Recovery Action Plan and Environment (Wales) Act 2016 are provided below:

Powys Nature Recovery Action Plan	Environment (Wales) Act 2016 (Section 7)
Farmland	Hedgerows
Linear habitats	Purple moor grass and rush pastures
Rivers and streams	Blanket bog
Upland & lowland heath	Upland flushes, fens and swamps
Rhos pastures	Upland heathland
Scrub and ffrid	Upland oak woodland
Upland oak woodland	
Coniferous woodland	

Botanical surveys (following the NVC methodology) were undertaken for the wind farm and access road. These surveys identified a range of NVC vegetation communities across the study area that are characteristic of the Welsh uplands. This encompassed 39 distinct community types, with other areas representing transitions/mosaics of these.

Of particular importance, in terms of sensitivity to Proposed Development, the range of blanket mire communities of M2, M18 and M19, and including more modified blanket mire, such as the M20 and U6 communities that are situated in the north and central locations of the study area, are noteworthy. In particular, hydrological impacts to such blanket mire and the oxidisation of the underlying peat layer may result in release of greenhouse gases linked with global warming such as carbon dioxide, methane and nitrous oxides, as well as a reduction in water quality and quantity, and potentially significant change to aquatic systems further downstream. Changes in soil chemistry (direct or airborne) will result in the modification of mire flora.

Similarly, the small base-rich flushes are equally botanically significant as any alteration of soil hydrology or chemistry will again have significant impacts on the relatively uncommon flora of this particularly sensitive community type. Small base-rich flushes such as this are relatively rare in the upland environment. They are reliant on the maintenance of a specific water chemistry and flow regime and are consequently sensitive to any hydrological modification. In addition to their intrinsic floristic significance, they also make a considerable contribution to the overall

diversity of the upland environment.

Along the route of the access road, four vegetation communities were considered to be of conservation value M23 (Mires, spring and flushes), H12 (dry heath) U4 and U20 (grassland and tall herbs).

Protected and noteworthy species records

Noteworthy species totalling 256 were recorded within 2 km of the Site. Noteworthy species include species of principal importance that are listed under Section 7 of the Environment (Wales) Act 2016. Of these, 5 are amphibians, 93 are birds, 3 are fish, 58 are invertebrates, 18 are mammals (of these, 10 are bats) and 37 are plants.

Protected and notable species

Wax caps

Anecdotal evidence of wax cap fungi was recorded during botanical surveys of acid grassland (NVC vegetation communities U20 and U4/U5 acid grasslands) within the wind farm area. The UK has been identified as being an important refuge for these species, in particular the Welsh uplands and further habitat assessment and survey work is required for the Site to determine if the acid grassland supports any wax caps of value.

Invertebrates

White clawed crayfish (WCCF) were confirmed to be present on at least one watercourse on the wind farm area. Records for WCCF were also cited within the 2 km BDS, particularly for the Nant yr Offeiriad and Cletwr Brook. The majority of watercourse were found to be unsuitable to support WCCF, with the exception of watercourses 8, 12, 13 and 23 which ranged from low to moderate suitability.

Records for pearl bordered fritillary were cited in the BDS and it is likely that the foodplant, violet species are present within areas of acid grassland so the butterfly could potentially be present.

Records of fairy shrimp (*Chirocephalus diaphanous*) were also sited within the 2 km BDS, with the most recent record dated in 2014. Ponds in the survey area have the potential to provide suitable habitat for fairy shrimp to be present however these ponds are not predicted to be directly impacted by the Proposed Development at this stage.

Fish

No protected fish were recorded in the BDS, but records of three Section 7 species (Atlantic salmon (*Salmo salar*), European eel (*Anguilla anguilla*) and brown trout (*Salmo trutta*)) were identified. Streams on the Site were found to be dry or very shallow (< 5 cm) at the time of the surveys and are therefore unlikely to support a diverse assemblage of fish species and unsuitable habitat for European eel.

Great crested newts (GCN)

The background data search returned records of five amphibian species, including GCN. A total of 23 waterbodies and one water course were surveyed during for the wind farm. Only one pond returned a positive result from the eDNA survey for GCN presence.

No suitable ponds for breeding GCN were identified on the Site boundary or surrounding 250 m of the PV solar farm area and access road.

Reptiles

The background data search returned records of all three species of reptile: adder (*Vipera berus*), common lizard (*Zootoca vivipara*) and slow-worm (*Anguis fragilis*). Common lizards were recorded at several locations during the PEA field surveys for the wind farm area.

The study area contains suitable habitats for reptiles including heathland, acid/neutral flushes, less intensely grazed areas of acid grassland and marshy grassland as well as areas of bracken and blanket bog.

Badger

The background data search returned records of badger, including setts, within 2 km of the Site. The study area contains suitable habitat for sett building, foraging and commuting including woodland, scrub, hedgerows and grassland. However, no setts nor other badger field signs were identified during the survey. The desk study however confirmed that a main badger sett was recorded within the Site boundary in 2021.

No active badger setts were recorded during surveys for the solar farm and the access road. A disused sett was however recorded off-site [redacted]

Bats

The BDS returned records of at least nine species of bat including lesser horseshoe bat (*Rhinolophus hipposideros*) and greater horseshoe bat (*Rhinolophus ferrumequinum*); both are protected under Annex II and are priority species under Section 7.

Static detectors deployed throughout the wind farm site returned results for several species including Annex II species barbastelle (*Barbastella barbastellus)* and lesser horseshoe (*Rhinolophus hipposideros*). The majority of the calls were from high-risk collision species namely noctule *(Nyctalus noctula*), common pipistrelle (*Pipistrellus pipistrellus)* and soprano pipistrelle (*Pipistrellus pygmaeus).*

Surveys for the PV solar farm returned results for lesser horseshoe and greater horseshoe (*Rhinolophus ferrumequinum)* both Annex II listed species, as well as

recordings of six other species of bat.

Bat surveys for the access road also recorded the presence of lesser horseshoe and barbastelle (both Annex II listed species), as well as at least eight other species of bat.

Hazel dormouse

The BDS contained records of hazel dormouse within 2 km of the Site, the most recent of which was dated 2002. The majority of the wind farm area lacks suitable habitat for dormice to be present. However, the presence of interconnected hedgerows, scrub and woodland in the western section does provide suitable habitat. Habitats on the indicative PV solar area and proposed access route provide suitable habitat for dormice to be present through the presence of hedgerows and woodland. Surveys undertaken on the wind farm and access road have returned a result of likely-absence from these areas.

Otter

The background data search returned multiple records of otter within 2 km of the Site. The watercourses across the Proposed Development provided limited foraging resources for otters but do provide commuting habitat, especially given the presence of ponds and blanket bog on the Site which are likely to provide a seasonal food source (i.e., amphibians and waterfowl).

Surveys on the wind farm area recorded the presence of otter (e.g., spraint) in three locations, however, did not identify any holts, layups or couches.

Surveys of the indicative PV solar area and access road did not record otter activity or the presence of holts or couches.

Water voles

No records of water voles were cited within the BDS, however suitable habitat is present on the Site in the form of streams for the species to be present, albeit of low suitability. Surveys for water vole recorded the absence of water voles in watercourses within the wind farm works area, indicative PV solar area and access road, including adjacent areas (upstream / downstream).

Ornithology

The Site contains suitable habitats for a wide variety of foraging and breeding birds, including species protected under Schedule 1 and those of conservation importance (priority species) in Wales (Section 7). The BDS returned records of 25 species listed under Schedule 1 including several species of raptor.

Flight Activity Surveys

Flight activity surveys recorded species that are defined by legal protection and/or conservation status which are vulnerable to impacts from wind turbines. This

included Schedule 1 raptors, waders, and a variety of non-target species (i.e. buzzard and raven etc). Targeted species recorded flying across the site include:

- Curlew (Numenius arquata).
- Golden plover Pluvialis apricaria).
- Snipe (Gallinago gallinago).
- Lapwing (Vanellus vanellus).
- Mallard (Anas platyrhynchos).
- Grey Plover (Pluvialis dominica0
- Five species of raptor.

Consultation is ongoing with NRW regards potential impacts on bird species.

Breeding Wader Surveys

Much of the Site, being large open moorland and grassland, is suitable for ground nesting birds, particularly in and around the wind farm element of the Proposed Development. These habitats provide suitable areas for a variety of ground nesting birds, curlew was identified to have confirmed breeding territories on the Site in 2022.

Breeding Raptor Surveys

One possible Red Kite territory was noted [redacted] in 2022. There is suitable breeding habitat on and adjacent to the Site in the form of woodlands with other suitable breeding habitat present within the wider area. The Site appears to be an important foraging ground with the high levels of activity witnessed.

- Buzzard (secondary target species) was recorded on the Site and within the 2 km buffer, some breeding activity witnessed. Suitable breeding habitat exists within the Site and within the wider area. Other raptors were recorded foraging or flying across the site during the surveys however no breeding activity was recorded .

Nightjar Surveys

No nightjars were recorded during the surveys in 2022 and 2023. There is limited apparently suitable habitat (<1 km^2) for nightjar on the Site.

Pine Marten

The BDS returned records of pine marten within 2 km of the Site. The majority of the Site does not provide suitable habitat for pine marten to be present with the exception of wooded areas. However, these woodlands are limited in extent, offering poor foraging resources. The areas of woodland present may form part of a larger

territory for pine marten, but they lacked the mature trees required for dens.

Other terrestrial mammals

The BDS returned records of European hedgehog, polecat and brown hare, brown hare and hedgehog were observed during surveys. The Site provides suitable habitats for all three species to potentially be present .

7.7.6 Additional (secondary and tertiary) mitigation

Specific mitigation is currently unknown at this stage and will be informed by further survey efforts. The following mitigation will be proposed as standard best practice.

Construction

- Roosting bats, including a licence (if required) to provide details of mitigation (unknown at this stage).
- Production and implementation of a CEMP to include the safeguard of the following receptors during construction:
    - Priority habitats.
    - Aquatic mitigation strategy for WCCF, including a WCCF licence (if required) to provide details of mitigation (unknown at this stage).
    - Reptiles.
    - Common nesting birds (including ground nesting).
    - Roosting bats
    - Foraging and commuting bats.
    - Priority species including brown hare, polecat and hedgehog.
- Pre-construction badger survey.
- Pre-construction otter survey.
- Depending on final design other pre-construction surveys may be required.
- Production of a Landscape Ecological Management Plan (LEMP) outlining how the scheme will benefit biodiversity.

Operation

- Any mitigation required to protect priority habitats and species, including the passage of breeding and non-breeding birds and bats across the Site.
- Implementation of a Landscape Ecological Management Plan (LEMP) or a Habitat Management Monitoring Programme (HMMP) following guidance set out in the Net-Benefit for Biodiversity in Wales.

- Continued adherence to condition and monitoring requirements for European Protected Species (EPS) licence submissions for GCN, WCCF and bats (if required).

7.7.7 Description of likely significant effects

Impacts to designated statutory protected sites

The following statutory protected sites are present within the Site:

- River Wye / Afon Gwy (SAC)
- River Wye (tributaries) / Afon Gwy SSSI
- Upper Chapel Pastures SSSI

Both of the River Wye designations are located on the same two streams which flow west to east across the wind farm area down to the River Wye. Current indicative design plans indicate that one of these streams will be directly avoided however, the second will be directly impacted by the creation of a permanent crossing point for the haul road during the construction phase. Given the proximity of the Proposed Development in relation to both watercourses, impacts to water quality may occur through changes in hydrological regime, run-off and changes in soil conditions.

It should be noted that White Clawed Crayfish (WCCF) have been found to be present in watercourses crossing the wind farm area, and are a designated feature of the Wye SAC and included in the citation for the SSSI, therefore significant impacts could occur without appropriate mitigation.

No impacts have been identified between the Proposed Development and the Upper Chapel Pasture (SSSI) due to the absence of possible pathways and large intervening distance from development works.

Impacts to designated non-statutory protected sites

Bryn-gago (RVNR) is located on the wind farm area however, given the indicative location of the works area, impacts to this nature reserve are not predicted to occur, but potential impacts will be monitored as the design evolves.

Habitat loss and degradation of priority habitats

The construction of the haul roads, turbine foundations and installation of PV solar panels and battery storage could result in the loss or alteration of habitat during the construction and operational phases of the development, particularly for upland habitats and ground water dependant ecosystems.

Impacts to ground water dependant terrestrial ecosystems, such as mires, blanket bog and flushes are likely to occur through changes in hydrology regimes, run-off

and changes in soil conditions. The haul road is also likely to impact hedgerows located in the west of the wind farm area.

The construction of PV solar panels is anticipated to avoid impacts to hedgerows, woodland and watercourses, with suitable buffers zones provided during construction, operation and decommission phases.

Wax cap: killing, loss of habitat

Wax cap fungi has been recorded in areas of acid grass (NVC communities U4, U5 and U20) within the wind farm area; whilst suitable grassland areas also exist within the indicative PV solar area. Further habitat assessment and presence / absence surveys are required to confirm predicted impacts to wax caps. As these surveys have not get been completed, wax cap has been included within the scope as a precautionary measure.

Small pearl border fritillary butterfly: injury and killing of individuals, loss of habitat

The presence of suitable habitat and the larval food plant (marsh violet) has been noted on Site during botanical surveys, principally in M6 *Carex echinata – Sphagnum fallax / denticulatum* mire communities. Habitat assessment and presence or absence surveys (if required) for the small pearl border fritillary are yet to be carried out to determine level of likely impacts. As these surveys have not yet been completed, impacts to small pearl border fritillary are currently unknown.

Crayfish: injury and killing of individuals, loss of habitat

WCCF have been recorded in watercourses on the wind farm area. The construction of the infrastructure between turbines road will directly impact several watercourses which cross the Site and therefore have the potential to impact WCCF if present, assumed likely given presence in the wind farm area.

Breeding birds: disturbance or destruction of active nests

During construction of the Proposed Development, impacts from disturbance or destruction of active nest sites for ground nesting and other birds could occur. There could also be a significant long-term impact during the operational phase should significant numbers of breeding birds decline on the Site. This could result in long-term declines of breeding waders from the wind farm area.

Impacts to breeding birds could occur during the construction of the PV solar area and access road depending on the timing of the works and final design plans. Breeding bird surveys for these areas are required to assess the potential for likely significant impacts.

Birds (passage/migratory): collision risk

Birds at risk from collision with turbine rotors have been recorded on the wind farm

area, which could result in death of individuals and lead to the potential loss of breeding sites.

Ornithological surveys recorded the passage of these target species across the Site, during both the breeding and non-breeding seasons. The surveys recorded the passage of high-risk species such as red kite and golden plover passing through the Site, as well as lower flight frequency for curlew, snipe and raptors. Secondary target species included high flight frequency of buzzard and raven.

A collision risk model has been completed (Year 1) highlighted a high risk of collision for golden plover and red kite. A collision risk model is yet to be completed surveys undertaken in Year 2. This assessment will be provided as part of the EIA process.

Bats (foraging and commuting): collision risk

The construction of the wind farm may impact foraging or commuting bats that occur on the wind farm area, particularly for high-risk species such as noctule and pipistrelles. Annex II species have been recorded which include lesser horseshoe and barbastelle which are likely to be impacted by the removal of hedgerows in the west of the Site.

Bats (foraging and commuting): habitat fragmentation

Foraging and commuting activity from greater horseshoe and lesser horseshoe bats were recorded in the indicative PV solar area and access road. Only initial design plans for these have been provided to date. The establishment of suitable buffer zones and retention of hedgerows, scrub and woodland would reduce impacts to these Annex II, and other, species.

Bats (roosts): roost decline and/or loss

The majority of the turbine locations and indicative infrastructure are located in open moorland, where there is a lack of potential roost habitat within *c.* 250 m radius. However, there are areas of broadleaved woodland, which may support important maternity or hibernation roosts. There are two concrete structures that could also hold bat roost potential.

Ground level trees assessments for the wind farm area were undertaken in 2023. Eight trees were found to hold low to moderate bat roosting potential. Further survey work is required to confirm if there will be impacts to these trees and bats. Emergence surveys for the structures have not occurred and therefore likely significant effects to bat roosts cannot be ruled out at this stage.

Initial PV solar design plans aim to avoid impacts to potential roost habitat (i.e. trees) and adjacent hedgerows, thereby avoiding the need for further surveys.

A total of 10 trees were identified to contain PRF-M features suitable for supporting roosts of high conservation status (i.e. maternity roosts) located within 20 m of the

access road. Further survey work is required to confirm if there will be impacts to these trees and bats. Emergence surveys for the structures have not occurred and therefore likely significant effects to bat roosts cannot be ruled out at this stage.

Water vole: injury or killing of individuals, loss of habitat

Surveys undertaken in 2023 on the wind farm recorded no evidence of water vole however further surveys are likely to be required for the proposed PV solar area. As absence of this species cannot be confirmed, there is still a risk of injuring or killing water voles, and the loss of borrows and habitat during watercourse crossings.

7.7.8 Receptors / matters to be scoped into the assessment

The following receptors / matters are proposed to be scoped into the assessment.

Receptor / matter	Phase	Justification
Statutory designated sites	Construction, operation, and decommissioning.	The River Wye / Afon Gwy (SAC) and River Wye (tributaries) / Afon Gwy (SSSI) are located on the Site. The Upper Chapel Pastures SSSI is located adjacent to the Site boundary.
Non-Statutory designated sites	Construction, operation, and decommissioning.	Bryn-gago (Road Verge Nature Reserve) is located on the Site.
Priority (upland) habitats: blanket bog, wet heath/acid grassland mosaic, acid grassland, acid-neutral flush and base-rich flush	Construction, operation, and decommissioning.	Blanket bog occurs on the Site. Construction and decommissioning works present a high risk if they occur within the works area during construction. Continued impacts may occur during the operational phase due to changes in hydrological characteristics of the Site. This element will be scoped by the

		hydrological assessment.
Other priority habitats: acid grassland, dry heath, mires hedgerows, scrub and broadleaved woodland	Construction, operation and decommissioning.	Impacts to these priority habitats could occur at all stages of the project. These impacts will be minimalised by strategies in the CEMP. Where habitat loss occurs, and is feasible to do so, this will be mitigated for through habitat creation and enhancement to be outlined in the LEMP following the guidance set out in the Net Benefit for Biodiversity.
WCCF	Construction, operation, and decommissioning.	WCCF presence has been confirmed in certain watercourses. Construction works present a high risk as they will directly impact watercourses through installation of crossing points. Crossing point locations and culvert design plans are currently not known and therefore has potential for significant effects.
Birds (passage and migration)	Operational	Target species high risk species have been identified passing through the wind farm area. The wind farm could have a significant effect for certain (vulnerable) species given the risk of collision with rotor blades.
Birds (nesting)	Construction, operational and	Curlew has been confirmed

	decommissioning.	as breeding on the wind farm area, as well as evidence of breeding raptors. The potential for long-term decline or loss of breeding sites for curlew and other ground nesting birds (i.e. skylarks and snipe), will be addressed in the Environmental Statement and suitable safeguards and mitigation measures outlined in the LEMP. The implementation of mitigation strategy detailed in the CEMP will sufficiently safeguard nests during construction.
Bats (foraging and commuting)	Construction, operational, and decommissioning.	Strategies as part of the CEMP will minimise fragmentation and lighting impacts during construction. The LEMP will aim to mitigate for any temporary or permanent loss of foraging or commuting habitat. There are collision risks with rotor blades for certain (vulnerable) species of bat. Design plans will be adjusted away from high quality bat habitat to minimise this risk.
Bats (roosting)	Construction, operation and decommissioning.	Trees with potential for roosting bats will be affected

		during the construction of the access road. However, it is currently unknown if these trees support roosting bats, pre construction surveys will be carried out to determine if trees support roosting bats. Where possible, the CEMP will look to avoid impacts to bat roosts. Where this is unavoidable, then an EPS licence will be required which will detail mitigation measures. As this is currently unknown, there is potential for significant effects.
Water vole	Construction and decommissioning.	Currently, water voles have not been recorded on the wind farm area, however further surveys are required to confirm absence for the indicative PV solar area. In the unlikely event water voles are found to be present and are impacted by the Proposed Development then a mitigation licence will be required, detailing the mitigation. As presence / absence is currently unknown for the PV solar farm there is potential for significant effects.
Wax cap	Construction and decommissioning.	Further surveys required to inform extent of suitable habitat on wind farm and PV

		solar areas and likely impacts. Mitigation approach to avoid suitable habitat where possible or to mitigate where impacts are predicted to occur.
Small-pearl border fritillary	Construction and decommissioning	Habitat assessment and presence or absence surveys (if required) for the small pearl border fritillary are yet to be carried out to determine likely impacts. As these surveys have not get been completed, small pearl border fritillary has been included within the scope as a precautionary measure.

7.7.9 Receptors / matters to be scoped out of the assessment

The following receptors / matters are proposed to be scoped out of the assessment.

Receptor / matter	Phase	Justification
Statutory Designations	Construction, operation and decommissioning	The following statutory designated sites have been scoped out due to the large intervening distance and lack of ecological pathways: • Elenydd-Mallaen (SPA) • River Usk / Afon Wysg (SAC) • Afon Wysg (Isafonydd) / River Usk (Tributaries) (SSSI) • Mynydd Epynt (SAC) • Drostre Bank (SAC) • Upper Chapel Pastures

		(SSSI) • Mynydd Epynt (SSSI) • River Wye (Upper Wye) / Afon Gwy (Gwy Uchaf) (SSSI) • Llandeilo, Rhulen and Llanbedr Hills (SSSI) • Allt Cynhelyg (SSSI) • Coed Aberedw (SSSI) • Duhonw (SSSI)
Non-Statutory Designations	Construction, operation and decommissioning	The following non-statutory designated sites have been scoped out due to the large intervening distance and/or lack of ecological pathways: • Old Bedw LWS (SINC) • Old Bedw 2 LWS (SINC) • Bryn-Gago (RVNR) • Old Bedw GCN pond LWS (SINC) • Allt Mawr Uchaf LWS (SINC) • Gwenddwr (RVNR) • Little Hill (RVNR) • Llwyn Llwyd (RVNR) • Mynydd Epynt (RVNR) • Llaneglwys Farm Meadows LWS (SINC) • Cefn-Perfedd Meadows LWS (SINC) • Cwm-Bwch-Fawr Meadows LWS (SINC)

Invasive non-native species (of plant)	Construction, operation and decommissioning.	No invasive non-native species of plant were recorded within the survey area during the PEA field survey or following NVC botanical surveys.
Fish and European eel	Construction, operation and decommissioning	Watercourses found to be of poor suitability to support important fish assemblage and unsuitable for European eel. Best practice measures to be implemented in the CEMP.
Fairy shrimp	Construction, operation and decommissioning	Records of fairy shrimp (*Chirocephalus diaphanous*) were cited in the BDS. This freshwater shrimp resides in low nutrient ephemeral ponds that annually dry out. Though more closely associated with traditional pastoral land use, ponds in the survey area for the turbines have the potential to provide suitable habitat for the fairy shrimp to be present. However, current design plans indicate that ephemeral ponds will not be directly impacted by the Proposed Development. Best practice pollution control measures will still be implemented to reduce the impact on water quality of the watercourses.
GCN	Construction and decommissioning	GCN confirmed in one Pond 15 (500 m from Site). Impacts to GCN unlikely to occur. Precautionary measures to be provided during construction

		and decommissioning phases.
Reptiles	Construction, operation and decommissioning	Common lizards are known to occur on Site, with potential for adder, slow worms and grass snake to be present. All species have been assumed to be present in all areas of suitable habitat. As extensive habitat will not be removed, and reptiles are already known to be present, surveys were deemed excessive but a precautionary approach will be used and the mitigation will be implemented with the assumption reptiles are present. Mitigation measures consisting of the displacement of reptiles through phased vegetation clearance and destructive searches will be detailed in the CEMP to safeguard reptiles from injury or killing during site preparation works.
Badger	Construction, operation and decommissioning	Records of badger were identified within the BDS however no badger activity or setts have been recorded on Site. Pre-construction surveys can be undertaken to confirm the continued absence of setts within and adjacent to work areas for the Proposed Development.
Dormice	Construction and decommissioning.	Surveys found no evidence of dormice present on the wind farm area and access road.

		Impacts from the PV solar area are anticipated to be avoided.
Otter	Construction, operation and decommissioning	Evidence of otter has been recorded on the Site however, no places of shelter / rest have been identified. Pre-construction surveys will be undertaken to confirm the continued absence of holts, couches and lay-ups within and adjacent to work areas for the Proposed Development.
Other invertebrates	Construction, operation and decommissioning	The background data search also returned records of 37 Section 7 species, the majority of which are moths. The Site contains suitable habitat for many of these species. Records of small-pearl bordered fritillary, small heath and other species of principal importance were found. In accordance with the Nature Recovery Action Plan Wales objective 'safeguarding and improving management for that species' would be required. Management of the Site in order to improve the habitats for invertebrate species will be included in the LEMP. A precautionary method and implementing mitigation with the assumption that invertebrates will be impacted, though it is unlikely that the impact will be significant.
Pine marten	Construction, operation and	The BDS returned records of

	decommissioning	pine marten within 2 km of the Site. The majority of the Site does not provide suitable habitat for pine marten. The limited extent of the woodland on the Site offers limited foraging resources. The areas of woodland present may form part of a larger territory for pine marten but they lacked the mature trees required for dens, therefore there is a low likelihood of pine martens being present on Site.
Other priority species	Construction, operation and decommissioning	Brown hare, polecat and hedgehog have the potential to occur in the works area due to the presence of suitable habitat. Mitigation measures detailed in the CEMP will safeguard these species from injury or killing during vegetation clearance and Site preparation works. A precautionary approach will be used and the mitigation will be implemented with the assumption that brown hare, polecat and hedgehogs are present, though it is unlikely that the impact will be significant.

7.7.10 Opportunities for enhancing the environment

Under the DECCA Framework for Net Benefit for Biodiversity (NBB) in the first instance, impacts to key receptors where significant effects are anticipated will be explored with the aim of avoiding or reducing impacts. Where this isn't possible, the following compensation and enhancement measures would be explored onsite resulting in a NBB.

Upland habitats listed under the Powys Nature Recovery Action Plan present in the survey area and wider Site include wet heath / acid grassland mosaic, blanket bog, wet modified bog and acid neutral flush. These habitats are also listed as priority habitats on the Environment (Wales) Act 2016. Where feasible, these priority habitats, particularly the areas of bog habitat, should be avoided by the Proposed Development. Areas of marshy grassland and semi-improved acid grassland were also found to be reasonably botanically diverse and will be included within any compensation measures.

Opportunities for restoration and enhancement of priority habitats, such as blanket bog and wet heathland will be explored and incorporated into the design proposals as part of the objective to deliver a biodiversity gain. This can include, but is not limited to, reduction in grazing pressures in certain key areas where blanket bog, wet heath or acid flush are present, creation of leaking dams in man-made ditches to slow down the flow of water, create pools of water and encourage the re-establishment of sphagnum mosses and blanket bog communities on previously degraded / drained areas.

The majority of hedgerows in the survey area were either defunct or in poor condition. The planting of new hedgerows and enhancement of existing hedgerows by reducing flailing or grazing on the Site would help deliver a biodiversity gain. Funding options for hedgerow planting and management will be explored.

Scrub is also listed in the Powys Nature Recovery Action Plan. Areas of scattered and dense scrub provide habitat for a wide variety of birds, mammals, and invertebrates, especially when present alongside other habitat types such as woodland and grasslands. Where the removal of scrub should be compensated for through the planting of additional areas using species native to Wales, of local provenance and should be of value to local wildlife.

If protected species are found to be present, then there is considerable scope to provide enhancement and compensation measures through the creation of new habitats, i.e., hedgerow planting for dormice, pond creation for GCN and woodland planting for bats. The requirement and specification for this would be determined by the need for EPS licensing.

Enhancement measures for breeding birds, in particular curlew, will first consider onsite options away from turbine locations. Where this isn't feasible or appropriate then offsite compensation and enhancement measures will be considered. The Project Team will consult with NRW's ornithological specialists regarding opportunities for onsite and offsite compensation and enhancement measures.

Net benefits of biodiversity will be formally explored once the design has been finalised and all surveys have been completed, this will be supported by a Habitat Management and Monitoring Plan to ensure habitats are appropriately managed for

the lifetime of the Proposed Development.

7.7.11 Proposed assessment methodology

The ecological impact assessment (EcIA) will follow the Chartered Institute of Ecology and Environmental Management's (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland, referred to here as 'the CIEEM Guidelines' (CIEEM, 2024).

The survey work conducted to data and the final assessment will have regards to :

- SNH (2016). Assessing Connectivity with Special Protection Areas (SPAs). Version 3.
- SNH (2017). Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms V2. Scottish Natural Heritage, Inverness.
- SNH (2021). Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation

The significance criteria proposed for the biodiversity assessment is presented in **Appendix F**.

7.7.12 Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- The first surveys for water vole for the wind farm area were carried out in October 2023, although just outside of the recommended survey period the survey is still considered suitable due to the stable weather conditions leading up to the survey and continued water vole activity at this time of year, meaning any signs would have been visble.
- Further survey work is required to confirm presence / absence of water vole for the PV solar area and haul road.
- A second year of ornithological surveys was undertaken (September 2022 to August 2023); although the findings for this second year have not yet been analysed in detail it is anticipated that the results will not significantly change.
- All other further surveys are detailed in **Section 7.7.4**.

7.7.13 References

- Bright, P., Morris, P. and Mitchell-Jones, T. (2006), The Hazel Dormouse Conservation Handbook (2nd edition), Peterborough, English Nature.
- CIEEM. (2024). Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland. Chartered Institute of Ecology and Environmental Management, Winchester.
- Collins, J. (2016). Bat Surveys-Good Practice Guidelines 3rd edition. London: Bat Conservation Trust.
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- Dean, M., Strachan, R., God, D. & Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Matthews and Paul Chanin. The Mammal Society, London.
- English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough
- English Nature (2002). Badgers and Development. English Nature, Peterborough.
- Gilbert, G., Gibbons, D. W., & Evans, J. (1998). Bird Monitoring Methods: a manual of techniques for key UK species. RSPB.
- Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors: a field guide to survey and monitoring (3rd Edition). The Stationery Office, Edinburgh.
- Natural England. (2023). MAGIC gov.uk. - interactive mapping tool run by Natural England. [Accessed March 2023].
- Natural Resources Wales (2018). Badgers- A Guide For Developers. Available at https://naturalresources.wales/media/684003/badger-fact-sheet-for-developers-english.pdf. [Accessed March 2023].
- NatureScot. (2016). Guidance - Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds. Available at: https://www.nature.scot/guidance-assessment-and-mitigation-impacts-power-lines-and-guyed-meteorological-masts-birds. [Accessed March 2023].
- Scottish Natural Heritage (2016). Guidance - Assessing Connectivity with Special Protection Areas (SPAs), Version 3. Available at: https://www.nature.scot/sites/default/files/2022-12/Assessing%20connectivity%20with%20special%20protection%20areas.pdf. [Accessed March 2023].

- Scottish Natural Heritage (2017). Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms, Version 3. Available at: https://www.nature.scot/sites/default/files/2018-06/Guidance%20Note%20-%20Recommended%20bird%20survey%20methods%20to%20inform%20impact%20assessment%20of%20onshore%20windfarms.pdf. [Accessed March 2023].

7.7.14 Scoping questions

- Do you agree with the proposed approach for WCCF and reptiles where mitigation measures will be based on habitat assessments only?
- Do you agree with the proposed approach for priority species where a precautionary approach based on suitable habitats for brown hare, polecat and hedgehog is proposed?
- Do you agree with the proposed study areas?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Do you agree that the surveys proposed to inform the EIA baseline characterisation are appropriate?
- Are any receptors / assets /resources not identified that you would like to see included in the EIA?
- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?
- Do you agree with the receptors / matters that are proposed to be scoped in and out of the EIA?
- Do you agree with the proposed factor-specific assessment approach?

7.8 Traffic and Movement

7.8.1 Consultation

No consultation to inform the traffic and movement assessment has been undertaken to date.

Key consultees will include:

- Powys County Council (Local Planning Authority).
- North and Mid-Wales Trunk Road Agency (NMWTRA).
- South Wales Trunk Road Agency (SWTRA).
- Welsh Government.
- Erwood Community Council, Duhonw Community Council, and Merthyr Cynog Community Council.

Agreement of a study area for construction traffic is required, along with traffic distribution in addition to the following:

- Specify aspects of the environment and issues relating to those that should be considered and addressed in the traffic and movement assessment and Environmental Statement (ES) (with emphasis on any issues local to the Site).
- Comment on the proposed approach to the traffic and movement assessment.
- Comment on or recommend, where appropriate, assessment methodologies.
- Highlight other relevant bodies or organisations that may have a vested interest in the scheme or be able to provide relevant information.

Once the Scoping Direction has been received, the response will be analysed, and the relevant points raised therein taken forward and used to inform the traffic and movement assessment.

7.8.2 Study area

An indicative study area is outlined in **Appendix G**. The study area has been developed assuming that all construction traffic travels to the Proposed Development from either the A470 or the B4520.

The proposed Port of Entry (POE) for turbine components is Swansea. The proposed access route to Site for the Abnormal Indivisible Loads (AILs) is as follows:

- Loads would depart the POE and access the A483 Fabian Way (Eastbound) using a contraflow manoeuvre.

- Loads would proceed eastbound and would join the M4 at Junction 42. They would then continue to Junction 43, where they would depart the motorway and would then join the A465 through to Merthyr Tydfil.
- Loads would then turn left onto the A470 and would travel north to Brecon. Loads would bypass Brecon and Bronllys using the A40, A470 and A438, before turning onto the A479.
- Loads would continue northbound on the A479 and A470.
- Loads will turn left off the A470 via a new access onto an unclassified private access by the Holmes and Wheelwright's Arms to Maesclettwr Farm.
- Loads will continue north-west towards the C0205 from junction with C0035 by footpath (021/29/3) to Pen y Garreg cattle grid 10032 via upgraded / new tracks to reach the Site.
- For the loads to access the southern and central parts of the wind farm area, they will cross the northern portion using the internal access tracks and join the B5420 to the west from a new access, travel south and re-enter either the central or southern part of the Site from new access points on the B5420.

7.8.3 Data sources to inform the EIA baseline characterisation

For the traffic and movement assessment, suitable baseline traffic data classified by vehicle type for the roads within the defined study area will be obtained from the Department for Transport (DfT) and the relevant LHA where available.

Any data gaps in this information will be supplemented with specifically commissioned traffic surveys.

7.8.4 Surveys to inform the EIA baseline characterisation

Traffic survey data from DfT Traffic Count database are to be utilised and considered in line with traffic estimate data provided by the Applicant for the construction phase of the Proposed Development. The following traffic count sites have been identified within the study area:

- 40544 (A470 between B4594 and A483 Station Road/Broad St Builth Wells)
- 70071 (A483 between A483 Builth Wells and A470)
- 70070 (A483 between A483 Builth Wells and A470)
- 805021 (B4601 in Brecon)
- 20543 (A470 between the A479 and B4594)

- 50552 (A479 between A470 and A40790
- 20551 (A479 between A438 and A4079)
- 50543 (A479 between A438 and A438)
- 99904 (A438 between A470 and A479)
- 538 (A470 between A438 and A479)
- 50540 (A470 between B4602 and A438)
- 10545 (A470 between A40 and B4602)
- 50516 (A40 between A470 south and A470 north)
- 919233 (B4520 north of Pwllgloyw and south of Lower Chapel)
- 811865 (U0055 between junction with road to A470 via New Cottage and Tregaer and junction W, Gwenddwr, Builth Wells)
- 10556 (A483 between A470 and A481)
- 10544 (A470 Castle Street and A470 roundabout)

7.8.5 Baseline conditions

A preliminary review of the DfT online traffic data portal suggests that historic traffic counts are available for most of the main roads in the area around the Proposed Development. Data for more local roads is less evident therefore, depending on the chosen access routes and points, additional surveys may be required.

A total of 17 DfT count points are located within the roads identified in the study area and in the vicinity of the Site. As noted, additional traffic surveys may be required, as well as open-source aerial imagery and mapping.

7.8.6 Additional (secondary and tertiary) mitigation

Where adverse traffic and movement effects are identified, mitigation will be proposed to reduce the effect of the Proposed Development. This will include mitigation developed to permit the safe transport of the wind turbine components from the POE to the Site, as will be detailed in an abnormal load assessment undertaken separately to support the Application. Mitigation will also include the production of a draft Construction Traffic Management Plan (CTMP) as part of the EIA chapter. The draft CTMP will include a framework for managing any cumulative impacts. The draft CTMP will also provide comfort to stakeholders that there is a commitment to mitigating any impacts.

7.8.7 Description of likely significant effects

Construction

Turbine components will be transported by sea to a POE at Swansea. Turbine components will be transported to Site on abnormal load vehicles, via an agreed access route.

General construction material, including PV solar panels, will need to be transported to the Site in standard Heavy Goods Vehicles (HGVs), leading to a temporary increase in traffic volumes on the surrounding road network. This will be dependent on the construction material quantities required and their source. This will need to be considered across the construction programme. Additionally, a small number of trips will also be generated by construction personnel travelling to Site.

7.8.8 Receptors / matters to be scoped into the assessment

The following receptors / matters are proposed to be scoped into the assessment.

Receptor / matter	Phase	Justification
Users of Roads	Construction	During the construction phase, traffic will be generated by a range of activities including: • Construction workers arriving and leaving Site areas; • Supply of construction materials and plant associated with the Site establishment and main construction works; • Movement of plant; • Removal of soil resources, spoil or waste; • Service vehicles and visitors. Construction traffic estimates are yet unknown, as such this phase of works has been scoped in to enable consideration of impacts on receptors within the study area against the Guidelines for the Environmental Assessment of Traffic and Movement (Institute of Environmental Management and
Users / Residents of Locations	Construction	

		Assessment, 2023)

7.8.9 Receptors / matters to be scoped out of the assessment

The following receptors / matters are proposed to be scoped out of the assessment.

Receptor / matter	Phase	Justification
All	Operation	Once operational, the effect on the local road network will be minimal. Access will be required from time to time for routine maintenance, and less frequently for major maintenance and upgrades. Therefore, it is not expected that the changes in traffic on the existing network will change by more than 10% for HGVs or 30% for all vehicle movements, these being defining thresholds for environmental effects on the local transport network.
All	Decommissioning	The levels of traffic associated with decommissioning are anticipated to be lower than those required during the construction phase, therefore will have a reduced impact compared to that assessed for construction phase. It is therefore proposed to scope out the assessment of the Proposed Development's decommissioning impacts as part of the EIA.

7.8.10 Opportunities for enhancing the environment

No opportunities for enhancement in relation to traffic and movement have been identified at this stage.

7.8.11 Proposed assessment methodology

Assessment of the traffic and movement environmental impacts and their significance will be based on the Guidelines for the Environmental Assessment of Traffic and Movement (Institute of Environmental Management and Assessment, 2023). This guidance provides two broad rules to be used as a screening process to identify the

appropriate extent of the assessment area and likelihood of impacts. These are:

- "Rule 1 - Include highway links where traffic flows would increase by more than 30% (or the number of HGVs would increase by more than 30%).
- Rule 2 - Include any other specifically sensitive areas where traffic flows would increase by 10% or more."

Where the predicted increase in traffic flow is lower than the thresholds, the Guidelines suggest the significance of the effects can be stated to be low or insignificant and further detailed assessments are not warranted.

Where construction traffic flows do exceed these thresholds, the significance of traffic and movement effects (including cumulative) will be determined by assessing the sensitivity of receptors against the magnitude of change to categorise significance as Major, Moderate, Minor or Negligible. The environmental effects that may be assessed are namely:

- Severance of communities
- Road vehicle driver and passenger delay
- Non-motorised user delay
- Non-motorised user amenity
- Fear and intimidation on and by road users
- Road user and pedestrian safety
- Hazardous/large loads

The traffic and movement assessment will also be based on a set of standards on environmental assessment from the Design Manual for Roads and Bridges (DMRB) (2020) which sets out a framework for EIA. The significance of likely effects is determined by considering the sensitivity of receptors to change, taking account of the specific issues relating to the study area, and then the magnitude of that change.

The determining factors that need to be taken into account when assessing the impact of traffic and movement vary for each type of impact.

Having quantified the magnitude of the impact (i.e. the level of change), there are various ways of interpreting whether or not the resulting outcome is considered significant. There is no definition of a 'significant effect' in the EIA Regulations. Furthermore, for many effects, there are no simple rules that define appropriate assessment thresholds and therefore there is a need for interpretation and professional judgement. The ES will record judgements about the likely significance of effects arising from the Proposed Development.

The significance criteria proposed for the traffic and movement assessment is

presented in **Appendix F**.

7.8.12 Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- This EIA Scoping Report has been prepared on the basis of the current design of the Proposed Development, as outlined within **Chapter 2.**
- The overview of baseline conditions is based on desk-based studies only at scoping stage and is based on data available at the time of writing.
- The construction assessment will assume the use of standard construction techniques commensurate for the type of works being undertaken. The final techniques, plant selection and programme are expected to be determined by the appointed contractor, in consultation with relevant authorities prior to commencement of construction.
- Traffic estimates for any stage of the Proposed Development are not confirmed at this time and may be subject to change but will be confirmed prior to assessment.

7.8.13 References

- Guidelines for the Environmental Assessment of Traffic and Movement (Institute of Environmental Management and Assessment, 2023).
- Design Manual for Roads and Bridges, LA 104 – Revision 1, Environmental assessment and monitoring (Highways England, Transport Scotland, Llywodraeth Cymru – Welsh Government, and An Roinn Bonneagair – Department for Infrastructure of Northern Ireland, 2020)

7.8.14 Scoping questions

- Do you agree with the proposed list of consultees?
- Do you agree with the proposed study area?
- Are any receptors / assets / resources not identified that you would like to see included in the EIA?
- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?

- Do you agree with the matters that are proposed to be scoped in and out of the EIA?

8 CUMULATIVE EFFECTS

8.1 Introduction

8.1.1 Paragraph (5)(e) of Schedule 4 of the EIA Regulations states that the Environmental Statement should include "*a description of the likely significant effects of the development on the environment resulting from… the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*".

8.1.2 Regulation 4(2) states that the EIA must "*identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors [...] population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape*". Regulation 4(2)(e) refers to the need to assess the interaction between those factors.

8.1.3 There is no widely accepted methodology or best practice for assessing cumulative effects, although various guidance documents exist. However, relevant guidance has been considered, including from the Institute of Environmental Management and Assessment (IEMA). The proposed assessment methodology also reflects that set out in the Planning Inspectorate's Advice Note Seventeen: Cumulative Effects Assessment (2024) which although it is written for projects in England, is used in this context as best practice guidance to aid in assessing cumulative effects.

8.1.4 The following types of cumulative effects will be considered in accordance with the EIA Regulations and best practice guidance (IEMA, 2011):

- Intra-project combined effects – the interaction and combination of different environmental residual (post-additional mitigation) effects from within the Proposed Development affecting a receptor; and
- Inter-project cumulative effects – the combined residual (post-mitigation) effects of the Proposed Development and other projects on a single receptor / resource, considering the deviation from the baseline conditions at common sensitive receptors / resources as a result of changes brought about as a result of the Proposed Development in combination with one or more other approved (committed) developments.

8.2 Intra-project combined effects

8.2.1 The approach to the assessment of interactions of environmental effects will consider the changes in baseline conditions at common sensitive receptors (i.e. those receptors that have been identified as experiencing likely significant

effects by more than one environmental factor) due to the Proposed Development.

8.2.2 The assessment will be based upon residual (post-additional mitigation) effects of '**moderate**' or greater significance only. The study area for the assessment will be informed by the study areas for the individual factor assessments.

8.2.3 The assessment of the intra-project combined effects will be undertaken using a two-stage approach:

Stage 1 - Screening

8.2.4 Screening will be undertaken to determine whether a sensitive receptor is exposed to more than one type of residual (post-additional mitigation) effect during the construction, decommissioning, and/or operational phases of the Proposed Development. Those common sensitive receptors exposed to two or more types of residual (post-additional mitigation) effects, with significance of '**moderate**' or greater, will be taken forward to Stage 2 of the assessment. These will be set out in a table demonstrating where intra-cumulative impacts are identified.

8.2.5 If there is only one type of effect on a sensitive receptor (i.e. only one technical chapter has identified effects on that sensitive receptor), then it will be considered that there are no potential intra-project combined effects and the sensitive receptor will not be taken forward to Stage 2 of the assessment.

Stage 2 – Assessment of intra-project combined effects

8.2.6 A quantitative assessment of the overall significance of the cumulative effects on common sensitive receptors identified at Stage 1 will be undertaken based on technical information provided in the technical chapters and supporting appendices as well as professional judgement. Given that the types of effects may be very different in some cases, a quantitative assessment may not be possible, and it may be necessary to apply professional judgement in determining the significance of each individual effect.

8.2.7 The evaluation at the receptor level will consider: the magnitude of change at the common receptor; previously identified sensitivity; duration and reversibility of interaction. The focus will be on determining a change in the level of effect likely to be experienced and whether this is significant or not.

8.3 Inter-project cumulative effects

8.3.1 The approach to the assessment of inter-project effects will consider the deviation from the baseline conditions at common sensitive receptors as a result of changes brought about as a result of the Proposed Development in combination with one or more other approved (committed) developments.

8.3.2 The assessment of the inter-project effects will be based upon the residual (post-additional mitigation) effects that have been identified in the various factor assessments for the Proposed Development, as well as available environmental information for the approved (committed) developments.

8.3.3 In accordance with Advice Note Seventeen (2024), there are four stages to a cumulative effects assessment. Two of these are stages that will be followed in identifying the list of approved (committed) developments which will be included within the inter-project cumulative effects assessment:

- **Stage 1**: Establish a long list of approved (committed) developments based on appropriate spatial and temporal limits.
- **Stage 2**: Apply a clear rationale to establish a short list of approved (committed) developments which, in combination with the Proposed Development, have the potential to result in a significant cumulative effect for inclusion within the assessment.
- **Stage 3**: Gather information on each of the developments shortlisted that will be used to inform the assessment.
- **Stage 4**: Assessment of the cumulative effects of the Proposed Development.

Stage 1: Long list methodology

8.3.4 The following criteria will be used to establish the 'long list' of approved (committed) developments, as at the time of submitting the planning application for the Proposed Development:

- Renewable energy schemes that are under construction but that will not be completed prior to the Proposed Development commencing (N.B. consideration will be afforded on a case by case basis to whether schemes that are under construction form part of the existing baseline or not, to avoid double counting);
- Schemes consented within the last five years[5], but not yet implemented;
- Submitted applications but not yet determined;
- Refusals subject to appeal procedures not yet determined;
- EIA development not yet submitted but subject of EIA scoping request;
- Projects on PEDW's and the Planning Inspectorate's programme of projects where an EIA scoping request has not been submitted; and

[5] A five-year period is considered a reasonable time period to capture all approved developments that still have the potential to be built. Developments with planning permission older than five years will likely have been built or will not likely be built at all.

- Projects identified in the relevant Development Plan and in other plans and programmes that set the framework for future development consents or approvals.

8.3.5 Where an approved (committed) development meets one of the criteria presented in **paragraph 8.3.4**, it will be taken forward for further consideration against the following spatial (and where appropriate, scale) limits in order to develop a refined list of approved (committed) development:

- Nationally Significant Infrastructure Projects (NSIP) or DNS developments[6]: must lie within the Zone of Influence (ZoI) of the Proposed Development.
- Onshore wind developments (not classed as a DNS) (where the wind turbines are greater than 50 m to tip height and more than one wind turbine proposed): Must lie within the 20 km of the Proposed Development.
- Other energy infrastructure developments must lie within 10 km of the Proposed Development.
- Employment developments: must lie within 10 km of the Proposed Development.
- Residential developments: must comprise 10+ dwellings and lie within 10km of the Proposed Development.
- Minerals and waste applications: must lie within 10 km of the Proposed Development.
- Transport infrastructure developments[7]: must lie within 10 km of the Proposed Development

8.3.6 The Zone of Influence (ZoI) is defined here as the study area for each environmental factor considered in the EIA for the Proposed Development. The environmental factor-specific study areas, and appropriate justifications for these study areas, will be provided in the Environmental Statement. The search area for forming the long list of approved (committed) developments will be based on the greatest ZoI in terms of distance.

8.3.7 A planning application search will be conducted to identify approved (committed) developments using relevant planning portals. However, it is recognised that Powys County Council as the local planning authority may be aware of additional proposals not yet fully in the public domain and hence comment is sought on any further developments that should, in the authority's opinion, be included in the cumulative effects assessment process.

[6] As defined by the Planning Act 2008 (as amended) and the Planning (Wales) Act 2015 and the Developments of National Significance (Wales) Regulations 2016 (as amended).

[7] Trunk roads only, as smaller transport infrastructure proposals would not likely have a significant cumulative effect.

8.3.8 Only if the approved (committed) developments meet the Stage 1 criteria will they then been taken forward to Stage 2.

Stage 2: Short list methodology

8.3.9 Following the formation of the long list, the eligible approved (committed) developments identified require further assessment (Stage 2) to establish a short list of approved (committed) developments which, in combination with the Proposed Development, have the potential to result in significant cumulative effects.

8.3.10 The criteria used to determine whether to include or exclude an approved (committed) development on the short list will reflect the process established by Advice Note Seventeen (2024) and have regard to relevant policy and guidance documents and consultation with the appropriate statutory consultation bodies (particularly the local planning authority).

8.3.11 Advice Note Seventeen (2024) states that the criteria should address the following:

- "***Temporal scope:*** *The applicant may wish to consider the relative construction, operation and decommissioning programmes of the other existing development and/or approved development identified in the ZOI together with the [project] programme, to establish whether there is overlap and any potential for interaction.*
- ***Scale and nature of development:*** *The applicant may wish to consider whether the scale and nature of the other existing development and/or approved development identified in the ZOI are likely to interact with the proposed [project]. Statutory definitions of major development and EIA screening thresholds may be of assistance when considering issues of scale.*
- ***Other factors:*** *The applicant should consider whether there are any other factors, such as the nature and/or capacity of the receiving environment which could make a significant cumulative effect with the other existing development and/or approved development more or less likely and may consider utilising a source-pathway-receptor approach to inform the assessment.*
- ***Documentation:*** *The shortlisting process may be documented using Matrix 1 (Appendix 1) and used to provide a clear record of the applicant's decision-making for decision makers, consultation bodies and members of the public.*"

8.3.12 Advice Note Seventeen (2024) suggests that professional judgement may also be used to supplement the threshold criteria and in order to avoid excluding other existing development and/or approved development that is:

- "*Below the threshold criteria limits but has characteristics likely to give rise to a significant effect; or*
- *Below the threshold criteria limits but could give rise to a cumulative effect by virtue of its proximity to the proposed [project].*"

8.3.13 Taking the above into consideration, the approved (committed) developments on the long list will be reviewed against the following criteria to form the short list of approved (committed) developments, as at the time of submitting the planning application for the Proposed Development:

- **Criteria 1:** The approved (committed) development has a construction, operational and/or demolition phase that is concurrent with the Proposed Development.
- **Criteria 2:** The approved (committed) development and the Proposed Development share common sensitive receptors / resources which are assessed and described in the supporting environmental documentation and have the potential to be significantly affected by the combination of the approved (committed) development and the Proposed Development.
- **Criteria 3:** The approved (committed) development has sufficient environmental assessment information freely and publicly available to inform the inter-project cumulative effects assessment. The assessment of each approved (committed) development on the short list will be proportionate to the environmental assessment information available (N.B: An attempt will not be made to assess the potential environmental effects of any other development to inform the inter-project cumulative effects assessment. If there is an approved (committed) development that it is known will be progressed but has insufficient environmental assessment information, it still may be prudent to consider it in the inter-project cumulative effects assessment. This might take the form of listing the project and why it hasn't been considered in detail, or the potential cumulative effect could be discussed at a high level (qualitatively) using professional judgement).

8.3.14 Where an approved development meets all of the above criteria, it will be taken forward for further consideration in the assessment.

Stage 3: information gathering

8.3.15 The other existing developments and/or approved developments that form part of the short list will be subject to a review of environmental information, where available, including details of:

- Location.
- Programme, including construction, operation (including maintenance) and decommissioning.

- Baseline data.
- Effects arising from such other developments.
- Proposed design.

Stage 4: Assessment

8.3.16 A full cumulative assessment will be reported in the ES. As per Advice Note Seventeen (2024), the assessment should:

- "*Be undertaken at a level of detail proportionate to the information available.*
- *Explain and record any limits of gamps in the information.*
- *Consider all other existing and / or approved developments where possible.*
- *Be documented in the ES*."

8.3.17 Should likely significant cumulative effects be identified, consideration will be given to additional mitigation to avoid, prevent, reduce or, if possible, offset any identified significant adverse cumulative effects.

8.3.18 There is no formal guidance on the criteria for determining significance of cumulative effects. The following principles will be considered when assessing the significance of cumulative effects in relation to both intra-project and inter-project cumulative effects as per Advice Note Seventeen (2024):

- "*Duration of effect (temporary or permanent).*
- *Extent of effect (the geographical area).*
- *Type of effect (whether additive or synergistic).*
- *Frequency of the effect.*
- *Value and resilience of the receptor affected.*
- *Likely success of mitigation*."

8.4 Difficulties and uncertainties

8.4.1 The assessment of inter-project cumulative effects will be limited to publicly available information obtained from the relevant planning applications on the Powys County Council planning portal, DNS portal and NSIP portal. For some of the identified approved developments, relevant information for this assessment may not be available. Where this is the case, the inter-project cumulative effects assessment will be based upon assumptions and professional judgement, and some statements made would rely on the review of mitigation measures proposed as part of the approved (committed) developments rather than the Proposed Development.

8.5 References

- Institute of Environmental Management and Assessment (IEMA). (2011). Special Report on 'The State of Environmental Impact Assessment in the UK'. Available at: https://s3.eu-west-2.amazonaws.com/iema.net/documents/knowledge/policy/impact-assessment/2011-State-of-EIA-IEMA.pdf
- Planning Inspectorate. (September 2024). 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