natural power

CREATING A BETTER ENVIRONMENT

Y Bryn Wind Farm

Scoping Report

Coriolis Energy

ESB Energy for generations

07 January 2021

1233647

Y Bryn Wind Farm Ltd

Document history

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1. Introduction

1.1.1. This scoping report has been prepared by Natural Power Consultants Limited (Natural Power) on behalf of Y Bryn Wind Farm Limited in anticipation of an application for a Development of National Significance (DNS) for a proposed wind farm development incorporating battery energy storage. The site is located north-east of the M4 motorway between Port Talbot and Maesteg. The majority of proposed infrastructure presented in this scoping report is located in Neath Port Talbot County Borough Council (NPTCBC) area with some in the Bridgend County Borough Council (BCBC).

1.1.2. As of April 2019, all energy generation projects between 10 MW and 350 MW, including overhead electric lines of up to 132 kV which are associated with a devolved generation station, are considered a DNS project.

1.1.3. Under the statutory procedures set out in The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (EIA Regulations) it is proposed that any such application is accompanied by an Environmental Statement (ES).

1.1.4. The site has been identified as potentially suitable for a large scale wind farm because it is located within Strategic Search Area F (SSA F), as set out in the Welsh Assembly Government's Technical Advice Note 8: Planning for Renewable Energy (July 2005). Further, the site was subsequently retained by local authorities within their Annex D refinement study (December 2006). Integration of a wind farm with other forms of renewable energy and / or energy storage is also encouraged as being particularly conducive to fulfilling Welsh Government's Natural Resources Policy 2017.

1.1.5. At the time of writing this scoping report, Future Wales: The National Development Framework (NDF) has been laid before the Senedd on 21st September 2020 for assembly scrutiny, to be adopted in February 2021.An initial review of draft NDF would indicate that the site is located within an area where large scale wind development would benefit from policy support subject to assessments including landscape impacts.

1.1.6. This scoping report has been prepared to identify the likely significant environmental effects of the proposed wind farm which will need to be assessed in detail in the Environmental Impact Assessment (EIA) and reported within the ES, which will accompany the planning application. This scoping request is made in relation to a DNS for the purposes of section 62D of the 1990 Act.

1.1.7. This scoping report is specifically for the proposed Y Bryn Wind Farm. The applicant intends to submit one planning application and one EIA that addresses the wind farm and all associated infrastructure and access.

1.1.8. The purpose of this scoping report is to provide sufficient information for consultees to agree the scope of the ES. Information has been provided on what the applicant intends to assess within the ES. Where the applicant is proposing to 'scope out' particular elements sufficient information and justification has been provided in this report. The intention is to ensure that the focus in the ES is on any receptors impacted by the proposed development that may experience significant effects.

1.1.9. Consultees will note that the scoping report contains a number of questions, which it would be useful to receive a response on. Not all questions will be relevant to all consultees; therefore, we request that consultees provide feedback only on those questions appropriate to them. The questions should not be considered an exhaustive list, and consequently, consultees are invited to provide further responses on any issue they consider relevant to the proposed development. If consultees elect not to respond, Y Bryn Wind Farm Ltd will assume that consultees are satisfied with the approach adopted/proposed.

2. The Applicant

2.1.1. Y Bryn Wind Farm Limited is a project company wholly owned by development partners ESB and Coriolis Energy.

2.1.2. ESB is Ireland's premier energy company and is a leading independent power generator in the UK market. ESB has a track record of over 20 years as a successful investor in the UK since commissioning one of the first independent power generating plants at Corby in Northamptonshire in 1994.

2.1.3. ESB owns and operates wind farms across the UK and Ireland with a total installed capacity of 500 MW, including the operational Mynydd Y Betws Wind Farm (34.5 MW) in Carmarthenshire.

2.1.4. Coriolis Energy identifies and works on the development of wind farm proposals, and ESB constructs and operates those wind farms.

2.1.5. Coriolis Energy is a specialist independent wind farm development company operating throughout the UK. Its principals have been responsible for successfully developing some 15 onshore wind farms in the UK with a capacity of over 500 MW over two decades.

3. The Proposed Y Bryn Development

3.1.1. The proposed Y Bryn wind farm site boundary comprises combined a large upland area primarily under coniferous forestry. The closest settlements are Bryn and Maesteg. The wider site is split in to two blocks – the Bryn block to the south of the B4282, and the Penhydd block to the north. The approximate site centre of the Bryn block is at OS Grid Ref SS 81659 89497. A regional context and indicative constraints plan can be found at the end of the document, Figure 3.1 and Figure 3.2 respectively.

3.1.2. The wind farm design may evolve from the layout submitted as part of this scoping report. At this stage, however, the proposed development is envisaged as comprising:

- up to 26 turbines of up to 250 m maximum tip height and indicative up to 170 m rotor diameters, and associated crane hardstandings;
- transformers housed adjacent to turbines;
- onsite access tracks plus underground cable runs alongside;
- an onsite sub-station building;
- construction compound(s);
- battery storage;
- one or more permanent anemometry masts (at up to the hub height of the turbines); and
- borrow pits.

3.1.3. In a post-subsidy commercial environment, achieving maximum potential turbine numbers, tip heights and rotor diameters will be more critical than ever to the prospects of project delivery. However, this consideration must of course be balanced with the requirement for the wind farm's benefits to outweigh its other environmental impacts, and be judged to do so by decision makers within the consenting process.

3.1.4. Technical Advice Note 8, published in 2005, was prepared by Welsh Government, identifying seven areas in Wales suitable for large scale wind farm developments. The site is located within Technical Advice Note 8, Strategic Search Area F, and critically also remains inside of the local authorities Annex D refinement identified areas.

3.1.5. Together with the level of wind resource, proximity and availability to grid connection and absence of statutory designations in the area, the proposed development is in an ideal location to help contribute to the UK and Welsh Government's renewable energy targets.

3.1.6. The wind farm development responds to Welsh Government's commitment to addressing the Climate Emergency through achieving Net Zero carbon emissions by 2050, by decarbonising electricity generation with a target of 70% of Wales' electricity demand (including for substantial increase owing to electrification of heat and transport sectors) to be met from renewable sources by 2030. Y Bryn Wind Farm will be seeking to maximise the potential of this site to deliver on these objectives and will be designed in such a way as to balance society's needs for efficient sustainable energy generation with the relevant environmental considerations.

3.2. Project Design

3.2.1. The following key considerations have been taken into account thus far during the design process of Y Bryn Wind Farm:

- Relationship to the surrounding landscape and communities;
- Relationship with cumulative developments; and
- Technical and environmental constraints.

3.2.2. A key aim of the design process has been to limit the overall footprint of the development whilst minimising the environmental impacts wherever possible.

3.3. Grid

3.3.1. Grid connection works may fall outside the scope of the EIA. However, it is important that surveys will be incorporated into the EIA if required. Connection to the electricity network is currently anticipated to be into the local transmission system network.

3.4. Transport

3.4.1. The EIA will involve consideration of the environmental impacts of access to the site by both abnormal indivisible loads (AILs) and heavy goods vehicles (HGVs).

3.5. Operational Period

3.5.1. The lifetime of the proposed development would be up to 50 years from commissioning to decommissioning.

3.6. Decommissioning

3.6.1. At least six months prior to the decommissioning of the site a Decommissioning Method Statement would be prepared and agreed with the relevant consultees. Best practice guidelines will be utilised at this time. The applicant would expect to commit to a planning condition regarding decommissioning and expected to set up a restoration fund should this development receive consent.

4. Consultation

4.1. Community Consultation

4.1.1. Natural Power, Coriolis and ESB, together with communication partners Thirty4/7, believe public consultation is important throughout the development of a renewable energy project. As this is a DNS project there is a requirement under article 11 of the Developments of National Significance (Procedure)

(Wales) Order 2016 that a DNS application must be accompanied by a Pre-Application Consultation report.

4.1.2. The community within the area surrounding the proposed development will be consulted in accordance with a Consultation Plan which is to be agreed, separately to this current EIA scoping consultation, with relevant stakeholders, including Planning Inspectorate (PINS), Neath Port Talbot County Borough Council (NPTCBC) and Bridgend County Borough Council (BCBC). This is anticipated to include meetings and public exhibitions in local community venues, such as village halls and will allow local residents an opportunity to view and discuss the proposal, provide comments and ask any questions. English and Welsh speaking staff will be on hand as well as bilingual written information. The events will be timed to allow any concerns to be raised and potentially addressed in the final design of the wind farm development and access routes. A project website will also be established and updated as development progresses. Contact details for the project would be made available on the website and shared in the local community including a dedicated project email address to field any queries and ensure two way communications.

Question 1: Do consultees have any comments in relation to the proposed approach to community consultation?

4.2. Other Stakeholder Consultation

4.2.1. Natural Power, Coriolis and ESB consider that consultation with statutory and non-statutory consultees as an integral part of the iterative EIA process and recognise the benefits in carrying out early consultation with all concerned parties. The consultation will progress with the circulation of this scoping report and will continue for the duration of EIA process.

5. Approach to the Environmental Impact Assessment (EIA)

5.1.1. The EIA is a statutory procedure which draws together in a systematic way an assessment of the likely significant environmental effects arising from a proposed development.

5.1.2. As the process has numerous steps, it allows for the opportunity to ‘design out’ adverse environmental effects at an early stage through the design of the proposed development. This of course is generally preferable to mitigation or remedy at a later stage.

5.1.3. An iterative design approach is already in process for this proposed development and will continue to be adopted throughout the EIA process, which will allow the proposed development to have adopted a design that works well for both the local environment and environmental resources within the area, as well as being an economically viable scheme with the ability to deliver on Welsh, UK and international renewable energy targets.

5.1.4. The steps taken for informing and developing the EIA process are identified in the flow diagram below:

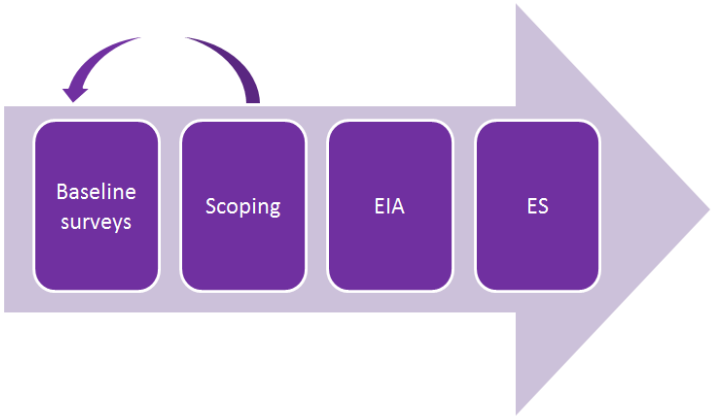

Figure 5.1: EIA Process

5.1.5. For this particular project the **collection of the baseline data** has begun. Along with Coriolis' and Natural Power's project experience in the area, we have a comprehensive understanding of the site and the local vicinity. Likewise, statutory and non-statutory consultees will also be aware of the environmental resources in the area, and the possible impacts from the proposed development.

5.1.6. The information within this scoping report will be sufficient to provide consultees with the information to agree on those features and topics that are likely to experience a significant effect, and thus 'scope out' the rest if applicable. In doing so the **impact assessment** will be **focussed** and **proportionate** to those that will actually **influence** the **decision** as to whether or not the **proposed development** should **receive consent**.

5.1.7. The impact assessment will determine for those assessed receptors what the effect, either directly or indirectly will be from the proposed development, by comparing the baseline conditions with the conditions that would prevail should the proposed development be constructed, operated (and decommissioned). The environmental effects of the proposed development will be predicted in relation to environmental receptors, built resources and natural resources.

5.2. What the EIA will Assess

5.2.1. The EIA will address the construction phase of the wind farm, the operational phase which would last up to 50 years, and the decommissioning phase.

The geographical coverage of the EIA will take account of the following:

- The physical extent of the proposed works;
- The nature of the baseline environment and the manner in which effects are propagated; and
- The National and Local planning and policy context for the proposed development.

5.3. Gathering Baseline Information

5.3.1. Some of the baseline data has already been collected for the proposed development, and the assessment team will ensure that sufficient data is obtained to enable a robust assessment, appropriate to the nature and scale of the proposed works.

5.3.2. The extent of the baseline assessment will be determined using both professional judgement and industry best practice. The EIA will also identify areas where the baseline may change, prior to the construction and operational phases of the proposed development from current conditions (for example, maturation of landscape). However, the EIA will assume continued ongoing forestry operations to be the future baseline for the site.

5.3.3. The collection of baseline data will be achieved through desk study (including the use of data gathered for other developments in the area), consultation, field survey and monitoring, and will be clearly reported in the subsequent sections, or within the ES (should there be an expected significant effect from the development).

5.3.4. In line with the regulations, the ES will also indicate any difficulties encountered in compiling environmental baseline conditions, such as access to land to carry out surveys where permission was not granted.

5.4. Prediction and Evaluation of Impacts and Effects

5.4.1. A distinction will be made in the assessments between impacts and effects, where:

- **Impacts** are defined as the predicted change to the baseline environment attributable to the scheme; and
- **Effects** are the consequence of impacts on environmental resources or receptors.

5.4.2. The prediction of impacts examines the change to the baseline environment that could result from the construction and operation of the wind farm.

5.4.3. The effects will be classified into one or more of the following:

- Positive effects that have a beneficial influence, and negative effects that have an adverse influence;
- Temporary effects that persist for a limited period only (whether for the short, medium or long-term);
- Permanent effects that result from an irreversible change to the baseline environment;
- Direct effects that arise from activities that form an integral part of the proposed development;
- Indirect/secondary effects that arise from activities not explicitly forming part of the proposed development; and
- Cumulative effects that arise from the combination of different impacts at a specific location, the recurrence of impacts of the same type at different locations, the interaction of different impacts over time, or the interaction of impacts arising from the scheme in conjunction with other development projects.
- Synergistic effects are when several individual impact factors combine to have an effect on a receptor which is greater than the sum of the individual impacts.

5.4.4. There is no statutory definition of what constitutes a significant effect. A significant effect may be broadly defined as an effect which, either in isolation or combination with others, should be taken into account in the decision making process. This general definition will be used as the basis against which the significance criteria for environmental disciplines will be developed. The threshold of significance for predicted effects tends to vary between the environmental topics. The assessment team will ensure that a consistent approach is applied where suitable to prevent undue weight being given to a particular discipline to the detriment of another.

5.5. Cumulative

Consideration and assessment of cumulative impact of wind farm sites within the vicinity of the proposed Y Bryn development will be undertaken as part of the EIA. Each discipline notes the scope of the cumulative assessment in this scoping report.

5.6. Mitigation, Enhancement and Monitoring of Environmental Effects

5.6.1. Mitigation measures will be considered for each significantly adverse effect. The ES will include a description of the measures envisaged to prevent, reduce and where possible remedy any significant adverse effects.

5.6.2. Mitigation will be discussed in two ways:

- It can be in the form of embedded mitigation, i.e. those measures incorporated in the design as environmental assessments were developed; or
- impact or additional mitigation i.e. for effects that are unavoidable through design, applying best practice and guidance recognised within the industry to attain environmentally acceptable levels, or those which are deemed acceptable through determination.

5.6.3. In addition, any significant positive effects arising from enhancement measures will be identified. These positive effects could be as a result of: –

- direct mitigating impacts arising from the wind farm development; or
- enhancement measures that are incorporated into the scheme – but not as a direct result of mitigation for significant effects.

5.6.4. In line with the regulations, when identifying mitigation measures, the proposed development will take into account the practicability and cost effectiveness of the proposals and their efficiency in reducing environmental impacts. Where practical, mitigation measures will be set out as commitments which will ensure they are implemented. Where the effects of the impact are significant, and where there is uncertainty in the mitigation proposed, monitoring may be proposed to ensure that the mitigation is both required and effective. Monitoring will allow for adaptation of the mitigation measures to ensure that they are fit for purpose. Monitoring will be proportionate to the level of significance experienced and not simply proposed as monitoring for monitoring sake.

5.6.5. Once the final design has been adopted and account has been taken of any mitigation measures, residual effects will be listed. The significance of a residual effect will be determined by correlating the magnitude of the change arising from the scheme with the sensitivity of the particular attribute under consideration. The magnitude of change will be evaluated in accordance with Table 5.1, unless a specific magnitude of change table is presented for that discipline in this scoping report.

Table 5.1: Magnitude of Change

Magnitude	Description
High	**Total loss or major alteration to key elements/features of the baseline conditions**
Medium	**Partial loss or alteration to one or more key elements/features of the baseline conditions**
Low	**Minor shift away from the baseline conditions**
Negligible	**Very slight change from baseline conditions**

Source: Natural Power

5.6.6. Where applicable in carrying out individual assessments, a scale of increasing sensitivity of the resource or receptor will be defined. This may be defined in terms of quality, value, rarity or importance and can be classed as '**Low**', '**Medium**' or '**High**', however again, the sensitivity methodology may vary for each discipline considered in the ES. For certain assessment areas, guidance will be taken from the value attributed to elements through designation or protection under law. Where assessment of this nature takes place the correlation of magnitude against sensitivity will determine a qualitative expression for the significance of the residual adverse effect. This is demonstrated in the matrix below, Table 5.2:

Table 5.2: Significance of Effect

		Magnitude of Change			
		Substantial	**Moderate**	**Low**	**Negligible**
Sensitivity	**High**	**Major**	**Major/Moderate**	Moderate	Moderate/Minor
	Medium	**Major/Moderate**	Moderate	Moderate/Minor	Minor
	Low	Moderate	Moderate/Minor	Minor	Minor/Negligible

Source: Natural Power

5.6.7. Those residual adverse effects indicated as **Major and Major/Moderate** will be regarded as being **significant** effects in terms of the relevant legislation if using the significance matrix in Table 5.2. However, other factors may have to be considered including the duration and the reversibility of the effect. It should also be noted however that while in the main the assessment considers the adverse effects, where positive effects are identified these will be also be discussed.

Question 2: Do consultees have any comments in relation to the Approach to the Environmental Impact Assessment and to mitigation, enhancement and monitoring? We intend to focus the EIA on the significant effects and therefore propose to scope out likely non-significant effects.

5.7. Securing Commitments and Mitigation through Planning Conditions

5.7.1. Where commitments and mitigation have been discussed within this scoping report they will form part of the ES and therefore ensure that they are secured if the proposal receives consent through specific planning conditions.

6. Legal and Policy Context

6.1.1. The application will conform to the statutory requirements legislated by the EIA Regulations.

6.1.2. A Planning Statement will accompany the application for consent and assess the proposed development in a legal and policy context against the relevant legislation and planning policies in force. The Planning Statement will assess such documents at international, national, regional and local levels, where applicable, including but not limited to:

- Paris Climate Agreement (2016);
- Climate Change Act (2008);
- Planning Policy Wales Edition 10 (December 2018);
- Technical Advice Note 8 (2005) Welsh Government;
- Draft National Development Framework for Wales (currently laid before the Senedd September 2020, for scrutiny, with a view to adoption in February 2021);
- Neath Port Talbot County Borough Council Local Development Plan (2016); and
- Bridgend County Borough Council Local Development Plan (2013) and replacement LDP (2018-2033).

6.1.3. Any other emerging Supplementary Planning Guidance will also be accounted for in the submitted ES with the appropriate weighting given relative to established policies.

6.1.4. It is recognised that this renewable energy development would contribute to the goals of the Well-being of Future Generations (Wales) Act 2015 and meet the principles of the Sustainable Management of Natural Resources (SMNR) as required by the Environment (Wales) Act 2016. The Planning Statement would

focus on these and references will be provided as to how the proposed development helps meet the goals and principles set out in these Acts.

7. Environmental Statement

7.1.1. The EIA process will result in the production of an ES. The ES will identify those features/receptors that have been agreed are likely to have a significant effect from the proposed development (or cumulatively with other projects) and will have an influence on the decision process.

7.1.2. The ES will focus on each of the broad topics identified within this scoping report, plus any others that develop throughout the remainder of the EIA process until submission.

7.1.3. Where features are considered, the assessment methodology, results, effects and mitigation proposed (if any) will be included. This will allow for the residual effect from the proposed development to be identified to allow the PINS sufficient information to determine the application.

7.1.4. The ES is likely to follow the structure in Table 7.1:

Table 7.7.1: Proposed ES structure

	Section	Title
Introductory	**1**	**Introduction**
	2	**Legal and Policy Context**
	3	**Approach to EIA**
	4	**Site Selection and Design Evolution**
	5	**Project Description**
Biological Environment	**6**	**Ecology Assessment**
	7	**Ornithology Assessment**
Physical Environment	**8**	**Landscape and Visual Impact Assessment (LVIA)**
	9	**Cultural Heritage Assessment**
	10	**Hydrology, Geology and Hydrogeological Assessment**
Population and Human Health	**11**	**Traffic and Transport Assessment**
	12	**Noise Assessment**
	13	**Forestry Assessment**
	14	**Health and Public Safety**
	15	**Aviation and Existing Infrastructure**
Conclusion	**16**	**Residual Effects, Mitigation & Enhancement**

Source: Natural Power

Question 3: Do consultees have any comments in relation to the proposed sections to be included in the ES?

7.1.5. The ES will be produced electronically and also in hard copy print if required. For the majority of consultees, unless otherwise requested, the ES will be provided electronically.

7.1.6. Upon submission of the application, these documents will be made available for public inspection at appropriate locations to be agreed with the determining body and local planning authorities and will be distributed to the relevant consultees, subject to COVID-19 restrictions. They will also be made available on the project consultation website www.ybryn-windfarm.cymru.

7.1.7. A bilingual Non-Technical Summary will be submitted alongside the ES, which will provide a summary of the main findings and will be written in a non-technical language to help enable a better understanding and overview of the assessments for the general public.

8. Embedded Mitigation and Further Layout Iterations

8.1.1. The design of the proposed Y Bryn Wind Farm to date has been an iterative process, and the layout has avoided environmental and physical constraints as far as possible (embedded mitigation).

8.1.2. Throughout the remainder of the EIA process (until the submission of the ES) it is likely that the layout presented here in the scoping report will develop further (especially in light of the scoping opinion and public consultations).

8.1.3. Should any changes occur to the layout that are likely to have a significant effect on a receptor that had previously been agreed to be scoped out, these will be included within the EIA. If the changes are not likely to have a significant effect, these will first be discussed with the relevant consultees, to ensure that they too are in agreement with the applicants' understanding before excluding them from the EIA.

9. Purpose of this Scoping Report

9.1.1. The applicant and its competent experts, as well as stakeholders, have already gained a sound understanding of the proposed development area from the work at Y Bryn Wind Farm and other adjacent wind farms.

9.1.2. For this application we propose to continue stakeholder consultation beyond the scoping stage in order to provide information on the proposed development area's baseline conditions and the possible impacts from the development. Therefore, this report utilises the existing information, experience from the existing wind farms and data gathered to date to focus on key areas and likely significant effects in agreement with consultees. Other minor and non-significant issues will be scoped out, and thus not included within the final submission in the ES.

9.1.3. Whilst this larger scoping report will inevitably require more engagement from key consultees at an early stage, the eventual ES submitted should be more streamlined than previous ES submissions and **focus only on likely significant effects**. The applicant will ensure that regular and continued liaisons with key stakeholders (including the community) are carried out and documented to agree the assessment baseline, methodology and thus the EIA process and final ES documents will be more efficient and streamlined.

Question 4: Do the consultees have any comments about the proposed approach to scoping and the purpose of the scoping report?

9.1.4. In the following sections the subject areas to be covered in the scoping report and ES are provided. Where it is considered that certain subjects or particular aspects within subjects can be scoped out of the ES, evidence and a rationale is provided.

10. Ecology

10.1. Introduction

10.1.1. The intention of this section of the scoping report is to provide PINS and its consultees with sufficient information (where it currently exists) on the likely impacts of the proposed Y Bryn Wind Farm on important ecological features.

10.1.2. Baseline ecology survey work to inform scoping, and therefore the EIA, commenced in August 2020 and to date includes a desk study review and an ecology survey consisting of an extended Phase 1 habitat survey of Y Bryn Site Boundary. The results are summarised in the following sections.

10.1.3. As the ecological baseline surveys to inform the planning application for Y Bryn Wind Farm are at an early stage, this section principally sets out the proposed approach to assessing potential ecological effects of the proposed Y Bryn Wind Farm.

10.2. Legislation and Guidance[1]

10.2.1. The approach to the collection of baseline ecological data will be based on industry standard guidance wherever this is available and applicable to the site. For example, Phase 1 habitat survey has been undertaken in accordance with JNCC (2016) guidelines[2], otter survey will follow Chanin (2003)[3], and bat surveys have been designed to take account of wind farm guidance (SNH, 2019)[4] as well as the guidance it superseded when published (Bat Conservation Trust, 2012)[5].

10.2.2. Particular consideration has been given to habitats and species listed under Annexes 1 and 2 of the Habitats Directive (92/43/EEC)[6], Schedules 5, 8 and 9 of the Wildlife and Countryside Act 1981 (as amended)[7], and Section 7 of the Environment Wales Act (2016)[8] in deriving the detailed approach to the work.

10.2.3. The approach to ecological impact assessment will be based on Chartered Institute for Ecology and Environmental Management (CIEEM) guidance[9].

10.3. Methodology

10.3.1. To date, a desk study review has been undertaken and an ecology survey conducted: consisting of an extended Phase 1 habitat survey of Y Bryn Site Boundary. A programme of protected species surveys

1 Existing EU environmental legislation will continue to operate in UK law after 1 January 2021

2 Joint Nature Conservation Committee. (2016). *Handbook for Phase 1 habitat survey - a technique for environmental audit (2010 reprint)*. JNCC, Peterborough

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

4 Scottish Natural Heritage (2019). *Bats and onshore wind turbines - survey, assessment and mitigation*. NatureScot, Inverness.

5 Bat Conservation Trust. (2012). *Bat surveys: good practice guidelines*. Second edition. Bat Conservation Trust, London.

6 https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A31992L0043

7 http://www.legislation.gov.uk/ukpga/1981/69

8 http://www.legislation.gov.uk/anaw/2016/3/section/7

9 CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Chartered Institute of Ecology and Environmental Management, Winchester.

shall be undertaken in 2021, in accordance with any feedback obtained from consultees. The proposed methodologies for these surveys are described within this ecology section.

Desk-based Review

10.3.2. The desk study initially involved study of open source aerial photography and Ordnance Survey mapping. A web-based search was also undertaken to identify and provide information on statutory sites with an international or national designation for ecological interests in relation to the proposed Y Bryn Wind Farm. The search also included locally designated sites within close proximity of the proposed development. The Natural Resource Wales (NRW) website[10] and online GIS tool MAGIC (Multi-Agency Geographic Information for the Countryside)[11] were used.

10.3.3. Data were sought for the following sites with protected habitats and ecological (non-avian) species as designated features:

- Special Areas of Conservation (SACs) – within 10 km of Y Bryn Site Boundary;
- Sites of Special Scientific Interest (SSSIs) – within 5 km of Y Bryn Site Boundary;
- National Nature Reserves (NNRs) – within 5 km of Y Bryn Site Boundary; and
- Local Nature Reserves (LNRs) within 2 km of Y Bryn Site Boundary.

10.3.4. Data has also been obtained from the South East Wales Biodiversity Records Centre (SEWBReC). The data requested was of all species of conservation interest and protected sites, within Y Bryn Site Boundary and a 2 km buffer. The list of protected sites includes locally important (non-statutory) Sites of Importance for Nature Conservation (SINCs) and other priority areas, such as Ancient Semi-Natural Woodlands. Data was received in November 2020 and covers all years up to, and including, 2020. This provides an update to the SEWBReC data that was summarised in a Preliminary Ecological Assessment (PEA) of Y Bryn[12], commissioned by Coriolis and undertaken in 2018.

10.3.5. The results of this data search have helped determine the likely ecological features of interested at Y Bryn Wind Farm, and this has been used in conjunction with the results of the extended Phase 1 survey to determine the species-specific surveys required as part of ongoing baseline recording (as described later in this section).

Habitat Survey

10.3.6. An extended Phase 1 Habitat Survey of the site was completed in late August to mid-September 2020 in accordance with industry standard survey guidance[2]. This survey aimed to characterise the habitats within Y Bryn Site Boundary, to identify any habitats of significant conservation value and/or protected plant species. Note that access beyond the site boundary was not permitted. During the extended Phase 1 habitat survey, the habitats were assessed for their suitability to support protected species, avian and non-avian. Target notes were made on any notable non-floral features, where this may benefit other ecological surveys (e.g. signs of reptiles, bats, badger, otter and water vole).

10 Available online from: https://naturalresources.wales/ (last accessed 22.10.20)

11 Available online from: https://magic.defra.gov.uk/MagicMap.aspx (last accessed 22.10.20)

12 ARUP (2018) Y-Bryn Preliminary Ecological Appraisal, Commissioned by Coriolis

10.4. Results

Desk-based Review

Designated Sites

10.4.1. Four designated sites of International importance are located less than 10 km from the proposed Y Bryn Site Boundary (Table 10.1). The nearest site is Kenfig SAC, lying less than 4 km south of the site boundary and designated for protected coastal habitats (dunes and saltmarsh) and two plant species associated with these habitats. Cefn Cribwr Grasslands SAC lies less than 5 km south-east of the site boundary and is designated for its marshy grassland and a butterfly associated with this habitat, marsh fritillary. Crymlyn Bog SAC and Blackmill Woodlands SAC are less than 9 km directly west and south-east of the site boundary, respectively, and have been designated for protected habitats.

10.4.2. Three additional sites designated as SSSI for ecological interests are located within 5 km of the site boundary (Table 10.1).

10.4.3. One NNR and one LNR are located within 5 km and 2 km of the site boundary, respectively (Table 10.1).

Table 10.1: Designated sites: SACs within 10 km and SSSIs & NNRs within 5 km of Y Bryn Site Boundary

Site	Designation	Distance from Proposed Site Boundary	Size (ha)	Designation Criteria
Kenfig	SAC/SSSI	<4 km south	1192	Extensive sand dune habitats and standing waters, together with a mixture of associated coastal habitats. Assemblages of nationally scarce and rare vascular plants, rare macrofungi and invertebrates.
Cefn Cribwr Grasslands including Caeau, Pencastyll, Bryn-Bach and Waun Fawr	SAC/SSSI	<5 km south-east	58	Marshy grassland and species-rich neutral grassland and associated habitats. Populations of two notable vascular plants and a nationally scarce butterfly (marsh fritillary).
Crymlyn Bog	SAC/SSSI	<9 km west	299	Fen habitats and wet woodland and associated invertebrate assemblages.
Blackmill Woodlands	SAC/SSSI	<9 km south-east	71	Sessile oak woodland
Margam Moors	SSSI	<3 km southwest	108	Fen and marshy grassland mosaic with standing water and associated aquatic invertebrate assemblage. The shrill carder bee in the dune grasslands.
Cwm du Woodlands	SSSI	<3 km east	24	Semi-natural broadleaved woodland
Waun Cimla	SSSI	<5 km southeast	16	Marshy grassland

Site	Designation	Distance from Proposed Site Boundary	Size (ha)	Designation Criteria
Kenfig Pool and Dunes	NNR	< 4 km south	514	One of Wales' top sand-dune reserves, with all the special plants, birds and insects that depend on this type of coastal habitat for their survival.
Bryn Tip*	LNR	Adjacent to site	-	An old coal pit now managed to enhance natural habitats and protect species of bird, reptile and invertebrate.

*No data available as to size of site

Source: MAGIC Online GIS tool

Non-statutory Designated Sites

10.4.4. A total of 35 SINCs lie within the search area (Y Bryn Site Boundary plus 2 km buffer). Of these, there are 14 SINCs that lie within, or immediately adjacent to, the site boundary. These are:

- Abercerdin Wood;
- Afan Mineral Railway;
- Bryn Goytre Cycleway;
- Bryn Tip;
- Caerau West;
- Cwmavon Coal Tips;
- Cwm Cerdin;
- Cwm Cerwyn;
- Cwm Sychbant;
- Margam Country Park;
- Nant-y-Crynwydd;
- NPT watercourses;
- Sychbant Fields; and
- Y Parc (south).

10.4.5. The SEWBReC data request also returned the additional priority areas (Table 10.2).

Table 10.2: NRW Priority Areas within Y Bryn Site Boundary and 2 km Buffer

Site Type	No. of Sites	Category
Ancient semi-natural woodland	136	Priority Area
Restored ancient woodland site	29	Priority Area
Plantation on ancient woodland site	84	Priority Area
Ancient woodland site of unknown category	21	Priority Area
NRW priority area (woodland - PAWS)	83	Priority Area
NRW priority area (heathland and grassland)	4	Priority Area
NRW priority area (lowland wetland)	1	Priority Area

Site Type	No. of Sites	Category
B lines	1	Local, non-statutory

Source: SEWBReC

Species Data

10.4.6. The SEWBReC data of priority and protected species within 2 km of Y Bryn Site Boundary is summarised below (Table 10.3). The table shows records of vertebrates (mammals, herptiles and fish) from the period 2010 to 2020.

Table 10.3: Records of selected ecological features within Y Bryn Site Boundary and 2 km Buffer

Sub-group	Species	No. of Records	Most recent
Amphibian	Common frog	24	2019
	Common toad	11	2017
	Palmate newt	5	2019
	Smooth newt	1	2011
Reptile	Adder	37	2018
	Common lizard	32	2018
	Grass snake	16	2019
	Slow-worm	23	2020
Fish	Brown/sea trout	2	2016
Terrestrial Mammal*	Badger	26	2019
	Brown hare	9	2018
	Harvest mouse	5	2019
	Hedgehog	35	2019
	Otter	5	2019
	Polecat	3	2019
Bat	Barbastelle	1	2015
	Brandt's bat	1	2016
	Brown long-eared bat	14	2020
	Common pipistrelle	31	2020
	Daubenton's bat	13	2019
	Greater horseshoe bat	3	2016
	Leisler's bat	2	2016
	Lesser horseshoe bat	5	2016
	Nathusius's pipistrelle	7	2019
	Natterer's bat	5	2019
	Noctule bat	20	2020
	Serotine	2	2016
	Soprano pipistrelle	19	2020
	Whiskered bat	4	2020

*Only terrestrial mammal species listed within Section 7 of the Environment Wales Act (2016) are included

Source: SEWBReC

10.4.7. Most of the bat records come from the wider area to the east and south of the site boundary, rather than the site itself. Many of these records (roosting and foraging) refer to bats at Margam Country Park, located adjacent to a section of the southern Y Bryn Site Boundary. Three Annex II bat species were recorded here: barbastelle, lesser horseshoe and greater horseshoe bats.

10.4.8. Note that the PEA[12] presents data of priority ecological features recorded within a previous alternative search area and, as such, includes some records that fall outside the search criteria of the data presented above. The most notable of these are included here for completeness, although these records are all c.4 km distant from the currently proposed Y Bryn Site Boundary. These records are: one hazel dormouse record to the south of the site boundary; a large number of great crested newt records from water bodies to the south-east of the site boundary; and a record of spawning brook lamprey to the south of the site boundary.

Habitat Survey

10.4.9. Habitats found during the Phase 1 Habitat survey of Y Bryn Site Boundary are described below and in Figure 10.1a and Figure 10.1b. The target notes that accompany the figures are presented at the end of this document.

Woodland and scrub

10.4.10. The site boundary is dominated by coniferous plantation, typically formed of dense, even-aged plantings of Sitka spruce and Lodgepole pine. The plantation is managed in rotation, and all growth stages are represented, from recently felled or replanted areas to stands of intermediate age and mature trees. In the field layer of the younger stands (and, where tree density is low, also in some of the intermediate-age stands) other habitats were present including scrub, dry heath, continuous and scattered bracken and acid and marshy grassland as described below.

10.4.11. Areas of semi-natural and planted broadleaved and mixed woodland were predominantly along riparian corridors and in the north-west of the site near/within Afan Forest Park. There was a mixture of trees within the canopy, especially oak, birch and sweet chestnut with alder and willow in more damp areas. Some blocks of woodland had a canopy dominated by beech usually with little ground flora or shrub layer.

10.4.12. Dense and scattered scrub often associated with forestry edges and/or felled forestry that may not have been replanted are usually dominated by a few species including bramble, European gorse and willow in the wetter areas, especially along riparian corridors.

Grassland and marsh

10.4.13. Grassland and marsh within the site boundary comprised acid, marshy and poor semi-improved grassland. A few areas classified as acid grassland were within clearings in the forestry adjacent to a track and in forestry rides. Although acid grassland indicators were present, such as heath bedstraw, the sward tended to be dominated by grass species such as common bent and Yorkshire fog, with some scrub and bracken encroachment. Marshy grassland habitat is more frequent within the study area and is located along track sides, within forestry rides and within unplanted areas at the head of or alongside streams. Additionally, marshy grassland had naturally regenerated in some felled woodland areas. The marshy grassland was usually dominated by purple moor-grass and/or rushes, usually soft-rush. The fields of poor semi-improved grassland are associated with Hafod Farm.

Tall herb and fern

10.4.14. Areas of bracken were found across the site in small and large patches. Some patches were continuous, while others were more scattered and in mosaic with heath and/or acid grassland and often in the field layer of woodlands.

Heathland

10.4.15. Patches of dry dwarf shrub heath, sometimes creating a mosaic with acid grassland were present along track sides, in areas of felled woodland and in the field layer of woodlands. Heather and bilberry were the most common dwarf shrubs present although bell heather was also recorded. A couple of patches of wet dwarf shrub heath in mosaic with purple moor-grass dominated marshy grassland were mapped adjacent to a forestry track.

Open Water

10.4.16. Two large waterbodies are present including Cwmwernderi Reservoir. Additionally, nine ponds are present within the site boundary. There are numerous watercourses throughout the study area.

Other habitats

10.4.17. Other habitats are limited to several small quarries and two buildings.

Non-native invasive species

10.4.18. Three non-native invasive plant species were noted on the site; montbretia, common rhododendron and Himalayan balsam. All are listed under Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended).

Protected Species

10.4.19. No signs of protected species were noted during the extended Phase 1 habitat survey.

10.5. Scoping

Discussion

10.5.1. The EcIA will assess the likely effects of construction, operation and decommissioning of the proposed Y Bryn Wind Farm on ecological receptors.

10.5.2. To update and provide a more comprehensive list of protected species within the vicinity of the proposed development, further desk-based work will be undertaken for the EIA and it is proposed that this will involve approaching the following organisations for contemporary ecological data:

- SEWBReC (to obtain further bat records using a wider search area (10 km) and to obtain any records that have been added to the database since the existing data request);
- Vincent Wildlife Trust (for protected mammal species particularly pine marten);
- South East Wales Rivers Trust; and
- Natural Resources Wales (NRW) Energy Delivery Team and Operational Land Management Team with knowledge of the site.

10.5.3. The results of this data search shall inform the EcIA but it is not considered necessary to have this data in order to determine the ecological survey programme planned for 2021; a precautionary approach shall be followed.

Designated sites

10.5.4. It is proposed that all of the statutory designated sites listed in Table 10.1 be scoped out of the EIA. The distance between the nationally and internationally designated sites and Y Bryn Wind Farm, and the lack of hydrological connectivity, means that there is a lack of a clear effect pathway with regard to the habitats/ species for which sites have been designated. Therefore, it is unlikely that there will be significant impacts on the ecological interest of these designated sites (alone or cumulatively) as a result of the wind farm proposal.

10.5.5. Bryn Tip LNR lies close to the site boundary, but with the embedded mitigation measures described in 10.1.7 it is considered unlikely that the development shall have a significant effect on the integrity of the LNR. Therefore, Bryn Tip LNR shall be scoped out of the EIA. (Note, however, that Bryn Tip shall be 'scoped in' as part of the approach for assessing SINCs.)

10.5.6. The approach to scoping in/out local non-statutory designated sites (SINCs), is proposed to be as follows. SINCs lying within the site boundary, or immediately abutting it, shall be scoped into the EIA irrespective of the qualifying feature. Additionally, SINCs with habitats as a qualifying feature shall be scoped in if the SINC lies within 250 m of the site boundary; and SINCs with protected mammal species as a qualifying feature shall be scoped in if the SINC lies within 500 m of the site boundary.

Habitats

10.5.7. Habitats shall not be scoped out of the EIA.

10.5.8. The result of the Phase 1 habitat survey has provided an overview of the habitats present at the proposed Y Bryn Wind Farm.

10.5.9. There is a requirement under the Water Framework Directive to carry out assessment of the likely impacts of development on habitats which are dependent on Groundwater Dependent Terrestrial Ecosystems (GWDTEs). The habitat survey work undertaken to date has identified broad habitats that may have high or moderate potential to support GWDTEs, as well as several Annex I and Section 7 habitats – see Table 10.4 below.

Table 10.4: Summary of protected habitats with potential for impact during development

Phase 1 Habitat	Conservation Status
Semi-natural broadleaved woodland	Potential GWDTE (high) for any wet woodland; Annex 1; Section 7
Acid grassland	Section 7
Marshy grassland	Potential GWDTE (high/moderate); Potential Annex 1 and/or Section 7
Dry dwarf shrub heath	Annex 1; Section 7
Wet dwarf shrub heath	Potential GWDTE (moderate) Annex 1; Section 7
Streams	Section 7
Standing open waters – ponds and lakes	Section 7

Source: GWDTE – Groundwater dependent terrestrial ecosystem; Annex 1 – Listed on Annex 1 of EU Habitats Directive; Section 7 – Listed on Section 7 of the Environment Wales Act (2016).

10.5.10. It is proposed that a National Vegetation Classification (NVC) survey will be undertaken in summer 2021 to further define the important vegetation communities found within the vicinity of the Proposed Development, following the standard survey method[13].The NVC survey will target those areas of potential conservation value highlighted in Table 10.4 that lie within 250 m of proposed infrastructure. The NVC survey shall allow for the identification of any notable or rare plant species present within these areas and will produce a detailed habitat map that shall be used both in development design and in the impact assessment.

13 Rodwell, J. S. 2006. *National Vegetation Classification: Users' handbook*. JNCC, Peterborough

Protected Species Surveys 2021

10.5.11. Based upon the results of the initial desk study, the results of the extended Phase 1 survey and using expert judgement as to the likely ecological considerations for a development in this area, the following protected species surveys are proposed for 2021.

Bat Surveys

10.5.12. Bat activity surveys: It is anticipated that 17 full spectrum static detectors will be deployed at the site in 2021. Fifteen detectors[14] shall be located near/at proposed turbine locations following recent NatureScot (formerly SNH) guidance[4]. Access to some proposed turbine locations may not be possible due to dense plantation cover and, in such cases, detectors will be relocated to the nearest edge feature (including rides and fire breaks). The detector locations will sample the different habitats and topographical features present on the site including open areas such as nearby clearings and felled areas in the forestry, to provide an indication of how bats may adapt to and use the new habitat created through turbine construction. In addition, if logistics and health & safety considerations allow, two static detectors will be located on a meteorological mast on the site to collect 'at height data'. This will allow determination of difference between bat activity below and above canopy level. Data will be collected on a seasonal basis (for 14 consecutive nights in each of spring, summer and autumn). The meteorological mast will collect site-specific weather data (wind speed, temperature and rainfall) for the duration of the work to help in the interpretation of the bat activity data. Bat calls shall be analysed using Kaleidoscope Pro software and bat activity levels shall be assessed using Ecobat.

10.5.13. Bat roost surveys: An assessment of potential roost features shall be undertaken in 2021, covering all buildings (including ruins and bridges), mine adits and mature trees that are situated along edges and corridors within the forest. (The interior of plantation forestry blocks shall not be surveyed.) These surveys shall cover a 250 m buffer around all proposed infrastructure (where access allows). Should evidence of bat roosts be found as part of these surveys, emergence/ re-entry surveys led by a licenced bat ecologist, will be completed in 2021 to gain an indication of the size and likely type of any roosts present.

Dormouse survey

10.5.14. Y Bryn PEA[1212] found dormouse records c.4 km distant from Y Bryn Site Boundary. The main habitat within the site boundary is coniferous forest, which is considered poor-quality habitat for dormouse, however the Phase 1 survey showed that there are some habitats (broad-leaved/mixed woodland and scrub) that could have potential to support dormice, although such habitat is largely fragmented. However, following a precautionary approach, the presence of dormouse in the region and the presence of areas of suitable habitat within the site boundary means that a targeted dormouse survey shall be undertaken in 2021, to determine their presence or absence.

10.5.15. The dormouse survey will follow recommended guidance[15]. One hundred nest tubes (50 in the northern part of the site and 50 in the southern part of the site) shall be placed at 20 m intervals in areas of suitable habitat that lie within 120 m[16] of proposed infrastructure. Suitable habitat shall be areas of mixed/broadleaf woodland and scrub that are considered to be 'linked' with other areas of suitable habitat. The nest tubes shall be in place from April to November and will be checked monthly for occupancy during this period.

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14 Where developments have more than ten turbines, detectors should be placed within the developable area at ten potential turbine locations plus a number of detectors should be placed at representative locations across the site, equal to a third of additionally proposed turbines (25 turbines = 10 + (15/3) = 15 detectors).

15 Bright, P. and Morris, P., (2006) *The dormouse conservation handbook Second Edition*. English Nature.

16 Distance is based upon the maximum foraging distance of dormice (70 m) plus a 50 m buffer to allow for micro-siting of infrastructure.

Great crested newt survey

10.5.16. Nine ponds and two larger water bodies were recorded during the Phase 1 habitat survey. Using the results of the extended Phase 1 survey and a desk-based appraisal using aerial images, an assessment of each pond's suitability for great crested newts has been undertaken, based upon the criteria listed in the Habitat Suitability Index[17] (HSI). It is considered that three of the ponds have 'poor' suitability for great crested newts, whilst the other six ponds are considered to fall into the 'below average', 'average' and 'good' categories. Using a precautionary approach, all ponds in these categories shall be subject to eDNA analysis for detecting presence of newts; where these ponds lie within 500 m of proposed infrastructure (predicted to be five locations). Based upon the results of the eDNA analysis further surveys will be undertaken if required.

Otter and water vole survey

10.5.17. All permanent watercourses within Y Bryn Site Boundary, will be surveyed for signs of otter and water vole using a combined survey. Signs of otter have been recorded previously on site as well as some potentially suitable water vole habitat being identified during the extended Phase 1 survey. Otter survey methods will be based on those recommended in Chanin (2003)[18] and water vole survey methods will be based on those recommended in Strachan *et al* (2011)[19]. Surveys shall be undertaken in suitable weather conditions (low water levels) and are anticipated to take place in the summer months of 2021 by experienced ecologists.

Badger, pine marten and polecat survey

10.5.18. Y Bryn Site Boundary will be surveyed for badger. Surveyors shall walk all linear features within the site boundary (fences, walls, tracks) and all signs of presence, such as latrines, runs and setts, shall be recorded and mapped following recommended survey methods[20]. Additionally, during the badger survey, surveyors shall also record any signs they encounter of pine marten and polecat presence (e.g. scats, footprints and potential den sites)[21]. The surveys will be carried out during summer 2021.

Fish survey/ fish habitat survey

10.5.19. It is **not** proposed that surveys are undertaken for recording fish species within Y Bryn Site Boundary. Instead data shall be obtained through desk study. It is considered that this shall be sufficient to assess any piscine features on site and shall negate the need for intrusive surveys such as electrofishing. Water courses shall be protected from significant negative effects during construction and operational activities through embedded mitigation.

10.6. Proposed Mitigation and Enhancement

Embedded Mitigation

10.6.1. The current proposed site design incorporates the following:

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17 http://www.narrs.org.uk/documents/HSI%20guidance.pdf

18 Chanin P (2003). *Ecology of the European Otter. Conserving Natura 2000. Rivers Ecology Series No. 10.* English Nature

19 Strachan R., Moorhouse T. and Gelling M. (2011) *Water Vole Conservation Handbook Third Edition*, Wildlife Conservation Research Unit.

20 Scottish Badgers (2018) *Surveying for Badgers: Good Practice Guidelines Version 1*

21 Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trewhella, W.J., Wells, D. and Wray, S. (2012). *UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation.* The Mammal Society, Southampton.

- A 50 m setback from all mapped watercourses and waterbodies. This is primarily a measure to minimise the potential for impacts on potable water supplies (e.g. through sedimentation during construction); however, it will also reduce the potential for impacts on mammals, fish and invertebrates associated with freshwater habitats;
- Soils identified by NRW-provided data as 'bog' have been avoided for turbine placement;
- All areas of Ancient Woodland, including Planted Ancient Woodland Sites, have been avoided; and
- Avoidance of all Sites of Importance for Nature Conservation (SINCs) located partially or wholly on site.

Additional Mitigation During Construction

10.6.2. To ensure compliance with legislation, and to follow good practice guidance and consultation recommendations, a number of standard measures will be implemented should the application be consented. The standard measures which are relevant to avoiding and reducing impacts on ecological features are described in paragraphs 10.6.3 to 10.6.6.

10.6.3. A maximum of six months prior to commencement of works, pre-construction ecology walkover surveys will be carried out to update the results of the baseline surveys, e.g. to determine badger sett activity, identify any new otter holt locations, etc. This will enable any refinements to be made if necessary, to mitigation, micro-siting and/or the construction programme to take account of any updated distribution or presence of protected species, with a suitable mitigation plan adopted on a case by case basis;

10.6.4. No development shall take place (including demolition, ground works, vegetation clearance) until a construction environmental management plan (CEMP), incorporating a Construction Method Statement (CMS), has been submitted to and approved in writing by the local planning authorities. The CEMP shall include the following:

- Practical measures (both physical measures and sensitive working practices) to avoid or reduce impacts during construction (may be provided as a set of method statements), including a Pollution Prevention Plan outlining measures to control pollution and a Drainage Management Plan outlining measures for management of surface and groundwater;
- The location of sensitive works to avoid harm to ecological features;
- The times and locations during construction when specialist ecologists need to be present on site to oversee works;
- Species Protection Plans outlining specific measures to avoid and reduce impacts on protected species;
- Responsible persons and lines of communication; and
- The role and responsibilities on site of an Ecological Clerk of Works (ECoW) or similarly competent person.

10.6.5. No development shall commence until the role and responsibilities and operations to be overseen by an appropriately competent ECoW have been submitted to and approved in writing by the local planning authorities. The appointed person shall undertake all activities, and works shall be carried out, in accordance with the approved details. The ECoW will monitor and advise on potential effects on ecological features during construction in order that impacts are avoided or minimised through best practice. This includes maintaining water quality and minimising the potential for disturbance or risk of injury/death for protected species which may be using the site.

10.6.6. The approved CEMP shall be adhered to and implemented throughout the construction period strictly in accordance with the approved details, unless otherwise agreed in writing by the local planning authority.

10.6.7. In addition, opportunities for providing biodiversity net gain through enhancement measures above and beyond base offsetting mitigation will be sought, both within and off-site.

10.7. Summary

10.7.1. Ecological work to inform the planning application for Y Bryn Wind Farm remains at an early stage and a programme of further desk-based review and ecological surveys are proposed to provide more detailed assessment of ecological receptors listed below.

10.7.2. The following lists the ecological features requiring more detailed assessment and are, therefore, **scoped in** to the EIA (an asterisk (*) denotes those receptors for which field surveys shall be undertaken during continued baseline recording):

- Non-statutory designated sites (SINCs) within Y Bryn Site Boundary and agreed buffer;
- Habitats*;
- Great Crested Newt*;
- Bats*;
- Hazel dormouse*;
- Otter*;
- Water vole*;
- Pine marten*;
- Polecat*;
- Badger*; and
- Fish.

10.7.3. The following statutory designated sites have been **scoped out** due to their distance from Y Bryn Site Boundary:

- Kenfig SAC/SSSI;
- Cefn Cribwr Grasslands SAC including Caeau, Pencastyll, Bryn-Bach and Waun Fawr SSSIs;
- Crymlyn Bog SAC/SSSI;
- Blackmill Woodlands SAC/SSSI;
- Margam Moors SSSI;
- Cwm Du Woodlands SSSI;
- Waun Cimla SSSI;
- Kenfig Pool and Dunes NNR; and
- Bryn Tip LNR.

10.7.4. Common species of herptile (reptiles and amphibian) are highly likely to be present. However, measures such as a working method statement will ensure legislative compliance during any construction phase impacts on these species and hence they have been scoped out.

10.7.5. To date, there is no evidence that any specially protected invertebrates or red squirrels are present within Y Bryn Site Boundary and hence they have also been scoped out of the assessment.

10.7.6. Regular communication with NRW with regard to emerging results will be undertaken when required.

Question 5: Do consultees agree with the approach used for scoping in/out statutory and non-statutory designated sites?

Question 6: Do consultees consider the proposed baseline survey methodologies appropriate?

Question 7: Do consultees see value to any particular mitigation and/or enhancement measures for any local or regional species or habitats, whether referred to above or otherwise?

11. Ornithology

11.1. Introduction

11.1.1. The intention of this section of the scoping report is to provide PINS and its consultees with sufficient information (where it currently exists) on the likely impacts of the proposed Y Bryn Wind Farm on important ornithological features. This will allow for an EIA that focusses on features which could be significantly affected, or for which the predicted effects are currently unknown.

11.1.2. Baseline survey work to inform scoping and therefore the EIA commenced in October 2019; the results of these surveys are summarised in the following sections. These results are used to identify important ornithological features that could sustain positive or negative impacts as a result of the development of the proposed Y Bryn Wind Farm. Where likely non-significant impacts are identified in this section, it is proposed that these are not carried forward for inclusion in the relevant EcIA (Ecological Impact Assessment) and are 'scoped out'.

11.1.3. This section also provides information on statutory sites of international importance, upon which the proposed development may have a 'Likely Significant Effect' (LSE). A screening process will be undertaken alongside the EIA to determine whether the predicted impacts of Y Bryn Wind Farm will result in a LSE. The screening process will allow PINS to determine whether an Appropriate Assessment (AA) will be required.

11.2. Legislation and Guidance[22]

Legislative and guidance documents with relevance to ornithology are listed below:

Legislation:

- Council Directive 2009/147/EC on the Conservation of Wild Birds (the Birds Directive);
- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive);
- The Conservation (Natural Habitats, &c.) Regulations 2017 (as amended) (the Habitats Regulations), which transposes the Habitats Directive into UK law;
- Wildlife and Countryside Act 1981 (as amended); and
- Environment (Wales) Act 2016.

Other guidance:

22 Existing EU environmental legislation will continue to operate in UK law after 1 January 2021

- Guidelines for EcIA in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine 2018[23];
- Recommended bird survey methods to inform impact assessment of onshore wind farms[24];
- Birds and Wind Farms: Risk Assessment and Mitigation[25];
- Developing field and analytical methods to assess avian collision risk at wind farms[26];
- Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action[27];
- Assessing significance of impacts from onshore windfarms on birds outwith designated areas[28];
- Monitoring the impacts of onshore wind farms on birds[29];
- Guidance on methods for monitoring bird populations at onshore wind farms[30];
- Avoidance rates for the onshore SNH (NatureScot) wind farm collision risk model[31];
- Assessing the cumulative impact of onshore wind energy developments[32]; and
- Assessing connectivity with Special Protection Areas (SPAs)[33].

To note, although the guidance referred to as standard for assessing impacts for birds is provided by NatureScot (formerly SNH (Scottish Natural Heritage)), this is accepted as standard by NRW.

11.3. Methodology

Consultation

11.3.1. NRW (statutory consultee function) and the two relevant local county councils (Neath Port Talbot County Borough Council and Bridgend County Borough Council) were contacted in July and August 2020 to seek agreement as to the baseline ornithology surveys being carried out at Y Bryn Wind Farm. Consultees were provided with a concise summary of the survey programme and of the results of Year 1.

11.3.2. Further details of the surveys undertaken and of the results of these surveys are provided within this Scoping section.

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23 CIEEM, 2018. Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

24 SNH, 2017. Recommended bird survey methods to inform impact assessment of onshore wind farms. Scottish Natural Heritage, Battleby.

25 de Lucas, M., Janss, G. & Ferrer, M. (eds.) 2007. Birds and Wind Power. Quercus, Madrid.

26 Band, W.; Madders, M.; Whitefield, D. 2007. Scottish Natural Heritage, Natural Research Ltd.

27 SNH. 2000. Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action. Scottish Natural Heritage, Edinburgh.

28 SNH. 2018. Assessing significance of impacts from onshore windfarms on birds outside designated areas. Scottish Natural Heritage, Inverness.

29 SNH. 2009. Monitoring the impact of onshore wind farms on birds (Guidance note). Scottish Natural Heritage, Edinburgh.

30 SNH. 2009. Guidance on methods for monitoring bird populations at onshore wind farms. Scottish Natural Heritage, Edinburgh.

31 SNH, 2017. Avoidance rates for the onshore SNH wind farm collision risk model. Scottish Natural Heritage, Battleby.

32 SNH. 2018. Assessing the cumulative impacts of onshore wind farms on birds: guidance. Scottish Natural Heritage, Inverness.

33 SNH. 2016. Assessing connectivity with Special Protection Areas (SPAs) (Guidance note: Version 3). Scottish Natural Heritage, Edinburgh.

Desk based review

Designated Sites

11.3.3. A web-based search was undertaken to identify and provide information on statutory and non-statutory sites with an international or national designation for ornithological interests located within the vicinity of the proposed Y Bryn Wind Farm. For all sites a search radius of 10 km was used, except where geese or gulls are listed (due to the larger foraging ranges of these species) for which a 25 km radius was used. Distances were measured from the currently proposed site boundary. The online GIS tool MAGIC (Multi-Agency Geographic Information for the Countryside)[34] was used.

11.3.4. Data were sought for the following:

- Special Protection Areas (SPAs);
- Ramsar sites (Ramsar Convention on Wetlands of International Importance) where waterfowl or waterfowl habitat are described as ecological features;
- Sites of Special Scientific Interest (SSSIs);
- Important Bird Areas (IBAs);
- Locally designated sites such as Sites of Important Nature Conservation (SINCs) and Sites of Nature Conservation Interest (SNCIs); and
- Local and National Nature Reserves (including RSPB (Royal Society for the Protection of Birds) and Wildlife Trust Reserves).

Species of Note

11.3.5. Ornithological data has been obtained from the South East Wales Biodiversity Records Centre (SEWBReC). The data obtained was part of a request for records of all species of conservation interest within Y Bryn Site Boundary and a 2 km buffer. Data was received in November 2020 and covers all years up to, and including, 2020. This provides an update to the SEWBReC data that was summarised in a Preliminary Ecological Assessment (PEA) of Y Bryn[35], commissioned by Coriolis and undertaken in 2018.

11.3.6. To provide further background information regarding the baseline status of notable ornithological features in the local environment, a data request was made to RSPB Cymru for data.

11.3.7. Before the EIA is submitted, further records of relevant ornithological data shall be requested from the following parties:

- SEWBReC, to obtain contemporary data and to obtain ornithological data from a wider search area (20 km);
- Local raptor surveyors; and
- NRW Energy Delivery Team and Operational Land Management Team with knowledge of the site.

11.3.8. In addition, a desk study to assess relevant information from the EIA of other wind farm developments in the vicinity of Y Bryn Wind Farm shall be undertaken.

Field Surveys

11.3.9. The baseline ornithology surveys undertaken so far (one non-breeding season and one breeding season) are described below. A suite of complementary surveys was carried out between October 2019 and August 2020, comprising vantage point (VP) surveys, breeding bird surveys, dedicated raptor surveys and dedicated nightjar surveys.

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[34] Available online from: https://magic.defra.gov.uk/MagicMap.aspx (last accessed 12.11.20)

35 ARUP (2018) Y-Bryn Preliminary Ecological Appraisal, Commissioned by Coriolis

11.3.10. Survey methodology followed standard NatureScot guidance. Surveys were all carried out by appropriately qualified and experienced personnel, in possession of a Schedule 1 licence where appropriate, and were undertaken in suitable weather conditions. These surveys are summarised in the following sections.

11.3.11. Full information on the dates, times and weather conditions for all ornithology surveys undertaken at Y Bryn can be provided upon request.

Target Species

11.3.12. NatureScot guidance states that work to establish the ornithological baseline should focus on those species which are afforded a higher level of legislative protection, or those which, as a result of their behaviour, may be more likely to be subject to impact from wind farms. There are three important species lists from which target species may be drawn:

- Annex I of the EC Birds Directive;
- Schedule 1 of the Wildlife & Countryside Act 1981; and
- Red-listed Birds of Conservation Concern (BoCC[36]).

11.3.13. Consideration should also be given to species of regional conservation concern, as listed within Local Biodiversity Action Plans (LBAPs).

11.3.14. Target species should be restricted to those likely to be affected by wind farms. It is generally considered that passerine species are not significantly impacted by wind farms.

11.3.15. As such, and in accordance with NatureScot guidance, surveys focused on the following target species:

- All species of raptors and owls listed in Annex I of the EC Birds Directive and/or Schedule 1 and 1A of the
- WCA 1981 (as amended);
- All species of wildfowl (with the exception of Canada goose and mallard);
- All wader species; and
- Nightjar.

11.3.16. In addition, 'large gull species' (e.g. herring gull) were also recorded as targets during VP surveys. Due to the number of flights it was considered precautionary to include these species so that data was obtained for any subsequent collision risk modelling (CRM) that may be required.

11.3.17. Raptor species that do not appear on the Annex I/ Schedule 1 lists (such as kestrel), and which are considered to be of lower conservation concern than target species, are termed secondary species. Recording of secondary species is subsidiary to recording of target species. The following species were considered secondary species for the purposes of flight activity surveys:

- All other raptor and owl species (buzzard, sparrowhawk, kestrel, tawny owl and long-eared owl);
- Small gull species;
- Grey heron;
- Raven; and
- Any large aggregations of red-listed passerines.

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36 Eaton, M.A., Aebischer, N.J., Brown, A.F., Hearn, R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D.A. and Gregory, R.D. 2015. Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. British Birds 108, 708-746.

Vantage Point Surveys

11.3.18. Vantage Point (VP) surveys were undertaken during the 2019/2020 non-breeding season (September to February) and the 2020 breeding season (March to August) to complete twelve months of baseline monitoring. These surveys were used to record the flight activity of target species within the vicinity of the proposed Y Bryn Wind Farm. The flight activity of secondary species was also recorded.

11.3.19. Eight vantage points were used to carry out the VP surveys: VPs 1, 2, 3 and 8 covering the proposed turbine layout in the northern section of the site, and VPs 4, 5, 6 and 7 covering the proposed turbine layout in the southern section of the site. The VP locations were carefully selected based on viewshed analysis and a ground-truthing visit prior to surveys commencing (Figure 11.1).

- VP1 - SS 83821 92996
- VP2 - SS 82259 93844
- VP3 - SS 81525 93131
- VP4 - SS 82385 90473
- VP5 - SS 81051 90016
- VP6 - SS 80530 89920
- VP7 - SS 82919 87554
- VP8 - SS 83705 92730

11.3.20. Due to the hill and valley terrain within the proposed development area and the forested nature of the site, the siting of VPs was not straightforward. However, the viewsheds of the eight VPs that have been chosen are able to fully cover the locations of the proposed turbines, with only small gaps in coverage of the surrounding 500 m buffer. It is considered that the coverage provided by the VPs is more than sufficient for recording ornithological features within the vicinity of the proposed turbines.

11.3.21. NatureScot guidance recommends 36 hours of survey effort per VP per survey season (September to February: non-breeding; and March to August: breeding). VP surveys in the 2019/20 non-breeding season did not begin until October 2019 but extra surveys in that month meant that three of the VPs reached a minimum of 36 hours survey effort over the 2019/20 non-breeding season, with the remainder receiving 33 hours of coverage. Although not quite meeting the recommended number of hours it is considered that the surveys satisfactorily inform baseline conditions for the non-breeding season (surveys were completed in favourable survey weather and flight activity was low). A second non-breeding season, starting September 2020 is now underway and this shall complete 36 hours at each vantage point over the 2020/21 non-breeding season.

11.3.22. During the 2020 breeding season, surveys were impacted upon by the COVID-19 pandemic, which prevented access to site during March and early April. However, extra survey effort over the season made up for this and all VPs were surveyed for a minimum of 36 hours over the course of the breeding season. A second year of breeding season VP surveys shall be undertaken in 2021.

11.3.23. A summary of the number of hours completed at each VP is shown in Table 11.1.

Table 11.1:Vantage Point survey effort (baseline year 1)

Month	VP1	VP2	VP3	VP4	VP5	VP6	VP7	VP8
October 2019	9	9	9	12	15	9	12	9
November 2019	6	6	6	6	6	6	6	6
December 2019	6	6	6	6	6	6	6	6
January 2020	6	6	6	6	6	6	6	6

Month	VP1	VP2	VP3	VP4	VP5	VP6	VP7	VP8
February 2020	6	6	6	6	6	6	6	6
Total non-breeding season	**33**	**33**	**33**	**36**	**39**	**33**	**36**	**33**
April 2020	3	3	3	12	6	6	6	3
May 2020	15	12	15	9	12	15	15	21
June 2020	6	9	6	6	6	6	6	3
July 2020	6	6	6	6	6	6	6	6
August 2020	6	6	6	6	6	6	6	6
Total breeding season	**36**	**36**	**36**	**39**	**36**	**39**	**39**	**36**

11.3.24. For each hour of survey, weather conditions were recorded including wind speed and direction, precipitation, cloud cover and visibility. Due to the large amount of data generated, only a summary of the weather data is provided here but full details of the dates, timings and weather conditions of each VP survey can be provided on request, in the form of an *Excel* spreadsheet. Based upon the full dataset of weather conditions it was determined that over two thirds (69.9%) of VP survey hours (non-breeding and breeding season) were undertaken in wind speeds between Beaufort Scale force 2 and 4, with all wind speeds between force 0 and force 7 (one hour) represented. Most surveys were undertaken in dry conditions (73.5% of survey hours), with just 5.0% of survey hours undertaken in persistent rain. Similarly, only 4.3% of survey hours were undertaken in low visibility (though surveys were abandoned if conditions were too poor to continue). The VPs were carried out at varying times of day, with survey hours completed between 0730 and 1830 in the non-breeding season and between 0415 to 2200 in the breeding season.

Collision Risk Modelling

11.3.25. Collision Risk Modelling (CRM) uses data collected during flight activity (VP) surveys to predict the number of individuals per species that have the potential to collide with turbine rotors. CRM has not been undertaken at this stage but is briefly described here to provide assurance that this will be included within the EIA. The EIA shall provide full details of CRM undertaken using the data collected over the full two years of baseline surveys (two breeding seasons and two non-breeding seasons). CRM will be carried out based upon the Band *et al*. (2007)[37] model recommended by NatureScot.

11.3.26. Y Bryn Wind Farm flight activity data have been recorded, thus far, using the following height bands:

- 1) <20 m;
- 2) 20-40 m;
- 3) 40-140 m; and
- 4) >140 m.

11.3.27. The turbines currently proposed for Y Bryn Wind Farm shall have a rotor swept height that straddles both height band 3 and height band 4. A precautionary approach shall be used that shall incorporate all flights within a band that overlaps with rotor swept height. When discussing the VP survey results within this Scoping section, those species recorded in height bands 3 and 4 are highlighted as being at potential collision height (PCH). Three or more flights and/or 10 or more individuals at PCH are considered as qualifying a species for CRM. In actuality only records at PCH that are also within the collision risk zone

37 Band, W., Madders, M. & Whitfield, D.P. 2007. *Developing field and analytical methods to assess avian collision risk at wind farms*. In de Lucas, M., Janss, G. & Ferrer, M. (eds.) Birds and Wind Power. Quercus, Madrid.

(CRZ) (blade width plus 200 m buffer) shall be used in the actual CRM so the approach used in this Scoping document can be considered precautionary.

11.3.28. To aid the pending CRM, it is proposed that new height bands be utilised for the remaining duration of baseline recording. The height bands shall provide a better match with the currently proposed turbine dimensions. These are proposed to be as follows:

- 1) <30 m;
- 2) 30-80 m;
- 3) 80-200 m;
- 4) 200-250; and
- 5) >250 m.

Breeding Bird Surveys

11.3.29. Breeding bird surveys (BBS) were undertaken in 2020 based upon standard guidance. These surveys covered all areas of open ground within the proposed site (Figure 11.2) including clearfelled areas. Access was not permitted to surrounding land but open areas in the buffer were surveyed by walking the forest edge and making regular stops in suitable locations to look and listen for birds within the buffer. Birds recorded within the woodland edge were also recorded. Although not the focus of the BBS, this provided some data as to the breeding bird assemblage present within the plantation, and other forested areas, within the survey area. Woodland point counts in the forested areas were not undertaken as this is no longer recommended in survey guidance[24]**Error! Bookmark not defined.**.

11.3.30. The surveys followed the widely used Brown & Shepherd (1993)38 methodology, but utilising four survey visits, as is currently recommended (Calladine *et al*., 2009)39. All bird species encountered were recorded during the BBS undertaken at Y Bryn Wind Farm. Due to access restrictions as a result of the COVID-19 pandemic the first visit was not made until early May; but visits were then spread throughout the rest of the survey season. The breeding bird survey effort for 2020 is summarised in Table 11.2. Note that each visit took four surveyor days to cover but some visits were completed by more than one person.

Table 11.2:Breeding bird survey effort 2020

Visit	2020
1st	5th/8th May
2nd	24th/26th/29th May
3rd	4th/7th/11th/13th June
4th	10th/11th/25th July

11.3.31. Upon completion of the fourth survey visit, records from all visits were combined and analysed to estimate the location of any breeding territories of non-passerines within open-ground habitats, based upon the territory analysis method outlined in Bibby *et al.,* (2000)40. Passerine species are generally considered to be at low risk from wind farm developments and so territory mapping focussed on non-passerines only. For passerines, and near-passerines, a list of all species recorded was created along with any evidence

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

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

40 Bibby, C.J., Burgess, N.D., Hill, D.A &Mustoe, S. 2000. Bird Census Techniques. Second edition. Academic Press, London.

of breeding (using data from the four survey visits), but no territory analysis was undertaken. This follows current NatureScot guidance.

Breeding Raptor Surveys

11.3.32. Dedicated surveys targeting breeding Schedule 1 species, covering the Y Bryn site boundary, were carried out during 2020 (Figure 11.2). Access was not permitted to surrounding land but suitable locations were found to scan the buffer area for raptors, in order to cover those areas not visible from the standard VP locations. Thus, the actual breeding raptor survey area covered a greater extent than that indicated in Figure 11.2. The nature of these surveys was determined by the target species recorded during the VP surveys and by those species considered to have the potential to breed within the survey area, including goshawk and honey buzzard, based upon the available habitat and knowledge of the area. Surveys involved walkovers and short VP watches to identify any breeding sites and to monitor these sites through the season. Surveys were undertaken by experienced surveyors holding a Schedule 1 Licence. Species-specific survey methods were informed by the methods outlined in Gilbert *et al*.41 (1998) and Hardey *et al*.42 (2013).

11.3.33. Surveys early in the breeding season were restricted due to the COVID-19 pandemic and subsequent effort being focussed on undertaking sufficient VP survey effort. This meant that the peak time for goshawk detection was not fully surveyed. A second season of raptor surveys shall be undertaken in 2021 and this shall include a focus on detecting displaying goshawk early in the breeding season (February/March).

11.3.34. The breeding raptor survey effort for 2020 is summarised in Table 11.3.

Table 11.3: Breeding raptor survey effort 2020

Month	Dates	Reason for visit
April	13th/30th	Check for raptor occupancy.
May	14th/28th	Check for raptor occupancy.
June	3rd/6th/7th/9th/30th	Further checks for occupancy and evidence of breeding.
July	19th/20th/25th/28th/29th/30th	Targeted monitoring based on previous surveys and surveys for honey buzzard.
August	13th/16th/26th/28th/31st	Further surveys to detect honey buzzard.

11.3.35. A summary of the weather data during the raptor surveys is as follows: all surveys were carried out in wind speeds judged to be between Beaufort Scale force 1 and 4; the majority of surveys (76.9% of survey hours) were carried in dry conditions, with 7.1% of survey hours carried out in prolonged rain. Most survey effort was completed during the middle part of the day to coincide with peak raptor activity, but over the course of the season surveys were carried out to cover all parts of the day between 07:30 and 21:00.

41 Gilbert, G., Gibbons, D.W. & Evans, J. 1998. *Bird Monitoring Methods A Manual of Techniques for Key UK Species*. RSPB, Sandy.

42 Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. 2013. Raptors: a field guide to survey and monitoring. Third edition. The Stationary Office, Edinburgh.

Nightjar Surveys

11.3.36. Dedicated nightjar surveys, covering suitable habitat within the site, were undertaken in the 2020 breeding season (Figure 10.2). Methods followed standard guidance as set out in Gilbert *et al*. (1998)43 and were undertaken at dusk on evenings with favourable weather conditions.

11.3.37. Survey visits were undertaken in June and July, to determine presence and breeding behaviour. All nightjars seen or heard were recorded and mapped. The breeding nightjar survey effort for 2020 is summarised in Table 11.4.

Table 11.4: Breeding nightjar survey effort 2020

Visit	Dates
1st	2nd/7th/11th June
2nd	19th/23rd/25th/29th July

11.4. Results

Consultation

A summary of the consultation responses is provided in Table 11.5.

Table 11.5: Consultation Responses pre-Scoping

Consultee	Response	How Addressed
NRW (statutory consultee function)	Further information required in order to comment on all surveys, including both survey effort (e.g. dates, times) and findings.	Due to the detail requested, NRW is being asked to comment again on this Scoping section.
Neath Port Talbot CBC	VP viewsheds appropriately cover the turbine locations, provided that these locations do not change.	It is acknowledged that changes in turbine locations may require further survey work if these are placed in locations without current coverage.
	Any gaps in survey effort as a result of COVID-19 should be addressed.	A second year of VP surveys and raptor surveys shall provide coverage of the early spring (March/April) period in 2021.
	Further information required regarding raptor surveys to comment on suitability.	Details provided within this Scoping section.
	BBS and nightjar surveys likely to be adequate if they followed guidance but further information required.	Surveys were carried out by experienced ecologists following the relevant survey guidance. Further details provided within this Scoping section.
Bridgend CBC	Further information to be provided in order to comment on scope.	Bridgend County Borough Council shall be provided with this draft scoping section in order to provide a more informed response.

Gilbert, G., Gibbons, D.W. & Evans, J. 1998. *Bird Monitoring Methods A Manual of Techniques for Key UK Species*. RSPB,

Sandy.43

Desk-based Review

11.4.1. Table 11.6 lists the protected areas within the vicinity of the proposed site, based upon the search criteria described in Section 11.2.3. The desk study did not identify any SPAs within the search criteria.

Table 11.6: Summary of protected sites designated for their ornithological interest, within 10 km of the proposed site (within 25 km for geese and gulls)

Site name	Designation	Distance and direction from proposed site	Designated feature
Bryn Tip	LNR	<1 km	Restored natural habitat; species include skylark and linnet.
Eglwys Nunydd Reservoir	SSSI	1.7 km to south	Wintering wildfowl and passage migrants, including pochard and tufted duck. Breeding species include; great crested grebe, little grebe, mallard, gadwall and coot.
Melincwrt Waterfalls	Wildlife Trust Reserve	6.9 km to north	Breeding bird assemblage includes redstart, wood warbler and pied flycatcher.

11.4.2. RSPB Cymru confirmed that they do not have any data for the search area requested.

11.4.3. Table 11.7 lists the target species highlighted in data returned by SEWBReC, for the period 2010-2020.

Table 11.7: Data search records of ornithological features (Schedule 1, Annex I and red-listed species only) recorded within the vicinity of Y Bryn Wind Farm

Ornithological Feature	Detail of Records
Arctic tern	Two records from Eglwys Nunydd Reservoir.
Barn owl	29 records, including an occupied nest-box sited on forest edge (2013).
Bar-tailed godwit	One record; not recorded on site.
Bittern	Three records; nearest >1 km from site.
Black-necked grebe	Two records from Eglwys Nunydd Reservoir.
Black-throated diver	One record from Eglwys Nunydd Reservoir.
Black redstart	One record, > 1km from site.
Black tern	Two records from Eglwys Nunydd Reservoir.
Brambling	Irregular records; including from site.
Cetti's warbler	Irregular records; but not from site.
Common crossbill	Numerous records; including from site.
Common scoter	One record from Eglwys Nunydd Reservoir.
Common tern	Two records from Eglwys Nunydd Reservoir.
Cuckoo	Numerous records; including from site.
Curlew	Two records from Eglwys Nunydd Reservoir.
Dartford warbler	Three records; including from site.

Ornithological Feature	Detail of Records
Fieldfare	Numerous records; including from site.
Firecrest	Two records; not recorded on site.
Golden plover	Irregular records; including from site.
Goshawk	Numerous records; including from site.
Grasshopper warbler	Numerous records; including from site.
Great northern diver	One record from Eglwys Nunydd Reservoir.
Green sandpiper	One record from Eglwys Nunydd Reservoir.
Hen harrier	Three records; including from site.
Herring gull	Numerous records; including from site.
Hobby	One record, > 1km from site.
Kingfisher	Irregular records; including from site.
Lapwing	Irregular records; including from site.
Lesser spotted woodpecker	One record, > 1km from site.
Little gull	Two records from Eglwys Nunydd Reservoir.
Long-tailed duck	Two records from Eglwys Nunydd Reservoir.
Marsh harrier	One record, > 1km from site.
Marsh tit	Irregular records; including from site.
Mediterranean gull	Two records from Eglwys Nunydd Reservoir.
Merlin	Irregular records; including from site.
Nightjar	Numerous records; including from site.
Osprey	Four records; not recorded on site.
Peregrine	Irregular records; including from site.
Pied flycatcher	Four records; including from site.
Pochard	Two records from Eglwys Nunydd Reservoir.
Quail	Two records; not recorded on site.
Red kite	Numerous records; including from site.
Redwing	Numerous records; including from site.
Ring ouzel	Five records; not recorded on site.
Scaup	Two records from Eglwys Nunydd Reservoir.
Short-eared owl	Three records; including from site.
Skylark	Numerous records; including from site.
Slavonian grebe	Two records from Eglwys Nunydd Reservoir.
Snow bunting	One record, > 1km from site.

Ornithological Feature	Detail of Records
Whimbrel	Two records; not recorded on site.
Whinchat	Irregular records; including from site.
Whooper swan	One record from Eglwys Nunydd Reservoir.
Willow tit	One record only; recorded on site.
Woodlark	One record only; recorded on site.
Wood warbler	Numerous records; including from site.
Yellow wagtail	Occasional records; including from site.

Source: SEWBReC

VP surveys

Target Species: breeding season 2020

11.4.4. The breeding season surveys during April to August 2020 recorded flight lines from a total of seven target species, these being either raptors or large gull species. Table 11.8 summarises levels of flight activity for each species and the level of flight activity which was at PCH. This shows that large gull species, particularly herring gull, were the most frequently recorded species. The associated flight lines are shown in Figures 11.3a (gulls) and 11.3b (raptors). In bold are species for which flight activity meets the required criteria for conducting CRM.

Table 11.8: Results of the breeding season vantage point surveys in 2020

Species	No. of flights (individuals) - 2020	No. of flights (individuals) at PCH - 2020
Great black-backed gull	**7 (8)**	**3 (4)**
Herring gull	**183 (313)**	**87 (170)**
Lesser black-backed gull	**58 (87)**	**17 (31)**
Large gull species*	**20 (215)**	**10 (178)**
Goshawk	**13 (13)**	**6 (6)**
Red kite	**18 (19)**	**5 (5)**
Merlin	1 (1)	1 (1)
Peregrine	1 (1)	-

*denotes either great black-backed gull, herring gull or lesser black-backed gull

11.4.5. Where an assessment into the impacts on large gulls is undertaken, the individuals recorded as 'large gull species' shall be apportioned, based on the proportion of gulls positively identified to each of the three species. On this basis, the 215 'large gulls' recorded during the 2020 breeding season would result in a further 166 herring gulls (479 individuals in total), 45 more lesser black-backed gulls (132 individuals in total) and a further four great black-backed gulls (12 individuals in total).

Target Species: non-breeding season 2019/2020

11.4.6. A total of six target species were recorded during non-breeding season VP surveys between October 2019 and February 2020 (inclusive). Five of those species were also recorded during the breeding season, the only target species not recorded during the breeding season being woodcock. Table 11.9 summarises

levels of flight activity for each species and the level of flight activity which was at PCH. In terms of number of records, herring gull was the most frequently recorded species. The flight lines for the non-breeding season target species are shown in Figure 11.4. No species met the required criteria for conducting CRM, following one year of non-breeding season surveys.

Table 11.9: Results of the non-breeding season vantage point surveys in 2019/20

Species	No. of flights (individuals) - 2019/20	No. of flights (individuals) at PCH – 2019/20
Woodcock	2 (2)	-
Herring gull	16 (86)	1 (2)
Lesser black-backed gull	1 (1)	-
Goshawk	4 (4)	1 (1)
Red kite	4 (4)	2 (2)
Peregrine	2 (2)	-

Incidental Records

11.4.7. A number of incidental records of target species were made during VP surveys (breeding and non-breeding season). Records in this category may include any of the following: birds not in flight; birds heard only; birds seen simultaneously where only one could be tracked; birds recorded before/after formal survey effort; and, most commonly, birds beyond the viewshed. These records are summarised in Table 11.10 for completeness.

Table 11.10: Incidental records of target species recorded during VP surveys

Species	Number of records/flights	Number of individuals
Golden plover	1	28
Great black-backed gull	1	1
Herring gull	6	7
Lesser black-backed gull	1	1
Goshawk	3	3
Red kite	2	2
Merlin	1	1

Secondary Records

11.4.8. Table 11.11 summarises the secondary species recorded during the VP surveys (breeding and non-breeding season combined). Both buzzard and raven showed evidence of breeding within the survey area.

Table 11.11: Summary of secondary species recorded during VP surveys

Species	Number of flights recorded (Individuals)
Canada goose	2 (4)
Mallard	2 (2)
Grey heron	7 (7)
Cormorant	1 (1)

Species	Number of flights recorded (Individuals)
Sparrowhawk	23 (23)
Buzzard	489 (576)
Kestrel	25 (27)
Raven	436 (639)

11.4.9. A second year of non-breeding and breeding season VP surveys shall be undertaken from September 2020 to August 2021.

Breeding Bird Surveys

11.4.10. The results of the breeding bird survey and breeding status are presented in Table 11.12. A total of 42 species were recorded across the breeding bird survey area, of which the large majority were passerines or near-passerines. Many of the species listed in Table 11.12 are arboreal species and were recorded in the woodland edge rather than in the open ground habitat that is the focus of this survey method, but are included to provide evidence of the baseline bird community within forested parts of the survey area.

11.4.11. No species of wader were recorded on any of the four survey visits. Raptor species are included in Table 11.12, as they were recorded on the BBS, but these species are self-evidently the focus of the dedicated raptor surveys. With all other records being of passerines and near-passerines, no territory mapping was undertaken.

11.4.12. Table 11.12 shows all species recorded within the survey area during breeding bird surveys. The table also shows which of these species showed evidence of breeding; as oppose to just being recorded as being present on site.

Table 11.12: Status of all species recorded during the breeding bird survey 2020

Species	Present within survey area (site/buffer)	Evidence of breeding within site	Evidence of breeding within buffer
Cuckoo	X	X	X
Woodpigeon	X	X	
Sparrowhawk	X	X	
Goshawk	X	X	
Red kite	X		
Buzzard	X		
Great spotted woodpecker	X	X	
Green woodpecker	X	X	
Kestrel	X		
Jay	X	X	
Carrion crow	X	X	X
Raven	X		
Coal tit	X	X	

Species	Present within survey area (site/buffer)	Evidence of breeding within site	Evidence of breeding within buffer
Marsh tit	X	X	
Blue tit	X	X	X
Great tit	X	X	
Skylark	X	X	X
Swallow	X		
Long-tailed tit	X	X	
Wood warbler	X		
Willow warbler	X	X	
Chiffchaff	X	X	X
Blackcap	X	X	
Whitethroat	X	X	
Goldcrest	X	X	
Wren	X	X	
Nuthatch	X	X	
Treecreeper	X	X	
Blackbird	X	X	X
Song thrush	X	X	X
Mistle thrush	X	X	
Robin	X	X	X
Redstart	X	X	
Stonechat	X	X	X
Dunnock	X	X	X
Grey wagtail	X		X
Pied wagtail	X		X
Meadow pipit	X	X	X
Tree pipit	X	X	
Chaffinch	X	X	X
Greenfinch	X	X	
Lesser redpoll	X	X	
Goldfinch	X	X	
Siskin	X	X	

11.4.13. The surveys recorded a typical community of mostly passerine species. Target species such as waders were not recorded and the BBS did not detect breeding target species that would not otherwise have been recorded by the other surveys.

11.4.14. The BBS undertaken in 2020 is considered sufficient to be able to assess the impacts of Y Bryn Wind Farm on the breeding bird assemblage and on this basis, the breeding bird survey shall not be repeated in 2021.

Breeding Raptor Survey

11.4.15. The results of the dedicated raptor surveys are shown on Figure 11.5 in the Confidential Annex. Two target raptor species were recorded during these surveys: goshawk and red kite. A pair of goshawk was recorded as breeding within the survey area. This nest lies approximately 600 m from the nearest proposed turbine. During the May survey an adult female was present at the nest and was thought to be incubating. Continued monitoring suggested that the nesting attempt failed at the chick-rearing stage.

11.4.16. Red kite was infrequently recorded during most months of the breeding season but there was no evidence of this species breeding within the survey area.

11.4.17. Despite the significant survey effort, particularly in July and August when detection rates are considered to be highest (Rare Breeding Birds Panel, 2020)44, no honey-buzzards were recorded during the dedicated raptor surveys.

11.4.18. The secondary raptor species recorded were sparrowhawk, kestrel and buzzard. Data recorded during the raptors surveys suggests that both buzzard and sparrowhawk bred within the survey area.

11.4.19. Of the other raptor species recorded during the VP surveys, both merlin and peregrine were recorded once during the breeding season (each on one date in April 2020), and there is no suggestion that these birds bred in the vicinity of the site and they were not recorded during the dedicated raptor surveys.

11.4.20. Raptor surveys shall be repeated in 2021 and shall be undertaken between February and August.

Nightjar Survey

11.4.21. The dedicated surveys recorded a total of 16 males ‘churring’ during June and 12 males in July. All data compiled during territory analysis estimated that 15-20 pairs were present within Y Bryn Wind Farm and buffer. These territories were recorded throughout the northern and southern halves of the site. During the July surveys three nests were located with young present. The results of the dedicated nightjar surveys are shown in Figure 11.6 in the Confidential Annex.

11.4.22. These surveys shall be repeated in 2021.

11.5. Scoping

11.5.1. In order to produce an EIA that focusses on significant effects, rather than including all ecological effects, this section states those ornithological features that shall be carried forward for inclusion within the EIA and those that it is considered can be ‘scoped out’ based upon the baseline survey undertaken in Year 1.

Statutory Sites

11.5.2. The Habitats Directive is largely transposed into law in Wales by the Conservation of Habitats and Species Regulations 2017 which consolidated and repealed the 2010 Habitats Regulations. Under the regulations any development that may have a LSE on an SPA or SAC, either alone or in combination with other

44 http://www.rbbp.org.uk/rbbp-surveys-HZ.htm

projects, requires an AA to be carried out by PINS, to determine whether or not the development would have an adverse effect on the integrity of the SPA or SAC.

11.5.3. Before an AA is initiated, a screening process is undertaken to determine whether any of the predicted impacts of the development will result in a LSE. This screening assessment provides information to PINS to allow them to reach a decision on whether or not the development will have a LSE on any SPA or SAC and therefore whether an AA is required.

11.5.4. Within 25 km of Y Bryn Wind Farm there is one site of international ornithological importance designated for wintering wildfowl and waders:

- Burry Inlet SPA/RAMSAR (c. 22.5 km) to the west of the site.

11.5.5. Given that none of the listed features of the SPA were recorded during the breeding and non-breeding season surveys, it is unlikely that there is connectivity between Y Bryn Wind Farm and the Burry Inlet SPA/Ramsar. However, full consideration will be given towards likely Habitat Regulations Assessment (HRA) requirements in the EIA.

11.5.6. No other SPAs are considered to lie close enough to Y Bryn Wind Farm for there to be connectivity between the listed ornithological features and the Development.

Target Species

Nightjar

11.5.7. Nightjar is a migrant breeder and passage migrant and is BoCC amber listed due to its localised breeding range in the UK. Nightjar also appears on the Welsh Government list of species of principal importance in Wales (the *Section 7* list)45.

11.5.8. From the data gathered during the dedicated nightjar surveys it is estimated that 15-20 breeding pairs were present within Y Bryn Wind Farm and buffer during 2020, with territories recorded throughout the site. Nightjar surveys shall be undertaken again in 2021 to determine baseline conditions in a second breeding season.

11.5.9. Due to the number of breeding pairs and the potential for disturbance/displacement effects during construction and operation, **we would scope in nightjar to the EIA.**

Golden Plover

11.5.10. Golden plover is a resident breeder and wintering migrant in the UK. Golden plover is an Annex 1 species and appears on the Welsh Section 7 species list.

11.5.11. This species was only recorded incidentally during the VP surveys (one record of 28 individuals).

11.5.12. Unless the level of recorded flight activity increases substantially in the second year of VP surveys, to the level required to meet CRM, we would seek to **scope out golden plover from the EIA.**

Woodcock

11.5.13. Woodcock is a resident breeder and winter migrant in the UK and is BoCC red-listed due to breeding range declines.

11.5.14. Two flights (each of individual birds) were recorded during the first year of VP surveys, both during the non-breeding season and both were in height band 1 (below PCH).

45 Available online from: https://www.biodiversitywales.org.uk/Environment-Wales-Bill (last accessed 11.12.20)

11.5.15. Unless the level of recorded flight activity increases substantially in the second year of VP surveys, to the level required to meet CRM, we would seek to **scope out woodcock from the EIA.**

Great black-backed gull

11.5.16. Great black-backed gull is a resident breeder and winter migrant. It is a BoCC amber-listed species due to breeding and non-breeding population declines.

11.5.17. A total of seven flights involving eight individuals were recorded during the breeding season VP surveys; however, following apportioning of the 'large gull' category an estimated 12 individuals were recorded during the breeding season. Three flights (four individuals) were at PCH.

11.5.18. Based upon scoping in species that qualify for CRM, we would **scope in great black-backed gull to the EIA.**

Herring gull

11.5.19. Herring gull is a resident breeder and winter migrant. and is BoCC red listed due to breeding and non-breeding population decline. Herring gull also appears on the Welsh Section 7 species list.

11.5.20. A total of 183 flights were recorded during the breeding VP surveys and a further 16 flights during the non-breeding VP season. There were 313 individuals recorded during the breeding season (479 individuals when incorporating those recorded as 'large gulls'). There were 87 flights (numbering 170 individuals) recorded at PCH in the breeding season, though this species did not qualify for CRM in the non-breeding season.

11.5.21. The level of recorded flight activity for this species during the breeding season allows for conducting CRM. On this basis, we would **scope in herring gull to the EIA.**

Lesser black-backed gull

11.5.22. Lesser black-backed gull is a resident and migrant breeder in the UK and is BoCC amber-listed.

11.5.23. In total 58 flights were recorded during the breeding season VP surveys, numbering 87 individuals (132 individuals following apportioning of 'large gulls'). There were 17 lesser black-backed gull records (31 individuals) at PCH. A single flight was recorded during the non-breeding season, not within PCH.

11.5.24. The level of recorded flight activity for this species allows for conducting CRM during the breeding season. On this basis, we would **scope in lesser black-backed gull to the EIA.**

Goshawk

11.5.25. Goshawk is a former and naturalised breeder in the UK and is a Schedule 1 species.

11.5.26. During the non-breeding and breeding season VPs a total of 17 flights (all single birds) were recorded, of which six were recorded at PCH in the breeding season and one at PCH in the non-breeding season. In 2020 an active goshawk nest was located during the raptor surveys within the site, approximately 600 m from the nearest turbine. There were a further two incidental records made in February and May 2020.

11.5.27. The level of flight activity recorded for this species suggests some collision risk, at least in the breeding season. Also, given the breeding attempt within the site, potential disturbance/displacement effects for this species during construction and operation are also possible. For these reasons, we would **scope in goshawk to the EIA.**

Red kite

11.5.28. Red kite is a resident breeding bird in the UK and is a Schedule 1 and an Annex 1 species.

11.5.29. Collectively 22 flights were recorded during VPs of which five flights (all individuals) were within PCH during the breeding season and two flights (both individuals) were recorded in the non-breeding season. An incidental flight within PCH was also recorded in June 2020.

11.5.30. The level of recorded flight activity in the breeding season qualifies this species for CRM. On this basis, we would **scope in red kite to the EIA.**

Merlin

11.5.31. Merlin is a resident and migrant breeder, passage and winter migrant. Merlin is BoCC red-listed due to its historical decline in population and is a Schedule 1 species.

11.5.32. A single flight was recorded during the breeding season VPs and an incidental flight was also observed in January 2020.

11.5.33. The level of flight activity recorded suggests negligible collision risk for this species and no route to impact as a result of disturbance/displacement. Unless the level of recorded flight activity increases substantially in the second year of VP surveys, to the level required to meet CRM, we would seek to **scope out merlin from the EIA.**

Peregrine

11.5.34. Peregrine is a resident breeder, passage and winter migrant. It is a Schedule 1 species.

11.5.35. A total of three flights were recorded; one during the breeding season and two during the non-breeding season. Only the breeding season flight (one individual) was at PCH.

11.5.36. The level of flight activity recorded suggests negligible collision risk for this species and no route to impact as a result of disturbance/displacement. Unless the level of recorded flight activity increases substantially in the second year of VP surveys, to the level required to meet CRM, we would seek to **scope out peregrine from the EIA.**

Secondary Raptor Species

11.5.37. Buzzard (no species-specific conservation designations) was regularly recorded during the VP surveys with 489 flights. Buzzard is believed to have bred within the survey area. Sparrowhawk (no species-specific conservation designations) is also believed to have bred within the survey area but was much less frequently recorded during VP surveys (total of 23 flights). Kestrel (BoCC Amber-listed and on the Section 7 list) was also infrequently recorded the VP surveys and showed no evidence of breeding within the survey area.

11.5.38. Turbine collision is a potential risk for these species, however, any such effects are considered unlikely to have any more than a local impact on these populations.

11.5.39. Given the relatively low predicted potential impact of collision effects, and very localised disturbance/displacement effects, we would **scope out buzzard, kestrel and sparrowhawk from the EIA**.

Other Secondary Species

11.5.40. Raven (no conservation designations) was regularly recorded during baseline VP surveys, with 436 flights recorded. Canada goose, mallard and grey heron were only recorded sporadically, with all species recorded less than 10 times in the year of VP surveys.

11.5.41. Turbine collision is a potential risk for species such as raven, however, any such effects are considered unlikely to have any more than a local impact on these populations.

11.5.42. Given the relatively low predicted potential impact of collision effects (or of disturbance/displacement effects) we would **scope out other secondary species from the EIA**.

Passerine Species

11.5.43. Of the passerine species recorded as breeding on site during the BBS, those that appear on the Welsh Section 7 species list are: cuckoo, lesser redpoll, marsh tit, skylark, song thrush and tree pipit. In addition, common crossbill (a Schedule 1 species) was noted during VP surveys (less than five flights) and may breed within the plantation forestry.

11.5.44. Passerines are not considered to be significantly affected by collision with turbines. As such, it is expected that there will be no significant population level impact of collisions on these species as a result of construction and operation of the proposed Development. The effect of disturbance/displacement on passerine species is also considered to be minimal at a population level and we would seek to **scope out all passerines and near-passerines (except nightjar) from the EIA**.

11.6. Proposed Mitigation and Enhancement

11.6.1. To minimise impacts and comply with legislation, appropriate mitigation measures will be adopted to minimise potential effects on ornithological features, specifically breeding birds, during the construction phase. This will include pre-construction surveys to be conducted to identify locations of breeding birds and will be repeated throughout construction as necessary.

11.6.2. Baseline surveys will be used to inform additional suitable mitigation, for example specific measures to protect nightjar.

11.6.3. The following general mitigation measures will be required for birds:

- Pre-felling and pre-construction surveys will be required to identify any Schedule 1 bird species nest sites (e.g. goshawk) in the breeding season before felling/construction works commence;
- Where possible all tree felling will be undertaken outside of the main breeding bird season (i.e. February to July inclusive). Where this is not possible, trees would only be felled during this period following an assessment by an ornithologist as to the likelihood that birds are nesting within the felling area. In practice, with densely planted Sitka spruce it can be very difficult, if not impossible, to determine categorically and therefore shall be judged on a precautionary basis.
- In addition to the Schedule 1 bird species pre-construction surveys, in advance of works commencing during the main bird breeding season all works areas will be checked by the site ecologist/ornithologist for the presence of any nesting birds.

11.6.4. The above measures shall be applied to new infrastructure in Y Bryn Wind Farm as well as improvement works to existing infrastructure (e.g. upgrading of roads and tracks) and for new or upgraded grid connection routes.

11.6.5. In addition, opportunities for providing biodiversity net gain through enhancement measures above and beyond base offsetting mitigation will be sought, both within and off-site.

11.7. Summary

Ornithological Features Proposed for Assessment within the EcIA

11.7.1. In order to ensure compliance with the EIA Directive, and to ensure that the EcIA is focussed on potentially significant effects only, we propose that only those important ornithological features and impacts identified in Table 11.13 be assessed within the relevant EIA.

Table 11.13: Features and impacts to be assessed within the EIA

Ornithological Feature	Impact	Assessment
Nightjar	Disturbance/displacement	EcIA
Great black-backed gull	Collision	EcIA, including CRM
Herring gull	Collision	EcIA, including CRM
Lesser black-backed gull	Collision	EcIA, including CRM
Goshawk	Collision & Disturbance/displacement	EcIA, including CRM
Red kite	Collision & Disturbance/displacement	EcIA, including CRM

11.7.2. It is acknowledged that the second year of baseline surveys may identify additional ornithological features not listed in Table 11.13 that should be considered for assessment (for example if VP surveys record flights/individuals that reach the threshold for undertaking CRM or if a target raptor species breeds on site). Similarly, ornithological features may be brought to light in a data search, that have not previously been highlighted. Thus Table 11.13 is based upon the data available after one year of baseline surveys but should be considered indicative of the approach that shall be taken to EcIA.

List of Questions for Consultees

Question 8: Are consultees satisfied with the coverage provided by the vantage point locations?

Question 9: Are consultees satisfied with the ornithology surveys proposed for a second year of baseline recording (i.e. a full year of VP surveys at standard effort (36hrs per season: September to February and March to August), raptor surveys (February to August) nightjar surveys (June and July) and with no repeat of the breeding bird survey)?

Question 10 Do consultees agree with those ornithological features that have been highlighted for assessment within EIA and those that have been 'scoped out'?

Question 11: Are there any other key ornithological features that consultees believe should be considered that have not been discussed above?

Question 12: Do consultees consider any Natura 2000 not discussed above as requiring consideration as part of screening for AA?

Question 13: Do consultees see value to any particular mitigation and/or enhancement measures for any local or regional species, whether referred to above or otherwise?

12. Landscape and Visual Impact Assessment (LVIA)

12.1. Introduction

12.1.1. The intention of this section of the scoping report is to provide PINS and its consultees with sufficient information (where it currently exists) on the likely impacts of the proposed Y Bryn Wind Farm on the physical landscape within the site boundary, as well as the wider effects on landscape character and visual amenity within the study area.

12.1.2. Baseline survey work to inform EIA, commenced in September 2020. Specialist landscape consultant, Soltys Brewster Consulting Limited carried out a desk-based review of landscape related designations, policy and LANDMAP to identify areas of potential sensitivity to change as a result of the development of the proposed Y Bryn Wind Farm. Viewpoints are proposed throughout the study area to demonstrate

potential visual effects. Preliminary site visits were undertaken in October 2020 to ensure suitability of the locations selected. As a result of the desk-based review and site visit representative landscape and visual receptors that could sustain positive or negative impacts as a result of the proposed Y Bryn Wind Farm have been identified.

12.1.3. As noted in paragraph 3.1.2, the proposed wind farm currently comprises a total of 26no.turbines to a maximum tip height of 250 m. In order to assess the worst-case scenario in terms of effects on landscape character and visual amenity, the turbine model used in the assessment will be based on the maximum hub height currently available for the tip height proposed for the application.

Question 14: Do consultees agree that assessing the maximum hub height available for the tip height in question is appropriate?

12.2. Guidance

12.2.1. The assessment will adopt a methodology developed in accordance with the following current guidance:

- Guidelines for Landscape and Visual Impact Assessment, Third Edition. Landscape Institute with the Institute of Environmental Management and Assessment (2013);
- Assessing the Cumulative Impact of Onshore Wind Energy Developments, SNH, (March 2012);
- A Guide to the Assessment of Cumulative Effects of Wind Farm Developments, ETSU/DTI (2000);
- Siting and Designing Wind Farms in the Landscape, Version 3, SNH (2017);
- LANDMAP Information Guidance Note 3: LANDMAP, Using LANDMAP for Landscape and Visual Impact Assessment of Onshore Wind Turbines: Natural Resources Wales (2013);
- Visual Representation of Wind Farms, Version 2.2, SNH (February 2017);
- Visual Representation of Development Proposals – Technical Advice Note 06/19, Landscape Institute (November 2011), including supporting Technical Information Notes 07/19, 08/19 and 09/19.
- TGN2/19 Residential Visual Amenity Assessment (RVAA), Landscape Institute, March 2019.

12.3. Scope

12.3.1. The Landscape and Visual section of the EIA will assess effects on the physical landscape within the site boundary, together with the wider landscape character and visual amenity within the study area. A study area of 45 km from the outermost proposed wind turbine will be adopted. The LVIA will assess the construction phase of the wind farm, the operational phase which would last up to 50 years.

Question 15: Do you agree with the proposed size of the study area?

12.3.2. Landscape and visual assessments are separate, although linked, procedures. Landscape effects derive from changes in the physical baseline landscape, which may give rise to changes in its character and how this is experienced. Visual effects relate to changes that arise in the composition of available views as a result of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity.

Landscape Effects

12.3.3. Direct landscape impacts comprise changes to the physical baseline landscape resulting directly from the development itself. These will likely arise as a consequence of changes to the existing pattern of landform, vegetation, habitats and other features through the imposition of turbines, access tracks and other associated infrastructure. Effects will be assessed using a combination of relevant site-based investigations and surveys to inform the baseline study and field work.

12.3.4. Indirect landscape impacts result from consequential change resulting from the development and are often produced away from the site of the proposed development or as a result of a complex pathway or secondary association and will include changes to the landscape character within the study area. Landscape character will be assessed using LANDMAP and site assessment field work, supplemented by Landscape Character Assessments where these are available.

12.3.5. The LVIA will include a review of available LANDMAP data. Aspect layers for Geological Landscapes and Landscape Habitats will be considered within a study area of between 2.5 km and 5 km, Historic and Cultural aspect layers will be considered within a study area of between 5 km and 15 km. Landscape and Visual Aspect Layers will be considered within the 45 km study area. Aspect areas evaluated as outstanding or high overall will be described and considered in more detail to enable the LVIA to focus on pertinent matters. An appendix will also be provided of all aspect areas within the study areas to supplementary information to the focus of the assessment. Landscape Character Areas (LCAs) will then be identified to form a baseline against which to assess effects as a result of the development of the proposed Y Bryn Wind Farm.

12.3.6. Landscape-related designations and policy reflect the different levels of importance attached to landscapes within the study area. The Landscape and Visual section will consider effects upon Statutory and Non-Statutory policy, and designated landscapes at National and Local levels within the study area, including the following:

National.

- Brecon Beacons National Park (BBNP).
- Gower Area of Outstanding Natural Beauty (AONB).
- Margam Park – Grade 1 status Registered Parks and Gardens of Special Historic Interest in Wales (RPG).

Local Policy: Neath Port Talbot County Borough Council (CBC) Local Development Plan (LDP) (Adopted January 2016)

- Special Landscape Area (Policy EN2).
- Landscape of Historic Interest (Policy SP21/4a).
- Bridgend CBC LDP (Adopted September 2013).
- Special Landscape Area (Policy ENV3.
- Historic Landscapes (SP5).
- Historic Parks/Gardens (SP5).
- Historic Parks/Gardens Essential Settings (SP5).

Other/Non-Statutory

- Margam Mountain Registered Landscape of Special Historic Interest (HLW).
- Glamorgan Heritage Coast.

12.3.7. The LVIA will consider visual effects from designated footpaths, bridleways and open access land. This will include the following long-distance routes within the 45 km study area, subject to analysis of the ZTV to identify sections likely to experience significant visibility, as well as distance from the proposed Y Bryn Wind Farm:

- Wales Coast Path.
- Ogwr Ridgeway Walk.
- St Illtyd's Walk.
- Coed Morgannwg Way.

- Beacons Way.
- Gower Way

12.3.8. The LVIA will also consider effects on transport corridors, including scenic driving routes, tourist attractions, heritage areas and cycle routes. Relevant transport corridors and attractions within the study area that will be assessed will include:

- The M4 Motorway.
- 'A' roads including the A4107 and A1063.
- National Cycle Network (NCN) cycle routes.
- Afan Forest Park, including the Glyncorrwg Mountain Bike Centre and Visitor Centre.
- Seafront locations along the South Wales Coast, including The Mumbles, Black Pill, Aberavon, Porthcawl and Ogmore-by-Sea.

Visual Effects

12.3.9. Visual impacts relate to the changes that arise in the composition of available views as a result of changes to the landscape resulting from the proposed Y Bryn Wind Farm. The LVIA will consider people's responses to the changes, and to the overall effects with respect to visual amenity. Twenty-two viewpoints will be assessed within the LVIA to enable an evaluation to be made regarding visual impacts and effects. These are listed in Table 12.1, together with a brief reason for their inclusion.

Table 12.1: Viewpoint Locations

VP No.	Location	Distance to nearest proposed turbine (km)	Easting	Northing	Reason for Inclusion of Viewpoint
1	Evans Terrace, Caerau.	2.04	285605	193878	NCN Route 885. Residents of Caerau. Users of Public Open Space (P.O.S).
2	Maesteg Golf Course.	0.95	283621	191607	Public Footpath. Recreational users (Golf).
3	Bryn, (Play area, off Neath Road).	1.49	281347	192438	Users of P.O.S. Residents of Bryn.
4	Brynna Road, Cwmafan.	4.28	277535	192500	Residents of Cwmafan. Users of P.O.S.
5	Rhiwlas, Neath	9.41	274240	198775	Residents of Rhiwlas. Users of P.O.S. Road users.
6	Mumbles Hill, Swansea.	17.96	262781	187443	Users of Public Footpath/Open Access Land. AONB.
7	Gower Way National Trail, Cefn Bryn	31.24	249418	189883	Users of Public Footpath, (Gower Way National Trail). AONB.

VP No.	Location	Distance to nearest proposed turbine (km)	Easting	Northing	Reason for Inclusion of Viewpoint
8	Margam Park, (Deer Park).	2.25	281391	186391	Users of Public Footpath (St.Illtyd's Walk/Ogwr Ridgeway Walk. RPG HLW.
9	Ogof-Ffynnon-Ddu, (BBNP).	22.33	287452	216032	Users of Public Footpath (Beacons Way). Open Access Land. BBNP.
10	St Illtyd's Way National Trail, near Cynonville.	1.60	281835	195244	Users of Public Footpath (St Illtyd's Way).
11	Wales Coast Path, Ogmore-by-Sea	13.77	286147	175099	Users of Public Footpath (Wales Coast Path). Residents of Ogmore-by-Sea.
12	Twmbarlwm.	40.56	324198	192624	Open Access Land.
13	Junction of Heol Gelli Lenor and Brynllywarch, Maesteg	2.17	284793	190339	Residents of Maesteg. Road users
14	Swansea Promenade, Black Pill.	18.70	261996	190610	Public Open Space. Wales Coast Path.
15	Clwyd Road, Pen-Lan, Swansea.	17.24	264710	195785	Public Open Space. Residents of Pen-Lan. Road users.
16	The Princess Margaret Way, Aberavon	6.90	273832	190276	Public Open Space. Wales Coast Path. Residents of Aberavon. Road users.
17	Margam Park.	2.86	280636	186001	Visitors to Country Park. RPG. HLW.
18	Pen-y-Fan, BBNP.	32.72	301202	221547	Public Footpath, (Beacons Way). Open Access Land. BBNP.
19	Wales Coast Path, Rest Bay/Royal Porthcawl Golf Club, Porthcawl.	10.06	279987	178709	Public Footpath (Wales Coast Path). Open Access Land. Recreational users, (Golf Club).
20	Bridgend Circular Walk, Bryncoch.	9.51	290961	183470	Public Footpath (Bridgend Circular Walk).

VP No.	Location	Distance to nearest proposed turbine (km)	Easting	Northing	Reason for Inclusion of Viewpoint
21	Sarn Helen, Aberdulais.	8.74	279397	201980	Public Footpath/Byway. Open Access Land.
22	Baxter Terrace, Glyncorrwg	6.74	287625	199343	Residents of Glyncorrwg. Road users.

Source: Soltys Brewster

12.3.10. Viewpoints 1 to 22, listed above in Table 12.1, were selected following a desk-based study, which included the production of zones of theoretical visibility (ZTV) mapping to indicate areas of theoretical visibility (on a 'bare earth' model) for Y Bryn Wind Farm. Each viewpoint was then visited, and the position refined to ensure adequate visibility and to take account of local conditions, including intervening vegetation, buildings and other structures. The viewpoints are intended to be broadly representative of the landscape character and visual sensitivities of the study area. They are not intended to cover all areas and receptors from where views may be possible, but are a sample designed to represent a 'balanced' range of receptors, (including footpath users, road users and residents of settlements), distances, elevations and directions within the study area.

12.3.11. The viewpoints will illustrate:

- areas of notable visibility, as identified on the preliminary ZTV (Figure 12.1). Wherever possible, viewpoints have been selected and micro-sited to display the worst-case scenario, (i.e. within the range of 24-26 number of turbines likely to be visible on the ZTV).
- Typical views from valued, designated landscapes, including the Brecon Beacons National Park to the north, the Gower AONB to the east and Margam Park RPG, to the south.
- Key recreational routes and public footpaths across the study area, including the Wales Coast Path, St Illtyd's Way and the Ogwr Ridgeway Walk.
- Residential areas including the major settlements of Swansea, Bridgend, Neath and Port Talbot, as well as smaller settlements nearer the proposed Y Bryn Wind Farm, including Bryn, Maesteg and Cwmafan. Relevant viewpoints and supporting text included with the LVIA will focus on public views and public visual amenity within residential settlements.

12.3.12. A separate Residential Visual Amenity Assessment (RVAA) for properties up to 1.5 km from the outermost turbines of the proposed Y Bryn Wind Farm will be produced and provided as a separate appendix to the LVIA. This will focus on private views and private visual amenity from residential properties and will comply with LI Technical Guidance Note 2/19.

12.3.13. A fully navigable 3D model, incorporating terrain data; aerial and OS imagery; tree location and height data; building location, shape and height data; and wind turbine (including cumulative) location and dimension information has been procured by the applicant and will be utilised to assist in the design and assessment of the proposed wind farm development.

Question 16: Do consultees agree with the number, location and receptor types that have been selected as the representative viewpoints in order to assess the effects on visual amenity within the study area?

Design

12.3.14. The design of the proposed wind farm development will aim to achieve a coherent and structured form, in line with guidance provided by the Welsh Government and NatureScot. The ES will present the rationale behind the final design strategy. The objective in designing the wind farm will be to develop a layout that accords with its setting in terms of landform and pattern, and which presents a simple visual image, avoiding where possible the clustering of turbines and the isolation of outlying turbines in views from key locations, whilst recognising that the final layout will need to balance a wide range of technical, ,environmental and economic considerations.

12.3.15. All elements of the proposed wind farm infrastructure will be considered in terms of locational and design choice, and the LVIA will set out how the design of ancillary elements has evolved to minimise visual impact, especially from nearby and sensitive visual receptors.

12.3.16. A brief high-level appraisal/summary description of the potential landscape and visual effects associated with the grid connection will be provided within the LVIA. The level of detail provided will depend upon the nature of the grid connection (i.e. underground cable or overhead line). It is likely that export infrastructure associated with the grid connection within the proposed site will be located underground and, therefore, photomontages and wireframe supporting illustrations will include turbines only.

12.3.17. Aviation lighting will be considered within the LVIA. This is subject to further consideration to understand likely requirements, including responses from aviation consultees. It is likely that a ZTV for lighting will be produced in the first instance and a methodology developed to assess effects following this. A number of methods to mitigate the effects of lighting are available. These will be explored post scoping.

12.3.18. At the end of the operational phase, the wind farm will be decommissioned in line with the agreed decommissioning method statement via planning condition. Decommissioning will involve the removal of all above ground infrastructure, including the turbines. Access tracks will likely be left in-situ subject to agreement via planning condition. The changes to the landscape arising during the decommissioning of the wind farm will be very similar to those arising during construction, following which the site will return to approximately its pre-construction condition, (subject to decommissioning method statement).

12.4. Methodology

12.4.1. In accordance with best practice guidance and in order to provide a less prescriptive approach through an emphasis on creating a narrative approach to describing the landscape and visual effects and judgements made on their significance, the assessment will follow the methodology set out below. This is based on criteria for determining effects on landscape character and visual amenity, as outlined in the tables that follow.

Landscape Character Significance

12.4.2. The significance of effects on landscape character will be determined in part by combining the sensitivity of the Landscape Character Area with the magnitude of change that would occur. The criteria for informing the sensitivity, magnitude and the significance of effects on landscape character are demonstrated in the following tables:

Table 12.2: Landscape Sensitivity

Sensitivity	Description
High	A landscape **highly sensitive** to wind farm development of the size proposed, by virtue of the inherent physical form and elements, aesthetic and perceptual qualities that form its character. The landscape will be unique, rare, contain valued features and will be designated at a national or local level. The landscape may be highly susceptible to change and considered to be of high value.
Medium	A landscape where a wind farm development of the size proposed may be **accommodated** to some degree without affecting overall character, by virtue of its inherent physical form and elements, aesthetic and perceptual qualities. The landscape may display some characteristics and features that are considered to be of high susceptibility and/or value and may be designated at a local level, although not exclusively so.
Low	A landscape where a wind farm development of the size proposed may be more **readily accommodated**, by virtue of its inherent physical form and elements, aesthetic and perceptual qualities that form its character. The landscape may be of generally low susceptibility to change and of low value.

Source: Soltys Brewster

Table 12.3: Magnitude of Landscape Effects

Magnitude	Description
High	The proposed development would result in **substantial loss or major alteration to key elements** of landscape character to the extent that there is a fundamental and permanent change to landscape character. The change may occur over an extensive area.
High - medium	The proposed development would result in **major loss or alteration to key elements** of landscape character to the extent that there is a considerable change. The change may occur over a wide area and for a duration extending into the foreseeable future.
Medium	The proposed development would result in the **loss or alteration to key elements** of landscape character to the extent that there is a partial change to landscape character that may have a duration extending into the long term. The change may occur over a notable area.
Medium - Low	The proposed development would result in **minor loss or alteration to key elements** of landscape character to the extent that there is a slight change to landscape character. The change may be temporary or occur over a limited area.
Low	The proposed development would result in **such a minor loss or alteration to key elements** of landscape character that there would be **no fundamental change**.

Source: Soltys Brewster

Table 12.4: Significance of Landscape Effects

Significance	Description
Major	The development would have direct effects upon characteristic landscape features, altering elements of the landscape that contribute toward distinct character. The proposed development is likely to become a defining landscape element across a significant proportion of the LCA. Characteristic features affected or substantially influenced may include topography, woodland, prominent hedgerows or other

Significance	Description
	dominant land cover features. The development is likely to become the **defining** landscape element.
Major/Moderate	The development is likely, although not exclusively, to have direct effects upon characteristic landscape features, resulting in changes to elements of the landscape that contribute toward its distinct character. The proposed development is likely to become a **prominent**, but not necessarily defining landscape element across a wide area of the LCA.
Moderate	The proposed development may be a characteristic component of landscape character, the alteration of which may influence key attributes to the extent that changes to the character of the landscape are noticeable. The development, however, **would not become a defining** landscape element. Effects may be direct or indirect and extend across a notable proportion of the LCA. Landscape character may be **equally defined** by the development and other **existing landscape attributes**.
Moderate/ Minor	Where the proposed development can be integrated into the existing landscape, without the loss of key underlying landscape attributes. Effects are likely to be indirect and extend across a limited area of the LCA. The proposed development would have **little, or no effect** on existing landscape character.
Minor	The development would be integrated into the existing landscape **without having a material effect** upon the distinctive and valued landscape characteristics.

Source: Soltys Brewster

12.4.3. Effects determined to have major or major/moderate landscape significance will be considered to be **significant**. Conversely, where it is determined that effects are moderate/minor or minor will be considered **not significant**.

12.4.4. Where effects are determined to be of moderate significance, whether these effects are significant or not significant will depend on the individual and specific mitigating circumstances and the professional opinion of the landscape specialist will determine this.

Visual Amenity Significance

12.4.5. The significance of effects on visual amenity will be determined by combining the sensitivity of the visual receptors with the magnitude of visual change that would occur. The criteria for informing the sensitivity, magnitude and the significance of effects on visual amenity are demonstrated in the following tables:

Table 12.5: Sensitivity of Visual Receptors

Sensitivity	Description
High	Receptors highly responsive to new visual elements of the type proposed, by virtue of their location, nature and/or existing visual qualities and elements. Receptors would be **highly susceptible to change** and considered to be at a location that may be valued for its views. Receptors would typically include occupiers of residential properties and people engaged in recreational activities in the countryside such as using public rights of way.
Medium	Receptors are able to accommodate some new visual elements of the type proposed, by virtue of their location, nature and/or existing visual qualities and elements. Receptors may be **susceptible to change**, although may not be at a location valued for its views. Receptors would typically include people engaged in outdoor sporting activities and people travelling through the landscape on minor roads and trains.

Sensitivity	Description
Low	Receptors are able to accommodate a high degree of new visual elements of the type proposed, by virtue of their location, nature and/or existing visual qualities and elements. Receptors are **unlikely to be highly susceptible to change** or at a location of valued for its views. Receptors would typically include people at place of work and people travelling through the landscape on A roads and motorways.

Source: Soltys Brewster

Table 12.6: Magnitude of Visual Effects

Magnitude	Description
High	The proposed development would be an **immediately apparent feature** that would occupy a wide proportion of the view, contrasting with existing built features within the view. It would affect and change the overall appearance of the view and to which other features would become subordinate. Development is likely to be visually dominant. Views of the development are likely to be from close distance and long in duration.
High - medium	The proposed development would be an **apparent feature** that is likely to occupy a significant proportion of the overall view. The development may contrast with existing features within the landscape. The proposed development is likely to be visually prominent to the extent that it would affect and change the appearance of a number of key existing elements within the view. Views are likely to be medium to short distance and long in duration.
Medium	The proposed development would form a **recognisable new element** within the overall view and would be readily observed without changing the overall nature of the view. Overall quality of the view may remain intact. Development is likely to be visible although not prominent. Views are likely to be medium distance and moderate in duration.
Medium - Low	The proposed development would form a **component of the wider view** that might be missed by the casual observer. Awareness of the development would not have a marked effect on the overall quality of the view. Development may be visible although not prominent. Views are likely to be medium to long distance and glimpsed or brief in duration.
Low	The proposed development would be **barely perceptible, or imperceptible**, and would have no marked effect on the overall quality of the view. Development is unlikely to be visible or restricted to long distance views that would be glimpsed or very brief in duration.

Source: Soltys Brewster

Table 12.7: Significance of Visual Effects

Significance	Description
Major	The proposed development would affect existing views to the extent that **defining visual elements would become subservient within the view**. When viewed within the context of the landscape, the proposed development is likely to be seen to conflict with existing visual amenity. Receptors are likely to be categorised as being of high sensitivity.
Major - Moderate	The proposed development would be **visually prominent**, which may lead to the loss of some essential landscape features which contribute to the visual character or quality of the view. Receptors are more likely to be categorised as being of medium or high sensitivity.
Moderate	The proposed development would result in **some alteration to landscape features** which contribute to the existing visual character or quality, but the overall integrity of the landscape and its visual qualities are maintained. The proposed development may be suitably absorbed or accommodated within the view alongside existing visual elements. Receptors are likely to be categorised as being of medium sensitivity.
Moderate - Minor	The proposed development would be **visually integrated within the existing landscape without the loss of essential landscape features** which contribute to the visual character or quality of the view. Receptors are more likely to be categorised as being of medium or low sensitivity, although not exclusively so.
Minor	The development would be **integrated into the existing landscape** without having a material effect upon the distinctive and valued characteristics of the view. Receptors are likely to be categorised as being of low sensitivity.

12.4.6. Viewpoint locations from where effects are determined to have **major** or **major - moderate** visual significance will be considered to be **significant**. Conversely any locations where it is determined that visual effects are **minor** or **moderate - minor**, visual effects will be considered not significant.

12.4.7. Where effects are determined to be of moderate significance, whether these effects are significant or not significant will depend on the individual and specific mitigating circumstances relating to each viewpoint and the professional opinion of the landscape specialist will determine this. For example, effects from a particular viewpoint may be considered to be of moderate visual significance. However, the broad nature of the view in which the proposed development would be seen may reduce these effects to an extent where effects would still be considered to be moderate though not considered to be significant.

Cumulative

12.4.8. In addition to assessing the individual effects of the proposed wind farm on landscape character and visual amenity the LVIA will also asses the cumulative effects of existing, consented, and those wind farms submitted for planning.

12.4.9. Given the large number of wind farm developments within the 45 km study area, the criteria outlined below is proposed to be applied in order that the assessment be focussed on only the wind farm developments that are likely to contribute to significant cumulative effects on landscape character and visual amenity:

- All existing, consented and submitted turbines within a 5 km radius of the outer most Y Bryn turbine.

- All existing, consented and submitted turbines with a blade tip height of 30 m or more within a 5 – 15 km radius of the outer most Y Bryn turbine.
- All existing, consented and submitted turbines with a blade tip height of 60 m or more within a 15 – 25 km radius of the outer most Y Bryn turbine.
- All existing, consented and submitted turbines with a blade tip height of 90 m or more within a 25 – 35 km radius of the outer most Y Bryn turbine.
- All existing, consented and submitted turbines with a blade tip height of 120 m or more within a 35 – 45 km radius of the outer most Y Bryn turbine.

12.4.10. It is proposed that the same viewpoints used to assess the individual effects on visual amenity as listed in Table 12.1 above, will be used to illustrate cumulative effects. Cumulative wind farms to be included within the LVIA, based on the methodology described above and on current information are listed in Table 12.8:

Table 12.8: Cumulative Wind Farms

Name	Distance to nearest Y Bryn turbine (km)	No. of Turbines	Hub Height	Tip Height
Operational				
Taff Ely	14.97	20	35	53.5
Maesgwyn	13.48	13	70/80	110-125
Maesgwyn Ext	14.16	1	80	125
Maerdy	12.84	8	80	125
Ferndale	14.95	8	51	76
Mynydd Bwllfa	13.81	12	70/80	115/125
Mynydd Brombil	1.63	4	60	100
Pant-y-Wal	11.89	10	70	115
Pant-y-Wal Ext	10.90	8	80	125
Llynfi Afan Renewable Energy Park	4.37	12	78	118
Pen-y-Cymoedd	2.92	76	89.5	143.5
Ffynnon Oer	4.12	16	58	93
Fforch Nest1/2	12.41	11	70	115
Mynydd Portref	16.06	11	49/60	75/86
Mynydd Portref Extension	16.8	6	70	110
Mynydd-y-Gwair (resubmission)	20.51	16	80	127
G24 Innovations Turbine	41.59	1	95	140
Mynydd y Gwrhyd (resubmission)	19.51	2	59	100
Oakdale Business Park	3.6	2	80	130
Pen Bryn Oer	32.54	3	71.5	110

Name	Distance to nearest Y Bryn turbine (km)	No. of Turbines	Hub Height	Tip Height
West of Rhiwfelin Fach Farm	20.77	1	61.5	77
Consented				
Graig Fatha	18.58	1	75	125
Llwyncelyn	19.84	2	75	125
Llwyncelyn (resubmission)	19.84	2	80	138.5
Maesgwyn Extension (Phase 2)	13.15	4	80	125
Taff Ely (Repowering)	15.09	7	69	110
In Planning				
Foel Trawsnant	0.20	11	100	145
Upper Ogmore	6.96	7	77.5	130

Source: Soltys Brewster/Natural Power Consultants

*If any of the cells are left blank it's because we were unable to source the data.

Question 17: Do consultees agree with the methodology used to determine which wind farms are to be included within the cumulative assessment and also agree with the list provided in Table 12.8?

12.4.11. The significance of cumulative effects on landscape character will be determined by combining the sensitivity of the Landscape Character Area with the magnitude of cumulative change that would occur. Note that sensitivity in respect of cumulative effects would be the same as identified for individual effects and therefore the same criteria as identified in Table 12.2 would be applied. The criteria for informing the magnitude and the significance of cumulative effects on landscape character are demonstrated in the following tables:

Table 12.9: Magnitude of Cumulative Landscape Effects

Magnitude	Description
High	The combined effects of the proposed development and other cumulative wind farm developments would result in **major loss of, or major alteration** to key elements of the landscape, to the extent that there would be a **fundamental and permanent, or long-term, change** to its character. The change may occur over an extensive area.
High - medium	The combined effects of the proposed development and other cumulative wind farm developments would result in **significant loss of, or major alteration** to key elements of the landscape, to the extent that there would be **a significant and permanent, or long-term, change** to its character. The change may occur over a large area.
Medium	The combined effects of the proposed development and other cumulative wind farm developments would result in the **loss of or alteration** to key elements of the landscape, to the extent that there would be a **partial long-term change** to its character. The change may occur over a limited area.

Magnitude	Description
Medium - Low	The combined effects of the proposed development and other cumulative wind farm developments would result in a **loss, or alteration** to key elements of the landscape, to the extent that there may be some **slight perception of change** to its character. The change may be temporary and occur over a limited area.
Low	The combined effects of the proposed development and other cumulative wind farm developments would result in such a **minor loss of or alteration** to key elements of the landscape that there would be **no fundamental change** to its character.

Source: Soltys Brewster

Table 12.10: Significance of Cumulative Landscape Effects

Significance	Description
Major	Effects that would occur when the majority of landscape attributes are deemed to be highly sensitive and the combined cumulative effects of the proposed development and other cumulative developments would **alter** the landscape character to the extent that it would become **defined or considerably influenced** by the presence of wind farm developments, taking account of cumulative baseline conditions.
Major - Moderate	Effects that would occur when the a number of landscape attributes are deemed to be highly sensitive and the combined cumulative effects of the proposed development and other cumulative developments would **partially alter** the landscape character to the extent that it would become **influenced** by the presence of wind farm developments, taking account of cumulative baseline conditions.
Moderate	The significance of cumulative effects would decrease as the number of sensitive landscape attributes also decreases. The proposed development and other cumulative developments may still be **easily noticeable**, but their combined effects would not cause the landscape character to become more defined by wind farm developments than by other landscape attributes.
Moderate - Minor	Effects that would occur when the majority of landscape attributes are not deemed to be highly sensitive and where the proposed development and other cumulative development can be **integrated into the existing cumulative baseline**, without the loss of key underlying landscape attributes.
Minor	Effects that would occur when the landscape attributes are **not deemed to be highly sensitive** and where the combined effects of the proposed development and other cumulative developments would have **no effect on the existing landscape attributes.**

Source: Soltys Brewster

12.4.12. The significance of cumulative effects on visual amenity will be determined by combining the sensitivity of the visual receptors with the magnitude of cumulative change that would occur. Note that sensitivity in respect of visual receptors would be the same as identified for individual effects and therefore the same criteria as identified in Table 12.5 would be applied. The criteria for informing the magnitude and the significance of cumulative effects on visual amenity are demonstrated in the following tables:

Table 12.11 Magnitude of Cumulative Visual Effects

Magnitude	Description
High	Cumulative development including the proposed development would increase the scale of wind farm development in the landscape to a level which would dominate views.

Magnitude	Description
High - medium	The proposed development when viewed in combination with other cumulative developments would be an apparent feature that is likely to occupy a significant proportion of the overall view. The development and other cumulative developments may contrast with existing features of the landscape. Wind farm development is likely to be visually prominent to the extent that it would affect and change the appearance of a number of key existing elements within the view. Views are likely to be medium to long distance and long in duration.
Medium	Cumulative development including the proposed development would result in a noticeable increase in wind farms within the view. However, this increase would not result in the wind farms being the dominant feature of the view.
Medium - Low	Cumulative development including the proposed development would be visible but would form components of the view that might be easily missed by the casual observer. They would not contribute to the overall prominence of wind farms within the view.
Low	Cumulative development including the proposed development would be barely perceptible, or imperceptible, and would have no effect on the perception of wind farms within the view.

Source: Soltys Brewster

Table 12.7: Significance of Cumulative Visual Effects

Significance	Description
Major	Effects that would occur when the majority of visual receptors are deemed to be highly sensitive and the combined effects of the proposed development and other cumulative developments would result in the view becoming **defined**, or **considerably influenced** by wind farm development.
Major - Moderate	The proposed development when viewed in combination with other cumulative developments would be visually prominent, which may lead to the **loss of some essential landscape features** which contribute to the visual character or quality of the view. Receptors are more likely to be categorised as being of medium or high sensitivity.
Moderate	The significance of effects would decrease as the number and sensitivity of visual receptors also decreases. The proposed development and other cumulative wind farms may still be a noticeable addition to views. However, their combined effects would not cause the overall visual character of the view to become defined by wind farm development rather than by other elements of the existing view.
Moderate - Minor	Effects that would occur when the majority of visual receptors are not deemed to be highly sensitive and where the combined effects of the proposed development and other cumulative wind farms would have little or no incremental effect on existing views. They are likely to constitute a barely perceptible, or imperceptible, component of the wider view, which might be missed by the casual observer. Awareness of the proposed development and other cumulative wind farms would not have a marked effect on the overall quality of the view.
Minor	Effects that would occur when the visual receptors are not deemed to be highly sensitive and where the combined effects of the proposed development and other cumulative wind farms would have no incremental effect on existing views.

Source: Soltys Brewster

LVIA Outputs

12.4.13. The following figures will be produced to assist in assessing and illustrating any changes in the effects on landscape character and visual amenity.

- Statutory and Non-Statutory Landscape Designations.
- Access and movement, including key transport routes, cycle routes, national/scenic routes and long-distance trails.
- LANDMAP plans for each of the five Aspect Areas, (LANDMAP Guidance note 3 (2017)).
- Character Areas.
- Viewpoint Location Plan (1 to 22).
- ZTV to blade tip height to illustrate any changes in theoretical visibility within the 45 km study area, presented at A1 size format.
- ZTV to hub height to illustrate any changes in theoretical visibility within the 45 km study area, presented at A1 size format.
- Viewpoint visualisations, to be produced following published guidance, from each of the 22 viewpoints to include:
  - baseline photograph and matching wireline (including cumulative developments),
  - photomontages, (from 10no. viewpoints – locations to be agreed with statutory consultees).
- Cumulative wind farm location plan.
- Cumulative ZTV (Blade Tip only) at A1 size format. Separate plans will be prepared to show the relationship of the Proposed Y Bryn Wind Farm, in combination with operational wind farms, consented wind farms, and wind farms in planning.
- Aviation lighting ZTV and associated figures.
- Key aviation lighting night-time visualisations.
- Residential Impact Assessment (RVAA).

12.4.14. Note that the photomontages will illustrate removal of forestry associated within the wind farm (if visible) only. Forestry removal as shown on NRW's Forestry Design Plan or not directly associated with Y Bryn Wind Farm that lie outside of the site boundary will not been shown on the photomontages. However, any potential effects of this removal on landscape character and visual amenity will be described within the assessment text.

12.4.15. The LVIA will include the following sections:

- Introduction
- Methodology
- Consultation
- Baseline conditions, including landscape related planning policy.
- Assessment of Potential Effects; including direct effects and, indirect effects upon the landscape character and visual effects, for both individual and cumulative effects. This will cover the constructional, operational and decommissioning phases of the development.
- Cumulative Effects.
- Conclusion.

Question 18: Do the consultees agree with the proposed approach to assess the effects on landscape character and visual amenity?

Question 19: Do consultees see value to any particular enhancement measures?

13. Hydrology, Geology and Hydrogeology

13.1. Introduction

13.1.1. This section of the scoping report has been prepared by Natural Power and outlines the information which currently exists, as well as presenting the baseline conditions applicable to the hydrological, hydrogeological and geological environment in the surrounding region of the proposed Y Bryn Wind Farm.

13.1.2. As noted in Section 1 and 9, the intention of this scoping report is to introduce the proposed development and provide the PINS and consultees with sufficient information (where it currently exists) on the likely impacts of the proposed Y Bryn Wind Farm development on individual receptors and important features at this stage. The intended approach will allow for an EIA that focusses on only those aspects of the proposed wind farm development that are likely to have a significant effect on known hydrological, hydrogeological and groundwater receptors, as well as those receptors that are currently unknown.

13.1.3. A hydrological baseline desktop review was undertaken in October 2020. The information gained from the desktop review has been presented in the following sections.

13.1.4. Where the impacts on important hydrological, hydrogeological and geological features (whether it be direct or indirect) from the proposed Y Bryn Wind Farm are not likely to cause a significant effect, it is proposed that these receptors are 'scoped out' and thus not included within the EIA.

13.1.5. Table 13.8 summarises the results of the desk top review and highlights whether or not the receptor will be included within the EIA.

13.1.6. As part of the EIA, a Hydrological, Geological and Hydrogeological Impact Assessment will be undertaken on those receptors that have potential to experience a **significant effect** from the construction, operation and decommissioning of the proposed development.

13.2. Legislation, Guidance and Consultation

International Legislation and Policy

13.2.1. The assessment takes into account the requirements of the Water Framework Directive (2000/60/EC) (WFD). The WFD aims to protect and enhance the quality of surface freshwater (including lakes, rivers and streams), groundwater, groundwater dependent ecosystems, estuaries and coastal waters. The key objectives of the WFD relevant to this assessment are:

- To prevent deterioration and enhance aquatic ecosystems; and
- To establish a framework of protection of surface freshwater and groundwater.

National Legislation and Regulations

13.2.2. This assessment takes into account the following legislation and policy:

- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017;
- Land Drainage Act 1994;
- Flood and Water Management Act 2010;
- Water Act 2014;
- The Pollution Prevention and Control (England and Wales) Regulations 2000;
- The Water Supply (Water Quality) Regulations 2018;
- The Private Water Supplies (Wales) Regulations 2017;
- The Waste (England and Wales) (Amendment) Regulations 2012;

- Part IIa of the Environment Protection Act 1990; and
- The Town and Country Planning (EIA) Regulations 2017.

Policy & Guidance

13.2.3. The following regional policies are also taken into account during the assessment:

- Planning Policy Wales (Edition 10) – November 2018;
- Technical Advice Note 8: Renewable Energy (2005);
- Technical Advice Note 15: Development and Flood Risk (2004);
- Neath Port Talbot County Borough Council Local Development Plan (2016);
- Bridgend County Borough Council Local Development Plan (2013) and replacement LDP (2018-2033).

13.2.4. Table 13.1 lists other guidance and best practice documentation which has been considered as part of this assessment.

Table 13.1: Guidance and Best Practice

Topic	Source of Information
Natural Resource Wales (NRW) Pollution Prevention Guidelines (PPG's)*	PPG 1 Understanding your environmental responsibilities - good environmental practices GPP 2: Above ground oil storage tanks GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer GPP 5: Works and maintenance in or near water PPG 6: Working at construction and demolition sites GPP 8: Safe storage and disposal of used oil GPP 13: Vehicle washing and cleaning GPP 21: Polluting incident response planning
Construction Industry Research and Information Association (CIRIA)	CIRIA C692 Environmental Good Practice on site (third edition) CIRIA C697 The SuDS Manual CIRIA C532 Control of Water Pollution from Construction sites CIRIA C624 Development and Flood Risk – guidance for the construction industry CIRIA C648 Control of Water Pollution from Linear Construction Projects CIRIA C689 Culvert Design and Operation Guide
Other Guidelines	Scottish Renewables Joint Publication, (2015) Good Practice During Wind Farm Construction Version 3 FCE, SNH, (2010), Floating Roads on Peat Scottish Renewables, Joint Publication (2012), Development of Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste
*A review plan for the PPGs is currently underway. The review will result in a replacement guidance series, Guidance for Pollution Prevention (GPPs). It is intended that the new series will provide environmental	

Topic	Source of Information
	good practice guidance for the whole UK, and environmental regulatory guidance directly to Northern Ireland, Scotland and Wales[46]

Consultation

13.2.5. Throughout the EIA stage on-going consultation will be undertaken with relevant stakeholders, including NRW (statutory consultee function), to ensure that they consider that the layout and the approach to the EIA is considered acceptable.

13.3. Survey Work Undertaken

13.3.1. The following sub-sections summarise the desktop survey work that has been undertaken to inform the hydrological, hydrogeological and geological details which are subsequently presented in this scoping report.

Desk Based Study

13.3.2. A desk based study has been undertaken in order to establish the hydrology, hydrogeological and geological conditions underlying the area of the proposed development. A detailed review of documentation and data sources has been undertaken, as detailed in Table 13.2.

Table Error! No text of specified style in document.**.2:Baseline Information Sources**

Topic	Sources of Information
Topography	1:25,000 Ordnance Survey Mapping 1:50,000 Ordnance Survey Mapping OS Landform Panorama digital terrain model (DTM) data OS Terrain 5 DTM
Designated Nature and Conservation sites	NRW Designated Sites (http://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/find-protected-areas-of-land-and-seas/designated-sites/?lang=en) [Accessed 06/10/2020]
Solid and Superficial Geology	1:50,000 Solid and Superficial Geology data provided by the British Geological Survey (BGS)
Soils and Peat	UK Soil Observatory Map Viewer (http://www.ukso.org/mapViewer.html) [Accessed 06/10/2020] Shapefiles supplied by NRW-EDT
Surface Water Hydrology	1:25,000 OS Raster Data 1:50,000 OS Raster Data OS VectorMap Local data
Flooding	NRW Long Term Flood Risk Map (https://naturalresources.wales/evidence-and-data/maps/long-term-flood-risk/?lang=en) [Accessed 07/10/2020]

[46] Net Regs (2020). *Guidance for Pollution Prevention (GPPs) - Full List*. [Online]. Available from: http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/ [Accessed: 08/10/2020]

Topic	Sources of Information
Water Quality	NRW Water Watch Wales Map Gallery (http://waterwatchwales.naturalresourceswales.gov.uk/en/) [accessed 07/10/2020] NRW River Basin Management Plans (https://naturalresources.wales/evidence-and-data/research-and-reports/water-reports/river-basin-management-plans-published/?lang=en) [Accessed 07/10/2020]
Water Resources	1:50,000 OS Raster Data Neath Port Talbot County Borough Council and Bridgend County Borough Council PWS Data Request
Hydrogeology	1:625,000 Hydrogeology data provided by the British Geological Survey (http://mapapps2.bgs.ac.uk/geoindex/home.html) [Accessed 07/10/2020]

13.4. Baseline Results

13.4.1. Through the desk study the existing site conditions have been established and are outlined below.

Topography

13.4.2. The landscape of the proposed development is characterised by extensive coniferous forestry plantation. The proposed development is divided into two areas which are centred around the Bryn (northern) and Penhydd (southern) forest blocks.

13.4.3. The general topography of the northern proposed development area slopes to the north-west and south forming a plateau which runs roughly through the centre of the area with a topographic high point of 363 m Above Ordnance Datum (AOC). The slopes steepen in the northern area of the forestry block around Cwm yr Argoed. Elevations range between ~100 m AOD and 363 m AOD.

13.4.4. The topography in the southern proposed development area is more complex with a number of notable hill tops and gentle slopes. There are some steep incised valleys towards the site boundary, generally sloping to the south and west. A topographic high of 349 m AOD is reached at the southern site boundary. Elevations range from ~140 m AOD to 349 m AOD.

Designated Sites

13.4.5. Within a 3 km radius of the proposed development site boundary there are four designated areas. Three are designated as a Site of Special Scientific Interest (SSSI) and one as a Local Nature Reserve (LNR). The Bryn Tip LNR is located between the Bryn and Penhydd forestry blocks directly south of the northern proposed development area. Bryn Tip is designated as a nature reserve to protect its historic colliery spoil status and enhance the natural habitat which is home to a number of rare and protected species including deer.

13.4.6. Eglwys Nunydd Reservoir SSSI is located approximately 1.8 km to the south of the proposed site boundary and is designated for its large number of wintering waterfowl and passage migrants. Margam Moors SSSI is located approximately 3 km to the south- west of the proposed site boundary and is designated for Fen and marshy grassland mosaic with standing water and associated aquatic invertebrate assemblage. Cwm du Woodlands SSSI is located approximately 2.8 km to east of the site boundary and is designated for semi natural broadleaved woodland.

13.4.7. The three sites which are designated SSSI are either not hydrologically linked to the proposed development or their designations are not due to hydrological, hydrogeological and geological features. Margam Moors SSSI and Cwm du Woodlands SSSI are situated in different hydrological catchments to the proposed development and it is unlikely that there will be any direct impacts from a hydrological perspective as a result of construction or operation. It is possible that Eglwys Nunydd Reservoir SSSI is hydrologically linked to the proposed development, however, because the designation is for wintering wildfowl and passage migrants this will be assessed in the Ecology Section of the ES. The assessment on SSSI are therefore proposed to be scoped out of the hydrology, geology and hydrogeology EIA section. Bryn Tip LNR will also be included as part of the Ecology Section of the EIA and is therefore suggested it is also scoped out given the designation is not for hydrology.

Site Hydrology

13.4.8. The main hydrology feature within the immediate vicinity of the proposed development is the River Avan/Afon Afan which is just north of the proposed site boundary. A number of mapped watercourses are identified within the site boundary flowing into the River Avan/Afon Afan. The Ffrwd Wyllt rises in an un-forested area between the Bryn and Penhydd forest blocks and flows east south-west, roughly following the site boundary of the southern forestry block. A number of mapped watercourses flow from both forestry blocks into the Ffrwd Wyllt.

13.4.9. Some mapped watercourses flow due east and discharge to the Llynfi River to the east of the proposed site boundary. A number of mapped watercourses are incised into short steep valleys within the forestry and flow south-west into Afon Cynffig.

13.4.10. The Cwm Wernderi Reservoir is a small reservoir within the Bryn forestry block. It is outside of the site boundary but within the catchment of the proposed development. This reservoir is within the catchment of the Ffrwd Wyllt.

13.4.11. The Eglwys Nunydd Reservoir approximately 1.8 km west of the site boundary could also be hydrologically connected, however more site investigation would be undertaken to confirm this.

13.4.12. A review of aerial photography shows extensive forestry works within the proposed site boundary and some evidence of the associated increased functional drainage of the land through the cutting of artificial drainage ditches and furrows, which ultimately feed into the watercourses named. Appropriate consideration of these features would be outlined within the EIA, including buffer distances.

13.4.13. Due to the proximity of proposed infrastructure to mapped watercourses and water bodies, further assessment will be required to determine the level of impact on water quality, flooding and potential pollution.

Flood Risk

13.4.14. A qualitative flood risk assessment has been undertaken where the risks of flooding have considered from all potential sources which are listed below and with reference to NRW's Flood Map[47]. The assessment has considered the risk to the proposed development as well as the potential to increase flooding downstream that could be caused by the proposed development.

13.4.15. NRW is progressing a Natural Flood Management (NFM) pilot project in the Ffrwd Wyllt catchment (northern part of Bryn forest block and southern part of Penhydd forest block) to take a holistic approach to catchment management, comprising interventions in the headwaters to slow the flow of water and

[47] NRW. (2018) *Long term flood risk.* [Online]. Available from https://naturalresources.wales/evidence-and-data/maps/long-term-flood-risk/?lang=en [Accessed 06/10/2020].

reduce flooding. The applicant would seek to complement the objectives of the pilot project through the infrastructure design of the wind farm.

Fluvial and Pluvial Flooding

13.4.16. A review of NRW's Flood Map indicates that the river Cwm Wernderi, within the proposed site boundary, has a medium (between 1 in 100 year event to a 1 in 30 year event) risk of flooding. This appears to be confined to the riparian zone of the channel. Within the proposed site boundary there is mainly a low (between 1 in a 1000 year event to 1 in a 100 year event) to medium risk of flooding from surface waters, but again, this is primarily confined to the riparian zones of watercourses and scattered across the site in topographic hollows.

Flooding from Reservoir Extents

13.4.17. The Cwm Wernderi watercourse within the site boundary and the Cwm Dyffryn watercourse which the Cwm Wernderi feeds into, are at risk of flooding from reservoirs. This does not extend beyond the functional flood plain.

Tidal Flood Sources

13.4.18. The proposed site boundary is approximately 3 km away from the nearest coast. However, given the topographical position of the proposed development it will not be affected by tidal flooding which will therefore be scoped out of the assessment.

Groundwater Flood Sources

13.4.19. Flooding can also result from high groundwater levels if the water table rises above the surface level. Groundwater flooding happens in response to a combination of already high groundwater levels (usually during mid- or late-winter) and intense or unusually lengthy storm events. Groundwater flooding is difficult to predict as it rarely follows a consistent pattern. The response time between rainfall and groundwater flooding is also relatively long.

13.4.20. Groundwater flooding is often associated with the shallow unconsolidated sedimentary aquifers that over lie non-aquifers. Such aquifers are susceptible to flooding as the storage capacity within these deposits is often limited and direct rainfall recharge can be relatively high, subsequently increasing the water levels within the groundwater. Further information on the superficial geology is provided in paragraph 13.4.29. This will be discussed and assessed as part of the ES.

Flooding from Artificial Drainage

13.4.21. There is evidence of artificial drainage associated with forestry works within the proposed site boundary. There is the potential that this could cause some localised flooding by increasing runoff rates to the watercourses that they drain to within the surrounding area.

13.4.22. Due to proximity of proposed infrastructure to mapped watercourses which have been determined as being at risk from fluvial and reservoir flooding, further assessment on the potential impacts will be required. As part of the site design infrastructure will be located as far as possible but a minimum of 50 m from mapped watercourses and waterbodies whilst taking into account other constraints.

Soils

13.4.23. The distribution of soils across the site boundary is dependent upon land use, geology, topography and hydrological regime of the area. Information on the site soils has been provided by the UKSO[48] and is presented below in Table 13.3 and a screenshot of the soils is presented in Figure 13.1.

[48] UKSO (2018). *UK Soil Observatory map viewer.* [Online].Available from http://www.ukso.org/mapViewer.html [Accessed 08/10/2020]

Table 13.3: Summary of Soil Types

Generalised Soil Type	Parent material
Very acid loamy upland soils with a wet peaty surface (light pink)	Glacial Till
Freely draining acid loamy soils over rock (salmon pink)	Mudstone and Sandstone
Slowly permeable wet very acid upland soil, with a peaty surface (light green)	Glacial Till

Source: UKSO

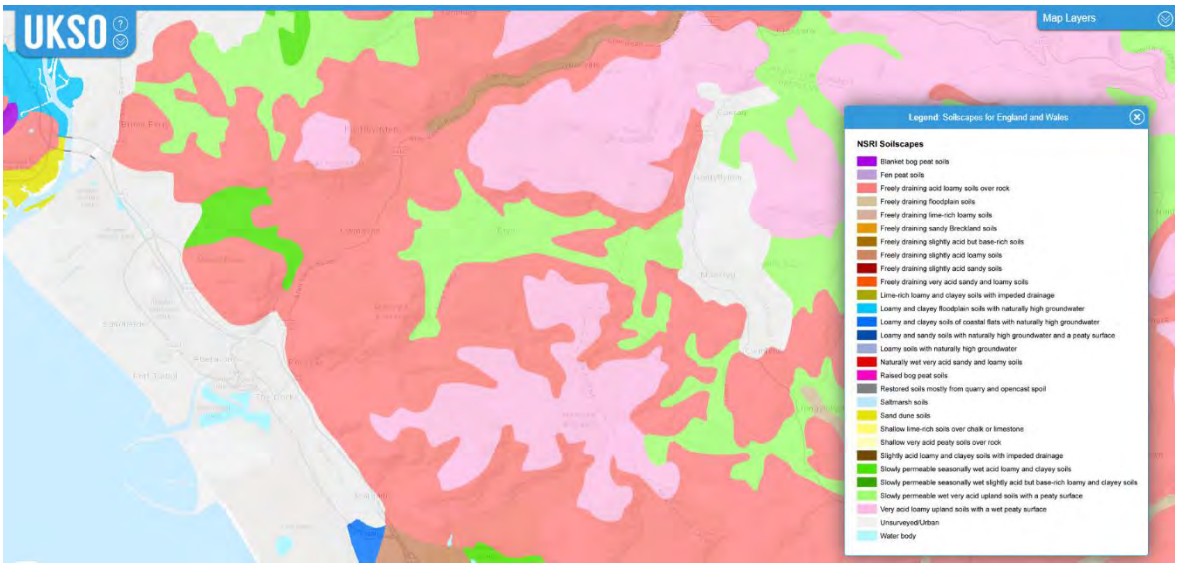


Figure 13.1: Screenshot of UKSO mapper showing soils underlying the site

13.4.24. The high-level information indicates that the dominate soil types are very acid/loamy soils with a wet peaty surface, freely draining acid loamy soils and slowly permeable wet very acid soils with a peaty surface. It is expected that the quality of the soils will be affected by the existing land use, including plantation forestry and artificial drainage ditches to dry the soils.

13.4.25. A phase 1 peat survey will be undertaken to inform potential site constraints. The phase 1 peat survey information will be used to inform the requirements for a more detailed phase 2 peat survey, together with Peat Management Plan and Peat Slide Risk Assessment.

13.4.26. Subject to forestry conditions and compliance with health and safety, a phase 1 peat survey shall consist of a 100 m gridded pass over all proposed infrastructure areas suggested to be underlain by peat or peaty soils. Following refinement/finalisation of the scheme layout and subject to outcomes of phase 1, detailed phase 2 probing over all proposed infrastructure areas underlain by peat or peaty soils would be proposed consisting of the following:

- 50 m gridded points for borrow pits and compounds/substations;
- 50 m spacing along centreline, with 10 m offsets along all new track sections;
- Determination of specific widening sections of the existing access track, with the same method applied; and
- 10 m spacing transects north-south and east-west out to 100 m for all turbine and met mast locations.

13.4.27. A peat core would be taken at turbine and infrastructure locations where peat exceeds 0.5 m depth. The core would be analysed for its physical properties - degree of decomposition using the Von Post scale[49].

Geology

13.4.28. According to the 1:50,000 scale British Geological Society (BGS) dataset, the proposed development is underlain by the geological units presented in Table 13.4.

Table 13.4: Solid and Superficial Geology

Element	Type	Comments
Rhondda Member: Sandstone.	Sedimentary	These sedimentary rocks are fluvial in origin. They are detrital, ranging from coarse- to fine-grained and form beds and lenses of deposits reflecting the channels, floodplains and levees of a river or estuary (if in a coastal setting).
South Wales Middle Coal Measures Formation: Mudstone, Siltstone And Sandstone.	Sedimentary	These sedimentary rocks are fluvial, palustrine and shallow-marine in origin. They are detrital, forming deposits reflecting the channels, floodplains and deltas of a river in a coastal setting (with periodic inundation from the sea).
South Wales Middle Coal Measures Formation - Sandstone	Sedimentary	These sedimentary rocks are fluvial, palustrine and shallow-marine in origin. They are detrital, forming deposits reflecting the channels, floodplains and deltas of a river in a coastal setting (with periodic inundation from the sea).
Llynfi Member - Mudstone, Siltstone And Sandstone	Sedimentary	These sedimentary rocks are fluvial in origin. They are detrital, ranging from coarse- to fine-grained and form beds and lenses of deposits reflecting the channels, floodplains and levees of a river or estuary (if in a coastal setting).
Brithdir Member - Sandstone.	Sedimentary	These sedimentary rocks are fluvial in origin. They are detrital, ranging from coarse- to fine-grained and form beds and lenses of deposits reflecting the channels, floodplains and levees of a river or estuary (if in a coastal setting).
Till	Superficial deposit	These sedimentary deposits are glacigenic in origin. They are detrital, created by the action of ice and meltwater, they can form a wide range of deposits and geomorphologies associated with glacial and inter-glacial periods during the Quaternary.
Peat	Superficial deposit	These sedimentary deposits are lacustrine and palustrine in origin. They comprise accumulated (and detrital) organic material, forming beds and lenses within lagoons, bogs and swamps. See Figure 13.2.

[49] The **von Post** humification test (**von Post classification** system) involves squeezing the **peat** and the material that is extruded between the fingers, examining the material, and classifying the soil as belonging to one of ten (H1–H10) humification or decomposition categories.

Source: UKSO

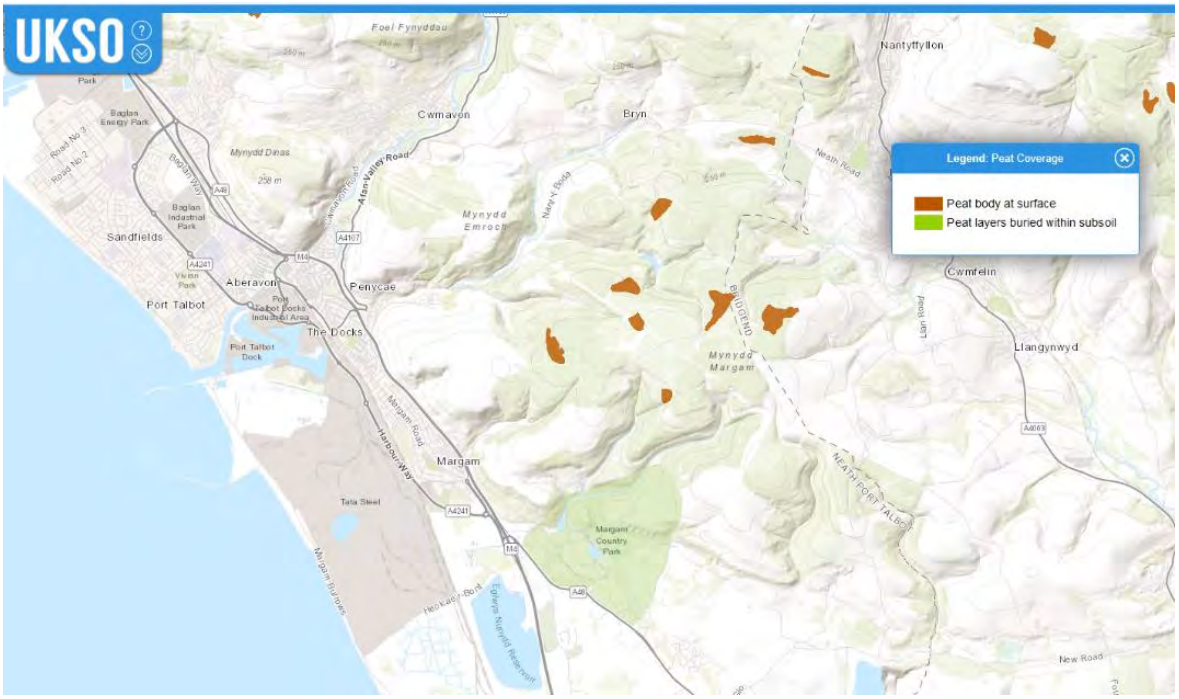


Figure 13.2: Screenshot of mapped peat deposits (UKSO)

13.4.29. The underlying solid geology comprises Brithdir Member - Sandstone Formation that covers the majority of the proposed site boundary, and both the South Wales Middle Coal Measures Formation and Llynfi Member Formation which underlays a section in the north. Superficial deposits of peat are well spread across the proposed site boundary but are not great in number, however till can be found on the edges of the Bryn forest block in the valley of Nant Cynon and Nant Drysiog watercourses, and the northern edge of the Penhydd Nant forest block in the valley of the Cwnfarteg watercourse.

13.4.30. It is noted that no specific geological feature of interest has been identified within the site boundary (excluding peat and soils which are discussed separately), as such, this can be scoped out of the assessment. Although having an understanding of the underlying bedrock and superficial geology is pivotal for the effectiveness of the construction design of the proposed development, specific mitigation to protect the geodiversity during construction, operation and decommissioning is not required. Knowledge of the local geology will be utilised in the assessment of groundwater dependent terrestrial ecosystems (GWDTEs).

Hydrogeology

13.4.31. Following review of the 1:625,000 scale BGS Hydrogeological Map[50] the majority of the site boundary is underlain by a moderately productive aquifer associated with the South Wales Upper Coal Measure Formation. The aquifer is a regional, cyclic multi-layered aquifer with moderate yields from sandstones and many springs, however mine water quality is poor. In the north, the site boundary is also underlain by a moderately productive aquifer but of the Pennine middle coal measures formation and South Wales Coal Measures Formation (undifferentiated) which exhibits the same characteristics as the South Wales Upper Coal Measure Formation.

[50] BGS (2018). *BGS hydrogeology 625K.* [Online]. Available from http://www.bgs.ac.uk/products/hydrogeology/maps.html (Last accessed: 08/10/2020)

13.4.32. At this stage, no assessment has been made on the groundwater dependency of the identified habitats located within the site boundary. A thorough review and inclusion of appropriate assessments will be included in the ES to determine the characteristics of the hydrogeological environment and its suitability to support GWTDEs. The ES will be prepared with cognisance of the habitats and NVC assessment completed as part of the Ecology assessment.

Water Resources

13.4.33. A data request was issued to the local authorities in September 2020 to determine the presence of any water abstractions for private water supply use using a 3 km buffer around the site boundary. Bridgend County Borough Council provided the coordinates for Private Water Supply (PWS) sources within 5 km of the Proposed Development. There is one PWS (ID 10) within the site boundary (emboldened in Table 13.5 below) and a further 20 PWS within 5 km of the site boundary.

Table 13.5 Private Water Sources

ID	Easting	Northing	Source Type	Activity Type
1	285116	189434	Borehole Water	Commercial
2	287800	192000	Spring Water	Shared Domestic
3	284500	188000	Spring Water	Shared Domestic
4	283789	190860	Spring Water	Shared Domestic
5	285200	189400	Borehole Water	Shared Domestic
6	284567	189251	Spring Water	Shared Domestic
7	284567	189239	Borehole Water	Domestic
8	283384	190166	Borehole Water	Domestic
9	283398	190198	Spring Water	Domestic
10	**283168**	**190264**	**Spring Water**	**Domestic**
11	284200	189000	Spring Water	Domestic
12	286600	191800	Spring Water	Domestic
13	285900	193500	Spring Water	Domestic
14	287500	191700	Spring Water	Domestic
15	284700	192500	Spring Water	Domestic
16	284700	192500	Borehole Water	Domestic
17	284600	188700	Spring Water	Domestic
18	285240	187659	Spring Water	Domestic
19	284799	189499	Spring Water / Borehole Water	Domestic
20	284600	188700	Spring Water / Borehole Water	Domestic
21	286543	188441	Spring Water /Borehole Water	Domestic

13.4.34. All identified PWS will be assessed for hydrological connectivity to the Proposed Development as part of the EIA.

13.4.35. At the time of writing a response has not yet been received from Neath Port Talbot County Borough Council therefore these PWS will also be assessed as part of the EIA.

Carbon Balance Assessment

13.4.36. A carbon balance assessment will be produced to give an indication of the proposed development's impact on the existing peat on site and to assess the potential effects in terms of carbon dioxide (CO_2) emissions against the total potential carbon savings attributed to the proposed development. The assessment will quantify the gains over the life of the proposed development against the release of CO_2 during construction, including loss of peat bog and construction of wind farm infrastructure. The latest version of the Scottish Government carbon calculator that is available will be used, which is currently 1.6.1.

13.5. Impact Assessment

Methodology

13.5.1. The greatest risk of affecting the hydrological, geological and hydrogeological environment will occur during the construction phase, with effects reduced during the operational and decommissioning phase. Taking this into account the EIA will address the following issues for all phases of development:

- Changes to existing drainage patterns.
- Effects on baseflow.
- Effects on run-off rates.
- Effects on erosion and sedimentation.
- Effects on groundwater levels.
- Effects on water resources.
- Effects on impediments to flow.
- Flood risk.
- Pollution risk.
- Effects on integrity of peat bodies.
- Effects on groundwater and surface water quality.

13.5.2. The EIA would involve the following

- Further detailed desk studies and further site visits to establish baseline conditions of the area and carry out detailed site investigations.
- Evaluation of the likely significant environmental effects of the Proposed Development and the impacts that these could have on the current site conditions.
- Demonstrating how the embedded good practice measures help to avoid and mitigate against any identified adverse effects resulting from the Proposed Development.
- Evaluation of the likely significant environmental effects with consideration of the potential embedded mitigation measures, taking account of the sensitivity of the baseline features, the potential magnitude of these effects and the probability of these effects occurring.
- The residual significance of the environmental effects following the consideration of additional mitigation measures, as well as further potential enhancement measures.

Effects Evaluation

13.5.3. The likely significant environmental effects will be defined by taking account of two main factors: the sensitivity of the receptor and the potential magnitude should that effect occur. The sensitivity of the

receptor i.e. its baseline quality as well as its ability to absorb the effect without perceptible change is defined in Table 13.6.

Table 13.6: Definition of sensitivity of the receptor

Sensitivity	Definition
High	National importance. Receptor with a high quality and rarity, local scale and limited potential for substitution/replacement or receptor with a medium quality and rarity, regional or national scale and limited potential for substitution / replacement.
Medium	Regional importance. Receptor with a medium quality and rarity, local scale and limited potential for substitution/replacement or receptor with a low quality and rarity, regional or national scale and limited potential for substitution / replacement.
Low	Local importance. Receptor with a low quality and rarity, local scale. Environmental equilibrium is stable and is resilient to changes that are greater than natural fluctuations, without detriment to its present character.

13.5.4. The magnitude of impact includes the timing, scale, size and duration of the likely significant environmental effects. For the EIA the assessment the magnitude of impact criteria would be defined in Table 13.7 below.

Table 13.7: Magnitude of impact

Magnitude	Criteria	Definition
High	Total loss of or major/substantial alteration to key elements/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed.	Fundamental (long term or permanent) changes to geology, hydrology, water quality and hydrogeology.
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.	Material but non-fundamental and short to medium term changes to the geology, hydrology, water quality and hydrogeology.
Low	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstances/situation.	Detectable but non-material and transitory changes to the geology, hydrology, water quality and hydrogeology.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.	No perceptible changes to the geology, hydrology, water quality and hydrogeology.

13.5.5. The sensitivity of the receiving environment together with the magnitude of the effect (assuming the successful implementation of industry good practice and design mitigation measures) is then combined to define the significance of the effect, as per Table 5.2. Those residual adverse effects indicated as **Major and Major/Moderate** will be regarded as being **significant** effects. However, other factors may have to be considered including the duration and the reversibility of the effect. It should also be noted, that in most cases the assessment considers only the adverse effects, where positive effects are identified these will be also be discussed.

Good Practice Mitigation

13.5.6. The design of the Y Bryn Wind Farm development will avoid known impacts on hydrological receptors as far as possible (embedded mitigation). Mitigation will be developed in line with the Good Practice During Wind Farm Construction Guide[51].

13.5.7. Throughout the EIA process and following survey work and feedback from the consultation process it may be that the layout presented here in the Scoping Report further develops.

13.5.8. Refer to Section 8 for further general information about embedded mitigation.

Mitigation by Design

13.5.9. A series of buffer distances will be adopted to help reduce effects of the Y Bryn Wind Farm on the hydrological environment. A 50 m buffer will be implemented for all identified mapped hydrological features. Infrastructure will be located outside this buffer except where access necessitates.

13.5.10. Watercourse crossings associated with any new access track will be minimised as far as practicable.

13.5.11. As part of the EIA site investigations will take place and if required a peat slide risk assessment (PSRA) will be produced to make sure the wind farm is designed to avoid areas of high risk. Alongside the PSRA, a peat management plan (PMP) will be also be produced if required, demonstrating how impact on peat will be minimised and means of reusing peat through reinstatement and restoration methods.

13.5.12. Mitigation will follow the well-established principles of industry good practice so as to prevent or minimise effects on the surface and groundwater environment. The following good practice principles will be included as part of the embedded mitigation:

- Drainage – all runoff derived from works associated with the proposed development will not be allowed to directly enter the identified natural drainage network. All runoff will be adequately treated via a suitably designed drainage scheme with appropriate sediment and pollution management measures. The proposed development is situated in an area of commercial forestry and it is imperative that the drainage infrastructure is designed to maintain the existing hydrological regime and meet the required design standards.
- Storage – all soil/peat stockpiles as well as equipment, materials and chemicals will be stored well away from any watercourses. Chemical, fuel and oil stores will be sited on impervious bases with a secured bund.
- Vehicles and Refuelling – standing machinery will have drip trays placed underneath to prevent oil and fuel leaks causing pollution. Where practicable, refuelling of vehicles and machinery will be carried out in designated areas, on an impermeable surface, and well away from any watercourses identified from the 1:10k OS mapping.
- Maintenance – only emergency maintenance to construction plant will be carried out in designated areas, on an impermeable surface well away from any watercourse or drainage feature, unless vehicles have broken down necessitating maintenance at the point of breakdown, where special precautions will be taken.
- Welfare Facilities – on-site welfare facilities will be adequately designed and maintained to ensure all sewage is disposed of appropriately. This may take the form of a soakaway or tankering with off-site disposal depending on the suitability of the site for a soakaway and only with prior agreement with NRW/Local Planning Authority.

[51] SNH and Scottish Renewables Joint Publication, (2019) Good Practice During Wind Farm Construction Version 4;

- Cement and Concrete – fresh concrete and cement are very alkaline and corrosive and can be lethal to aquatic life. The use of wet concrete in and around watercourses will be preferentially avoided however if necessary it will be carefully controlled.
- Monitoring Plan – all activities undertaken as part of the proposed development will be monitored throughout the construction phase. Such monitoring will be to ensure environmental compliance.
- Contingency Plans – plans will ensure that emergency equipment is available on site i.e. spill kits and absorbent materials, advice on action to be taken and who should be informed in the event of a pollution incident.
- Training – All relevant staff personnel will be trained in both normal operating and emergency procedures, and will be made aware of any highly sensitive areas on site.

13.5.13. Further details on specific mitigation requirements will be provided within the ES chapter, technical appendices and a site specific outline Construction Environmental Management Plan (CEMP). It should be acknowledged that some mitigation measures included in the chapter or CEMP would be outline in certain elements of detail, due to the requirement of detailed engineering design which will not be available at the stage of the application, but nonetheless, will be guided by good practice and legislation.

13.5.14. Based on the findings of the baseline study and whether the significance of any impact on receptors can be quantified Table 13.8 identifies what is proposed to be scoped in and out of the assessment.

Table 13.8: Proposed Scoping Topics

Baseline	Scope in or out	Reason
Designated Sites	Scope Out	The designated sites (SSSI/LNR) are either located so it is unlikely that there will be any direct impacts from a hydrological perspective as a result of construction or operation or their designation is not related to hydrology and will therefore be assessed as part of the Ecology Section of the EIA.
Site Hydrology	Scope In	There are a number of watercourses and water features hydrologically connected to the proposed development including the Cwnwernderi Reservoir and potentially the Eglwys Nunydd Reservoir An appropriate level of assessment will need to be considered to understand the potential impacts of the development on water quality, flood risk and potential pollution.
Flood Risk	Scope In	Whilst a desk based assessment has been provided above, further assessment will be required due to the mapped water features in the proximity to proposed infrastructure.
Peat and Soils	Scope In	The initial desktop study identifies areas of peat soils which is to be supported by a phase 1 peat survey. Further assessment may be required to inform a carbon balance assessment, peat management plan and peat slide risk assessment, if required. Information on peat and soils will also be utilised for production of a GWDTE assessment.
Geology	Scope Out	No specific mitigations to protect geodiversity are required. Review of the local geology information will be considered for the GWDTE assessment.
Hydrogeology	Scope In	Assessment will be required to confirm the presence of GWTDE on site based habitat, soils and hydrogeological information for the moderately productive aquifer.
Water Resource	Scope In	PWS are identified within the surrounding area and further assessment will be required to confirm supply details and mitigation requirements

Baseline	Scope in or out	Reason
Carbon Balance	Scope In	Initial desk top study and site visits indicate the presence of peat on site, and although careful siting of infrastructure will minimise the impact on peat, the use of the NatureScot carbon calculator tool will assess the carbon impact of the proposed development.

Question 20: Are consultees in agreement with the methodologies proposed and the topics to be scoped out?

Question 21: Do consultees see value to any particular mitigation and/or enhancement measures for any local or regional receptors, whether referred to above or otherwise?

14. Cultural Heritage

14.1. Introduction

14.1.1. This section presents the proposed scope of work for the Cultural Heritage Assessment for Y Bryn Wind Farm and has been prepared by Headland Archaeology (UK) Ltd. The purpose of the assessment is to identify the potential effects of the proposed development on the historic environment and cultural significance of the area in which the development is located. The heritage impact assessment will follow policy and best practice guidance in order to establish a robust and transparent analysis of the issues. The approach adopted will follow a standard staged process consisting of baseline survey to identify known and potential historic assets, design iteration to minimise likely impacts on the historic environment, comparative analysis to determine which historic assets might be affected by the proposed development, field survey and analysis to establish the heritage significance of important affected assets, characterising the nature and magnitude of impacts, design of mitigation measures, and an assessment of the residual effect on the historic environment.

14.1.2. It is important to note that, although any effects on the significance of historic assets due to change in their setting are likely to be visual in nature, the assessment of these visual effects is distinct from the assessment of visual change in the LVIA. The assessment of effects on setting may be informed by visualisations prepared as part of the LVIA but the conclusions reached regarding visual change in the setting of a heritage asset are distinct.

14.2. Environmental Baseline and Potential Sources of Impact

Baseline Conditions

14.2.1. The baseline used for this scoping section has been compiled using existing data on the historic environment available online from Royal Commission on Ancient and Historic Monuments Wales (RCAHMW) via the Coflein website[52], and data obtained from the Gwynedd Archaeological Trust (GAT) Historic Environment Record (HER), and designations data available as GIS datasets from the Lle Geo-Portal for Wales[53] with the exception of records for Historic Parks and Gardens which were supplied directly by Cadw in a dataset dated July 2017. This dataset was due to be transferred to a Statutory Register of Historic Parks and Gardens in Wales in late 2020.

[52] Available online from: https://coflein.gov.uk/ (last accessed 12.11.2020)

[53] Available online from: http://lle.gov.wales/home (last accessed 12.11.2020)

14.2.2. The proposed wind farm site is within the Registered Landscape of Special Historic Interest known as Margam Mountain. There are six Scheduled Monuments within the wind farm site boundary (Figure 14.1) – one post-medieval industrial site (Caer Mynydd Ventilation Furnace and Mine), two prehistoric religious, ritual and funerary sites, and three prehistoric defensive enclosures, in addition the prehistoric enclosure known as “Roman Camp” (GM058) and Y Bwlwarcau hillfort (GM059) border the wind farm site. There are also 89 non-designated historic assets recorded by the HER within the site boundary (Figure 14.1). The HER also includes six duplications of designated assets (Scheduled Monuments) within the site boundary. A study of the Coflein website has identified at least 21 undesignated heritage assets recorded within the site boundary. The majority of these non-designated assets are post-medieval features identified from historic mapping or as upstanding features, but they also include two Bronze Age barrows, a Bronze Age cairn, an Iron Age enclosure and five medieval sites which survive as earthworks. A similar mix of monument types is recorded within 1km of the site boundary (Figure 14.3).

14.2.3. There are a further 50 Scheduled Monuments and another Landscape of Special Historic Interest within 5 km of the site boundary. There are also eight Grade I Listed Buildings, 25 Grade II* Listed Buildings, 168 Grade II Listed Buildings, three Conservation Areas and two Registered Parks and Gardens within 5 km of the site boundary (Figure 14.4). Between 5 and 10 km from the site boundary there are 52 Scheduled Monuments, and four Grade I and 30 Grade II* Listed Buildings (Figure 14.5).

Potential Sources of Impact

14.2.4. Effects on the historic environment can arise through direct physical impacts, impacts on setting or indirect impacts:

- Direct physical impacts describe those development activities that directly cause damage to the fabric of a heritage asset. Typically, these activities are related to construction works and will only occur within the site of the asset.
- An impact on the setting of a heritage asset occurs when the presence of a development changes the surroundings of a heritage asset in such a way that it affects (positively or negatively) the heritage significance of that asset. Visual impacts are most commonly encountered but other environmental factors such as noise, light or air quality can be relevant in some cases. Impacts 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.
- Indirect impacts describe secondary processes, triggered by the development, that lead to the degradation or preservation of heritage 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.

14.2.5. Decommissioning should not result in further damage to historic assets as the ground disturbance would already have occurred during the construction phase, and therefore is scoped out of the assessment.

14.2.6. Cultural heritage constraint areas will, where necessary, be defined to include an appropriate buffer around known historic assets. Constraint areas can be treated as a ‘trigger’ for the identification of potential direct effects: they represent areas within which works may lead to direct effects of more than negligible significance on known historic assets.

14.2.7. 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.

14.2.8. Potential effects on the settings of historic assets will be identified from an initial desk-based appraisal of data from Cadw, RCHAMW and the HER and consideration of current maps and aerial images available. Where this initial appraisal identifies the potential for a significant effect, the asset will be visited to define baseline conditions and identify key viewpoints. Visualisations will be prepared (by the LVIA consultants) to illustrate changes to key views, where potentially significant effects are identified.

14.2.9. Where potentially significant effects are identified, mitigation measures will be proposed. The preferred mitigation option is always to avoid or reduce effects through design, or through precautionary measures such as fencing off heritage assets during construction works. Effects which cannot be eliminated in these ways would lead to residual effects.

14.2.10. Adverse effects resulting from physical harm to historic assets may be mitigated by an appropriate level of survey, excavation, recording, analysis and publication of the results, in accordance with a written scheme of investigation agreed with Gwent Glamorgan Archaeological Trust (GGAT). Archaeological investigation can have a beneficial effect of increasing knowledge and understanding of an asset, thereby enhancing its archaeological and historical interest and offsetting adverse effects. Adverse effects resulting from visual change within the setting of historic assets can generally only be mitigated through changes to the design and layout of the proposed development, but can be off-set through more general enhancement measures (though this will not reduce the overall level of impact).

14.3. Methodology

14.3.1. The assessment will be carried out with reference to the following legislation, policy and guidance:

- The Historic Environment (Wales) Act 2016 as the primary statutory tool for protecting historic assets and sustainable management of the historic environment in Wales[54]
- Planning Policy Wales Edition 10, December 2018 (PPW)[55],
- Technical Advice Note 24: The Historic Environment (May 2017)[56],
- Cadw guidance documents: Heritage Impact Assessment in Wales (May 2017)[57] and the Setting of Historic Assets in Wales (2017)[58],
- Cadw's Conservation Principles (March 2011)[59],
- Natural Resources Wales (NRW) Guide to using the Register of Landscapes of Historic Interest[60]

[54] Available online from: https://www.legislation.gov.uk/anaw/2016/4/contents (last accessed 12.11.2020)

[55] Available online from: https://gov.wales/planning-policy-wales (last accessed 12.11.2020)

[56]. Available online from: https://gov.wales/technical-advice-note-tan-24-historic-environment (last accessed 12.11.2020)

[57] Available online from: https://cadw.gov.wales/sites/default/files/2019-05/20170531Heritage%20Impact%20Assessment%20in%20Wales%2026917%20EN.pdf (last accessed 12.11.2020)

[58] Available online from: https://cadw.gov.wales/sites/default/files/2019-05/Setting%20of%20Historic%20Assets%20in%20Wales%20EN.pdf (last accessed 12.11.2020)

[59] Available online from: https://cadw.gov.wales/sites/default/files/2019-05/Conservation_Principles%20for%20the%20sustainable%20managment%20fo%20the%20historic%20environment%20of%20Wales.pdf (last accessed 12.11.2020)

[60] Available online from: https://cadw.gov.wales/sites/default/files/2019-05/LandscapesRegisterGoodPractice_EN_0.pdf (last accessed 12.11.2020)

- Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists (CIfA 2020)[61],
- Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (CIfA 2020)[62],
- Gwent Glamorgan Archaeological Trust (GGAT) standards and guidance for archaeological work[63].

14.3.2. The consultees below will be approached for information to inform the EIA. These consultees may also be contacted by PINS regarding the scope of the EIA:

- Cadw,
- GGAT,
- Neath Port Talbot County Borough Council's Conservation Officer,
- Bridgend County Borough Council's Conservation Officer; and
- Local archaeological interest groups (as appropriate).

Baseline Desk Study

14.3.3. It is proposed that the cultural heritage assessment will employ two overlapping study areas. The Inner Study Area (ISA) will comprise the proposed site boundary and a 2 km buffer from the outer edge of the site boundary. The ISA will allow the development of the local historic environment to be understood in detail, to enable an assessment of the significance of known assets, and to identify the potential for currently unknown assets to occur, within the boundary of the proposed development. The Outer Study Area (OSA) will extend to at least 20 km from the site boundary, which is taken as the maximum extent of potentially significant effects on the settings of heritage assets. Within the OSA, assets will be included in the assessment based on the level of importance assigned to the asset (defined in the EIA Methodology), to ensure that all significant effects are recognised:

- Up to 2 km from site: minimum Grade II Listed Buildings, and any undesignated asset of local importance which has a wider landscape setting that contributes substantially to its cultural significance,
- Up to 5 km from site: minimum Grade II Listed Buildings, Conservation Areas, Historic Landscapes, Historic Parks and Gardens and undesignated assets of recognised regional importance,
- Up to 10 km from site: World Heritage Sites, Grade I and II* Listed Buildings, Scheduled Monuments and undesignated assets of national importance,
- Up to at least 20 km from site: any asset which is 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 10 km, the baseline will be screened (and agreed with consultees) in order to identify any assets of particular sensitivity or importance.

14.3.4. The distribution of known archaeology in the surrounding area indicates that previously unidentified archaeological remains are most likely to be found on gentle slopes, sheltered fertile land and/or close to

[61] Available online from: https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf (last accessed 12.11.2020)

[62] Available online from: https://www.archaeologists.net/sites/default/files/CIfAS%26GCommissioning_2.pdf (last accessed 12.11.2020))

[63] Available online from: www.ggat.org.uk (last accessed 12.11.2020)

the principal watercourses. At present, the entire ISA is considered to be of Low to Medium archaeological potential, although this may change during the assessment process.

14.3.5. The baseline of the assessment will be informed by a full desk-based assessment. The following sources will be consulted in preparing this assessment:

- Listed building data from Cadw;
- Descriptions of designated historic assets and assets recorded in the Glamorgan Gwent Archaeological Trust Historic Environment Record (GGATHER) and the National Monuments Record Wales (NMRW), viewed on the Historic Wales website (http://historicwales.gov.uk);
- Archaeological records held by GGAT HER;
- Conservation area details from Neath Port Talbot County Borough Council and Bridgend County Borough Council;
- Natural Resources Wales (NRW) Lidar data;
- LANDMAP datasets;
- Maps and plans held in the Glamorgan Gwent Archives (subject to any access restrictions posed by Covid-19);
- Relevant internet sources including National Library of Wales,
- Aerial photos held by the Central Register for Aerial Photography Wales (CRAPW) and the RCAHMW;
- Readily available published sources and unpublished archaeological reports.

14.3.6. A walkover survey will be undertaken to confirm the presence and condition of known features within the ISA once the layout has progressed and likely infrastructure locations have been identified.

14.3.7. A stage 1 setting assessment following Cadw guidance will be carried out for all historic assets within the ISA, and on Designated Historic Assets (DHAs) within the OSA. This will identify those assets for which the proposed wind farm may result in potentially harmful changes within their setting and will inform the scope of the detailed assessment of setting which will be included within the EIA.

14.3.8. Intangible cultural heritage for the combined study areas would also be considered at this stage, to include for example potential artistic or literary associations, sacred space, or local traditions and customs.

Baseline Field Study and Virtual Modelling

14.3.9. A site inspection will be carried out of those areas of the wind farm that are not under forestry, targeting the proposed turbine locations and internal access and cabling routes with a 100 m buffer to allow for micrositing to establish the condition of historic assets and identify the potential for the existence of additional assets not currently identified. It will also identify the contemporary existing environment (including historic and modern developments, and land-use including operational wind farms and single turbines, commercial forestry, as well as other infrastructure and major developments such as the motorway, steelworks and high-voltage overhead powerlines) to help understand the setting of historic assets and the degree of change that the proposed development might introduce.

14.3.10. To assist with the impact assessment a staged approach will be undertaken. Field inspections will be made after a filtering exercise to identify those historic assets that would not experience visual change, and that can therefore be scoped out. This would be achieved by comparison of mapped historic assets against the Zone of Theoretical Visibility (ZTV) data and aerial imagery. For those assets which show a potential change to their setting by the development being visible, further analysis would be undertaken to assess the level of impact. The ZTV mapping uses a bare earth model and even when it suggests

potential visibility of the proposed development from historic assets, intervening vegetation and structures might screen views, which will be confirmed through field inspections.

14.3.11. A fully navigable 3D model, incorporating terrain data; aerial and OS imagery; tree location and height data; building location, shape and height data; and wind turbine (including cumulative) location and dimension information has been procured by the applicant and will be utilised to assist in the design and assessment of the proposed wind farm development.

Assessment of Heritage Significance

14.3.12. Analysis of the historic assets and historic mapping will allow synthesis and interpretation of the historic development of the site and enable the heritage significance to be established in accordance with Cadw's Heritage Impact Assessment in Wales (section 4.2) and Conservation Principles for the sustainable management of the historic environment in Wales. This analysis will also establish what comprises the setting for the historic assets, and what elements of that setting contribute to how the asset is experienced, understood and appreciated. Assessment of the heritage significance (sensitivity) of the asset would use the criteria in the following table (the Registered Landscape of Special Historic Interest (HLW) is not included as this has a specific assessment methodology and scoring mechanism that needs to be applied (Assessment of the Significance of Development on Historic Landscape (ASIDOHL2)), so is itemised separately below).

Table 14.1: Levels of heritage significance

Importance of the asset	*Criteria*
Very high	World Heritage Sites and other assets of equal international importance
High	Grade I and II* Registered Parks and Gardens, Scheduled Monuments, Protected Wreck Sites, Registered Battlefields, Grade I and II* Listed Buildings, and undesignated historic assets of equal importance
Medium	Conservation Areas, Grade II Registered Parks and Gardens, Grade II Listed Buildings, historic assets on local lists and undesignated assets of equal importance
Low	Undesignated historic assets of lesser importance
Negligible	Negligible or no heritage significance
Unknown	Further information is required to assess the potential of these sites

Source: Headland Archaeology

Initial Input to Design Iteration and Mitigation

14.3.13. Analysis of Geographic Information System (GIS) layered data about the historic environment (DHAs, non-designated historic assets in GAT and RCHAMW datasets) will be used to identify historic assets that may be affected by the proposed development. This information will be provided to the design team to assist with avoiding or minimising both direct and indirect effects on historic assets. Where potential adverse impacts on cultural heritage are identified, measures to prevent, reduce and/or where possible offset these impacts will be proposed.

Assessment of Potential Impacts

14.3.14. The proposed development would result in a change to the existing baseline, and change might be considered as impacts according to the degree of change in relation to heritage significance. In accordance with 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; indirect impacts are those which affect the heritage significance of an asset by causing change within its setting. Application of Cadw's Managing: Setting of Historic Assets in Wales will require a four stage process in assessment of impacts:

- Stage 1: Identify the Historic Assets
- Stage 2: Define and Analyse the Setting
- Stage 3: Evaluate the Potential Impact of Change or Development
- Stage 4: Consider Options to Mitigate the Impact of a Proposed Change or Development

14.3.15. Magnitude of impact will be assessed with reference to the criteria set out in Table 14.2.

Table 14.2: Magnitude of impact

Magnitude of Impact	*Guideline Criteria*
High beneficial	Elements of the asset's physical fabric which would otherwise be lost, severely compromising its heritage significance, are preserved in situ; or Elements of the asset's setting, which were previously lost or unintelligible, are restored, greatly enhancing its heritage significance.
Medium beneficial	Elements of the asset's physical fabric which would otherwise be lost, leading to an appreciable but partial loss of heritage significance, are preserved in situ; or Elements of the asset's setting are considerably improved, appreciably enhancing its heritage significance; or Research and recording leads to a considerable enhancement to the archaeological or historical interest of the asset.
Low beneficial	Elements of the asset's physical fabric which would otherwise be lost, leading to a slight loss of heritage significance, are preserved in situ; or Elements of the asset's setting are improved, slightly enhancing its heritage significance; or Research and recording leads to a slight enhancement to the archaeological or historical interest of the asset.
Negligible	The asset's fabric and/or setting is changed in ways which do not beneficially or adversely affect its heritage significance.
Low adverse	Elements of the asset's fabric and/or setting which are of very limited relevance to its significance are lost or changed, resulting in a very slight loss of heritage significance; or Elements of the asset's fabric and/or setting which contribute to its heritage significance are minimally affected, resulting in a very slight loss of heritage significance.
Medium adverse	Elements of the asset's fabric and/or setting which contribute to its significance are affected, but to a limited extent, resulting in an appreciable but partial loss of the asset's heritage significance.
High adverse	Key elements of the asset's fabric and/or setting are lost or fundamentally altered, such that the asset's heritage significance is lost or severely compromised.

Source: Headland Archaeology

Assessment of Potential Effects

14.3.16. Following a design freeze the EIA will assess the potential direct effects for heritage assets from construction activities. Within the Outer Study Area assessment would be focussed on DHAs of the highest heritage significance (Table 14.1) that, following the filtering process, are considered to have potential for more than minimal visual change.

14.3.17. The assessment of effects will combine analysis of the data gathered during the DBA and site visit, photographs and wireframe visualisations of the topography and proposed development (produced by the LVIA consultants). Consideration will be given to assessing effects resulting from night time illumination following a review of the aviation lighting assessment and current baseline.

14.3.18. These assessments will be carried out using professional judgement, taking into account designations and heritage significance as assessed against national standards. Significance of effect will be based on a combination of heritage significance (in other disciplines sometimes referred to as sensitivity of the receptor) and magnitude of impact. The significance of effect matrix is presented in Table 14.3 and relates the heritage significance to the magnitude of impact (incorporating contribution from setting where relevant) to establish the likely significance of effect.

14.3.19. Effects of Major or Moderate significance are considered to be "significant effects"; those of Minor or Negligible significance are considered not to be significant, but will be described in the assessment. Where Table 14.3 provides two possible options for the significance of effect this will be a matter of professional judgement, taking into account the relative heritage significance of the asset, the magnitude of impact and the reversibility or otherwise of the impact.

Table 14.3: Significance of Effect

Magnitude of Impact	***Heritage Significance***				
	Very High	**High**	**Medium**	**Low**	
High beneficial	Major	Major	Major or Moderate	Moderate or Minor	*Enhancement*
Medium beneficial	Major	Major or Moderate	Moderate or minor	Minor	
Low beneficial	Major or moderate	Moderate or minor	Minor	Negligible	
Neutral/None	Neutral/nil	Neutral/nil	Neutral/nil	Neutral/nil	*Neutral/nil*
Low adverse	Major or moderate	Moderate or minor	Minor	Negligible	*Harm*
Medium adverse	Major	Major or moderate	Moderate or minor	Minor	
High adverse	Major	Major	Major or Moderate	Moderate or Minor	

Source: Headland Archaeology

ASIDOHL 2

14.3.20. The introduction of the wind farm within the Registered Landscape of Special Historic Interest (HLW) would have direct and indirect impacts on the historic landscape. Development within an HLW is not restricted, however the classification presents a further aspect of interest that would need to be assessed. A full Assessment of the Significance of the Development on the Historic Landscape (ASIDOHL2) would be required to complement any EIA and related planning submission, and ultimately the benefit that might

derive from the proposed development would be an essential element in determining whether the development would receive permission.

14.3.21. An ASIDOHL2 assessment will be completed following the design freeze. The process set out in Natural Resources Wales (NRW)'s "Guide to Good Practice on Using the Register of Landscapes of Historic Interest in the Planning and Development Process" (2007[64]) will be followed.

Cumulative Effects

14.3.22. Cumulative effects on the significance of historic assets may occur where the wind farm results in an effect on the significance of a historic asset and other developments also have an effect on the same asset.

14.3.23. It is proposed that:

- turbines below 20 m in height be excluded from the assessment of cumulative effects;
- single turbines between 20 m and 50 m in height within 5 km of Y Bryn Wind Farm are included;
- single turbines over 50 m in height and all wind farms within 20 km be considered for cumulative effects; and
- wind farms or single turbines beyond 20 km be excluded.

14.3.24. This is in order to focus the assessment on potentially significant cumulative interactions. It is not considered that domestic scale turbines (less than 50 m height to tip) beyond 5 km from the proposed development will have the potential to result in significant cumulative interactions.

14.4. Scope

14.4.1. It is not proposed that cultural heritage issues in general would be scoped out, but where for example the "bare earth" ZTV indicates no visibility of the 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.

14.4.2. As noted above, decommissioning should not result in further damage as the ground disturbance would already have occurred during the construction phase, and therefore is scoped out of the assessment.

14.4.3. The EIA may include a high level overview of the proposed grid connection. At this stage, the proposed grid connection route and method of connection is unknown. However, it is proposed that operational phase effects on historic assets will be scoped out for the grid connection route if the proposal taken forward is for underground cable.

Question 22: Do consultees agree with the approach and scope of the Heritage assessment?

Question 23: Do consultees see value to any particular mitigation and/or enhancement measures for any local or regional heritage features, whether referred to above or otherwise?

[64]Available online from: https://cadw.gov.wales/sites/default/files/2019-05/LandscapesRegisterGoodPractice_EN_0.pdf (last accessed 12.11.2020)

15. Traffic and Transport

15.1. Introduction

15.1.1. The objective of the Traffic and Transport Assessment is to assess the impact of the development of Y Bryn Wind Farm on the public road network, through an assessment of impact on existing traffic levels by means of a Traffic Impact Assessment (TIA). The assessment will be undertaken by Natural Power Consultants and Pell Frischmann.

15.1.2. At this stage, turbine component deliveries are anticipated to come from Swansea docks and along the M4 towards the site, however a number of options are currently being investigated for final site access.

15.2. Methodology and Scope

EIA - Traffic Impact Assessment Scope

15.2.1. An assessment of the traffic impact will be undertaken for the proposed development using the relevant project specific information. The methodology for the assessment would comply with all latest guidance, as relevant, including the Guidelines for the Environmental Assessment of Road Traffic (IEMA 1993) and Department for Transport (DfT) Guidance on Transport Assessment.

15.2.2. The methodology used for the assessment will be as follows:

- The geographic extent of the study will be confirmed in consultation with the relevant roads and highways authorities and will generally consist of the local road network where sensitive receptors are evident.
- Baseline traffic data will be used to measure the impact on existing traffic levels, considering the increase in heavy goods vehicles (HGV's) and light goods vehicles (LGV's) during construction and operation for the proposed development which will be derived from detailed project information and professional judgement. Acquisition of traffic count data will be done either by use of the Department for Transport Traffic Count Database, consultation with the local roads authority or commissioning of traffic counts, depending on the level of existing information available.
- The assessment of traffic against baseline data will determine the likely impact of project traffic against the criteria set out in Institute of Environmental Assessment (IEA) Guidance Notes No.1 and Department for Transport (DfT) guidance, as relevant. The guidance suggests that two rules can be used as a screening process to delimit the scale and extent of the assessment:
  - 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. (IEA Guidelines Paragraph 3.20 defines sensitive area as including "accident blackspots, conservation areas, hospitals, links with pedestrian flows etc.")

  Where the predicted increase in traffic flow is lower than these thresholds, the significance of the effects can be stated to be low or insignificant, and further detailed assessments are not warranted. Where the predicted increase in traffic flow results in a high significance then further mitigation is required in order to minimise the potential impact.

  It should be noted that these guidelines are intended for the environmental impact assessment of long-term impacts of road traffic associated with major new developments such as industrial estates and supermarkets. In terms of a wind farm development, this would be equivalent to the operational phase rather than the construction phase. The volume of traffic generated during the operational phase of a wind farm is considered negligible as during normal operation the wind farm would generally be unattended but with regular site visits to carry out routine inspections and preventative

maintenance. However, in the absence of other guidance, the IEA guidelines are used to assess the temporary transport flow during construction.

If any traffic impact criteria is exceeded, the assessment will recommend suitable mitigation measures. The assessment would consider:

- Delay effects on other road users (by consideration of percentage changes in traffic composition and volume),
- Road Infrastructure (dilapidation)
- Safety effects on other road users and adjacent properties, and
- Safety effects on pedestrians and cyclists (e.g. on routes passing through towns).

- The study would consider effects during construction, operation and decommissioning.

AIL Route Survey Report

15.2.3. An assessment of potential delivery routes for Abnormal Indivisible Loads (AILs) will be carried out, including the production of swept path drawings for key points of interest, on OS base mapping or topographical survey data as deemed appropriate. The swept path assessments will identify areas of over-sail and over-run, street furniture modifications and indicative mitigation works, for both turbine blade and tower section components.

15.2.4. A full Electronic Service Delivery for Abnormal Loads (ESDAL) consultation with the trunk and local roads officers relating to structure issues with the proposed access routes would also be undertaken to identify any structural issues that may arise. Consideration will also be given to any site access junctions to ensure adequate design including visibility splays.

15.2.5. A Road User Safety Audit will be undertaken, if necessary.

Preliminary Traffic Management Plan

15.2.6. As part of the Traffic and Transport assessment, and in line with any pre-application requirements, a Preliminary Construction Traffic Management Plan will be produced for transport associated with site traffic (HGV's, LGV's etc), as well as a separate Preliminary Abnormal Indivisible Load (AIL) Traffic Management Plan for transport associated with wind turbine component deliveries. Both documents will be included as part of the planning submission. The Traffic Management Plans will generally outline the detail of the works and the associated traffic. It will include aspects such as the standard industry mitigation measures considered for impacts associated with the works, and typical traffic management measures employed for control of traffic on the public road to ensure there are no safety issues or impediments on the public highway.

EIA - Traffic and Transport Chapter

15.2.7. A Traffic and Transport EIA chapter will be produced as part of the EIA and include the following information:

- Traffic Impact Assessment;
- AIL Route Survey Report(appended);
- Preliminary AIL Traffic Management Plan (appended);
- Preliminary Construction Traffic Management Plan (appended).

16. Noise

16.1. Introduction

16.1.1. This section of the scoping report summarises the proposed scope for the noise assessment for Y Bryn Wind Farm, undertaken by specialist noise consultants Hayes McKenzie Partnership Ltd.

16.1.2. Noise from an operating wind farm generally exhibits itself in two forms: aerodynamic and mechanical. The aerodynamic noise is broadband in nature and originates from the incoming air interacting with the moving blades. Given the rotational nature of the source, there can be a certain rhythmical nature, or modulation, to the broadband noise under certain circumstances. Whether the wind farm noise is audible, or distinguishable, to a nearby resident depends upon many factors, including: the receptor distance, the wind speed, the wind direction, and the nature of local background noise sources (e.g. noise from nearby trees blowing in the wind, noise from a nearby stream, or noise from local traffic flows) that may or may not help to mask the wind turbine noise. It is possible that mechanical noise from internal machinery can also be audible, depending upon the design of said machinery. Mechanical noise if present is generally tonal in nature, where discrete frequencies may be identified, but this depends upon the machine design in the first instance, and upon the nature of any background noise that may provide masking in particular frequency ranges.

16.1.3. Noise related to the construction phase of a wind farm may exhibit itself in many forms, depending upon the nature of the particular construction activity and plant. Typically there would be various stages (that may overlap) to the construction phase, e.g. works on borrow pits, construction and renovation of access tracks, hard standing area construction, turbine foundation excavation and concrete pouring, etc. Each of these operations may involve different machinery and so cause different levels of noise, but is generally, relatively speaking, short-term in nature, and likely to be limited to daytime working hours. Additional noise may also be generated from construction related traffic, for instance if there is a requirement for delivery of road stone or concrete.

16.1.4. It is proposed to assess operational noise from the proposed development using ETSU-R-97, and noise from the construction phase using BS 5228:2019.

16.2. Methodology

Operational Noise - General Approach

16.2.1. Operational noise from the proposed development will be assessed according to the noise criteria suggested by ETSU-R-97[65]. The use of ETSU-R-97 to assess the potential noise impact of wind energy developments is recommended by TAN 8[66],[67], which is referred to by Planning Policy Wales[68] in regards

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

66 Technical Advice Note (TAN) 8: *Planning for Renewable Energy*, Welsh Assembly Government (July 2005).

67 TAN 8 states at Paragraph 2.16 of Annex C: "*The report 'The Assessment and Rating of Noise from Wind Farms' (ETSU-R-97) describes a framework for the measurement of wind farm noise and gives indicative noise levels calculated to offer a reasonable degree of protection to wind farm neighbours, without placing unreasonable restrictions on wind farm development or adding unduly to the costs and administrative burdens on wind farm developers of planning authorities. The report presents the findings of a cross-interest Noise Working Group and makes a series of recommendations that can be regarded as relevant guidance on good practice*".

68 *Planning Policy Wales*. Edition 10, December 2018. Welsh Government (2018).

large scale wind energy development. The methods outlined in the Institute of Acoustics Good Practice Guide[69] (GPG) will also be followed, as this gives further good practice guidance to the application of ETSU-R-97.

16.2.2. Y Bryn Wind Farm currently is proposed to have turbines with a tip height of up to 250 m. In terms of predicting potential noise from the development, source noise levels will be based upon a range of candidate turbine models that are currently available in the market of maximum tip height considered. A combined sound power level curve that encompasses the maximum noise levels of the various candidate turbine models will be modelled.

Cumulative Assessment and Daytime Noise Criterion

16.2.3. It is required for cumulative noise levels, from all wind farm developments combined, to meet the ETSU-R-97 noise criteria. The cumulative noise assessment will consider all other existing, proposed, or consented wind farm developments that are close enough to be relevant to the noise sensitive receptors neighbouring this proposal. When modelling the other wind farm developments, consideration will be given to the 'controlling property' and 'significant presented headroom' approaches outlined in the GPG. If it is possible and realistic, it will be assumed that the other wind farm developments are at their respective noise limits.

16.2.4. Table 16.1 below summarises other wind farm developments in the immediate area, detailing their approximate distance and generating capacity.

Table 16.1: Other wind farm developments

Wind Farm	Distance to nearest Y Bryn turbine (km)	County*	Status	Generating Capacity (MW)
Foel Trawsnant	0.2	NPT	Proposed[70]	33 MW
Mynydd Brombil	1.6	NPT	Operating	8 MW
Pen y Cymoedd	2.9	RCT/NPT	Operating	228 MW
Ffynnon Oer	4.1	NPT	Operating	32 MW
Llynfi Afan	4.4	NPT/BCC	Operating	24 MW
Melin Court	6.5	NPT	Approved	18 MW
Upper Ogmore	7.0	BCC	Proposed	25 MW
Newton Down	8.5	BCC	Operational	5 MW
Pant y Wal	11.9	BCC	Operational	25 MW
Pant y Wal Extension	10.9	BCC	Operational	20 MW
Pant y Wal Extension (Phase 2)	11.9	BCC	Proposed	5 MW
Fforch Nest 1/2	12.4	RCT/BCC	Operational	17.5/10 MW

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

70 Consent has been granted to a 13 turbine scheme at Foel Trawsnant, subject to a Section 106 agreement. A revised 11 turbine scheme (with greater tip height) has subsequently been proposed, for which it is understood the local authority have resolved to grant permission, subject to a Section 106 agreement.

Wind Farm	Distance to nearest Y Bryn turbine (km)	County*	Status	Generating Capacity (MW)
Maerdy	12.8	RCT	Operational	24 MW
Maesgwyn	13.5	NPT	Operational	26 MW
Maesgwyn Extension	13.2	NPT	Operational	10 MW

**Where: NPT: Neath Port Talbot County Borough Council, BCC: Bridgend County Borough Council, RCT: Rhondda Cynon Taf County Borough Council.*

16.2.5. It is understood that there are no single wind turbine developments within 4 km of the site, that are either existing, or proposed/consented within the planning system, that would need consideration within the cumulative noise assessment.

16.2.6. It is proposed to include the following wind farms in the cumulative noise assessment:

- Foel Trawsnant;
- Mynydd Brombil;
- Pen y Cymoedd;
- Ffynnon Oer;
- Llynfi Afan;

Question 24: Do consultees agree with the proposed approach to cumulative noise and the list of other wind developments that are planned to be included in the cumulative noise assessment?

16.2.7. ETSU-R-97 suggests that daytime noise limits within the range of 35 – 40 dB L_{A90} offer a reasonable degree of protection to wind farm neighbours without placing unreasonable restrictions on wind farm development. The actual value chosen for the daytime limit should depend upon a number of factors, namely:

- The number of dwellings in the neighbourhood of the wind farm;
- The effect of noise limits on the number of kilowatt/hour (kWh) generated; and
- The duration and level of exposure.

16.2.8. Due consideration should be given to all three mentioned factors. Nevertheless, if just the second aspect is considered, the potential wind energy generating capacity of the Y Bryn development is estimated to be up to 171.6 MW. ETSU-R-97 suggests that the larger the development, the stronger the planning merit for a higher noise limit, e.g. "*a single wind turbine causing noise levels of 40 dB at several nearby residences would have less planning merit than thirty wind turbines causing the same amount of noise at several nearby residences*" (noting that in 1997 the largest machines considered by the Noise Working Group were only 450 kW). That is, the greater the generating capacity, the greater the positive aspects of the development to justify a higher noise limit, in a planning balance sense. For large significant wind farm developments (i.e. >50 MW), an overall noise condition daytime limit of 40 dB is usually imposed, for example as at Pen y Cymoedd, Clocaenog and Brechfa Forest West. Given the proposed Y Bryn development is estimated to be up to 171.6 MW and the additional planning merit inferred from the weight of more recent climate change and renewable energy related law and policy, including the Net Zero target, Hayes McKenzie consider a daytime noise limit at the upper value of 40 dB L_{A90} (or background + 5 dB) to be appropriate for non-financially involved properties. Any financially involved properties would be apt to receive a higher 45 dB L_{A90} limit.

16.2.9. Potential wind farm noise levels during night-time periods will be assessed against the ETSU-R-97 night-time criterion of 43 dB L_{A90} (or background + 5 dB). For dwellings where residents have a financial

involvement with the development, potential wind farm noise levels will be assessed against the ETSU-R-97 suggested criterion of 45 dB L_{A90} (or background + 5 dB).

Question 25: Do consultees agree it is appropriate to assess noise from the development, individually and cumulatively, against a daytime limit of 40 dB L_{A90} / Background + 5 dB and 45 dB L_{A90} for financially involved properties?

Baseline Monitoring Locations

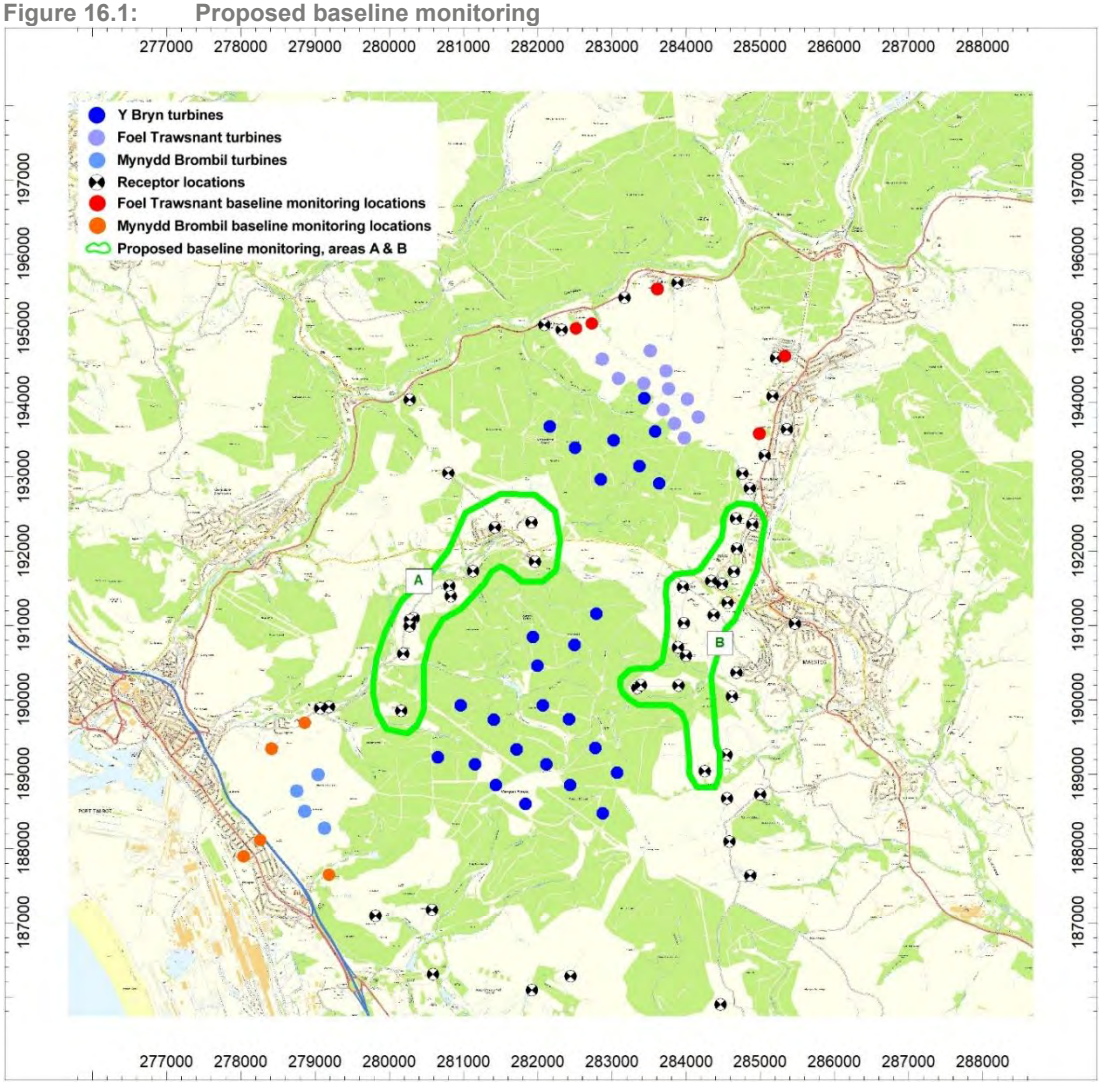
16.2.10. Following the ETSU-R-97 approach, baseline background noise levels will be monitored at several potentially sensitive noise receptors neighbouring the proposed development.

16.2.11. Figure 16.1 details the areas of proposed baseline noise monitoring. Also highlighted on the figure are the background noise monitoring locations to the north, which were previously used for the Foel Trawsnant application. For the assessment of receptors to the north and north-east, it is intended to refer to these background noise measurements collected for Foel Trawsnant.

16.2.12. In a similar fashion, the background noise monitoring locations used for the Mynydd Brombil application are also highlighted. It is intended to use these background noise levels for the assessment of receptors to the south-west of the development.

16.2.13. It is intended, if possible, to undertake new background noise monitoring at several locations within areas A and B as highlighted on Figure 16.1. These are areas where preliminary noise predictions suggest cumulative wind farm noise levels may be approaching the ETSU-R-97 daytime limit range of 35-40 dB L_{A90}, and where background noise monitoring has not previously been undertaken.

Figure 16.1: Proposed baseline monitoring



Source: Hayes McKenzie

16.2.14. The methodology and final locations of background noise monitoring will be discussed and agreed with the local environmental health officers of NPT and BCC.

Question 26: Do consultees agree with the areas proposed for background noise monitoring?

Construction Noise

16.2.15. Noise associated with the construction and decommissioning stages of the proposed development will be undertaken according to the methods outlined by BS 5228[71]. This will be based upon noise levels of typical or intended construction plant, that would be considered likely for the anticipated various construction phases of the development. It is intended to assess noise from construction related traffic on nearby access routes according to the method outlined in Calculation of Road Traffic Noise[72].

71 BS 5228-1:2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites, Part 1: Noise.* (December 2008).

72 Department of Transport: *Calculation of Road Traffic Noise.* (1988).

Question 27 Do consultees agree with the proposed approach to assessing construction related noise from the proposed development?

Scope

16.2.16. The scope of the noise assessment will include an assessment of:

- Operational noise from the proposed development, including cumulative noise impacts from neighbouring wind farm developments;
- Construction related noise from the construction and decommissioning phases of the proposed development, including noise from associated construction traffic.

17. Forestry

17.1. Introduction

17.1.1. This section has been prepared by ARC Woodlands Ltd and sets out the approach which would be used to integrate the proposed Y Bryn Wind Farm into the existing woodland structure.

17.1.2. The proposed development is within the afforested areas that lie between Port Talbot and Maesteg. These areas of forest are managed by NRW on behalf of the Welsh Ministers and the site boundary lies within the two NRW Forest Resource Plan areas of Margam and Afan[73].The forest areas can be characterised as upland dominated by conifer tree species, the most common of which is Sitka spruce (Picea sitchensis) (Figure 17.1). Other areas of broadleaved woodland exist within the site boundary as either plantation, Semi-natural or Ancient semi-natural type woodland. In addition, there are areas of permanent open ground around water courses and other features and open ground created through the felling programme of NRW.

17.1.3. The current Bryn site boundary includes only the freehold land belonging to NRW. In addition to the freehold land, there are areas within the existing NRW Forestry Resource Plans which are leased to Welsh Government and managed by NRW alongside the freehold land. As a result, the study area for the forestry assessment for Y Bryn will be extended to include these leasehold areas as shown in Figure 17.2.

17.1.4. The planted forests were established from the 1920's onwards[74] and many parts have been harvested and restocked. This has given rise to a range of ages of trees with open areas, young trees and mature trees all present. The forests are now in a production phase and felling and replanting is ongoing.

17.1.5. The forest area is actively managed on either a clear felling or a continuous cover system, with some areas being subject to minimum intervention practices. The management objectives of NRW include restructuring the forests to break up even aged crops, diversifying species, restoring open habitat and ancient woodland sites and providing recreation and community benefits including footpaths, cycle paths.

17.1.6. In the UK there is a strong presumption against permanent deforestation[75], unless it addresses other environmental concerns. The integration of the proposed development into the Forest Design Plan will be a key part of the development process. A wind farm felling plan would be prepared setting out the forestry felling and management requirements, including replanting associated with the construction and operation of the proposed development.

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[73] https://naturalresources.wales/about-us/what-we-do/welsh-government-woodland-estate/forest-resource-plans [Accessed:22/09/2020]

[74] UK. Forestry Commission (1961) *Glamorgan Forests, Forestry Commission Guide*. London: Her Majesty's Stationery Office

[75] Available online from: http://gov.wales/woodlands-wales-strategy (last accessed 12.11.20)

17.2. Consultation

17.2.1. The main forestry consultee is NRW who manage and control the forest land within the site boundary. They are also the body that regulates tree felling and planting in Wales in both the Welsh Government woodland and private woodlands.

17.2.2. To integrate the tree felling needed by the proposed wind farm, the developer will consult with NRW throughout the development of the proposal so that the felling can meet the requirements of the Welsh Government's Woodland for Wales strategy[76], individual NRW Forest Resource Plans and NRW's long term objectives.

17.2.3. There may be comments raised by other consultees, including Neath Port Talbot and Bridgend County Borough Councils, regarding forestry and these will be detailed in the ES.

17.3. Legislation and Guidance

17.3.1. The forestry proposal will be prepared in accordance with the current industry best practice and guidance.

17.3.2. The United Kingdom Forestry Standard (Forestry Commission 2017)[77] is the standard used by all UK governments as a reference for sustainable forest management. The standard is supported by seven guidelines which can be used to demonstrate the appropriate management of forests and woodland in the UK to international and European criteria. National forestry policy in Wales is set out by the Welsh Government's Woodlands for Wales (Welsh Government, 2018) strategy. The strategy is supported by the Woodlands for Wales: action plan (Welsh Government, 2018[78]) and the 7 main themed supporting documents-

- Biodiversity
- Economic development and enterprise benefits
- Education, learning and skills benefits
- Extent nature and character
- Health and well being
- Landscape heritage and culture
- Water and soils
- Tree health strategy[79]

17.3.3. NRW managed woodlands are certified through both the Forest Stewardship Council (FSC)[80] and the Programme for the Endorsement of Forest Certification (PEFC)[81] sustainable forest management schemes. Any forest operations required by the development will adhere to the commitments made through these schemes to the UK Woodland Assurance Standard 4.0 (2018)[82].

- Forestry Commission (2017). The UK Forestry Standard: The Government's Approach to Sustainable Forestry, Forestry Commission, Edinburgh.

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[76] Available online from: http://gov.wales/woodlands-wales-strategy (last accessed 12.11.20)

[77] Available online from: http://www.gov.uk/government/publications/the-uk-forestry-standard (last accessed 12.11.20)

[78] Available online from: https://gov.wales/woodlands-wales-action-plan (last accessed 12.11.20)

[79] Available online from: http://gov.wales/forestry [Accessed: 10/09/2020 (last accessed 12.11.20)

[80] Available online from: https://fsc-uk.org (last accessed 12.11.20)

[81] Available online from: https://www.pefc.co.uk (last accessed 12.11.20)

[82] Available online from: http://ukwas.org.uk (last accessed 12.11.20)

- UKWAS (2012). The UK Woodland Assurance Standard Third Edition, UKWAS, Edinburgh.
- Woodlands for Wales – The Strategy for Woodlands and Trees. Welsh Government (2018). Welsh Woodland Strategy

17.3.4. In addition, the proposals will be developed in line with industry best practice and will refer to other guidance produced by NRW, along with relevant material from Forest Research, Forestry Scotland and Forestry England.

Question 28: Are consultees in agreement that this provides sufficient guidance for the forestry elements of this wind farm proposal?

17.4. Methodology

17.4.1. The forestry baseline will be prepared from site visits, aerial photography and the GIS datasets held by NRW at the time of the ES preparation. The GIS datasets used by NRW to produce the Forest Resource Plans are live datasets and up to date versions will be used up to design freeze stage. The baseline produced for the ES will include current species, age and the existing felling and restocking plans. The baseline used for this scoping section was sourced as a GIS datasets from the Lle Geo-Portal for Wales[83].

17.4.2. The ES will reflect on how the forests can rapidly change either through regular forest management activity dictated by landowner activities and market forces or through natural events like storm damage, pests and disease outbreaks. Forestry is therefore not considered likely to result in a significant effect. The ES chapter will describe the changes needed to incorporate the wind farm proposal into the forest areas rather than ascertaining levels of EIA significance. This will include changes to forest cover where felling is needed to incorporate roads or other infrastructure including turbine locations, and will describe the felling method (which is dependent on age of crop) and product (e.g. timber, brash etc.). The Forestry Chapter of the ES will also identify where replanting is possible once the development is completed. The effects of the forest felling and restocking will be assessed in other chapters of the ES including Ecology, Landscape, Hydrology, and Traffic and Transport.

17.4.3. The main source of potential change within the forest will be from the preparation of the site prior to the construction of turbines and infrastructure. This will be in the form of tree felling/clearance to create the space required for the development. Tree felling and clearance will be needed for turbine foundations and crane hardstandings, the upgrading and construction of new access tracks/roads, excavation of borrow pits, cable routes, drainage ditches, batters and the construction of control buildings/substation, met masts, compounds and laydown areas etc.

17.4.4. Further impact in the operational phase may arise from maintenance works to tree cover around infrastructure. Examples may include removing or cutting trees to maintain tree heights. During decommissioning it may be necessary to remove trees, which have regrown since construction, in order to access the infrastructure.

17.5. Cumulative Assessment

17.5.1. The changes to the forest resulting from the development are regarded as specific to the site boundary and it is proposed that there are no cumulative forestry issues to be addressed.

17.6. Mitigation

17.6.1. Mitigation of potential impacts will be embedded, where possible, in the design of the proposed wind farm; for example, by using existing forest infrastructure and avoiding sensitive areas such as Plantations on

[83] http:lle.gov.wales/home [Accessed:03/05/2020]

Ancient Woodland Sites (PAWS) within the study area. A keyholing approach will be used around the individual wind farm elements which will seek to limit the amount of felling required for each wind farm component. Assessment of the crops surrounding the component by age, existing felling data and wind firmness will indicate whether keyholing will be used or whether felling out to larger areas will be needed.

17.6.2. Some of the area felled will be available post construction for replanting which may be with alternative species or the areas may be retained for other purposes that benefit the overall aims of the Forest Resource Plan, for example an alternative open habitat or a change of woodland type. The Forest Resource Plans may need to be redesigned by NRW to incorporate these changes.

17.6.3. The "Woodlands for Wales" document presents the role that the Welsh Government expects new and existing woodlands to provide. The strategy highlights the "strong presumption" against permanent removal of woodlands except for the restoration of priority open habitats. The strategy goes on to explain that where forest or woodland area is lost to development it is assumed that the loss is offset by new compensatory planting.

Question 29: Are consultees in agreement with the proposed methodology and approach for forestry?

18. Socio-Economics

18.1. Introduction

18.1.1. The demonstration of socio-economic and community impacts has become a more prominent issue for the onshore wind sector in recent years. We therefore consider it an essential that this ES includes a socio-economic assessment to determine the benefits for the Welsh economy and benefits for local communities.

18.1.2. In terms of tourism effects, the review of literature evidence suggests that overall the research tends to support the premise that wind farm development has not resulted in a serious negative economic impact on tourism and could even have wider positive impacts. The most relevant and recent research on the economic impact of wind farms on tourism was published by the Welsh Government in February 2014[84]. The research outlines a number of key findings which suggests that there is little evidence to suggest wind farms have had/or as having, a detrimental impacts on tourism across Wales. Furthermore, a more recent national tracker survey[85] outlined that support for renewable energy has been consistently high during the tracker with 79% expressing support for the use of renewables, whilst opposition to renewables was very low at 4%, with only 1% strongly opposed. It is intended therefore to **scope out** assessment of **tourism** from the EIA.

18.2. Methodology

18.2.1. We propose that the socio-economic assessment would be based upon 3 economic boundaries (local, regional and national economy) and will include the following:

[84] Welsh Government (2014) *Study into the Potential Economic Impact of Wind Farms and Associated Grid Infrastructure on the Welsh Tourism Sector*, Available online from: https://gov.wales/sites/default/files/publications/2019-06/potential-economic-impact-of-wind-farms-on-welsh-tourism_0.pdf (last accessed 12.11.20)

[85] Energy and Climate Change Public Attitude Tracker, Wave 24, January 2018: Available online from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/678077/BEIS_Public_Attitudes_Tracker_-_Wave_24_Summary_Report.pdf (Last accessed 12.11.20)

- assess the existing economic environment (baseline) using official data on population, industrial structure, unemployment and economic activity levels, income and earnings;
- assess the potential economic effects during the development and construction phase of the proposed development including direct employment, supplier effects and income effects;
- assess the potential economic effects during the operation of the wind farm including direct employment, supplier effects and income effects;
- assess the economic affects arising from infrastructure improvements and potential community benefits and shared ownership; and
- consider and report on mitigation and management measures which could be employed to minimise any negative impacts and maximise potential positive impacts.

18.2.2. Given the evidence from numerous large scale wind farm applications in the UK that there is little likelihood of significant effects in EIA terms, the socio-economic chapter will not aim to derive EIA significance for effects.

Question 30: Are consultees in agreement with the proposed methodology for socio-economic and that tourism is scoped out?

19. Health and Public Safety

19.1. Shadow Flicker

19.1.1. Department of Energy and Climate Change (DECC) studies[86] have shown that shadow flicker occurs in the UK within ten rotor diameters of the turbine and within 130 degrees either side of north relative to the turbines. Beyond these limits it is considered that potential impacts associated with shadow flicker will not be significant.

19.1.2. Should the final turbine layout mean that there are no residential properties identified within potential shadow flicker zones of proposed turbines, we propose to scope out the need for a shadow flicker assessment from the ES. Otherwise, shadow flicker assessment will be undertaken to analyse the potential impact and assess its significance. This would consist of determining the maximum number of shadow flicker hours per year at any receptor within the vicinity of the wind farm that theoretically has the potential to experience some form of shadow flicker effects, using software such as WindFarmer (which would show 'worst case scenario', i.e. with no account taken of actual window locations, local average climatic conditions, intervening screening features (buildings, trees etc.)). Depending on the outcomes of this initial 'worst case' assessment further 'real-world' conditions would be reviewed further.

19.1.3. There is limited guidance on a defined number of hours of shadow flicker that is considered acceptable and considered insignificant. Predac, which are a European Union sponsored organisation that promotes best practice in energy use and supply, recommends that shadow flicker does not exceed 30 hours per year or 30 minutes per day (Predac, 2003)[87]. Less than 30 hours per year of theoretical shadow flicker is the most commonly quoted figure within the industry as an acceptable limit in the UK. Mitigation is however possible through use of light sensors and individual turbine control during potential flicker producing times and conditions.

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[86] An update of the UK Shadow Flicker Evidence Base as reported for DECC by Parsons Brinckerhoff, March 2011: Available online from Update of UK Shadow Flicker evidence base - GOV.UK (www.gov.uk) (Last accessed 25.11.20)

[87] Predac (2003) *Spatial Planning of Wind Turbines Report*.

19.2. Ice Throw

19.2.1. Blade icing is a rare occurrence that will only happen when the blades of the turbine are stationary and under near freezing temperatures and relatively high humidity, with either freezing rain or sleet. If these certain climatic conditions cause icing to occur, once operation recommences, the operational motion of the turbine blades and the forces of gravity can cause the ice to break off and fall vertically to the ground.

19.2.2. The risk of ice throw[88] is dependent on the local climate and weather conditions in which the wind turbines are situated. Increases in temperature, wind speed and solar radiation can cause the ice to loosen and fall. This makes the area under the turbine the area of the greatest risk. Dependent on the conditions, there is the potential for the blades to propel the ice up to several hundred meters when they commence operation. This can cause damage to people, structures and vehicles.

19.2.3. Siting the turbines away from occupied buildings, roads and public areas can mitigate the risk, as is the case at the proposed Y Bryn Wind Farm development. There are also nowadays specific turbine sensors that can identify the likeliness of the climatic conditions that cause icing, so if ice accumulation is expected or occurs the turbines can be shut down. This works when icing on the blades results in reduced performance, unusual loads, and/or vibrations. These are then detected by a control system and trigger an automatic shutdown of the turbine. Project operators use these detection systems to halt operation of certain turbines during icing events to prevent ice throws and equipment damage and, in these cases, the turbine remains off-line until an operator visually inspects and manually restarts the turbine when the blades are clear of ice.

19.2.4. The overall view is that modern turbines which are fitted with climatic detection systems like the ones being considered for Y Bryn Wind Farm, together with good practice site management procedures including the use of visual warnings signs and restricted access to turbines where ice is present on blades, will mitigate and manage this potential hazard.

19.2.5. TAN 8 notes that the '*build up of ice on turbine blades is unlikely to present problems'* and has not been reported as a significant issue at operational sites in Wales. Ice throw will **not** be assessed in the ES.

19.3. Lightning

19.3.1. The danger to human or animal life from lightning strike via a turbine is rare since lightning is directed down the turbine to the earth. Maintenance of the turbines would not be undertaken during high lightning risk weather conditions. Lightning will **not** be assessed in the ES.

19.4. Health & Safety

19.4.1. The assessment of the safety aspects of the construction, operation and decommissioning of the wind farm will consider the health and safety of construction workers and risks to safety of members of the general public. NPT and Bridgend Councils will be consulted with regard to the location of any hazardous sites within the vicinity of the proposed development.

[88] Evaluating risk caused by ice throw from wind turbines (2017). Available fromhttps://www.lr.org/en-gb/insights/articles/evaluating-risk-caused-by-ice-throw-from-wind-turbines.aspx [Accessed 03.12.2020]

Question 31: Do you agree that ice throw and lighting is scoped out of the ES and potentially shadow flicker if no properties lie within 10 rotor diameter of turbines?

20. Aviation and Existing Infrastructure

20.1. Introduction

20.1.1. This section assesses the potential impact of the proposed Y Bryn Wind Farm development on aviation and existing infrastructure and then sets out the proposed methods for assessing aviation and existing infrastructure.

20.1.2. In terms of aviation, consideration has been given to the potential impact on civil and military aviation interests. The relevant aviation stakeholders have been identified.

20.1.3. The assessment to date has been undertaken by means of desktop study methods, including the review of the relevant aviation policy and legislation documents, identification of statutory aviation bodies, as well as identifying any potential mitigation measures that may need to be employed.

20.1.4. The assessment on existing infrastructure will be carried out by Natural Power. This section summarises the existing public right of way (PRoW) network and any other public trails in the vicinity of the proposed development. In addition, TV and radio reception, and telecommunications is discussed in this section, along with any existing water, gas and power infrastructure.

20.2. Aviation

Introduction

20.2.1. Wind turbines have the potential to cause degradation to air traffic control, air defence and meteorological radars and aeronautical radio navigation equipment. They can also pose a hazard to low flying aircraft and affect the flight procedures for aircraft in the vicinity of airports.

20.2.2. This section of the Scoping Report identifies aviation receptors that have the potential to be affected by the proposed development. It also assesses whether any of these receptors have the potential to be significantly affected by the proposed development and therefore require full EIA assessment.

References and Standard Guidance

20.2.3. A full explanation of the impact of wind turbines on aviation is contained within Civil Aviation Publication 764 (CAA Policy and Guidelines on Wind Turbines)[89].The following guidance and industry standards on the potential effects of wind turbines on aviation will be used in undertaking the aviation assessment:

- Civil Aviation Publication (CAP) 168 Licensing of Aerodromes.
- CAP 493 Manual of Air Traffic Services Part 1.
- CAP 738 Safeguarding of Aerodromes.
- CAP 774 UK Flight Information Services.
- CAP 793 Safe Operating Practices at Unlicensed Aerodromes.
- CAA Policy Statement: Lighting of Onshore Wind Turbine Generators in the UK with a maximum blade tip height at or in excess of 150m Above Ground Level.
- ICAO Annex 14 Volume 1 (Eighth Edition): Aerodromes – Aerodrome Design and Operations

89 http://publicapps.caa.co.uk/modalapplication.aspx?appid=11 [Accessed 12/11/2020]

- Military Aviation Authority (MAA) Air Traffic Management (3000 series) Regulatory Articles.
- UK Military Aeronautical Information Publication (AIP).
- UK Aeronautical Information Publication.
- Civil Aviation Authority (CAA) 1:250,000 and 1:500,000 Visual Flight Rules (VFR) Charts.
- DTI/MoD/CAA/BWEA Wind Energy and Aviation Interests Interim Guidelines.
- Ministry of Defence (MoD) Low Flying Charts.

Methodology

20.2.4. Given that there is no published legislation or guidance to define how the significance of impacts on aviation receptors should be determined, the criteria to be used in the EIA have been devised using professional judgement and developed in consultation with relevant aviation stakeholders.

20.2.5. A search of Ministry of Defence (MoD), NATS and in-house Aviatica databases was carried out to identify:

- all air defence and en-route air traffic control radars within 250 km of the proposed development;
- all airport and airfield radars within 125 km of the proposed development;
- all Meteorological Office radars within 30 km of the proposed development;
- all licensed, certificated and Government aerodromes within 25 km of the proposed development; and
- all unlicensed aerodromes and landing sites within 15 km of the proposed development.

20.2.6. In addition the features of the military low flying system in the area were determined from Low Flying Charts and the UK Military Aeronautical Information Publication.

Scope

Potentially affected receptors

20.2.7. The proposed Y Bryn development has potential to affect the following aviation assets and features;

- NATS Clee Hill radar
- NATS Bovingdon radar
- NATS Pease Pottage radar
- NATS Burrington radar
- RAF Portreath air defence radar
- Cardiff Airport radar
- Bristol Airport radar
- QinetiQ Aberporth range radar
- RN Hartland Point radar
- Exeter Airport radar
- RN Yeovilton airfield radar
- Yeovil Airfield radar
- Gloucestershire Airport radar.

20.2.8. Effects on the radars at Cardiff Airport and Hartland Point will be subject to assessment, including consultation with NATS and the Ministry of Defence, therefore scoped in to the assessment.

Aviation Impacts Scoped Out

20.2.9. The radars at Clee Hill, Bovingdon, Pease Pottage, Bristol Airport, Burrington, Portreath, Aberporth, Exeter, Yeovilton, Yeovil and Gloucestershire have all been found to have no line of sight to the proposed wind turbines due to intervening terrain. Impacts on those facilities can therefore be scoped out of the assessment.

20.2.10. There are no Meteorological Office radars within 30 km of the site. The site is located within a part of the UK Military Low Flying System known as the Glamorgan Transit Area, which is classified by the MoD as an "area with no military low flying concerns". There are no licensed, certificated or Government aerodromes within 25 km of the site; nor any unlicensed aerodromes or landing sites within 15 km of the site. Effects on those facilities can also, therefore, be scoped out of the assessment.

Mitigation

20.2.11. For any radars found to be adversely affected by the development, an assessment will be conducted of the potential methods for mitigating against those adverse effects.

20.2.12. Turbines 150 m or more in height are required by the Air Navigation Order to be fitted with lighting. The EIA will explore the potential for reducing the number of lit turbines, and the frequency with which they are switched on, in order to maintain air safety while minimising the night time visual impacts of the turbines. The proposed lighting scheme will be submitted to the CAA for approval.

Question 32: Are consultees in agreement with the proposed methodology and approach for aviation?

20.3. Other Existing Infrastructure

20.3.1. The EIA will consider the potential impact on other existing infrastructure including:

- Water, gas and power;
- Existing paths including Public Rights of Way (PRoW);
- Microwave fixed links; and
- Telecoms.

20.3.2. No gas or water infrastructure have been identified within the site boundary. There are electricity power lines just inside the Penhydd forestry block and one power line that runs through the bottom half of the Bryn block.

20.3.3. Consultation with Ofcom and a search for microwave fixed-links is ongoing. A number of links have been identified in the surrounding area. Mitigation is generally available, in particular through the utilisation of re-routing via Openreach fibre optic networks (for mobile phone network operators), or otherwise via the use of relay dishes (whether on-or off-site) for utility operators who require a higher level of security and autonomy. Where re-routing is not possible, appropriate buffers will be incorporated in the design of the wind farm

20.3.4. The Bryn block hosts a number of public rights of way (PRoW) featured on the Definitive Maps, including the St Illtyd's and Ogwr Ridgeway Walks running through to the east. These are widely recognised as promoted routes. Consultation will be undertaken with the countryside services at both local planning authorities to agree appropriate forms of mitigation as a result of construction and operational effects of the wind farm on PRoW. Any direct impacts on PRoW will be temporary during construction period, similar to during existing forestry practice when felling is in place. Therefore, we do not intend to assess the significance effects on PRoW, although amenity will be assessed in the LVIA. The north-west of Penhydd block benefits from a number of world class mountain bike trails, being accessed typically from the visitor centre and tearooms at Cynonville. While there are links to population and existing recreation centres at

Maesteg and Margam Castle there are no similarly challenging trails providing a magnet for community interest within the Bryn block.

20.3.5. Detailed discussion is required with NRW to ascertain their views on the proposed infrastructure layout with regards to PRoW (which includes public footpaths and bridleways) and recreational routes located within their forest. A proposed Access Management Area (AMA) during construction will be prepared to indicate the restrictions for users and any proposed mitigation (through means of alternative routes and enhancement opportunities etc.).

20.3.6. Terrestrial television reception in the UK is widely available either through the well-established network of standard broadcast services and/or through digital satellite receivers. No interference is possible to the reception of analogue television services, as these were switched off during the Digital Television Switchover that took place throughout the region during 2009. Whereas an analogue signal can be of reduced quality (i.e. grainy or ghosted) due to interference, provided the receiver can identify the components of the signal, digital signals can overcome a certain amount of signal degradation and are effective at eliminating ghosting due to an internal data correction process. Interference signals are provided by reflections of the carrier signal by wind turbines. To achieve good quality reception, an aerial must receive a strong carrier signal but weak interference signals.

20.3.7. A baseline survey would be undertaken prior to construction of the wind farm and the Applicant would seek to agree a planning condition setting out the procedure for a claim for domestic television picture loss or interference and the remedial action to be taken if needed. Mitigation against impacts to television reception may include in some case upgrading to a modern professionally installed antenna system, or the provision of digital satellite television receiving equipment, the operation of which cannot be impacted in any way by the wind farm. It is suggested that TV and radio reception will not be significantly impacted and should be scoped out of the EIA.

Question 33: Do consultees agree with the proposal to scope in aviation, Public Rights of Way and scope out impacts on impact on TV and microwave fixed links, gas, water and power lines?

21. Residual Effects, Mitigation and Enhancement

21.1.1. This section of the ES will summarise the residual effects associated with the construction, operation and decommissioning of the proposed development. It will identify all mitigation, including the mitigation by design that will be undertaken to reduce any such effects, should the development be consented. We will also give consideration here to any synergistic effects anticipated. In addition, any significant positive effects arising from enhancement measures – whether directly mitigating impacts arising from the wind farm development, or otherwise incorporated into the scheme – will be identified.

22. ES Accompanying documentation

22.1. Non-Technical Summary (NTS)

22.1.1. The NTS details the main components of the proposed development and summarises the main findings of the environmental studies carried out to build and operate the proposed development. It is designed to be an easily readable document that will communicate the main elements of the EIA to any interested party without the need for the reader to have specialist background knowledge. It will also contain maps that show the extent and geographical location of the development. This document will be bilingual.

22.2. Design & Access Statement (DAS)

22.2.1. The DAS seeks to highlight the design principles and concepts behind the proposed development. It will detail how the applicant has applied these principles to the proposed development in tandem with input from consultation activities and will review how successful the proposed development has been in realising the design strategy.

22.3. Planning Statement

22.3.1. The Planning Statement will provide a commentary of the EIA findings and assess the proposed development accounting for residual effects (both positive and negative) against national policy and legislation, the Development Plan and other material planning considerations relevant to the proposed development.

22.4. Pre-Application Consultation (PAC) Report

22.4.1. Under article 11 of the DNS (Procedure) (Wales) Order 2016, a DNS application must be accompanied by a pre-application consultation (PAC) report which provides:

- An account of the statutory consultation, publicity, deadlines set, and activities required under section 61Z of the Town and Country Planning Act 1990, including:
  - Copies of all notices and publications used during the consultation;
  - Declarations that the relevant notices and publication requirements comply with the Act and Order;
  - The addresses of those given notice of the proposed application;
- a summary of all issues raised by any person consulted under section 61Z(3) of the Act and articles 8 and 9(2), including confirmation of whether the issues raised have been addressed and, if so, how: and
- the particulars of all responses received from persons consulted under section 61Z(3) or (4) of the Act, including copies of responses from specialist consultees; and the account taken of these.

Question 34: Do the consultees have any comments regarding the proposed documentation that will accompany the application?

23. Responding to the Scoping Report

23.1.1. The scoping report has identified the baseline resource at the site for different topics and presented where any effects to these may be experienced from the development (either indirectly or directly).

23.1.2. The responses provided by consultees will ensure that they too are in agreement, with the baseline and likely impact assessment so that the ES is focussed. Where features or receptors are deemed to have a possible significant effect the methodologies to assess the impact have been provided for comment. Responses on these would help ensure that the detailed methodology, survey and assessment are carried out with consideration to all statutory consultees and key stakeholders. This approach is in line with good practice in the planning system and an emphasis being communicated at a national level to focus the content of the EIA and ES on key elements identified at the scoping stage.

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