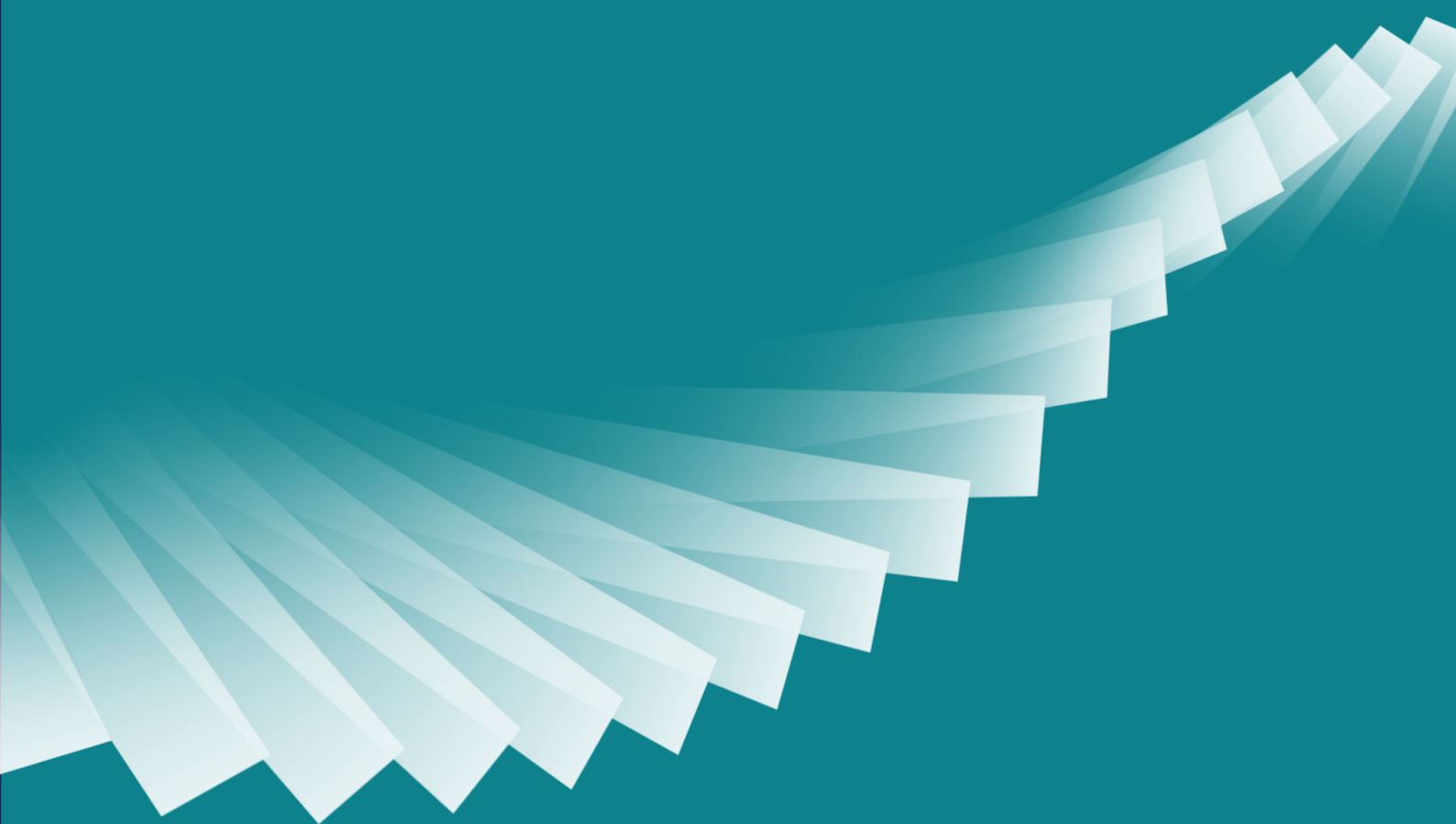




Bute Energy
Aberedw Energy Park

Environmental Statement

Chapter 7: Ecology (non-avian)



Chapter 7

Ecology (non-avian)

Introduction

7.1 This chapter considers the potential effects of the proposed Aberedw Energy Park (the Proposed Development) on Ecology (non-avian). It details the ecological baseline conditions and identifies Important Ecological Features (IEFs). It then contains an Ecological Impact Assessment (EclA) on any IEFs considered to be potentially affected by the Proposed Development.

7.2 This chapter should be read with reference to the project description in **Chapter 4: Development Description**, as well as other chapters as referenced. **Chapter 8: Ornithology** contains the avian baseline and assessment. **Chapter 9: Hydrology, Hydrogeology and Geology** sets out the baseline and assessment in relation to Groundwater Dependent Terrestrial Ecosystems (GWDTes) and peat.

7.3 The Ecology assessment was undertaken by Land Use Consultants (LUC). This Chapter has been authored by Niall Machin BSc (Hons), MCIEEM (see **Appendix 1.1: Statement of Expertise**).

7.4 This chapter is supported by a number of figures which are referenced throughout the text, and which can be found at **Volume 2: Figures**.

- **Figure 7.1 Statutory and Non-statutory Nature Conservation Designations**
- **Figure 7.2 Ecology Survey Area**
- **Figure 7.3a Phase 1 Habitats**
- **Figure 7.3b National Vegetation Classification (NVC) Habitats**
- **Figure 7.4 Ponds and Great Crested Newts (GCN) Results**
- **Figure 7.5 Static Bat Detector Equipment Locations**
- **Figure 7.6 Bat Activity Index (BAI) of Genus Variation**

7.5 The following appendices are also referred to throughout the chapter and can be found in **Volume 3: Technical Appendices**:

- **Appendix 7.1: Aberedw Energy Park Desk Study (CONFIDENTIAL)**
- **Appendix 7.2: Habitat Survey Report**
- **Appendix 7.3: Protected Species Survey Report**
- **Appendix 7.4 Bat Survey Report**
- **Appendix 7.5 Outline Habitat Management Plan (oHMP)**
- **Appendix 7.6 Preliminary Arboriculture Assessment**
- **Appendix 7.7 Arboriculture Impact Assessment**

Assessment Methodology

Legislation, Policy and Guidance

Legislation

7.6 This assessment is carried out in accordance with the principles contained within the following legislation:

- The Invasive Alien Species (Enforcement and Permitting) Order 2019;
- The Conservation of Habitats and Species Regulations 2017;
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017;
- The Environment (Wales) Act 2016;
- The Wellbeing of Future Generations (Wales) Act 2015;
- The Hedgerow Regulations 1997;
- The Protection of Badgers Act 1992; and
- The Wildlife and Countryside Act 1981.

Policy

7.7 The following policies of relevance to the assessment have been considered:

- Future Wales: The National Plan 2040 (Welsh Government 2021a);
- Planning Policy Wales 12 (PPW) (Welsh Government, 2024b); and
- Powys Local Development Plan (2011-2026).

Guidance

7.8 This assessment is carried out in accordance with the principles contained within the following documents:

- Guidelines for Ecological Impact Assessment (EclA) in the UK and Ireland: terrestrial, freshwater, coastal and marine (Chartered Institute of Ecology and Environmental Management 2018);
- The Powys Nature Recovery Action Plan 2022-2032;
- Guidance document on the strict protection of animal species of Community Interest under the Habitats Directive (European Commission, 2011); and
- Technical Advice Note (TAN) 5: Nature Conservation and Planning (2009).

Consultation

7.9 In undertaking the assessment, consideration has been given to the Scoping Responses and other consultation which has been undertaken as detailed in **Table 7.1**.

Table 7.1 Consultation responses

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
Local Planning Authority (Powys County Council), 19.02.24	Formal Scoping Consultation	Scoping out designated sites other than Colwyn Brook Marsh North and South SSSI, River Ithon SSSI and River Wye SAC generally considered appropriate, but consideration should be given to potential for impacts to designated sites to occur as a result of any offsite works e.g. access routes. Powys state: Therefore, consideration will also need to be given to the potential for impacts to designated sites to occur as a result of any proposed off-site work prior to confirmation that it would be appropriate to screen designated sites (other than the Colwyn Brook Marsh North and South SSSI, River Ithon SSSI and River Wye SAC) out of the EIA.	This chapter considers the potential effects of offsite works on ecology and IEFs where appropriate. Appendix 4.3 provides a high-level appraisal of the access routes considered. These will be subject to a separate consent as required.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		PEDW also draw attention to PCC's comments above and recommend that when the access route has been confirmed, the Applicant liaises directly with NRW and the LPA on this matter. If impact on other statutory designated sites is identified, these should be scoped in and the Applicant should liaise directly with NRW and the LPA regarding the detail required for the ES.	
	Formal Scoping Consultation	The Scoping Report identifies that an initial Phase 1 Habitat survey and a Phase 2 NVC was carried out in Sept/Oct 2020. Section 5.21 identifies that updated extended Phase 1 Habitat Survey and walkover NVC will be undertaken in spring/summer 2024 – these surveys will need to include assessments of habitats associated with any offsite areas that would be affected as a result of the	This chapter considers the potential effects of offsite works on ecology and IEFs, where appropriate. This chapter provides an assessment of the effects of the Proposed Development upon habitats.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		proposed development i.e. as a result of proposed highways improvements along the access route. PEDW also includes this advice.	Appendix 4.3 provides a high-level appraisal of the access routes considered. These will be subject to a separate consent as required.
	Formal Scoping Consultation	Section 5.19 makes reference to the Powys County Council Local Biodiversity Action Plan (LBAP) 2002, this should be amended to The Powys Nature Recovery Action Plan 2022-2032 which is the update version of the Powys LBAP – consideration of species and habitats identified in the PNRAP would ensure locally important species and habitats can be appropriately accounted for and assessed in accordance with the Step-Wise approach set out in Planning Policy Wales and considered when identifying opportunities to deliver net benefits to biodiversity. Further information and	This chapter and Appendix 7.5: oHMP , takes the Powys Nature Recovery Action Plan into account when assessing IEFs and proposing enhancements.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		associated Habitat and Species Action Plans can be found at https://en.powys.gov.uk/article/2573/Powys-Nature-Recovery-Action-Plan PEDW also draw attention to PCC's comments above.	
	Formal Scoping Consultation	Section 5.37 of the Scoping Report states 'A Green Infrastructure Assessment will be produced, accompanied by an outline Habitat Management Plan (HMP) which will identify measures to secure a net benefit for biodiversity. The HMP will set out the immediate and on-going management of the Site, future monitoring arrangements for all secured measures and identify funding	Appendix 7.5 addresses these issues. A separate Green Infrastructure Statement (GIS) has been prepared and is submitted with the DNS application.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		mechanisms to meet management plan objectives.' The Green Infrastructure Assessment and outline Habitat Management should clearly set out how the proposed development will contribute to maintaining and enhancing biodiversity and deliver net benefits for biodiversity and improve the resilience of ecosystems including those included in the PNRAP. It is recommended that the OHMP include specification regarding an appropriate Ecological Compliance Audit, this should detail: ■ Key performance indicators for each identified ecological feature ■ Persons responsible for commissioning and undertaking the audit	

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		■ The duration and frequency of audits ■ Dissemination of audits to relevant regulatory bodies When developing the OHMP consideration should be given to the principles set out in the CIEEM publication 'Good practice guidance for ecological restoration – January 2024' which can be found at https://cieem.net/wp-content/uploads/2024/01/Good-Practice-Principles-V4.pdf The Green Infrastructure Statement should include the following: ■ An outline and plan of the existing green infrastructure and connectivity on and adjacent to the site.	

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		■ Describe how green infrastructure has been incorporated into the proposal and demonstrate that there is no impact or no net loss. ■ Provide a plan to show the proposed green infrastructure for the site and identify where opportunities for connectivity have been enhanced/created/restored. PEDW also draw attention to PCC's comments on this issue.	
	Formal Scoping Consultation	Section 5.15 provides brief details of survey results undertaken in 2020, this includes a categorisation of the species recorded in terms of collision risk. The collision risks assigned in Section 5.15 of the EIA scoping Report for some of the species recorded during these surveys does not align with the risks stated in the recognised guidelines i.e.	Paragraph 7.87 of this assessment identifies Leisler's bat as a high collision risk species. Barbastelle were not recorded on the most recent LUC bat surveys – see Appendix 7.4: Bat Survey Report.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		Scottish Natural Heritage (August 2021) Bats and Onshore Wind Turbines: Survey Assessment and Mitigation. In Wales Leisler's bat are categorised as high collision risk (not medium as stated in the Scoping Report) and barbastelle are categorised as medium collision risk (not low risk as stated in the Scoping Report). PEDW also draw attention to PCC's comments above.	
	Formal Scoping Consultation	The Scoping Report identifies that the preliminary ground level inspections and Preliminary roost assessments were undertaken in 2020, whilst 19 features with potential to support bats were identified these were all over 300 m from proposed turbine locations so no further survey effort was considered necessary. It is unclear from the	No roosts were located in the 2020 and updated 2023 ground inspection surveys.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		Scoping Report as to whether these surveys are proposed to be updated as part of the planned surveys in 2024 to establish whether new features have developed would be within 250 m of the proposed turbine locations. PEDW also draw attention to PCC's comments above.	
	Formal Scoping Consultation	Section 5.5 of the Scoping Report identifies that with regards to protected/priority species data, only records from within the last 10 years have been considered. CIEEM Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK. 2nd Edition (2020) advise that 'There is no definable cut off date for determining that desk study records of a certain age are no longer valid. Each record will need to be considered on its own merits.	Noted and applied in this chapter. An updated Data search has been undertaken – see paragraph 7.12. Fairy shrimp is addressed in this chapter – see paragraph 7.132.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		Where there is strong evidence to suggest that a species is no longer present despite the data search identifying a record, this should be explained clearly in any report. In the absence of such evidence the record should be considered to be relevant. In addition, historical data can be useful in identifying trends.' Having reviewed records for the site it is noted that several records which would fall outside of this date range considered may provide relevant information to the scope of surveys required: • Record of fairy shrimp (<i>Chirocephalus diaphanous</i>) within the proposed development site - Wildlife & Countryside Act Schedule 5 species (fully protected) and listed as Vulnerable in the Red Data Book	

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		It is therefore advised that consideration is given to potential for the proposed development to impact this species (directly or indirectly) and the likely significance of any such impacts. PEDW also refer to PCC's comments in relation to fairy shrimp and recommend that consideration is given to potential for the proposed development to impact this species and the likely significance of any such impact.	
	Formal Scoping Consultation	It is recommended that details with regards to a post construction monitoring scheme for bats (injuries, fatalities and activity) and contingency plans e.g. curtailment are outlined within the ES. PEDW also refer to PCC's comments above and make the same recommendation.	Included in this chapter.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
	Formal Scoping Consultation	It is noted that the Scoping Report states that ground disturbance within 250 m of breeding ponds will be avoided – it is recommended that works within 500 m of any breeding ponds should be avoided. If works associated with the proposed development cannot be avoided within 500 m of ponds used by great crested newt, then full surveys to establish the population concerned will need to be undertaken in accordance with recognised guidelines i.e. Natural England - Great Crested Newt Mitigation Guidelines (2001). PEDW also draw attention to PCC's comments above.	The chapter assesses the effects on GCN. Where works are proposed within 250 m of a GCN pond, or 500 m where the intervening habitat is suitable, then suitable mitigation is set out in this chapter.
	Formal Scoping Consultation	The Scoping Report identifies that surveys are due to be undertaken for badger and otter in 2024. The	Noted.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		survey effort and methodologies identified are considered to be in line with current guidelines.	
	Formal Scoping Consultation	Fish and aquatic species have been identified as being scoped out of the EIA, whilst it is noted that Section 5.18 of the Scoping Report states 'Given the habitats present and likely to be impacted, no specific aquatic surveys have been undertaken or are being proposed', it is noted that a number of references to watercourse crossings associated with the proposed development are made throughout the Scoping Report – therefore further information would be required with regards to impacts to watercourses and associated flora/fauna prior to confirmation that it would be appropriate to screen fish and aquatic species out of the EIA. It should be noted that the area surrounding the proposed windfarm is known to be	The chapter assesses the effects on watercourses and includes appropriate mitigation. Fish and aquatic surveys scoped out due to the proposed controls set out within Chapter 9 which include that cable installation which may affect watercourses will be undertaken when these are dried out, as these watercourses are ephemeral.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		of importance for white clawed crayfish (a Wildlife & Countryside Act Schedule 5 species and a Conservation & Habitats Regulations (2017 as amended) Annex II species that are a primary reason for selection feature of the River Wye SAC). PEDW also draw attention to PCC's comments above.	
	Formal Scoping Consultation	Further information regarding the proposed access route would be required prior to confirmation that non-statutory sites could be scoped out. As identified above an assessment of any proposed off-site works associated with the development i.e. highways improvements along the access route will need to consider potential impacts to non-statutory sites.	The chapter assesses the effects on non-statutory sites.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		PEDW also refer to PCC's comments above and recommend that when the access route has been confirmed, the Applicant liaises directly with NRW and the LPA on this matter. If impact on non-statutory designated sites is identified, these should be scoped in and the Applicant should liaise directly with NRW and the LPA regarding the detail required for the ES.	
	Formal Scoping Consultation	Subject to confirmation that no impacts to other National Site Network Sites would occur as a result of associated off-site works it is agreed that the HRA should focus on the River Wye SAC. In addition to potential pollution events and sedimentation impacts to the River Wye SAC it is advised consideration will need to be given to the	This is considered by the sHRA submitted with the application. Drainage issues are addressed in this chapter and in Chapter 9

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		potential for the proposed development to contribute additional phosphates to the River Wye SAC Catchment. on the 21st January 2021 NRW issued a planning position statement regarding the deterioration in the condition of riverine SACs due to the potential to increase phosphate levels. NRW have identified in the associated guidance that in their opinion, any new development which is likely to increase the concentration of organic materials discharged directly or indirectly into the River Wye catchment has the potential to increase phosphate levels causing further deterioration of the special features that the SAC is designated for. As a result, new and development proposals must be able to demonstrate phosphate neutrality or betterment.	

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		Consideration will need to be given to the potential for introduction of foul drainage at the site in relation to both the construction, operational and decommissioning phases of the proposed development including temporary welfare arrangements during the construction/decommissioning phase and longer-term welfare facilities required during the operation of the development. PEDW refer to PCC's views above.	
NRW 25.01.24	Formal Scoping Consultation	River Wye Phosphorus Sensitive Catchment We note the application site is within the catchment of the River Wye Special Area of Conservation (SAC). As you are aware, on the 21st January 2021, we published an evidence package outlining	This is considered by the sHRA submitted with the DNS application. Drainage issues are addressed in this chapter and in Chapter 9.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		phosphorus levels for all river SACs across Wales. In line with our Planning Advice (August 2023) under the Habitats Regulations, Planning Authorities must consider the phosphorus impact of proposed developments on water quality within SAC river catchments. We therefore advise you to consider whether the proposals, as submitted, would increase the volume of foul discharge from the site in planning terms. Whilst upon reviewing the scoping report, it is not clear whether any permanent foul drainage facilities will be located on the site. However, we note that paragraph 8.49 of the Scoping Report states that the Outline CEMP will include measures such as 'provision of Site-Worker accommodation and sanitation facilities.'. We assume that this	

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		maybe Portaloo's managed by a licensed waste carrier. PEDW also refer to NRW's comments above.	
		Evaluation of the impacts should include: direct and indirect; secondary; cumulative; short, medium and long term; permanent and temporary; positive and negative; construction, operation and decommissioning phases; and long term site security impacts on the nature conservation resource, landscape and public access. PEDW also draw attention to NRW's comments above.	The chapter includes these factors in the evaluation, with the exception of decommissioning which is scoped out as the effects of decommissioning are predicted to be similar to and/or of lower magnitude than construction and operational effects, and the fact decommissioning will happen after 40 years.
		The EA must: ■ Include a description of all the existing natural resources and wildlife interests within and in the	The chapter adopts this approach in accordance with industry guidance.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		vicinity of the proposed development, together with a detailed assessment of the likely impacts and significance of those impacts; ■ Consider significance (both alone and in combination) and where applicable conservation status. In respect of conservation status, we advise consideration to be given to current conservation status (CCS), and demonstration of no likely detriment to maintenance of favourable conservation status (FCS) during construction operation and decommissioning phases of the scheme. Reference to CCS and FCS in accordance with EC Guidance is advocated;	

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		Any habitat surveys should accord with the NCC Phase 1 survey guidelines (NCC (1990) Handbook for Phase 1 habitat survey. NCC, Peterborough). We advise that Phase 1 surveys are undertaken and completed during the summer to ensure the best chance of identifying the habitats present. We also advise that Habitats Directive Annex 1 habitats are identified as part of this assessment. PEDW repeat this advice.	See Appendix 7.2: Habitat Survey Report which sets out how the assessment conforms to this approach.
		We advise the site is subject to assessment to determine the likelihood of protected species and that targeted species surveys are undertaken for all species scoped in. These should comply with current best practice guidelines and if the surveys deviate or there are good reasons for deviation that full justification for this is included within the EIA.	The chapter assesses the potential effects on protected species and sets out appropriate mitigation, including the need for any licensing, where required. Baseline information is contained in Appendices 7.3: Protected Species Survey Report and 7.4: Bat Survey Report . The chapter sets out a rationale for the inclusion or otherwise

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		Should protected species be found during the surveys, information must be provided identifying the species-specific impacts in the short, medium, and long term together with any mitigation and compensation measures proposed to offset the impacts identified. We advise that the EIA sets out how the long-term site security of any mitigation or compensation will be assured, including management and monitoring information and long term financial, tenure, and management responsibility. Where the potential for significant impacts on protected species is identified, we advocate that a Conservation Plan is prepared for the relevant species and included as an Annex to the EA. In respect of European protected species, we advise consideration of Section 3.3.2 of	of any Conservation Plans for Protected Species. Licences from NRW will be sought where/if required.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		Guidance on the strict protection of animal species of Community interest under the Habitats Directive. Where a European Protected Species is identified and the development proposal is predicted to likely contravene the legal protection they are afforded, a licence should be sought from NRW. The EIA must include consideration of the requirements for a licence and set out how the works will satisfy each of the three requirements as set out in the Conservation of Habitats and Species Regulations 2017 (as amended).	
		Where a European Protected Species is identified and the development proposal is predicted to likely contravene the legal protection they are afforded, a licence should be sought from NRW. The EIA must include consideration of the requirements for a	This is noted.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		licence and set out how the works will satisfy each of the three requirements as set out in the Conservation of Habitats and Species Regulations 2017 (as amended). Where a European Protected Species is present and a development proposal is likely to contravene the legal protection they are afforded, the development may only proceed under licence issued by Natural Resources Wales, having satisfied the three requirements set out in the legislation. A licence may only be authorised if: (a) It satisfies an appropriate derogation or licencing purposes, which in the case of development is most likely to be preserving public health or safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial	

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		consequences of primary importance for the environment; (b) There is no satisfactory alternative and (c) The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in its natural range. These requirements are translated into planning policy through Planning Policy Wales (PPW) Edition 11 dated February 2021, sections 6.4.22 and 6.4.23 and Technical Advice Note (TAN) 5, Nature Conservation and Planning (September 2009). The planning authority should take them into account when considering development proposals where a European Protected Species is present and avoid developments with planning	

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		permission subsequently not being granted derogations in relation to European protected species, planning authorities must take the above three requirements for derogation into account when considering development proposals where a European protected species is present	
		We recommend that the developer consults the local authority Ecologists on the scope of the work to ensure that regional and local biodiversity issues are adequately considered, particularly those habitats and species listed in the relevant Local Biodiversity Action Plan, and areas that are considered important for the conservation of biological diversity in Wales. NRW would expect the developer to contact other relevant people/organisations for biological information/records relevant to the site and its	Data has been sourced from the Local Records Centre, see Appendix 7.1: Desk Study . Data was not sourced from any other local ecological interest groups.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		surrounds. These include the relevant Local Records Centre and any local ecological interest groups (E.g. bat groups, mammal groups).	
		We advise that provisions of the EIA audit compliance in respect of relevant nature conservation legislation (UK and Wales) together with relevant local and national policies including BS 42020:2013.	Relevant legislation and guidance are set out in the chapter and complied with.
		Rivers and streams are included in the Section 7 list of habitats of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales under the Environment (Wales) Act 2016. Atlantic salmon, brown trout and other species are included in the Section 7 list of species of principal importance for the purpose of maintaining and enhancing biodiversity in relation	Whilst the need for fish surveys has been scoped out due to the fact that watercourses which would be crossed by infrastructure are minor watercourses which dry out, the chapter includes an assessment of potential effects on rivers and fish.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		to Wales under the Environment (Wales) Act 2016. We advise that the potential impacts on these species and habitats have not been adequately considered, i.e. what fish species are considered to be present within and in close proximity to the site. Habitat fragmentation caused by watercourse crossings needs to be considered. Pollution impacts on watercourses within the site should also be considered. Death, injury and or disturbance to fish should be assessed. A Water Framework Directive (WFD) assessment will be required to illustrate that the WFD objectives of the waterbodies concerned will not be impacted. This should include assessment of potential impacts on the fish element of WFD classification.	

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		Table 5.2 We do not agree that potential effects on fish should be scoped out. There is insufficient justification for this currently, with no details of potential impacts on fish through construction of watercourse crossings etc. PEDW also draw attention to NRW's comments above.	
		The applicant should have regard to the differentiation of current conservation status (CCS) and favourable conservation status (FCS) at various spatial scales and the need to differentiate between significance from an EIA perspective and demonstration of no detriment to maintenance of FCS for each local population of EPS; and the need to consider monitoring and prevention of	The chapter takes into account CCS and FCS of relevant protected species populations in assessing potential effects.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		"incidental" injury to EPS during the construction phase of the proposals.	
Planning and Environment Decisions Wales (PEDW) 05.04.24	Formal Scoping Consultation	The responses from PEDW are largely a repeat of the comments from NRW and Powys County Council, as set out above. PEDW's agreement to comments have been acknowledged above	See responses above.
PEDW 05.04.24	Formal Scoping Consultation	PEDW considers it to be appropriate to scope priority habitats in for construction and out for operation. Following the results of the surveys, any habitats scoped out will need to be supported by robust justification in the ES.	The chapter provides robust justification for decisions to scope in or out various habitats.

Study Area

7.10 Figure 7.2 sets out the Ecology Survey Area (ESA). The extent of field survey was based on relevant industry standard guidance, as indicated below:

- The Phase 1 habitat survey followed Joint Nature Conservation Committee (JNCC, 2010¹) Guidance, covering, as a minimum, the Proposed Development area plus a 100 m buffer (access permitting) (**Appendix 7.2**).
- The NVC survey followed standard guidance (Rodwell, 2006²), covering the Proposed Development area, plus a 100 m buffer (access permitting) but extended to 250 m for wetland habitats (access permitting).
- Bat activity surveys covering the turbine area followed the NatureScot et al. (2021) guidance. The guidance describes that, where developments have more than ten turbines, detectors should be placed within the developable area at ten of the turbine locations (if known) plus a third of the additional turbine locations, with the latter distributed according to a system of stratified sampling based on the availability of different habitats and topographical features on the Site and based on professional judgment.
- Bat roost survey methods followed Collins (2016³ and 2023⁴) and NatureScot et al. (2021) guidance. The Preliminary Roost Assessment Study Area covered buildings, structures and trees within the Site and up to a 250 m buffer (where accessible). Further survey of potential roost features was not required as all lay outside 300 m of potential turbine locations, and 50 m of all infrastructure.

¹ JNCC (2010) Handbook for Phase 1 habitat survey – a technique for environmental audit

² Rodwell, J. S. (2006) NVC Users' Handbook. ISBN 978 1 86107 574 1.

³ Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). The Bat Conservation Trust, London

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

- Badger survey followed best practice guidance methods described by the Badger Trust (2023⁵) and Scottish Badgers (2018⁵). It covered suitable habitat within the Proposed Development area and up to a 100 m buffer, where accessible.
- Great crested newt (GCN) surveys followed best practice guidance (Oldham, et al., 2000⁶ and English Nature, 2001⁷) with a survey area encompassing the development boundary (the Site) and a 250 m buffer.
- Otter survey followed best practice guidance (Chanin, 2003⁸), with a survey area of watercourse habitat up to a minimum of 250 m upstream and downstream of the Proposed Development area, where access was granted. A search was undertaken of the riparian zone and up to 20 m away from the water's edge, and 100m for woodland (where suitable habitat was found to be present).
- Water vole survey followed best practice guidance (Dean, et al., 2016⁹), with a survey area of up to 250 m from the Proposed Development area upstream and downstream, where access was granted. A search for potential water vole evidence was undertaken in the riparian zone and up to 20 m away from the water's edge (where suitable habitat was found to be present), as well as areas of wet habitat, such as marshy grassland and pond margins.

7.11 The following terminology is also used to describe areas on the Site:

- **Access Road Area** - the proposed access road entering the northeast of the Site (as shown in **Figure 7.1**).
- **Northern Substation Area** - the proposed substation connection area in the far north of the Site (as shown in **Figure 7.1**); and

⁵ Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1.

⁶ Oldham, R. S., Keeble, J., Swan, M. J. and Jeffcote, M. (2000) Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*)

⁷ English Nature (2001) Great Crested Newt Mitigation Guidelines

⁸ Chanin, P. (2003) Monitoring the Otter *Lutra lutra* – Conserving Natura 2000 Rivers Monitoring Series No. 10

⁹ Dean, M., Strachan, R., Gow, D., and Andrews, R. (2016) The Water Vole Mitigation Handbook

- **Southern Fields Area** - an area of farmland and wooded river valley in the south of the Site (as shown in **Figure 7.1**).

Desk Based Research and Data Sources

7.12 The following data sources have informed the assessment:

- MAGIC: Nature on the Map (MAGIC, 2024);
- Natural Resources Wales Designated Sites Search (Natural Resources Wales, 2021a);
- Natural Resources Wales Ancient Woodland Inventory (Natural Resources Wales, 2021b); and,
- Biodiversity Information Service (BIS) for Powys and Brecon Beacons National Park (BIS, 2021). Updated 2025.

Field Survey

7.13 The following field surveys were carried out to inform the assessment:

- **Phase 1 habitat survey:** This was undertaken in September-October 2020 of the potential wind farm area and updated in June and August 2024. Further habitat surveys were undertaken in 2024 and 2025 of specific areas: Northern Substation Area (updated March 2025); Access Road Area (new habitat surveys in 2024 and 2025); and Southern Fields Area (May 2025) – see **Figure 7.2**. Dominant plant species observed within each habitat type were recorded in accordance with plant species nomenclature in Stace (2010). Target Notes (TN) were used to identify potential for protected or priority species or habitats, and to provide more detailed site descriptions. See **Appendix 7.2** for details on the surveys and qualifications of surveyors.
- **National Vegetation Classification (NVC):** This was undertaken in September-October 2020 and updated in June and August 2024 to provide more detailed information on the grassland, heath, mire and woodland communities and their alignment with NVC communities. The methodology for NVC survey followed that outlined in Rodwell (2006). The differences in plant communities were assessed mainly by eye by walking the Site, and general communities identified by noting abundance of each floral species within sample

‘quadrats’ or pinpointed locations. Sampling concentrated on areas perceived to be Important Ecological Features (IEFs) and habitats whose vegetation is critically dependant on groundwater i.e., groundwater dependent terrestrial ecosystems (GWDTE). Refer to **Appendix 7.2** for details on the surveys and qualifications of surveyors.

- Preliminary Bat Roost Assessment (PBRA): A ground level PBRA was undertaken by ITP in 2020 on trees and built structures within and around the Site following assessment criteria set out in standard guidance at the time prepared by the Bat Conservation Trust (BCT). The PBRA was updated in 2023 and 2024 by LUC.
- Bat activity surveys: Bat activity surveys of the turbine area were carried out in the spring, summer and autumn periods of 2020 and were repeated in 2023-24. All survey work was carried out in line with the standard methods described within the NatureScot et al. (2021¹⁰) guidance on assessing bats and onshore windfarm developments. No emergence bat roosting surveys were conducted given the lack of suitable roosting features identified during the PBRA (trees, buildings, structures, caves) on the open moorland where the turbines are proposed. See **Appendix 7.4** for details on the bat surveys and qualifications of surveyors.
- Protected mammal surveys: A combined survey investigating for signs of badger, otter and water vole was conducted over during June and August 2024. Any incidental evidence of other protected species was also recorded. Methods followed best practice as outlined in paragraph 7.10 above. See **Appendix 7.3** for details on the protected mammal surveys and qualifications of surveyors.
- GCN surveys: Ponds on Site and within the study area (up to 500 m from the Site boundary) were assessed for GCN. A range of surveys were conducted in 2023 to assess pond suitability, presence /absence and population size of GCN, as required. HSI, eDNA and population surveys were also conducted on selected ponds in 2024 and 2025 (See **Appendix 7.3** for details). Surveys consisted of:
 - Great crested newt Habitat Suitability Index (HSI) (Oldham, et al., 2000) assessment;

¹⁰ NatureScot, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, University of Exeter, Bat Conservation Trust. (2021). Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation.

- Environmental DNA (eDNA) survey;
- Presence/Absence survey; and
- Population Size Class Assessment (PSCA) survey.

Assessing Significance

7.14 The approach to the EclA follows the Chartered Institute of Ecology and Environmental Management guidelines (CIEEM, 2018¹¹), which prescribe an industry-standard method to define, predict and assess potential ecological effects to a given Proposed Development. Starting with establishing the baseline through a mix of desk study and field survey, IEFs are identified and those requiring assessment established through a reasoned process of valuation and consideration of factors, such as statutory requirements, policy objectives for biodiversity, conservation status of the IEF (habitat or species), habitat connectivity and spatial separation from the Proposed Development. From this stage, these features are assessed for impacts with the assumption of this being in the presence of construction industry-standard mitigations to ameliorate impacts as far as practicably possible. Additional mitigation strategies can then be determined to minimise any residual impacts that would otherwise be experienced by the IEF and any opportunities for biodiversity gains identified.

7.15 In summary, the impact assessment process (CIEEM, 2018) involves:

- Identifying and characterising impacts and their effects;
- Incorporating measures to avoid and mitigate negative effects;
- Assessing the significance of any residual effects after mitigation;
- Identifying the appropriate compensation methods to offset significant residual effects; and,
- Identifying opportunities for ecological enhancement/net benefit for biodiversity

¹¹ CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal and Marine*. Chartered Institute for Ecology and Environmental Management, Winchester.

Identifying Important Ecological Features

7.16 Table 7.2 below lists the criteria used to determine the value (importance) of ecological features in a geographical context.

Table 7.2 Geographical evaluation criteria (note: excludes ornithological designations)

Importance	Criteria	Examples
International	Nature conservation resource, i.e. designated nature conservation area, habitat or populations of species, of international importance. For any Special Area of Conservation (SAC) this may also include offsite features on which the qualifying population(s) or habitat(s) are considered, from the best available evidence, to depend.	International nature conservation areas: Any SAC or candidate SAC (cSAC). Significant numbers of a designated population outside the designated area. A site supporting more than 1% of the EU population of a species.
National (i.e. Wales)	Nature conservation resource, i.e. designated nature conservation area, habitat or populations of species, of national importance. N.B. For designations, such as a Site of Special Scientific Interest (SSSI) or a National Nature Reserve (NNR), this may also include offsite features on which the qualifying population(s) or habitat(s) are considered, from the best available evidence, to depend.	National nature conservation areas: Any SSSI or NNR designated for biological feature(s). A site supporting more than 1% of the UK population of a species. Nationally important population/assemblage of an EPS or species listed on Schedule 5 of the WCA.

Importance	Criteria	Examples
Council area (i.e. PCC)	Nature conservation resource, i.e. nature conservation designation, habitat or species, of importance on a regional scale.	Statutory and non-statutory nature conservation designations: ■ Any Local Nature Reserve (LNR); ■ Any Site of Interest for Nature Conservation (SINC); ■ Any Local Wildlife Site (LWS); ■ Any Country Park; and, ■ Ancient woodland listed on the Ancient Woodland Inventory (Natural Resources Wales, 2022b²³). A Council-scale important population/area of a species or habitat of principal importance through its listing on Section 7 of the Environment (Wales) Act 2016. A regional-scale important population/area of a species or habitat listed on the local Biodiversity Action Plan (BAP)/Action for Nature Plan. A regional-scale important population/assemblage of an EPS or species listed on Schedule 5 of the WCA.

Importance	Criteria	Examples
Local (i.e. within 2 km of the Site)	Nature conservation resource, e.g. a habitat or species of importance in the context of the local district.	A breeding population of a species of principal importance through its listing on Section 7 of the Environment (Wales) Act 2016. A breeding population of a species or a viable area of a habitat that is listed on the Local BAP/Action for Nature Plan because of its rarity in the locality. An area supporting 0.05%-0.5% of the UK population of a species.
Less than local	Unremarkable, common and widespread habitats and species of little/no intrinsic nature conservation importance.	Common, widespread, agricultural and/or exotic species (such as escapees).

7.17 Where a feature qualifies under two or more criteria, the higher value is applied to the feature.

7.18 Within this chapter, any ecological feature of local or higher value is considered an IEF.

Ecological Zone of Influence

7.19 The Ecological Zone of Influence (EZoI) is defined as the area within which there may be IEFs subject to effects from the Proposed Development. Such effects could be direct (e.g. habitat loss resulting from removal of a pond with GCN) or indirect (e.g. noise or visual disturbance causing a species to move out of the EZoI). Generally, the EZoI is up to 10 km for statutory designations listed for bat interests, up to 2 km for other designated sites designated

for mobile species and for habitats and species the distances listed in **Table 7.2**. The EZol was determined through:

- Review of the existing baseline conditions based on desk study results, field surveys and information supplied by the consultees;
- Identification of sensitivities of ecological features, where known;
- The design of the Proposed Development and approach to construction and operation; and,
- Through liaison with other technical specialists on the project team (e.g. hydrologists and noise specialists).

Characterising Ecological Impacts and Effects

7.20 In accordance with the CIEEM guidelines, the following definitions are used for the terms ‘impact’ and ‘effect’:

- Impact – Actions resulting in changes to an ecological feature. For example, the construction activities of a development removing a hedgerow.
- Effect – Outcome to an ecological feature from an impact. For example, the effects on a species population from the loss of a hedgerow.

7.21 In accordance with the CIEEM guidelines, when determining impacts on IEFs, reference is made to the following:

- Beneficial or adverse – i.e. whether the impact has a beneficial or adverse effect in terms of nature conservation objectives and policy.
- Magnitude – i.e. the size of an impact, in quantitative terms where possible.
- Extent – i.e. the area over which an impact occurs.
- Duration – i.e. the time for which an impact is expected to last.
- Timing and frequency – i.e. whether impacts occur during critical life stages or seasons.
- Reversibility – i.e. a permanent impact is one that is irreversible within a reasonable timescale or for which there is no reasonable chance of action being taken to reverse it. A temporary impact is one from which a spontaneous recovery is possible.

7.22 Both direct and indirect impacts are considered. Direct ecological impacts are changes that are directly attributable to a defined action (e.g. the physical loss of habitat occupied by a species during the construction process). Indirect ecological impacts are attributable to an action but affect ecological resources through effects on an intermediary ecosystem, process or feature (e.g. fencing of a development site may cause scrub to invade marshy grassland).

Determining Sensitivity of Receptors

7.23 In determining the sensitivity of each ecological feature, the vulnerability, recoverability and value/importance of that ecological feature is taken into consideration, along with professional judgement. For the purposes of this assessment, the predicted sensitivity of an ecological feature is categorised as ‘negligible’, ‘low’, ‘medium’, ‘high’ and ‘very high’, based on the definitions in **Table 7.3**.

Table 7.3 Sensitivity Criteria

Significance of Effect	Description
Very High	Nationally and internationally important ecological feature with high vulnerability and no ability to recover.
High	Regionally important ecological feature with high vulnerability and no ability to recover. Nationally and internationally important ecological feature with high vulnerability and low recoverability.
Medium	Nationally and internationally important ecological feature with medium vulnerability and medium recoverability. Regionally important ecological feature with medium to high vulnerability and low recoverability. Locally important ecological feature with high vulnerability and no ability to recover.

Significance of Effect	Description
Low	Nationally and internationally important ecological feature with low vulnerability and high recoverability. Regionally important ecological feature with low vulnerability and medium to high recoverability.
Negligible	Locally important ecological feature with low vulnerability and very high recoverability. Ecological feature is not vulnerable to impacts regardless of value/importance.

Determining Level of Impact Magnitude

7.24 The CIEEM guidelines state that impacts should be quantified, if possible, and expressed in absolute or relative terms (e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population). That approach has been followed here, where possible, using the criteria in **Table 7.4** and professional judgement. For the purposes of this assessment, the predicted impacts on an ecological feature are categorised as ‘no impact’, ‘negligible’, ‘low’, ‘medium’ or ‘high’, based on the definitions in **Table 7.4**.

Table 7.4 Magnitude criteria

Magnitude	Description
High	Irreversible impact on the status of the nature conservation designation, habitat or species and likely to threaten the long-term integrity of the feature. Not reversible or replaceable. Will remain detectable in the medium and long term (see below).
Medium	Detectable impact on the status of the nature conservation designation, habitat or species population in the medium term but is

Magnitude	Description
	reversible/replaceable when given time, and not a threat to the long-term integrity of the feature.
Low	Detectable impacts, and may be irreversible, but either of sufficiently small-scale or of short-term duration to have no material impact on the conservation status of the nature conservation designation, habitat or species population.
Negligible	Detectable impact but reversible within 12 months. Not expected to affect the conservation status of the nature conservation designation, habitat or species under consideration.
No Impact	No detectable impacts on the ecological resource, even in the immediate term.
The following definitions have been applied in respect to timescales: ■ Immediate: Within approximately 12 months. ■ Short term: Within approximately 1-5 years. ■ Medium term: Within approximately 6-15 years. ■ Long term: More than 15 years. The following definitions have been applied in respect to reversibility: ■ High reversibility: Reversible within 12 months (e.g. removal and reinstatement of grassland habitat). ■ Medium reversibility: Reversible in the medium term (6-15 years), not a threat to the long-term integrity of the feature (e.g. removal and reinstatement of scrub or hedgerow habitat). ■ Low reversibility: Reversible but will take an extended period of time (e.g. 15-50 years) and will require mitigation (e.g. removal and reinstatement of immature or semi-mature woodland).	

Magnitude	Description
■ Irreversible:	The impact is one from which recovery is not possible within a reasonable timescale and there is no reasonable chance of action being taken to reverse it (e.g. removal of veteran trees or compaction of soil within ancient woodland which will irreversibly damage ground flora).

Determining Ecologically Significant Effects

7.25 The predicted significance of the effect was determined through a standard method of assessment based on professional judgement, considering both sensitivity and magnitude of change as detailed in **Table 7.5** below. Major and moderate effects are considered significant in the context of the EIA Regulations.

Table 7.5 Significance criteria

Magnitude	Description
Major	Irreversible impact on the status of the nature conservation designation, habitat or species and likely to threaten the long-term integrity of the feature. Not reversible or replaceable. Will remain detectable in the medium and long term.
Moderate	Detectable impact on the status of the nature conservation designation, habitat or species population in the medium term but is reversible/replaceable when given time, and not a threat to the long-term integrity of the feature.
Minor	Detectable impacts, and may be irreversible, but either of sufficiently small-scale or of short-term duration to have no material impact on the conservation status of the nature conservation designation, habitat or species population.

Magnitude	Description
Negligible	Detectable impact but reversible within 12 months. Not expected to affect the conservation status of the nature conservation designation, habitat or species under consideration.
No Impact	No detectable impacts on the ecological resource, even in the immediate term.
The following definitions have been applied in respect to timescales: ■ Immediate: Within approximately 12 months. ■ Short term: Within approximately 1-5 years. ■ Medium term: Within approximately 6-15 years. ■ Long term: More than 15 years.	

7.26 The EclA is undertaken in relation to the baseline conditions that will be expected to occur in the absence of the Proposed Development and, therefore, may include possible predictions of future changes to baseline conditions, such as environmental trends and other completed or planned development. Both adverse and beneficial impacts/effects are possible.

7.27 A significant effect, in ecological terms, is defined as an effect (whether adverse or beneficial) on the integrity of a defined site or ecosystem and/or the conservation status, e.g. favourable conservation status (FCS) or current conservation status (CCS), of habitats or species within a given geographical area, including cumulative and in-combination impacts.

7.28 In accordance with the CIEEM guidelines, the approach adopted in this chapter aims to determine if the effect of an impact is significant or not, based on a discussion of the factors that characterise it, i.e. the ecological significance of an effect is not dependent on the value of the feature in question. For example, an effect on a species which is on a national list of species of principal importance for biodiversity may not have a significant effect on its national population. As such, the value of a feature that will be significantly effected is used to determine the geographical scale at which the effect is significant.

7.29 In accordance with the current CIEEM guidelines, effects of impacts are assessed in the presence of embedded mitigation measures. Additional mitigation may be identified where it is required to reduce a significant effect.

7.30 Any significant effect remaining post-mitigation (the residual effect), together with an assessment of the likelihood of success of the mitigation, are the factors to be considered against legislation, policy and development control in determining the application.

7.31 In addition to determining the significance of effects on IEFs, this chapter also identifies any legal requirements in relation to wildlife.

Assessment Limitations

7.32 It is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and assessment of likely significant environmental effects on ecology. However, some limitations were encountered, as described in the corresponding appendices. The following outlines the main limitations encountered:

NVC Survey limitations

7.33 The NVC system does not include all possible semi-natural vegetation or habitat types that may be found. Since the NVC was adopted for use in Britain in the 1980s further survey work and an increased knowledge of vegetation communities has led to additional communities being described that do not fall within the NVC system. Where such communities are found and recorded, they are given a non-NVC community code and are described accordingly.

7.34 The ecological surveys undertaken to support the Proposed Development have not produced a complete list of plants and the absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future. However, the results of these surveys have been reviewed and are considered to be robust to undertake the assessment.

7.35 The NVC category has been based on the species composition using a “best fit” method. Due to the lack of some species recorded in some of the quadrats it was occasionally difficult to assign a definite category, as a number of different categories would fit. The NVC category has

therefore been based on species, composition and professional experience of mapping such habitats.

7.36 Whilst the original NVC surveys were undertaken in October 2020, which is at the end of the flowering plant season, update surveys were undertaken in June 2024 and August 2024 and as such provide a robust database to work with.

Bat survey limitations

7.37 Ecobat was offline from 2023 and throughout 2024 due to essential maintenance with no timeline available for when the software was expected to become operational. The Mammal Society have highlighted that NRW are aware of the maintenance which is preventing users from analysing bat data. Ecobat has become the standardised method of assessing bat activity in relation to collision risk for onshore wind farms. In the absence of Ecobat, NatureScot¹⁴ guidance has been followed as far as reasonably practicable.

7.38 Ecobat subsequently became available in January 2025, after this assessment had been completed. However, the newly released application is acknowledged to be in the early stages, and it is unclear at this point whether it is fully functional and what the turnaround time would be for any data submitted for analysis. Due to these uncertainties, it was assessed that it was not feasible to submit data for Ecobat analysis at this late stage. The assessment will be updated when Ecobat is confirmed to be fully operational, supplemented by sufficient data and adopted by statutory consultees.

7.39 As Ecobat was unavailable, BAI in combination with Site Risk assessment (which is originally used in combination with activity levels assigned by Ecobat) has been used to provide a reliable account of bat activity within the Site and the risk of collision to each species and genus of bat recorded. This method should still provide a reliable indication of the collision risk to bats as a result of the Proposed Development.

7.40 A total of 14 bat detectors were originally deployed based on a layout of 18 turbines proposed at the time of survey. Whilst static detector locations in 2023-24 were originally based on locations close to all turbines, the schemes evolution since 2023 meant that final distances varied. However, it is considered that static locations provide a sufficient and robust spread across the Site in relation to turbine locations. Given that two seasons of surveys have been

undertaken in the last 5 years (2020 and 2023-24) we consider that a good picture of bat activity on Site has been gained and this represents a reasonable effort in terms of survey for this assessment.

7.41 During the Autumn 2023 deployment, the weather station lost all of its data due to damage by members of the public and equipment failure issues. Data was subsequently taken from the previous weather forecast sourced from 'Time and Date'¹². This provides accurate weather forecasts for previous dates from nearby Aberedw. Whilst it is likely the weather would vary slightly from the higher altitude it is not considered a significant limitation.

7.42 Minor changes to the placement of each detector have occurred as a result of different surveyors undertaking the deployment and the accuracy of GPS equipment which varied by a maximum of 10 m. These differences were minimal and therefore the data recorded during each season was considered suitable to undertake a reliable comparison.

7.43 Detector 12 failed to record during the Spring 2024 deployment due to a technical fault. However, the volume and extent of data collected from all deployed detectors across all three survey periods provides confidence that the dataset is sufficiently robust.

7.44 During bat sound analysis, *Myotis spp.* calls were only identified to genus rather than species level due to the difficulty in identifying these genera to species via sound analysis. Genus level identified species data was included within the assessment and given that the mitigation for species in each genus will be consistent, regardless of which species was recorded, this is not considered a limitation to this assessment.

GCN Survey Limitations

HSI and eDNA

7.45 Only those ponds located on the Site could be accessed. An additional five ponds (A1, A3, A5, A6 and A57) lie within 250 m of the Site but access was not granted at the time of survey. Although the status of GCN in these ponds is currently unknown, all four lie over 350 metres away from the Proposed Development boundary and are not considered to be impacted

¹² Available at: [World Temperatures — Weather Around The World](#). (Accessed at the time of each survey)

by the works due to distance and intervening barriers. As such, this is not considered a significant limitation.

2023 Population Size Class Assessment

7.46 The population size class assessment was not commenced until 15th May 2023 and so the majority of surveys were completed outside the mid-April to mid-May key survey window (English Nature, 2001). Weather data and temperature recordings indicate that air temperatures in March and April 2023 from Builth Wells recorded lows of below 5°C throughout the majority of these months. With consistent low temperatures, newts can be so inactive in ponds that they go undetected. The air temperature below which torching becomes less reliable has not been established but 5°C can be taken as a working guide (Langton et al, 2001). It is considered that due to the poor weather in Spring 2023, GCN breeding is less likely to have occurred early in the season due to potential low activity in cooler conditions. It is therefore considered that the later start to the population assessment from mid-May does not present a significant constraint to the assessment, as it is considered that the majority of breeding adults would still have been present within ponds at this time due to the likely later start to the 2023 breeding season.

Badger Survey Limitations

7.47 Much of the site is covered in dense bracken, which limited the surveyor's ability to search for evidence of badger. This limitation is commonly encountered during badger surveys and the lack of recorded badger field signs should be interpreted with caution. This bracken is harvested each year by the farmers for livestock bedding and this annual disturbance reduces the likelihood of badger setts being present.

Existing Conditions

7.48 This section of the chapter details the results the desk study and field surveys conducted across the Site and respective study areas, which provides the baseline conditions from which the impact assessment is based. This includes:

- Designated sites and desk study/external data;
- Habitats and vegetative communities;

- Protected or otherwise notable species; and,
- An evaluation of ecological features (see **Table 7.10**).

Statutory Nature Conservation Designations

7.49 As described in **Appendix 7.1** and shown on **Figure 7.1**, 45 Statutory Nature Conservation Designations (including overlapping designations) are present in the local area within 10 km of the Site. Distances to the Site boundary are listed below: distances to turbines and construction works are greater:

- Colwyn Brook Marshes North and South SSSI lies around 225 m north of the Site boundary (across and to the north of the A481).
- Afon Gwy/River Wye (Upper Wye) SAC/SSSI lies 60 m to the west and Afon Gwy/River Wye (Tributaries) SAC/SSSI 220 m to the east of the Site boundary at their closest points (1.4 km west and 760 m east of nearest turbine locations respectively).
- No local statutory designations i.e. Local Nature Reserves (LNRs) were identified within 2 km of the Site boundary.

7.50 Colwyn Brook Marshes SAC/SSSI is assessed further in this chapter (paragraphs 7.55 – 7.57 and **Table 7.10**). In addition, connectivity between the Site's watercourses and the River Wye SSSI (Upper Wye and Tributaries) are also assessed further within this chapter (7.49 – 7.54 and **Table 7.10**).

7.51 The River Wye SAC and SSSI covers an area of 2,234.89 ha.

7.52 Designated features of the River Wye SAC and SSSI (applicable to the Upper Wye and Tributaries) are listed on NRW's website and in the River Wye Management Plan¹³ (unique unit number 7729, River Wye Afon Irfon to Sgithwen Brook) as including:

- Annex I habitats that are a Primary reason for selection of this Site:
 - Watercourses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation SAC Key Habitat.

¹³ <https://naturalresources.wales/media/a0oioqx/river-wye-sac-core-management-plan-approved.pdf>

■ Annex II species that are a Primary reason for selection of this Site:

- White-clawed (or Atlantic stream) crayfish (*Austropotamobius pallipes*), SAC Sympathetic Feature;
- Sea lamprey (*Petromyzon marinus*), SAC Key Species;
- Brook lamprey (*Lampetra planeri*) SAC Sympathetic Feature;
- River lamprey (*Lampetra fluviatilis*), Key Species;
- Twaite shad (*Alosa fallax*), SAC Key Species;
- Atlantic salmon (*Salmo salar*), SAC Key Species;
- Bullhead (*Cottus gobio*) SAC Key Species; and,
- Otter (*Lutra lutra*), SAC Key Species.

■ Annex II species present as a qualifying feature, but not a primary reason for site selection:

- Allis shad (*Alosa alosa*), SAC Sympathetic Feature.

7.53 For the River Wye Tributaries (units 7762, 7738, 7737):

■ Annex I habitats that are a Primary reason for selection of this Site:

- Watercourses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation SAC Key Habitat 7762 and 7738.

■ Annex II species that are a Primary reason for selection of this Site:

- White-clawed (or Atlantic stream) crayfish (*Austropotamobius pallipes*), SAC Sympathetic Feature 7662, Key Species 7737;
- Brook lamprey (*Lampetra planeri*) SAC Sympathetic Feature;
- River lamprey (*Lampetra fluviatilis*), SAC Sympathetic Feature;
- Atlantic salmon (*Salmo salar*), SAC Key Species;
- Bullhead (*Cottus gobio*) SAC Sympathetic Feature; and,
- Otter (*Lutra lutra*), SAC Key Species.

7.54 For the Upper Wye at 7729, the summary of conservation issues¹³ reads:

Invasive Himalayan balsam on this section is a threat to rare plant species and needs control. Signal crayfish may have colonised the lower end of this section from the Bach Howey? Water quality is generally good but there could be some issues with agricultural pollution? The potential impact of increased flow regulation from Elan reservoirs on populations of river jelly lichen on bedrock in this reach should be researched and monitored. Rare mosses at Nyth, Pwll-y-faedda and Glanyrafon, Erwood are vulnerable to shading from riverside trees.

7.55 For the River Wye Tributaries at units 7662 and 7738, the summary of conservation issues¹³ reads:

7662 River Edw within Coed Aberedw SSSI: This tributary was formerly important for native white-clawed crayfish but since the time of SAC notification the species is suspected to have become extinct due to a crayfish plague outbreak. The river was extensively fenced along with selective coppicing of riparian trees in the early 2000s and these trees are now being re-coppiced and the fences repaired. Biosecurity measures are necessary to prevent further spread of crayfish plague and invasive species including signal crayfish and Himalayan balsam during management works. Coed Aberedw is likely to be used as a breeding site by otters and disturbance should be managed by managing access appropriately.

7738 River Edw, Clas Brook to Aberedw and 7737 River Edw, Colwyn Brook to Clas Brook: This tributary was formerly important for native white-clawed crayfish but since the time of SAC notification the species was thought to have been lost (2015). However, there may be refugia in the tributaries from which native crayfish can recolonise the Edw? The river was extensively fenced along with selective coppicing of riparian trees in the early 2000s and these trees are now being re-coppiced and the fences repaired. However over-grazing and silt run-off may still be an issue on some farms? Consequently, a population of native crayfish could be restored, subject to strict controls of sheep dip and other agricultural pollution and appropriate biosecurity measures to prevent the spread of crayfish plague and invasive species including signal crayfish and Himalayan balsam during management works.

7.56 The current conservation status of the River Wye SAC and SSSI is mostly unfavourable due to invasive species, nutrient enrichment and habitat and population fragmentation.

7.57 Colwyn Brook Marshes SSSI covers an area of around 26ha. Designated features of the SSSI are listed on the NRW website as including (for closest units 3014, 3015 and 3016):

- Annex I habitats that are a Primary reason for selection of this Site:
 - Quaking bogs and transition mires SAC Key Habitat 3015, Sympathetic Feature 3014 and 3016.
- Annex II species that are a Primary reason for selection of this Site:
 - White-clawed (or Atlantic stream) crayfish (*Austropotamobius pallipes*), SAC Key Species 3014 and 3016;
 - Brook lamprey (*Lampetra planeri*) SAC Sympathetic Feature and;
 - Otter (*Lutra lutra*), SAC Key Species.

7.58 Marshy grassland (unit 3016) and Fen-topogenous mires in valleys, basins and flood plains (all units), are Key Habitats for the SSSI.

7.59 Summary conservation issues¹³ for units 3014-3016 are:

3014 Colwyn Brook Marshes, Cilberllan, SAC land: *Land continues to be managed within a Glastir agreement but this will expire at end 2023. At times grazing has been insufficient and the unit needs assessing to see if scrub control is required. Negotiations on grazing management will be required once Glastir expires and there are moves towards the sustainable farming scheme or a new S16 management agreement is put in place.*

3015 Colwyn Brook Marshes, Wern Heulog, SAC land. *This compartment has been left un-grazed for several years was heavily invaded by willow scrub. Not included in Glastir contract and owner not willing to S15 agreement for scrub control and follow on grazing. Most of the scrub now been tackled on this parcel (land ownership split down middle of parcel) via S16 on neighbouring land (Matts Farm) as no boundary fence on the ground. Suitable grazing by cattle or ponies is required to ensure scrub does not regrow to the extent it was. Invasive non-native plants such as Himalayan balsam and Japanese knotweed may also be a threat in this unit.*

3016 Colwyn Brook Marshes, Matts Farm, SAC land. *Grazing regime secured under S15 management agreement 2016. Programme of scrub control undertaken 2017 & 2018 to clear mature willow & birch from transition mire habitat. Need to ensure suitable follow up grazing takes place.*

7.60 All other statutory designations are either listed for habitats and/or plant species interests only and will not be affected by the Proposed Development or there is no reasonable likely connectivity (including Ciliau SSSI located 6.55 km to the south which is designated for lesser horseshoe bats).

Non-Statutory Nature Conservation Designations

7.61 As described in **Appendix 7.1** and shown on **Figure 7.1**, three non-statutory nature conservation designations are present in the local area within 2 km. Two of these are Road Verge Nature Reserves, Llanelwedd and Hendre, whilst the third is Old Bedw Site of Importance for Nature Conservation (SINC). These all lie around 1 km or more to the west, south or south-west of the Site and will not be impacted by the Proposed Development.

7.62 Finally, as described in **Appendix 7.1** and shown on **Figure 7.1**, 291 areas of ancient woodland (including restored ancient woodland and plantation on ancient woodland) were identified within 2 km of the Site boundary. Of these, 30 are located immediately adjacent or within the Site boundary. All 30 are located around the Site boundary apart from one in the south of the Site, as follows: five on the eastern boundary (7.41 ha); 12 on the northern boundary or in the north of the Site (10.98 ha); one on the north west boundary (0.95 ha); eight on the southern boundary or in south of Site (31.42 ha); and four on the western boundary (6.73 ha).

Habitats

7.63 The Site is approximately 1,323 ha, occupying mostly open upland ground around 2.7 km east of Builth Wells, c.1 km north of Aberedw and c.0.3 km west of Cregina, in Powys.

7.64 The Site ranges in elevation from 224 m Above Ordnance Datum (AOD) in the north where open farmland abuts the A481, up to 451 m AOD.

7.65 The area is largely covered by dense bracken, which is utilised by local farmers for livestock bedding. Where the topography is advantageous, other floral communities such as upland heathland, rush pasture and mire occur, although these are minor in area terms compared with bracken coverage. The Site has historically been, and is still subject to sheep and pony grazing, as well as being accessible to the public including walkers and other

recreational activity. The majority of the Site comprises common land subject to grazing by livestock, mainly sheep but also including cattle and ponies.

7.66 A summary of the Phase 1 habitat survey and NVC results are provided in **Table 7.6** below and shown on **Figure 7.3a** and **Figure 7.3b**, respectively. Detailed descriptions of the habitat types and NVC communities recorded in the Study Area, including sub-communities and variations from the published descriptions where relevant, are presented in **Appendix 7.2**, which also provides scientific names of species mentioned below. Arboricultural surveys have been undertaken in 2025, the findings of which are presented in **Appendix 7.6** and **Appendix 7.7**.

7.67 Whilst the dominant habitats include improved grassland, dry dwarf shrub heath, semi-improved acid grassland, dry heath/acid grassland mosaic and continuous bracken, the Site also includes small areas of acid flushes, marshy grassland and one area of degraded bog within the centre of the Site. Parcels of coniferous woodland plantation and semi-natural broadleaved woodland are present around the Site peripheries and within the Northern Substation Area. The majority of the habitat within the Site, where the Proposed Development will be located (60%), is continuous bracken.

Table 7.6 Habitats

Phase 1 Habitat	Constituent NVC Communities/ Variants	Description	Extent on Site (ha or metres (m))
A1.1.1 Semi natural broadleaved woodland	N/a	Mature broadleaved woodland is largely absent from the ESA, apart from small parcels around the Site peripheries and parcels within the Northern Substation Area. Tree species include sessile oak <i>Quercus petraea</i> , pedunculate oak <i>Quercus robur</i> , ash <i>Fraxinus excelsior</i> , hawthorn <i>Crataegus monogyna</i> , hazel	24.37 ha

Phase 1 Habitat	Constituent NVC Communities/ Variants	Description	Extent on Site (ha or metres (m))
		<i>Corylus avellana</i> , alder <i>Alnus glutinosa</i> , blackthorn <i>Prunus spinosa</i> and silver birch <i>Betula pendula</i> . The ground flora is openly grazed by sheep and is typically synonymous with the surrounding grassland, therefore ancient woodland indicator species are largely absent.	
A1.1.1./A1.3.1 Broadleaved and Mixed semi- natural woodland and A1.3.1 Mixed woodland semi natural	N/a	As above and present along the riverbanks and field edges in the south.	1.03 ha
A1.2.2 Coniferous woodland plantation	N/a	There are no large coniferous woodland plantations within the survey area. There are small coniferous tree lines and parcels within the areas of lowland agricultural land in the central southern areas of the Site, which act as wind breaks to livestock.	2.87 ha
A2.1 Dense/continuous	N/a	Occasional pockets of gorse <i>Ulex</i> sp. are generally found on the steep hillsides and in association with poor	0.13 ha

Phase 1 Habitat	Constituent NVC Communities/ Variants	Description	Extent on Site (ha or metres (m))
and A2.2 Scattered scrub		semi-improved and acid grassland. Common gorse <i>Ulex europaeus</i> was the main species recorded although western gorse <i>Ulex gallii</i> was also recorded. The hybrid between these two species is also likely to be present. In many areas, an understory of bracken occurs resembling ffridd habitat.	
A3.1 Broadleaved scattered trees	N/a	Areas of broadleaved scattered trees were present, particularly on the hillsides. These often had an understory of bracken, resembling ffridd habitat.	56.3 ha
B1.2 Acid grassland – semi-improved	U5	U5 <i>Nardus stricta</i> – <i>Galium saxatile</i> grassland community The U5 grassland community is dominated by <i>Nardus stricta</i>, interspersed with <i>Agrostis capillaris</i> and <i>Galium saxatile</i>. Moss species are scattered throughout at ground level, such as <i>Polytrichum commune</i> and <i>Pleurozium schreberi</i>, along with <i>Cladonia</i> lichen species. This habitat is present on the highest plateau of the Site, is well-grazed and is commonly	78.74 ha

Phase 1 Habitat	Constituent NVC Communities/ Variants	Description	Extent on Site (ha or metres (m))
		associated with heavily-grazed examples of H18, with poorly-defined boundaries between the two.	
B1.2 Acid grassland (semi-improved) and A2.2 Scrub scattered	N/a	U5 communities, as described above, with scattered gorse.	6.32 ha
B4 Improved grassland	MG7	MG7 <i>Lolium perenne</i> leys and related grassland community MG7 is present where the lowland slopes of the Site are used for agricultural grazing. The habitat supports a low diversity of floral species which is dominated by <i>Lolium perenne</i>, <i>Holcus lanatus</i> and <i>Trifolium repens</i>.	96.56 ha
B5 Marshy grassland, A33. Mixed scattered trees/B5 marshy grassland; and B4 Improved grassland/ B5 marshy grassland	M23	M23 <i>Juncus effusus/acutiflorus</i> – <i>Galium palustre</i> rush-pasture The rush-pasture vegetation comprises a fairly homogenous community in terms of species and structure, being typically rank. Most of it was not diverse, often with common marsh-bedstraw	3.62 ha

Phase 1 Habitat	Constituent NVC Communities/ Variants	Description	Extent on Site (ha or metres (m))
		<i>Galium palustre</i> being the only fen species found.	
B6 Poor semi-improved grassland	N/a	Areas of poor semi-improved grassland were present within heavily grazed lowland parts of the Site.	7.38 ha
C1.1 Continuous bracken (with small areas of A1.1.1/C1.2 scattered bracken; C1.2; and C1.1 with B4 improved grassland)	U20	U20 <i>Pteridium aquilinum</i> – <i>Galium saxatile</i> grassland community The U20 <i>Pteridium aquilinum</i> – <i>Galium saxatile</i> community has vegetation dominated by bracken <i>Pteridium aquilinum</i>, which can form extensive stands and was noted to be both standing, topped/laid over or had been harvested and baled. The community occupies the majority of the various land uses across the Site. It is most commonly present on the steeper slopes of the Site where, along with scrub vegetation it forms ‘ffridd’ habitat, although it has been allowed to encroach over the top of lower hilltops for agricultural purposes. Within the community, species diversity is very limited due to the dense cover of <i>Pteridium aquilinum</i>, although around	737 ha

Phase 1 Habitat	Constituent NVC Communities/ Variants	Description	Extent on Site (ha or metres (m))
		the edges where it is more easily grazed and along mown pathways <i>Galium saxatile</i> is present.	
C1.1 Continuous bracken and A3.1 broadleaved scattered trees	N/a	As above.	11.29 ha
D1 Dry shrub heath and D1.1 Dry dwarf shrub heath - acid	H8, H12, H18	H8 <i>Calluna vulgaris</i> – <i>Ulex gallii</i> heath Heath vegetation is common within the survey area. There are several discrete areas of dry dwarf shrub heath present, the majority of these are patches of <i>Ulex gallii</i>, which are classified as heath. Within the Site this was characterized by species-poor H8 which was dominated by <i>U. gallii</i> but no <i>Calluna</i> or <i>E. cinerea</i>. The <i>U. gallii</i> was growing in a matrix with grasses. These heaths are not represented in the NVC but clearly have a close affinity with a degraded form of H8 <i>Calluna-Ulex gallii</i> heath (JNCC, 2004) which is how it is represented in this Chapter. H12 <i>Calluna vulgaris</i> – <i>Vaccinium myrtillus</i> heath	133.54 ha

Phase 1 Habitat	Constituent NVC Communities/ Variants	Description	Extent on Site (ha or metres (m))
		Smaller areas of H12 are present toward the south and east of the Site and are generally located on the middle of slopes between the H18 communities at the top and the U20 communities toward the bottom. The vegetation is dominated by <i>Calluna vulgaris</i> and <i>Vaccinium myrtillus</i> although at ground level, moss and lichen species such as <i>Pleurozium schreberi</i>, <i>Rhytidiadelphus loreus</i> and <i>Hylocomium splendens</i> occur. The occurrence of this community are somewhat heavily grazed, and hint at the community being classified as the H12c where <i>Potentilla erecta</i>, <i>Galium saxatile</i> and <i>Nardus stricta</i> are also present throughout. H18 <i>Vaccinium myrtillus</i> – <i>Deschampsia flexuosa</i> heath H18 cloaks the upper slopes of the Site and is commonly rather degraded from anthropogenic activities. The heath community best fits with the H18 community identification, however, due to the high density of sheep grazing it is a poor fit to the NVC. Toward the top of	

Phase 1 Habitat	Constituent NVC Communities/ Variants	Description	Extent on Site (ha or metres (m))
		the slopes, this degradation makes differentiation between this habitat and grazed U5 very difficult. The habitat occupies 63.35 ha of the Site and is considered to be the typical presentation of the habitat.	
D5 Dry heath/ acid grassland mosaic	H18/U5; H12/U5	See above.	133.06 ha
E1.6.1 Blanket bog	M17, M1	The discrete area of blanket bog within the centre of the ESA has been modified to some degree by anthropogenic activities such as livestock grazing and to some extent drainage. Despite this falling under the 'Blanket bog' habitat type, peat survey results found limited shallow peaty soils in this area of 12 to 14 cm. These impacts are likely to have influenced the extent to which this bog can continue to form peat. The habitat is therefore considered to be a degraded form of blanket bog. The habitat is located on the plateau area in the northern part of	2.45 ha

Phase 1 Habitat	Constituent NVC Communities/ Variants	Description	Extent on Site (ha or metres (m))
		the survey area. The blanket bog is on level or very gently sloping ground. <i>M17 Scirpus cespitosus – Eriophorum vaginatum</i> blanket mire The discrete area of bog is comprised of M17, measuring 2.5 ha. M1 community bog pools are found toward the western extent of the area, with visible patches of Sphagnum moss species and noticeable <i>Scirpus cespitosus</i>. Grazing and other anthropogenic activities, such as off-road biking have reduced the quality of the habitat and areas of <i>Juncus effusus</i> are also present on the edges. <i>M1 Sphagnum auriculatum</i> bog pool community As above, instances of M1 are found only in association with the M17 blanket mire and are present as shallow pools with floating and submerged Sphagnum moss species. The habitat is typical of bog pools commonly found in the west of Britain and are small in size,	

Phase 1 Habitat	Constituent NVC Communities/ Variants	Description	Extent on Site (ha or metres (m))
		measuring on average 1.5-2 m in length at 1 m in width.	
E2.1 Flush and spring – acid/ neutral flush	M6	M6 <i>Carex echinata</i> - <i>Sphagnum recurvum/denticulatum</i> mire M6 is found throughout the study area, present typically as small flushes or runnels, and around minor watercourses. It is noted that complex mosaics of grassland and flush are common in uplands (JNCC, 2007). Almost all instances of M6 are of the species-poor M6c <i>Juncus effusus</i> sub-community, although some <i>Juncus acutiflorus</i> is present.	0.23 ha
G2 Running water	N/a	The Cwmblaenerw Brook begins on the Site, with its headwaters in the area of M17 / M1 floral community and bog pool. Other small watercourses forming the headwaters of the Milo Brook are present across the Site.	0.26 ha
G1.2 Standing water	N/a	A number of ponds occur on Site, with many of the upland ponds drying out in spring and summer.	1.41 ha
I2.1 Quarry	N/a	Instances of what appear to be old/defunct quarries or landslips are	0.9 ha

Phase 1 Habitat	Constituent NVC Communities/ Variants	Description	Extent on Site (ha or metres (m))
		present infrequently across the Site on steeply-sloping ground.	
J1.1 Cultivated land	N/a	Farmland in the Northern Substation Area and Southern Fields Area	15.48 ha
J1.3 Ephemeral/ short perennial	N/a	Occasional patches e.g. on transition to quarry.	2.34 ha
J2.1.2 Intact hedge (species-poor), J2.1.1 Intact hedge (native species-rich), J2.2.1 Defunct hedge (native species-rich), J2.3.1 Hedge with trees (native species-rich)	N/a	Hedgerow networks are largely found within the Northern Substation Area, the Access Road Area, and the lowland areas of the ESA, away from the proposed wind farm. They are associated with field boundaries and flanking the road.	0.304 ha
J3.6 Buildings	N/a	Limited to agricultural farmsteads to the north and central/south of the Site.	0.67 ha
J5 Other habitat	N/a	Various minor habitat types e.g. Bare Ground, Other Tall Herbs.	0.3 ha

7.68 The plant communities are described in greater detail in **Appendix 7.2**.

Potential groundwater dependent terrestrial ecosystems (GWDTEs)

7.69 The results of the NVC surveys identified six communities with potential for moderate or high groundwater dependency in accordance with SEPA guidance. These are M23 *Juncus effusus/acutiflorus* – *Galium palustre* rush pasture (high potential), M6 *Carex echinata* – *Sphagnum recurvum/denticulatum* mire (high potential). These NVC communities listed are very common habitat types across upland Wales, and some are otherwise generally of low ecological value. The degree to which each of these plant communities is groundwater fed is assessed and described in **Chapter 9**.

Protected or Otherwise Notable Species – External Data

7.70 As detailed in **Appendix 7.1**, a number of protected or otherwise notable non-avian species have been recorded in the local area.

Protected or Otherwise Notable Species – Field Survey Data

7.71 Full details of the survey methods adopted for each of the species referred to below, as well as the field survey results, can be found in **Appendix 7.3** (badger, otter, water vole, GCN) and **Appendix 7.4** (bats), and the figures therein. Summaries are provided below.

Bats

Habitats

7.72 The Site comprises mostly open upland ground at an elevation from 224 m Above Ordnance Datum (AOD) in the north where open farmland abuts the A481, up to 451 m AOD. It is sheep grazed and largely covered by continuous bracken, with upland dwarf heathland, gorse and some rush pasture and mire. The Site supports very few minor watercourses, and hedgerows and treelines are infrequent and largely absent from the upland parts of the Site, where the proposed wind turbines will be located.

7.73 The Site can be categorised into three areas: the upland, the steep slopes and the lowland. The upland area which dominates the Site is characterised by large, open areas blanketed in bracken *Pteridium* sp., heathland and improved neutral and acid grassland. Few trees are present. The land slopes steeply down into valleys, located centrally and to the east,

and the more open plain of the River Wye to the west. These slopes are commonly populated with areas of continuous bracken and areas of 'ffridd' habitat: a diverse mosaic of scrub, bracken and small broadleaved trees. Ffridd, synonymous with the 'upland fringe' connects the more open and unenclosed uplands with the traditionally-farmed lowlands. The lowlands form a very small part of the Site that generally only fringe the bases of Aberedw Hill and are present within the Northern Substation Area and Access Road Area, comprising improved and poor semi-improved grassland fields demarcated by hedgerows and trees.

7.74 Areas and features generally considered to be of high foraging value for bats are within the lowland areas and comprise broadleaved woodland, woodland edge, individual and scattered trees, tree lines, hedgerows and watercourses. Areas of woodland and hedgerows are present in the lowland areas, primarily in the Northern Substation Area, which are considered to be of high value for foraging bats. These features are almost entirely absent from the majority of the remainder of the Site, where the wind farm will be located. Open areas are considered to be less-valuable to foraging and commuting bats, due to the lack of linear features which can be used for navigation and due to the perceived increased threat of predation, however, *Nyctalus* species (noctule and Leisler's bat) are known to utilise more open areas (Boughey et al. 2011¹⁴; Mackie & Racey, 2007¹⁵; Roeleke et al. 2016¹⁶; Shiel, Shiel & Fairley, 1999¹⁷).

7.75 Based on established criteria¹⁸, the Site is considered to be of Low value to bats owing to the predominance of exposed open moorland, bracken and acid grassland with no potential roosting features (e.g., suitable trees, buildings and quarries). Features for roosting, bat

¹⁴ Boughey, K. L., Lake, I. R., Haysom, K. A., & Dolman, P. M. (2011). Improving the biodiversity benefits of hedgerows: how physical characteristics and the proximity of foraging habitat affect the use of linear features by bats. *Biological Conservation*, 144(6), 1790-1798.

¹⁵ Mackie, I. J., & Racey, P. A. (2007). Habitat use varies with reproductive state in noctule bats (*Nyctalus noctula*): implications for conservation. *Biological Conservation*, 140(1-2), 70-77.

¹⁶ Roeleke, M., Blohm, T., Kramer-Schadt, S., Yovel, Y., & Voigt, C. C. (2016). Habitat use of bats in relation to wind turbines revealed by GPS tracking. *Scientific reports*, 6(1), 1-9.

¹⁷ Shiel, C. B., Shiel, R. E., & Fairley, J. S. (1999). Seasonal changes in the foraging behaviour of Leisler's bats (*Nyctalus leisleri*) in Ireland as revealed by radio-telemetry. *Journal of Zoology*, 249(3), 347-358.

¹⁸ NatureScot (2021). Bats and Onshore Wind Turbines - Survey, Assessment and Mitigation [Online]. Available at: <https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation> [Accessed January 2025].

foraging, and commuting potential are primarily restricted to the lower slopes and adjacent off-site woodland. These assertions were supported by the findings of the desk study, which did not identify any known significant roosts in the desk study search area or indicate the likely presence of significant populations of high-risk bat species.

Preliminary roost assessment

7.76 No potential roost features occur on the main upland Site.

7.77 The Northern Substation Area supported 19 trees with individual bat roost potential, four trees with potential for multiple bats and classified as PRF-M and two buildings with individual/low bat roost potential.

7.78 The Access Road Area supported four trees and one set of farm buildings (off site) with individual/low bat roost potential and one tree with the potential to support multiple bats, categorised as PFR-M.

7.79 Pre-construction ground-level tree assessment surveys and bat surveys (where required) are recommended on any trees or buildings impacted by the Proposed Development. No emergence surveys were undertaken on the Northern Substation Area, Access Road Area or Southern Fields areas, given the distance from the proposed turbines, the likelihood that trees with PRF-M features can be retained and the dynamic nature of bat roosts.

7.80 Nine trees within the Northern Access Road area have the potential to support roosting bats and to be impacted by the Proposed Development. However, as these cover all cabling route options, only a small proportion of these will eventually require removal. All of these trees are categorised as PRF-I (suitable for supporting only individual or small numbers of bats) and this category does not require emergence surveys to be undertaken. It is considered that none of these trees, or other features listed in **Appendix 7.4**, would support significant bat populations and any impacts would therefore not be significant in EIA terms.

Automated bat detector surveys

7.81 As described in **Appendix 7.4** (Bat Appendix), 17 static detectors were set out on Site in 2020 by Environment Systems covering the Spring, Summer and Autumn periods (see Annex A of **Appendix 7.4**).

7.82 LUC set up 14 static detectors in 2023-24. These were installed in Autumn 2023, Spring 2024 and Summer 2024. The results are described in **Appendix 7.4** and **Figures 7.5 and 7.6**.

7.83 In line with the NatureScot et al. (2021) guidance, detector locations were based on the proposed turbine location (correct at the time of the surveys) and also the locations were chosen for being close to either the proposed turbine locations (based on the proposed turbine layout in spring 2020) or to habitats or features of interest and based on professional judgment. Good coverage of bat activity within the Site, including the turbine envelope, and the key habitats within, was achieved. The locations of the static detectors in relation to the final turbine layout are shown on Drawing 7.4 of **Appendix 7.4**.

7.84 The static detectors were set to record for a minimum of 10-night periods from half an hour before sunset to half an hour after sunrise, the period during which bats are usually active away from their roosts. The duration of recording per night varied throughout the survey period according to day/night length.

Assessment of potential risk

7.85 An assessment of site risk levels based on the NatureScot et al., (2021) guidance, described in full within **Appendix 7.4**, assessed the Site as having a 'Low' habitat risk.

7.86 Due to the size of the turbines the project size is classed as 'Large'. The overall site risk based on habitats and project size is Medium (3). Further details are provided in **Appendix 7.4**.

Summary of overall bat activity

7.87 In 2020, nine species (or genera in the case of more cryptic species) were recorded on the static detectors as follows (total passes in brackets): common pipistrelle (5267), soprano pipistrelle (2110), noctule (1635), Leisler's bat *Nyctalus leisleri* (7), brown long-eared bat *Plecotus auritus* (588), serotine (60), Myotis species (787), lesser horseshoe (123) and barbastelle (2). A total registration count of 10,580 bat passes were recorded across the Site. Common pipistrelle and soprano pipistrelle (high collision-risk and medium population vulnerability risk) recorded Moderate median activity levels during the 2020 survey effort. Noctule (high collision-risk and high population vulnerability risk) recorded Moderate, Moderate / High and Low / Moderate median activity levels during the 2020 survey effort. Total passes from

noctule bats comprised 16% of all passes recorded. Leisler's bat (high collision-risk and high population vulnerability risk), serotine and barbastelle (medium collision-risk and high population vulnerability risk) were very infrequently recorded. Median activity levels from all three species ranged between Low and Moderate. Leisler's bat and barbastelle were only recorded in spring and autumn (survey periods 1 and 3). Serotine was recorded throughout the survey effort. Total passes from these three species amount to 0.7% of all passes. Low to medium population vulnerability species and low collision risk species (brown long-eared bat and *Myotis* sp.) recorded low to moderate activity levels across the study area.

7.88 In 2023 - 2024, again nine species (or genera in the case of more cryptic species) were recorded on the static detectors: common pipistrelle (71), soprano pipistrelle (72), Nathusius' pipistrelle (12), noctule (899), brown long-eared bat (18), *Myotis* sp. (194), serotine (19), Leisler's bat (177) and *Plecotus* sp. (11). Barbastelle was only recorded in very low numbers in 2020, and not recorded in the 2023 - 2024 surveys. Across all detectors, the total number of passes of all bat species was 1,473.

7.89 Far fewer calls were recorded in total in 2023-24 compared to 2020. This is likely to be due to the higher number of statics used in 2020 and the differences in positioning of the static detectors (which reflected differing turbine location between the two surveys). In 2020, 3 detectors recorded 56% of the calls: locations A, K and I. Location K was very close to the northern woodland in the NE of the Site and location A was at the southern extreme of the Site – neither of these locations were included in 2023-24 due to turbines no longer being proposed in those areas. Therefore, the 2023-24 surveys reflect a more accurate turbine location design located away from fringe woodlands and hedges and therefore less bat foraging and commuting activity can be expected. Weather patterns may have also had an influence. The Spring 2020 survey was undertaken in May, whereas it was undertaken in April in 2024. Whilst April 2024 was dry, average wind speed was 27.9 mph, higher than recommended in guidance¹⁶. Autumn surveys in 2020 were in September, whereas they were in October in 2023. Summer surveys were in June-Aug 2020, and in June in 2024.

7.90 *Nyctalus* was the most abundantly recorded species group in 2023-24, whereas *Pipistrellus* was the most abundantly recorded species group in 2020. In 2023-24, the most common species group was *Nyctalus* (73% of all bat passes (a total of 899 passes) followed by

Myotis (13.7% of all bat passes). In 2023-24, *Pipistrellus* made up 10.52% of all bat passes (155 passes) recorded with *Plecotus* making up 1.97% (2.53%) and *Eptesicus* just 1.29%.

Bat species assemblage

7.91 The Bat Mitigation Guidelines (Reason et al, 2023¹⁹) provide guidance on assessing the importance of the bat species assemblage within a site. It notes that for sites which are functionally linked to a SAC where bats are a qualifying interest species, the site is automatically defined as being of International importance for the qualifying bat species. The River Wye SAC/SSSI lies within 20 m to the west of the Site boundary at its closest point, although over 800 m to the nearest turbine. Bats are not listed as a qualifying interest species for this SAC though the River Ithon SSSI (component part of SAC) is noted to be an important habitat for Daubenton's bat. This species specialises in foraging over large water bodies and favours enclosed habitats such as woodland and well-connected linear features. The area of the Site within which the turbines would be located is poorly connected to these habitats, lacks suitable linear features and only a low number of *Myotis* bat registrations were recorded during the 2023/2024 surveys. The Proposed Development is therefore not anticipated to result in impacts to the features of the SSSI.

7.92 The Bat Mitigation guidance uses a scoring system based on the number of different bat species present to determine the level of Site importance (see Table 3.3, pp 30, Reason et al., 2023). The maximum score for a site in north or mid Wales is 36, based on the presence of three widespread species (1 point per species – score 3), five less-abundant species (2 points per species – score 10), one rare species (3 point per species – score 3), and five very rare species (4 point per species – score 20).

7.93 The thresholds are as follows:

- 45% county importance (16 to 18);
- 55% regional importance (19 to 24); and,
- 70% national importance (25 or above).

¹⁹ Reason, P. F. and Wray, S. (2023) UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats (Version 1.1)

7.94 The bat species assemblage score for the Site using the 2023-24 data is calculated as shown in **Table 7.7** below. On this basis, the species assemblage within the Site scores 21 ($21/36 = 52.8\%$). This Site will therefore meet the threshold for Regional importance. However, this score is based on presence/absence only and does not take into account variations in the level of bat activity/frequency of occurrence between species. For example, if Nathusius' pipistrelle is removed from the calculation, as their activity accounted for less than 1% of the bat activity recorded within the Site in 2022 (equating to a total of 12 bat passes which would suggest very low numbers of these species are present), and not recorded at all in 2020, the assemblage would score 17 ($17/36 = 47\%$), which is of County importance. Given the low overall number of bat passes recorded in 2023-24, the Site is considered to be no greater than County importance.

Table 7.7 Bat species assemblage and rarity scores

Rarity category (points/species)	Species recorded within the Site 2023-24	Score
Widespread all geographies [score 1]	Soprano pipistrelle Common pipistrelle Brown long-eared bat	3
Widespread in many geographies, but not as abundant in all [score 2]	Noctule Myotis* assuming 2 species	6
Rarer or restricted distribution [score 3]		
Rarest Annex II species and very rare [score 4]	Nathusius' pipistrelle Serotine Leisler's bat	12
TOTAL		21

*Myotis: could include whiskered, Brandt's bat, Daubenton's bat, Natterer's bat

Impact assessment

7.95 Full details on species composition and rate of passes at the static detectors in 2023-24 is provided within **Appendix 7.4** and is summarised below (and for 2020 in Appendix A of **Appendix 7.4**).

7.96 As per the guidance from SNH et al., (2019), an individual risk assessment has been conducted for each of the high collision-risk species. Whilst not directly recommended by SNH et al., (2019), this exercise is also performed for the medium collision-risk species given below. This is in part owing to both species' populations being considered as highly vulnerable, as well as both species still being vulnerable to turbine collision. There is no requirement to complete an overall risk assessment for low collision-risk species.

High collision risk species

Common pipistrelle and Soprano pipistrelle

7.97 Common and Soprano pipistrelle are 'high collision risk' species. The Site is within the known range of common and soprano pipistrelle (Mathews et al. 2018). The species are listed as being of Least Concern (LC) on the IUCN Red List in Europe, with the species' conservation status as being Favourable in Wales and the UK. Wray et al., (2010) class common and soprano pipistrelle bats as common species in Wales.

7.98 Across all survey seasons, 71 common pipistrelle passes were recorded, and 72 Soprano pipistrelle passes were recorded. There is a Medium risk to these 2 species (each score 9, see Table 4.3 of **Appendix 7.4**) reproduced below as **Table 7.8**.

7.99 *Pipistrellus* spp. predominantly recorded in the area around detectors D13 and D14, situated around proposed turbines T16, T17 and T18 on the east of the Site. These were the two lowest altitude detectors.

Nathusius' pipistrelle

7.100 Just 12 passes of this species were recorded. There is a Low overall risk to this species (score 3, Table 4.1 of **Appendix 7.4**) reproduced below:

Table 7.8 Overall Risk Outcomes per Species

Species	Overall Risk
Common pipistrelle <i>Pipistrellus pipistrellus</i>	9
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	9
Nathusius's pipistrelle <i>Pipistrellus nathusii</i>	3
Noctule bat <i>Nyctalus noctule</i>	15
Leisler's bat <i>Nyctalus leisleri</i>	15

Noctule and Leisler's bat and *Nyctalus* sp.

7.101 *Nyctalus* spp. accounted for 73% of all bat activity on Site. Across all survey seasons, 899 noctule passes were recorded, and 177 Leisler's bat passes were recorded on Site. Both species had a High risk (score 15, see Table 4.1 of **Appendix 7.4**). Around 84% of *Nyctalus* passes were noctule and around 16% Leisler's bat. Though *Nyctalus* species represented the majority of bat call registrations within the Site, it should be noted that the total number of registrations across the survey period is relatively low compared to typical lowland bat surveys; therefore, a higher proportion of this species does not translate to a high level of bat activity.

7.102 *Nyctalus* spp. activity varied between seasons For Leisler's bat, the highest number of passes in spring (176) and zero in summer with a single pass in autumn. In Spring, 168 of the 176 passes were recorded on detector D8: these passes were almost all in a two-day period covering the evening of 13th April, the morning of the 14th and the evening of the 14th. Analysing the data shows that this is likely a small number of bats (2-5) continually flying near the detector, and not a large number of individuals. Even in spring, Leisler activity was low at 1.82. (BAI 0 to 5.0 being low). Variation was also noted for noctule, with the majority of the call registrations occurring in the Summer, around just a few static detectors and clustered within short periods of the night. Noctule registrations were lowest in the Autumn.

7.103 The Site is within the known range of noctule (Mathews et al. 2018). The species is listed as being of Least Concern (LC) on the IUCN Red List in Europe, with the species' conservation

status as being Unknown in Wales. Wray et al., (2010) class noctule as one of the rarest species in Wales. Noctule is known to be less reliant on linear features for foraging and commuting (Boughey et al., 2011; Mackie & Racey, 2007; Roeleke et al., 2016) and is adapted for foraging in open spaces.

7.104 The Site is at the edge of the known range of Leisler's bat (Mathews et al., 2018). The species is listed as being Near-Threatened (NT) on the IUCN Red List in Wales, with the species' conservation status as being Unknown in Wales. No assessment was made by Wray et al., (2010) of the scarcity of Leisler's bat. Owing to the species' morphology and manner of hunting and foraging, it is at high risk of collision with turbines. Leisler's bat is considered to have high population vulnerability.

Medium Collision Risk Species

Serotine

7.105 Serotine bats accounted for 1.29% of all bat species recorded across the entire survey period, which equates to 19 passes (Bat Activity Index (BAI) 0.04). Serotine has a medium collision risk and have low activity levels on the Site. Serotine were most active in the Summer, and least active in the Autumn, implying that they are at greater risk at certain times of the year.

7.106 The Site is at the edge of the known range of serotine (Mathews et al., 2018). The species is listed as being of LC on the IUCN Red List in Europe, with the species' conservation status as being Unknown in Wales. Wray et al., (2010) class serotine as one of the rarest species in Wales. Serotine is at a medium risk of turbine collision, in contrast with other species previously mentioned, owing to its' association with both open areas and linear features/woodland (Catto et al., 1996).

Barbastelle

7.107 Barbastelle bats were not recorded on Site during the 2023-24 surveys. In the 2020 surveys, there were just 2 passes of this species recorded, for detector locations associated with woodland edge.

7.108 The Site is at the edge of the known range of barbastelle (Mathews et al., 2018). The species is listed as being Vulnerable (VU) on the IUCN Red List in Europe, with the species'

conservation status as being Unknown in Wales. Wray et al., (2010) class barbastelle as one of the rarest species in Wales.

7.109 Barbastelle is at a medium risk of turbine collision in contrast with other species previously mentioned. It shows a strong association with linear features and broadleaved woodland (Zeale et al., 2012) but, owing to its aerial hawking foraging style (Sierro & Arlettaz, 1997) it is highly adaptable to many habitats relative to prey availability (Hillen et al., 2011).

Overall risk

7.110 The Site level risk for collision effects on bats was Medium (3) (see Table 4.2 of **Appendix 7.4** reproduced below as **Table 7.9**). Noctule and Leisler's bats had the highest level of bat activity on Site, resulting in a high overall risk score of 15. Common and Soprano pipistrelle had moderate bat activity, resulting in a medium risk score of 9. Nathusius's pipistrelle had low bat activity, resulting in a low risk score of 3.

Table 7.9 Overall Risk Assessment Matrix

Site Level Risk	Bat Activity Category					
	Nil (0)	Low (1)	Low-moderate (2)	Moderate (3)	Moderate-high (4)	High (5)
Lowest (1)	0	1	2	3	4	5
Low (2)	0	2	4	6	8	10
Medium (3)	0	3	6	9	12	15
High (4)	0	4	8	12	16	20
Highest (5)	0	5	10	15	20	25

Seasonal trends in Bat Activity

7.111 *Nyctalus spp.* contributed the greatest BAI across the Summer (BAI 8.20) and Spring (BAI 4.03), following the same pattern as total bat activity. *Pipistrellus spp.* contributed the most BAI during the Autumn (BAI 0.2), with *Nyctalus spp.* contributing only slightly less (BAI 0.18).

7.112 In the Spring, *Pipistrellus spp.* contributed the second highest BAI (0.72) though was significantly lower than *Nyctalus* activity during the same season. Lower levels of *Pipistrellus spp.* activity were recorded in the Spring and Autumn (BAI 0.20 for both seasons).

7.113 In the Summer, *Myotis spp.* contributed the second highest BAI (2.28) though was significantly lower than *Nyctalus* activity during the same season.

7.114 *Plecotus* and *Eptesicus spp.* activity levels were very low throughout the survey period, with only 29 and 19 passes recorded respectively. *Plecotus spp.* and *Eptesicus* were recorded most in the summer (BAI 0.24 and BAI 0.21 respectively).

Badger

7.115 The Data Search (**Appendix 7.1**) details badger records: there are records from the 1 km square on the north eastern edge of the Site (east of T17), the 1 km square off site east of T15 (roadkill 2019), in the 1 km square south of T8 (2003); the 1 km square off site south of T19 (2003), 1.8 km SE at Rhulen Hill, 2021, around 2 km to west of Site in 2022 and off Site to the north-east in 2024.

7.116 An active main sett was located in woodland in the South of the Site in 2025. This was located over 600 m from the nearest turbine and over 420 m from the nearest works. It was in an area of lowland woods and fields unaffected by the works. The October 2023 badger survey of the Site found potential badger rooting field signs detected in multiple path areas. One potential badger footprint was identified within soil that was uprooted and one disused badger sett (taken over by foxes) was recorded with the northern area of the Site. No other signs of badger setts were detected, and it is considered likely that badgers are occasionally visiting the site from lower elevation areas where setts may be located.

7.117 It is assumed that badger setts occur off-site in other adjacent woodland and farmland and that badger use the Site for foraging.

Otter

7.118 The otter survey in 2023 identified only limited suitable habitat for otter and no evidence of otter. The few minor watercourses within the upland areas on Site are shallow and narrow and do not offer suitable conditions for otter sheltering, commuting, and foraging.

7.119 There is a small stream that runs north-west to south-east near the centre of the Access Road Area. The stream has narrow margins dominated by soft rush, and the water was clear and fast flowing at the time of survey. This stream could provide suitable habitat for commuting otter but no evidence of otter was found.

7.120 Similarly, no evidence of otter was found within the Northern Substation Area. The streams in this area are shallow and also have very little marginal vegetation. The majority of the streams are bordered by heavily grazed grassland fields and lack suitable sheltering opportunities.

Water vole

7.121 No suitable habitat was identified on Site for water vole. Signs of water vole were searched for during the otter survey (2023) and subsequent habitat surveys of wetter areas on Site in 2024 and the Access Road Area and Northern Substation Area. No evidence of water vole was present on Site.

Great crested newt

7.122 As described in **Appendix 7.3**, GCN surveys have included a combination of HSI assessments, eDNA, conventional presence/absence surveys and population surveys. **Figure 7.4** shows the pond locations and GCN results.

7.123 A total of 56 waterbodies have been subject to HSI, eDNA and/or population surveys. A further five waterbodies were not accessible (A1, A3, A5, A6 and A57, all outside of the Site).

7.124 The results show that a total of 40 ponds were of poor suitability for GCN and so were not subject to any further assessment or survey as it was assumed that GCN would likely be absent from these ponds. Another 16 ponds were found to be either below average, average or good for GCN and so these ponds were subject to presence/absence eDNA surveys (14 ponds in 2023 and 2 ponds in 2025). No ponds were of excellent suitability for GCN.

7.125 Of the 14 ponds subject to eDNA testing in 2023, 6 returned positive results: A4, A7, A11, A14, A16 and A56. The remainder were negative. In 2024 and 2025, ponds A2, A4, A61 and A62 were tested for eDNA and/or subject to GCN population survey. Ponds A2 and A62 were found to be negative for eDNA, whilst ponds A4 and A61 were found to support small populations of GCN, based on Population Size Class Assessment (PSCA) surveys.

7.126 Ponds A11 and A14 are 460 m and 600 m from any proposed works and considered unlikely to be impacted.

7.127 Population PSCA surveys of ponds A7 and A16 in 2023 found a small population of GCN to be present. In addition, there was a sight record of GCN in pond A9 which is assumed to have GCN presence.

7.128 Therefore, small populations of GCN are considered to be present on Site.

7.129 Metapopulations of GCN are likely to occur as follows:

- In the lowland agricultural area of the northern Substation (ponds A4 and A61);
- In the north-east of the Site around ponds A7 and A9, possibly extending to A56;
- In the south-west of the Site, around ponds A16 and A14, possibly extending to A11.

Other groups

7.130 No other surveys were undertaken for other protected species or groups, though incidental sightings were recorded.

7.131 Habitats on Site are suitable for common species of reptiles, such as slow worm, adder, common lizard and grass snake *Natrix Helvetica* (more likely within the vicinity of the lowland ponds than within the upland areas). One common lizard was observed in 2024 in the western part of the Site on the top of Aberedw Hill. These habitats are widespread throughout the Site, providing large expanses of available habitat.

7.132 There are older records of fairy shrimp, *Chirocephalus diaphanous* from the ephemeral ponds on Site, specifically the area of the pond cluster A26-A32 (grid ref SO083515, from 2006, Welsh Invertebrate Database). Only pond A61 is to be lost to facilitate the Proposed Development, and this pond is considered unlikely to support fairy shrimp, due to being

permanent, with poor water quality, high nutrient levels and being densely overgrown by bulrush. Surveys for this species were therefore not undertaken.

7.133 Minor streams within the valleys on the steep slopes of Aberedw Hill were not considered suitable for white clawed crayfish, due to the narrow channels, steep slopes, fast moving water and limited refuges. Minor streams south of the Access Road and within the northern Substation Area were also considered unsuitable for white clawed crayfish, being shallow, drying in summer, with limited refuges and with improved agricultural fields on both sides reducing water quality. For similar reasons, the habitat surveys did not identify the watercourses as being suitable for fish, and the watercourses are limited in connectivity to other watercourses due to the presence of culverts and steep slopes.

Evaluation of ecological features

7.134 An evaluation of the baseline ecological features is presented in **Table 7.10** below. Features of local or higher value are considered IEFs and are carried forward to the next stage of the assessment.

Table 7.10 Evaluation of ecological features

Feature	Evaluation reasoning	Level of importance
Ecological designations		
River Wye SAC, SSSI and tributary SSSIs	The level of value follows the level of designation	SAC – International SSSI - National
Colwyn Brook Marshes North and South SSSI	The level of value follows the level of designation	National
Ancient Woodland areas listed on the Ancient Woodland Inventory	The level of value follows the level of designation	Council area

Feature	Evaluation reasoning	Level of importance
Habitats		
A1.1.1 Semi natural broad leaved woodland	Mature broadleaved woodland is largely absent from the Site, apart from woodland blocks in the Northern Substation Area and a wooded valley in the Southern Fields Area along the banks of the Cwmblaenerw Brook. Tree species include pedunculate oak <i>Quercus robur</i> , ash <i>Fraxinus excelsior</i> , hawthorn <i>Crataegus monogyna</i> , hazel <i>Corylus avellana</i> , alder <i>Alnus glutinosa</i> , blackthorn <i>Prunus spinosa</i> and silver birch <i>Betula pendula</i> . The ground flora is openly grazed by sheep and is typically synonymous with the surrounding grassland, therefore woodland indicator species are largely absent. Woodland is a PNRAP priority habitat.	Local
A1.2.2 Coniferous woodland plantation	There are no large coniferous woodland plantations within the Site. There are small coniferous tree lines within the area of agricultural land in the central southern area of the Site, which act as wind breaks to livestock.	Less than Local
A3.1 Broadleaved scattered trees	Stands of gorse <i>Ulex sp.</i> are generally found on the steep hillsides and in association with unimproved acid grassland. Common gorse <i>Ulex europeus</i> was the main species recorded although western gorse <i>Ulex gallii</i> was also recorded. The hybrid between these two species is also likely to be present. Some of this scrub	Local

Feature	Evaluation reasoning	Level of importance
	habitat aligns with the scrub and Ffridd priority habitat in the PNRAP.	
B1.2 Acid grassland – semi-improved	U5 <i>Nardus stricta</i> – <i>Galium saxatile</i> grassland community The U5 grassland community is dominated by <i>Nardus stricta</i>, interspersed with <i>Agrostis capillaris</i> and <i>Galium saxatile</i>. Moss species are scattered throughout at ground level, such as <i>Polytrichum commune</i> and <i>Pleurozium schreberi</i>, along with <i>Cladonia</i> lichen species. This habitat is present on the highest plateaux of the Site, is well-grazed and is commonly associated with heavily-grazed examples of H18, with poorly-defined boundaries between the two. Though not a priority habitat in itself, it is a component of Ffridd habitat.	Less than Local
B4 Improved grassland	MG7 <i>Lolium perenne</i> leys and related grassland community MG7 is present where the lowland slopes of the Site are used for agricultural grazing. The habitat supports a low diversity of floral species which is dominated by <i>Lolium perenne</i>, <i>Holcus lanatus</i> and <i>Trifolium repens</i>.	Less than Local
B5 Marshy grassland	M23 <i>Juncus effusus/acutiflorus</i> – <i>Galium palustre</i> rush-pasture	M23 less than Local

Feature	Evaluation reasoning	Level of importance
	Overall, the rush-pasture vegetation comprises a fairly homogenous community in terms of species and structure, being typically rank. Most of it was not diverse, often with common marsh-bedstraw being the only fen species found. Not a conservation priority.	
C1.1 Continuous bracken	U20 <i>Pteridium aquilinum</i> – <i>Galium saxatile</i> grassland community The U20 <i>Pteridium aquilinum</i> – <i>Galium saxatile</i> community has vegetation dominated by bracken, which can form extensive stands and was noted to be both standing, topped/laid over or had been harvested and baled. The community occupies the majority of the various land uses across the Site. It is most commonly present on the steeper slopes of the Site where, along with scrub vegetation it forms ‘ffridd’ habitat, although it has been allowed to encroach over the top of lower hilltops for agricultural purposes. Within the community, species diversity is very limited due to the continuous cover of bracken, although around the edges where it is more easily grazed and along mown pathways heath bedstraw is present. Component part of Ffridd habitat.	Less than Local
D1.1 Dry dwarf shrub heath - acid	H8 <i>Calluna vulgaris</i> – <i>Ulex gallii</i> heath	Local

Feature	Evaluation reasoning	Level of importance
	Heath vegetation is common within the survey area. There are several discrete areas of dry dwarf shrub heath present, the majority of these are patches of <i>Ulex gallii</i>, which are classified as heath. Within the Development this was characterized by species-poor H8 which was dominated by <i>U. gallii</i> but no <i>Calluna</i> or <i>E. cinerea</i>. The <i>U. gallii</i> was growing in a matrix with grasses. These heaths are not represented in the NVC, but clearly have a close affinity with H8 <i>Calluna-Ulex gallii</i> heath (JNCC, 2004) which is how it is represented in this report. Species poor and not considered Annex 1 European dry heath habitat. H12 <i>Calluna vulgaris</i> – <i>Vaccinium myrtillus</i> heath Smaller areas of H12 are present toward the south and east of the Site, and are generally located on the middle of slopes between the H18 communities at the top and the U20 communities toward the bottom. The vegetation is dominated by heather and bilberry although at ground level, moss and lichen species such as <i>Pleurozium schreberi</i>, <i>Rhytidiadelphus loreus</i> and <i>Hylocomium splendens</i> occur. The occurrences of this community are somewhat heavily grazed, and hint at the community being classified as the H12c where <i>Potentilla erecta</i>, heath bedstraw and mat grass <i>Nardus stricta</i> are also present	

Feature	Evaluation reasoning	Level of importance
	throughout. Poor fit to NVC with range of acid grassland species and not considered Annex 1 habitat. H18 <i>Vaccinium myrtillus</i> – <i>Deschampsia flexuosa</i> heath H18 cloaks the upper slopes of the Site, and is commonly rather degraded from anthropogenic activities. The heath community best fits with the H18 community identification, however, due to the high density of sheep grazing it is a poor fit to the NVC. Toward the top of the slopes, this degradation makes differentiation between this habitat and grazed U5 very difficult. The habitat occupies 63.35 ha of the Site and is considered to be the typical presentation of the habitat. Often in mosaic with U5, suffered from grazing and not considered Annex 1 habitat. H12 and H18 It corresponds to the Section 7 habitat 'Upland heathland' and aligns with the 'Upland and heathland' priority habitat in the PNRAP.	
D5 Dry heath/ acid grassland mosaic	U5 <i>Nardus stricta</i> – <i>Galium saxatile</i> grassland community The U5 grassland community is dominated by mat grass, interspersed with <i>Agrostis capillaris</i> and <i>Galium saxatile</i>. Moss species are scattered throughout at ground level, such as <i>Polytrichum</i>	Local

Feature	Evaluation reasoning	Level of importance
	<i>commune</i> and <i>Pleurozium schreberi</i>, along with <i>Cladonia</i> lichen species. This habitat is present on the highest plateaux of the Site, is well-grazed and is commonly associated with heavily-grazed examples of H18, with poorly-defined boundaries between the two.	
E1.6.1 Blanket bog	M1 <i>Sphagnum auriculatum</i> bog pool community Instances of M1 are found only in association with the M17 blanket mire, and are present as shallow pools with floating and submerged Sphagnum moss species. The habitat is typical of bog pools commonly found in the west of Britain and are small in size, measuring on average 1.5-2 m in length at 1 m in width. M17 <i>Scirpus cespitosus</i> – <i>Eriophorum vaginatum</i> blanket mire A discrete area of M17 is located in a largely central position within the Site, measuring 2.5 ha. M1 community bog pools are found toward the western extent of the area, with visible patches of Sphagnum moss species and noticeable <i>Scirpus cespitosus</i>. Grazing and other anthropogenic activities, such as off-road biking have reduced the quality of the habitat and areas of <i>Juncus effusus</i> are also present on the edges. As a result of both communities being subject to grazing historically and currently, as well as historical	Local

Feature	Evaluation reasoning	Level of importance
	drainage and other anthropogenic disturbance events, the small area is deemed to be poor or degraded forms of the Annex 1 blanket bog habitat.	
E2.1 Flush and spring – acid/ neutral flush	M6 <i>Carex echinata</i> - <i>Sphagnum recurvum/denticulatum</i> mire M6 is found throughout the study area, present typically as small flushes or runnels, and around minor watercourses. It is noted that complex mosaics of grassland and flush are common in uplands (JNCC, 2007). All instances of M6 are of the species-poor M6c <i>Juncus effusus</i> sub-community although some <i>Juncus acutiflorus</i> is present.	Local
Standing water	Various ponds occur on Site, with many drying up in the spring/summer months. Ponds are a Section 7 Priority Habitat 'Ponds' and align with freshwater and wetland habitats in the PNRAP.	Local
Rivers and Streams	The Cwmblaenerw Brook begins on Site, with its headwaters in the area of M17 / M1 floral community and bog pool. Other small watercourses forming the headwaters of the Milo Brook are present across the Site.	Local
Quarry	Instances of what appear to be old/defunct quarries or landslips are present infrequently across the Site on steeply-sloping ground.	Less than Local

Feature	Evaluation reasoning	Level of importance
Cultivated land	Limited to agricultural farmsteads to the north and central/south of the Site.	Less than Local
Native hedgerows	Hedgerow networks are largely found within the northern and central areas of the Site. They are associated with field boundaries and flanking the road. The ground flora is synonymous with the surrounding grassland, predominantly improved. Hedgerows align to Section 7 Priority Habitat 'Hedgerows' and also align with PNRAP priority 'linear habitat'.	Local
Buildings	Two corrugated iron sheds occur in the Northern Substation Area, one off-site. A set of farm buildings occur just north of the access track, off-site.	Less than Local
Species		
Plants	The Section 7 plant pillwort <i>Pilularia globulifera</i> occur on ponds and wet areas on the upland plateau. The 2021 and 2024 surveys identified this species in ponds 13, 14, 16, 19, 20, 22, 23, 25, 31, 32, 35, 40, 47, 49, 54, 55, 56 on Site.	Local
Bryophytes	Section 7 mosses records from within 5 km.	Local
Bats	Roosting All bat species are protected in Wales under the Conservation of Habitats and Species Regulations 2017 (as amended) and the WCA. Of	Less than Local

Feature	Evaluation reasoning	Level of importance
	the 17 species of bat known to breed in the UK, eight are also WPL listed, 12 are priority species under the PNRAP. All roosting features lie over 900 m from turbines.	
	Commuting foraging All bat species are protected in Wales under the Conservation of Habitats and Species Regulations 2017 and the WCA 1981. Of the 17 species of bat known to breed in the UK, eight are also WPL listed, 12 are priority species under the PNRAP. The field surveys recorded eight bat species and one general in 2020 and seven species and two genera (<i>Myotis</i> sp. and <i>Plecotus</i> sp.) in 2023/2024, foraging and commuting within the Site. When considering high collision risk species, overall risk per species was between medium for common pipistrelle (Favourable Current Conservation Status (CCS) in Wales) and soprano pipistrelle (Favourable CCS in Wales), and high for noctule (Unknown CCS in Wales) and Leisler's bat (Unknown CCS in Wales); the risk was low for Nathusius' pipistrelle (Unknown CCS in Wales). Medium collision risk species serotine (Unknown CCS in Wales) was recorded in low numbers (19 passes).	County

Feature	Evaluation reasoning	Level of importance
	Low collision risk species <i>Myotis</i> species (including Daubenton's bat (Favourable CCS in Wales), Brandt's bat (Unknown CCS in Wales), Natterer's bat (Favourable CCS in Wales) and whiskered (Unknown CCS in Wales)) and brown long-eared bat (Favourable CCS in Wales) were also recorded. Suitable habitat features including plantation and woodland edges, and stream corridors are present on the periphery of the Site. However, the Site is an exposed upland landscape with very limited suitable habitat connectivity, such as hedgerows, tree lines and woodland. The Site is therefore considered to be of low suitability for bats. Based on this, the species present (most of which are common and widespread) and the low numbers of bat passes, the Site is considered to be of County Importance. See paragraph 7.91 for more details.	
Badger	Badgers are protected under the Protection of Badgers Act 1992. One active sett recorded on Site, and limited other signs of badger were present.	Less than Local
Otter	Otters are strictly protected as an EPS under the Conservation of Habitats and Species Regulations 2017 (as amended). Current Conservation Status in Wales is Favourable. No signs of otter were recorded on Site.	Less than Local

Feature	Evaluation reasoning	Level of importance
Water vole	Water vole is a Species of Principal Importance in Wales as well as a Powys Priority Species. It is fully protected under the WCA 1981. No evidence of water vole was identified on Site, and no records of water vole were identified during the desk study (ITPEnergised, 2021). The habitats of the Site and buffer area are considered largely sub-optimal for use by this species. Water vole presence on Site is therefore considered unlikely.	Less than Local
Hazel dormouse	No records returned from the data search and limited suitable habitat on Site.	Less than Local
Reptiles	The Site is likely to support common species of reptile, including slow worm <i>Anguis fragilis</i> , common lizard <i>Zootoca vivipara</i> and adder <i>Vipera berus</i> .	Local
GCN	Three metapopulations of GCN are present on site, each comprising a small population. GCN are strictly protected as an EPS under the Conservation of Habitats and Species Regulations 2017 (as amended). Current Conservation Status in Wales is unfavourable at a national and county level.	Local
Fish	No suitable watercourses on Site for any notable fish species.	Less than Local
Invertebrates	Historical records for fairy shrimp on Site.	Local

Implications of Climate Change for Existing Conditions

7.135 The summary of the relevant climate change projections using the UK Climate Change Projections 2018 (Met Office, 2022) are:

- Temperatures are projected to increase, particularly in summer;
- Winter rainfall is projected to increase and summer rainfall is most likely to decrease;
- Heavy rain days (rainfall greater than 25 mm) are projected to increase, particularly in winter;
- Near surface wind speeds are expected to increase in the second half of the 21st century with winter months experiencing more significant effects of winds; however, the increase in wind speeds is projected to be modest; and
- An increase in frequency of winter storms over the UK.

7.136 The non-avian ecological baseline is unlikely to change significantly over the coming years as a direct result of climate change. However, changes to the local climate, such as higher temperatures and reduced rainfall in summer, may lead to gradual changes to habitats and associated species at the Site, particularly wetlands, such as ponds, marshy grassland, mire and flush habitats locally declining. The process is likely to be relatively slow but a decline of wetlands may take place over the lifetime of the Proposed Development which will be operational for 40 years. This may impact species such as GCN, fairy shrimp and wetland plants which rely on different types of wetlands.

7.137 Drier and warmer spring and summers are likely to increase the likelihood of wildfires which may increase bare burnt areas and slow progression of habitat succession.

Future Baseline in the Absence of the Proposed Development

7.138 In the event that the Site remained undeveloped, the vegetation would likely continue to be overgrazed in areas, habitats would remain species poor, water quality would remain the same and adjacent woodland areas would remain overgrazed and lacking in structure and species diversity. In areas, habitats would remain species poor, water quality would remain the same and adjacent woodland areas would remain heavily grazed and lacking in structure and

species diversity. Certain ponds would remain unsuitable for wildlife including GCN and some existing breeding ponds may become unsuitable overtime due to siltation, excess drying or continued poaching of banks. It is possible that agricultural support mechanisms would change over time and make biodiversity enhancement measures more financially attractive.

Embedded Design Mitigation

7.139 The ecological baseline has been considered throughout the design process for the Proposed Development (see **Chapter 3: Site Selection and Design Strategy**), via the Mitigation Hierarchy and Step Wise approach to the placement of the infrastructure layout, such that it avoids interacting with sensitive ecological receptors in the first instance. Where interaction could not be avoided (for example, loss of vegetation to hard standing), the infrastructure layout was amended to minimise this interaction, where possible.

7.140 A series of design meetings were held where representatives of each specialist subject provided input to subsequent design options. The aim of this has been to either avoid or minimise the potential for any significant effects on important features. Non-avian ecology factors considered throughout the design process have included the following:

- Recommended disturbance buffers for protected species were adhered to wherever practicable.
- As necessary, the design iteration process aimed to avoid woodland edge and linear features likely to be used by bats for foraging and commuting.
- Avoiding or minimising losses of priority habitats.
- Avoiding areas of peat soils (i.e. areas of greater than 0.3 m depth).
- Implementing a minimum 50 m buffer for any infrastructure or construction activity around all watercourses, except where watercourse crossings/upgrading works are required. The design process has actively minimised the number of watercourse crossings required for associated infrastructure.

7.141 Minimising the impact on potential GWDTEs even if these were subsequently assessed as being predominantly surface water or rain fed.

- 250 m buffer round GWDTEs, where possible. Where this is not possible, **Chapter 9** specifies additional mitigation that is required.

Good Practice Measures

7.142 In line with the current CIEEM guidelines, the assessment of likely effects is carried out in the presence of standard mitigation measures. The following good practice and mitigation measures will be set out in a Construction Environment Management Plan (CEMP) applied (post consent) during construction to ensure that effects on IEFs are reduced:

- Work area buffer zones will be implemented around sensitive areas (priority habitat, water features, etc.), in a manner consistent with the existing rights over common land;
- Whilst impacts on bats is fully assessed in this Chapter, and no features other than a small number of PRF-I trees are to be impacted, an updated walkover survey will be carried out pre-construction on features within 50 m of works that have the potential to support roosting bats and which could be directly or indirectly affected by the Proposed Development. If any evidence of a potential roost is identified, which has the potential to be impacted by the Proposed Development, additional surveys, mitigation and/or compensation will be identified and implemented via licencing requirements, where applicable, to ensure no breach in legislation will occur.
- Whilst impacts on protected species are fully assessed in this Chapter, a pre-construction survey for protected species, including badger, otter and water vole (where suitable habitat has been identified) will be carried out. If evidence or a high likelihood of protected species presence is identified, additional mitigation will be identified and implemented via licencing requirements, where applicable, to prevent impacts on individuals.
- It is considered that sufficient survey information on GCN is available to determine likely significant effects for the purpose of this EIA. Update GCN surveys will be undertaken prior to construction, to inform the proposed development works and any licensing requirements. This will include Habitat Suitability Index (HSI) Assessments of all ponds within 250metres of the Proposed Development, eDNA surveys of all ponds which are assessed to have an HSI of below average or above, and full population surveys of any of those ponds which

return a positive eDNA result. No works which could impact GCN will be undertaken until all necessary licences are obtained.

- A pre-construction survey will be carried out and if invasive species are found to be present, a management plan will be developed to eradicate invasive species present on Site and ensure biosecurity measures are implemented to avoid the introduction of invasive species during construction.
- The Applicant will appoint a suitably qualified Ecological Clerk of Works (ECoW) prior to the commencement of any construction activities take place. The ECoW will be present on a regular basis to oversee site clearance and construction activities, provide toolbox talks to site personnel with regards to priority species and habitats, as well as undertake monitoring works, as appropriate.
- A Site speed limit of 15 mph will be in place at all times to reduce the risk of faunal collisions with construction vehicles.
- Excavations will be covered at the end of each working day or a wooden plank placed inside to allow protected faunal species to escape, should they enter the hole. Any temporarily exposed open pipe system will be capped in such a way as to prevent wildlife, such as badgers, gaining access.
- Where appropriate and safe to do so (due to the presence of suitable habitat and connectivity), all construction working areas with potentially suitable open habitats for reptiles will initially be cut during the active season for reptiles (April to October), under the guidance of the ECoW to reduce the height of vegetation and make it less attractive for reptile habitation. The ECoW, or an approved contractor under the supervision of the ECoW, will move/dismantle any potential refugia or hibernacula that may be present in working areas, either by hand or sensitively by machine. Working areas will then be kept unsuitable for reptiles through regular cutting until construction in that location commences.
- In order to prevent pollution of watercourses within the Site (with particulate matter or other pollutants such as fuel), standard construction practice measures will be employed as set out in the CEMP. Full details of construction mitigation measures will be provided in the CEMP.

Micrositing

7.143 It is proposed that the turbines and other infrastructure will be subject to a 50 m micrositing allowance which will be applied should adverse ground conditions be encountered during pre-construction ground investigations, or where more optimal ground conditions are available. The assessment presented in this chapter has been undertaken on that basis. Further details on micrositing are provided in **Chapter 4**. Micrositing guidance in relation to ecology is set out in **Table 7.11** below. A number of restrictions to the micrositing allowance relating to non-avian ecology have been applied and are set out below. These will be controlled by planning condition.

- Minimum bat buffers are to be maintained around suitable bat features (e.g. woodland edge, riparian corridors, boundary features). Micrositing of turbines will be completed with consideration of these buffers and based on the turbine specification. The aim should be to maximise the distance between the works and suitable bat habitat features.
- If new, active badger setts are identified, micrositing will be used to reduce the potential for impacts and avoid the need for sett closure and licencing, where possible.
- Where GCN ponds are present, micrositing will be used, where possible, to maximise the distance between any GCN ponds (or ponds that could be restored for GCN) to limit the impacts to immediate terrestrial habitat around ponds. Any movement of infrastructure will be dependent on other onsite constraints and subject to advice from an Environmental and Ecological Clerk of Works (ECoW).

Table 7.11 Non-avian ecology micrositing restrictions

Infrastructure	Micrositing restrictions
T1	Any movement north-west will need to consider the GCN pond A16 which is around 160 m to NW.
T2	Any movement south-east should consider the pond A16 which is around 140 m to SE.

Infrastructure	Micrositing restrictions
T3	Any movement east will need to consider the presence of Section 7 Priority Habitat.
T4	Any movement west will need to consider the presence of Section 7 Priority Habitat.
T5	Any movement north or east will need to consider the presence of Section 7 Priority Habitat, as well as a wet area with ponds to the north.
T6	Any movement north-west will need to consider Section 7 Priority Habitat.
T7	None
T8	Any movement east should consider the presence of hedgerows.
T9	Any movement north-west will need to consider the presence of a GCN pond (A56).
T10	Any movement north or north-east will need to consider the presence of a cluster of ponds (A51-A54).
T11	Any movement north will need to consider the presence of a cluster of ponds (A44-A49). Any movement north-east will need to consider and maintain suitable buffers for blanket bog habitat and associated ponds.
T12	Any movement north-west/north-east will need to consider the presence of Section 7 Priority Habitat (heathland to the north-west and wetland habitats to the north-east).
T13	Any movement south will need to consider the presence of a Section 7 Priority Habitat (heathland).
T14	Any movement east will need to consider the presence of a Section 7 Priority Habitat.

Infrastructure	Micrositing restrictions
T15	None
T16	None
T17	Any movement west will need to consider the presence of a GCN pond (A9).
T18	Any movement west will need to consider the presence of woodland.
Access tracks	Any movement south-west for the track between T1 and T2 will need to consider pond A16 and GCN. Any movement for the track between T5 and T6 needs to consider the ponds in the pond cluster at this location. Any movement north or south for the track between T12 and T13 needs to consider Section 7 Priority Habitat. Any movement north of the track between T14 and T16 needs to consider GCN pond (A7). Any movement of the Main access track into Site south of Compound 2 needs to consider Section 7 Priority Habitat.
Temporary construction compounds	Any movement will need to consider hedgerows in all directions.
Borrow pits	None
Substation	Any movement will need to consider the presence of hedgerows and woodland in the vicinity of the substation.
Cable route	When determining the final routing of the cabling from the substation to the access track, consideration needs to be made of GCN ponds, watercourses, GWDTE, hedgerow and woodland in this area.

Scope of the Assessment

Effects Scoped In or Out

7.144 Following evaluation of the baseline data, including desk study and field survey data, and considering the embedded mitigation and good practice measures described above, some potential effects on IEFs (features of Local or higher value) are scoped out of the assessment, and the rationale for this scoping is described in **Table 7.12** below. This is based on professional judgement and experience from other relevant projects in Wales. Decommissioning effects are likely to be similar to and/or of lower magnitude than effects from the construction and operational phases and are scoped out.

Table 7.12 Rationale for effects scoped in or out.

Important Ecological Feature	Rationale for scoping In/Out	Scoped In/Out
Ecological designations		
River Wye SAC and SSSIs	The Cwmblaenerw Brook and Milo Brook flow south off the Site and are hydrologically connected to the small streams and watercourses which are located within the site. The Cwmblaenerw Brook and Milo Brook are tributaries of the River Wye SAC. As such there is connectivity between the Site and the SAC/SSSI. Whilst the Proposed Development does not directly impact these watercourses, indirect impacts are possible on the qualifying features during the construction and operational phases of development.	Construction: In Operation: In
Colwyn Brook North and South SSSI.	There is no hydrological or other connectivity between the Proposed Development and the SSSI likely to impact the SSSI features. Habitat features are mainly impacted by grazing regimes, whilst the SSSI is upstream of the Site and no riparian features such as white clawed crayfish, fish and otter will be impacted. The closest turbine is 1.6 km to	Construction: Out Operation: Out

Important Ecological Feature	Rationale for scoping In/Out	Scoped In/Out
	the south. The Site boundary is 215 m to the south west across the A481 and the closest proposed works is the substation site entrance.	
Ancient woodland areas listed on the Ancient Woodland Inventory.	291 areas of ancient woodland (including restored ancient woodland and plantation on ancient woodland) were identified within 2 km of the Site boundary. Of these, 29 are located immediately adjacent to the Site and six blocks of ancient woodland are located within the Site. There is no negative impact to areas of ancient woodland present on Site from construction or operation. AW areas that lie outside, but adjacent to, the Site and will be subject to enhancement opportunities have been scoped in for Operation to assess enhancement benefits.	Construction: Out Operation: In
Habitat		
A1.1.1 Semi natural broad-leaved woodland	See ancient woodland above. Negative impact to woodland on Site is not significant.	Construction: Out Operation: Out
A1.2.2 Coniferous woodland plantation	Only small areas are present, of very limited ecological value and will not be impacted by the Proposed Development.	Construction: Out Operation: Out

Important Ecological Feature	Rationale for scoping In/Out	Scoped In/Out
A3.1 Broadleaved scattered trees	This habitat will not be impacted by construction of the Proposed Development.	Construction: Out Operation: Out
A1.3.1 Mixed semi natural woodland	Small area on Site, largely unaffected, impact not significant	Construction: Out Operation: Out
A2.2 Scattered scrub	Small area on Site, largely unaffected, impact not significant	Construction: Out Operation: Out
B1.2 Acid grassland – semi-improved	Acid grassland is a S7 Welsh Priority Habitat. Grassland is a Powys Action Plan habitat and will be impacted by construction of the Proposed Development.	Construction: In Operation: Out
B4 Improved grassland	Improved grassland is not ecologically valuable and any impact will not be significant.	Construction: Out Operation: Out
B5 Marshy grassland	Marshy grassland can be ecologically valuable and will be impacted by construction of the Proposed Development.	Construction: In Operation: Out
C1.1 Continuous bracken	Continuous bracken has limited ecological value and any impact is unlikely to be significant.	Construction: Out

Important Ecological Feature	Rationale for scoping In/Out	Scoped In/Out
		Operation: Out
D1.1 Dry dwarf shrub heath - acid	Upland heathland is a S7 Welsh Priority Habitat and a Powys Action Plan habitat and will be impacted by construction of the Proposed Development.	Construction: In Operation: Out
D5 Dry heath/ acid grassland mosaic	Upland heathland/acid grassland are S7 Welsh Priority Habitats and Powys Action Plan habitats and will be impacted by construction of the Proposed Development.	Construction: In Operation: Out
E1.6.1 Blanket bog	Blanket bog is a S7 Welsh Priority Habitat and subject to a Powys Action Plan habitat and will be impacted by construction of the Proposed Development.	Construction: In Operation: Out
E2.1 Flush and spring – acid/ neutral flush	Wetland habitats are a S7 Welsh Priority Habitat and subject to a Powys Action Plan habitat and will be impacted by construction of the Proposed Development.	Construction: In Operation: Out
Standing water	Standing water such as ponds are a S7 Priority Habitat and subject to a Powys Action Plan. Pond enhancement for GCN has been scoped in for Operation.	Construction: In Operation: In

Important Ecological Feature	Rationale for scoping In/Out	Scoped In/Out
Rivers and Streams	See River Wye SAC and SSSIs above	Construction: In Operation: In
Quarry	Not identified as having significant ecological value.	Construction: Out Operation: Out
Cultivated land	Not identified as having significant ecological value.	Construction: Out Operation: Out
Native hedgerows	Very few hedgerows occur on the upland parts of the Site although hedgerows do occur on the Northern Substation Area and access road. Whilst there may be construction impacts, any operational impacts are considered negligible.	Construction: In Operation: Out
Buildings	Not identified as having significant ecological value.	Construction: Out Operation: Out
Species		
Plants	Potential impacts to habitats supporting notable plants have been identified during construction.	Construction: In

Important Ecological Feature	Rationale for scoping In/Out	Scoped In/Out
		Operation: Out
Bryophytes	No records of any bryophyte species or assemblage of significant conservation interest, that could be impacted by the Proposed Development.	Construction: Out Operation: Out
Bats - roosting	No roosting features are located on the main upland area and minor features (PRF-I) within the Northern Substation Area and Access Road Area are unlikely to be impacted and no significant impact expected. Whilst small numbers of trees and hedges are impacted along the access road, none of these had identified bat roost potential. As a precaution, measures detailed within the CEMP, will ensure avoidance of significant effects, should any new features suitable for bats be identified, prior to construction commencing.	Construction: Out Operation: Out
Bats - Foraging and commuting	Various bats have been recorded foraging and commuting across the Site, some of high collision risk, therefore assessment during operation is scoped in. Habitat loss effects during construction on foraging and commuting bats are scoped out of the assessment as the main part of the Site, where	Construction: Out Operation: In

Important Ecological Feature	Rationale for scoping In/Out	Scoped In/Out
	turbines are proposed, is largely comprised of open habitat. Linear features such as woodland edges and stream corridors will remain available for use by bats both during and post construction therefore no impacts are anticipated.	
Badger	No impact on active setts, and limited use of the Site by badger. Impacts considered insignificant and can be managed through the CEMP.	Construction: Out Operation: Out
Otter	No evidence of otter on Site. Impacts considered insignificant and can be managed through the CEMP.	Construction: Out Operation: Out
Water vole	No evidence of water vole on Site. Impacts considered insignificant and can be managed through the CEMP.	Construction: Out Operation: Out
Hazel dormouse	No evidence of hazel dormouse on Site. Impacts considered insignificant and can be managed through the CEMP.	Construction: Out Operation: Out
Reptiles	Reptiles are likely to be present on Site but are scoped out of the assessment because the measures implemented through the embedded mitigation will be employed, ensuring the avoidance of any impacts on reptile. Suitable habitat for reptiles is widespread across the Site,	Construction: Out Operation: Out

Important Ecological Feature	Rationale for scoping In/Out	Scoped In/Out
	providing ample opportunities for reptiles to disperse away from any proposed works, without overall loss of habitat carrying capacity for reptiles.	
GCN	A small number of ponds within the Site have been confirmed as supporting a small population of GCN. Some of the proposed infrastructure is within 250 m of GCN ponds and as such could have an impact on GCN habitat as well as the GCN themselves. The Proposed Development will result in the direct loss of one breeding pond. There are also risks associated with 'immediate' and 'intermediate' habitat loss and habitat fragmentation of groups of ponds supporting metapopulations during the construction phase. Operational effects may occur due to killing/injury by vehicles if GCN pass across access tracks located between ponds that likely support a metapopulation. However, GCN primarily move at night and therefore the risk of this is considered to be low.	Construction: In Operation: In

Important Ecological Feature	Rationale for scoping In/Out	Scoped In/Out
Fish	No suitable watercourses are to be directly impacted, and measures to prevent indirect impacts through pollution can be addressed via a CEMP.	Construction: Out Operation: Out
Invertebrates	There are historical records of fairy shrimp from ephemeral waterbodies on Site. Such conditions are likely to fluctuate naturally on Site and tracking of vehicles likely to create additional advantageous conditions from rutting and vehicle track pits filling with water temporarily. The only pond to be lost (A61) does not provide suitable habitat for this species. Therefore, no significant impact is expected.	Construction: Out Operation: Out

Assessment of Effects

7.145 The assessment of effects is based on the project description as outlined in **Chapter 4**. Unless otherwise stated, potential effects identified are considered to be adverse.

Construction Effects

Predicted Construction Effects

7.146 The elements of the Proposed Development which have the potential to impact on IEFs during construction are:

- The working of borrow pits (as required);
- The upgrading/creation of site access tracks, including passing places, turning heads, junctions and drainage;
- Construction of temporary compounds;
- Construction of the onsite substation;
- Construction of turbine foundations at each turbine location;
- Construction of crane hardstandings and laydown/storage adjacent to each turbine;
- Excavation of trenches for drainage and laying of electrical cable;
- Construction of crane hardstandings and laydown/storage adjacent to each turbine;
- Delivery and erection of turbines (including installation of aviation warning lights); and
- Site restoration and implementation of the Habitat Management Plan.

7.147 Note that the Proposed Development is temporary (40 years) and reversible and the term 'permanent loss' below is used in this context. The above activities have the potential to cause the following construction impacts to the IEFs identified:

- Direct loss of habitat, including foraging habitat and/or breeding habitat for protected species.
- Indirect loss of foraging habitats and/or breeding habitat for species, through displacement.

- Disturbance to habitats and species (including noise, vibration, pollution), due to track and turbine base construction, as well as turbine erection, heavy machinery, noise and human activity on the Site. Disturbance of vegetation will affect a 10 m zone around all infrastructure.

- Fragmentation due to the construction of watercourse crossings

7.148 In accordance with the CIEEM guidelines, effects of impacts are assessed in the presence of applied mitigation measures (as described above); where possible, design iteration has ensured avoidance of the highest quality and most sensitive areas of habitat

7.149 Habitat lost to the Proposed Development has been calculated using the following assumptions:

- Permanent loss:
 - All habitat under permanent dug track/hardstanding will be lost.
- Temporary loss (habitats lost during construction but re-instated subsequently):
 - All habitats under temporary dug infrastructure e.g. cabling corridor, will be reinstated to previous habitat unless stated; and
 - A 3 m radius of habitat from all dug track will be lost (due to embankments and drainage ditches).
- Temporary disturbance of habitats (overlaps with ‘degradation’ category below but is a construction phase impact):
 - 2 m radius from all permanent and temporary lost habitat.
- Disruption of water flows in wetland habitats.

7.150 The access track to be constructed for the Proposed Development, is assumed to be 5.5 m wide.

7.151 All habitat loss calculations are presented in **Table 7.13**. Only those subject to permanent and temporary losses and direct or indirect effects are included in the table, and habitats not listed are therefore predicted to not undergo direct or indirect impacts. Categories marked with

an asterisk are IEFs. Note that figures in the table have been rounded up to two decimal places but calculations have been done using the unrounded figures.

Table 7.13 Permanent and temporary habitat losses

Habitat	Total extent within Site (ha)	Permanent habitat loss (ha/m and % of total extent on Site)	Temporary habitat loss (ha/m and % of total extent on Site))	Area/ length of permanent and temporary effects (ha/m)	Permanent and temporary effects as % of total extent within Site
A1.1.1 Semi natural broad leaved woodland*	24.37	0	0.01 (0.04%)	0.01	0.04%
A2.2 Scattered scrub*	0.13	0	0.03 (23.10%)	0.03	23.10%
A1.3.1 Mixed woodland semi natural*	0.6	0	0.02 (3.33%)	0.02	3.33%
B1.2 Acid grassland – semi-improved*	78.74	2.75 (3.5%)	0.94 (1.19%)	3.69	4.69%
B4 Improved grassland	96.56	7.12 (7.37%)	7.37 (7.63%)	14.49	15%
B5 Marshy grassland*	1.93	0.05 (2.6%)	0.08 (4.15%)	0.13	6.74%
B6 Poor semi improved grassland	1.52	0.12 (7.9%)	0.01 (0.66%)	0.13	8.55%

Habitat	Total extent within Site (ha)	Permanent habitat loss (ha/m and % of total extent on Site)	Temporary habitat loss (ha/m and % of total extent on Site))	Area/ length of permanent and temporary effects (ha/m)	Permanent and temporary effects as % of total extent within Site
C1.1 Continuous bracken	735.84	16.41 (2.2%)	9.25 (1.26%)	25.66	3.49%
C1.1 Continuous bracken/ B4 improved grassland	0.97	0.08 (8.3%)	0.32 (33%)	0.4	41.24%
D1. Dry dwarf shrub heath*	17.93	1.10 (6.14%)	0.33 (1.84%)	1.43	7.98%
D1.1 Dry dwarf shrub heath – acid*	115.61	5.12 (4.43%)	2.11 (1.83%)	7.23	6.25%
D5 Dry heath/ acid grassland mosaic*	133.06	5.03 (3.78%)	4.64 (3.49%)	9.67	7.27%
E2.1 Flush and spring – acid/ neutral flush*	0.23	0.01 (4.35%)	0.03 (13.04%)	0.04	17.39
G1 Standing water*	1.71	0	0.01 (0.59%)	0.01	0.01 (0.59%)
Indirect effects					
Running water*	No loss of running water but indirect effects may occur. There are up to four watercourse crossings required, all of which are associated with unnamed tributaries of the Cnithio Brook at the north of the Site. One crossing is associated with the access track of the substation and between one and three watercourse crossings with the cable corridor				

Habitat	Total extent within Site (ha)	Permanent habitat loss (ha/m and % of total extent on Site)	Temporary habitat loss (ha/m and % of total extent on Site))	Area/ length of permanent and temporary effects (ha/m)	Permanent and temporary effects as % of total extent within Site
	route options. The watercourses are typically ephemeral and the option remains to install the cable route during a period of no flow to mitigate effect on flooding, drainage and water resources in accordance with good practice during design and construction.				
Intact hedge (species-poor), J2.1.1 Intact hedge (native species-rich), J2.2.1 Defunct hedge (native species-rich), J2.3.1 Hedge with trees (native species-rich)	0.304 ha	215 m	0	215 m	215 m

7.152 As evaluated in **Tables 7.12** and **7.13**, the following IEFs are scoped into the construction phase assessment:

- River Wye SAC and component SSSIs;
- A1.1.1 Broadleaved woodland (semi-natural);
- B1.2 Acid grassland – semi-improved;
- B5 Marshy grassland;
- D1.1 Dry dwarf shrub heath – acid;

- D5 Dry heath/ acid grassland mosaic;
- E1.6.1 Blanket bog;
- E2.1 Flush and spring – acid/ neutral flush;
- Standing water;
- Rivers and Streams;
- Native hedgerows;
- Plants; and
- GCN.

Assessment of effects

River Wye SAC and component SSSIs

Feature Value and Status: As per **Table 7.12**, the SAC is of International Importance and is of high sensitivity. The condition of the SAC is unfavourable. The SSSI is of National Importance and high sensitivity.

Impact

7.153 Afon Gwy/River Wye (Upper Wye) SAC/SSSI lies 60 m to the west and Afon Gwy/River Wye (Tributaries) SAC/SSSI 220 m to the east of the Site boundary at their closest points (1.4 km west and 760 east of nearest turbine locations respectively). The Cwmblaenerw Brook and Milo Brook flow south off the Site and are tributaries of the River Wye SAC. Watercourses near Northern Substation Area flow into the Cnithio Brook and then into the River Wye SAC. As such there is connectivity between the Site and the SAC/SSSI. There is some minor direct impact to the northern watercourses via temporary diversions for cable construction. The Proposed Development does not directly impact the Cwmblaenerw Brook and Milo Brook watercourses, however indirect impacts are possible on the qualifying features of the SAC during the construction phase of development, for example if spillages occur.

Magnitude

7.154 The Cwmblaenerw Brook and Milo Brook watercourses will not be physically impacted by the works. A potential temporary reduction in water quality is possible due to accidental

spillages and silt runoff. Reference should be made to **Chapter 9** for full details of these impacts and proposed mitigation. This could lead to a reduction in water quality of watercourses downstream including the SAC and likely significant effects on the species/habitats for which the SAC is designated. Temporary diversion of watercourses may be required for cable installation in the Northern Substation Area, although the watercourses here are often dry drainage channels representing flow paths during times of heavy rainfall, they drain into the Cnithio Brook and then into the River Wye. The watercourse diversion for cabling will be undertaken when the watercourse is dry.

7.155 Without additional mitigation for both direct and indirect effects, magnitude is considered to be Low and short term.

Significance of Effect

7.156 The direct and indirect effects are considered to be Minor adverse, and Not Significant in the context of the EIA regulations.

B1.2 Acid grassland – semi-improved (U5)

7.157 This U5 grassland habitat is present on the highest plateau of the Site, is well-grazed and is commonly associated with heavily-grazed examples of H18, with poorly-defined boundaries between the two. Though not a PNRAP priority habitat in itself, it is a component of Ffridd habitat. Whilst acid grassland is listed as a Section 7 Priority Habitat in Wales, the grassland on Site does not qualify as this priority habitat. This habitat is considered to be of less than Local Importance and negligible sensitivity.

Impact

7.158 The extent of this habitat will be reduced with the construction of tracks and hardstanding areas.

Magnitude

7.159 A total of 0.7 ha will be permanently lost and 0.12 ha subject to temporary loss. Direct and permanent habitat loss due to infrastructure is therefore predicted to be at most 1.31% of the total acid grassland vegetation found within the Site. The direct loss of this habitat is of a relatively small extent in the local context.

7.160 As such, when considering the relatively small areas of direct permanent habitat loss (i.e. 0.7 ha), the magnitude of impact within a regional context (e.g. 33,607 ha of upland acid grassland and 19,000 ha of Ffridd habitat in Powys (PNRAP)) is considered to be Low and irreversible.

Significance of Effect

7.161 Given the above consideration of sensitivity and magnitude, the effect significance for acid grassland (U5) of less than Local value is considered to be Minor adverse, long term and Not Significant.

B5 Marshy grassland;

7.162 The M23 habitats account for 1.93 ha within the Site. Overall, M23 rush-pasture vegetation comprises a fairly homogenous community in terms of species and structure, being typically rank. Most of it was not diverse, often with common marsh-bedstraw *Galium palustre* being the only fen species found. This habitat is considered to be a Section 7 Priority habitat, however it is a poor example, and is therefore not a conservation priority, and is considered to be less than Local value and low sensitivity.

Impact

7.163 The extent of this habitat will be reduced with the construction of tracks and hardstanding areas.

Magnitude

7.164 A total of 0.05ha ha will be lost permanently and another 0.08ha subject to temporary impact. Direct and permanent habitat loss due to infrastructure is therefore predicted to be at most 2.6% of the marshy grassland vegetation found within the Site. The direct loss of this habitat is of a relatively small extent in the local context.

7.165 As such, when considering the relatively small areas of direct habitat loss (i.e. 0.05 ha), the magnitude of impact within a regional context (e.g. 12,654 ha of marshy grassland habitat in Powys (PNRAP)) is considered to be Low and irreversible.

Significance of Effect

7.166 Given the above consideration of sensitivity and magnitude, the effect significance for marshy grassland M23 of less than Local value, is considered to be Minor Adverse, long term and Not Significant.

D1.1 Dry dwarf shrub heath – D1 Dry dwarf shrub heath

7.167 As shown in **Table 7.13**, the Proposed Development is predicted to reduce the extent of upland dry dwarf shrub heath (D1 and D1.1 combined). Dry dwarf shrub heath covers 134 ha of the Site and is comprised of H8 *Calluna vulgaris*- *Ulex gallii* heath (species poor and not Annex 1 European Dry Heath), H12 *Calluna vulgaris* – *Vaccinium myrtillus* and H18 *Vaccinium myrtillus* – *Deschampsia flexuosa* communities (Annex 1 European Dry Heath). Upland dry heath is a section 7 habitat and a priority habitat in the PNRAP. It is therefore considered to be of Local importance and medium sensitivity.

Impact

7.168 The extent of this habitat will be reduced with the construction of tracks and hardstanding areas.

Magnitude

7.169 A total of 6.22 ha will be lost permanently and 2.44 ha will be subject to temporary impact. Direct and permanent habitat loss due to infrastructure is therefore predicted to be at most 4.64% of the dry dwarf shrub heath vegetation found within the Site. The direct loss of this habitat is of a relatively small extent in the local context.

7.170 As such, when considering the relatively small areas of direct permanent habitat loss (i.e. 6.22 ha), the magnitude of impact within a regional context (e.g. 11,709 ha of dry heath habitat in Powys (PNRAP)) is considered to be Low and irreversible.

Significance of Effect

7.171 Given the above consideration of sensitivity and magnitude, the effect significance for dry dwarf shrub heath of Local value is considered to be Minor Adverse, long term and Not Significant.

D5 Dry heath/ acid grassland mosaic

7.172 The U5 grassland community is dominated by *Nardus stricta*, is present on the highest plateaux of the Site, is well-grazed and is commonly associated with heavily-grazed examples of H18, with poorly-defined boundaries between the two. Whilst acid grassland is listed as a Section 7 Priority Habitat in Wales, the grassland on Site does not qualify as this priority habitat, though the heathland does. This habitat is considered to be of Local Importance and low sensitivity.

Impact

7.173 The extent of this habitat will be reduced with the construction of tracks and hardstanding areas.

Magnitude

7.174 A total of 5.03 ha will be lost permanently, and 4.64 ha will be subject to temporary loss. Direct and permanent habitat loss due to infrastructure is therefore predicted to be at most 3.78% of the heath/ acid grassland mosaic vegetation found within the Site (total amount 133.06ha). The direct loss of this habitat is of a relatively small extent in the local context.

7.175 As such, when considering the relatively small areas of direct permanent habitat loss (i.e. 5.03 ha), the magnitude of impact within a regional context (e.g. 33,607 ha of upland acid grassland and 11,709 ha of dry heath habitat in Powys (PNRAP)) is considered to be Low and irreversible.

Significance of Effect

7.176 Given the above consideration of sensitivity and magnitude, the effect significance for dry heath/acid grassland mosaic (U5) of less than Local value is considered to be Minor Adverse, long term and Not Significant.

E2.1 Flush and spring – acid/ neutral flush;

7.177 M6 is found throughout the Site, present typically as small flushes or runnels, and around minor watercourses. It is noted that complex mosaics of grassland and flush are common in uplands (JNCC, 2007). All instances of M6 are of the species-poor M6c *Juncus effusus* sub-community although some *Juncus acutiflorus* is present. It is considered to be of Local importance and medium sensitivity.

Impact

7.178 The extent of this habitat will be reduced with the construction of tracks and hardstanding areas.

Magnitude

7.179 A total of 0.01 ha will be lost permanently with a further 0.03 ha subject to temporary loss. Direct and permanent habitat loss due to infrastructure is therefore predicted to be at most 4.35% of the flush and spring vegetation found within the Site (a total of 0.23 ha occurs on Site). The direct loss of this habitat is of a relatively small extent in the local context.

7.180 As such, when considering the relatively small areas of direct habitat loss (i.e. 0.01 ha), the magnitude of impact within a regional context (e.g. 2,074 ha of flush and spring habitat in Powys (PNRAP)) is considered to be of Low and irreversible.

Significance of Effect

7.181 Given the above consideration of sensitivity and magnitude, the effect significance for flush and spring of Local value is considered to be Minor Adverse, long term and Not Significant.

Standing water

7.182 Standing water occurs on Site in the form of 54 ponds. Another 6 ponds occur outside of the Site. As per **Table 7.12** and **Table 7.13** standing water is of Local importance and medium sensitivity.

Impact

7.183 Standing water bodies (ponds) are both a Section 7 and PNRAP habitat. No direct permanent impact is predicted to ponds from the Proposed Development with the exception of the loss of Pond A61. Temporary impact is calculated at 0.01 ha i.e. 0.59% of the 1.41 ha of standing water on Site. Indirect impact may occur through the use of machinery near standing water which may also result in accidental fuel/oil spillages. Indirect impacts from silt runoff/fuel leaks could also occur, resulting in a reduction in water quality in the standing water bodies within the Site. Reference should be made to **Chapter 9** for full details of these impacts and proposed mitigation.

Magnitude

7.184 Measures included within the embedded and applied mitigation (CEMP and oHMP) will contribute to effectively managing risk during the construction phase. The magnitude of impact is considered to be medium and temporary.

Significance of Effect

7.185 Given the above consideration of sensitivity and magnitude, the effect significance is considered to be Minor Adverse, short term and Not Significant.

Rivers and Streams

7.186 As per **Tables 7.12 and 7.13**, rivers and streams of are Local importance and of medium sensitivity.

Impact

7.187 The Cwmblaenerw Brook and Milo Brook flow south off the Site and are tributaries of the River Wye SAC (the impact on the SAC and SSSI is addressed above). Whilst the Proposed Development does not directly impact these watercourses, indirect impacts are possible during the construction phase of development, for example due to spillages. Minor watercourses in the Northern Substation Area may be subject to diversions to install by cabling works.

Magnitude

7.188 Up to four minor watercourses (dry in places) will be crossed near the Northern Substation. A potential temporary reduction in water quality is possible due to accidental spillages and silt runoff. Reference should be made to **Chapter 9** for full details of these impacts and proposed mitigation.

7.189 Without mitigation the Magnitude is considered to be low and short term.

Significance of Effect

7.190 The indirect effects are considered to be Minor Adverse, short term and Not Significant.

Hedgerows

7.191 As per **Tables 7.12 and 7.13** - hedgerows are of Local importance and medium sensitivity.

Impact

7.192 Species rich Hedgerows are both a Section 7 and priority PNRAP habitat. Parts of four Category C hedgerows will be removed, which equates to c.215 m length of hedgerow loss as part of the proposed construction works.

Magnitude

7.193 According to the previous Powys LBAP, it is estimated that the length of hedgerow in Powys, including the Bannau Brycheiniog National Park is 9,100,000 m of ancient or species rich hedgerows. The magnitude of impact of the length to be permanently lost within the Site is considered to be low and medium reversibility.

Significance of Effect

7.194 Given the above consideration of sensitivity and magnitude, the effect is considered to be Minor Adverse, Short Term and Not Significant.

Plants: pillwort

7.195 The Section 7 plant pillwort occur in ponds and wet areas on Site. Pillwort is considered to be of Local importance and medium sensitivity.

Impact

7.196 Pillwort is a Section 7 Priority Species. It is a Locally Important Species in the PNRAP. It is characteristic of muddy edges of ephemeral ponds, poached by livestock. The Proposed Development will not impact ponds where this plant is present (not present in pond A61, the only pond being lost to the Proposed Development), and is also likely to produce an increase in temporary ephemeral waterbodies during construction (e.g. from vehicle tracks and movements).

Magnitude

7.197 Given the impact above, the magnitude of impact is considered to be negligible.

Significance of Effect

7.198 Given the above consideration of sensitivity and magnitude, the effect is considered to be Negligible and Not Significant.

Great crested newt (GCN)

7.199 As per **Table 7.12**, GCN are of Local importance and a EPS under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and medium sensitivity.

Impacts

7.200 Overall, four ponds have been confirmed as supporting small populations of GCN during the breeding season (A4, A7, A16 and A61), with a further two ponds (A9 and A56) supporting GCN. An additional two ponds had positive eDNA in 2023: A11 and A14 and are also assumed to have a small population of GCN, however, these are located over 460 metres from the Proposed Development. The populations within the Site are considered to be of Local importance.

7.201 It has been assumed that a metapopulation exists within the northern cluster of ponds A4 and A61. Further metapopulations are assumed to exist around ponds in the north-east of the Site (around A7 and A9, possibly extending to A56) and in the south-west (around ponds A16, A14 and possibly extending to A11). All populations are considered of small size, based on the survey results and site conditions.

7.202 Pond A61 is assumed to be lost to the construction of the Proposed Development substation and the associated cable routes. No other ponds will be directly impacted by the Proposed Development and so no further direct impacts to confirmed breeding ponds will occur.

7.203 Calculations have been undertaken to confirm the amount of terrestrial habitat loss as a result of the Proposed Development. In total, 0.2 ha of 'immediate' GCN habitat (within 50 m of ponds) will be permanently lost around ponds A61 and A4 both of which support small populations. Impacts within 50 m of ponds A4 and A61 involve loss of improved grassland and bare ground. In addition, 0.3 ha of habitat around GCN ponds (A16, A4, A61) will be temporarily impacted- as such works here are likely to be of 'temporary destruction, then reinstatement', then this is considered to be a 'low' impact as per the GCN Mitigation Guidelines (English Nature, 2001). 'Partial destruction' of habitat within 50 m relating to the Substation works equates to a 'medium' impact as per the GCN Mitigation Guidelines (English Nature, 2001).

7.204 The proposed access track passes approximately 60 m to NE of pond A16, 65 m north at its closest point to pond A7 and 125 m to the east of A56, all with established or presumed small

populations of GCN. 'Intermediate' terrestrial habitat (50-250 m from ponds) loss will also take place around ponds A4, A7, A9, A16, A56 and A61 with a total loss/modification of 5.2 ha of 'intermediate' terrestrial habitat. This habitat comprises 35% continuous bracken, 23% heathland type habitat, 41% acid/improved grassland and 1% others. At this distance terrestrial habitat will be lost under the footprint of infrastructure including the turbine pads, trench digging for cabling, earthworks cut and fill and access track construction. As the impacts (destruction of terrestrial habitat) will be over 50 m from the ponds, this equates to a 'medium' impact as per the GCN Mitigation Guidelines (English Nature, 2001). The habitat around A7/A9, A56 and A16 is primarily bracken and *Galium saxatile* acid grassland/ dry heath communities and is open and sheep grazed and presumably used for hibernation given the lack of traditional scrubby and woodland habitat on the upland area. A further 6ha of intermediate habitat will be subject to temporary impact.

7.205 Ponds A4 and A61 are located in a more traditional landscape of agricultural fields and hedgerows with pockets of adjacent woodland. No permanent losses of woodland or scrub habitat is predicted in this area.

7.206 A further total loss of 7.3 ha of 'distant' GCN terrestrial habitat (250-500 m from ponds) will occur as a result of the Proposed Development, plus another 5.7 ha of temporary impact.

7.207 Where access tracks occur within 250 m of GCN ponds, construction will likely involve digging and use of trenching for the cable which has the potential to result in killing or injury to GCN passing across the working area if they become trapped in trenches or are killed by machinery. However, given the size of the Site, the small proportion of habitat to be impacted and the low populations of GCN present, this risk is considered to be low. It is assumed that GCN in the upland area of the Site are using low growing heather and bracken as hibernation habitat and this vegetation is plentiful across the upland. Therefore, these works are unlikely to act as a barrier to GCN movement or prevent them from reaching their hibernation habitat

7.208 These impacts upon terrestrial habitat are considered to be temporary in nature for the duration of the construction period in this area, however, may result in killing / injury to GCN during the construction period.

7.209 Whilst both 'immediate' and 'intermediate' GCN terrestrial habitat will be lost, the scale of impact in both scenarios is 'low' based on the nature of proposed works within those distances.

7.210 There are numerous ponds elsewhere on the Site, however the majority of these were considered unsuitable for GCN due to frequent drying and heavy poaching of banks and scored poor in the HSI assessments. However, due to fluctuation of water levels across the Site, it is possible that GCN may occur elsewhere on Site in the future.

Magnitude

7.211 It is noted that the GCN population are unfavourable at a national scale in Wales (Natural Resources Wales, 2018), and Wales is marginal for GCN based on the HSI location criteria (ARG UK, 2010). However, at a county level, GCN are favourable in Powys. Habitats suitable for GCN sheltering and hibernation are widespread across the Site (long grassland, heathland, bracken) and therefore the proportion of permanent and temporary habitat loss is limited. Only one of the large number of ponds within the Site is to be lost (A61) and therefore sufficient resources will remain to support GCN breeding activity. Additionally, the proposed works will not result in a significant barrier to GCN dispersal and habitat availability. It is assessed, in the absence of additional mitigation, the loss of GCN habitat and the loss of pond A61, in the context of the Site, will not detrimentally impact the GCN population on Site.

Significance of Effect

7.212 Given the above consideration of sensitivity and magnitude, and without additional mitigation, the effect is considered to be Minor Adverse, Short-term and Not Significant.

Committed Additional Mitigation

River Wye SAC and SSSIs

7.213 Chapter 9 sets out further detail on pollution control measures. An Outline Drainage Strategy (ODS) has also been produced and is provided in **Appendix 9.4**. Water quality monitoring will also be addressed in the CEMP.

7.214 During the construction phase of the works, CEMP control measures will be implemented to minimise the risk of fine sediment/debris (construction derived or otherwise) from being washed into the watercourse by installing silt screens/fences or similar. In addition, oil and fuel can be toxic for aquatic life, furthermore hydrocarbons such as oil or fuel do not degrade quickly and can remain present in the environment for some time after the spill. Industry best practice

guidelines for fuel storage, refuelling and mitigation (spill kits/bunds/refuelling protocol) should be followed at all times when on Site.

Habitats, including ancient woodland, heathland and riparian

7.215 A Habitat Management Plan (HMP) will be implemented during the construction and operational phases. An outline HMP (oHMP) is presented in **Appendix 7.5** which also includes a Net Benefit for Biodiversity (NBB) assessment, in order to identify and confirm that following the DECCA framework, a net benefit to biodiversity can be achieved, whilst ensuring ecosystem resilience through a detailed HMP which will be secured by planning condition.

7.216 Whilst it is not currently possible to gain agreement from the Commoners Association to conservation friendly grazing levels previously set by the Glastir scheme (which ended in 2024), this could be achieved at some future date. This would improve a number of habitat communities, including acid grassland, dry and wet heath, acidic fen, blanket bog and rush pasture by improving habitat condition and species diversity. For the purposes of the Proposed Development, the oHMP sets out proposals to reinstate heathland on the Borrow Pit areas.

7.217 Woodland management will be introduced to some areas of ancient woodland around the periphery of the Site (off of common land) which will be fenced and subject to enhancement measures. These are currently unfenced and grazed by sheep preventing the establishment of ground flora and a shrub layer. In addition, extensive woodland planting will create new woodland and help to connect existing woodland blocks.

7.218 Riparian restoration along sections of the Cwmblaenerw Brook and Milo Brook will be undertaken by enhancing riparian woodland through tree planting.

7.219 Reference to **Appendix 7.5: oHMP** should be made here for the full details of the approach to be undertaken.

Rivers and Streams

7.220 All mitigation described above for the River Wye SAC will be implemented for all watercourses within the Site boundary. Reference should also be made to **Chapter 9** for further mitigation measures.

Species

Great crested newt

7.221 An NRW mitigation licence will be required for the Proposed Development on a project-wide basis due to the presence of GCN on Site and the loss of pond A61 which has GCN presence.

7.222 A GCN Species Protection Plan (SPP) will be required as part of the NRW mitigation licencing requirements. This will detail mitigation and compensation measures, with the details to be agreed with NRW. The GCN SPP will include the following:

- Details of the specific requirements for mitigation of impacts on GCN across the Site.
- Details of ECoW supervision as required.
- Details of toolbox talks.
- Details of habitat compensation measures and enhancement. Many of the ponds on Site are currently of poorer condition and scored low on the HSIs, primarily due to their drying annually, and heavily poached banks due to livestock leading to a lack of emergent vegetation and poor water quality from livestock waste eutrophication. These factors likely make the waterbodies unsuitable for breeding. Where feasible, enhancements will be implemented on these ponds and will be detailed within the GCN licence. The enhancements could include:
 - De-silting or extending existing ponds to ensure there are deeper sections year-round; and,
 - Sensitive management and enhancement of surrounding terrestrial habitat – to include:
 - Enhancement of marginal and emergent vegetation by plug planting with locally native species, re-seeding pond banks and creating log piles around the ponds.
 - Pond creation and terrestrial habitat enhancement in appropriate areas where existing meta-populations are located.

7.223 In addition, to compensate for the loss of pond A61, two additional ponds will be created on Site.

7.224 It is considered that following implementation of these measures, a GCN licence is likely to be approved and the derogation tests satisfied.

Residual Construction Effects

River Wye SAC and SSSIs

7.225 The mitigation strategy involves measures to prevent pollutants entering the watercourses and a water quality monitoring program will detect any incidents and rectify them immediately during construction. A surface water management plan is also included in the CEMP, and this will detail measures to prevent contaminated run-off from construction.

7.226 Following implementation and monitoring of mitigation measures, residual effects on the protected sites during construction are considered to be Negligible and Not Significant.

Habitats

7.227 The restoration of 12 ha of heathland vegetation on the Borrow Pit areas will compensate for the permanent loss of 11.25ha of heathland habitats (D1, D1.1 and D5) on Site. The permanent losses of acid grassland, marshy grassland, acid flush and spring habitats, cannot be mitigated due to the common land status of the upland parts of the Site means that influencing habitat management and achieving restoration (requiring fencing) is not possible. Therefore, the residual construction effect is therefore assessed to remain Minor Adverse and Not Significant.

7.228 Habitat management is proposed that will enhance adjacent and contiguous ancient woodland habitats and deliver a net benefit for biodiversity. Habitat enhancements of riparian corridors is also included. In the long term the residual construction effect is therefore assessed as Minor Beneficial and Not Significant.

Standing Water

7.229 The creation of two ponds near the Proposed Development substation will compensate for the loss of Pond A61 (the details of which would be agreed and approved by NRW through the licencing process for GCN). With this compensation in place, residual effects on ponds are considered to be Negligible and Not Significant.

Rivers and Streams

7.230 As stated above for the River Wye SAC and SSSI components, following implementation and monitoring of mitigation measures, residual effects on the watercourses during construction are considered to be Negligible and Not Significant.

Great crested newt

7.231 With additional compensation and enhancement measures implemented, it is considered that the population on Site can increase over time as more suitable habitat is created. With measures in place, the residual effects on the GCN population within the Site will reduce to Minor Beneficial and Not Significant.

Operational Effects

Predicted Operational Effects

7.232 The main elements of the Proposed Development which have the potential to impact on IEFs during operation are:

- Pollution of watercourses and indirect impacts on SAC and SSSI qualifying species;
- Bats colliding with turbine blades or experiencing barotrauma; and
- GCN being killed/injured by vehicles.

7.233 As evaluated in **Tables 7.12 and 7.13**, the following IEFs are scoped into the operation phase assessment:

- River Wye SAC and SSSI components;
- Ancient woodland;
- Standing water;
- Rivers and streams;
- Bats; and
- GCN.

Assessment of Effects

River Wye SAC and SSSI

Impact

7.234 During operation, in the absence of mitigation, there is the potential for runoff and pollution (e.g., from maintenance) to enter the River Wye SAC catchment.

Magnitude

7.235 In terms of operation of the Proposed Development, there will be an increase in impermeable surface area (turbine bases, substation) potentially increasing runoff into the River Wye catchment.

7.236 There is the potential for land or water contamination associated with coolants in substation and potential for leaks and spills during maintenance operations.

7.237 Magnitude is considered to be Low and short term.

Significance of Effect

7.238 The effects are considered to be Minor adverse, and Not Significant in the context of the EIA regulations.

Ancient woodland

Impact

7.239 Blocks of ancient woodland around the edges of the Site and contiguous with it, will be enhanced by fencing and removal of grazing livestock (these areas are not common land, but livestock are understood to be able to move freely between these areas and the common land). This will improve floral diversity in the shrub and ground flora layers.

Magnitude

7.240 Medium and long term.

Significance of Effect

7.241 Operational effects on ancient woodland are therefore considered to be Minor beneficial and Not Significant.

Standing water

Impact

7.242 Two new ponds will be created in the Northern Substation Area as part of GCN mitigation.

Magnitude

7.243 Medium and long term.

Significance of Effect

7.244 Operational effects on standing water are therefore considered to be Minor beneficial and Significant.

Rivers and streams

Impact

7.245 As detailed above for the River Wye SAC and SSSI components, potential impacts on rivers and streams may occur through runoff and pollution.

Magnitude

7.246 As above for the SAC, magnitude is considered to be Low and short term.

Significance of Effect

7.247 Operational effects on Rivers and Streams are therefore considered to be Minor adverse and Not Significant.

Bats

Impact (all species)

7.248 During the operational phase, there is a potential for bats to collide with turbine blades or to suffer 'barotrauma' when flying in close proximity to rotors. For the purposes of this assessment, impacts from barotrauma are assumed to be the same as for collision risk, owing to the paucity of published empirical evidence in causes of bat fatalities around windfarms and the difficulties in determining whether bat fatalities are caused by collisions or barotrauma.

7.249 Findings of a study completed by Exeter University (Mathews et al., 2016²⁰) found that most UK onshore windfarm bat fatalities consisted of common pipistrelle, soprano pipistrelle and noctule bats. The findings indicated that collision rates were proportionately higher than the calls recorded during ground-level, static detector surveys, but numbers were more affiliated to the recordings made at turbine hubs. Other findings of the study concluded that the risk presented

²⁰ Mathews, F., Richardson, S., Lintott, P. and Hosken, D. (2016) Understanding the risk to European Protected Species (bats) at onshore wind turbine sites to inform risk management

to bats from onshore windfarms increased with the number of turbines as well as increased rotor size. Conversely, the hub height and the operational period of a given windfarm were not found to be significant in terms of the collision risk presented to bats from onshore windfarms.

7.250 NatureScot et al. (2021) indicate that vulnerability to collision is likely to depend on bat activity relative to the location of turbines and that, due to the non-uniformity of bat activity across a site, risks are also not uniform. Design of the bat surveys, to provide good coverage by detectors, can be an important factor in assessing areas of greatest risk of collision/barotrauma from turbine siting.

7.251 Risk also reduces with a greater distance from the foraging or commuting habitat; following NatureScot et al. (2021) a minimum buffer of 50 m is required between the rotor tip and habitat features to lower the risk of collision. For the turbines chosen for the Proposed Development (i.e. maximum 125.45 m hub height and 81.5 m blade length and assuming 20 m forestry height), and following the buffer calculation (NatureScot et al., 2021) to ensure this minimum buffer is achieved, a distance of between 78.5 m between a turbine base and the forestry edge (and other suitable linear features) is required. This minimum buffer has been incorporated within the design of the Proposed Development. The closest a turbine base is to a woodland or suitable linear hedgerow feature is T15 at around 175 m. The remainder span 200 m to 830 m from woodland or suitable hedgerow features.

7.252 It should also be noted that these distances are measures on a horizontal scale, whereas in reality, the distance will be at a diagonal. This is because the parcels of woodland are located at a low elevation, whereas the proposed turbines will be located on Aberedw Hill, which ranges from 224 m Above Ordnance Datum (AOD) to 451 m, which will further increase the distances.

7.253 With a proposed tip height of up to 200 m, the turbines are required to be equipped with aviation lighting, pursuant to Article 222 of the UK Air Navigation Order (ANO), 2016. Please see **Chapter 4** and **Appendix 2.6: Aviation Lighting and Mitigation Report** for more details on the aviation lighting specifications required and which turbines will have this installed. The lighting will be mounted on the hub of each turbine.

7.254 Recent evidence indicates that migratory pipistrelle bats may be attracted to red lights, which, may potentially lead to an increased risk of collision with wind turbines (Voigt et al.,

2018²¹). It was noted, however, that while bats were recorded as being attracted to red LED lighting, there was a lack of foraging activity once closer to the light source, indicating that the attraction of migratory bats to red light sources is not caused by foraging and is more likely a positive phototaxis²² response (Voigt et al., 2018). There is only a vague understanding of the migratory behaviour of bats in the UK, but the baseline study results (see **Appendix 7.4**) suggest that no significant migratory movements are likely to have occurred within the study area, and the potential for increased risk of turbine collisions associated with foraging bats being attracted to red lights is considered to be Negligible.

Noctule, Leisler's bat, Common pipistrelle, Soprano pipistrelle and Nathusius's pipistrelle

Sensitivity

7.255 Noctule are considered to be of Local Area Nature Conservation Value (see Table 2.3 of **Appendix 7.4**, reproduced below as **Table 7.14**). Following NatureScot et al. (2021) and Reason et al. (2023) guidance, noctule bats are considered to be widespread in many geographies in mid-Wales with the highest collision risk and therefore have a High population vulnerability within mid-Wales. Leisler's bats are one of the rarest species in this part of Wales, with a high collision risk.

7.256 Common pipistrelle and soprano pipistrelle are considered to be of Local Nature Conservation Value (see **Table 7.14** below). Following NatureScot et al. (2021) these are considered to be common and widespread species; however, as they have a high collision risk, overall, they have a Medium population vulnerability within mid-Wales. Nathusius's pipistrelle is one of the rarest bat species in Wales with a 'high collision risk'.

7.257 The established buffer distance will effectively mitigate for the remaining species identified to be using the site during the 2023-24 surveys.

²¹ Voigt, C. C., Azam, C., Dekker, J., Ferguson, J., Fritze, M., Gazaryan, S., Hölker, F., Jones, G., Leader, N., Lewanzik, D., Limpens, H. J. G. A., Mathews, F., Rydell, J., Schofield, H., Spoelstra, K. and Zagnajster, M. (2018) Guidelines for consideration of bats in lighting projects – Technical Report

²² Phototaxis is where bats (and other organisms) will move towards or away from a light source. A positive phototaxis response is where the bat moves towards the light source.

Table 7.14 Level of potential vulnerability of populations of British bat species in mid-Wales (NatureScot, 2021, updated using Reason et al., 2023)

Rarity Category	Collision risk		
	Low	Medium	High
Widespread all geographies	Brown long-eared bat <i>Plecotus auritus</i>	N/A	Soprano pipistrelle <i>Pipistrellus pygmaeus</i> Common pipistrelle <i>Pipistrellus pipistrellus</i>
Widespread in many geographies, but not as abundant in all	Whiskered bat <i>Myotis mystacinus</i> Brandt's bat <i>Myotis brandtii</i> Daubenton's bat <i>Myotis daubentonii</i> Natterer's bat <i>Myotis nattereri</i>	N/A	Noctule <i>Nyctalus noctula</i>
Rare or restricted distribution	Lesser horseshoe <i>Rhinolophus hipposideros</i>	N/A	N/A
Rarest Annex II species and very rare	Alcathoe bat <i>Myotis alcathoe</i> Bechstein's bat <i>Myotis bechsteini</i>	Serotine Eptesicus <i>serotinus</i> Barbastelle bat <i>Barbastella barbastellus</i>	Leisler's bat <i>Nyctalus leisleri</i> Nathusius' pipistrelle <i>Pipistrellus nathusii</i>

	Greater horseshoe bat <i>Rhinolophus ferrumequinum</i> Grey long-eared bat <i>Plecotus austriacus</i>		
Green = low population vulnerability Orange = medium population vulnerability Red = high population vulnerability			

Impact

7.258 See paragraphs 7.246 – 7.251.

Magnitude

7.259 Given that Ecobat was not available for the bat analysis on this Project, to allow for an accurate and reliable comparison of bat passes between detector locations and across all three survey seasons, a Bat Activity Index (BAI) was calculated. BAI is calculated by taking the number of bat passes (in this instance per genus, per detector location) and dividing it by the number of hours recorded, this will give the number of bat passes per hour.

7.260 Based on established criteria, the Site is considered to be of Low value to bats owing to the predominance of exposed open moorland, bracken and acid grassland with no potential roosting features (e.g., suitable trees, buildings and quarries). Features for roosting, bat foraging, and commuting potential are primarily restricted to the lower slopes and adjacent off-site woodland. These assertions were supported by the findings of the desk study, which did not identify any known significant roosts in the site's vicinity or the likely presence of significant populations of high-risk bat species. The Proposed Development comprises 18 turbines. This number equates to a 'Medium' project size. However, the turbine blade tips are up to 200 m in height, which is considered to indicate a 'Large' project size. Due to the height of the wind turbines, the Site is considered to be 'Large' overall.

7.261 The Site level risk for collision effects on bats was Medium (3) (see Table 2.2 of **Appendix 7.4**, reproduced below as **Table 7.15**). Noctule and Leisler's bat had the highest level of bat activity on Site, resulting in a high overall risk score of 15. Common pipistrelle and Soprano pipistrelle had moderate Bat Activity, resulting in a medium risk score of 9. Nathusius's pipistrelle had low Bat Activity, resulting in a low risk score of 3 – see **Table 7.15** below.

Table 7.15 Overall Risk Outcomes per Species

Species	Overall Risk
Common pipistrelle <i>Pipistrellus pipistrellus</i>	9
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	9
Nathusius's pipistrelle <i>Pipistrellus nathusii</i>	3
Noctule bat <i>Nyctalus noctule</i>	15
Leisler's bat <i>Nyctalus leisleri</i>	15

7.262 As already noted above, the Site was assessed as having Low habitat risk, owing to the predominance of exposed open moorland, bracken and acid grassland with no potential roosting features (e.g., suitable trees, buildings and quarries). Features for roosting, bat foraging, and commuting potential are primarily restricted to the lower slopes and off-site adjacent woodland. The Low category is categorised by:

- A small number of potential roost features, of low suitability.
- Low quality foraging habitat that could be used by small numbers of foraging bats.
- Isolated site not connected to the wider landscape by prominent linear features.

7.263 Though the number of turbines falls within the medium sized project category (greater than 10-40 turbines), the size of the turbines is greater than 100 m in height and the Proposed Development is therefore classed as a large project size. As such, following NatureScot et al. (2021)¹⁰, the Site risk level has been assessed as Medium Site risk.

7.264 The NatureScot et al. (2021) guidance recommends Stage 2 is followed by using the EcoBat software analysis tool (or a suitable alternative) to categorise the recorded activity levels by each deployment season. As explained in the Constraints Section, EcoBat was not available when the analysis was undertaken and below we have used Bat Activity Index (BAI). EcoBat analysis will be run post PAC for final submission of the planning application. The overall risk for noctule and Leisler's bats is considered to be High; with soprano and common pipistrelle as Medium and Nathusius's pipistrelle as Low, see **Table 7.16** below, and medium term.

Table 7.16 Risk summary table for noctule, Leisler's bat, soprano pipistrelle, Nathusius's pipistrelle and common pipistrelle

Species	Site Risk	Bat Activity Index	Collision Risk	Overall Risk
Noctule	Low	2.07	High	15 High
Leisler's bat	Low		High	15 High
Common pipistrelle	Low	0.3	High	9 Medium
Soprano pipistrelle	Low		High	9 Medium
Nathusius's pipistrelle	Low		High	3 Low

Significance of Effect

7.265 it is important to note that though *Nyctalus* species represented the majority of bat call registrations within the Site, the total number of registrations across the survey period is relatively low compared to what would be expected for a typical bat survey; therefore, a higher proportion of this species does not translate to a high level of bat activity.

7.266 The data collected by the bat detectors represents single bat call registrations, and these provide an indication of levels of bat activity, not the numbers of bats present. As such, a large number of bat call registrations can be the result of just a single bat or a small number of bats making multiple passes and flying circles within the vicinity of a bat detector, rather than a large bat population being present. To investigate this further, the call registrations were analysed to

characterise their distribution and density throughout the night. This analysis identified that the registrations were clustered into short periods of time and most of the echolocation pulse sequences did not overlap, suggesting that each registration was produced by a single bat. This indicates that the majority of the recorded *Nyctalus* spp. registrations were the result of individual bats and that bat activity, in terms of number of individuals, is unlikely to be high.

7.267 Detailed analysis of the data for Leisler's bats and noctule reveals that the numbers of individual bats were in fact much lower than the number of passes would indicate. For Leisler's bats, there was variation between seasons, with a higher number of passes in spring (176) and zero in summer with a single pass in autumn. In Spring, 168 of the 176 passes were recorded on detector D8: these passes were almost all in a 2-day period covering the evening of 13th April, the morning of the 14th and the evening of the 14th. Analysing the data shows that this is likely a small number of bats (2-5) continually flying near the detector, and not a large number of individuals. Even in spring, Leisler's bat activity was low at 1.82. (BAI 0 to 5.0 being low). The low activity levels recorded for Leisler's bat imply that the risk at a population level is Low.

7.268 Analysis of the data for noctule shows a similar pattern to that described for Leisler's bat above. In summer 2024, detectors around T14/T15 and T5 recorded higher numbers of noctule bats (165 and 166 calls respectively, which over a survey period would be considered a relatively low number of bat passes), but analysis shows these were clustered in short periods, indicating a small number of bats being involved, making multiple passes, rather than large numbers of bats.

7.269 Given the low numbers of bats involved, the above consideration of Nature Conservation Value, Conservation Status and Magnitude, the effect significance of collision risk on noctule, Leisler's bat, common pipistrelle and soprano pipistrelle in the absence of additional mitigation is considered to be Minor Adverse and Not Significant. The effect will apply to the time of year when bats are moving in the landscape, typically April through to October, during operation of the Proposed Development.

7.270 Given the potential operational effect on bats of the Proposed Development is not considered to be significant in the context of the EIA Regulations, no committed additional mitigation is required for bats.

Great crested newt

Impacts

7.271 Operational effects relate primarily to the potential for use of vehicles on access tracks on Site, therefore no further habitat will be impacted during the operational phase of the Proposed Development. Due to the presence of GCN ponds within proximity to access tracks and presence of access tracks between potential metapopulations, there is a possibility that GCN will cross the access tracks and may be at risk of killing/injury from vehicles. Due to the limited frequency of vehicles, which are highly unlikely to be present at night when GCN are active, this presents a minor risk to individual GCN on a long-term basis.

7.272 The access tracks between turbines and other infrastructure may result in a degree of habitat fragmentation for the metapopulations, although GCN will cross minor roads. Pond A4 will remain connected to ponds to the east (ponds A3, A5 and A6). Whilst pond A7 will remain in a cluster (with ponds A8, A58, A59 and A60), pond A9 will be temporarily isolated by the access road to the borrow pit area. Pond A56 will remain connected to pond A55 but temporarily isolated from the cluster of ponds north of T10. Finally, pond A16 will remain connected to ponds A13, A14 and A15 to the south-west and A12 to the SE. Given the narrow nature of the access tracks, the fact that GCN will cross minor roads at nights and the paucity of traffic, the metapopulations will remain unaffected.

Magnitude

7.273 Due to the minor risk level posed there is potential for loss of only a very small number (individual) of GCN during the operational phase. If this occurs, this will not detrimentally impact the future maintenance of the favourable conservation status of the Local population. It is therefore considered to be of negligible magnitude and long-term temporal impact.

Significance of Effect

7.274 Given the above consideration of sensitivity and magnitude, the residual effect significance is considered to be Negligible and Not Significant.

Committed Additional Mitigation

River Wye SAC and SSSIs

7.275 During operation, the outline drainage strategy will be implemented (see **Chapter 9**). Borrow pits, temporary construction compounds and any excavations will be reinstated after construction, therefore any exposed soil and potential for sediment leakage into watercourses will be minimised. Vehicular access will generally be reduced to maintenance and survey work and pre-existing farming practices.

7.276 However, the applied mitigation (Outline Drainage Strategy) is considered sufficient to effectively limit the magnitude of change to Negligible, and potentially lead to a reduction in runoff as infiltration trenches included to manage the full runoff from the 1 in 100 year with 40% climate change flood events (see **Chapter 9**, Table 9.12). Applied mitigation through the OEMP (Operation and Maintenance plan – including pollution control and emergency protocols, which will be secured by a planning condition) is considered sufficient to effectively limit the impact to low or negligible in terms of reaching waterbodies on Site. The effect on the River Wye SAC is therefore considered negligible.

7.277 In addition, the oHMP incorporates riparian restoration measures along tributaries extending south from the Site to reduce the potential for impacts to the SAC and SSSIs downstream of the Site. Riparian restoration will reduce sedimentary runoff to the watercourses as well as improve habitat for SAC and SSSI qualifying species. Fencing off adjacent ancient woodlands and a reduction in livestock in these woodland areas will also reduce the volume of agricultural pollutants (including phosphorus) seeping into watercourses. .

Residual Operational Effects

River Wye SAC and SSSIs

7.278 Effects during operation were considered to be minor adverse and not significant based on rare incidents occurring, which will likely be localised and discreet. Riparian restoration as proposed in the oHMP will reduce pollution as well as provide habitat for SAC and SSSI qualifying species. Residual impacts are therefore considered to be Minor Beneficial and Not Significant.

Bats

7.279 Taking into account the proposed mitigation measures, it is concluded that the Minor adverse effect on bats can be reduced through an appropriate mitigation strategy that will be tailored to the Site. The residual effect for bats is considered to be Minor to Negligible Adverse and Not Significant.

Cumulative Effects

7.280 Likely cumulative effects have been defined as the likely effects that the Proposed Development may have in combination with other wind farms and other relevant developments that are at application stage, consented, under construction or operational (i.e. the incremental effects resulting from the Proposed Development if all other wind and relevant developments are assumed to be constructed/operational).

7.281 The list of all developments identified for consideration in the cumulative effects assessment is presented in **Chapter 2: Approach to EIA** and **Appendix 2.9: Cumulative Developments**. The locations of the wind developments are shown in **Figure 2.2 Cumulative Developments: wind farms**. **Appendix 2.9** includes justification for which developments are scoped out for the Proposed Development.

7.282 The following developments are considered to be relevant for the cumulative assessment for Ecology. Given the nature of the ecological impacts identified above. None of the Powys County Council developments listed in **Appendix 2.9** have been assessed as having cumulative effects given the distances involved and the scale of the proposed developments (unless otherwise stated).

Table 7.17 Cumulative effects of other developments in Mid Wales

Development Name	Status	Assessment
Wind farms		
Bryn Blaen	Operational	No cumulative effects due to distance and no pathways for significant cumulative impacts to IEFs at Aberedw, i.e. no significant cumulative effects to River
Bryn Titli	Operational	
Carno I	Operational	

Carno II	Operational	Wye SAC and no significant cumulative effects to priority habitats or protected species (bats, GCN, otter, plants).
Carno III	Consented	
Cefn Croes	Operational	
Cemmaes 2	Operational	For operational wind farms, no potential cumulative effects are assumed as all required mitigation will have been implemented.
Esgair Cwmowen	Application Submitted	
Garn Fach	Consented	
Garreg Lwyd Hill	Operational	
Llanbrynmair	Consented	
Llandinam	Operational	
Llandinam Repowering	Consented	
Llangwryfon	Operational	
Mynydd Clogau	Operational	
Mynydd Gorddu	Operational	
Nant Mithil	Application Submitted	
Rheidol	Operational	
Tirgwynt	Operational	
Hendy	Under Construction	See paragraphs 7.284-7.285 below.
Other developments		
Green Gen Towy Usk OHL	Researching	Scoped out due to researching stage

During Construction

Predicted Cumulative Effects During Construction

7.283 No significant cumulative effects have been identified for the construction phase as a result of the Proposed Development.

Committed Additional Mitigation

7.284 It is considered that no committed additional mitigation is required.

Residual Cumulative Effects During Construction

7.285 No residual construction effects have been identified.

Cumulative Effects During Operation

Predicted Cumulative Effects During Operation

7.286 The assessment of ecological effects associated with the operational phase of the Proposed Development alone has predicted a Minor to Negligible Adverse and Not Significant effect on bats. The majority of bat species recorded during the baseline surveys are unlikely to range in excess of 5 km, although individual bats of some species such as noctule can commute and forage up to 10 km. On this basis developments greater than 10 km from the Site are unlikely to be relevant.

7.287 As detailed within **Table 7.17**, a number of single turbine developments are located within 10 km of the Site. Due to the fact that bat surveys are not normally a requirement for single turbine developments, there has been no assessment for such projects, and they are not considered as part of the cumulative assessment.

7.288 The impacts on all bats during construction due to disturbance and habitat loss are considered to be negligible and were scoped out of the assessment. The cumulative impacts are therefore concentrated on collision risk/barotrauma during operation.

7.289 Hendy wind farm (under construction) is located 6.6 km to the north east. For the Hendy ES, the Ecology Technical Appendix 7.5 'Bat Survey Report' Chapter (Churton Ecology, 2013) concluded that Hendy wind farm may affect the use of that site by bats, including increasing the mortality risk for bats locally, particularly common pipistrelle (this being by far the most frequently recorded bat on that site) and noctule.

7.290 When assessing potential cumulative effects, only common pipistrelle, soprano pipistrelle, Nathusius's pipistrelle, Leisler's bat and noctule are considered as other species have been scoped out of the assessment. Common pipistrelles and soprano pipistrelles

generally do not forage more than 1.5 km from their roost site (Dietz & Kiefer, 2016) therefore due to the separation distance between the Proposed Development and Hendy Wind Farm being more than 3 km, common pipistrelle and soprano pipistrelle bats recorded at Hendy Wind Farm are unlikely to be impacted by the Proposed Development. Noctule and Leisler's bats can commute up to 10 km from their roost site therefore there is potential for the same population to use both Hendy Wind Farm and the Site.

7.291 However, the small numbers of noctule and Leisler's bat recorded at the Site make cumulative impacts unlikely to be significant.

Committed Additional Mitigation

7.292 It is not considered that any committed additional mitigation is required.

Residual Cumulative Effects During Operation

7.293 There are no residual operational effects.

Interrelationship Between Effects

7.294 No interrelationships between effect have been identified.

Monitoring

7.295 Monitoring measures are described above in relation to water quality for the River Wye SAC and SSSIs (and in **Chapter 9**).

Summary of Effects

7.296 **Table 7.18** below provides a summary of effects identified in this ecological assessment.

Table 7.18 Summary of significant effects

Predicted effect	Importance	Sensitivity	Magnitude	Significance	Mitigation	Significance of residual effect
Construction						
River Wye SAC and SSSI	International and National	High	Low, short term	Minor adverse, not significant	Outline Drainage Strategy (ODS), CEMP measures	Not significant
Acid grassland	Less than Local	Negligible	Low and irreversible	Minor Adverse, long term, not significant	N/A	Not significant
Marshy grassland	Local/ less than local	Medium	Low and irreversible	Minor Adverse, long term, not significant	oHMP – riparian enhancement	Not significant
Dry dwarf shrub heath, acid	Local	Medium	Low and irreversible	Minor Adverse, long term, not significant	oHMP – heathland re-creation	Not significant
Dry heath, acid	Local	Negligible	Low and irreversible	Minor Adverse, long term, not significant	oHMP – heathland re-creation	Not significant

Predicted effect	Importance	Sensitivity	Magnitude	Significance	Mitigation	Significance of residual effect
grassland mosaic						
Acid flush	Local	Medium	Low and irreversible	Minor Adverse, long term, not significant	N/A	Not significant
Standing water	Local	Medium	Medium and temporary	Minor Adverse, short term, not significant	oHMP, pond creation, GCN licence	Not significant
Running water	Local	Medium	Low and temporary	Minor Adverse, short term, not significant	ODS, CEMP, oHMP	Not significant
Native hedgerow	Local	Medium	Low and medium reversibility	Minor Adverse, short term, not significant	oHMP, CEMP	Not significant
Pillwort	Local	Medium	Low and short term	Minor Adverse, short term, not significant	N/A	Not significant

Predicted effect	Importance	Sensitivity	Magnitude	Significance	Mitigation	Significance of residual effect
GCN	Local	Medium	Low and short term	Minor Adverse, short term, not significant	oHMP, habitat creation / enhancement / GCN licence	Not significant
Operation						
River Wye SAC and SSSI	International and National	High	Low and short term	Minor Adverse, short term and not significant	ODS, CEMP	Not significant
Ancient woodland	Council	High	Medium, Long Term	Minor Beneficial, long term and significant	oHMP	Not significant
Bats – commuting and foraging	Council	High population vulnerability– noctule, Leisler's bat Medium population	Noctule and Leisler's bat – high Common and Soprano	Minor Adverse, not significant	N/A	Not significant

Predicted effect	Importance	Sensitivity	Magnitude	Significance	Mitigation	Significance of residual effect
		vulnerability – pipistrelle species	pipistrelle – medium Nathusius's pipistrelle - low			
GCN	Local	Medium	Negligible long term	Minor beneficial, long term, significant	oHMP, pond creation	Not significant