Foel Fach Wind Farm Limited.

Foel Fach Wind Farm – Environmental Statement Volume II

Main Written Statement – Chapter 5

Project Reference: 664094

This chapter is summarised within the Non-Technical Summary of this Environmental Statement

DECEMBER 2025

Energy for generations

Coriolis Energy

RSK

DECEMBER 2025

Energy for generations

CONTENTS

TABLES

VOLUME III: SUPPORTING TECHNICAL APPENDICES

Appendix 5.1: Habitats and Vegetation
Appendix 5.2: Protected Species
Appendix 5.3: Bats
Appendix 5.4: Outline Habitat Management Plan, and
Appendix 5.5: Habitats Regulations Assessment – Ecology.

VOLUME IV: SUPPORTING FIGURES AND PLANS

Figure 5.1: Ecological Statutory Designated Sites
Figure 5.2: Ecological Non-statutory Designated Sites (Confidential)
Figure 5.3: Existing Ecological Records (Sensitive) (Confidential)
Figure 5.4: Phase 1 Habitat Survey Plan
Figure 5.5: NVC Survey Plan
Figure 5.6: Terrestrial Mammal Survey Results
Figure 5.7a: Reptile Survey Plan
Figure 5.7b: Reptile Survey Results
Figure 5.8a: Bat Activity Survey Plan, and
Figure 5.8b: Bat Roost Feature Plan.

5 TERRESTRIAL ECOLOGY

5.1 Introduction

5.1.1 This chapter reports the outcome of the assessment of potential significant effects arising from the Proposed Development upon terrestrial ecology during construction, operation and decommissioning.

5.1.2 This chapter is supported by the following technical appendices, presented in Environmental Statement **(ES) Volume III**:

- Appendix 5.1: Habitats and Vegetation
- Appendix 5.2: Protected Species
- Appendix 5.3: Bats
- Appendix 5.4: Outline Habitat Management Plan, and
- Appendix 5.5: Habitats Regulations Assessment – Ecology.

5.1.3 This chapter is supported by the following figures, presented in **ES Volume IV**:

- Figure 5.1: Ecological Statutory Designated Sites
- Figure 5.2: Ecological Non-statutory Designated Sites (Confidential)
- Figure 5.3: Existing Ecological Records (Sensitive) (Confidential)
- Figure 5.4: Phase 1 Habitat Survey Plan
- Figure 5.5: NVC Survey Plan
- Figure 5.6: Terrestrial Mammal Survey Results
- Figure 5.7a: Reptile Survey Plan
- Figure 5.7b: Reptile Survey Results
- Figure 5.8a: Bat Activity Survey Plan, and
- Figure 5.8b: Bat Roost Feature Plan.

5.1.4 Information considered sensitive (**ES Volume IV, Figure 5.2: Ecological Non-statutory Designated Sites (Confidential)** and **ES Volume IV, Figure 5.3: Existing Ecological Records (Sensitive) (Confidential)**) will not be made publicly available but will be provided to Natural Resources Wales (NRW) and Gwynedd Council.

5.1.5 This chapter (and its associated figures and appendices) is intended to be read as part of the wider ES, with particular reference to **ES Volume II, Chapter 6: Ornithology** and **ES Volume II, Chapter 7: Land, Soils and Water.**

Terminology

5.1.6 The following terminology is specific to this chapter:

- Proposed Development: the physical infrastructure for the proposed Foel Fach Wind Farm.
- The Site: everything within the red line boundary.

- Wind Farm Area (WFA): an area of the Proposed Development comprising a 290 m buffer from proposed turbines. This area was subject to preliminary (bat) roost potential appraisals.
- Access track: sits immediately to the west of the Site and is a linear strip of land connecting the Site to the B4501 road.
- National Vegetation Classification (NVC) study area: an area including everything within the red line boundary excluding the access track area to the west and extended to include a 250 metre (m) buffer zone. This is shown in **ES Volume IV, Figure 5.5: NVC Survey Plan**.
- Extended Phase 1 study area: comprises two parts; the area covered by the original extended phase 1 survey and the access track habitat survey. Combined, these areas include the majority of the Site and a 250 m buffer zone surrounding it but excludes some land beyond 100 m from the access track. This is shown in **ES Volume IV, Figure 5.4: Phase 1 Habitat Survey Plan**.

5.2 Consultation, Scope and Study area

Scoping Direction

5.2.1 The scope of this assessment has been established through an ongoing scoping process. This has involved the production of an EIA Scoping Report (provided in **ES Volume III Appendix 1.1: EIA Scoping Report**), which was submitted to Planning and Environment Decisions Wales (PEDW) in July 2024. Further information on the scoping process can be found in **ES Volume II, Chapter 4: Approach to the EIA**.

5.2.2 The Scoping Direction, a copy of which is included in in **ES Volume III, Appendix 1.2: EIA Scoping Direction**, was received on 05 December 2024 and 18 December 2024. **Table 5.1** summarises the key Scoping Direction comments related to this assessment and sets out how these have been addressed by the Applicant. To avoid repetition, information contained elsewhere in the chapter is only briefly summarised in **Table 5.1**, with cross references given to where in the chapter (and/ or accompanying technical appendices or figures) further information is provided.

5.2.3 **Table 5.2** provides a summary of the consultation activities undertaken in support of the preparation of this assessment. It summarises the consultation responses received regarding ecology and provides information on where and/ or how they have been addressed in this assessment.

Table 5.1 Summary of Scoping Direction Comments Relevant to this Ecology Assessment

Consultee	ID no.	Issue	Comment raised	Applicant response
Planning & Environment Decisions Wales (PEDW) DNS: EIA Scoping Direction 05/12/2024	*ID.19*	Consultation	Advised that the Local Planning Authority (LPA) is consulted regarding local biodiversity net benefit measures and methodologies.	Information from the LPA with regards to the content of the outline Habitat Management Plan (OHMP) has been considered (see below in this table information from Gwynedd Council). See **ES Volume III, Appendix 5.4: Outline Habitat Management Plan**.
	ID.20	Study area	NRW confirms they are content with the proposed study areas for each protected species survey type.	Noted. No action needed.
	ID.21	Data sources	NRW agrees with the list of data sources to be used to inform baseline ecological conditions.	Noted. The full details of the desk study sources consulted is provided in **ES Volume III, Appendices 5.1: Habitats and Vegetation** to **ES Volume III, Appendices 5.3: Bats**.
	ID.22	Surveys	Recommended that when the access track has been confirmed, the applicant liaises directly with NRW and the LPA regarding any further survey requirements.	The access track has been appropriately covered during the ecological surveys, and the survey extensive buffers used for ecology surveys (**ES Volume IV, Figures 5.1: Ecological Statutory Designated Sites** to **ES Volume IV, Figures 5.8b: Bat Survey Results Plan**). No further liaison is considered to be required.
	ID.24	Great Crested Newts	NRW advised that due to recent identification of great crested newt (GCN) near Llandderfel, Bala, this species will need to be considered and surveyed. They advise that the ecological field	Great crested newts are considered highly unlikely to be present, given the lack of suitable habitat and documented range not extending to the Site's locality. Additionally, no suitable waterbodies were identified within 250 m of the

Consultee	ID no.	Issue	Comment raised	Applicant response
			surveys to inform baseline conditions also include GCN.	Proposed Development. **Table 5.3** provides further details.
	ID.25	Bats	NRW advised Ecobat software is used to inform the impact assessment in relation to bats.	Ecobat software has been used to inform the impact assessment in relation to bats. Information on the methodologies used in the assessment with regards to bats are provided in **Section 5.3**.
	ID.27	Significant effects	PEDW notes that the Scoping Report (SR) states that following review of baseline information and considering potential pathways for effect, ecological and ornithological features would be scoped out if they are unlikely to be so important in the context of the Proposed Development to warrant detailed assessment, or unlikely to be significantly affected. The SR adds that mitigation measures may still be outlined, to reduce and / or avoid any potentially adverse effects or ensure legislative compliance. Advised that if adverse effects are identified on ecological features, and mitigation measures are relied on to reduce or avoid any potential impacts, these aspects should be scoped into the ES. PEDW also advises that any ecological and ornithological features to be scoped out should be agreed with NRW and the	Noted. Those features scoped in and out are provided (with full justification) in **Section 5.2,** and the assessment considers effects on scoped in features in **Section 5.6**. Any 'additional mitigation' required is considered with respect to scoped in features. The scoped out features have been largely agreed with NRW and the LPA (through scoping and/or Discretionary Advice Service consultation with NRW), or for features like great crested newts fully justification for scoping out has been provided in this chapter, as requested by NRW. Rationale for scoped out features is provided in **Section 5.2**.

Consultee	ID no.	Issue	Comment raised	Applicant response
			LPA. If it is agreed any effects can be scoped out, a robust rationale for this should be provided in the ES. Any departure from the advice provided by NRW and the LPA should also be supported by a robust rationale.	
	ID.29	Assessment methodology – ecology	NRW confirms that all potential impacts on ecological features have been identified and that impact assessments will have to have regard to conservation status as well as significance.	Noted. This has been considered in the assessment, see **Section 5.3**.
	ID.30	Assessment methodology – protected species	NRW advised that the proposed approach to protected species assessment should consider current conservation status as well as favourable conservation status.	Noted. This has been considered in the assessment, see **Section 5.3**.
	ID.31	Cumulative assessment	NRW confirmed that they agree with the proposed approach to cumulative ecological assessment.	Noted. The cumulative assessment is provided in **Section 5.10**.
	ID.32	Species Protection Plans (SPPs)	PEDW notes the SR states that where required SPPs will be presented within the Construction Environmental Management Plan (CEMP) and the Operational Management Plan.	Noted. Mitigation for specific species assessed within this chapter has been provided within **ES Volume III, Appendix 2.1: Outline CEMP.**
	ID.41	Surveys-Land and Soil	NRW advises undertaking mapping of Section 7 habitats as part of the Phase 2 survey to ensure irreplaceable peatland	The NVC study area has been subject to an NVC survey which mapped Section 7 habitats. The results of this survey are presented in **ES Volume IV, Figure 5.5: NVC Survey Plan.**

Consultee	ID no.	Issue	Comment raised	Applicant response
			habitats are avoided, as well as National Vegetation Classification (NVC) survey.	
	ID/51	Peatland definition	The applicant's attention is drawn to LQAS' comments regarding the definition of peatlands to be used for assessment. They add that it will need to be acknowledged that peatlands function as an ecosystem and shallow peat soils (<30 cm deep) supporting peatland habitat and/or integral to the hydrological functioning of wider peat bodies (either on site or adjoining) should also be included in the assessment.	Within this ES, a distinction has been made between 'peatland' and 'peat soils'. Peat soils are organic-rich soils with a thickness of more than 40 cm of organic material within the upper 80 cm of a soil profile. The exception to this is where the organic-rich soils sit directly over bedrock, in which case a thickness greater than 30 cm is required for the soil to be considered peat soil. Peatland is the habitat on peat soils. The Proposed Development's likely effects on peatland is reported within this Chapter and the likely effects on peat soils are reported in **ES Volume II, Chapter 7: Land, Soils and Water**.
PEDW DNS: EIA Scoping Direction Addendum 18/12/2024 *Information from Cyngor Gwynedd from September 2024*	*N/A*	Plans – peat and NVC	Gwynedd's Council's Biodiversity Officer requests that the NVC and peat depth maps are overlaid with the Proposed Development for ease of review.	NVC and peat depth maps have been overlaid with the Proposed Development, see **ES Volume IV, Figures 5.5: NVC Survey Plan** for the NVC survey map, and the peat depth on **ES Volume IV, Figure 7.5: Peat Soil Depth**.
	N/A	Habitats & Vegetation	Gwynedd's Council's Biodiversity Officer highlighted the potential presence of Devils-bit Scabious which can support the Marsh Fritillary Butterfly. PEDW direct that the presence of, and potential impact to, Marsh Fritillary is considered in the ES.	Marsh fritillary is considered in **Section 5.2**.

Consultee	ID no.	Issue	Comment raised	Applicant response
	N/A	OHMP	Gwynedd Council advised that a biodiversity enhancement plan should be prepared and could include peatland restoration (ditch-blocking), other habitat enhancement like grasslands, woodland and hedgerows, providing features for key species and reducing grazing pressure.	An OHMP has been prepared and is included as **Appendix 5.4**. These include measures suggested by Gwynedd Council.
	N/A	Otter	Advised that survey work should consider holts, resting places and routes for otter and that further consultation should be undertaken with Gwynedd Council to determine the scope of further survey work.	Surveys have given due regard to these otter signs. Full details are provided in **ES Volume III, Appendix 5.2: Protected Species**.
	N/A	Reptiles & Amphibians	Advised that all adder breeding and hibernation sites must be retained. The potential presence of adder and potential impacts should be addressed in the ES. Survey work should be undertaken to determine the presence of the species to inform the ES.	Reptile surveys have been completed, with survey methodology presented in **Section 5.3** and survey results in **Section 5.4**. Adder, and reptiles more widely, are considered in **Section 5.2**. Details of the baseline gathering is provided in **Section 5.3**, and results of the surveys including for reptiles (such as adder) are provided in **Section 5.4**.
	N/A	Grassland Fungi, Bryophytes and Lichens	Advised that consultation is required with Gwynedd Council on the scope of the survey for grassland fungi, bryophytes and lichens. Advised that these should be considered in the ES.	Surveys have considered habitats in accordance with standard guidance (NatureScot, 2024). Full details are provided in **ES Volume III, Appendix 5.1: Habitats and Vegetation** and **Section 5.3.**

Consultee	ID no.	Issue	Comment raised	Applicant response
	N/A	Wildlife Site	Advised that Gwynedd Council should be liaised with to confirm which Wildlife Sites are to be included in the impact assessment.	Effects on those Wildlife Sites ('Candidate') onsite have been considered in the assessment. This is principally addressed in **Sections 5.6** and **5.8**. A precautionary approach has been taken and all sites which could be adversely impacted have been included within the assessment.
	N/A	Invasive Non-Native Species (INNS)	Advised that an INNS survey and a rhododendron eradication plan (as a biodiversity enhancement) is recommended for the Site and surroundings.	INNS were recorded as part of habitat surveys, see **Appendix 5.1**, and INNS control is proposed as part of the OHMP (**Appendix 5.4**).
	N/A	Data Sources	Gwynedd Council note that the Local Record Centre hold up to date records to inform the baseline assessment.	Noted. The Local Record Centre (Cofnod) has been consulted for desk study data, which has been gathered and considered, see details in **Appendices 5.1** to **ES Volume III, Appendix 5.3: Bats**.

Additional Consultation

5.2.4 **Table 5.2** provides a summary of the additional consultation activities undertaken in support of the preparation of this assessment outside of the EIA Scoping process.

Table 5.2 Summary of Additional Consultation Undertaken

Consultee	Type of engagement	Key matters raised	Actions in response to consultee comments
Natural Resources Wales (NRW)	Discretionary Planning Advice Service (DAS) 08/08/2022	Requested that confirmation of the extent of the "*immediately surrounding area (where accessible*)" that was checked during the late August 2021 reconnaissance visit should be provided.	The reconnaissance visit was a preliminary check of the Site (and immediate surrounding area) which was used to help define survey scope, as well as enable health and safety and logistical considerations to be identified. The results of this visit are not considered relevant to the assessment, other than the survey scope which was determined (partly as a result of the visit), and this scope has been agreed with NRW.
		Advised that the scope of the assessment considers: • All widespread European protected species; • Species subject to "full" protection under the provisions of Section 9 and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); and • Surveys that consider adder.	Noted. The scope of the assessment is presented in **Section 5.2**. Details of the baseline gathering is provided in **Section 5.3**, and results of the surveys including for reptiles (such as adder) are provided in **Section 0**. Surveys for, and consideration of, all relevant protected species have been undertaken.
		NRW advised that determining the importance of species and populations identified from surveys should refer to Wales-specific resources and publications, where practical.	Noted. Where relevant and applicable this has been considered in the assessment, see **Section 5.3**.

Consultee	Type of engagement	Key matters raised	Actions in response to consultee comments
		NRW advised that impact assessments will require consideration of conservation status as well as significance.	The scope and approach of the assessment is detailed in **Section 5.3**, which includes how significance was determined, noting this also considers conservation status.
		NRW advised that impact assessments will require consideration of current conservation status as well as favourable conservation status.	The scope and approach of the assessment is detailed in **Section 5.3**, which includes how significance was determined, noting this also considers conservation status.
		PEDW advised that the LPA and other relevant consultees should be liaised with to highlight schemes that should be included in the cumulative assessment.	Noted. The cumulative assessment is provided in **Section 5.10.** The Applicant has consulted Gwynedd Council regarding their opinion on any other schemes (including non-wind) that should be considered in the cumulative assessment and no response has been received. However, a comprehensive search has been undertaken by the Applicant to determine the short list of cumulative schemes. Further information on approach to developing the short list is provided in **ES Volume II, Chapter 15: Cumulative Effects Assessment.** The assessment reported in this chapter has considered a zone of influence out to 10 km as stated in the scoping, with the assessment results provided in **Section 5.10**.

Consultee	Type of engagement	Key matters raised	Actions in response to consultee comments
		Noted changes to Chapter 6 of Planning Policy Wales (PPW) in relation to net benefit for biodiversity and the step-wise approach, green infrastructure and protection for Sites of Special Scientific Interest.	Noted. The changes to PPW have been considered in this chapter. See **Section 5.9,** and **Appendix 5.4**.

Scope of the Assessment

5.2.5 The technical scope of this assessment has been established through an ongoing scoping process. Assessment has been undertaken in accordance with CIEEM guidelines (2018), and considers the following main potential impacts upon ecological features associated with wind farm developments:

- Designated Sites - potential indirect effects upon designated sites for nature conservation.
- Habitat Loss/Deterioration - direct and indirect loss and deterioration of habitats.
- Mortality / Injury - incidental loss of life or injury through construction activities to species.
- Disturbance/Displacement of Species - disturbance and displacement of faunal species; loss, damage or disturbance to their breeding and/or resting places.

5.2.6 CIEEM guidelines (2018[1]) and, in the absence of Welsh-specific guidance, NatureScot guidelines (NatureScot, 2024) stipulate that it is not necessary to carry out a detailed assessment of impacts upon ecological features that are sufficiently widespread, unthreatened and resilient to impacts of a development proposal.

5.2.7 As such, the assessment considers effects upon ecological features which are considered important on the basis of relevant guidance, professional judgement and those features of greater conservation concern.

5.2.8 Where ecological features are not considered so important as to warrant a detailed assessment, or where they will not be significantly affected on the basis of baseline information, these are 'scoped out' of the assessment. Mitigation measures for such features may, however, still be outlined as appropriate to reduce and/or avoid any potentially adverse effects or to ensure legislative compliance.

5.2.9 Potential effects upon Important Ecological Features (IEFs) are considered as a result of the Proposed Development alone and cumulatively, in-combination with other developments which are the subject of a valid planning application. Operational, under construction and consented wind farm developments with design information in the public domain are considered for the cumulative impact assessment. Developments close to the end of their operational life are included as part of the cumulative assessment to present 'worst case scenario'.

Decommissioning Phase Effects

5.2.10 Decommissioning phase effects are considered to result in no greater scope and magnitude of effects upon ecological features than would occur during the construction phase of the Proposed Development, albeit occurring over a shorter timescale.

[1] Note, this guidance has been updated in September 2024, but this updated 2024 version still says to reference the original 2018 guidance.

5.2.11 However, for completeness, decommissioning phase effects upon ecological features are considered explicitly within this assessment and any differences between the phases have been noted.

Factors Scoped Out of Further Assessment

5.2.12 **Table 5.3** presents the receptors/matters that are scoped out of further assessment, together with appropriate justification. Where a change has occurred since EIA scoping, this is clearly stated and justified.

5.2.13 The potential effects of aviation lighting on wind turbines on ecological features are scoped out of further assessment. The ecological feature that is considered to be potentially affected by aviation lighting on wind turbines are bats. It is considered that migratory species of bat can be drawn to lights, which may disturb natural flight patterns and increase susceptibility to collide with turbine blades. However, the Site is a low-risk site with respect to bats and is exposed, open and located at higher altitude which reduces the attractiveness of the Site for foraging/commuting bats.

5.2.14 Given the inland nature of the Site, the Site is not located where migratory bats are predicted to be flying through, and those species recorded during field surveys are species which are resident, and do not migrate extensively, as they primarily rely on stable roosting sites throughout their range. There is therefore no expected notable movement of bats through the Site, including for migration.

5.2.15 Therefore, such effects of lighting from the Proposed Development are therefore not anticipated to have any adverse effects on ecological features.

Receptors/Matters Scoped into Further Assessment

5.2.16 **Table 5.4** presents the receptors/matters that are scoped into further assessment, together with appropriate justification. Where a change has occurred since EIA scoping, this is clearly stated and justified.

Table 5.3 Receptor/Matters Scoped Out of Further Assessment

Receptor/matter	Phase	Justification	Change since EIA Scoping?
Migneint-Arenig-Dduallt SAC and SSSI; Llyn Tegid Ramsar and SSSI; Berwyn and South Clwyd Mountains SAC; Cors y Sarnau SSSI; Caerau Uchaf SSSI; Y Glyn- Diffwys SSSI; Corsydd Nug a Merddwr SSSI; Berwyn SSSI (ecological features only); and, Coedydd Dyffryn Alwen SSSI.	Construction, Operational & Decommissioning	The nearest of these sites to the Proposed Development are Migneint-Arenig-Dduallt SAC and SSSI which is *c.* 805 m away. There is no connectivity determined between the Site and the majority of these designated sites, with the Site spatially distant (> 2.5 km) from most (Berwyn and South Clwyd Mountains SAC, Cors y Sarnau SSSI, Caerau Uchaf SSSI, Y Glyn- Diffwys SSSI, Corsydd Nug a Merddwr SSSI, Berwyn SSSI (ecological features only) and Coedydd Dyffryn Alwen SSSI). The Migneint-Arenig-Dduallt SAC and SSSI which is on the other side of the B4501 and the River Dee and Bala Lake SAC and River Dee SSSI from the Site, has largely static qualifying features (habitats and plants), or typically restricted ranges (invertebrates) so effects on the SAC/SSSI are discounted. The SAC/SSSI although 805 m from the Site (this is from the access track where habitats are largely semi-species pasture used for livestock grazing) is *c.* 2 km from the main part of the Proposed Development (turbines). The Llyn Tegid Ramsar and SSSI is 3.9 km from the Site. It has some connectivity potentially with the Site, however this is from the River Dee and Bala Lake SAC and River Dee SSSI which is scoped in for further assessment. It is considered that if impacts on the River Dee and Bala Lake SAC and River Dee SSSI are assessed and no significant effect is predicted then logically no significant effect on the Llyn Tegid Ramsar and SSSI would be either. The Llyn	No. The Scoping Opinion stated that these sites would be scoped out of further assessment and the Scoping Direction did not request any change in scope.

Receptor/matter	Phase	Justification	Change since EIA Scoping?
		Tegid Ramsar and SSSI has habitats and plant interest (thus static features), and fish and snail (for the SSSI) interest. The Site is not considered suitable to support any of these features. Embedded mitigation (including separation buffers) and good practice measures implemented, in combination with a CEMP, including (but not restricted to) pollution and siltation protection measures, water quality monitoring (pre-, during and post-construction) and the presence of an ECoW during construction, would prevent adverse impacts associated with the Proposed Development to these designated sites. As such, providing the implementation of good practice construction measures detailed herein (and in the Outline CEMP provided as **Appendix 2.1**), there is no route to impact for any of static habitat qualifying features or aquatic qualifying features of these sites. A minimum 50 m buffer around those watercourses which drain into the Cors y Sarnau SSSI and then into the Llyn Tegid Ramsar and SSSI from turbine hardstanding and substation compounds has been adopted, and works within 50 m of watercourses will be limited to vehicular access along existing tracks with the exception a limited number of new watercourse crossing points (three crossings; one an open span bridge and two arch culverts) The open span bridge design means that no instream works would be required, and the arch culvert design is bottomless meaning that the watercourse substrate will not be directly impacted.	

Receptor/matter	Phase	Justification	Change since EIA Scoping?
		Owing to the spatial separation between these designated sites, embedded mitigation to offset the Proposed Development from watercourses (and minimise the requirement for watercourse crossings), the static nature of most qualifying features (habitats and flora), relatively limited range of other qualifying features (like invertebrates) and lack of pathways, with the Site, effects, at all phases, on these designated sites (with ecological interests only) are scoped out.	
Candidate Local Wildlife Sites: Llwyn-y-brain heath - candidate Llwyn-y-brain cottage - candidate	Construction, Operational, Decommissioning	These sites are partially within the Site along the north-western application boundary. These sites are however spatially distant from the Proposed Development and no effects are predicted, including no watercourses hydrologically linking the sites. Accordingly, effects at all phases are scoped out.	Yes, these Candidate LWSs were not considered in detail in the EIA scoping.
All other Candidate Local Wildlife Sites (LWS)	Construction, Operational, Decommissioning	All other Candidate LWS are outside the Site. Given the spatial separation and lack of pathways between these and the Site no effects are predicted. Accordingly, effects at all phases are scoped out.	Yes, these Candidate LWSs were not considered in detail in the EIA scoping.
Candidate Local Wildlife Site: Llandderfel Wildlife site - candidate	Operational	No further effects on habitats of the Candidate LWS are predicted during the operational phase, with works to be carried out during this time restricted to infrastructure (access tracks, etc). Accordingly, effects within the operational phase are scoped out.	Yes, this Candidate LWS was not considered in detail in the EIA scoping.
Notable habitats (Annex 1 and Section 7)	Operational	No further effects on notable habitats are predicted during the operational phase, with works to be carried out during this time restricted to infrastructure (access tracks, etc).	No. The Scoping Opinion stated that this feature would be scoped out of further assessment and

Receptor/matter	Phase	Justification	Change since EIA Scoping?
		Accordingly, effects within the operational phase are scoped out.	the Scoping Direction did not request any change in scope.
Common and widespread habitats (those not categorised above)	Construction, Operational, Decommissioning	Habitats which are common/widespread and of low sensitivity and/or conservation interest, for which effects would be inconsequential are scoped out.	No. The Scoping Opinion stated that these features would be scoped out of further assessment and the Scoping Direction did not request any change in scope.
Foraging/commuting bats	Construction, Decommissioning	The Site is exposed, remote upland moorland with a limited number of suitable habitat features that could be used by foraging/commuting bats (such as watercourses). With the adoption of the CEMP (which will restrict works to daytime hours), effects on foraging/commuting bats during the construction and decommissioning phases are scoped out.	No. The Scoping Opinion stated that this feature would be scoped out of further assessment and the Scoping Direction did not request any change in scope.
Roosting bats	Construction, Operational, Decommissioning	Given the lack of suitable features which could support roosting bats within the Proposed Development footprint, effects on roosting bats at all phases are scoped out.	No. The Scoping Opinion stated that this feature would be scoped out of further assessment and the Scoping Direction did not request any change in scope.
Protected terrestrial mammals	Construction, Operational, Decommissioning	The Site offers very limited suitable habitat for terrestrial mammals, with watercourses typically sub-optimal for water vole, and the lack of suitable woodland/hedgerow habitat for the establishment of badger setts, and habitat for red squirrel and dormouse. Effects on otter are not considered alone, but are considered with respect to	No. The Scoping Opinion stated that these features would be scoped out of further assessment and the Scoping Direction did not request any change in scope.

Receptor/matter	Phase	Justification	Change since EIA Scoping?
		effects on the River Dee and Bala Lake SAC and River Dee SSSI and Afon Dyfrdwy (River Dee) SSSI. Pre-construction surveys for terrestrial mammals to check for evidence of establishment by any species within the Site will be undertaken to ensure works are legally compliant. Effects on protected terrestrial mammals during all phases are accordingly scoped out.	
Reptiles	Construction, Operational, Decommissioning	Common lizard was recorded within the Site during reptile surveys. No evidence of adder was recorded (although the presence of the species within the Site cannot be entirely precluded). Given the modest footprint (habitat loss) of the Proposed Development (only 2.93 % direct loss of habitats onsite), effects on reptiles from a population-level are discounted. The embedded mitigation (**Section 5.5**) will ensure that works can proceed in a legally compliant manner with due regard and protection for any reptiles that may be present, including any adder. Species, like common lizard and adder, are protected against (intentional) killing and injuring by the Wildlife and Countryside Act (1981). This will include works being undertaken in accordance with a CEMP and will include SPPs in relation to reptiles. Effects on reptiles at all phases are therefore scoped out. Furthermore, habitat enhancement measures to be implemented as part of the OHMP (**Appendix 5.4**) will benefit reptiles.	Yes. The Scoping Opinion stated that the potential presence of adder should be addressed in the ES and that survey work should be undertaken in order to inform the assessment.

Receptor/matter	Phase	Justification	Change since EIA Scoping?
Invertebrates/ Amphibians	Construction, Operational, Decommissioning	Effects on invertebrates and amphibians are scoped out, given effects on these will be inconsequential (in accordance with NatureScot, 2022). This is largely due to the footprint of the Proposed Development being very limited with respect to the available habitat retained (and some habitats enhanced) onsite. There would be a direct loss of only 17.38 ha of the 593.5 ha habitat onsite (2.93 %). Loss of habitats suitable to marsh fritillary would comprise a direct loss of 0.11 ha marshy grassland and 1.14 ha of flush/spring, thus a total of 1.25 ha. There is a total of 129.56 ha of these 'damp' habitats onsite with the majority of the habitat remaining available for marsh fritillary. Marsh fritillary would benefit from the enhancement and creation of damper habitats and seeding areas with devil's-bit scabious would increase the extent of this butterfly's foodplant onsite. Effects on marshy fritillary at all phases are thus scoped out of further assessment. Great crested newts are considered highly unlikely to be present, given the lack of suitable habitat and documented range not extending to the Site's locality. Additionally, no suitable waterbodies exist within 250 m of the Proposed Development. Two waterbodies were identified within the Site during habitat surveys, however, one of these was confirmed to contain fish (Llyn Maen Bras) and the other was recorded as being connected to a ditch system with flowing water. Subsequently it is considered that great crested newts are likely absent from the Site and are scoped out further assessment.	The EIA Scoping Direction 05/12/2024 highlighted a recent record of GCN in the area and requested that GCN undergo full consideration in the assessment (if suitable habitats are present). Justification is provided as to why great crested newts have been scoped out of further assessment. The Scoping Opinion stated that these features would be scoped out of further assessment.

Table 5.4 Receptor/Matters Scoped into Further Assessment

Receptor/matter	Phase	Justification	Change since EIA Scoping?
River Dee and Bala Lake SAC and River Dee SSSI and Afon Dyfrdwy (River Dee) SSSI	Construction, Operation and Decommissioning	This site lies immediately adjacent to the Site to the west. Effects on otters associated with the SAC and SSSI have been considered in the assessment, at all phases, given the close proximity of the SAC/SSSI to the Site combined with the mobile nature of otter as a qualifying feature. Evidence of otter was recorded on the Afon Mynach west of the Site and B4501. All other qualifying features of these sites have been scoped out. **ES Volume III, Appendix 6.4 Habitats Regulations Assessment** considers the likely effects on the River Dee and Bala Lake SAC.	No. The Scoping Opinion stated that these features would be scoped into further assessment.
Candidate Local Wildlife Site: Llandderfel Wildlife site - candidate	Construction, Decommissioning	Effects on these sites will be considered in the assessment, at all phases, given that the Site partially lies within these three Candidate Local Wildlife Sites.	Yes, this Candidate LWS was not considered in detail in the EIA scoping.
Notable habitats (Annex 1 and Section 7)	Construction, Decommissioning	Effects on notable habitats will be considered at the construction and decommissioning phases, due to direct habitat loss and indirect effects (such as drying of adjoining habitats).	No. The Scoping Opinion stated that these features would be scoped into further assessment.
Foraging/commuting bats	Operation	Effects on foraging/commuting bats are only considered during the operational phase as a result of collision risk mortality and displacement/potential severance of movement routes.	No. The Scoping Opinion stated that these features would be scoped into further assessment.

5.3 Methodology

5.3.1 This assessment has been undertaken in accordance with the following legislation, and with regard to the following planning policy and guidance. It should be noted that this chapter does not assess the compliance of the Proposed Development against relevant planning policy. Such an assessment is presented in the **Planning Statement**.

Legislation

- The Conservation of Habitats and Species Regulations 2017, as amended by the Conservation (Natural Habitats, &c.) (EU Exit) (Amendment) Regulations 2019 (collectively 'the Habitats Regulations')
- The Protection of Badgers Act (1992)
- The Environment (Wales) Act 2016
- Wildlife and Countryside Act 1981 (as amended)

National Planning Policy

- Planning Policy Wales: Edition 12, Policy 6 'Distinctive and Natural Places' (Welsh Government, 2024), and Section 6 Duty, securing a net benefit for biodiversity and building resilience through the planning system
- Technical Advice Notes 5– Nature Conservation and Planning (Welsh Government, 2009)
- Nature Recovery Action Plan (Welsh Government, 2020)
- Future Wales (Welsh Government, 2021) - Policy 9 Resilient Ecological Networks and Green Infrastructure

Local Planning Policy

- Anglesey and Gwynedd Joint Local Development Plan 'AMG5 – Local Biodiversity Conservation' and 'AMG6 – Protecting Sites of Regional or Local Significance' (March 2022)

Applicable Guidance

5.3.2 The following guidance documents have been used during the preparation of this chapter:

- Pre-application guidance for onshore wind farms (NatureScot, 2024)
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018)
- NatureScot pre-application guidance for onshore wind farms (NatureScot, 2024)
- Assessing the Cumulative Impact of Onshore Wind Energy Developments (NatureScot, 2021)
- Countryside Council for Wales (2010) Assessing the Impact of Windfarm Developments on Peatlands in Wales

- Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London
- Scottish Natural Heritage, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust (BCT) (2019, updated 2021). Bats and Onshore Wind Turbines: Survey Assessment and Mitigation. This document is referred to as the 'Joint Agencies guidance (2021)

5.3.3 Note, NatureScot (formerly SNH) guidance is considered in the absence of Welsh-specific guidance, which is the standard accepted approach.

5.3.4 Guidance relating solely to survey methods used is contained in **Table 5.5** and **Appendix 5.1** to **Appendix 5.3**.

Baseline Characterisation

Extent of the Study Area

5.3.5 The main study area within which baseline information in relation to ecological features has been obtained has comprised the Proposed Development footprint and survey-specific buffers, for field surveys, as per current guidance (NatureScot, 2024), and up to 10 km searches for internationally and nationally designated sites with ecological interests. Habitat surveys were extended out beyond 250 m from the Proposed Development footprint and covered the Site. The access track was included within the majority of survey areas, and was subject to a targeted habitat survey extending out to 100 m either side of the access track.

5.3.6 Full details of study areas adopted for desk study and field surveys are provided in **Appendix 5.1** to **Appendix 5.3** and associated figures.

Desk Study

5.3.7 An initial review of existing ecological information was undertaken prior to the commencement of field surveys. This enabled a preliminary overview of likely habitats, species and populations in proximity to the Proposed Development to be formed, identify possible target species for survey and define field survey requirements, which were subsequently agreed in consultation with NRW (**Table 5.1**).

5.3.8 Key sources of existing ecological information have comprised:

- Cofnod (Biological Records Centre)
- NRW website (for designated site information), and
- DEFRA MAGIC website (for designated site information).

5.3.9 Full details and results of the desk study undertaken are provided in **Appendix 5.1, Appendix 5.2** and **Appendix 5.3**.

Field Study

5.3.10 Field surveys were conducted between 2022 and 2024 in accordance with standard methodologies.

5.3.11 Study areas for baseline ecological surveys were determined respectively in accordance with current NatureScot guidance (2024).

5.3.12 **Table 5.5** presents details of the surveys that were undertaken.

Table 5.5 Field Surveys Undertaken to Inform the EIA Baseline Characterisation

Survey Type	Date undertaken	Data collected and Study Area	Shown on Figure	Relevant guidance
Extended Phase 1 Habitat Survey	15 to 19 August 2022	The study area included all land within the NVC study area. Signs of terrestrial mammals were also searched for, and the area was assessed for suitability to support reptiles.	Phase 1 Habitat Survey Plan - **ES Volume IV, Figure 5.4: Phase 1 Habitat Survey Plan**.	Handbook for Phase 1 habitat survey – a technique for environmental audit (JNCC, 2016). SEPA guidance (2017).
NVC Survey	15 to 19 August 2022	The study area included all land within the NVC study area.	NVC Survey Plan - **ES Volume IV, Figure 5.5.**	National Vegetation Community Users' Handbook (Rodwell, 2006).
Extended Phase 1 Habitat Survey of the access track	15 and 17 October 2024	The study area included all land within the access track and a 100 m buffer zone around this area.	Phase 1 Habitat Survey Plan - **ES Volume IV, Figure 5.4**.	Handbook for Phase 1 habitat survey – a technique for environmental audit (JNCC, 2016). SEPA guidance (2017).
Terrestrial mammal species survey	23 and 24 May 2023, 28 September 2023	The study area consisted of the Proposed Development and species specific buffers (where access allowed) around this area. These were as follows: • Otter – 200 m • Badger – 100 m	Terrestrial Mammal Survey Plan - **ES Volume IV, Figure 5.6: Terrestrial Mammal Survey Results**.	Chanin (2003), Cresswell *et al*. (2012), Dean *et al.* (2016), Harris *et al*. (1989), NatureScot (2018) and NatureScot

Survey Type	Date undertaken	Data collected and Study Area	Shown on Figure	Relevant guidance
		• Water vole – 50 m The location and distribution of field signs identifying the presence and/ or potential presence of protected terrestrial mammal species were recorded.		(2024a-c). The study area in 2023 was the Site out to at least 200 m from the Proposed Development, in accordance with NatureScot guidance (2024a-c).
Reptile 'presence/absence' surveys	The refugia were deployed on 31 August 2023. Checks commenced on 29 September 2023	The study area consisted of representative habitat within the Site in which 96 refugia were deployed[2]. The survey effort targeted five distinct areas (A, B, C, D and E). This habitat was selected as the most suitable reptile habitat as it included mosaic habitat, scrub, tussocky grassland and moorland. The refugia were subject to seven checks in autumn (September/October 2023). The range of reptile species present and their relative abundance was recorded.	Reptile Survey Plan - **ES Volume IV, Figure 5.7a: Reptile Survey Plan**.	'Froglife' Advice Sheet 10 'Reptile Survey' (Froglife, 2016).
Preliminary (Ground-based) Bat Roost Potential	May 2023	The study area consisted of the Site and a 200 m (where access allowed) buffer zone around this area, resulting in at least 290 m from the proposed turbines) for assessment of bat roost potential and following guidance applicable at the time (NatureScot, 2021).	Bat Survey Plan - **ES Volume IV, Figure 5.8a: Bat Survey Plan.**	Collins, J. (ed.) (2023). NatureScot guidance (2021).

[2] Due to iterative changes in the Site boundary during the design process, Area E now lies outwith, but immediately adjacent to, the Site. However, these data have been included within the assessment in order to provide context.

Survey Type	Date undertaken	Data collected and Study Area	Shown on Figure	Relevant guidance
Bat Activity Surveys Site	Spring (May), Summer (July to early August) and autumn (late September to early October) 2023	Static detectors deployed as close as possible to proposed turbine locations and/or area of turbine interest and following guidance applicable at the time (NatureScot, 2021).	Bat Survey Plan - **ES Volume IV, Figure 5.8a.**	Collins, J. (ed.) (2023). NatureScot guidance (2021).

Field Survey Personnel

5.3.13 All field surveys were completed by experienced, reputable and professional ecologists fully conversant in established survey methodologies for proposed wind farm developments.

5.3.14 Details of field surveyors used are provided in **Appendix 5.1** to **Appendix 5.3**.

Assessment Methodology

5.3.15 The assessment has been undertaken with reference to CIEEM guidelines (2018) and includes the following stages:

- Determination and evaluation of Important Ecological Features (IEFs)
- Identification and characterisation of impacts
- Assessment of the significance of effects prior to mitigation measures
- Outline of mitigating measures to avoid and reduce significant impacts
- Assessment of the significance of any residual effects after such measures
- Identification of appropriate compensation measures to offset significant residual effects, and
- Identification of opportunities for ecological enhancement.

Requirements for Mitigation

5.3.16 A step-wise approach (mitigation hierarchy) has been adopted to avoid, mitigate and compensate for potential ecological impacts as a result of the Proposed Development:

1. Avoidance is used where an impact has been avoided e.g., through changes in scheme design.
2. Mitigation is used to refer to measures to reduce or remedy a specific negative impact in situ.
3. Compensation describes measures taken to offset residual effects, i.e., where mitigation in situ is not possible.
4. Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

Assessment of Residual Effects

5.3.17 Where the assessment proposes measures to mitigate adverse effects on ecological features, a further assessment of residual effects, taking into account any ecological mitigation recommended, has been undertaken.

Assessment of Cumulative Effects

5.3.18 In the absence of specific guidance for Wales, cumulative impacts have been assessed with reference to NatureScot guidance (2012 and 2021) for IEFs subject to a detailed assessment and NatureScot (2021) in relation to bats.

5.3.19 Potentially significant cumulative effects can result from individually not significant but collectively significant actions taking place over a period of time or concentrated in a location.

5.3.20 For aquatic features, potential cumulative effects are likely to be significant only for other developments located relatively close (e.g., within 2 km) and within the same hydrological sub-catchments.

5.3.21 For (non-avian) species potentially significant cumulative effects are only likely where other developments are located within the regular range of more mobile species (e.g., bats). Cumulative impacts have therefore been assessed with reference to NatureScot (2021) for bats only, in-combination with other relevant developments located within 10 km of the Site.

5.3.22 Cumulative effects are only considered for impacts of above negligible magnitude, as it is considered that negligible residual impacts would not likely contribute measurably to significant cumulative effects.

5.3.23 The cumulative assessment includes consideration of:

- Existing wind farm developments, either operational or under construction
- Approved wind farm developments, awaiting implementation, and
- Proposals awaiting determination within the planning process with design information in the public domain.

5.3.24 Major non-wind developments are also considered in the assessment.

5.3.25 Those developments which have been withdrawn and/or refused are not considered, unless an appeal is currently in progress and information is available. Furthermore, those developments at the EIA screening stage are not considered as no information relevant to the cumulative effects is available for these projects.

5.3.26 Whilst single or small-scale wind turbine developments may contribute to cumulative effects, these have been scoped out of inclusion for potentially significant cumulative effects as applications for such developments do not generally consider the potential for impacts upon IEFs in sufficient detail to enable meaningful assessment.

Requirements for HRA

5.3.27 The Site is in proximity to River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid SAC where effects on the designated site's qualifying species are considered possible.

5.3.28 Accordingly, **Appendix 5.5** provides a 'screening' stage where the Proposed Development is examined to determine if it is likely to have a significant effect on the aforementioned protected site. Furthermore, **Appendix 5.5** provides information to inform an HRA (which is all the data and details gathered) to allows the competent authority to undertake an appropriate assessment, if necessary.

Assessment Criteria

Determining Importance

5.3.29 Relevant European, national and local guidance from governments and specialist organisations has been referred to in order to determine the sensitivity (or importance) of IEFs. Reference has also been made to NatureScot guidance on certain species for assessment, when considering the development of onshore wind farms. Although this is guidance for Scotland, it is applicable to Welsh onshore wind farms, in the absence of Welsh-specific guidance.

5.3.30 In addition, importance has also been determined using professional judgement and taking account of the results of baseline surveys, desk study and the importance of features within the context of the regional ('Gwynedd' or 'North Wales; where available) geographical area.

5.3.31 For the purposes of this assessment the importance of ecological features is considered within a defined geographical context, from 'Local' to 'International', as outlined in **Table 5.6.**

5.3.32 It should be noted that importance does not necessarily relate to the level of legal protection that a receptor receives, and IEFs may be important for a variety of reasons, such as their connectivity to a designated site, rarity or the geographical location of species relative to their known range.

5.3.33 Similarly, whilst a particular feature may be associated with a nearby internationally designated site, the feature is not automatically assigned a value of "*International*" importance.

Table 5.6 Sensitivity/ Geographic Scale of Ecological Feature Importance

Importance	Description
High - International	An internationally designated site i.e. Special Area of Conservation (SAC) or candidate/potential site (pSAC). Large areas of priority habitat listed under Annex 1 of the Habitats Directive, and smaller areas of such a habitat that are essential to maintain the viability of that ecological resource. A regularly occurring, nationally significant population of any internationally important species, listed under Annex II or Annex IV of the Habitats Directive.

Importance	Description
High - National	A nationally designated site e.g. Site of Special Scientific Interest (SSSI), or area meeting criteria for national level designations. Significant extents of a priority habitat identified in Section 7 of the Environment (Wales) Act 2016 (S7), or smaller areas which are essential to maintain the viability of that ecological resource. A regularly occurring, regionally significant population of any nationally important species listed as a S7 priority species and species listed under Schedule 1 or Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) or Annex II or Annex IV of the Habitats Directive.
Medium - Regional	Viable areas of key semi-natural habitat identified in the UK Biodiversity Action Plan (UKBAP). A regularly occurring, locally significant population of any nationally important S7 species and species listed under Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive. Sites which exceed the local authority-level designations but fall short of SSSI selection guidelines, including extensive areas of semi-natural woodland.
Low - Local	All other species that are widespread and common and which are not present in regionally or nationally important numbers, but which do contribute to, and enrich, the local ecological assemblage.

Characterising Impacts

5.3.34 Once identified, potential effects are described with reference to the following characteristics as appropriate:

- Positive or negative
- Extent
- Magnitude
- Duration
- Timing
- Frequency, and
- Reversibility.

5.3.35 The assessment only makes reference to those characteristics relevant to understanding the nature of an effect and determining its significance. For the purposes of this assessment the temporal nature of potential effects is described where appropriate as follows:

- Negligible: of inconsequential duration
- Short-term: for 1-5 years
- Medium-term: for 5-10 years
- Long-term: >10 to 40 years, and

- Permanent: >40 years.

5.3.36 The likelihood or probability that an effect will occur is also described as far as possible based on best available information and where relevant. The likelihood of an impact occurring is referred to using the following terms: certain, likely, unlikely or highly unlikely, where appropriate.

5.3.37 The criteria used to determine the magnitude of effects are set out in **Table 5.7**.

5.3.38 It is important to note that, where reference is made to population level effects to assess magnitude the most recently published available population estimates used are considered to be guides.

5.3.39 In addition, it will often be impossible to equate an impact to an actual population loss. For example, where protected species may be displaced from a wind farm site as a result of construction or operational activities, such a loss may be temporary or may reasonably result in the relocation of species to suitable habitats elsewhere within the Site, immediate or wider area. Where uncertainty arises, a precautionary approach has been adopted.

5.3.40 As such, professional judgement, on the basis of best available evidence, has been used to inform the assessment presented within this chapter.

Table 5.7 Impact Magnitude

Magnitude	Description
Very High	The impact (either on its own or in-combination with other proposals) may result in the permanent total or almost complete loss of a site and/ or species status or productivity, or alternatively notable gains in the designated site and/or species/habitat status or productivity.
High	The impact (either on its own or in-combination with other proposals) may adversely affect the conservation status of a site and/ or species population, in terms of the coherence of its ecological structure and function (integrity), across its whole area, that enables it to sustain the habitat, complex of habitats and/ or the population levels of species of interest.
Medium	The impact (either on its own or in-combination with other proposals) would not adversely affect the conservation status of a site and/ or species, but some element of the functioning might be affected, and impacts could potentially affect its ability to sustain some part of itself in the short to medium-term.
Low	Neither the above or below applies, but some observable adverse effect is evident on a temporary basis or affects extent of habitat/species abundance in the local area.
Negligible	A very slight (indiscernible) reduction in a site and/ or species status or productivity and/ or no observable impact.
Beneficial	The impact is considered to be beneficial to a species or sites nature conservation status.

Determining Significance

5.3.41 For the purposes of assessment, a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important features' or for biodiversity in general.

5.3.42 Significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution) and are identified on the basis of magnitude, professional judgment and best available evidence.

5.3.43 CIEEM guidelines (2018) note that "*A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant negative ecological effects have been lawfully permitted following EIA procedures.*"

5.3.44 For the purposes of this assessment, significant effects are primarily expressed with reference to an appropriate geographical scale.

5.3.45 In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect has been assumed as a precautionary approach. Where uncertainty exists, this is acknowledged.

5.3.46 CIEEM guidelines (2018) do not recommend the sole use of a matrix table as commonly set out in ES Chapters to determine 'significant' and 'not significant' effects. For the purposes of this assessment presented herein, **Table 5.8** sets out adapted CIEEM terminology and equivalent EIA terms, for ease of interpretation. Within **Table 5.8**, 'major' and 'moderate' are considered as significant in the context of the EIA regulations (and these are shown in **bold**).

Table 5.8 Effect Significance

Importance	Impact Magnitude				
	Very high	High	Medium	Low	Negligible
High	**Major**	**Major/ Moderate**	**Moderate**/ Minor	Minor	Negligible
Medium	**Major/ Moderate**	**Moderate**	Minor	Minor/ Negligible	Negligible
Low	**Moderate**/ Minor	Minor	Minor	Minor/ Negligible	Negligible

5.4 Baseline Conditions

Existing Baseline

5.4.1 This section provides a summary of baseline ecological conditions in relation to:

- Designated sites of nature conservation (see **Table 5.9** and **Table 5.10**);
- Habitats and vegetation (see **Table 5.11** to **Table 5.13**);
- Terrestrial mammals (see **Table 5.14**);
- Bats; and
- Reptiles (see **Table 5.15**).

5.4.2 Detailed information regarding desk study records and field survey results is presented in **Appendix 5.1** to **Appendix 5.3**, where relevant, and also as relevant within the "*Predicted impacts*" with regards IEFs.

Designated Sites for Nature Conservation

5.4.3 This section should be read with reference to **ES Volume IV, Figure 5.1**.

5.4.4 **Table 5.9** provides a summary of statutory designated sites for nature conservation, with ecological interests, located within 10 km of the Site. The distances specified within **Table 5.9** are from the application boundary to the designation boundary at its nearest point.

5.4.5 The Site does form part of a statutory designated site for nature conservation with ecological qualifying features for protected species, although the western application boundary runs adjacent to the River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid SAC and Afon Dyfrdwy (River Dee) SSSI.

5.4.6 Sites designated for ornithological features only are addressed separately in **ES Volume II, Chapter 6: Ornithology.**

Table 5.9 Designated Sites for Nature Conservation

Site	Distance and Direction	Qualifying Interests
River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid SAC	Adjacent to Site, west	• Atlantic salmon (*Salmo salar*) • Floating water-plantain (*Luronium natans*) • Sea lamprey (*Petromyzon marinus*) • Brook lamprey (*Lampetra planeri*) • River lamprey (*Lampetra fluviatilis*) • Bullhead (*Cottus gobio*) • Otter (*Lutra lutra*), and • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
Afon Dyfrdwy (River Dee) SSSI	Adjacent to Site, west	• Rivers with floating vegetation often dominated by water crowfoot • Sea lamprey • River lamprey • Brook lamprey • Atlantic salmon • Bullhead • Freshwater pearl mussel • Grayling (*Thymallus thymallus*), and • Otter.

Site	Distance and Direction	Qualifying Interests
Migneint-Arenig-Dduallt SSSI	805 m, west	• Dry heath • Blanket bog • Wet heath • Flushes • Lakes • Woodland • Other habitats including calcareous grassland, rush pasture and swamp • Ground beetle (*Trechus rivularis*) • Weevil (*Anthonomus conspersus*) • Fungus gnat (*Brevicornia kingi*) • Large heath butterfly (*Coenympha tullia*) • Assemblage of invertebrates, and • Multiple flora species (including flowering plant assemblage).
Migneint-Arenig-Dduallt SAC	805 m, west	• European dry heaths • Blanket bogs (priority feature if active bog) • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea* • Natural dystrophic lakes and ponds • Northern Atlantic wet heaths with *Erica tetralix*, and • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles.

Site	Distance and Direction	Qualifying Interests
Cors y Sarnau SSSI	2.55 km, south-east	• Wetland habitats over peat mire, fen, bog, wet woodland).
Caerau Uchaf SSSI	3.19 km, east	• Species-rich hay meadow, and • Wet pasture.
Llyn Tegid SSSI	3.9 km, south-west	• Lake and aquatic/emergent vegetation • Lake fen/swamp including wet woodland • Common whitefish (*Coregonus lavaretus*) • Glutinous snail (*Myxas glutinosa*), and • Floating water-plantain (*Luronium natans*).
Llyn Tegid Ramsar	3.9 km, south-west	• Floating water-plantain • Water mudwort (*Limosella aquatica*) • Six-stamened waterwort (*Elatine hexandra*) • Water sedge (*Carex aquatilis*) • Common whitefish, and • Grayling.
Y Glyn-diffwys SSSI	4.61 km, north-east	• Semi-natural ancient broad-leaved woodland, which is rare habitat in the former county of Clywyd.
Corsydd Nug a Merddwr	6.12 km, north-west	• Lowland valley side blanket mire, and • Mire, swamp, rush pasture and wet grassland.

Site	Distance and Direction	Qualifying Interests
Berwyn a Mynyddoedd De Clwyd / Berwyn and South Clwyd Mountains SAC	6.80 km, south- west	• European dry heaths • Blanket bogs (priority feature if active bog) • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*), and • Transition mires and quaking bogs.
Berwyn SSSI	6.80 km, south-east	• Common heather dominated heath and blanket mire.
Coedydd Dyffryn Alwen SSSI	7.49 km, north-east	• Semi-natural broad-leaved woodland.

5.4.7 There are 79 Gwynedd 'Wildlife Sites' (all Candidate Wildlife Sites) within 2 km of the Site. Of these, there are three Candidate Wildlife Sites within the Site (Llandderfel, Llwyn-y-brain heath and Llywyn-y-brain cottage), with information on these Candidate LWSs onsite provided in **Table 5.10**. For a full list of all identified Wildlife Sites (including Candidate Wildlife Sites) see **ES Volume IV, Figure 5.2.** Note, Candidate Wildlife Sites do not necessarily still have qualifying interests that would qualify them as local wildlife sites. Candidate Wildlife Sites would require onsite survey and assessment to appraise habitats and condition, with the list of Candidate Wildlife Sites typically identified from a high-level appraisal including from historic maps/plans and/or from historic surveys.

Table 5.10 Non-statutory Designated Sites for Nature Conservation within the Site

Site	Qualifying Interests
Llandderfel Wildlife site – candidate	Acid grassland; dwarf shrub heath; bracken.
Llwyn-y-brain heath – candidate	Valley mire.
Llwyn-y-brain cottage – candidate	Neutral grassland.

Habitats and Vegetation Survey

5.4.8 Detailed habitats and vegetation survey results are provided in **Appendix 5.1** and illustrated on **ES Volume IV, Figures 5.4** and **5.5.** A summary of habitats recorded within the Site is provided in the following paragraphs, in **Table 5.11**. Habitats are discussed with reference to both the Phase 1 habitat and NVC survey findings.

5.4.9 The survey recorded 21 Phase 1 habitats, and within these 12 NVC communities were identified.

5.4.10 Semi-improved acid grassland predominates in the eastern and central areas of the Site, along with extensive areas of acid flush and marshy grassland. In the west, there is a complex mosaic of poor semi-improved grassland, acid grassland, and marshy grassland, with areas of wet heath, acid flush, and fen. There is also scattered dry heath and bracken / gorse scrub across the Site, and small remnant patches of blanket bog.

5.4.11 There are a few small streams in the centre and south-west of the Site, running off the hills, and also a waterbody, called Llyn Maen Bras, in the south-west.

5.4.12 The access track is composed of enclosed species-poor pasture, with some adjacent native hedgerow boundaries and mature broad-leaved trees.

Table 5.11 Key Habitat Summary

Habitat Name	Phase 1 Code	Community Description
Broad-leaved Woodland – semi-natural	A1.1.1	There are small stands of broad-leaved trees close to the access track including mature beech, willow and ash trees. This area also contains numerous individual mature broad-leaved trees, predominantly oak, with some sycamore, beech and rowan.
Coniferous Woodland – plantation	A1.2.2	Plantation forestry occurs to the south of the Site, within the buffer zone. Some compartments had been recently felled at the time of surveying.
Mixed Woodland – plantation	A1.2.3	See above.
Recently Felled Woodland	A4	See above.
Scrub	A2	Patches of dense gorse occur on the steep valley sides within the Site, generally as a mosaic with acid grassland and large stands of bracken. Gorse scrub also occurs close to the access track where it is present within the semi-improved acid grassland.
Acid Grassland - semi-improved	B1.2	The Site's acid grassland is mostly species-poor and heavily grazed, forming mosaics with gorse or bracken on steep slopes. Grassland dominates hilltops and ridges, featuring mat-grass, bent grasses, bryophytes, and occasional bilberry. Grassland in the western valley includes wavy hair grass, heath rush, mosses, and purple moor grass, possibly suppressed wet heath. A small grassland area in the south-west is dominated by wavy hair grass. Along the access track, nutrient enrichment is evident with species like cocksfoot and ryegrass.
Neutral Grassland - semi-improved	B2.2	In the south-west valley, a well-drained floodplain supports grassland with abundant tufted hair grass, sweet vernal grass, red fescue, common bent, and Yorkshire fog, along with frequent soft rush, creeping bent, sheep's sorrel, meadow buttercup, and marsh thistle. Occasional species

Habitat Name	Phase 1 Code	Community Description
		include mat grass, sheep's fescue, red-stemmed feather moss, marsh violet, and sharp-flowered rush. Along the access track, a fenced strip of neutral grassland follows a watercourse, featuring damp-environment species like tufted hair grass, flag iris, and soft rush, alongside nutrient-enriched indicators such as nettle, creeping thistle, and cocksfoot.
Modified Grassland	B4	There is a field of agriculturally improved grassland close to the access track. This modified grassland is dominated by perennial ryegrass with creeping buttercup but otherwise shares many of the same species that occur in the surrounding semi-improved enclosed pasture.
Marshy Grassland	B5	In the west of the Site, rush pasture is widespread, dominated by tall soft rush with some areas of sharp-flowered rush, alongside Yorkshire fog and minimal bog-moss. In the buffer zone, a heavily grazed mosaic of wet heath, rush pasture, and rush flush is present. In the south-west valley, rush flush transitions into marshy grassland, where soft rush dominates, with patches of tussocky purple moor grass. Small areas of marshy grassland also occur along the access track, featuring soft rush, tufted hairgrass, marsh thistle, and occasional species like Yorkshire fog, mare's tail, creeping buttercup, and water forget-me-not.
Poor Semi-Improved Grassland	B6	This species-poor sward occurs on flatter ground within the Site, predominantly along the west and south-west buffer zone, and makes up the majority of the area on the access track. This grassland is heavily sheep grazed. Perennial ryegrass is abundant, alongside other common grasses such as Yorkshire fog, crested dog's-tail, wavy hairgrass and tufted hairgrass. The forbs present are generally common ruderal species such as creeping thistle, common nettle, creeping buttercup and white clover.
Bracken – continuous	C1.1	Large dense stands of bracken are found on sloping ground in several areas across the Site. These stands are overwhelmingly dominated by bracken but occur as a mosaic with semi-improved acid grassland, so that some species of the acid grassland community occur under the bracken where the fronds are less dense.

Habitat Name	Phase 1 Code	Community Description
Dry Heath	D1.1	This Site features two main heath communities. In central and southern areas, the vegetation is dominated by common heather, western gorse, and bilberry, with scattered bell heather. In higher western areas, common heather dominates alongside abundant small bilberry plants and various moss species. Occasional tufts of hare's-tail cottongrass, greater wood rush, and crowberry are present, with heather generally in a mid-growth stage. On steep hillsides, purple moor grass is increasingly present, forming a mosaic with acid grassland.
Wet Heath	D2	This wet heath community occurs on gently sloping valley floors and sides with shallow peat, featuring common heather, wavy hair-grass, bilberry, and various mosses. Other frequent species include heath rush, tormentil, and heath bedstraw, with occasional bog asphodel, crowberry, and deergrass. In wetter areas, it transitions to rush pasture, possibly influenced by nutrient enrichment from sheep. In the southern valley, a distinct area resembles blanket bog but is classified as wet heath due to shallow peat and limited bog-moss. It features pronounced tussocks of mosses, bilberry, and cottongrass, with well-marked sheep tracks. The vegetation suggests past modification by drainage and heavy grazing.
Blanket Bog	E1.6.1	A small pocket of blanket bog on deep peat is found on a central hilltop within the Site (east of the access track), featuring frequent to abundant common heather, cross-leaved heath, red-stemmed feather-moss, and wavy hair-grass, with locally abundant bog-mosses. Bilberry, hare's-tail cottongrass, and other mosses are also present, alongside occasional cup lichen, purple moor-grass, and crowberry. A larger area of blanket bog occurs on wet, deep peat in the central the Site (north and north-east of Moel Emoel), forming a mosaic with rush pasture and flush. In the east, very small patches of blanket bog are dominated by common heather and hare's-tail cottongrass, with bilberry, crowberry, and a variety of mosses creating a patchwork ground cover.
Flush and Spring - acid	E2.1	In the western part of the Site, acid flushes form narrow bands along higher streams and broader areas in valley bottoms, primarily on wet, deep peat. These areas are dominated by soft

Habitat Name	Phase 1 Code	Community Description
		rush, accompanied by a variety of mosses, grasses, and flowering plants, including marsh violet, bilberry, and cross-leaved heath. In the east, larger flush areas also feature soft rush along with additional moss species, velvet bent, purple moor grass, and tormentil. In wetter locations, the vegetation transitions to a community with more abundant bog-moss, common cottongrass, bog asphodel, star sedge, bog bean, and cranberry, without soft rush being dominant.
Standing Water	G1	A small waterbody (Llyn Maen Bras) occurs in the south-west of the Site. It is fringed with marginal stands of bottle sedge, soft rush and flat-topped bog moss (F2.1 marginal / inundation), with extensive pondweed across the lake surface. Fish are present. There is a man-made pond at the eastern end of the access track, which has soft rush growing marginally. It is likely naturally fed from the surrounding hills but is connected to a pipe that then feeds into a ditch system.
Running Water	G2	A number of small streams are present within the Site.
Cultivated / Disturbed Land - arable	J1.1	At the Site boundary in the west the land use transitions to lowland farming, including fields for arable cultivation.
Boundaries	J2	The access track is located on agricultural land and consists of field separated by boundaries. The majority of these boundaries are native hedgerows with mature trees, a few hedgerows are defunct, and there is a ditch system running along some of the fields.
Built-up areas	J3	A group of farm buildings and yards occurs on the eastern end of the access track.

5.4.13 A summary of habitat types and approximate areas within the Site is provided in **Table 5.12**.

5.4.14 NVC communities identified through the NVC survey present onsite are summarised in **Table 5.13** along with corresponding Habitats Directive (92/43/EEC) Annex 1 Habitat types and Section 7 priority habitat type in accordance with SEPA guidance (2017b) and NatureScot NVC / EUNIS / Annex 1 correspondence tables (2017). NVC communities inconsequential in extent (i.e. very localised) are not included in **Table 5.13**.

5.4.15 For the purpose of this assessment, potential for impacts on GWDTEs are not discussed, and are discussed separately in **ES Volume II, Chapter 7: Land, Soils and Water**.

5.4.16 The survey identified two instances of a priority peatland community within the Site. These were two areas of E1.6.1/M20 blanket bog, one located in a small pocket of blanket bog is found on deep peat on a central hilltop in the west of the Site (east of the access track) and another larger area found within the centre of the Site, north and north-east of Moel Emoel. Any impacts from the Proposed Development on these areas would likely be of national interest.

Table 5.12 Summary of Baseline Habitats Including Approximate Area and Relative Percentage Coverage within the Site

Phase 1 Habitat Type / Mosaic	Extent (ha)	Relative Cover (%)
A1.1.1 – Broad-leaved woodland-semi-natural	0.68	0.11
A1.1.2 – Broad-leaved woodland-plantation	0.05	0.01
A1.3.2 - Mixed Woodland (Plantation)	1.27	0.21
A2.1-Scrub - dense/continuous	0.49	0.08
A2.2-Scrub - scattered	0.10	0.02
A4 - Recently felled woodland	0.04	0.01
B1.2/A2.1 - Acid grassland - semi-improved/Scrub - dense/continuous	1.10	0.18
B1.2/A2.2 - Acid grassland - semi-improved/Scrub - scattered	3.24	0.55
B1.2/B5 - Acid grassland - semi-improved/Marshy grassland	0.03	0.01
B1.2/C1/A2.2 - Acid grassland - semi-improved/Bracken/Scrub - scattered	0.01	<0.01
B1.2/C1/A3.1 - Acid grassland - semi-improved/Bracken/Broadleaved Parkland/scattered trees	0.01	<0.01
B1.2/D1.1 - Acid grassland - semi-improved/Dry Heath	21.89	3.69
B1.2/E2.1 - Acid grassland - semi-improved/Flush and Spring - acid	1.23	0.21
B1.2 - Acid grassland - semi-improved	266.03	44.82
B2.2 - Neutral grassland - semi-improved	2.23	0.38
B4 - Improved grassland	1.50	0.25
B5/E2.1 - Marsh/marshy grassland/Flush and Spring - acid	2.53	0.43
B5 - Marsh/marshy grassland	7.10	1.20

Phase 1 Habitat Type / Mosaic	Extent (ha)	Relative Cover (%)
B6 - Poor semi-improved grassland	52.97	8.93
C1.1 - Bracken	14.15	2.38
D1.1 - Dry dwarf shrub heath - acid	33.72	5.68
D2 - Wet dwarf shrub heath	26.86	4.53
D2/B1.2- Wet dwarf shrub heath/Acid grassland - semi-improved	1.84	0.31
D2/E.2.1 - Wet dwarf shrub heath/Acid/neutral flush	1.81	0.31
E1.6.1 - Blanket bog	9.72	1.64
E2.1 - Flush and Spring - acid	122.46	20.63
E2.1/ D2/B5 - Flush and Spring - acid/Wet dwarf shrub heath/Marshy grassland	7.65	1.29
E2.1/D2/B1.2 - Flush and Spring - acid/Wet dwarf shrub heath/Acid grassland - semi-improved	8.27	1.39
F1 - Swamp	0.58	0.10
F2.1 - Marginal and inundation - marginal vegetation	0.22	0.04
G1 - Standing water	2.96	0.50
G1.1 - Standing water - eutrophic	0.01	<0.01
I2.1 - Quarry	0.02	<0.01
J3.6 - Buildings	0.01	<0.01
J3 - Built-up areas	0.70	0.12
J1.1 - Arable	0.02	<0.01
Total	**593.50**	**100.00**

Table 5.13 Summary of the Recorded Plant Communities Within the Site with Relevant Conservation Designations

Phase 1 habitat	NVC community	NVC Sub-Community	Annex I Habitat	Section 7 habitat
B1.2 Acid grassland, semi-improved	U5 *Nardus stricta - Galium saxatile* grassland	-	-	-
	U6 *Juncus squarrosus - Festuca ovina* grassland	-	-	-
B2.2 Neutral grassland, semi-improved	MG9 *Holcus lanatus - Deschampsia cespitosa* grassland	-	-	-
B5 Marshy grassland	M23 *Juncus effusus/acutiflorus - Galium palustre* rush pasture	M23a *Juncus acutiflorus* sub-community	-	Upland flushes, fens and swamps
		M23b *Juncus effusus* sub-community		
	M25 *Molinia caerulea - Potentilla erecta* mire	-	-	-
D1.1 Dry dwarf shrub heath - acid	H8 *Calluna vulgaris - Ulex gallii* heath	H8e *Vaccinium myrtillus* sub-community	4030 European dry heaths	Upland heathland
	H12 *Calluna vulgaris- Vaccinium myrtillus* heath	H12a *Calluna vulgaris* sub-community	4030 European dry heaths	Upland heathland
D2 Wet dwarf shrub heath	M15d *Trichophorum cespitosum - Erica tetralix* wet heath	M15d *Vaccinium myrtillus* sub-community	4010 Northern Atlantic wet heaths with *Erica tetralix*	Upland heathland
D2 Wet dwarf shrub heath (degraded blanket bog)	M19 *Calluna vulgaris - Eriophorum vaginatum* mire	-	-	Blanket bog
E1.6.1 Blanket bog	M19 *Calluna vulgaris - Eriophorum vaginatum* blanket mire	M19a *Erica tetralix* sub-community	7130 Blanket bogs	Blanket bog
E2.1 Flush and spring – acid	M6 *Carex echinata - Sphagnum fallax* flush	M6a *Carex echinata* sub-community	-	Upland flushes, fens and swamps

Phase 1 habitat	NVC community	NVC Sub-Community	Annex I Habitat	Section 7 habitat
		M6c *Juncus effusus* sub-community	-	Upland flushes, fens and swamps
G1 Standing water	-	-	-	Oligotrophic and dystrophic lakes
J2 Boundaries – native hedgerows	-	-	-	Hedgerows

Terrestrial Mammal Survey

5.4.17 Full details of terrestrial mammal surveys are provided in **Appendix 5.2**, and **ES Volume IV, Figure 5.6**.

5.4.18 Baseline terrestrial mammal survey results are summarised in **Table 5.14**.

Table 5.14 Summary of Baseline Terrestrial Mammal Survey Results

Ecological Feature	Summary
Otter	Watercourses within the Site were mostly considered to be sub-optimal for otter, given they were either rocky, fast-flowing, or very low in depth and likely subject to seasonal drying. However, several watercourses within the Site were considered to have potential for supporting commuting otters, particularly those with riparian trees and scrub that have potential to be functionally linked to suitable woodlands and watercourses in the wider area. During the first terrestrial mammal survey, two old otter spraints were recorded along the Afon Mynach located directly west of the Site, specifically the access track, and the B4501. The river comprised of suitable otter habitat, with shallow flowing water and deep pools present. The water quality of the river was considered to be high and to have potential for supporting otter prey (although the water levels were very low at the time of survey). The banksides included sections of riparian trees and woodland, with surrounding habitats dominated by pasture grassland. The banksides were considered to be unsuitable for the establishment of otter holts. No other signs of otter were identified in the second survey.
Badger	During the targeted terrestrial mammal surveys no signs of badger were identified. The habitats within the study area offered some foraging potential for badger, and the establishment of a badger sett in wooded areas cannot be discounted. However, much of the Site is suboptimal for sett establishment given the habitats are mainly open grassland fields, and upland moorland.
Pine marten	No signs of pine marten were identified during surveys. Habitats onsite were considered sub-optimal for pine marten due to there being few wooded areas.
Water vole	No signs of water vole were identified during surveys. Watercourses within the Site were mostly considered to be sub-optimal for water vole, given they were either rocky, fast-flowing, or very low in depth and likely subject to seasonal drying. The banksides were considered to be unsuitable for the establishment of water vole burrows.

Ecological Feature	Summary
Red squirrel	No signs of red squirrel were identified during surveys. Habitats onsite were considered sub-optimal for red squirrel due to there being few wooded areas.

Bat Survey

5.4.19 Full details of bat survey results are provided in **Appendix 5.3**, and **ES Volume IV, Figure 5.8b**.

5.4.20 Five species of bat were recorded during bat activity surveys comprising of common pipistrelle, soprano pipistrelle, noctule, brown long-eared and *Myotis* species. Of these common pipistrelle, soprano pipistrelle and noctule are considered as high collision risk species. The most frequently recorded species was noctule with 60.3 % of passes attributed to that species, and next was *Myotis* species with 27.9 % of passes. For common pipistrelle, soprano pipistrelle and brown long-eared bats ≤5 % of all passes were attributed to these species.

5.4.21 A total of 239 recent bat records were returned by Cofnod from within a 2 km radius of the Desk Study Search Area, accounting for three confirmed species overall (i.e., common pipistrelle, soprano pipistrelle and brown long-eared bat), in addition to records relating to the *Myotis* and *Pipistrellus* genus, and broader Chiroptera records.

5.4.22 Records returned also included a total of 15 records relating to roosts within the search area, accounting for common and soprano pipistrelle, brown long-eared bat and *Pipistrellus* and Chiroptera records. However, none of these records were recorded directly within the WFA.

5.4.23 A summary of bat records returned by Cofnod is provided in **ES Volume IV, Confidential Figure 5.3**.

Reptile Survey

5.4.24 Full details of reptile surveys are provided in **Appendix 5.2**, and **ES Volume IV, Figures 5.7a** and **b**.

5.4.25 Baseline reptile survey results are summarised in **Table 5.15**.

Table 5.15 Baseline Reptile Survey Results

Visit Number	Species	Refugia Number	Notes
1	Common lizard	1, 4, 17, 20, 57, 61 and 64	10 x juvenile
2	Common lizard	1 and 20	1 x adult (unknown sex); 1 x juvenile

Visit Number	Species	Refugia Number	Notes
3	Common lizard	3, 5, 19 and 57	1 x adult (female); 4 x juvenile
4	Common lizard	4, 13 and 79	1 x adult (female); 2 x juvenile
5	Common lizard	2 and 57	1 x adult (male); 1 x juvenile
6	-	-	-
7	-	-	-
4	Common lizard	4, 13 and 79	1 x adult (female); 2 x juvenile
5	Common lizard	2 and 57	1 x adult (male); 1 x juvenile
6	-	-	-

5.4.26 Over the course of surveys 27 common lizards were recorded across four of these visits. These records were concentrated around Areas A and E. Area A is located in the centre of the Site and, due to Site Boundary evolution, Area E is now located immediately adjacent to, but outside of, the north-eastern boundary. No other reptile species were recorded.

Future Baseline in the Absence of the Proposed Development

Land management

5.4.27 In the absence of the Proposed Development, or assuming a gap between baseline surveys and the commencement of the Proposed Development construction, changes in baseline ecology conditions (i.e. distributions and populations) are most likely to result from habitat modifications within or surrounding the Site due to land management practices.

5.4.28 In the absence of the Proposed Development, the habitats within the Site are considered to largely remain under the existing management regime. This comprises grazing by livestock (sheep and cattle, the latter in the lower lying fields to the west).

5.4.29 Commercial forestry operations within adjacent plantation forestry, such as felling, may also modestly alter the distribution of ecological species recorded during baseline surveys; however, it is highly unlikely this would be in such a way as to substantially alter the baseline reported here.

5.4.30 The Site is not subject to any other development pressures or management which would affect the habitats or ecological species in such a way that the present baseline conditions presented here would become substantively different.

5.4.31 Habitats and the assemblage of protected species densities would therefore reasonably be expected to remain at comparable levels with those recorded during field surveys and identified through desk study.

5.4.32 Whilst short-term and small-scale variability in ecological populations and distributions may occur, and revisions to conservation statuses and designations are possible, such changes would be unlikely to qualitatively alter the conclusion of the assessment presented within and have been accounted for through application of a precautionary approach and appropriate mitigation.

Climate Change

5.4.33 A summary of the relevant climate change projections using the UK Climate Change Projections 2018 (UKCP18) is:

- 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.

5.4.34 The impact of climate change on protected and notable species will vary depending on factors such as the availability of suitable habitat and the extent to which such habitats might be lost, and the adaptability of a species to cope with change.

5.4.35 Impacts are likely to be felt at a population scale, across a species' range. For example, there may be species for which Wales currently lies outside their usual breeding range and which may colonise if this range shifts north. Alternatively, non-breeding species may winter further north than currently, leading to a shift in wintering range and a local population decline.

5.4.36 Increased summer and winter temperatures and higher average precipitation rates in summer and winter, predicted by climate change, are likely to result in an extended growing/breeding season with earlier in the year vegetation growth and breeding activity of key species. Increased rainfall is likely to result in greater vegetation growth, although for some botanical species it may have adverse effects (through water-logging). Higher rates of juvenile mortality for key species may be expected as a result of higher rates of rainfall. The bat activity season is likely to be extended by the higher seasonal temperatures, but conversely higher rates of rainfall are likely to adversely affect foraging activity.

5.4.37 The opposing potential effects of climatic change on ecology features makes predicting future likely outcomes difficult. However, the potential effects on ecological features detailed in this chapter are not predicted to substantively change in relation to climate change over the lifetime of the Proposed Development.

5.4.38 In terms of the impact assessment for the Proposed Development, the potential impacts of climate change are noted but would not be expected to have more than a minor impact (either positively or adversely) on the ecological features identified during baseline data gathering.

5.5 Mitigation Embedded into the Design

5.5.1 This assessment has been based on the principle that measures have been 'embedded' into the design of the Proposed Development to remove potential significant effects as far as practicable, for example by the considered placement of infrastructure. **ES Volume II, Chapter 2: Description of the Proposed Development**, identifies the design mitigation that has been embedded into the design of the Proposed Development.

5.5.2 The embedded mitigation relevant to this assessment is detailed in **Table 5.16**.

Table 5.16 Embedded Mitigation

Embedded Mitigation Measure Relevant to Ecology	Function
The Proposed Development infrastructure has been designed to minimise the requirement for land-take and the number of watercourse crossings.	To reduce impacts on habitats and species associated with these watercourses.
As part of the Proposed Development proposals a drainage system, separation of clean and dirty water and placement of settlement ponds during construction would be implemented.	These measures would prevent sediment entering watercourses and potentially adversely impacting on habitats and species associated with the watercourse.
New watercourse crossings were reduced as far as practicable by using existing tracks where possible and minimising the number of crossings during initial design iterations. One of the new watercourse crossings is a clear span bridge, and two are bottomless arch culverts.	To reduce impacts on habitats and species associated with these watercourses. The clear span design for the new bridge crossing eliminates the requirement for instream works and the potential for resulting water pollution. The two arch culverts are also bottomless to ensure the watercourse substrate at these localities will not be directly impacted.
A 50 m buffer from watercourses (included on OS 1:25,000 scale mapping) has been incorporated from an early design stage to avoid watercourses and watercourse crossings. Any new crossings will be sensitively designed to allow the continued movement of water and wildlife therein.	To reduce impacts on habitats and species associated with these watercourses by preventing sediment entering watercourses during the construction phase.
Where the access track does cross watercourses, where possible, the track has been aligned to cross watercourses at around 90 degrees (perpendicular) to the direction of flow.	This minimises disturbance during construction and operation in the vicinity of watercourses and ensures separation from the watercourse buffer zones as much as possible.

Embedded Mitigation Measure Relevant to Ecology	Function
The length of access track within 50 m of mapped watercourses has been minimised as part of the sensitive Proposed Development design. Works within 50 m of watercourses has been restricted where possible to creation of some new areas of track (within 50 m of watercourses) and a number of watercourse crossings (see above) will be required.	To reduce impacts on habitats and species associated with these watercourses.
The layout of the Proposed Development has adopted a minimum 50 m 'stand-off' distance from bat habitat features and turbine blade tips in accordance with NatureScot guidance (2021). A spatial separation of > 300 m between the turbines and woodland edge, and 50 m between turbines and watercourses, has been achieved.	To reduce collision risk with bat species and minimise affecting the most likely important habitats used by foraging/ commuting bats.
The Proposed Development design has been sensitive to the River Dee and Bala Lake SAC and River Dee SSSI and is offset from the SAC and SSSI. For example, in order to prevent any indirect impacts on these designated sites via watercourses, a minimum 50 m buffer from turbine hardstanding and substation compounds has been adopted around all mapped watercourses.	To negate the potential for direct impacts on the SAC and SSSI (within the SAC/SSSI boundaries) from the Proposed Development.
Design of the Proposed Development has largely avoided those areas of peatland, bog and heath.	These habitats are some of the most ecologically important onsite and with respect to peatland may be considered as irreplaceable habitat, and thus prudent to avoid impacts.
The Proposed Development's turbines are positioned ≥290 m from the identified Bat Roost Features (BRF) onsite. Note, 290 m is approximately turbine rotor radius plus 200 m in accordance with the study area as defined in NatureScot guidance (2021).	This reduces the risk to roosting bats from the Proposed Development.
The length of new track construction has been minimised with use of existing farm tracks used to minimise land-take, although it is acknowledged the access track would need upgrading.	Minimise habitat loss and impact habitats which are already heavily disturbed such as an existing vehicular farm track.

5.5.3 The extent of micro-siting allowance to be included (50 m) would not diminish any of the mitigation measures listed in **Table 5.16**.

5.5.4 To ensure works can proceed in a legally complaint manner and not result in an offence under the Wildlife and Countryside Act (1981), pre-construction checks for protected species would be undertaken. The results of the pre-construction checks would be considered and included within a specific Species Protection Plans (SPPs), which would be secured as part of an Construction Environmental Management Plan (CEMP) and as part of a Decommissioning Environmental Management Plan (DEMP).

5.5.5 Details of the CEMP and DEMP are provided in the **Section 5.7**. Furthermore, as part of these documents, an Ecological Clerk of Works (ECoW) would be employed for the duration of the construction/decommissioning and reinstatement works, and further details of the role of the ECoW are also provided in **Section 5.7**.

Pre-construction Surveys

5.5.6 There is potential for a change in the distribution of protected terrestrial mammal species within the Site and access track between the completion of baseline surveys presented in this chapter and the commencement of construction activities for the Proposed Development. Pre-construction surveys for protected terrestrial mammals will be undertaken within a defined period prior to the commencement of construction works and as set out within the CEMP (**Appendix 2.1**).

5.5.7 This will cover all areas within 200 m of the Proposed Development and associated working areas, following guidance applicable at the time of survey.

5.5.8 The results of the pre-construction surveys will inform the need for further mitigation (if required) in respect of sensitive working practices, SPPs and/or the requirement to consult with NRW in relation to any protected species licensing.

5.6 Assessment of Likely Effects (Without Additional Mitigation)

5.6.1 This section identifies the potential effects in relation to habitats (Annex 1 and Section 7), qualifying features of the River Dee and Bala Lake SAC and River Dee SSSI, Llandderfel Candidate LWS, and bats (foraging/commuting only) as a result of the Proposed Development alone. An explanation of and rationale for the IEFs scoped in and out of the assessment is provided in **Table 5.3** and **Table 5.4**.

5.6.2 The Proposed Development has been assessed for an operational life of 40 years.

Construction

5.6.3 Potential construction phase impacts on ecological features associated with the Proposed Development are considered to relate to:

- direct land-take (habitat loss) to accommodate the Proposed Development;

- indirect habitat loss to account for potential changes in habitat vegetation structure (and hydrological linkage) due to drying effects as a result of construction works;
- temporary disturbance and land-take for laydown areas, construction compounds, cut and infill areas and storage areas (if required);
- disturbance to, fragmentation or severance of connecting habitat or potential bat commuting routes within, and adjacent to, the Proposed Development; and
- disturbance and pollution (indirect effects such as noise and vibration, dust, pollution from surface water run-off) resulting from site clearance and construction, plant and vehicles movements, and site workers' activities.

5.6.4 Potential effects are assessed on the assumption that embedded mitigation measures, as detailed in **Section 5.5,** are implemented. A CEMP (**Appendix 2.1**) will also be implemented and is included as additional mitigation (as laid out in **Section 5.7**).

River Dee and Bala Lake SAC

5.6.5 The SAC is designated for fish species (including Atlantic salmon, bullhead and lamprey species), otter, floating water-plantain and for being a watercourse of plain to montane levels with *Callitricho-Batrachion* vegetation. It is considered of High – International sensitivity for the purpose of assessment.

5.6.6 The SAC is adjacent to the Site and is to the west of the B4501 (watercourse called Afon Mynach). The SAC will not be directly impacted by the Proposed Development given it lies on the other side a road network (B4501) from the Site. A number of watercourses flow through the Site and tribute into the River Dee and Bala Lake SAC including the Nant Cefn-coch in the east of the Site which tributes into the SAC downstream near Sarnau, and a minor brook which flows west parallel to the access track near Wern Fawr. The number of watercourse crossings has been minimised (only three new crossings), and therefore watercourses will be typically unaffected by the construction works, with a minimum 50 m offset between works and watercourses. Where watercourse crossings are essential including of the Nant Cefn-coch in the east of the Site these will be sensitively designed to allow the free movement of water and wildlife therein (**Section 5.5**).

5.6.7 None of the onsite watercourses are considered suitable for any of the qualifying features with the exception of otter. Although no potentially suitable locations for holt sites (or couches) were recorded, two of the watercourses onsite (**ES Volume IV, Figure 5.6**) were considered potentially suitable for commuting otter (including the Nant Cefn-coch). These are greater than 100 m from the Proposed Development infrastructure with the exception of where the onsite tracks pass over Nant Cefn-coch to T09 and T10. This watercourse has some potential for commuting otters, but it is considered unlikely given it heads upstream into an expanse of high altitude remote, exposed and open moorland. It is considered that otter associated with the River Dee and Bala Lake SAC are likely to be most readily using watercourses within the SAC (as was recorded during field surveys along the Afon Mynach west of the Site, which is part of the SAC and is tree lined and was appraised as optimal otter habitat/ high otter potential) and adjoining optimal tributaries.

5.6.8 As summarised in **Section 5.5** (and **ES Volume II, Chapter 2: Description of the Proposed Development**) the Proposed Development design and evolution has limited the number of watercourse crossings, and all three new crossings will be sensitively designed and installed to allow the continued, uninterrupted flow of water and wildlife therein, including any commuting otter (**ES Volume II, Chapter 7: Land, Soils and Water** for further information).

5.6.9 One of the watercourse crossings (across the Nant Cefn-coch) will be an open span bridge. This would mean that there are no instream works required. Further, in the (unlikely) event that otter would use the Nant Cefn-coch for commuting (see above) the bridge will not restrict otter movements, with otter either swimming under the narrow bridge (given the bridge's limited width) or crossing the bridge or adjacent habitats on foot. The other

5.6.10 Two watercourse crossings will be arch culverts, with one located on a small tributary north-west of the Nant Cefn-coch, and the other adjacent to the access track in the west of the Site. The watercourses where the two arch culverts will be located, are considered sub-optimal for otter (including for commuting) and thus otter are considered unlikely to be moving along these watercourses. Similar to the proposed bridge location the arch culverts (which will be limited in width) are not anticipated to restrict any otter movements (in the unlikely event otter were commuting), with any otter likely crossing over through adjacent habitats to the culverts. Furthermore, a minimum 50 m buffer around all mapped watercourses from the Proposed Development footprint has been adopted and works within 50 m of watercourses will be limited (where possible) to some localised construction of new tracks. Embedded mitigation and good practice measures implemented, including (but not restricted to) pollution and siltation protection measures, and the presence of an ECoW during construction, would prevent adverse impacts associated with the Proposed Development to the River Dee and Lake Bala SAC and its qualifying species.

5.6.11 With adoption of embedded mitigation (see **Section 5.5**), it is considered that potential effects on the River Dee and Bala Lake SAC can be avoided.

River Dee SSSI

5.6.12 The SSSI is designated for fish species (including Atlantic salmon, bullhead, grayling, and lamprey species), freshwater pearl mussel, otter, and for comprising rivers with floating vegetation often dominated by water crowfoot. It is considered of High – National sensitivity for the purpose of assessment.

5.6.13 The SSSI is adjacent to the Site and is to the west of the B4501 (watercourse called Afon Mynach). The SSSI will not be directly impacted by the Proposed Development given it lies on the other side a road network (B4501) from the Site. A number of watercourses flow through the Site and tribute into the River Dee SSSI including the Nant Cefn-coch in the east of the Site which tributes into the SSSI downstream near Sarnau, and a minor brook which flows west parallel to the access track near Wern Fawr. The number of watercourse crossings has been minimised (only three new crossings), and therefore watercourses will be typically unaffected by the construction works, with a minimum 50 m offset between works and watercourses. Where watercourse crossings are essential including in the Nant Cefn-coch in the east of the Site these will be sensitively designed to allow the free movement of water and wildlife therein (**Section 5.5**).

5.6.14 None of the onsite watercourses are considered suitable for any of the qualifying features with the exception of otter. Although no potentially suitable locations for holt sites (or couches) were recorded, two of the watercourses onsite (**ES Volume IV, Figure 5.6**) were considered potentially suitable for commuting otter (including the Nant Cefn-coch). These are greater than 100 m from the Proposed Development infrastructure with the exception of where the onsite tracks pass over Nant Cefn-coch to T09 and T10. This watercourse has some potential for commuting otters, but it is considered unlikely given it heads upstream into an expanse of high altitude remote, exposed and open moorland. It is considered that otter associated with the River Dee SSSI are likely to be most readily using watercourses within the SSSI (as was recorded during field surveys along the Afon Mynach west of the Site, which is part of the SSSI and is tree lined and was appraised as optimal otter habitat/ high otter potential) and adjoining optimal tributaries.

5.6.15 As summarised in **Section 5.7** (**ES Volume II, Chapter 2: Description of the Proposed Development**) the Proposed Development design and evolution has limited the number of watercourse crossings, and the three new crossings will be sensitively designed and installed to allow the continued, uninterrupted flow of water and wildlife therein, including any commuting otter (**ES Volume II, Chapter 7: Land, Soils and Water** for further information).

5.6.16 One of the watercourse crossings (across a tributary of the Nant Cefn-coch) will be an single span bridge. This would mean that there are no instream works required. Further, in the (unlikely) event that otter would use the Nant Cefn-coch for commuting (see above) the bridge will not restrict otter movements, with otter either swimming under the narrow bridge (given the bridge's limited width) or crossing the bridge or adjacent habitats on foot.

5.6.17 The other two watercourse crossings will be arch culverts, with one located on a small tributary north-west of the Nant Cefn-coch, and the other adjacent to the access track in the west of the Site. The watercourses where the two arch culverts will be located, are considered sub-optimal for otter (including for commuting) and thus otter are considered unlikely to be moving along these watercourses. Similar to the proposed bridge location the arch culverts (which will be limited in width) are not anticipated to restrict any otter movements (in the unlikely event otter were commuting), with any otter likely crossing over through adjacent habitats to the culverts. Furthermore, a minimum 50 m buffer around all mapped watercourses from the Proposed Development footprint has been adopted and works within 50 m of watercourses will be limited (where possible) to some localised construction of new tracks. Embedded mitigation (including sediment, erosion and control measures incorporated into the drainage design) would prevent adverse impacts associated with the Proposed Development to the River Dee SSSI and its qualifying species.

5.6.18 With the implementation of embedded mitigation, it is considered that potential effects on the River Dee SSSI can be avoided.

Llandderfel Candidate Local Wildlife Site (cLWS)

5.6.19 The Llandderfel cLWS lies partially within the Site and is 995.8 ha in extent and has as habitats listed: acid grassland, dwarf shrub heath and bracken. It is considered of Low – Local sensitivity for the purpose of assessment.

5.6.20 This Llandderfel cLWS is only a candidate site, with the information surrounding such a site preliminary, likely high-level (and not yet with supportive data to determine whether it meets the criteria for formal LWS designation) and further assessment is required to accurately assess the condition of the habitats within, in order to formalise such a site to LWS status.

5.6.21 Total direct land-take from the Proposed Development is 17.38 ha (with indirect habitat loss, out to 10 m from the Proposed Development's footprint, of 21.25 ha). Much of this land-take is within the Llandderfel cLWS with only the access track outside the cLWS. The Proposed Development would thus only result in the direct loss of 1.75 % of the cLWS's habitat (with a 2.13 % indirect loss, although this indirect loss is considered unlikely to be realised).

5.6.22 In terms of habitats listed as present within the cLWS, these are acid grassland, dwarf shrub heath and bracken. Within the Site the extent of these habitats are respectively 293.53 ha, 64.23 ha and 14.15 ha. In terms of direct losses of these habitats from the Proposed Development this is 14.46 ha for acid grassland, no dwarf shrub heath and 0.34 ha of bracken. Indirect habitat losses are 15.5 ha of acid grassland, 0.59 ha of dwarf shrub heath and 0.32 ha of bracken. The Proposed Development will therefore result in the direct loss of 4.93 % of the acid grassland onsite, <0.01 % of the dwarf shrub heath onsite and 2.4 % of the bracken onsite.

5.6.23 These losses of habitats which are noted as being present within the Llandderfel cLWS are modest (<2 % of the habitat within the cLWS to be directly lost) and includes only the direct loss of 14.46 ha of acid grassland and 0.34 ha bracken. Noting, there is a total of 293.53 ha acid grassland and 14.15 ha bracken onsite.

Notable Habitats

5.6.24 Notable habitats are Annex 1 and/or Section 7 habitats. These are considered of Medium – Regional sensitivity for the purpose of assessment.

5.6.25 There are two main ways by which habitats and vegetation may be affected by habitat loss as a result of the construction phase of the Proposed Development:

- direct loss – the loss of habitats and vegetation under the footprint of the Proposed Development; and
- indirect loss – calculated for Annex 1 and/or Section 7 habitats which are located within 10 m of direct habitat loss areas, to account for potential changes in habitat vegetation structure due to drying effects as a result of construction works.

5.6.26 For the purposes of assessment, a precautionary approach has been taken which assumes that direct habitat loss and indirect loss of Annex 1 and Section 7 habitats represents a permanent, irreversible adverse effect. In practice, some areas indirectly affected may be able to be restored i.e., during habitat reinstatement following construction in accordance with good practice measures and embedded mitigation. Consideration is also given to those habitats temporarily affected, although it is considered that these will be reinstated.

5.6.27 Annex 1 and/or Section 7 habitats recorded onsite during the field surveys were:

- B5 Marshy grassland/ M23a *Juncus effusus/acutiflorus - Galium palustre* rush pasture (Section 7 habitat)

- D1.1 Dry dwarf shrub heath – acid/H8 *Calluna vulgaris - Ulex gallii* heath and H12 *Calluna vulgaris-Vaccinium myrtillus* heath (Annex 1 and Section 7 habitat)
- D2 Wet dwarf shrub heath/M15d *Trichophorum cespitosum - Erica tetralix* wet heath
- D2 Wet dwarf shrub heath/M19 Calluna vulgaris - Eriophorum vaginatum mire (degraded blanket bog) (Section 7 habitat)
- E1.6.1 Blanket bog/ M19 *Calluna vulgaris - Eriophorum vaginatum* blanket mire (Annex 1 and Section 7 habitat)
- E2.1 Flush and spring – acid/M6 *Carex echinata - Sphagnum fallax* flush (Section 7 habitat)
- G1 Standing water (Section 7 habitat) and
- J2 Boundaries – native hedgerows (Section 7 habitat).

5.6.28 **Table 5.17** details the estimated direct and indirect permanent habitat losses as a result of the construction of the Proposed Development on Annex 1 and/or Section 7 habitats.

5.6.29 Some areas of the Site comprise a mix of habitats which are too complex to separate into defined habitat types, however, the majority of these mosaics do not fall within the land-take of the Proposed Development and are therefore considered to be unaffected.

5.6.30 Temporary loss relates to temporary vegetation clearance to accommodate the construction compound, laydown areas, cut and infill areas and material storage areas (if required) over habitats which will be reinstated back to those respective habitats after the construction phase. These areas are shown in **ES Volume IV, Figure 2.19: Construction Layout**. The permanent habitat loss relates to all other infrastructure associated with the Proposed Development. As a precaution, borrow pits are included as permanent land-take.

5.6.31 Total temporary direct land-take for the Proposed Development will be approximately 35.23 ha, mostly comprising of semi-improved acid grassland (U5). There are some modest areas of notable habitat to be temporarily 'lost' and then reinstated, comprising the construction compound laydown areas, cut and infill areas and material storage areas (if required). These comprise of 0.12 ha of B5 marshy grassland, 0.60 ha of D1.1 dry dwarf shrub heath, 2.66 ha of E2.1 flush and spring (acid) and 2.07 ha of E1.6.1 bog. These areas total 5.45 ha. Given, these areas will be only temporarily 'lost' and will be reinstated, and in relation to material storage areas may not be required, these are not considered in **Table 5.17**, or further in the assessment.

5.6.32 Total permanent direct land-take for the Proposed Development will be up to 17.38 ha of which 1.50 ha are notable habitats accounted for in **Table 5.17**. For notable habitat, 1.50 ha is only 0.92 % of the notable habitat present onsite. A total of 14.46 ha of semi-improved acid grassland will be directly lost (83.2 % of all habitats to be lost as a result of the Proposed Development).

5.6.33 Through the design evolution of the Proposed Development, those areas of deeper peat (>30 cm) have been avoided where possible, and thus the Proposed Development has been sensitive to any habitats which could be considered as 'irreplaceable habitats' in accordance with PPW. See **ES Volume II, Chapter 7: Land, Soils and Water** with regards to avoidance of peat.

5.6.34 Potential indirect losses of protected and notable habitats within 10 m of the Proposed Development are of a lesser extent as compared to direct losses (**Table 5.17**) and are less certain to take place.

5.6.35 Note, the extent of micro-siting allowance to be included (50 m) is not considered to notably alter the extent of habitat losses of protected and notable habitats as a result of the Proposed Development, The habitat losses presented in **Table 5.17** are thus considered well-founded and robust for the purpose of assessment.

Table 5.17 Summary of Habitat Losses on Scoped in Habitats

Habitat Type Category	Relevant NVC code	Annex 1/ S7 Habitat	Total Area Within Site (ha)[3]	Habitat Losses (ha)			Relative Coverage Lost (%)
				Direct	Indirect (out to 10 m)	Total (Direct plus indirect out to 10 m)	
Marshy grassland (B5)	M23a/M23b	S7 - Upland flushes, fens and swamps (M23a)	7.10	0.11	0.22	0.33	1.55 (direct) 3.10 (indirect) 4.65 (total)
Flush and spring (E2.1)	M6c	S7 - Upland flushes, fens and swamps	122.46	1.14	2.37	3.51	0.93 (direct) 1.95 (indirect) 2.86 (total)
Dry heath (D1.1)	H8e	Annex 1 – European dry heaths; S7 – Upland heathland	33.75	0.25	0.00	0.25	0.74 (direct) 0.00 (indirect) 0.74 (total)

[3] Note, this does not include mosaics containing the listed habitat type given none of these mosaics are to be directly or indirectly impacted (so the calculated habitat losses are considered a worst-case scenario).

Operational

5.6.36 Operational effects are defined as effects occurring during the operation of the Proposed Development. Operational effects generally relate to disturbance of adjacent habitats or species, on either a temporary or permanent basis. Some effects may reduce with habituation or remain for the lifetime of the Proposed Development.

5.6.37 During the operational phase, with the application of good practice measures relating to wind farm operation and maintenance activities, it is considered that potential adverse impacts are restricted to the risk of collision mortality for bats (namely, common and soprano pipistrelle bats and noctules). Direct adverse effects on other sensitive ecological features (such as habitat loss and disturbance) are not anticipated to occur during the operational period.

River Dee and Bala Lake SAC and River Dee SSSI

5.6.38 Operational activities, including maintenance, are likely to result in irregular/occasional vehicular movements during the operational phase of the Proposed Development; however, this would be constrained to the access tracks and infrastructure meaning that very little disturbance will occur as a result. Therefore, no adverse effects to the River Dee and Bala Lake SAC and River Dee SSSI, either directly or indirectly (e.g. via disturbance of watercourses) are anticipated and such effects at the operational phase are discounted.

Bats (foraging/commuting)

5.6.39 Foraging/commuting bats are considered of Medium – Regional sensitivity for the purpose of assessment.

5.6.40 Operational turbines can affect bats in a number of ways, although the main concerns to species populations relates to collision mortality, barotrauma (i.e. injury caused by a change in air pressure) and other injuries resulting from collision with, or flying in very close proximity to moving turbines (NatureScot, 2021).

5.6.41 The risk of operational mortality to bats is generally acknowledged to be lowest at locations with low bat activity. Additionally, the availability of suitable foraging habitats within 1.5 km of proposed turbine locations, such as watercourses, waterbodies and woodland, is suggested to have a protective effect on bat species, with bats more likely to use these high value foraging habitats (and other suitable linear features) than be attracted to the turbines (Mathews *et al*., 2016).

5.6.42 The assessment of potential effects upon bats resulting from the operation of the Proposed Development's turbines has been based on the two-stage methodology set out in NatureScot guidance (2021). Full details are presented in **Appendix 5.3**.

5.6.43 In accordance with NatureScot guidance (2021) a Stage 1 'Initial Site Risk Assessment' of the potential risk level of the Proposed Development has been undertaken based on a consideration of the Site's habitats and development-related features. This concludes that the Site is assessed as having an overall 'Site Risk' of 2, which represents a Low Site Risk.

5.6.44 Stage 2 ‘Overall Risk Assessment’ of the two-stage process detailed within NatureScot guidance (2021) has then subsequently been completed to provide an overall assessment of risk to bat species, by considering the conclusions of Stage 1 in relation to relative levels of bat activity tool and considering the vulnerability of species recorded, at the population level.

5.6.45 In accordance with NatureScot guidance (2021), Stage 2 has been carried out separately for all high collision risk (HCR) species recorded during baseline bat activity surveys, and which includes the following species:

- soprano pipistrelle
- common pipistrelle, and
- noctule bats.

5.6.46 The calculated Stage 2 ‘Overall Risk Assessment’ per species, both temporally and spatially is presented in **Appendix 5.3**.

5.6.47 The Stage 2 overall risk assessment concludes that there is a Low likelihood of the Proposed Development resulting in significant impact on bat species populations.

5.6.48 No potential roost sites for bats were recorded within 290 m of the Proposed Development’s turbines although a number of features (mainly mature trees) with bat roost potential were recorded within the wider Site including on land close to the access track.

5.6.49 NatureScot guidance (2021) advises that to reduce potential impacts upon bats resulting from operational wind turbine development, a 50 m 'stand-off' distance should be maintained around bat habitat features, into which no part of the turbine intrudes. The guidance provides a formula for calculating this 'stand-off' distance.

5.6.50 The layout of the Proposed Development has adopted a minimum a 50 m 'stand-off' (from blade tip) distance between all proposed turbine locations and bat habitat features (including woodland, watercourses and waterbodies) to reduce potential impacts on bats in accordance with NatureScot guidance (2021).

5.6.51 Based on activity levels recorded and subsequent analysis as outlined, potential mortality or injury levels for bat species are considered to be low. The Proposed Development is not considered to represent a site of concern for bat collision risk following the approach set out in the bats and wind farm guidance (NatureScot, 2021). It is, however, acknowledged that low risk sites can still result in bat casualties, but for which embedded ‘stand-off’ distances from habitat features in accordance with NatureScot guidance (2021) is considered adequate mitigation to avoid potentially significant operational mortality risks to bat populations at most low-risk locations.

5.6.52 A 50 m buffer between the blade tip and bat habitat features (including watercourses and waterbodies) will ensure appropriate mitigation requirements for all bat species in accordance with NatureScot guidance (2021) are implemented as part of the Proposed Development.

5.6.53 Given the overall low suitability of the habitats which would be lost as a result of the Proposed Development, and the presence of woodland, watercourses and open water in the wider area which offer higher suitability habitat, loss and damage to bat foraging or commuting habitat as a result of the Proposed Development is considered to be inconsequential at a population level.

Decommissioning

5.6.54 The future of the ecological assemblage onsite at the time of decommissioning (40 years) is unknown and cannot be reasonably assumed with any certainty. Despite this element of uncertainty, a high-level assessment of the effects is made here.

5.6.55 In the absence of mitigation, decommissioning effects may result in the destruction of habitat and disturbance and displacement of the IEFs identified as being taken forward for assessment and thus considered in further assessment in **Section 5.8**. An explanation of and rationale for the IEFs scoped in and out of the assessment is provided in **Table 5.3** and **Table 5.4.** Further habitats may also need to be included at the decommissioning stage, should the Proposed Development footprint be extended during the decommissioning phase.

5.6.56 Potential decommissioning phase impacts on ecological features associated with the Proposed Development are considered to relate to:

- direct and indirect land-take (habitat loss) to accommodate the area included in the decommissioning phase and any extension to it;
- temporary disturbance and land-take for laydown areas, cut and infill areas construction compounds and storage areas (if required);
- disturbance to, fragmentation or severance of connecting habitat or potential bat commuting routes within, and adjacent to, the Proposed Development; and
- disturbance and pollution (indirect effects such as noise and vibration, dust, pollution from surface water run-off) resulting from site works, plant and vehicles movements, and site workers' activities.

5.6.57 As with construction, embedded mitigation would be implemented during decommissioning in accordance with applicable best practice measures and to ensure compliance with legal obligations. Following the implementation of embedded mitigation measures, such as those outlined in **Section 5.5** and presented in a DEMP, which would be implemented at the time of decommissioning. In this context, it is unlikely that significant effects upon important ecological features would occur during the decommissioning phase.

River Dee and Bala Lake SAC

5.6.58 The SAC is designated for fish species (including Atlantic salmon, bullhead and lamprey species), otter, floating water-plantain and for being a watercourse of plain to montane levels with *Callitricho-Batrachion* vegetation. It is considered of High – International sensitivity for the purpose of assessment.

5.6.59 In the absence of mitigation, decommissioning effects may result in the disturbance and displacement of the qualifying features of this designated site**.** The impacts of decommissioning will require a reassessment in the context of the status of the SAC and the Site in 40 years. However, with adoption of embedded mitigation (see **Section 5.5**) and the implementation of a DEMP, it is considered that potential effects on the River Dee and Bala Lake SAC can be avoided.

River Dee SSSI

5.6.60 The SSSI is designated for fish species (including Atlantic salmon, bullhead, grayling, and lamprey species), freshwater pearl mussel, otter, and for comprising rivers with floating vegetation often dominated by water crowfoot. It is considered of High – National sensitivity for the purpose of assessment.

5.6.61 In the absence of mitigation, decommissioning effects may result in the disturbance and displacement of the qualifying features of this designated site**.** The impacts of decommissioning will require a reassessment in the context of the status of the SSSI and the Site in 40 years. However, with the adoption of embedded mitigation (see **Section 5.5**) and the implementation of a DEMP, it is considered that potential effects on the River Dee SSSI can be avoided.

5.6.62 With the implementation of embedded mitigation, it is considered that potential effects on the River Dee SSSI can be avoided.

Llandderfel Candidate Local Wildlife Site (cLWS)

5.6.63 The Llandderfel cLWS lies partially within the Site and is 995.8 ha in extent and has acid grassland, dwarf shrub heath and bracken as habitats. It is considered of Low – Local sensitivity for the purpose of assessment.

5.6.64 This cLWS may be formalised to LWS status or alter in condition during the 40 year project duration. However, irrespective of change, in the absence of mitigation, decommissioning effects may result in the disturbance and displacement of the species and habitats within this Site**.** The impacts of decommissioning will require a reassessment in the context of the status of the cLWS and the Site as a whole in 40 years. However, with the adoption of embedded mitigation (see **Section 5.5**) and the implementation of a DEMP, it is considered that potential effects on the Llandderfel cLWS can be avoided.

Notable Habitats

5.6.65 Notable habitats are Annex 1 and/or Section 7 habitats. These are considered of Medium – Regional sensitivity for the purpose of assessment.

5.6.66 In the absence of mitigation, decommissioning effects may result in the direct and in-direct destruction of habitat identified as being taken forward for assessment in **Table 5.4** and thus considered in further assessment in **Section 5.6**. Further habitats may also need to be included, should the Proposed Development footprint be extended during the decommissioning phase. The impacts of decommissioning will require a reassessment in the context of the types, extent and status of the habitats within the Proposed Development (and any area required within the footprint of decommissioning) in 40 years. However, with the implementation of embedded mitigation, additional mitigation, habitat reinstatement and any enhancement possible, it is considered that potential effects on habitats within the Site can be avoided during decommissioning.

5.7 Additional Mitigation Measures

5.7.1 The Proposed Development is predicted to have up to minor impacts on the IEFs assessed, and therefore no significant adverse effects are predicted at the construction, operational and decommissioning phases. Therefore, no additional mitigation measures are required. However, it is considered good practice to include mitigation measures to reduce impacts even where significant effects are not predicted. For the Proposed Development some mitigation measures are proposed (these are additional to the embedded mitigation detailed in **Section 5.5**).

5.7.2 As stated in **Section 5.5**, the CEMP and DEMP (and role of the ECoW) will be implemented, and this is considered an additional mitigation measure. Further details are provided below.

5.7.3 Although no significant effects on foraging/commuting bats are predicted, good practice measures will be adopted to reduce unnecessary risk to foraging and commuting bats. During the operational phase of the Proposed Development, additional mitigation in the form of pitching the blades out of the wind ("*feathering*") to reduce rotation speeds below two revolutions per minute (rpm) while idling, as detailed in NatureScot guidance (2021) would be implemented. The reduction in speed resulting from feathering compared with normal idling can reduce bat fatality rates by up to 50 % (NatureScot guidance, 2021). Feathering would therefore be implemented using automated Supervisory Control and Data Acquisition (SCADA) data for the lifetime of the Proposed Development.

Construction Environmental Management Plan

5.7.4 An Outline Construction Environmental Management Plan (OCEMP) is provided in **Appendix 2.1**. The CEMP would include all good practice construction measures, dust suppression and prevention measures, sediment management and sensitive techniques with regards to construction in/near watercourses pollution prevention controls and monitoring to be implemented over the course of the Proposed Development in line with current industry statutory guidance and as detailed within **ES Volume II**, **Chapter 2: Description of the Proposed Development.**

5.7.5 h). Where construction (or decommissioning works) are required to take place outside of normal working hours, for example concrete pouring of turbine bases which must be continuous, measures will be put in place to manage temporary lighting. Where it is used during the construction phase through the CEMP it will be informed by current guidance provided within Bats and Lighting in the UK: Bats and the Built Environment Series (BCT, 2018). Such measures will control light spill beyond working areas, and these along with the planned working hours, will suitably control lighting impacts. The CEMP will include details regarding temporary lighting management during the construction phase. The requirement for lighting during the operational phase is anticipated to be very minor and impacts on wildlife using the area to be inconsequential as a result.

5.7.6 Safe methods for onsite concrete batching and vehicle washing will be included in the CEMP, to consider both airborne and waterborne paths of impact.

5.7.7 Pollution management best practices for re-fuelling, bunding and storing fuel, oil or hazardous substances, careful storage of chemical, fuel and oil, as well as spillage incident protocols, will be included in the CEMP. Re-fuelling will only take place at a distance of more than 50 m from watercourses. Appropriate bunding will also be used around re-fuelling and chemical storage areas, preventing any fuel or chemical leaks from contaminating the capping layer stone or being washed into the receiving water environment. The protocols to be adopted in the event of a fuel spillage or similar incident within the compound area will be contained in the CEMP and will include the requirement for all onsite vehicles to carry spill kits.

5.7.8 Good practice measures to protect retained habitats during the construction works will also be implemented, including the sensitive demarcation of working areas, to be overseen by an Ecological Clerk of Work (ECoW).

5.7.9 The CEMP will include a Species Protection Plan (SPP) and Habitat Protection Plan (HPP) detailing good practice measures for construction works respectively with regards to the protection of protected species (such as terrestrial mammals and reptiles) and notable (Annex 1 and/or Section 7) habitats. The SPP will details measures to protect species during construction works, and include contemporary information gathered from pre-construction surveys (for terrestrial mammals) that would be carried out. The HPP will detail measures required to manage construction works within t notable/sensitive habitats and include habitat reinstatement measures.

5.7.10 To minimise damage or alteration in pH from leaching of cement or other alkaline building materials into sensitive wet acidic habitats (blanket bog, valley mire and acid grassland), where groundwater is encountered in the excavation for the turbine bases, the excavation will be lined with an impermeable membrane to prevent seepage of cementitious material into the sub-soil.

5.7.11 Good practice pollution prevention measures during works are discussed further in **Appendix 2.1**. Measures to prevent hydrological impacts are set out, which will prevent impacts such as contamination to the rivers and streams within the Site and access track as well as downstream rivers and designated sites to which they connect. This plan would include details of the inspections, audits and the protocol for incident reporting and response. Those would ensure that any unforeseen reduction in quality and condition of watercourses draining the Site are identified, including watercourses which tribute into designated sites in the wider area; the River Dee and Bala Lake SAC and River Dee SSSI.

5.7.12 Good practice measures to prevent harm to faunal species will also include SPPs (see Pre-construction Surveys, below) and the careful storage of potentially dangerous substances or materials within construction compounds. Excavations will either be temporarily covered outside working hours or, if excavations are left open, boards will be positioned so that any animal can escape. Onsite speed limits will also be adhered to.

5.7.13 Good practice habitat reinstatement measures will also be adopted and implemented in areas subject to disturbance during construction works, as soon as it is practical to do so. Further details of habitat reinstatement measures to be implemented will be provided within the CEMP, and details on habitat enhancement measures are provided within the Outline Habitat Management Plan **Appendix 5.4**.

Ecological Clerk of Works (ECoW)

5.7.14 A suitably qualified ECoW will be employed for the duration of the construction and reinstatement periods, to ensure ecological interests are safeguarded, although this may not necessarily be a full-time role throughout. The role of the ECoW related to ecological work will include the following tasks:

- provide briefings and information to all staff onsite, so staff are aware of the ecological sensitivities within the Site and access track and the legal implications of not complying with agreed working practices;
- agree and monitor measures designed to minimise damage to retained habitats;
- undertake pre-construction surveys and advise on ecological issues and working restrictions where required;
- complete site-supervision works as required, in relation to sensitive habitats and protected species;
- report to the Gwynedd Council any material breaches of the CEMP (if encountered); and
- oversee restoration of working areas following construction.

5.8 Assessment of Residual Effects (with Additional Mitigation)

5.8.1 As stated in **Section 5.6** no potential significant effects are anticipated, with the implementation of embedded mitigation (including measures to ensure works proceed in a legally compliant manner), and as such there is no requirement for additional mitigation. However, it is considered good practice to include precautionary mitigation even where no significant effects are predicted, and these as well as the CEMP (and associated works assigned under the CEMP) as summarised in **Section 5.7**, are to be implemented.

5.8.2 The residual effects with the precautionary mitigation and the CEMP implemented are provided below and are summarised in **Table 5.18.**

Construction

River Dee and Bala Lake SAC

5.8.3 Construction impacts on the River Dee and Bala Lake SAC (and its qualifying features) are considered to be of short-term and of **negligible** magnitude. The effects would be **not significant**.

River Dee SSSI

5.8.4 Construction impacts on the River Dee SSSI (and its qualifying features) are considered to be of short-term in duration and of **negligible** magnitude. The effects would be **not significant**.

Llandderfel Candidate Local Wildlife Site (cLWS)

5.8.5 The impacts of habitat loss (direct and indirect) during the construction phase on the Llandderfel cLWS is considered to be long-term, **low** magnitude, resulting in a **minor/negligible** adverse effect which is considered **not significant**.

Notable Habitats

5.8.6 The permanent direct and indirect loss of notable habitats (marshy grassland, flush and spring and dry heath) is considered to be long-term, **low** magnitude, resulting in **minor/negligible** adverse effect, which is considered **not significant**.

Operational

Bats (foraging/commuting)

5.8.7 Impacts of bat collision risk mortality and barotrauma are considered to be long-term and **low** magnitude, **minor/negligible.** The effect would be **not significant**.

5.8.8 Impacts on the loss of foraging and/or commuting habitat is long-term and **negligible** magnitude, **negligible adverse.** The effect would be **not significant**.

Decommissioning

River Dee and Bala Lake SAC

5.8.9 Decommissioning impacts on the River Dee and Bala Lake SAC (and its qualifying features) are considered to be of short-term and of **negligible** magnitude. The effects would be **not significant**.

River Dee SSSI

5.8.10 Decommissioning impacts on the River Dee SSSI (and its qualifying features) are considered to be of short-term in duration and of **negligible** magnitude. The effects would be **not significant**.

Llandderfel Candidate Local Wildlife Site (cLWS)

5.8.11 The impacts of habitat loss (direct and indirect) during the decommissioning phase on the Llandderfel cLWS is considered to be short-term, **low** magnitude, resulting in a **minor/negligible** adverse effect which is considered **not significant**.

Notable Habitats

5.8.12 The direct and indirect loss of notable habitats (those present within the Site in 40 years' time) is considered to be short-term, **low** magnitude, resulting in **minor/negligible** adverse effect, which is considered **not significant**.

Table 5.18 Assessment of Likely Effects (With Additional Mitigation)

Paragraph number	Receptor/ receptor groups	Description of impact	Magnitude of Impact	Additional Mitigation Proposed	Description of likely effect	Monitoring
Table key: ST/MT/LT = Short Term, Medium Term or Long Term, N/A = Not Applicable						
Construction						
5.18.1	River Dee and Bala Lake SAC and River Dee SSSI and Afon Dyfrdwy (River Dee) SSSI	Habitat Loss/ Displacement & Disturbance to SAC/ SSSI qualifying species	Negligible	CEMP, including pollution prevention measures and adoption of ECoW. CEMP would be secured through a Condition.	**Negligible (not significant)** ST (displacement & disturbance) & LT (habitat loss)	Water quality monitoring as part of the CEMP.
5.18.2	Candidate Local Wildlife Site: Llandderfel Wildlife site - candidate	Habitat Loss/ Displacement & Disturbance to designated site	Low	CEMP, including pollution prevention measures and adoption of ECoW. CEMP would be secured through a Condition.	**Minor/Negligible (not significant)** ST (displacement & disturbance) & LT (habitat loss)	N/A

Paragraph number	Receptor/ receptor groups	Description of impact	Magnitude of Impact	Additional Mitigation Proposed	Description of likely effect	Monitoring
Table key: ST/MT/LT = Short Term, Medium Term or Long Term, N/A = Not Applicable						
5.18.3	Notable habitats (Annex 1 and Section 7)	Direct and Indirect Habitat Loss/ Disturbance of notable habitats	Low	CEMP, including pollution prevention measures and adoption of ECoW. CEMP would be secured through a Condition.	**Minor/Negligible (not significant)** ST (displacement & disturbance) & LT (habitat loss)	N/A
Operation						
5.18.4	Foraging/commuting bats	Bat collision risk mortality	Low	Feathering of turbines, implemented with the SCADA system. To be secured through a Condition.	**Minor/Negligible (not significant)** LT	N/A
		Habitat, loss and damage to bat foraging or commuting habitat	Negligible	N/A	**Negligible (not significant)** LT	N/A

Paragraph number	Receptor/ receptor groups	Description of impact	Magnitude of Impact	Additional Mitigation Proposed	Description of likely effect	Monitoring
Table key: ST/MT/LT = Short Term, Medium Term or Long Term, N/A = Not Applicable						
Decommissioning						
5.18.5	River Dee and Bala Lake SAC and River Dee SSSI and Afon Dyfrdwy (River Dee) SSSI	Habitat Loss/ Displacement & Disturbance to SAC/ SSSI qualifying species	Negligible	DEMP, including pollution prevention measures and adoption of ECoW. DEMP would be secured through a Condition.	**Negligible (not significant)** ST (displacement & disturbance) & ST (habitat loss)	Reassessment of the status and condition of the receptor and the Site nearer the time of decommissioning. Water quality monitoring as part of the DEMP.
5.18.6	Candidate Local Wildlife Site: Llandderfel Wildlife site - candidate	Habitat Loss/ Displacement & Disturbance to designated site	Low	DEMP, including pollution prevention measures and adoption of ECoW. DEMP would be secured through a Condition.	**Minor/Negligible (not significant)** ST (displacement & disturbance) & ST (habitat loss)	Reassessment of the status and condition of the receptor and the Site nearer the time of decommissioning.
5.18.7	Notable habitats (Annex 1 and Section 7)	Direct and Indirect Habitat Loss/	Low	DEMP, including pollution prevention	**Minor/Negligible (not significant)**	Reassessment of the status and condition of the

Paragraph number	Receptor/ receptor groups	Description of impact	Magnitude of Impact	Additional Mitigation Proposed	Description of likely effect	Monitoring
Table key: ST/MT/LT = Short Term, Medium Term or Long Term, N/A = Not Applicable						
		Disturbance of notable habitats		measures and adoption of ECoW. DEMP would be secured through a Condition.	ST (displacement & disturbance) & ST (habitat loss)	habitats within the Site nearer the time of decommissioning.

5.9 Opportunities for Environmental Enhancement

5.9.1 Suitable principles for biodiversity enhancement to be delivered as part of the Proposed Development are provided within the oHMP (**Appendix 5.4**) and are underpinned by Section 6 of PPW.

5.9.2 This policy '*states that the planning system must ensure development results in a net benefit for biodiversity and ecosystem resilience to enhance well-being'*. PPW defines a net benefit as development leaving "*biodiversity and the resilience of ecosystems in a significantly better state than before, through securing immediate and long term, measurable and demonstrable benefit, primarily on or immediately adjacent to the site.*"

5.9.3 Enhancement measures currently proposed to be adopted are moorland and heathland enhancement, with areas of modified and degraded peatland the focal areas for enhancement, which will benefit the habitats themselves as well as the wildlife which use them. Ditch-blocking is proposed to re-wet areas of degraded peatland. Restoring heathland through planting heather in targeted areas to extend heathland habitat and seeding wet areas with plant species including devil's-bit scabious would benefit species like marsh fritillary. Riparian planting with native trees and scrub to improve habitat connectivity and networks through the Site and provide shade for the benefit of aquatic wildlife. Riparian planting may also be used by wildlife including mammals (such as otter and water vole), birds and reptiles, and used as foraging/commuting routes for bats. Other measures currently proposed to be adopted are hedgerow and tree planting in the west of the Site to improve habitat connectivity, and deployment of a floating island on Llyn Maen Bras to provide shelter and refuge for wildlife (including breeding gulls and waterfowl, and in relation to below the water's surface aquatic wildlife, such as invertebrates). An invasive species management protocol will also form part of the OHMP to control species such rhododendron onsite.

5.9.4 An OHMP is provided as **Appendix 5.4** which a Habitat Management Plan (HMP), secured by condition, will align with, for the Proposed Development.

5.10 Abnormal Indivisible Loads Route

5.10.1 There are expected to be minor works around highways junctions associated with the 'Abnormal Indivisible Load Route' (AILR) (see **ES Volume II Chapter 2 Section 6**), rom the Port of Liverpool through to the access route junction of the Site and is required to facilitate transport of the large turbine components. The AILR has been reviewed for environmental constraints (see **ES Volume II Chapter 4 Section 3**). Where environmental constraints were identified in relation to terrestrial ecology, these are further considered here.

5.10.2 As part of the AILR constraints screening, potential impacts to sensitive IEFs have been identified. The AILR would be used in the construction phase therefore effects are confined to during the construction phase. This assessment is high-level given it would be subject to a separate application, and any works required are not known at this stage. For the separate application for the AILR further existing baseline information from local biological records centres, which would provide relevant ecological records and locations of non-statutory designated sites, would be gathered, to assist in fully assessing impacts on sensitive IEFs.

Assessment of Effects

5.10.3 The AILR would require some limited, localised road realignment and the resulting loss of marginal roadside verge with some scrub/tree pruning and potential removal required.

5.10.4 The limited, localised habitat to be affected which adjoins major road network has negligible value for protected species.

5.10.5 There may be some pruning and potential limited localised tree removal of some vegetation on the edge of areas identified as 'ancient woodland'. Any such areas of ancient woodland that would be affected by the works would be subject to targeted habitat surveys (and condition assessment). Based on a high-level appraisal of the AILR (and subject to onsite surveys when specific works are confirmed) effects on ancient woodland are predicted to be inconsequential.

5.10.6 Given the location of the AILR in relation to statutory designated sites with ecological interest, and limited, localised nature of the works, no effects on such sites are anticipated.

Mitigation

5.10.7 The route largely follows the existing major road network, and where it does deviate from the road network passes within localised areas of amenity grassland (including in the centre of road roundabouts) and clipping edges of shelterbelt plantation woodland. It has however, not been possible to entirely avoid areas of vegetation clearance.

5.10.8 For any subsequent application, good practice construction measures implemented as part of a CEMP would include for pre-construction checks for protected species prior to the commencement of works and habitat clearance and which will enable legislative compliance with regards to the protection of protected species. Should any evidence of protected species be found, work exclusion buffers around sensitive areas would be implemented where necessary in accordance with best available species guidance applicable at the time and/ or as agreed in consultation with NRW via a SPP.

5.10.9 A suitably qualified ECoW would be employed for the duration of the construction and reinstatement periods, to oversee environmental protection measures and working practices specified in a CEMP and prevent breaches of legislation pertaining to protected species. Good practice measures to protect retained habitats during the construction works would be implemented including the sensitive demarcation of working areas, to be overseen by an ECoW.

5.10.10 If hedgerow sections are required to be impacted for turbine delivery access, including oversailing of turbine structures, hedgerows will be coppiced and allowed to reinstate post construction. If any hedgerow sections are required to be removed to facilitate the AILR, hedgerow planting would be implemented and realigned to run parallel with the AILR.

5.10.11 Areas of land affected by the installation and use of the AILR will be reinstated.

Statement of Significance

5.10.12 Based on this high-level appraisal of the AILR, the installation and use of the AILR during the construction phase would result in a short-term, **negligible** magnitude of impact, on sensitive IEFs, and a **negligible (not significant)** effect is concluded.

5.10.13 Furthermore, no significant cumulative impacts as a result of the AILR are anticipated combined with the Proposed Development or other major schemes, given the limited and localised nature of the works for the AILR, on unremarkable ecological habitats.

5.11 Inter-project Cumulative Effects

5.11.1 An assessment of potential impacts on IEFs as a result of the Proposed Development on its own is presented above **Section 5.6** and **Section 5.8**). This section presents a Cumulative Impact Assessment (CIA), in which other relevant development projects are also considered. The CIA has been undertaken in reference to the four stage process set out in NSIP: Advice on Cumulative Effects Assessment (formerly PINS advice note 17).

5.11.2 Impacts which are predicted to result in an effect of more than negligible scale are now considered in this CIA and as such impacts on the following IEFs are considered:

- Loss of notable habitats and Llandderfel CLWS – construction phase, and
- Collision risk for (foraging/commuting) bats – operational phase.

5.11.3 Potential impacts in this CIA on the Llandderfel cLWS are precluded and not included in this section, given the other developments are spatially distant from the cLWS and no potential pathways of impact from other developments are identified. The cLWS is partially within the Site so the greatest impact (albeit of minor/negligible magnitude and not significant) is considered to be from the Site itself.

Screening Cumulative Developments within the Zone of Influence

5.11.4 The inter-project CIA has been undertaken in accordance with Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment, as detailed in **ES Volume II, Chapter 4: Approach to the EIA**.

5.11.5 **Table 5.19** sets out the other committed developments located within 10 km of the Site. In the absence of Welsh-specific guidance, this Zone of Influence (ZoI) has been determined as appropriate for this cumulative assessment based on professional judgement. This ZoI has been agreed through scoping with NRW (**Table 5.1**).

5.11.6 **Table 5.19** also sets out the findings of a screening assessment undertaken to identify those schemes which have the potential to result in significant effects with the Proposed Development. For completeness all identified major developments within 10 km are given due regard.

Table 5.19 Inter-project Cumulative Effects: Screening

ID	Committed development	Scheme description	Potential for cumulative effects?
C21	C20/0963/04/YA Rhiwlas Home Farm	RWK Price - Engineering operation to form 3 wetlands. Located 2.45 km from the Site.	No. The development is engineering works to create wetland habitat, which will benefit protected and notable species and habitats, rather than lead to any adverse cumulative effect. No cumulative effects are anticipated.
C18	DNS CAS-02646-S1G1Q8 Moel Chwa Energy Park	Moel Chwa Energy Park Ltd - energy park - 12 turbines, 200 m in height. Located 4.30 km from the Site.	**Yes.** There are potential cumulative effects on notable habitats and foraging/commuting bats based on the review of the scoping report for the project.
C19	DNS/3276735 Gaerwen Wind Farm	RWE Renewables UK Ltd - wind farm - Approximately 9 km north east of Bala with the Site entrance directly off the A494 near Glan yr Afon. Located 5.09 km from the Site.	**Yes.** There are potential cumulative effects on notable habitats and foraging/commuting bats.
C2	07/2022/0824 Tyfos, Pen Y Geulan Solar Array	Tyfos Ltd - Installation for the erection of a 609.12kw ground mounted solar array and all associated works. Located 7.84 km from the Site.	**Yes**. There are potential cumulative effects on notable habitats and foraging/commuting bats.
C23	0/52115 Proposed new slurry lagoon	Maes Tyddyn Maes Tyddyn Llanfihangel Glyn Myfyr LL21 9UF. Located 10 km from the Site.	No. The development is considered localised with a limited footprint/land-take (with no adverse impact on foraging/commuting bats considered likely) and is also on the extreme periphery of the search area in Conwy.

ID	Committed development	Scheme description	Potential for cumulative effects?
C10	DNS/3214855 Alwen Forest	RWE Renewables UK Ltd - 9 turbines, 200 m height to blade tip. Alwen Forest, 5 km north of Cerrigydrudion. Located 10.08 km from the Site[4].	**Yes**. There are potential cumulative effects on notable habitats and foraging/commuting bats.

Assessment

5.11.7 Relevant information during the construction and operational phases from other committed developments determined to have the potential to result in likely significant cumulative effects with the Proposed Development, is provided in **Table 5.20**.

Table 5.20 Inter-project Cumulative Effects: Assessment

ID	Committed development	Description of committed development effects (in isolation)
C18	DNS CAS-02646-S1G1Q8 Moel Chwa Energy Park	Only limited conclusions can be drawn on the cumulative effects of the Proposed Development and this project as the development is at the scoping stage only. However, the scoping report indicates that a number of notable habitats were recorded at the site during NVC surveys in 2022 as well as the confirmed presence of five bat species from activity surveys in 2022. Bat activity levels were considered to be low across the survey season, however. No assessment of effects was made within the scoping report.
C20	DNS/3276735 Gaerwen Wind Farm	This development reports the following: Construction phase: • Habitat subject to loss or disturbance includes 11.04 ha through permanent loss (of which 0.12 ha is a notable habitat) and 16.19 ha through temporary loss (of which 0.23 ha is a notable habitat, 0.01 ha of which is also an Annex 1 habitat). This was concluded to be a **significant negative/adverse** effect at the County level. However, with the implementation of ecological enhancement as a result of the HMP a **significant positive** effect at the County level is predicted.

[4] Considered as a precaution given it lies just outside the 10 km ZoI.

ID	Committed development	Description of committed development effects (in isolation)
		Operational phase: A **significant negative/adverse** effect at up to the County level for soprano pipistrelle, common pipistrelle or noctule.
C2	07/2022/0824 Tyfos, Pen Y Geulan Solar Array	Only limited publicly available information but the development is located on species-poor semi-improved grassland with no predicted impacts on notable habitats. No predicted adverse impacts on bats either in terms of roost sites or flight activity given the development will be located on species-poor semi-improved grassland.
C10	DNS/3214855 Alwen Forest	This development reports the following: Construction phase: • Notable habitat subject to direct loss comprises 1.599 ha (and up to 8.85 ha to be temporarily lost but reinstated). This was concluded to be no more than a **significant adverse** effect at the Site level. The vast majority of the habitat loss for the development would be the loss of (non-native) conifer plantation (*c*. 48.1 ha to be felled). Operational phase: • A **significant adverse** effect at the Local level for noctule (but concluded as **significant adverse** effect at the Site level with additional mitigation implemented), in terms of collision mortality, and at the Site level for common and soprano pipistrelles, in terms of collision mortality.

Habitat loss

5.11.8 The Proposed Development and the other developments listed in **Table 5.19** would result in a direct loss of 3.219 ha notable habitat, of which 1.5 ha is lost as a result of the Proposed Development, and comprises marshy grassland, flush and spring and dry heath. Indirect loss is considered less likely to take place, with at least most of the habitat likely to be reinstated.

5.11.9 In the worst-case scenario cumulative indirect losses of notable habitat would total *c*. 11.67 ha. For the Alwen Forest development, the dominant habitat to be impacted (directly and indirectly) is conifer plantation, with only modest losses of notable habitat (noted as <1 % of the extent of notable habitats within the Site). Similarly, the Gaerwen wind farm will only result in a direct loss of 0.12 ha notable habitat (and 0.23 ha indirect loss). The Tyfos, Pen Y Geulan Solar Array will affect habitat which is not considered notable. The habitat losses at Moel Chwa Energy Park are at present unknown and therefore solid conclusions cannot be drawn in this cumulative assessment. However, given the minor/negligible/not significant adverse effect on notable habitats concluded to result from the Proposed Development, cumulative

adverse impacts on notable habitats are considered unlikely but cannot be precluded.

5.11.10 The Proposed Development's direct loss of 1.5 ha of notable habitat constitutes is only 0.92 % (thus <1 %) of the notable habitat present onsite. Cumulative losses of notable habitats are modest particularly with respect to the extent of notable habitat present within the sites.

5.11.11 In terms of the loss of notable habitats, the cumulative construction impact is considered to be of low magnitude, resulting in a **minor/negligible** adverse effect, and therefore **no significant effect** is concluded.

Bats (foraging/commuting)

5.11.12 Both the Gaerwen wind farm and Alwen Forest wind farm predict significant adverse effects at least at the local level in terms of collision risks to bats. As well as embedded mitigation measures including the adoption of appropriately sized bat buffers and feathering (addition mitigation), for both schemes monitoring is proposed including operational monitoring (such as carcass searches). The predicted effects on bats of the Moel Chwa Energy Park are at present unknown and therefore cannot be fully incorporated into this cumulative assessment. However, given the minor/negligible/not significant adverse effect on bats concluded to result from the Proposed Development, cumulative adverse impacts on bats are considered unlikely but cannot be precluded.

5.11.13 The overall risk to bats from the Proposed Development was determined as low, likely as consequence of the Site being relatively high altitude (typically >400 m above sea level), remote, isolated, exposed and open moorland with only few key bat foraging/commuting features (such as watercourses). Furthermore, the Proposed Development has been appropriately offset from key bat habitat features, and feathering, as precautionary additional mitigation, is also to be applied to further reduce the collision risk to foraging/commuting bats. No significant effects are therefore predicted for the Proposed Development, even at the local level.

5.11.14 In terms of collision risk to bats, the cumulative operation impact is considered to be of low magnitude, resulting in a **minor/negligible** adverse effect, and therefore **no significant effect** is concluded.

Proposed Mitigation

5.11.15 Given no significant cumulative effects are predicted when considering the effects of other major developments within the ZoI, no additional mitigation is proposed.

References

Joint Planning Policy Unit for Anglesey and Gwynedd. (2022, March). Anglesey and Gwynedd Joint Local Development Plan: Policies AMG5 "Local Biodiversity Conservation" and AMG6 "Protecting Sites of Regional or Local Significance" (Review Report).

Chanin (2003), Cresswell et al. (2012), Dean et al. (2016), Harris et al. (1989), NatureScot

(2018) and NatureScot (2024a-c). The study area in 2023 was the Site out to at least 200 m from the Proposed Development, in accordance with NatureScot guidance (2024a-c).

CIEEM (2018 (updated 2024)). Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, freshwater, coastal and marine. Chartered Institute of Ecology and Environmental Management, Winchester. Version 1.3 (updated September 2024).

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

Countryside Council for Wales (2010) Assessing the Impact of Windfarm Developments on Peatlands in Wales

Froglife (2016) Surveying for Reptiles. Tips, Techniques, and Skills to help you survey for reptiles.

Joint Nature Conservation Committee. (2016). Handbook for Phase 1 habitat survey – a technique for environmental audit. Available online: https://data.jncc.gov.uk/data/9578d07b-e018-4c66-9c1b-47110f14df2a/Handbook-Phase1-HabitatSurvey-Revised-2016.pdf.

Mathews, F., Richardson, S., Lintott, P., & Hosken, D. (2016, October 20). Understanding the Risk of European Protected Species (Bats) at Onshore Wind Turbine Sites to Inform Risk Management (University of Exeter Report for RenewableUK).

Natural Resources Wales (2022) Core Management Plan Including Conservation Objectives For River Dee And Bala Lake/Afon Dyfrdwy A Llyn Tegid SAC https://naturalresources.wales/media/673374/river_dee___bala_lake_32_plan.pdf

NatureScot (2021) Assessing the Cumulative Impact of Onshore Wind Energy Developments

NatureScot (2024). NatureScot pre-application guidance for onshore wind farms. Version: November 2024.

Planning Inspectorate. (2024, September 20). Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (Advice Note Seventeen). GOV.UK. Updated March 25, 2025. Retrieved from https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-on-cumulative-effects-assessment

Rodwell, J.S. (2006). National Vegetation Community Users' Handbook. JNCC, Peterborough, ISBN 978 1 86107 574 1.

Scottish Natural Heritage, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust (BCT) (2019, updated 2021). Bats and Onshore Wind Turbines: Survey Assessment and Mitigation. This document is referred to as the ‘Joint Agencies guidance (2021)

SEPA (2017) Land Use Planning System SEPA Guidance Note 31: Guidance on Assessing

the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems.

SEPA (2017). Land Use Planning System SEPA Guidance Note 4: Planning guidance on on-shore windfarm developments. SEPA.

SNH (2012). Assessing the Cumulative Impact of Onshore Wind Energy Developments. Scottish Natural Heritage, Inverness.

Welsh Government. (2009, September 30). Technical Advice Note 5: Nature Conservation and Planning [PDF]. Retrieved from https://www.gov.wales/technical-advice-note-tan-5-nature-conservation-and-planning

Welsh Government. (2016). Environment (Wales) Act 2016 Section 7 – list of the habitats of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. Available online: https://datamap.gov.wales/layergroups/geonode:nrw_terrestrial_sections_7_habitats

Welsh Government. (2020). The Nature Recovery Action Plan for Wales 2020–21. Crown copyright. Retrieved from https://www.gov.wales/sites/default/files/publications/2020-10/nature-recovery-action-plan-wales-2020-2021.pdf

Welsh Government. (2021, February 24). Future Wales: The National Plan 2040 (Policy 9: Resilient ecological networks and green infrastructure). [PDF]. Retrieved from https://www.gov.wales/future-wales-national-plan-2040 GOV.WALES+1

Welsh Government. (2024, February). Planning Policy Wales: Edition 12. Chapter 6 “Distinctive and Natural Places”—including Section 6 duty on biodiversity net benefit and ecosystem resilience. Retrieved from https://www.gov.wales/planning-policy-wales-edition-12