

7. Ornithology

7.1 Introduction

- 7.1.1 This Chapter has been prepared by BSG Ecology and sets out the proposed approach to assessing potential ornithological effects associated with the construction, operational and decommissioning of the Proposed Development.
- 7.1.2 Considerable baseline ornithological survey has been undertaken to inform an impact assessment, with the first survey starting in the winter of 2020. Subsequent surveys have been carried out in each year following this and are continuing in 2026.

7.2 Study Area

- 7.2.1 A desk study was undertaken in 2025 using data obtained from the West Wales Biodiversity Information Centre (WWBIC) within two km of the Order Limits.
- 7.2.2 The different types of ornithological survey which have taken place at the Site are described in **Table 7.1**. All survey work has been based on industry standard guidance (early surveys followed Scottish Natural Heritage, 2017 and surveys after the winter season of 2024/ 2025 aligned with NatureScot, 2025)^{1,2} which sets out recommendations as to the extent of land around the periphery of a Site that survey should cover. Each has a different Study Area, relating to the method of the survey and the boundary of the Proposed Development at the time of survey, which has changed as the project has progressed. It will continue to evolve in response to multi-disciplinary constraints mapping work as the project approaches a design freeze. **Figure 1** shows the current Site and Proposed Development boundary.

Table 7-1 - Summary of bird survey type, guidance and Study Area. Table 1 Summary of bird survey type, guidance and Study Area.

Bird survey type	Relevant guidance	Study Area description	Years completed	
			Winter season	Breeding season
Vantage point (VP)	SNH (2017), NatureScot (2025)	Viewsheds consisting of an arc of 180° extending 2 km from an observer at eight to twelve vantage points ³ , to cover the boundary of the Proposed Development and 500 m outside it, as much as possible.	2020/21, 2023/24, 2025/26	2021, 2023, 2025

¹ Scottish Natural Heritage (SNH) is now NatureScot. However, the guidance remains an SNH publication until such time as it is reviewed and updated.

² SNH guidance is applied in Wales in the absence of a Welsh equivalent, and is referred to by NRW and other stakeholders as industry guidance.

³ The different numbers of vantage points reflect the changing Site areas throughout the project.

Bird survey type	Relevant guidance	Study Area description	Years completed	
			Winter season	Breeding season
Breeding raptor	SNH (2017), Hardy et al. (2013)	Surveys undertaken within a 2 km minimum distance of the boundary of the Proposed Development (1 km for goshawk <i>Accipiter gentilis</i> , hobby <i>Falco subbuteo</i> and kestrel <i>F. tinnunculus</i>).	n/a	2021, 2023, 2025
Breeding wader	SNH (2017), Calladine et al. (2009), Brown & Shepherd (1993)	Surveys of suitable (moorland) habitats within an 800 m minimum distance of the boundary of the Proposed Development.	n/a	2021, 2022, 2026
Nightjar <i>Caprimulgus europaeus</i>	Gilbert et al. (1998)	Areas of suitable habitat (coniferous forestry plantation compartments) adjacent to the boundary of the Proposed Development were surveyed (the Study Area was variable and based on extent of adjacent suitable habitat).	n/a	2021, 2022
Goshawk	SNH (2017), Hardy et al. (2013)	Surveys were undertaken within a 1 km minimum distance of the boundary of the Proposed Development.	2023, 2024	n/a

7.2.3 The ornithological Study Area consists predominantly of extensively grazed, unenclosed upland moorland and grassland with wet flushes and pools, intersected by several shallow valleys with streams and semi-natural pasture. Numerous farm buildings are located at Nant y Maen Farm and at Bryn-glas, which are located in the central part of the Proposed Development.

7.2.4 Most of the Study Area comprises rough grazing land with a few small agriculturally improved fields. The landscape consists of broad, undulating, and gently sloping ridges separated by narrow, steep-sided stream valleys. Embedded within the ridges are a series of troughs, basins, and terraces filled with deep peat, generally between 1-2 m in depth, but in some locations reaching 8 m deep. Gently sloping ground surrounding these predominantly supports wet purple moor-grass vegetation on shallow peat or peaty podsol soils. Small springs, seepages and flushes are present but uncommon, and are scattered throughout the survey area. Other broad habitats comprise dry acidic grassland, dry heath, wet heath, and bracken patches. Woodland is virtually absent, with a single small patch of ravine woodland, rarely some scattered willow scrub and self-sown conifers, and a few trees planted around farm buildings at Nant y Maen farm and Bryn-glas. A lake which covers approximately 2 ha is present to the west of Gamallt. Adjacent to the boundary of the Proposed Development, to the west and east are stands of commercial coniferous forestry, which are at various stages in the timber cycle.

- 7.2.5 The entire survey area appears to have suffered from a long history of heavy grazing and frequent burning, which has caused widespread degradation of the vegetation. This has led to the dominance of purple moor-grass across much of the landscape.

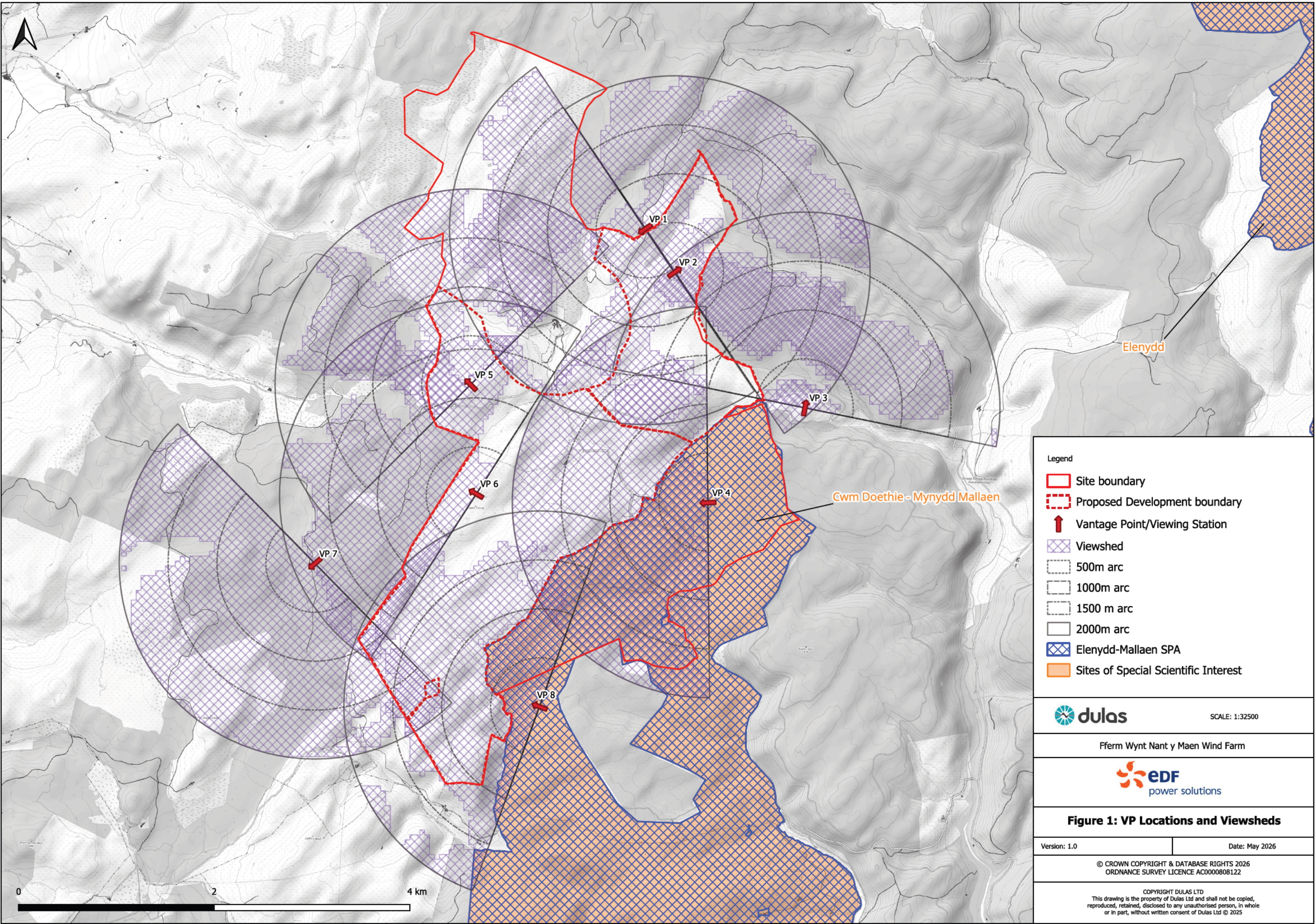
7.3 Baseline context

Designated sites

- 7.3.1 A small proportion of the Elenydd-Mallaen Special Protection Area (SPA) falls within the eastern part of the Site but lies outside the Order Limits and is not being considered for location of windfarm infrastructure. Its location is shown in **Figure 1**.
- 7.3.2 This SPA is classified for its breeding population of red kite *Milvus milvus*, merlin *Falco columbarius* and peregrine *F. peregrinus*^{4,5}. Other notable breeding birds that occur within the SPA, but are not included as reasons for classification, include chough *Pyrrhocorax pyrrhocorax*, golden plover *Pluvialis apricaria* and raven *Corvus corax*. The SPA is largely dominated by upland pastoral agriculture with other habitats such as sessile-oak *Quercus petraea* woodland, heath and blanket mire. The location of Elenydd-Mallaen SPA is presented in **Figure 1**.
- 7.3.3 Cwm Doethie – Mynydd Mallaen SSSI also lies immediately adjacent to the south east boundary of the Proposed Development. This SSSI is notified for the habitats present which include semi-natural broadleaved woodland, species rich neutral grassland, dry heathland and blanket bog. These habitats support a diverse assemblage of lichens and internationally rare species of bryophytes. The SSSI is also noted for its woodland and upland bird population, which includes merlin, ring ouzel *Turdus torquatus*, redstart *Phoenicurus phoenicurus* and tree pipit *Anthus trivialis*. It is also noted that golden plover have bred within the SSSI. The location of Cwm Doethie – Mynydd Mallaen SSSI is shown on **Figure 1**.
- 7.3.4 No Sites of Importance for Nature Conservation (SINCs) were identified within 2 km of the Order Limits.

⁴ Although peregrine is not listed on the Natura 2000 data form for the Elenydd -Mallaen SPA it is understood that it is considered a feature by Natural Resources Wales.

⁵ <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9014111.pdf>



Protected and priority bird species

7.3.5 Data obtained from WWBIC in February 2025 mostly contained bird records in excess of ten years old. However, it indicated that:

- The Schedule 1⁶ raptors, nesting goshawk were recorded in 2004 in the Cwm Berwyn plantation which borders the west of the Proposed Development. Peregrine were last recorded breeding within the Study Area at Glog Fach in 1996, with sightings around the same area (the southern part of the Proposed Development) in 1997. Nesting merlin were last recorded breeding at Ty'n-yr-Cornell within the Proposed Development in 2010, and no records have been made since then. Hen harrier *Circus cyaneus* and osprey *Pandion haliaetus* have been recorded as sightings in 2012 and 2016 respectively. An April short-eared owl record *Asio flammeus* was made at Nantymaen in 2013, possibly indicating local breeding or a lingering non-breeding bird.
- In 1992 a brood of five kestrel were recorded in Nantgwernod, approximately 1 km to the south of the Proposed Development.
- Wader records are limited to little ringed plover *Charadrius dubius*, which bred within 2km of the Proposed Development in 2004 at Duffryn Tywi. There are also records of passage golden plover within the Proposed Development boundary.
- The Section 7 (priority species) passerines, coot *Fulica atra*, fieldfare *Turdus pilaris*, grey wagtail *Motacilla cinerea*, meadow pipit *Anthus pratensis*, mistle thrush *Turdus viscivorus*, skylark *Alauda arvensis*, ring ouzel *Turdus torquatus* and yellowhammer *Emberiza citronella* have been recorded as sighting records within and near the Proposed Development boundary⁷.
- Black-headed gull *Croicocephalus ridibundus* has been recorded within the Proposed Development boundary.

7.3.6 The survey data summarised below relates to completed survey data collected during the breeding seasons (April – July/ August) of 2023 and 2025 the winter (non-breeding) season (September – March) of 2023/ 24 and 2025/ 26. Target species consisted of Schedule 1 and Annex 1⁸ raptors and owls, kestrel, and waterbirds (excluding cormorant *Phalacrocorax carbo*, feral greylag *Anser anser*, Canada goose *Branta canadensis* and grey heron *Ardea cinerea*). Gulls were included as target species following updated NatureScot guidance (NatureScot 2025) in 2025/ 26.

⁶ Of the Wildlife and Countryside Act 1981

⁷ Due to the resolution of location data, it is sometimes not possible to say if the record came from within or outwith boundaries.

⁸ Of Directive 2009/147/EC, often referred to as the Birds Directive

Target raptors and owls

- 7.3.7 Osprey, red kite, hen harrier, kestrel, hobby, peregrine, merlin, goshawk and barn owl *Tyto alba* were detected during VP and breeding raptor surveys. Red kite and kestrel were the species most commonly encountered, while the other raptors/ owls were less frequently recorded.
- 7.3.8 Red kite activity over the Study Area was attributed to foraging and commuting flights. They were recorded in every month of survey, apart from September 2023. They were most frequently recorded in the late spring with 81 flights both recorded in April 2023 and May 2025. Fewer flights were recorded over the winter periods. Flights were generally distributed evenly across the survey area, apart from over the central Camddwr valley, which had fewer flights. Small numbers of red kite territories were detected during breeding raptor surveys, the most recently in 2025.
- 7.3.9 Kestrel was recorded frequently during the breeding seasons of 2023 and 2025. Birds were recorded in May, June, July and August. Flights were distributed widely over the Study Area, but concentrations of activity were seen [REDACTED] within the Proposed Development boundary, where an active nest was recorded in 2023, [REDACTED] Kestrel were present in the area during the winter with flights recorded in all months between and including September to February. A (second) kestrel territory was recorded [REDACTED] [REDACTED] in 2022 and 2023.
- 7.3.10 Osprey was recorded as a singleton over [REDACTED] in June 2023 (this flight crossed the Proposed Development) and over [REDACTED] in April 2025. No osprey territories were detected.
- 7.3.11 A singleton hen harrier was recorded at [REDACTED] in May and two ringtail (female or juvenile) birds were recorded in August 2023. In 2025 a flight was recorded over [REDACTED] in March. The species was recorded more regularly over the winter of 2025/ 26 with 11 flights recorded in the western part of the Proposed Development and Site. No territories of hen harrier were recorded.
- 7.3.12 Goshawk were recorded regularly in low numbers over conifer plantations during the breeding season of 2023 and 2025 and the winter season of 2025/ 26. In 2025 the land around [REDACTED], close to the western boundary of the Proposed Development, was the location of most records. No goshawk territories were detected during breeding raptor surveys or targeted goshawk surveys in 2024.
- 7.3.13 In 2023, hobby was recorded twice during breeding raptor surveys, outside the boundary to the south of the Proposed Development, however breeding was not confirmed. In 2025 the species was recorded more regularly during VP surveys, mostly in August. No evidence of breeding hobby was recorded.
- 7.3.14 In August 2023 two peregrine flights were recorded over [REDACTED]. Singleton peregrine were recorded crossing the Proposed Development infrequently, in March, April

and August 2025. Peregrine were recorded breeding in the surrounding area, with the nearest occupied eyrie being within 4 km of the Proposed Development, and a second between 6 and 7 km of the Proposed Development. Occupancy of both was most recently recorded in 2023.

7.3.15 In 2023 a suspected merlin nest was detected in the [REDACTED] within the Elenydd-Mallaen SPA, outside the Site. In 2025 flights were recorded in March, April and June of male and female birds in a similar location, however breeding was not confirmed. In 2025 records of two birds were also made in the northern part of the Proposed Development area, but a territory was not confirmed.

7.3.16 Successful breeding of barn owl in a box was recorded in 2025 [REDACTED] of the Proposed Development.

Target waterbirds

7.3.17 Golden plover were regularly detected in the northern part of the Study Area and Site during the winter and passage periods. Flocks of up to 215 birds have been noted. No territories of the species have been recorded.

7.3.18 Small numbers of snipe flights have been recorded during the breeding season VP surveys and up to five territories have been detected between [REDACTED] during breeding wader surveys.

7.3.19 Small numbers of lapwing flights were recorded within the Proposed Development at [REDACTED] in 2020 and 2021. No breeding territories were detected and the species has not been recorded at the Site since.

7.3.20 Small numbers of goosander flights have been recorded within the Proposed Development, associated with the large pool west of Gamallt.

7.3.21 Small numbers of ringed plover and a singleton dotterel were recorded within the southern part of the Proposed Development boundary on early autumn and spring passage respectively.

7.3.22 Small numbers of other waterbirds consisting of teal *Anas crecca*, mallard *Anas platyrhynchos*, goldeneye *Bucephala clangula* and little grebe *Tachybaptus ruficollis* have been recorded, associated with [REDACTED].
[REDACTED] Mallard were confirmed to have bred on [REDACTED], within the Site but outside the Proposed Development and outside the Site near at [REDACTED].

7.3.23 Up to three great black-backed gulls have been recorded flying across the Study Area and [REDACTED] on 12 occasions in 2023 (breeding season) and one occasion in 2025 (winter season).

7.3.24 Herring gull *Larus argentatus* is not a commonly recorded species either at the pool or over the Site.

Nightjar

7.3.25 In 2021 and 2022 targeted nightjar survey was undertaken in coniferous forestry surrounding the Proposed Development.

7.3.26 Four territories were detected in the [REDACTED] which borders the north eastern part of the Proposed Development and five territories were detected in the [REDACTED] which borders the Proposed Development to the west.

7.4 Embedded mitigation and design assumptions

7.4.1 For the purposes of scoping the following design assumptions have been made:

- Stand-off distances, dependent on species, from raptor or wader territories will be applied.

7.4.2 Construction phase mitigation will principally be delivered through input to the Construction Environment Management Plan (CEMP). This will be an integral part of the Proposed Development. Ornithological objectives of the CEMP will include:

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

7.4.3 In conjunction with the ecological assessment, a policy-compliant biodiversity enhancement plan will be produced and will form part of the Habitat Management Plan (HMP) for the Site. The HMP will aim to deliver a net benefit for biodiversity in line with the DECCA Framework (Planning Policy Wales (PPW) 12). The HMP will be implemented over the operational life of the Site and may include monitoring requirements.

7.5 Potential Effects

7.5.1 This section sets out the ornithological features that are scoped into the Ornithological Impact Assessment at this stage.

Construction phase

- 7.5.2 The extent of the effects of construction on birds will depend upon the timing of disturbing activities, the degree of displacement (spatially and temporally) that occurs, the size, suitability and proximity of habitats available to displaced birds, and their capacity to accommodate them.
- 7.5.3 Potential for significant construction phase effects are limited to those birds that regularly use the Site for breeding or foraging. These include kite, merlin and peregrine features of the Elenydd-Mallaen SPA. Consideration will also be given to locally-breeding merlin, red kite, kestrel and barn owl, and to ground nesting species of birds (such as meadow pipit and skylark) that are likely to be present in grassland and moorland habitats.
- 7.5.4 There is the potential for the displacement of breeding birds during construction, including Schedule 1 species such as barn owl. The potential for offences under the Wildlife and Countryside Act will be managed through embedded mitigation and working methods to ensure legal compliance, such as pre-construction checks, timing restrictions (if required), and species specific protection methods to avoid disturbance.
- 7.5.5 Outside of the breeding season, the potential effect of displacement on species that breed in the Elenydd-Mallaen SPA and range widely in winter will need to be considered.
- 7.5.6 Impacts on SPA species will also need consideration under a parallel Habitats Regulations Assessment process.

Operation

- 7.5.7 There are two ways in which birds can be affected by operational wind farms: through displacement due to ongoing disturbance caused by the turbine towers and moving blades (and by periodic servicing of them), and through collision with moving blades or associated infrastructure.
- 7.5.8 Operational impacts on the features of the Elenydd-Mallaen SPA, red kite, merlin and peregrine, will need to be considered. The Proposed Development lies within the core foraging ranges of these species.
- 7.5.9 Further species that will be scoped in are; goshawk, kestrel, hen harrier, osprey, hobby, barn owl and golden plover, lapwing, snipe and goosander. Measures to improve habitat quality for some species (particularly passerines) will also need to be assessed (to determine whether significant positive effects are likely).

Decommissioning

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

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

Table 7-2 - Summary of Likely Significant Effects

Summary of Likely Significant Effects		
Receptor	Potential Effects	Scoped In
Construction Phase		
Statutory designated sites	Disturbance and displacement of features of Elenydd-Mallaen SPA.	✓
Target raptors/ owls	Disturbance and displacement of breeding and wintering raptors/ owl species.	✓
Target waterbirds	Disturbance and displacement of breeding and wintering waterbirds (excluding ducks)	✓
Operational Phase		
Statutory designated sites	Collision of Elenydd-Mallaen SPA species with turbines, displacement of SPA species.	✓
Target raptors/ owls	Collision and displacement of breeding and wintering raptors with turbines.	✓
Target waterbirds	Collision and displacement of wintering and breeding waterbirds (excluding ducks) with turbines.	✓
Decommissioning Phase		
All ornithological features considered during construction and any other features which have received statutory protection or priority status over the intervening period (between construction and decommissioning)	All impacts considered at construction stage	✓

7.6 Scoping Assessment

- 7.6.1 Further to the above, Table 7.3 below provides details on the matters to be scoped out of further assessment within the ES.

Table 7-3 - Matters to be scoped out of the assessment

Matters to be scoped out of the assessment	
Matter	Rationale
Nightjar	Although nightjar are known to breed in young conifer plantation adjacent to the Proposed Development and were detected during targeted nightjar surveys, most recently in 2022, there are no areas of suitable habitat for the species within the development boundary. Impacts through disturbance and displacement during construction phase are

Matters to be scoped out of the assessment	
Matter	Rationale
	unlikely and collisions with turbines at operational windfarms is considered to be an uncommon occurrence (Rydall <i>et al.</i> 2017). Recent removal from the Section 7 ⁹ priority species lists indicate that the species is not vulnerable at a population level.
Little grebe	This species has been infrequently recorded, and records relate to [REDACTED] only. No flightlines have been recorded on VP surveys. Impacts to little grebe during construction and operation phase are unlikely and they are not included in the current Section 7 priority species list.
Ducks	Teal, goldeneye and mallard have been scoped out due to the low numbers of flights across the Proposed Development and the two waterbodies used by the species being outside the Proposed Development. Impacts to ducks are unlikely.

7.7 Proposed Assessment Methodology

Legislation and guidance

- 7.7.1 The approach to ornithological survey has been based on NatureScot (2025) guidance for bird survey at onshore wind farms, which represents industry standard guidance for the UK. Survey work began prior to this guidance being updated (from Scottish Natural Heritage 2017 guidance which it supersedes), but updates did not change the scope or specification of the work.
- 7.7.2 Particular consideration has been given to those species listed under Annex 1 of the Birds Directive (2009/147/EC), Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and Section 7 of the Environment Wales Act (2016) (as it was at the time of survey planning – it has been recently updated¹⁰) in deriving the detailed approach to the work.
- 7.7.3 Consideration has also been given to national and local policy, including Planning Policy Wales (PPW) 12, Technical Advice Note (TAN) 5 Nature Conservation and Planning, Future Wales (The National Plan 2040) and local policy and planning guidance documents.
- 7.7.4 The approach to the ornithological impact assessment will be based on Chartered Institute for Ecology and Environmental Management (CIEEM) guidance (2024) and informed by Collision Risk Modelling using the Band Model (Band *et al.* 2024) derived by NatureScot (previously known as SNH).

Assessment of Likely Significant Effects

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

⁹ Of the Environment (Wales) Act 2016.

¹⁰ No changes to the survey scope are required due to the recent changes to Section 7 species.

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

7.7.6 The assessment process will be informed by Collision Risk Analysis. This will involve extrapolation of flight-data obtained during VP surveys, to calculate the number of flights likely to occur through the rotor swept area when the Proposed Development becomes operational. Following the application of avoidance rates, predicted fatalities per year and over the life of the wind farm (by each focal species) will be determined.

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

Cumulative Effects

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

7.7.9 The scope of the assessment of cumulative effects will consider all proposed renewable developments and any other relevant schemes or initiatives within the ranging distance of scoped in species breeding within or close to the site.

7.7.10 For the Proposed Development a 10 km zone of influence is likely to be appropriate as this will cover the core ranging distance of mobile species using the Site and the likely maximum extent of any potential impacts on features remote from it that might result from construction or operation.

7.8 Summary of scoping position

- 7.8.1 Following a comprehensive suite of ornithological surveys which began in 2020 and are continuing in 2026, target species of raptors and owls which have been identified during VP, breeding raptor surveys and targeted goshawk surveys have been scoped in to further assessment.
- 7.8.2 Target species of waterbirds have been identified during VP work and breeding wader survey and apart from species with records mostly restricted to the closest two large waterbodies, have been scoped into further assessment.
- 7.8.3 The features of the Elenydd-Mallaen SPA have been scoped in to further assessment.
- 7.8.4 Following two years of targeted nightjar survey, the species has been scoped out of further assessment due to impacts on the species being unlikely. Little grebe, mallard, teal and goldeneye have been scoped out due to infrequent records and mostly being restricted to waterbodies outside the Proposed Development.

7.9 References

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