



Parc Ynni Calon y Gwynt

ENVIRONMENTAL STATEMENT

Chapter 6 Ornithology





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6 ORNITHOLOGY

6.1 INTRODUCTION

6.1.1. This chapter presents the assessment of the likely significant effects of the Proposed Development with regard to ornithology. This chapter should be read in conjunction with the development description provided in **Chapter 4: Description of the Proposed Development** and with respect to relevant parts of the following chapters:

- **Chapter 2: Approach to EIA**; and
- **Chapter 5: Ecology**

6.1.2. This chapter describes:

- The legislation, policy and technical guidance that has informed the assessment (**Section 6.2**);
- Consultation and engagement that has been undertaken and how comments from consultees relating to ornithology have been addressed (**Section 6.3**);
- The methods used for baseline data gathering (**Section 6.4**);
- The ornithological baseline (**Section 6.6**);
- Embedded mitigation measures relevant to ornithology (**Section 6.7**);
- The scope of the ornithological assessment (**Section 6.8**);
- The methods used for the ornithological assessment (**Section 6.5**);
- The assessment of effects on ornithological features (**Section 6.6**);
- The assessment of cumulative (inter-project) ornithological effects (**Section 6.11**);
- Summary of significance (**Section 6.9**);
- Assessment of residual ornithological effects (**Section 6.12**); and
- Mitigation and enhancement measures (**Section 6.10**).

LIMITATIONS AND ASSUMPTIONS

6.1.3. There were no limitations to the survey effort, with all surveys completed in accordance with industry standard guidance (including with regard to survey specification and timing).

6.2 RELEVANT LEGISLATION, PLANNING POLICY AND TECHNICAL GUIDANCE

6.2.1. This section identifies the legislation, planning policy and technical guidance that has informed the assessment of effects with respect to ornithology.

LEGISLATION

A summary of the relevant legislation is provided in **Table 6-1**.

Table 6-1 – Legislation relevant to the ornithology assessment

Legislation	Legislative context
The Environment (Wales) Act (2016) ¹	The Act places a statutory obligation on all public authorities in Wales to seek to maintain and enhance biodiversity and promote ecosystem resilience while carrying out their functions. It also requires Welsh Ministers to maintain a published list of living organisms and habitats of principal importance for conserving biodiversity in Wales, and to take steps to maintain and enhance them.
The Conservation of Habitats and Species Regulations (2017) ²	This legislation brings the EC Habitats Directive (and elements of the EU Wild Birds Directive) into UK law, providing for the protection and designation of ‘European sites’, specifically Special Protection Areas (SPAs) which are designated for their international importance to birds. This legislation also places duties on competent authorities (including Local Authorities and National Park Authorities) in relation to wild bird habitat. These provisions relate back to Articles 1, 2 and 3 of the EC Directive on the conservation of wild birds (2009/147/EC, ‘Birds Directive’ ²³) (Regulation 10 (3)) requires that the objective is the ‘preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of the upkeep, management and creation of such habitat, as appropriate, having regard to the requirements of Article 2 of the new Wild Birds Directive...’ Regulation 10 (7) states: ‘In considering which measures may be appropriate for the purpose of security or contributing to the objective in [Regulation 10 (3)] Paragraph 3, appropriate account must be taken of economic and recreational requirements’.
Wildlife and Countryside Act (1981) ³	The Wildlife and Countryside Act 1981 (as amended), under subsection 1(1), protects all wild birds, their nests and eggs. Under this legislation a person shall be guilty of an offence if they intentionally: ■ Kill, injure or take any wild bird, ■ Take, damage or destroy the nest of any wild bird while that nest is in use or being built; and ■ Take or destroy an egg of any wild bird. Additional protections are extended to Schedule 1 species, whereby it is an offence to intentionally disturb at, on, or near an active nest site.

Legal Compliance regarding Wild Bird Habitat

- 6.2.2. In relation to the duties placed on competent authorities under the 2017 Regulations, Regulation 10 (8) states: ‘So far as lies within their powers, a competent authority in exercising any function [including in relation to town and country planning] in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds (except habitats beyond the outer limits of the area to which the new Wild Birds Directive applies).’

¹ Available at: <https://www.legislation.gov.uk/anaw/2016/3/contents> (accessed 18/06/2026).

² Available at: <https://www.legislation.gov.uk/ukxi/2017/1012/contents> (accessed 18/06/2026).

³ Available at: <https://www.legislation.gov.uk/ukpga/1981/69> (accessed 18/06/2026).

PLANNING POLICY

6.2.3. A summary of relevant national and local planning policy is provided in **Table 6-2** below.

Table 6-2 – Planning policy relevant to the Ornithology assessment

Policy	Policy context
National Planning Policy	
Planning Policy Wales (Edition 12, February 2024) ⁴	Planning Policy Wales 12 (PPW 12) sets out that development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity. PPW 12 states that a step-wise approach should be taken to design such that impacts on ecological features are avoided or minimised and, as necessary, compensated for. Features identified should be targeted for enhancement through the application of the DECCA ⁵ framework.
Future Wales: The National Plan 2040 ⁶	The National Plan identifies the necessity for resilient ecosystems within Wales (within Policy 9 of the document) and that development must deliver net biodiversity benefits whilst also maximising the provision for green infrastructure (Policies 17 and 18).
Technical Advice Note (TAN) 5 Nature Conservation and Planning (2009) ⁷ .	TAN 5 outlines how the land use planning system in Wales should contribute to the protection and enhancement of biodiversity. This is delivered via ensuring that material considerations are taken into account in the consideration of policies and proposals in local level planning applications.
Local Planning Policy	
Powys Local Development Plan ⁸	The Powys Local Development Plan (LDP) includes Policy DM02: The Natural Environment. The policy requires any development proposal to demonstrate how biodiversity (and geodiversity) will be protected, positively managed and enhanced. Consideration of how the resilience of biodiversity can be improved through enhancement of connectivity (both within and beyond the site) is also referred to in DM02.
Powys Nature Recovery Action Plan (PNRAP) ⁹	The national strategy for biodiversity was delivered at a local level via Local Biodiversity Action Plans (LBAP), which were superseded and transposed into the PNRAP by the Powys local nature partnership.

TECHNICAL GUIDANCE

6.2.4. A summary of the technical guidance for ornithology is provided in **Table 6-3** below.

⁴ Available at: <https://www.gov.wales/sites/default/files/publications/2024-07/planning-policy-wales-edition-12.pdf> (accessed 18/06/2026)

⁵ NRW developed a framework for evaluating ecosystem resilience based on five attributes and properties specified in the Environment (Wales) Act: Diversity, Extent, Condition, Connectivity, Adaptation to change

⁶ Available at: <https://www.gov.wales/future-wales-national-plan-2040> (accessed 18/06/2026).

⁷ Available at: <https://www.gov.wales/technical-advice-note-tan-5-nature-conservation-and-planning> (accessed 18/06/2026).

⁸ Available at: <https://en.powys.gov.uk/article/4898/Adopted-LDP-2011---2026> (accessed 18/06/2026).

⁹ Available at: <https://powys.moderngov.co.uk/documents/s68660/Appendix%20C%20-%20PNRAP%20Impact%20Assessment.pdf> (accessed 18/06/2026).

Table 6-3 – Technical guidance relevant to the Ornithology assessment

Technical Guidance Document	Context
CIEEM (2018) guidelines for Ecological Impact Assessment in the UK and Ireland ¹⁰ .	Industry standard guidance concerning the assessment of impacts of proposed development on ornithological and ecological features. Used to inform the approach to this chapter.
Recommended bird survey methods to inform impact assessment of onshore windfarms NatureScot (2025) ¹¹	This document outlines appropriate survey methodologies to be employed when collecting baseline data for impact assessment of onshore windfarms.
Guidance on using an updated collision risk model to assess bird collision risk at onshore wind farms (NatureScot, 2026) ¹²	This document provides technical advice on estimating the 'no-avoidance risk' (the rate of collisions assuming birds are flying through the airspace in the absence of structures) for bird species.
A review of disturbance distances in selected bird species (Goodship & Furness, 2022) ¹³ .	A study commissioned by NatureScot to provide current empirically-derived information on disturbance distances in focal bird species typically considered as part of wind farm (and other development) planning applications.
Use of Avoidance Rates in the NatureScot Wind Farm Collision Risk Model (NatureScot, 2025b) ¹⁴	This document sets out accepted turbine blade avoidance rates for a range of species based on flight characteristics and activity (some avoidance rates are derived from studies of bird behaviour around wind farms), which are then used when modelling the collision risk for species recorded overflying sites.
Using a collision risk model to assess bird collision risks for onshore wind farms. NatureScot Research Report 909. (Band, 2024) ¹⁵	This document outlines the currently accepted approach to modelling of bird collision risk at onshore wind farms. The approach is sometimes referred to as the 'Band model', having been developed by William (Bill) Band of NatureScot.
Assessing Significance of Impacts from Onshore Wind Farms Outwith Designated Areas (NatureScot, 2025) ¹⁶	This document sets out a framework for assessing the impact of onshore wind farms on bird populations outside of and away from protected areas and has informed the approach taken in this document.

¹⁰ Available at: <https://cieem.net/wp-content/uploads/2018/08/EclA-Guidelines-v1.3-Sept-2024.pdf> (accessed 18/06/2026)

¹¹ Available at: <https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms> (accessed 18/06/2026)

¹² Available at: <https://www.nature.scot/doc/guidance-using-updated-collision-risk-model-assess-bird-collision-risk-onshore-wind-farms> (accessed 18/06/2026)

¹³ Available at: <https://www.nature.scot/doc/disturbance-distances-selected-scottish-bird-species-naturescot-guidance> (accessed 18/06/2026)

¹⁴ Available at: <https://www.nature.scot/doc/wind-farm-impacts-birds-use-avoidance-rates-naturescot-wind-farm-collision-risk-model> (accessed 18/06/2026)

¹⁵ Available at: <https://www.nature.scot/doc/naturescot-research-report-909-using-collision-risk-model-assess-bird-collision-risks-onshore-wind> (accessed 18/06/2026)

¹⁶ Available at: <https://www.nature.scot/doc/guidance-note-assessing-significance-impacts-bird-populations-onshore-wind-farms-do-not-affect> (accessed 18/06/2026).

Technical Guidance Document	Context
Windfarms and birds: An analysis of the effects of windfarms on birds and guidance on environmental assessment criteria and site selection issues (Langston & Pullan, 2003 ¹⁷)	This document outlines the risks that wind farms pose to birds, considering not only collision risk, but impacts including habitat loss and displacement.
“Vogelverluste an Windenergieanlagen/bird fatalities at wind turbines in Europe” maintained by Tobias Dürr (Dürr, 2026) ¹⁸	This document is a regularly maintained database which details all known collisions of bird species recorded at European wind farms.

6.3 CONSULTATION AND ENGAGEMENT

OVERVIEW

- 6.3.1. The assessment has been informed by consultation responses and stakeholder engagement. An overview of the approach to consultation is provided in **Section 2.4 of Chapter 2: Approach to EIA**.

SCOPING DIRECTION

- 6.3.2. A Scoping Direction (**Appendix 1B**) was issued by PEDW on behalf of the Welsh Ministers, on 14 May 2025. A summary of the relevant responses received in the Scoping Direction in relation to ornithology and confirmation of how these have been addressed within the assessment to date is presented in **Table 6-4**.

Table 6-4 – Summary of EIA Scoping Direction responses for Ornithology

Consultee	Consideration	How addressed in this Draft ES
Natural Resources Wales (NRW)	Scope of the Project (Solar PV)	NRW were unable to offer opinion on potential issues arising from the Solar PV element as the extent and location of the proposed solar arrays had not been provided at the time of scoping. Solar PV was removed from the Proposed Development prior to the design freeze due to various limitations, including the potential impacts to ground nesting Red and Amber listed Birds of Conservation Concern (BoCC) species.
NRW	Displacement of curlew	NRW did not agree that significant effects on curlew were unlikely and expressed concerns that potential displacement as a result of the Proposed Development could occur. This has been addressed in Sections 6.8.12 - 6.8.15 and 6.8.45 - 6.8.47

¹⁷ Langston, R.H.W. & Pullan, J.D. 2003 Windfarms and birds: an analysis of the effects of wind farms on birds, and guidance on environmental assessment criteria and site selection issues. Report T-PVS/Inf (2003) 12, by BirdLife International to the Council of Europe, Bern Convention on the Conservation of European Wildlife and Natural Habitats. RSPB/BirdLife in the UK

¹⁸ Available at: <https://ifu.brandenburg.de/ifu/de/aufgaben/natur/artenschutz/vogelschutzwarte/arbeitsschwerpunkt-entwicklung-und-umsetzung-von-schutzstrategien/auswirkungen-von-windenergieanlagen-auf-voegel-und-fledermaeuse/#> (last updated February 2026; most recently accessed 18/06/2026).

Consultee	Consideration	How addressed in this Draft ES
NRW	Enhancement opportunities for curlew	NRW were uncertain on the location(s) of any mitigation and enhancement measures for the Proposed Development. This has been addressed in Appendix 6d , which presents an outline curlew management and monitoring plan. The location of the mitigation/enhancement areas is subject to final agreement with stakeholders.
NRW	Enhancement opportunities for kestrel	NRW agreed that the outline enhancement measures were considered suitable, but that these should also extend to enhancement of suitable foraging areas. These areas will be managed in line with Aim 1, 2 and 3 within the oHMP (Appendix 5O).
NRW	Study area and extent	NRW agreed that the extent of the study area was suitable for a thorough assessment of potential impacts to be undertaken.
NRW	Cumulative impact assessment	NRW agreed that the geographical extent of the areas around the Proposed Development considered for cumulative assessment (see Section 6.4.2) was suitable for a thorough assessment of potential impacts to be undertaken. The cumulative assessment is contained in Section 6.11 .

TECHNICAL ENGAGEMENT

- 6.3.3. A summary of the technical engagement in relation to ornithology undertaken to date is outlined in **Table 6-5**.

Table 6-5 – Technical engagement on the Ornithology assessment

Consultee	Consideration	How addressed in this Draft ES
NRW	A meeting was held on 18 January 2023 to discuss survey scope and evolving development plans.	The scope of the work was considered appropriate and reflective of potential interest on Site. The scope of survey effort has been outlined within Section 6.4.8 of this chapter.
Gylfinir Cymru / Curlew Wales	BSG Ecology requested a meeting to discuss appropriate measures for a curlew management plan on 11 November 2025, with subsequent email correspondence on 12 December 2025 and 6 January 2026. It was not possible to schedule a meeting with Gylfinir Cymru / Curlew Wales.	Impacts of the Proposed Development on curlew are considered in this chapter. An outline curlew management and monitoring plan has been drafted for inclusion as part of the compensation and enhancement measures (Appendix 6a) and will be finalised following further consultation with stakeholders post-consent.

6.4 DATA GATHERING METHODOLOGY

- 6.4.1. All survey methods used were based on industry standard guidelines for surveys to inform ornithological impact assessment¹⁹. An overview of survey effort is included within **Table 6-7**, and full details of the relevant methods adopted for each species group are included within the Year 1 and Year 2 baseline ornithological reports (**Appendix 6b and 6c**).

STUDY AREA

- 6.4.2. The Study Area comprised the entire Site boundary at the time the work was completed, an area of approximately 381 ha²⁰. An additional 800 m perimeter buffer area was surveyed for breeding wader surveys, a 2 km perimeter buffer for breeding raptors and during winter walkover surveys (to include the three main waterbodies present - Llyn Mawr, Llyn Du and Llyn y Tarw). The Study Area is shown in **Figure 6.1**.
- 6.4.3. Additionally, breeding bird surveys were conducted along the proposed access route, which begins at an existing road junction of the A470 with the B4568, and heads north for approximately 4 km via a new access road to be constructed as part of the Proposed Development.
- 6.4.4. The spatial extent of surveys was determined in accordance with Scottish Natural Heritage (2017) guidance, which was the industry standard at the time of survey (and has now been superseded by NatureScot onshore wind farm bird survey guidance (NatureScot 2025)). There is no difference to recommended survey distances between these iterations of the guidance. A perimeter buffer around the site boundary as opposed to turbine locations was applied as the latter were not fixed at the time of the work.
- 6.4.5. The following broad land categories are located within the Study Area:
- Unenclosed pasture (in the western and south-western parts of the Study Area) covering an area of approximately 238 ha; and
 - Enclosed pasture (in the eastern and north-eastern parts of the Study Area) covering an area of approximately 108 ha.
- 6.4.6. Habitats present within the Study Area include:
- Acid grassland;
 - Bracken, which covers an area of approximately 18 ha along the western boundary of the Study Area;
 - Wet modified bog in the north-western part of the Study Area covering an area of approximately 4 ha;
 - Low rock exposures, not extending to more than 3 m in height in the western part of the Study Area;
 - Minor watercourses which discharge into the Nant y Llyn Mawr, which is a tributary of Afon Rhiw; and
 - Three freshwater bodies (Llyn Mawr, Llyn Du and Llyn y Tarw).

¹⁹ Scottish Natural Heritage (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2. Scottish Natural Heritage, Inverness.

²⁰ This is similar to the final extent of the site (381 ha). It included the entire extent of the access route.

DESK STUDY

- 6.4.7. A desk study was undertaken to collate existing ornithological information relevant to the Proposed Development. This included public domain and third-party data and was informed by the outcome of consultation. The purpose of the desk study was to provide information on bird populations in and around the Proposed Development. Combined with the results of the ornithological field surveys, this information has been utilised to provide a robust baseline on which to base the impact assessment. Data were obtained from the Biodiversity Information Service for Powys & Brecon Beacons National Park, British Trust for Ornithology (BTO) and from the annual Montgomeryshire Bird reports. The data obtained was from structured on-going formal research, such as Wetland Bird Survey (WeBS) and Breeding Bird Survey (BBS).

Table 6-6 – Data sources used to inform the ornithology assessment

Organisation	Data Source	Data Provided
Biodiversity Information Service for Powys & Brecon Beacons National Park	Confidential record data	Non- statutory sites of nature conservation interest and bird records within 2 km of the Site.
National Biodiversity Network (NBN) Gateway	NBN Gateway - National Biodiversity Network	Publicly accessible biological records (specifically those relating to birds) within 2 km of the Site.
Welsh Ornithological Society	Milvus ²¹	Contextual peer-reviewed research data on species ecology and distribution.
The Multi Agency Geographic Information for the Countryside (MAGIC)	https://magic.defra.gov.uk/	Statutory designated sites notified for their ornithological interest within 2 km of the Site.
Montgomeryshire Birds	Montgomeryshire Bird Reports (2021 – 2024) available online at MONTGOMERYSHIRE BIRDS: County Reports	Annual bird reports for Montgomeryshire compiled by the county bird recorder.

SURVEY WORK

- 6.4.8. In order to assess the potential effects of a development on birds, both the value of the land area proposed for the development itself to birds and the level of flight activity within and around the Site boundary should be determined. In view of the species assemblage that could occur within the vicinity of the Proposed Development (considering species range, habitats present, and desk study data) and following scoping responses after the first year of baseline recording, the surveys below were undertaken (in line with NatureScot²² (2025) guidance).

²¹ The journal of the Welsh Ornithological Society. Published three times a year. The respective issues contain: an account of rare and scarce birds in Wales; a report on all birds in Wales; research papers on birds in Wales.

²² Survey methods followed the recommendations of the previous iteration of the latest update to the guidance document, Guidance note - Assessing the significance of impacts on bird populations from onshore wind farms that do not affect protected areas (published in 2017)

Table 6-7 – Survey effort

Survey Type	Timescale
Non-breeding season vantage point (VP) surveys	2022 – 2023 and 2023 – 2024 (September to February inclusive)
Breeding season VP surveys	2022 and 2023 (March – August inclusive)
Breeding raptor surveys	2022 and 2023 (March – August inclusive)
Breeding wader surveys	2022 and 2023 (March – August inclusive)
Breeding bird characterisation surveys	2024 (April – August)
Llyn Mawr waterbody counts	2023 (April – August)
Non-breeding season wader/waterfowl walkover surveys (including waterbody counts)	2022 - 2023 and 2023 – 2024 October – March (inclusive)
Nightjar surveys	2022 (June and July).

6.4.9. The assessment has been made within five years of data collection, in line with NatureScot recommendations.

6.4.10. A summary of the baseline ornithological survey methods is provided below.

Vantage Point Surveys

- 6.4.11. Flight activity surveys were undertaken to cover two breeding seasons and two non-breeding seasons, thus completing two years of baseline flight line surveys in total. Surveys were completed from a total of three VP locations (**Figure 6.2**), although only two were in use during each respective season / year²³.
- 6.4.12. For the purposes of the flight activity surveys, which split the year into two six-month periods, the breeding season is considered to be from March²⁴ to August inclusive and the non-breeding season is considered to be September to February inclusive, in accordance with survey guidance. The VP surveys aimed to complete 36 hours per VP per season. This was typically completed by undertaking six hours per VP per month to spread survey coverage evenly.
- 6.4.13. Flight activity survey focuses on identifying flight lines and flight heights of target species, such as raptors and wildfowl in order to inform modelling of theoretical collision risk and (where relevant) wind farm design.
- 6.4.14. The altitude of the target bird(s) was recorded at the start of the observation and at 15 second intervals thereafter into one of several specified height bands. Initially four height bands were used, however these generic height bands were updated in November 2023 to reflect the parameters of

²³ As a result of changes to the proposed layout, VP2 (OSGR SO 01195 98793) which was used during Year 1 was retired and replaced by VP3 (OSGR SO 01746 97997) for the second year of survey, as VP3 provided better coverage of the updated layout.

²⁴ March is included due to the potential for early breeding species such as lapwing and crossbill to be actively nesting at this time.

the preferred turbine model, with the following three height bands: (1) 0 m - 80 m, (2) 80 m - 200 m which is collision risk height, (3) > 200 m. This change is accounted for in the Collision Risk Modelling (CRM).

6.4.15. The target species recorded during the VP surveys were as follows:

- All raptor species (except buzzard *Buteo buteo* and sparrowhawk *Accipiter nisus*) including owls;
- All wader species; and
- All wildfowl species (except for feral Canada goose *Branta canadensis* and re-established greylag goose *Anser anser*).

6.4.16. 'Secondary' species²⁵ were also recorded in accordance with NatureScot guidance.

6.4.17. All incidental records of target species (i.e. birds that were not in flight, birds that were heard but not seen, birds that were observed well beyond the survey area and records outside of the formal VP surveys) were also recorded to provide context, although these records do not contribute to any analysis of flight activity.

Breeding Raptor Surveys

6.4.18. Dedicated breeding raptor surveys were undertaken within the Study Area and a 2 km buffer during both 2022 (nine visits between April and July inclusive) and 2023 (12 visits between April and July inclusive) (see **Figure 6.2**). The focus of the surveys was to identify any evidence of breeding by raptor species, particularly target species such as goshawk and peregrine which had been identified as having potential to breed on or close to the Site from study of habitats / features visible on aerial imagery and Ordnance Survey mapping.

6.4.19. Surveys were informed by the species-specific methods described in Hardey *et al.* (2013)²⁶. A combination of short VP watches and walkover surveys in suitable breeding habitat was undertaken. Short VP surveys were carried out with the aim of identifying courtship displays and territorial behaviour, whilst walkover surveys were to locate and monitor nests and check for other signs of breeding (such as plucking posts, faecal staining at perches, and prey remains). Areas with potential breeding birds recorded during the flight activity VP surveys were flagged to ensure these were also visited during the dedicated raptor surveys.

Breeding Wader Surveys

6.4.20. Walkover breeding wader surveys of moorland habitats extending to approximately 800 m beyond the Site were completed where potentially suitable breeding habitat was present (see **Figure 6.2**). Surveys were undertaken in 2022 and repeated in 2023. The survey approach followed SNH guidance (2017), which recommends that the Brown & Shepherd (1993)²⁷ method is applied²⁸ (extended to four visits based on recommendations set out in Calladine *et al.* (2009)) between April and mid-July inclusive (with at least seven days between visits). A total of eight days survey effort was conducted in both years, with all visits between 22 April and 20 July (inclusive).

²⁵ Secondary species are defined as those which are not the main focus for data collection due to a reduced risk posed by potential collision.

²⁶ Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors: a field guide for surveys and monitoring (3rd Edition). The Stationary Office, Edinburgh.

²⁷ Brown, A. F. & Shepherd, K. B. (1993). A method for censusing upland breeding waders. Bird Study, 40, 189-195.

²⁸ The approach is based on the 2017 edition, which was updated in 2025, however the recommended approach remains consistent.

- 6.4.21. The work involved walking over moorland areas and applying a constant search effort for upland waders. Where possible, all parts of the survey area were approached to within approximately 100 m. Frequent stops were made at local viewpoints in order to listen for singing and calling birds and to scan areas around the observer.

Breeding bird characterisation surveys

- 6.4.22. Walkover breeding bird characterisation surveys of the proposed access route and a 50 m buffer were undertaken between April to August 2024. The survey comprised six visits during which bird locations and behaviour were mapped using standard British Trust for Ornithology (BTO) species and activity codes (Marchant, 1983)²⁹. The breeding bird characterisation survey area is shown in **Figure 6.2**. Details of weather conditions during the survey were also recorded.

Llyn Mawr Waterbody Counts

- 6.4.23. A count of waterfowl using Llyn Mawr was conducted once per month over the breeding season (April 2023 to August 2023 inclusive). The location of Llyn Mawr is presented on **Figure 6.2**. All waterfowl present (including waders at the pool margins) were recorded systematically using point counts, with the surveyor mapping the location of each individual from a fixed position. Details of weather conditions during the survey were also recorded.

Winter Walkover Surveys

- 6.4.24. Walkover of moorland habitats and counts of wildfowl on waterbodies extending to approximately 800 m beyond the developable area were conducted over two consecutive non-breeding / winter survey period (October 2022 to March 2023, and October 2023 to March 2024 inclusive). The survey area was extended to include Llyn y Tarw and surrounding moorland (which are beyond 800 m from the developable area) due to the potential for this area to support species which could use the Site for foraging/resting/commuting over. The winter walkover survey area is shown **Figure 6.2**. All waterfowl present (including gulls, and waders at the pool margins) were recorded systematically, with the surveyor mapping the location of each individual from a fixed position. Details of weather conditions during the survey were also recorded.

Nightjar surveys

- 6.4.25. Dedicated surveys to record nightjar present within a 1.5 km vicinity of the Site, were carried out in 2022 (see **Figure 6.2**). A second year of survey effort was not undertaken following consultation with NRW, whereby it was agreed that impacts to nightjar could be scoped out due to the distance of breeding habitat from the Proposed Development. Survey methods followed those outlined in Gilbert *et al.* (1998)³⁰. The nightjar surveys were carried out at dusk in suitable weather conditions (wind of F3 or less, with no or light intermittent precipitation). Two survey visits were made (one night in each of June and July) to record all nightjars encountered and record any behaviour indicative of breeding (such as churring, wing-clapping, displaying and pairs of birds seen together).

²⁹ Marchant, J. H. (1983) Common Birds Census instructions. BTO, Tring. 12pp.

³⁰ Gilbert, G., Gibbons, D.W., & Evans, J. (1998) Bird Monitoring Methods: A Manual of Techniques for UK Key Species. The Royal Society for the protection of Birds, Sandy, Bedfordshire, England.

6.5 ASSESSMENT METHODOLOGY

OVERVIEW

- 6.5.1. The generic project-wide approach to the assessment methodology is set out in **Chapter 2: Approach to EIA**. However, whilst this has informed the approach that has been used in this ornithology assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this ornithology assessment. The assessment follows the determination of significance as outlined in CIEEM guidance³¹, detailed in **Section 6.5.4**.

DETERMINATION OF SIGNIFICANCE

- 6.5.2. This section assesses the potential impacts (changes to the baseline conditions) during the construction, operational and decommissioning phases of the Proposed Development on important ornithological features (IOFs), and the resultant effects on IOFs.
- 6.5.3. The Proposed Development has undergone several design iterations, and ornithological features have been considered during the evolution of the scheme. Potential impacts and effects are assessed against the final design.

CRITERIA FOR THE ASSESSMENT OF EFFECTS

- 6.5.4. The evaluation and assessment within this chapter has been undertaken with reference to relevant parts of the 2018 Guidelines for EclA in the United Kingdom developed by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018). Although this is widely considered to represent the industry standard for ecological (ornithological) assessment, the guidance itself recognises that the approach to EclA (and OIA) should not be prescriptive; it follows that the aim of the CIEEM document is therefore to “*provide guidance to practitioners for refining their own methodologies*”.

Evaluation: Determination of Importance

- 6.5.5. A first step in OIA is the determination of which ornithological features (designated sites and species) are important. Important features should be subject to detailed assessment if they are likely to be affected by a Proposed Development. It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and/or resilient to project effects, such that there is no risk to their viability.
- 6.5.6. Ornithological features can be important for a variety of reasons. Importance may relate, for example, to the quality or extent of designated sites, to species rarity, to the extent to which they are threatened throughout their range or to their rate of decline.
- 6.5.7. The importance of an ecological (ornithological) feature should be considered within a defined geographical context. The following frame of reference has been used in this case:
- International: European;
 - National: United Kingdom;

³¹ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester.

- Country: Wales;
- Regional: Central Wales;
- County: Powys;
- Local: The area extending to 10 km of the Proposed Development (equal to the Zone of Influence (Zoi) defined below); and
- Site: the red line boundary.

- 6.5.8. In certain circumstances particular receptors may be valued below the Site level. In these instances, they are described as being of negligible importance.
- 6.5.9. CIEEM guidance indicates that features of less than local importance are generally considered unlikely to trigger a mitigation or policy response in EIA terms (and it follows effects on these features are unlikely to be significant at EIA level). For significant residual effects on features of greater geographical importance (based on the CIEEM assessment method), professional judgement is applied to determine whether the conservation status of that feature is likely to be affected, and national and local policy considered in drawing a conclusion as to whether it is significant in EIA terms.
- 6.5.10. In addition to the consideration of the importance of populations of a mobile receptor (such birds in this case), the evaluation has considered the likely use of the land within (or airspace above) the development site by individuals of the population (as determined from survey observation and contextual information, such as local records, distribution data and general ecology) to conclude importance in terms of the value of the site for that receptor.
- 6.5.11. In this assessment, a 1 % population threshold³² is used as a guide when assessing the importance of the Site for a species in a geographical context. While there is no biological reason for the application of a 1 % threshold, 1 % is often applied in defining thresholds of importance relating to nature conservation. Examples include the selection of protected sites such as Special Protection Areas (SPAs)³³. Stage 1 of the SPA selection guidelines states that “*an area used regularly by 1 % or more of the Great Britain (GB) population of a species listed in Annex 1 of the EC Birds Directive*” should be considered as an area “*likely to qualify for SPA status*”. Other examples of the application of the 1 % threshold include Ramsar and Site of Special Scientific Interest (SSSI) selection and the reporting of WeBS. This is an appropriate threshold for assessing the importance of the Site for a species within this assessment.

Characterising and Quantifying Effects and Assessing their Significance

- 6.5.12. CIEEM (2018) guidelines state that ecological effects or impacts (including those relating to birds) should be characterised in terms of ecosystem structure and function and reference should be made to: beneficial, adverse or neutral effects; extent; magnitude; duration; reversibility; timing and frequency; and cumulative effects. The guidelines provide a list of “*...aspects of ecological structure and function to consider when predicting impacts and effects*”. The terms impact and effect are used within this chapter in accordance with the following definitions (as provided by the guidelines):

³² 1% of a population at a National Level

³³ A Special Protection Area (SPA) is the land classified under Directive 79/409 on the Conservation of Wild Birds.

- Impact: Actions resulting in changes to an ecological feature. For example, the construction activities of a development removing an area of grassland; and
- Effect: Outcome to an ecological feature from an impact. For example, the change on a curlew population from loss of an area of grassland.

- 6.5.13. Following the characterisation of effects, an assessment of their ecological significance is made. The guidelines promote a transparent approach in which a beneficial or adverse effect is determined to be significant or not, in ecological terms, in relation to the integrity of the defined site or ecosystem(s) and/or the conservation status of habitats or species within a given geographical area, which relates to the level at which it has been valued.
- 6.5.14. The decision about whether an effect is significant (in ecological terms) or not is independent of the value of the ecological feature concerned; the value of any feature that will be significantly affected is then used to determine the implications, in terms of legislation and/or policy (CIEEM, 2018).

Significant Effects

- 6.5.15. Box 3 (Significant Effects) in the EclA guidelines (CIEEM, 2018) states that:
- 6.5.16. *“Significance is a concept related to the weight that should be attached to effects when decisions are made. For EclA, ‘significant effect’ is an effect that either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local.*
- 6.5.17. *A significant effect is an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. In broad terms, 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)”.*
- 6.5.18. The EclA guidelines (CIEEM, 2018) also state 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 adverse ecological effects can be lawfully permitted following EIA procedures” and “Significant effects should be qualified with reference to an appropriate geographic scale. For example, a significant effect on a Site of Special Scientific Interest or Natural Heritage Area is likely to be of national significance. European case law is specific regarding significance in relation to European sites and Annexed habitats. However, the scale of significance of an effect may not be the same as the geographic context in which the feature is considered important. For example, an effect on a species which is on a national list of species of principal importance for biodiversity may not have a significant effect on its national population. Examples of other relevant scales include regional and county. It should be noted that effects may be significant at the local scale, particularly in view of policies for no net loss of biodiversity”.*
- 6.5.19. The significance of effects is, therefore, qualified with reference to an appropriate geographic scale (based on the same frame of reference for determining importance) considering the extent and type of impacts, and populations of the affected receptor. The assessment of significance is based on professional judgement considering the nature and characteristics of the impact on the receptor. Given that features of less than Local importance are generally considered unlikely to trigger a

mitigation or policy response in EIA terms, it follows that effects on receptors that are significant at less than a Local-level are not-significant. Generally, the geographical scale of reference used to identify the level of effects relate to EIA terms (and outlined in **Chapter 2**) as follows:

- Negligible and Site-Level – Not significant;
- Local-level – Minor significant effect;
- County and Regional – Moderate significant effect; and
- Country, National and International – Major significant effect.

Zone of Influence (Zol)

- 6.5.20. The Zol is defined as the area within which there may be ornithological features subject to effects from the Site. Such effects could be direct, e.g., habitat loss resulting from land-take, or indirect, e.g. noise or visual disturbance causing a species to move out of the Zol. The Zol was determined through:
- Review of the existing baseline conditions based on desk study results, field surveys and information supplied by consultees;
 - Identification of sensitivities of ornithological features, where known;
 - Outline design of the Proposed Development and approach to construction; and
 - Liaison with other technical specialists involved in the assessment, e.g., noise.
 - A 10 km Zol has been adopted for the species considered in this assessment. This Zol encompasses all sites that could potentially be affected by impact mechanisms that are most wide-ranging. Potential impact mechanisms are:
 - Disturbance and displacement as a result of habitat loss, noise/vibration, or visual disturbance; and
 - Increased mortality.
- 6.5.21. Habitat loss and disturbance is only likely to have an effect on receptors within or close to the Proposed Development.
- 6.5.22. Noise and vibration related disturbance is only likely to have an effect on receptors within a Zol that is defined by the spatial extent over which noise and vibration impacts are predicted to arise.
- 6.5.23. Similarly, the extent of visual impacts will also be limited by the distance over which people and machinery might be seen. This is likely to be constrained by topography and vegetation and is unlikely to extend more than 1 km for ornithological receptors. Aviation lighting will be fitted to the arrays, increasing the visibility of turbines during poor weather conditions.
- 6.5.24. Whilst noise, vibration and visual disturbance effects arising from the development are likely to be limited in their spatial extent, a further consideration is the mobility of birds. For example, birds breeding in the local area may fly across the Proposed Development or utilise habitats within the Proposed Development. It is therefore possible that birds breeding locally that visit or commute across the Proposed Development could be affected by it. It is reasonable to assume that breeding birds could use areas within 10 km of the nest for provisioning of food and other resources.

- 6.5.25. A 10 km Zol is, therefore, considered to be appropriate based on the bird community recorded, i.e., birds using the upland habitats at the Site during the breeding season are unlikely to be ranging more than this distance from it (but could disperse further afield following breeding).

Cumulative effects

- 6.5.26. Cumulative effects are most likely to result with regard to those receptors for which a significant effect is predicted, as a result of development. Effects are likely to arise if the extent or condition (habitats) or core range of those ornithologically important features (OIFs) are also likely to be affected by planned, consented or built development. It is also possible that non-significant effects on ecological features from multiple projects may result in a significant cumulative effect.
- 6.5.27. Cumulative effects may therefore be:
- cumulative Zol effects whereby two or more developments which are considered insignificant in isolation have a net significant effect on the same specific feature, when considered in conjunction; and
 - cumulative effects on the total resource (or population) of an ecological feature in a region due to two or more developments (e.g., two developments affecting the same feature reducing its overall extent or number).
- 6.5.28. For the Proposed Development a 10 km Zol 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.

6.6 CURRENT BASELINE AND EVALUATION OF RECEPTORS

- 6.6.1. This section summarises the baseline ornithological conditions recorded through the course of field survey. This section identifies and evaluates those ornithological features/receptors that lie within the relevant Study Area(s) and which are pertinent in the context of the Proposed Development. Further technical details are provided in **Appendix 6b** and **Appendix 6c**.
- 6.6.2. It has been possible to “scope out” of the assessment, at this stage, species that are not likely to be significantly affected, for example, by virtue of the design or operation of the Proposed Development, or because they are very commonplace and/or of very low conservation value (unless there are other reasons to consider them further, for example, they may be legally protected or require special care and therefore require particular mitigation measures to be adopted when developing or operating the Proposed Development).
- 6.6.3. The decision whether to scope species in or out of further assessment considers their known susceptibility to collision with wind turbines and sensitivity to disturbance, their importance in nature conservation terms, and their level of use of the turbine locations and the airspace above them based on survey and desk study.
- 6.6.4. Where it has been possible to scope out a specific receptor, the rationale for doing so is outlined in the following text.

Statutory Designated Sites

- 6.6.5. The desk study identified one statutory site of nature conservation interest within 10 km of the Proposed Development. There was one Site of Special Scientific Interest (SSSI) which has ornithological interest. Other designated sites without ornithological interest are considered in

Chapter 5: Ecology. The nearest SPA (Berwyn) is 16 km from the Proposed Development, and therefore exceeded the threshold for consideration in terms of functional linkage for species/assemblages for which Berwyn SPA is designated, with the extent of the Study Area agreed with NRW.

6.6.6. Llyn Mawr SSSI is located approximately 170 m south-east of the Site at its closest edge, and the indicative access track (an existing public road) runs adjacent to it, to the east. NRW confirmed during consultation on the scope of the survey effort that, although waterfowl are referred to within the citation, the reasons for the notification of the SSSI are the oligotrophic nature of the pool and the associated fringing bog communities, as opposed to its ornithological or faunal interest.

6.6.7. Statutory designated sites are shown on **Figure 6.1**.

Evaluation of Statutory Designated Sites

6.6.8. SSSIs are of National (United Kingdom) Importance. This reflects the role of SSSIs in providing the best examples of the UK's flora, fauna, or geological or physiographical features (notified under the Wildlife and Countryside Act 1981).

6.6.9. There is no overlap between the Proposed Development and the Llyn Mawr SSSI, although the indicative access track runs adjacent to the eastern part of the SSSI. Although the SSSI is not notified for its ornithological interest, a range of birds of conservation value use Llyn Mawr. Despite the proximity of the SSSI to the Proposed Development, no direct or indirect impacts to Llyn Mawr are anticipated, and therefore Llyn Mawr SSSI is **Scoped out** of further assessment.

Non-statutory Designated Sites

6.6.10. The desk study identified one non-statutory designated site: Llyn Du Site of Importance for Nature Conservation (SINC), which is located 570 m south of the Site boundary. The SINC comprises the Llyn Du waterbody and edge habitats and is approximately 4.2 ha in area. No information regarding the reasons for designation of this site is publicly available.

Evaluation of Statutory Designated Sites

6.6.11. SINC are of Local Importance. This reflects the provision of habitat which may be locally important. Given the distance of the SINC from the Site boundary (570 m) the SINC will not be affected by the Proposed Development. The Llyn Du SINC is not designated for any ornithological interest, and therefore, **Scoped Out** of further assessment.

Species

Red Kite

Desk Study

6.6.12. The National Biodiversity Network (NBN) hold records of red kite *Milvus milvus* from within 2 km of the Site (though these are observations of individuals rather than relating to evidence of breeding). Additional data received from BIS³⁴ included 52 records between 1992 – 2021 within 2 km of the Site. No data in relation to breeding was received.

³⁴ Biodiversity Information Services: BIS is one of four Local Environmental Record Centres covering Wales.

Flight Activity

- 6.6.13. A total of 166 red kite flights were recorded during the VP surveys. These are categorised as follows:
- 42 flights during the 2022 breeding season VP surveys;
 - 54 flights during the 2022/2023 winter season VP surveys;
 - 27 flights during the 2023 breeding season VP surveys; and
 - 43 flights during the 2023/2024 winter season VP surveys.
- 6.6.14. These flights resulted in a total flight time of 5 hours, 28 minutes and 45 seconds of which 5 hours, 5 minutes and 32 seconds was spent at collision risk height. Flights at collision risk height occurred as follows:
- 1 hour, 57 minutes and 25 seconds during the 2022 breeding season VP surveys;
 - 2 hours, 24 minutes and 5 seconds during the 2022/2023 winter season VP surveys;
 - 21 minutes and 8 seconds during the 2023 breeding season VP surveys; and
 - 29 minutes and 54 seconds during the 2023/2024 winter season VP surveys.
- 6.6.15. Red kite activity was widely distributed across the Site, with the majority of activity over the central and western parts of the Site. Activity related to birds commuting and foraging over the Site with the majority of flights involving singletons, and a maximum of three birds together in Year 1, and four in Year 2. Flight activity generally was lower in Year 2 than in Year 1 (with a 27% decrease in the number of flights). There was a 35% decrease in the number of flights between the 2022 and 2023 breeding seasons, and a 20% decrease in the number of flights between the 2022/2023 and 2023/2024 non-breeding seasons. There was no apparent change in land management on Site or in proximity to the breeding territories which accounts for the disparity between the two years' data, and this change in occurrence likely reflects the 'snap-shot' nature of surveys.
- 6.6.16. Red kite flights are shown on **Figure 6.3 – Figure 6.6.**

Breeding Activity

- 6.6.17. Red kite did not breed within the Site. There was one probable nest within 40 m of the Access Route, and one probable red kite territory present 450 m south-west of the Site in both years. The nest along the Access Route was within woodland within an inaccessible area: a recently fledged juvenile was present at this location during the final survey. The probable territory was located within deciduous woodland within a valley to the south-west of the Site, with birds recorded calling and undertaking display flights above the woodland in both years.
- 6.6.18. Red kite territories are shown on **Confidential Figure 6.17.**

Evaluation

- 6.6.19. The conservation status of red kite was amended from amber-listed to green-listed in the UK in 2015, and in Wales in 2023 on account of its rapidly expanding range (Eaton *et al*, 2015³⁵; Johnstone *et al.*, 2022³⁶). The red kite population in the UK increased by 159 % in the ten years between 2010 to 2020, and the population in Wales increased by 76% over the same period (Haywood *et al*, 2023). The species' breeding range now includes much of central and south Wales, and the Welsh population was estimated to be 2,500 pairs in 2019 (Welsh Kite Trust, 2020). A revised figure of 2,117 pairs in 2022 was suggested by Hereward *et al.*, (2024)³⁷. Data on the Powys population has not been published in recent annual reports³⁸, however work by the Welsh Kite Trust found a minimum of 39 territories within a sample area in eastern Powys alone, and a large proportion of the Welsh population is generally held to be present in Powys³⁹.
- 6.6.20. Given the relatively low activity levels recorded over the Site⁴⁰, and the absence of breeding activity on Site, it is likely that that the Site is of no more than **Local-level** importance. Red kite is **Scoped in** for further assessment on the basis that this species will be susceptible to impacts resulting from potential collision with turbines, despite the low levels of flight activity recorded.

Hen harrier

Desk Study

- 6.6.21. There were no records of hen harrier returned from NBN. Seven records were received from BIS; three records of a male and one female during 2008 (no date provided), two records between 2007 and 2008 (no further data provided) and one record spanning the period April to June 2018 (no further details provided). No data were received that suggested local breeding.

Flight Activity

- 6.6.22. A total of five hen harrier flights were recorded during the VP surveys. These are categorised as follows:
- One flight during the 2022 breeding season VP surveys;
 - Three flights during the 2022/2023 winter season VP surveys;
 - No flights during the 2023 breeding season VP surveys; and
 - One flight during the 2023/2024 winter season VP surveys.
- 6.6.23. These flights resulted in a total flight time of 13 minutes and 36 seconds of which all was below collision risk height.

³⁵ Eaton, M., Aebischer, N., Brown, A.F., Hearn, R., Lock, L., Musgrove A.J., Noble, D., Stroud, D., and Gregory, R. (2015). Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. British Birds. 108. 708-746.

³⁶ Johnstone, I.G., Hughes, J., Balmer, D.E., Brenchley, A., Facey, R.J., Lindley, P.J., Noble, D.G. & Taylor, R.C. 2022. Birds of Conservation Concern Wales 4: the population status of birds in Wales. Milvus

³⁷ Hereward, H.F.R., Macgregor, C.J., Gabb, O., Connell, A., Thomas, R.J., Cross, A.V. & Taylor, R.C. (2024). Modelling population-level impacts of wind farm collision risk on Welsh Red Kites. BTO Research Report 766, BTO, Thetford, UK

³⁸ Montgomeryshire Annual Bird Report. Available online: [MONTGOMERYSHIRE BIRDS: County Reports](#)

³⁹ Welsh Kite Trust (2019). Red Kites in East Powys 2019. Available online: [Red Kites in East Powys](#)

⁴⁰ Total flight time of comparable sites in the local area: Llanbrymair (18h, 21, 45s – 126 flights from 7 VPs); Bryn Cadwgan (10h, 9 m, 16s 460 flights from 8 VPs); Bryn Titli (4h 6m, 5s* 145 flights from 6 VPs single year only)

- 6.6.24. All flights involved singletons quartering⁴¹ over open ground, with two flights involving an adult male, one flight involving a second calendar year male, and two flights involving 'ringtails'⁴². Flight activity was higher during Year 1, with four of the five flights recorded during this initial survey period.
- 6.6.25. Two additional flights were noted outside of VP surveys; one in May 2022 and one in June 2022. Both flights were located south of the Site boundary (north of Llyn Mawr and Llyn y Tarw); the May flight involved an adult male bird hunting over moorland and the June flight involved a female commuting east.
- 6.6.26. Hen harrier flights are shown on **Figure 6.7**.

Breeding Activity

- 6.6.27. Hen harrier did not breed on the Site.

Evaluation

- 6.6.28. Hen harrier is included in Section 7 of the Environment (Wales) Act 2016 and is red listed in Wales (Johnstone *et al.*, 2022) and the UK (Stanbury *et al.*, 2021⁴³). It is a scarce breeding species in mid and north Wales (WOS, 2021). Between 2021 – 2024, two to three pairs bred at Lake Vyrnwy RSPB reserve, with two territories present around Glaslyn in 2021, approximately 20 km north of the Site. Hen harrier is widely recorded within Montgomeryshire, though limited data on counts and time periods is provided within the annual bird reports⁴⁴. There is no habitat present on the Site that is suitable to support breeding hen harrier (due to human disturbance, topography, land use and grazing pressure in some areas). Potentially suitable breeding habitat is present to the north-west and south-west of the Site, some of which falls within 2 km of the Site boundary.
- 6.6.29. Hen Harrier activity levels were low throughout the survey period. Recorded flight activity during the 2022 breeding season (with three flights recorded in May and June) may indicate a summering non-breeding bird was using the wider local landscape at that time, but no evidence of breeding was recorded. Given the lack of evidence of breeding within 2 km of the Proposed Development, infrequent records outside the breeding season and the limited value of habitats within the Site to the species, it is unlikely that the importance of the Site for hen harrier will extend beyond the level of the **Site** itself. Hen harrier is **Scoped Out** of further assessment.

Hobby

Desk Study

- 6.6.30. There were no records of hobby returned from NBN. BIS returned two records from 2007, although no additional details were provided. No data in relation to breeding was received.

⁴¹ This activity relates to slow, low-level flight during which birds are hunting.

⁴² Adult female and juvenile birds (of both sexes) are referred to as "ringtails" and are difficult to separate without very good views.

⁴³ Stanbury, A.J., Eaton, M.A., Aebischer, N.J., Balmer, D., Brown, A.F., Douse, A., Lindley, P., McCulloch, N., Noble, D.G. & Win, I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds* 114: 747.

⁴⁴ [MONTGOMERYSHIRE BIRDS: County Reports](#)

Flight Activity

- 6.6.31. One hobby flight was recorded during the breeding season VP surveys, on 12 July 2022. The flight lasted for 2 minutes and 15 seconds and was at collision risk height throughout. The flight involved an adult bird commuting south-west over the Site, from land east of Y Glonc towards Craig Lithrig.
- 6.6.32. Hobby flights are shown on **Figure 6.8**.

Breeding Activity

- 6.6.33. Hobby did not breed on the Site, and was not recorded breeding within the 2 km perimeter survey area.

Evaluation

- 6.6.34. Hobby is a scarce migratory breeding species in the UK and Wales. The UK breeding population was estimated at 2,050 pairs in 2016 (Woodward *et al.*, 2020⁴⁵). The UK breeding population declined by 11% over the 10-year period from 2011 to 2021 (Heywood *et al.*, 2023⁴⁶). In Wales, most breeding records are from the south-east. However, hobby was considered to have bred in every Welsh county (except Anglesey) by 2019, with the Welsh population in the region of 205 pairs in 2018⁴⁷. On average, three pairs bred annually within the Montgomeryshire recording area in the period 2021 – 2024⁴⁸. No breeding was recorded within the Site, and the Proposed Development is unlikely to impact the available foraging habitat around the waterbodies to the south of the Site. The lack of observations suggests that the Site is likely to be of **negligible importance** to hobby. This species is **Scoped Out** of further assessment.

Peregrine

Desk Study

- 6.6.35. NBN returned data showing peregrine was 'present' within 10 km of the Site, but no further information was provided. BIS returned six records between 2007 – 2018; three records between 2007 – 2008 (no further data provided), one record from September 2021 (no further data provided) and two records between 2017 – 2018 concerning a bird seen with a prey item to the east of the Site, and an adult recorded in flight respectively. No data in relation to breeding was received.

Flight Activity

- 6.6.36. A total of seven peregrine flights were recorded during the VP surveys. These are categorised as follows:
- Four flights during the 2022 breeding season VP surveys;
 - No flights during the 2022/2023 winter season VP surveys;
 - No flights during the 2023 breeding season VP surveys; and
 - Three flights during the 2023/2024 winter season VP surveys.

⁴⁵ Woodward, I., Aebischer, N., Burnell, D., Eaton, M., Frost, T., Hall, C., Stroud, D.A. & Noble, D. (2020). Population estimates of birds in Great Britain and the United Kingdom. *British Birds* 113: 69–104

⁴⁶ Heywood, J.J.N., Massimino, D., Balmer, D.E., Kelly, L., Marion, S., Noble, D.G., Pearce-Higgins, J.W., White, D.M., Woodcock, P., Wotton, S. & Gillings, S. 2024. The Breeding Bird Survey 2023. BTO Research Report 765. British Trust for Ornithology, Thetford.

⁴⁷ Hughes, J., Spence, I.M. and Gillings, S. (2020) Estimating the sizes of breeding populations of birds in Wales. *Birds in Wales* 17 (1) 56-67.

⁴⁸ Montgomeryshire Birds Annual Reports 2021 – 2024.

- 6.6.37. These flights resulted in a total flight time of 6 minutes and 8 seconds of which 5 minutes and 25 seconds was at collision risk height. Flights at collision risk height occurred as follows:
- 5 minutes and 30 seconds during the 2022 breeding season VP surveys;
 - Unrecorded during the 2022/2023 winter season VP surveys;
 - Unrecorded during the 2023 breeding season VP surveys; and
 - 1 minute and 38 seconds during the 2023/2024 winter season VP surveys.
- 6.6.38. Flight activity was broadly distributed across the entire Site, with birds recorded commuting and hunting during VP surveys. Small-scale variation in flight activity was recorded between the two years of baseline survey, with no flights recorded during the Year 1 non-breeding season (three were recorded during the same period in Year 2) and no flights recorded during the Year 2 breeding season (four were recorded during the same period in Year 1).
- 6.6.39. Two additional flights were recorded outside of VP surveys; in April 2022 an unsexed adult was recorded flying north-east over the south-eastern part of the Site during breeding wader surveys, and in February 2024 a bird was seen briefly in flight during a winter walkover survey.
- 6.6.40. Peregrine flights are shown on **Figure 6.8**.

Breeding Activity

- 6.6.41. Peregrine did not breed within the Site. In 2022, an apparent nesting attempt took place in a quarry 1.7 km north of the Site. Birds were recorded from this location between April and July, with a pair recorded on two occasions. In July, two recently fledged juveniles were present within the quarry, proving that a successful breeding attempt had taken place. An adult male was present within the same quarry during May 2023; however, no further evidence of occupation was recorded during subsequent checks, and any breeding attempt that may have taken place is assumed to have failed.
- 6.6.42. Peregrine territories are shown on **Confidential Figure 6.17**.

Evaluation

- 6.6.43. The UK population of peregrine increased by 22 % over the twelve years between 2002 and 2014 (Wilson *et al.*, 2018⁴⁹) and more than quadrupled over the 43 years 1971 to 2014. Peregrine is an uncommon resident breeding species in Wales (WOS, 2022), with a stable breeding population estimated at 280 pairs in 2014 (Wilson *et al.*, 2018). There is no suitable habitat on the Site for breeding peregrine, with the nearest suitable habitat the quarry which was occupied during survey work. The population in Montgomeryshire is considered to be stable, with approximately 15 breeding pairs within the recording area.
- 6.6.44. Peregrine flight activity is very limited over the Site, with few observations made during the survey work (four flights in the breeding season of 2022, and three during the winter of 2023/24). Extrapolation from this low frequency of detection is unlikely to generate any meaningful collision risk prediction, and, it follows, any impact on populations at any geographic level. Despite breeding within 2 km of the Proposed Development, activity levels suggested that the Site does not form part

⁴⁹ Wilson, M.W., Balmer, D.E., Jones, K., King, V.A., Raw, D., Rollie, C.J., Rooney, E., Ruddock, M., Smith, G.D., Stevenson, A., Stirling-Aird, P.K., Wernham, C.V., Weston, J.M. & Noble, D.G. (2018) The breeding population of peregrine falcon *Falco peregrinus* in the United Kingdom, Isle of Man and Channel Islands in 2014. *Bird Study* 65(1): pp.1-19

of the regular commuting or foraging area. Peregrine show high fidelity to traditional nest sites, and there are no historical breeding records for the Site. The low activity levels recorded over the Site suggest that the Site is likely to be of **negligible importance**, and therefore peregrine is **Scoped Out** of further assessment.

Merlin

Desk Study

- 6.6.45. NBN returned data showing merlin was 'present' within 10 km of the Site, but no further information was provided. BIS returned two historic records; merlin was present between March – October 1978 (no further details), with a second undated record in 1992 (no further details). No data in relation to breeding was received.

Flight Activity

- 6.6.46. Merlin was not recorded during VP surveys in either year. There was one observation of a first calendar year / female bird flying north along the western Site boundary during the walkover surveys on 22 November 2022.

Breeding Activity

- 6.6.47. Merlin did not breed on the Site. Merlin was recorded on two occasions during breeding raptor surveys, with both observations relating to adults (one male in April 2022 and one female in June 2022) sitting on fenceposts adjacent to an area of open moorland approximately 2.2 km north of the Site boundary. There were no other observations during survey work.

Evaluation

- 6.6.48. Merlin is included in Section 7 of the Environment (Wales) Act 2016 and is red listed in the UK (Stanbury *et al.*, 2021) and in Wales (Johnstone *et al.*, 2022). It is a scarce breeding resident and uncommon passage and winter migrant in Wales (WOS, 2021). The Welsh population is estimated at 46 pairs (WOS, 2021). Merlin is a rare breeder within Montgomeryshire, with 1 – 2 pairs present in the Lake Vyrnwy area between 2021 – 2024, with successful breeding only recorded in the latter year. The species is an uncommon and occasional winter visitor to Montgomeryshire, with between four and eleven observations per annum away from breeding locations.
- 6.6.49. Merlin was recorded on three occasions during Year 1, but not subsequently. The seasonality of the records suggests that the Site was used occasionally during the breeding season, and infrequently during the winter period. The absence of data from Year 2 may indicate a change in the distribution of merlin within the local area between years. The combination of an absence of flight data, and a low level of activity entirely limited to Year 1 suggests that the Site is likely to be of **negligible importance** to merlin. This species is **Scoped Out** of further assessment.

Kestrel

Desk Study

- 6.6.50. NBN returned a total of 62 kestrel records for the period 1978 – 2019. BIS returned a total of 51 records between 1972 – 2019. Breeding was confirmed in nest boxes, immediately to the south of the Site at Llyn Mawr during 2020, with additional breeding records between 2017 – 2019 from Tirgwynt Wind Farm, approximately 1.5 km to the north of the Site.

Flight Activity

- 6.6.51. A total of 30 kestrel flights were recorded during the VP surveys. These are categorised as follows:
- 12 flights during the 2022 breeding season VP surveys;
 - 15 flights during the 2022/2023 winter season VP surveys;
 - 2 flights during the 2023 breeding season VP surveys; and
 - 1 flight during the 2023/2024 winter season VP surveys.
- 6.6.52. These flights resulted in a total flight time of 1 hour, 15 minutes and 54 seconds of which 56 minutes and 10 seconds was spent at collision risk height. Flights at collision risk height occurred as follows:
- 23 minutes and 30 seconds during the 2022 breeding season VP surveys;
 - 30 minutes and 45 seconds during the 2022/2023 winter season VP surveys;
 - 1 minutes and 1 second during the 2023 breeding season VP surveys; and
 - 54 seconds during the 2023/2024 winter season VP surveys.

- 6.6.53. Kestrel flights are shown on **Figure 6.9** and **Figure 6.10**.

Breeding Activity

- 6.6.54. Kestrel bred within the Site in all three years of survey⁵⁰. The nest location changed in all three years: in Year 1 kestrel bred in a nest box on an agricultural building close to the eastern boundary of the Site. Successful breeding was confirmed on 14 July 2022, with two adults and at least two recently fledged juveniles present near to the box; in Year 2 kestrel bred within a different nest box (and was not recorded from the nest box used in Year 1) located 1.8km from the previous nesting location, to the southeast of the Site. Successful breeding was confirmed with the presence of two juveniles and an adult female together close to the building on which the nest box was located on 19 July 2023. In 2024, breeding was confirmed from a third location – a further nestbox attached to farm buildings, approximately 255 m south-southwest from where successful breeding had taken place in 2023.
- 6.6.55. Kestrel nest sites are shown on **Confidential Figure 6.17**.

Evaluation

- 6.6.56. Kestrel is an amber listed bird of conservation concern in Wales, with approximately 1,750 pairs present in Wales (Johnstone *et al.*, 2022). Kestrel is classified as a scarce breeding species in Montgomeryshire, with most breeding activity recorded via monitoring of nestboxes; survival to fledging age is considered high, with 22 nestlings ringed from 5 boxes in 2023, and 24 nestlings ringed from 5 boxes in 2024⁵¹. The utilisation of the Site for both breeding and foraging was recorded at a consistent level across both years of survey effort. The Site is considered to have value for breeding, foraging and commuting kestrel and is therefore important at the **Local** level. Kestrel is therefore **Scoped in** to this assessment.

⁵⁰ Breeding within nestboxes recorded during breeding raptor surveys in 2022 and 2023, and again during breeding bird characterisation surveys in 2024.

⁵¹ Data from Montgomeryshire Bird Reports for 2023 and 2024. Specific locations for the nestboxes were not provided within the report.

Short-eared owl

Desk Study

- 6.6.57. NBN returned data that indicates the presence of short-eared owl within 10 km of the Site, but no further information was provided. BIS returned a total of five records between 1992 – 2020. The records were: one observation dated 1992 (with no additional information provided); one dated January 2017; and three dated December 2020, with observations including up to 10 individuals, most likely a wintering population associated with a non-breeding roost. No data in relation to the locations of these observations, or evidence of any breeding was received.

Flight Activity

- 6.6.58. A total of three short-eared owl flights were recorded during the VP surveys. These were as follows:
- No flights during the 2022 breeding season VP surveys;
 - Two flights during the 2022/2023 winter season VP surveys;
 - No flights during the 2023 breeding season VP surveys; and
 - One flight during the 2023/2024 winter season VP surveys.
- 6.6.59. These flights resulted in a total flight time of 2 minutes and 58 seconds of which 45 seconds was spent at collision risk height, the remainder below. The entire 45 second flight at collision risk height was on 13 October 2022.
- 6.6.60. Flight activity was confined to the area north of Llyn y Tarw, approximately 1 km west north-west of the Site. All three flights involved singletons quartering over open moorland, with one observation of an individual being mobbed by a sparrowhawk whilst hunting. There were no observations during the breeding season.
- 6.6.61. Short-eared owl flights are shown on **Figure 6.8**.

Breeding Activity

- 6.6.62. Short-eared owl did not breed within the Site.

Evaluation

- 6.6.63. Short-eared owl is an amber listed bird of conservation concern in Wales. No recent data for the Welsh population has been published, with approximately 18 pairs during the period 2013 – 2017⁵². Short-eared owl is a rare breeding bird in Montgomeryshire, with breeding only occurring regularly at one site (Lake Vyrnwy). Numbers recorded during the non-breeding season fluctuate, and reflect the number of immigrant individuals arriving in the UK from continental Europe. On the basis that low numbers of both individuals and flights were recorded, the Site is considered to be of **Site Level** importance only, and short-eared owl is **Scoped Out** of further assessment.

Nightjar

Desk Study

- 6.6.64. No data for nightjar was received from either NBN or BIS.

⁵² Holling, M. and Rare Breeding Bird Panel (2019). Rare breeding birds in the UK 2018. British Birds. 111 (11) 635 – 710.

Breeding Activity

- 6.6.65. One nightjar territory was recorded on 14 July 2022, in clear-fell adjacent to coniferous plantation on the western slope of the valley at Blaen-y-Cwm, approximately 380 m west of the Site boundary. The bird was recorded churring, and subsequent wing-clapping and calling were recorded when the bird took flight. No nightjar activity was recorded during the June 2022 survey that preceded the second visit. No surveys were conducted during Year 2 following agreement that they could be scoped out in consultation with NRW.

Evaluation

- 6.6.66. Nightjar was recorded on a single occasion during Year 1. As a result of the absence of suitable breeding and foraging habitat on Site, and the distance between the territory location and the Proposed Development. Natural Resources Wales (NRW) agreed that nightjar could be scoped out of survey effort in the second year. Although nightjar can forage widely, the Site is likely to offer typical rather than higher value foraging resource in the context of the local landscape. As a result, the Site is considered to be of **negligible** importance, and the species is **Scoped Out** of further assessment.

Mallard

Desk Study

- 6.6.67. NBN returned 164 records for mallard for the period 1978 – 2018. BIS returned 49 records between 1978 and 2021. British Trust for Ornithology (BTO) Wetland Bird Survey (WeBS)⁵³ data indicate a peak count of 75 individuals in the 2000 – 2001 winter period. Confirmed breeding took place in either 2007 or 2008, with a record of 'one adult with two young' returned. All records are assumed to relate to the three waterbodies to the south of the Proposed Development.

Flight Activity

- 6.6.68. A total of three mallard flights were recorded during the VP surveys. These are categorised as follows:
- One flight during the 2022 breeding season VP surveys;
 - No flights during the 2022/2023 winter season VP surveys;
 - Two flights during the 2023 breeding season VP surveys; and
 - No flights during the 2023/2024 winter season VP surveys.
- 6.6.69. These flights resulted in a total flight time of 2 minutes and 11 seconds of which 30 seconds was spent at collision risk height, the remainder below. The flight at collision risk height was on 13 May 2022.
- 6.6.70. Flight activity was confined to the southern half of the Site, with one flight involving an adult male over the western boundary during 2022, and two flights over the eastern boundary in 2023, one involving an adult male, and the second involving a male and female. All flights were during the breeding season.

⁵³ Calbrade, N.A., Birtles, G.A., Woodward, I.D., Feather, A., Hiza, B., Caulfield, E., Balmer, D.E., Peck, K., Wotton, S.R., Shaw, J.M., and Frost, T.M. 2025. Waterbirds in the UK 2023/24: The Wetland Bird Survey and Goose & Swan Monitoring Programme. BTO/RSPB/JNCC/NatureScot. Thetford.

6.6.71. Mallard flights are shown on **Figure 6.12**.

Breeding Activity

6.6.72. Mallard were confirmed to have bred on Llyn Mawr in 2022, when four recently hatched chicks were observed with adults on 15 July. There was no evidence that breeding had taken place in 2023. However, adults were present at Llyn Mawr throughout the breeding season in both years, with peak counts of six in 2022 and seven in 2023.

Evaluation

6.6.73. Mallard is a green listed bird of conservation concern in Wales, with between 4,600 – 11,000 breeding pairs. Given the favourable conservation status of mallard in Wales, and the overall low levels of activity recorded, the Site is considered to be of **negligible** value, and the species is **Scoped Out** of further assessment.

Tufted duck

Desk Study

6.6.74. NBN returned 209 records of tufted duck for the period 1978 -d 2018 and BIS returned 52 records between 1978 – 2021 from the three lakes to the south of the Site (Llyn Du, Llyn Mawr and Llyn y Tawr). BTO WeBS data returned a peak count of 21 individuals on Llyn Mawr in the 1994 – 1995 winter period. No data in relation to breeding was received.

Activity

6.6.75. Tufted duck was not present during VP surveys, and no other flight activity was recorded.

6.6.76. In Year 1, tufted duck was present on Llyn Mawr throughout the breeding season, although no evidence that a breeding attempt had taken place was recorded. The maximum count during the waterbody surveys was four individuals, with at least two present during all surveys. During the Year 1 non-breeding season, tufted duck were observed on two occasions, with eight present in October 2022 and four in January 2023. Tufted duck was not recorded during Year 2.

Evaluation

6.6.77. Tufted duck is a green listed bird of conservation concern in Wales, with a breeding population of between 765 and 2,250 breeding pairs. Tufted duck observations were limited to presence on the waterbodies to the south of the Site. There is no suitable habitat present within the Proposed Development area. Given the favourable conservation status of tufted duck in Wales, and the overall low levels of activity recorded on Site any impacts to the species are considered **negligible**, and the species is **Scoped Out** of further assessment.

6.6.78. **Teal**

Desk Study

6.6.79. NBN returned 56 records of teal for the period 1978 – 2013. BIS returned 10 records between 1978 – 2021 from the three lakes to the south of the Site (Llyn Du, Llyn Mawr and Llyn y Tawr), including a maximum count of 16 in 1978 on Llyn Mawr. BTO WeBS data showed a maximum of 51 on Llyn Mawr in 1992/1993 winter period. No data in relation to breeding was received.

Activity

- 6.6.80. Teal were recorded on one occasion during waterbody surveys: 12 were present on Llyn Mawr during January 2023. The observation followed a period of cold weather, which coincided with several species of wildfowl being recorded (see goosander and goldeneye). Teal was not present during VP surveys, and no other flight activity was recorded.

Evaluation

- 6.6.81. Teal is an amber listed bird of conservation concern in Wales and has a breeding population of 60 – 250 pairs. There were no opportunities for foraging at the Site, with the nearest suitable habitat off-site and limited to the immediate surrounds of Llyn Mawr. Teal were recorded on a single occasion after a period of cold weather, suggesting that other more suitable locations are typically favoured in all but exceptional weather conditions. Teal observations were limited to presence on the waterbodies to the south of the Site, and there was no suitable foraging and/or breeding habitat present within the Proposed Development area. Given the overall low level of activity recorded, the value of the site for teal is considered to be **negligible**, and the species is **Scoped Out** of further assessment.

Goosander

Desk Study

- 6.6.82. NBN returned 33 records of goosander for the period 1978 – 2018. BIS returned 16 records between 1978 – 2021, with peak counts of 14 between 1996 – 1998 on Llyn Mawr. BTO WeBS data showed a maximum of 14 in the winter 1996/1997 period. No data in relation to breeding was received.

Flight Activity

- 6.6.83. Goosander was recorded on two occasions during VP surveys, with both flights during Year 2: one in each of the breeding and winter periods. No flights were recorded during the Year 1 work.
- 6.6.84. An adult female was recorded flying north-east from Llyn Mawr for 15 seconds below collision risk height on 5 April 2023, and a pair was recorded flying in the direction of Llyn y Tarw for 37 seconds below collision risk height on 12 March 2024.
- 6.6.85. Goosander flights are shown on **Figure 6.12**.

Other Activity

- 6.6.86. During Year 1, goosander was recorded on one occasion: four unsexed and unaged birds were present on Llyn Mawr in January 2023 during a period of cold weather. There were no other observations during Year 1.
- 6.6.87. During Year 2, there were three observations during the non-breeding waterbody counts: two unsexed and unaged birds were present in January 2024, with two and four birds present in February 2024. Goosander was absent from Llyn Mawr, with all observations at Llyn y Tarw.

Evaluation

- 6.6.88. Goosander is a green listed bird of conservation concern in Wales, with a population of approximately 685 breeding pairs. In Montgomeryshire the species is widespread, usually on rivers during the breeding season before moving to larger waterbodies in the winter. Goosander observations were limited to presence on the waterbodies outside, and to the south of the Site, and

there was no suitable habitat for foraging or breeding present within the Proposed Development area. Given the overall low level of activity recorded, the value of the Site for goosander is considered to be **negligible**, and the species is **Scoped Out** of further assessment.

Goldeneye

Desk Study

- 6.6.89. NBN data returned a total of 74 records of goldeneye for the period 1978 – 2015. BIS returned 52 records for the same period, all from Llyn Mawr. BTO WeBS data showed a maximum of six on Llyn Mawr in the winter periods 1995 -1996 and 1996 – 1997. No data in relation to breeding was received.

Activity

- 6.6.90. During Year 1, goldeneye was recorded on one occasion during waterbody surveys: three were present on Llyn Mawr during January 2023 during a period of cold weather. There were no other observations during Year 1.
- 6.6.91. During Year 2, there were two observations during the non-breeding waterbody counts: three unsexed and unaged birds were present at Llyn Mawr in January 2024, and one male was present on Llyn y Tarw in February 2024.

Evaluation

- 6.6.92. Goldeneye is an amber listed bird of conservation concern species in Wales. In Montgomeryshire the species is a scarce wintering visitor which occurs in variable numbers with between one and six recorded annually between 2021 – 2024. Goldeneye observations were limited to presence on the waterbodies outside of, and to the south of the Site, and there was no suitable habitat present within the Proposed Development area. Given the overall low level of activity recorded, the value of Site is considered **negligible** for goldeneye, and the species is **Scoped Out** of further assessment.

Golden plover

Desk Study

- 6.6.93. NBN returned data showing golden plover was 'present' within 10 km of the Site, but no further information was provided. BIS returned a total of four records between 1978 – 2010, all relating to wintering birds, though no further information (including approximate location) was provided.

Flight Activity

- 6.6.94. A total of 24 golden plover flights were recorded during the VP surveys. Flights were noted between November 2022 and April 2023 inclusive and October 2023 and March 2024 inclusive.
- 6.6.95. These flights resulted in a combined total flight time of 47 minutes and 44 seconds of which 40 minutes and 46 seconds was spent at collision risk height. These are categorised as follows:
- 1 minute 30 seconds in November 2022;
 - 1 minute 45 seconds in March 2023;
 - 3 minutes 28 seconds in April 2023;
 - 24 minutes 2 seconds in October 2023;
 - 6 minutes 10 seconds in January 2024; and
 - 36 seconds in March 2024.

6.6.96. Golden plover flights are shown on **Figure 6.13**.

Other Activity

6.6.97. Golden plover were recorded during the winter walkover surveys during the non-breeding season of both Year 1 and Year 2. In Year 1, birds were recorded between October and December 2022 inclusive and in March 2023, with flocks widely distributed across the entire local area. The maximum count was of 175 individuals in November 2022, with a minimum of three individuals recorded. All observations related to birds in flight over the eastern part Site, and were likely part of the population present within the local area during the late winter passage period. During Year 2, birds were recorded in January and February 2024, with a flock of 13 loafing on open ground in the north-west part of the Site, and 41 flying over the northern part of the Site respectively.

Evaluation

- 6.6.98. Golden plover is a rare breeding bird within the Montgomeryshire recording area, with the most recent record in relation to a territorial male present at Lake Vyrnwy in April 2023⁵⁴. Passage and wintering birds occur in variable numbers, with generally between 20 – 80 individuals present at scattered locations, with the largest recent flock (approximately 1,500 individuals) recorded in November 2023 near Llanidloes⁵⁵. The temporal distribution of the Calon y Gwynt records indicates that golden plover utilise the Site for foraging/loafing during passage periods, with birds largely departing the area during the mid-winter period; this is reflected in the absence of data during December in Year 2, and the low count during January 2024. Numbers of golden plover vary between years, .
- 6.6.99. Golden plover remained within the wider area during late autumn, and was not recorded foraging or loafing on Site, suggesting that the Site does not provide resource during the passage period. The data indicate that larger flocks of golden plover are present within the local area, and the habitats on Site are unremarkable in this context, and do not offer preferred areas for foraging or loafing. However, there were some scattered flights over the airspace above the Site (albeit at variable levels across the two years) suggesting that golden plover will occasionally utilise this spatial parameter. The Site is, therefore, considered to be important at the **Local** level. Golden plover is **Scoped in** to this assessment.

Lapwing

Desk Study

6.6.100. NBN returned a total of nine records for the period 1992 – 2011. BIS returned 13 records between 1978 – 1998, which included a high count of 18 in 1995 (no further data provided). No data in relation to breeding was received.

Flight Activity

6.6.101. Lapwing were recorded on one occasion during Year 1 only; two were observed in flight over the northern part of the Site near Y Glonc during VP surveys in December 2022. The flight lasted for 2 minutes, of which 30 seconds was at collision risk height and the rest below. The birds were seen to land twice briefly during the flight before continuing to the north-west.

⁵⁴ Montgomeryshire Bird Report: 2023. Available online at https://drive.google.com/file/d/1e0EpuYLFdr_68ocDYSMeM0G3WaW6bVCA/view?usp=sharing

⁵⁵ As above

6.6.102. The lapwing flight is shown on **Figure 6.18**.

Evaluation

6.6.103. Lapwing is a red listed bird of conservation concern in Wales, and has declined as a breeding bird, with the last published data suggesting 1,689 pairs in 1998, although a more recent estimate based on BBS data suggested a population of 830 – 1,360 in the period 2008 - 2011. Lapwing is a regular breeder in small numbers in the county, with concentrations at single sites (e.g. 10 pairs near Caerhowel approximately 20 km to the east of the Site), and is present in larger numbers during the winter as a result of dispersal and immigration (e.g. 8000 at Arddleen approximately 29 km north-east of the Site in 2024)⁵⁶. Given the overall low level of activity recorded, the value of Site is considered **negligible** for lapwing, and the species is **Scoped Out** of further assessment.

Turnstone

Desk Study

6.6.104. No data for turnstone was received from either NBN or BIS.

Flight Activity

6.6.105. Turnstone was recorded on one occasion during Year 1 only; three birds were observed flying south over the Site on 16 December 2022. The entire 1 minute and 30 second flight was below collision risk height. Turnstone was not recorded during the remainder of the survey effort.

6.6.106. Turnstone flights are shown on Figure 6.18.

Evaluation

6.6.107. Turnstone is an amber listed bird of conservation concern in Wales; the species does not breed in the UK. Turnstone is a rare passage migrant in Montgomeryshire, with one record between 2020 – 2025. The record of turnstone at the Site followed a period of hard (cold) weather, which likely caused turnstone to move to alternative wintering locations in response. Given the overall low level of activity the value of Site is considered **negligible** for turnstone, and the species is **Scoped Out** of further assessment.

Redshank

Desk Study

6.6.108. NBN and BIS returned two records of redshank (singles in 1978 and 2014).

Activity

6.6.109. Redshank was recorded on one occasion during Year 1 only; two were present during breeding wader surveys in July 2022, flying to Llyn Mawr from the south-east before continuing west. Redshank was not recorded during the remainder of the survey effort.

6.6.110. This flight is shown on **Figure 6.18**.

⁵⁶ Montgomeryshire Bird Report: 2024. Available online at https://drive.google.com/file/d/1TTuROPiISY2LmZnyjddV_tNIFUJ8c44/view?usp=sharing_eil&ts=68f75612

Evaluation

6.6.111. Redshank is a red listed bird of conservation concern in Wales; the Welsh population is estimated to be 150 pairs, the vast majority of which occur along the coast. The timing of the record suggests failed breeding birds moving between breeding and wintering areas. Given the single record of the species during survey work the value of Site is considered **negligible** for redshank, and the species is **Scoped Out** of further assessment.

Snipe

Desk Study

6.6.112. NBN returned 32 records of snipe for the period 1978 – 2019, and BIS eight records between 1978 – 2008. The highest count was 14 in April 1995, with an unspecified number recorded chipping and drumming, suggesting several territories were present in the area at that time. A record of 4 – 5 drumming birds on land to the south of the Site at Llyn Mawr during an April visit was not assigned to year (data range provided 1978 – 1996).

Flight Activity

6.6.113. Snipe was recorded on three occasions during the non-breeding season VP surveys; two flights, both involving two birds, were recorded in October 2022, and a flight of a singleton in December 2022. The total flight time was 3 minutes, all of which was at collision risk height.

6.6.114. Snipe flights are shown on **Figure 6.18**.

Other Activity

6.6.115. Snipe were recorded during all non-breeding walkover surveys in both Year 1 and Year 2, with the maximum count of five individuals in January 2024. Snipe were widely distributed across the entire Site, and were associated with areas of wet or rank grassland.

Evaluation

6.6.116. Snipe is an amber listed bird of conservation concern in Wales, with an estimated population of 1,100 pairs in Wales. The species is a regular but localised breeding species in Montgomeryshire, with a population of between 15 – 20 pairs present at Lake Vyrnwy. It is a regular if under-recorded wintering species⁵⁷. Given the overall low level of flight activity recorded on Site, and the scattered distribution of wintering birds present, the Site is considered to be of **Site Level** importance only for snipe, and the species is **Scoped Out** of further assessment.

Whimbrel

Desk Study

6.6.117. No data was received from NBN. There were two records received from BIS, both relating to singletons present at an undisclosed location during spring migration in May 1978.

Activity

6.6.118. Whimbrel was recorded on a single occasion during the entire survey effort; one individual was observed flying west to the south of the Site during breeding wader surveys in July 2022. There were no further observations.

⁵⁷ Montgomeryshire Birds (2022)

6.6.119. This flight is shown on **Figure 6.18**.

Evaluation

6.6.120. Whimbrel is an amber listed bird of conservation concern in Wales. Whimbrel is a scarce passage migrant in Montgomeryshire, with 1 – 3 records per year, generally in spring; ; the species does not breed in Wales. The timing of the record suggests a return passage individual. Given the overall low level of activity the value of Site is considered **negligible** for whimbrel, and the species is **Scoped Out** of further assessment.

Curlew

Desk Study

6.6.121. NBN returned 29 records of curlew for the period 1978 – 2014. BIS returned 39 records between 1978 – 2021, including evidence of a breeding population to the south of the Site at Llyn Mawr before 1997, with territorial behaviour recorded in this area as recently as 2021. Additional data from Green (2022)⁵⁸ found three pairs of curlew with the wider area during 2021 (one pair near Llyn y Tarw, and two pairs near Mynydd Clogau).

Flight Activity

6.6.122. A total of six curlew flights were recorded during the VP surveys. These are categorised as follows:

- One flight during the 2022 breeding season VP surveys.
- No flights during the 2022/2023 winter season VP surveys.
- Five flights during the 2023 breeding season VP surveys.
- No flights during the 2023/2024 winter season VP surveys.

6.6.123. These flights resulted in a total flight time of 7 minutes and 8 seconds of which 2 minutes and 43 seconds was spent at collision risk height. Those flights at collision risk height are as follows:

- 45 seconds during the 2022 breeding season VP surveys.
- 1 minute and 58 seconds during the 2023 breeding season VP surveys.
- No at collision height flights during either the 2022/2023 or 2023/2024 winter season VP surveys.

6.6.124. Curlew flights are shown on **Figure 6.14**.

Breeding Activity

6.6.125. Curlew did not breed within the Site, however, evidence of territories or breeding attempts off Site were recorded during both the 2022 and 2023 breeding seasons.

6.6.126. In 2022, two birds were recorded in flight and calling at Esgair Cwmowen, approximately 300 m north-east of the Site boundary during April and May; additionally, two birds were recorded on open ground north of Llyn y Tarw, approximately 1 km east of the Site boundary in April. There were no subsequent records during breeding wader surveys in June and July, suggesting that any breeding attempt that may have taken place had failed.

⁵⁸ Green, M. (2022). Curlew in Montgomeryshire. *Milvus: The Journal of the Welsh Ornithological Society*. 1: 1, 38-40.

6.6.127. In 2023, a curlew was seen undertaking song-flights and alarm calling in April and May to the south of the Site boundary, but there were no subsequent behaviours to suggest a successful breeding attempt had taken place. Winter walkover surveys on 30 March 2024 (at the end of survey effort at the Site) found a pair of curlew at the same area to the south of the Site boundary, with the birds displaying and undertaking song flights.

6.6.128. Curlew territories are shown on **Figure 6.15**.

Evaluation

6.6.129. Curlew is a red-listed bird of conservation concern in Wales, with population estimates in 2024 suggesting 400 – 500 breeding pairs (Curlew Wales, 2024)⁵⁹. The curlew population in Wales has declined by 80% in the last 30 years (Curlew Wales, 2024). The population in Montgomeryshire was estimated at 25 pairs in 2021⁶⁰, with the most recent data suggesting 23 nests (producing 9 fledglings) in 2023. Although breeding was not confirmed within the study area, this trend is reflected more broadly within the low productivity of the Welsh population, averaging 0.31 chicks per pair per year⁶¹. The Proposed Development is situated within Important Curlew Area 9 (ICA 9), one of twelve areas considered to be of national importance for the Welsh curlew population. As part of the Curlew Recovery Plan, conservation of the populations present within the ICAs are considered a priority in order to ensure continued genetic variability. No breeding is considered to have taken place in either year, and the low number of observations do not suggest regular use of the site at any time of year. Some use of the Site was noted by individuals breeding within the wider local area, with birds observed commuting and foraging in the wet grassland to the south-east of the Site near Llyn y Tarw; as such, the Site is likely to have some role in sustaining these birds.

6.6.130. As a result of the foraging opportunities present near Llyn y Tarw, in combination with the presence of (unproductive) territorial birds, the Site is considered of **Local Importance**, and therefore curlew is **Scoped in** to this assessment.

⁵⁹ Curlew Wales: [Welsh Ornithological Society \(WOS\) | Birds in Wales](#)

⁶⁰ Green, M. (2022) The curlew in Montgomeryshire. *Milvus* 1 (1) 2022, 38 - 40.

⁶¹ Gylfinir Cymru / Curlew Wales (2021). A Wales Action Plan for the Recovery of Curlew.

Passerines

Desk study

6.6.131. The desk study returned records of 63 passerine and near-passerine⁶² species, including 23 Red listed species, and 15 Amber listed Birds of Conservation Concern, demonstrating that a typical suite of upland species are present within the study area. Of greatest relevance to this assessment were records of meadow pipit *Anthus pratensis* and skylark *Alauda arvensis*, both of which are ground-nesting passerine species.

Breeding Activity

- 6.6.132. A total of fifty-one species were recorded during breeding bird surveys⁶³, forty of which showed breeding behaviours and thirty of which bred in the survey area. Eight Red Listed and twelve Amber Listed Birds of Conservation Concern in Wales were among the species considered to be breeding.
- 6.6.133. The following Red Listed BoCC species were confirmed to be breeding within the survey area (with number of territories in parenthesis): goldcrest *Regulus regulus* (1), greenfinch *Chloris chloris* (1), grasshopper warbler *Locustella naevia* (1), linnet *Linaria cannabina* (3), meadow pipit (35+), spotted flycatcher *Muscicapa striata* (1), willow warbler *Phylloscopus trochilus* (71) and yellow wagtail *Motacilla flava* (1).
- 6.6.134. The following Welsh Amber Listed Species were confirmed as breeding within the survey area: bullfinch *Pyrrhula pyrrhula* (1), chaffinch *Fringilla coelebs* (60), coal tit *Parus ater* (8), dunnoek *Prunella modularis* (19), garden warbler *Sylvia borin* (2), house sparrow *Passer domesticus* (37), mistle thrush *Turdus viscivorus* (4), pied flycatcher *Ficedula hypoleuca* (2), and skylark (258⁶⁴).

Evaluation

6.6.135. The Site supports a breeding bird community which reflects the habitats present throughout the local area. As per NatureScot (2025) guidance, passerine communities are generally not the focus of wind farm assessment work due to a lack of evidence of population-level displacement and collision related effects. Therefore, significant operation phase effects are unlikely to occur. However, effects resulting from the construction of access track and other wind farm infrastructure within the Site should be considered both in terms of EIA level effects and legislative compliance. None of the species populations present within the Site are significant at Regional level (i.e., forming 1 % or more of the Wales breeding population); however, given their BoCC status in Wales and reported declines throughout the country, the Site is considered to be important at the **Local level** for skylark (for which ~258 territories were recorded within the Site), and at the **Site level** for meadow pipit and willow warbler. For all other species of passerine, the Site is considered to be of **Negligible importance**. Passerines (with the exception of skylark) are **Scoped Out** of further assessment.

⁶² Excluding diurnal raptors and owl species.

⁶³ Data on breeding BoCC passerines was collected during other surveys (walkover surveys for raptors and waders in 2023) in addition to specific surveys of the breeding bird assemblages along the access track in 2024.

⁶⁴ It was not possible to accurately determine the total number of territories, so the number of registrations here given as the maximum number of singing individuals recorded across the Site.

FUTURE BASELINE

- 6.6.136. In the absence of the Proposed Development, it is expected that the western part of the Site will continue to be unenclosed moorland. Depending on the management of this area, there will be little change to the vegetation structure and composition if grazing continues, whilst without management the area will be subject to colonisation of varying vegetation, resulting in areas of scrub and heath, with woodland developing in suitably sheltered areas, or in close proximity to areas already forested. The eastern part of the Site is likely to continue to be grazed and improved pastures maintained. The land along the access track is likely to continue in its current state (predominantly enclosed improved pasture) though there is potential for management of hedgerows. Where any areas of hedgerows are managed (such as through coppicing) or removed these areas will be subject to colonisation.
- 6.6.137. The bird community present within the Site will remain broadly similar to the existing baseline, albeit with fluctuations in the populations of species such as skylark as these respond to any changes in agricultural use. Any changes to communities or populations within the Site will likely broadly follow each species population dynamics at the regional or national level. For example, it is likely that curlew will be lost as a breeding species as a result of the on-going pressures to the species without intervention.
- 6.6.138. It is now widely accepted that the climate is changing as a result of anthropogenic influence, but the nature and magnitude of the resultant changes are difficult to predict (see for example ASC, 2016⁶⁵). Climate change has been cited as a leading cause of declines and distribution changes of many species of bird at the local to global level. At the Site level, the wider effects of climate change may lead to a change in the species assemblage present over time. Golden plover is likely to be directly impacted by climate change, with the decrease in the breeding population likely to continue as vegetation composition changes leading to a loss of suitable breeding habitat for the species.

6.7 EMBEDDED MEASURES

- 6.7.1. A range of environmental measures have been embedded into the Proposed Development as outlined in Chapter **4.6 Embedded Environmental Measures**.
- 6.7.2. The Proposed Development has gone through an iterative series of design changes to the design being taken forward to submission. The design of the Proposed Development has employed the Step-wise approach (as set out in PPW 12, Chapter 6) by avoiding⁶⁶, where possible, impacts on habitats and species in order to protect biodiversity and ecosystem resilience. Mitigation and enhancement measures have subsequently been proposed where impacts cannot be avoided. Key ornithological aspects of the design evolution of the Proposed Development included:
- **Layout E** (fifth design iterations): Removal of a twelfth turbine from the array on the basis of environmental constraints and proximity to other turbines. The removal of an additional turbine reduces predicated collision risk for focal species modelled;

⁶⁵ ASC (2016). UK climate change risk assessment 2017 evidence report – summary for Scotland. Adaptation Sub-Committee of the Committee on Climate Change, London

⁶⁶ The Step-wise approach follows a sequential process: Avoid; Minimise; Mitigate; Compensate, and; New benefits (delivered through enhancement of existing features or creation of new features).

- **Layout F** (sixth design iteration): layout design amended following inputs from multiple disciplines (including ornithology) with a turbine moved from the central part of the Site partially as a result of flight activity of target species (red kite, kestrel);
- **Layout G** (seventh design iteration): reduction of T7 from 200 m tip height to 180 m tip height. T1 was moved further west, away from the Layout F location close to the eastern part of the Site. The relocation was partially on the basis the new location exceeded the minimum disturbance distance to curlew (breeding season), reducing the likelihood of disturbance and/or displacement of one (unproductive) curlew territory. The proposed solar element of the project was removed, avoiding potential impacts to ground-nesting BoCC species; and
- **Layout H** (eighth design iteration): access road moved to the west of an area of Ancient Woodland (Coed Neuadd-newydd), which avoids potential impacts to breeding BoCC species present within the woodland.

6.7.3. Embedded measures are built into the Proposed Development to minimise the potential for any negative effects, and to ensure compliance with the Wildlife and Countryside Act (1981) as amended. Various measures will be proposed to provide compliance with legislation, and to follow good practice guidance and consultation recommendations with regard to breeding birds.

Construction Phase

- 6.7.4. All relevant construction phase embedded mitigation measures, such as the appointment of an Ecological Clerk of Works (ECoW), will be implemented through a CEMP, which will be agreed in advance with the local planning authorities, in consultation with NRW. An Outline CEMP is provided alongside this ES as part of the suite of application submission documents for Developments of National Significance (DNS).
- 6.7.5. In line with good practice, an independent ECoW will be appointed prior to the commencement of construction and will be present on site during enabling works and throughout the construction period. They will be a suitably experienced individual, whose role will be to oversee that all works are carried out in accordance with environmental legislation and good practice, and with agreed construction phase management plans, such as the CEMP.
- 6.7.6. In the first instance, all groundworks will be undertaken outside of the breeding season (March – August inclusive) where practicable to avoid impacts to breeding birds and reduce the likelihood of any breach of legislation. Where groundworks or other construction activities are unable to be undertaken during this time, additional measures will apply. These measures are discussed further below.

Ecological Clerk of Works

- 6.7.7. Prior to the start of construction, contractors will be made aware of the ornithological sensitivities within the area of the Proposed Development. The ECoW will give regular Toolbox Talks to contractors regarding the status and locations of protected and sensitive species and habitats at the Proposed Development.
- 6.7.8. The ECoW will carry out pre-construction survey checks during the nesting season in advance of tree felling, vegetation stripping or excavation works to check for the presence of any active nests. To account for the small number of species that may nest outside the typical breeding season, for example early nesters such as crossbill, nest checks will be carried out between February and August. An area around active nests should be identified and measures taken to prevent the

destruction of these nests until such point as they are inactive. There will be a clear line of responsibility for establishing that these measures are adhered to. This will reduce the possibility of illegal damage, destruction or disturbance to occupied bird nests during the construction phase. Full details of the ECoW's role and responsibilities will be provided in the CEMP and secured through an appropriate planning condition.

Operational Phase

- 6.7.9. With the exception of the operation of the wind turbines and general maintenance of the turbines, on-site operational phase activity will be limited to maintenance, security and occasional management work. Speed restrictions will be in place throughout the Site, and vehicular movements limited to constructed tracks and demarcated working areas around other infrastructure.

Decommissioning

- 6.7.10. Embedded measures relevant to decommissioning will follow those proposed for construction activities, including pre-decommissioning surveys and appropriate ecological supervision of activities with the potential to result in an offence.

Table 6-8 – Summary of the embedded environmental measures

Receptor	Potential impacts	Embedded measures	Compliance mechanism
Construction / Decommissioning Phase			
Breeding red kite	Disturbance to breeding red kite present 450 m south-west of the Site arising from construction of access tracks and erection of turbines (specifically T5).	Construction-phase nesting bird checks. Implementation of work exclusion (extending to a maximum of 300 m of a nest) areas near active nests.	Mitigation through design. CEMP (ECoW and timing).
Breeding kestrel	Disturbance to territories kestrel present on/near to Site (on eastern boundary of the Site in 2022, and to the south of the Site along the access track in 2023).	Construction-phase nesting bird checks. Implementation of work exclusion areas (extending to a maximum of 200 m of a nest or occupied nest box) near active nests.	CEMP (ECoW and timing).
Breeding/territorial curlew	Disturbance to territorial curlew present approximately 900 m – 1 km to the east of the Site arising from construction of access tracks and erection of turbines (specifically T1).	Movement of turbines away from the eastern boundary of the Site. Construction-phase nesting bird checks. Implementation of work exclusion areas near active nests.	Mitigation through design. CEMP (ECoW and timing).
Passage golden plover	Displacement resulting from construction activities. Loss of foraging and breeding habitat as a result of the construction of the solar element of the project.	Restrict any nocturnal working activities within the northern part of the Site to fall outside of the passage periods (Oct – Dec, Feb – April inclusive). Removal of solar element from the overall project design, reducing the overall loss of habitat suitable for foraging/resting.	CEMP (ECoW and timing, including restrictions on working hours). Mitigation through design

Receptor	Potential impacts	Embedded measures	Compliance mechanism
Passerine communities	Loss of habitat arising as a result of construction phase of the development.	Routeing of access tracks to avoid or minimise habitat loss for skylark and other less common ground nesting birds such as yellow wagtail and grasshopper warbler. Timing of construction works to fall outside of the breeding season (March – August inclusive) or to be subject to an ornithological watching brief. If works are undertaken during the breeding season, ground preparation (e.g. mowing/trimming of grassland/tall vegetation) of access track and working area is to be undertaken with ECoW supervision.	Mitigation through design CEMP (ECoW and timing)
Operation Phase			
All receptors	Operational-phase disturbance. Collision risk. Loss of nesting and foraging habitat.	Management of habitat immediately beneath swept area of turbines to reduce suitability for foraging red kite and/or kestrel. This area should be managed to reduce sward height to no more than 6 cm. Speed limits and vehicle restrictions to constructed tracks.	Mitigation through design. Operational site restrictions.

6.8 SCOPE OF THE ASSESSMENT

OVERVIEW

- 6.8.1. The scope of the following assessment is based upon a review of the baseline information detailed in **Section 6.4** and complements the assessment of terrestrial ecology effects as presented in **Chapter 5: Ecology**.
- 6.8.2. This section considers effects of the Proposed Development on features within the Zol (see **Section 6.3: Assessment Methodology**), specifically the known bird populations within the Proposed Development.

SPATIAL SCOPE

- 6.8.3. The spatial scope of the assessment extends to the Site and 10 km buffer. Statutory designated sites within 10 km (where present) are also considered.

TEMPORAL SCOPE

- 6.8.4. The temporal scope of the assessment extends to a period of 50 years, which includes construction activities, an anticipated operational lifespan of 40 years for the wind farm, and decommissioning.

POTENTIAL RECEPTORS

- 6.8.5. The identified potential receptors for this project are as follows:
- Those target species which have been scoped in for further assessment as identified in **Section 6.4**: red kite (present year round), kestrel (present year round), breeding curlew, non-breeding golden plover and breeding skylark.
- 6.8.6. The ornithological receptors which have the potential to be significantly affected and have been taken forward for detailed assessment are summarised in **Table 6-9**.

Table 6-9 – Ornithological receptors scoped in for further assessment

Receptor	Summary	Evaluation
Red kite	Red kite do not breed on Site, but breed within 2 km. The Site is used for foraging and commuting.	Local-level importance
Kestrel	Kestrel breed on Site and utilise the Site for foraging and commuting.	Local-level importance
Golden plover	Golden plover utilise the airspace over the Site and occasionally forage/rest on Site.	Site-level importance
Curlew	The Site is located within ICA 9. Curlew hold territories close to the Site but there is no evidence from baseline work that they are regularly productive.	Local-level importance.
Skylark	Displacement Habitat loss/fragmentation	Site-level importance

6.8.7. Following evaluation of desk study and survey data, consideration of the Proposed Development footprint, relevant guidance and empirical information on the effects of renewable energy development on ornithological features, potential impacts on the following features were scoped out of further consideration:

- Berwyn SPA;
- Llyn Mawr SSSI;
- Non-statutory Sites (Llyn Mawr SINC);
- Hen harrier;
- Hobby;
- Peregrine;
- Merlin;
- Short-eared owl;
- Nightjar;
- Wildfowl (including mallard, tufted duck, teal, goosander and goldeneye);
- Other waders (including turnstone, redshank, snipe and whimbrel); and
- Breeding passerines (with the exception of skylark and measures for legislative compliance).

6.9 ASSESSMENT OF POTENTIAL EFFECTS

6.9.1. The following section will provide an assessment of the overall significant effects to protected areas and species present on Site across all phases of the Proposed Development.

POTENTIAL CONSTRUCTION EFFECTS

Red kite

- 6.9.2. The Site is considered to be of importance for red kite at **Local Level**.
- 6.9.3. One pair of red kite bred within the Site in 2024, with the nest located approximately 40 m from the Access Track (precise location unknown due to access restrictions). Red kite was also recorded occasionally in flight throughout the survey period. A second probable nesting location was located west-southwest of the Site approximately 670 m from T5 and 780 m from T6.
- 6.9.4. Red kite is considered to have a medium sensitivity to disturbance, and a perimeter buffer of 150 – 500 m between nest locations and potential disturbance sources is recommended⁶⁷ based on empirical evidence (Goodship & Furness, 2022). Although the precise nest location in the southern part of the Site was unknown, it was likely located within 40 m of the Proposed Access route. Construction phase impacts (such as noise and presence of people and machinery) have been considered as part of embedded measures, and any residual effects are anticipated to be limited temporally and spatially (with construction unlikely to occur over a large proportion of the Site at any given time). The nest is located within approximately 150 m of a working farm, suggesting that

⁶⁷ The provided range given here relates to the proximity of nests to varying activities which may cause disturbance, from low-level activity (such as a person walking with 150 m of a nest) to higher-level activity (such as forestry operations within 500 m of a nest).

disturbance resulting from changes in anthropogenic activity in the wider area is unlikely as a result of habituation to operational movements associated with farming. There will be some loss of trees at the northern end of the woodland where the nest was located, though this is not considered to affect the functionality of the habitat for breeding red kite.

- 6.9.5. Red kite nests are not close enough to the Site for disturbance during the construction phase to be a significant issue based on nest/territory locations identified over two years of survey work. No part of the Proposed Development is within ~300 m (the upper range of disturbance distances suggested by Goodship and Furness, 2022) of a known nest/woodland block that is assumed to support a nest based on bird behaviour.
- 6.9.6. There is potential for construction activity to lead to localised displacement of foraging red kite. If birds are not displaced, or there is only a partial displacement effect (i.e., birds will enter the construction area if there is an incentive to do so – such as carrion). The result of this could be to reduce the population size or affect its productivity.
- 6.9.7. Construction phase impacts (such as noise and presence of people and machinery) are anticipated to be limited temporally and spatially (construction activity is unlikely to occur over a large proportion of the Site at any given time). Whilst there is the potential for birds foraging over the Site to be displaced by construction activity, the effect is likely to be indiscernible. Given this, and the extent of suitable foraging habitat for the species in the wider area, it is considered that disturbance effects during construction could be **adverse** but are likely to be **Negligible** and **not significant**.

Kestrel

- 6.9.8. The Site is considered to be of importance for Kestrel at **Local level**.
- 6.9.9. Kestrel bred adjacent to the Site during both years of survey. During the Year 1 survey period (2022), kestrel bred immediately east of the Site boundary, approximately 250 m from T11, whilst during Year 2 (2023) kestrel bred to the south of the Site, approximately 600 m south-southwest of T1. Kestrel also bred in 2024, occupying a third nestbox approximately 260 m south west of the 2023 breeding location. Kestrel were also recorded in flight throughout the survey period⁶⁸, though there was a disparity in frequency of records between the two years of survey effort.
- 6.9.10. Kestrel is considered to have a low – medium sensitivity to disturbance during breeding, with a recommended disturbance distance for approximately 100 – 200 m from nest locations (Goodship & Furness, 2022). Construction phase impacts (such as noise and presence of people and machinery) are anticipated to be limited temporally and spatially (with construction unlikely to occur over a large proportion of the Site at any given time). Both nest locations were within nestboxes located on farm buildings and in areas with anthropogenic disturbance, suggesting that the birds are habituated to activity levels on Site. In Year 1, the nest location exceeded the disturbance distance as outlined in Goodship & Furness (2022), whilst in Year 2, the nest location was within 21 m of the proposed access track. The embedded measures will ensure that construction activity will not take place within 200 m of an active nest. There will be some small loss of foraging areas during the construction phase, which in addition to increased activity on Site may result in limited disturbance or displacement; however, these elements are not considered to negatively affect the suitability of the Site for breeding kestrel.

⁶⁸ 27 flights in Year 1, 3 flights in Year 2.

- 6.9.11. Construction phase impacts (such as noise and presence of people and machinery) are anticipated to be limited temporally and spatially (construction activity is unlikely to occur over a large proportion of the Site at any given time). Whilst there is the potential for birds foraging over the Site to be displaced by construction activity, the effect is unlikely to be discernible. Given this, and the extent of suitable foraging habitat for the species in the wider area, it is considered that disturbance effects during construction could be **adverse** but are likely to be **Negligible** and **not significant**.

Golden plover

- 6.9.12. The Site is considered to be of importance for golden plover at the **Local level**.
- 6.9.13. A total of 24 golden plover flights were recorded across both years of the study, with variable numbers recorded loafing within suitable habitat across the entire Proposed Development. A maximum of 175 individuals were noted in Year 1 and 13 individuals in Year 2.
- 6.9.14. Due to the wide area utilised by loafing golden plover, there is the potential for disturbance to occur during construction. A review of bird disturbance distances (Goodship and Furness, 2022) identified golden plover as of 'medium sensitivity' to disturbance, with empirical evidence suggesting this occurs through activities within 200 m – 500 m during the non-breeding season.
- 6.9.15. Construction phase impacts (such as noise and presence of people and machinery) are anticipated to be limited temporally and spatially (with construction unlikely to occur over a large proportion of the Site at any given time). Whilst there is the potential for disturbance to birds present to the east of the Site, the effect is likely to be indiscernible from baseline vehicle and pedestrian movements in the area resulting from agricultural activities. The impacts of habitat loss will be minimal due to the small footprint of construction works on Site, and the extent of suitable able foraging habitat locally. Given this, it is considered disturbance effects resulting from construction could be **adverse** but are likely to be **Negligible** and **not significant**.

Curlew (including consideration of ICA 9)

- 6.9.16. The Site is considered to be of importance for curlew at the **Local level**. ICA 9 is of National (Welsh) importance.
- 6.9.17. Up to two curlew territories were located within 2 km of the Proposed Development during the survey period (Section 6.9.22); the nearer was approximately 1 km east-northeast from the nearest infrastructure. Curlew was recorded occasionally overflying the Site. The Proposed Development falls entirely within ICA 9. Of the two territories only one was considered to have resulted in an (unproductive and unsuccessful) breeding attempt. One (unproductive) pair amounts to approximately 2.5% of the overall curlew population present within ICA 9. The habitats within the developable area of the Proposed Development were not utilised by curlew for breeding, foraging or resting.
- 6.9.18. Probable curlew territories were not close enough to the Site for disturbance to occur during the construction phase of the Proposed Development based on territory locations identified over the two years of survey work. A review of bird disturbance distances (Goodship and Furness, 2022) identified curlew as of 'high sensitivity' to disturbance, with empirical evidence suggesting this occurs through activities within 200 m – 300 m of a nest during the breeding season. No part of the development is within 300 m of either of the identified territory locations.
- 6.9.19. Construction phase impacts (such as noise and presence of people and machinery) are anticipated to be limited temporally and spatially (with construction unlikely to occur over a large proportion of

the Site at any given time). Whilst there is the potential for disturbance to birds present to the east of the Site, the effect is likely to be indiscernible from baseline vehicle and pedestrian movements in the area resulting from agricultural activities. Given this, and the apparent lack of breeding success for the species, it is considered disturbance effects resulting from construction could be **adverse** but are likely to be **Negligible** and **not significant**.

Skylark

- 6.9.20. The Site is considered to be of importance for breeding skylark at the **Local level**.
- 6.9.21. Construction-phase effects on passerines (including skylark) are generally not considered major issues for wind farm developments (NatureScot, 2025), but localised (Site level) impacts could potentially occur through disturbance and displacement by the construction activities.
- 6.9.22. 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.
- 6.9.23. Damage or destruction of active nests or killing and injury of young birds will be avoided through implementation of embedded measures to ensure legislative compliance. There is specific guidance, last updated in March 2016, on the NatureScot website with regard to this (and applicable to sites in Wales)⁶⁹. Measures to manage the implementation of appropriate protection measures would be included in the CEMP.
- 6.9.24. Construction phase displacement impacts will be greatest on individuals and populations not exposed to disturbance at baseline, and that are intolerant of noise and the visible presence of people. It follows that a worst-case assessment is that there will be some disturbance of breeding birds resulting from construction, and this could result in declines in productivity during the construction period.
- 6.9.25. Skylark territories are distributed across the Site, with up to 258 territories recorded during baseline survey work. Some displacement/disturbance is considered likely as habitats utilised for breeding and foraging will be lost during construction. A total of 21 registrations⁷⁰ were present within 100 m of turbines, and a maximum of 12 registrations were present within the footprint of the ancillary building compound areas (Battery Energy Storage System (BESS), substation and control buildings). Extensive areas of alternative suitable breeding habitat (such as unenclosed moorland) are present within the surrounding area, and these would be expected to accommodate any displaced birds from the Proposed Development.
- 6.9.26. Construction phase impacts (such as noise and presence of people and machinery) are anticipated to be limited temporally and spatially (with construction unlikely to occur over a large proportion of the Site at any given time). There will be some loss of habitat resulting from construction activities, particularly within the Proposed Development where the ancillary building compounds will be located. It is considered unlikely that skylark will be affected by construction activities along the access route due to the small number of territories present. The potential construction effects are therefore considered to be **adverse** and **significant** at **Site level**.

⁶⁹ Available at: <https://www.nature.scot/doc/dealing-construction-and-birds> [Accessed 11/02/2025]

⁷⁰ A registration is defined as any observation of an individual displaying breeding or territorial behaviours, but may include duplication of individuals. It should not be considered to represent a territory, as multiple registrations may relate to the same territory.

POTENTIAL OPERATIONAL EFFECTS

Species

- 6.9.27. There are two main 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.
- 6.9.28. A range of studies have concluded that most bird species are not significantly affected by operational wind farms (e.g. Vauk, 1990⁷¹; Phillips, 1994⁷²; Percival, 2005⁷³, 2000⁷⁴; Devereux *et al.*, 2008⁷⁵; Winkelmann, 1994⁷⁶; Langston & Pullan, 2003⁷⁷; Hotker *et al.*, 2006⁷⁸). This is reflected by NatureScot Guidance (2025) on birds and wind farms which does not, for example, normally recommend surveys for breeding passerines. In the context of the Proposed Development, those species that are most susceptible are likely to be those that have a low tolerance to disturbance such as breeding golden plover (Pearce-Higgins *et al.*, 2009⁷⁹), that breed on open moorland (such as merlin), and are more susceptible to collision than others (such as red kite and kestrel (inferred from collision data presented by the Brandenburg Institute; Dürr, 2025)).

Displacement

Red kite

- 6.9.29. The Site is considered to be of importance for red kite at the **Local Level**.
- 6.9.30. There were two red kite territories within 2 km of the Proposed Development during the survey period. The closer territory was approximately 746 m from T5, exceeding the minimum buffer distance of 150 m – 300 m during the breeding season as per Goodship and Furness (2022). Red kite was recorded in flight over the Site and wider area, with flight activity highest over the western part of the Site.
- 6.9.31. It is unlikely that displacement of red kite will occur during the operational phase of the Proposed Development, as the overall composition of the habitats present on Site will not change as a result of the development; some localised displacement may occur in the immediate vicinity of turbines located within open habitats on Site, although there are abundant alternative foraging opportunities within the local area. Evidence from operational schemes such as Bryn Titli and Mynydd y Gwair

⁷¹ Vauk, G. (1990) Biological and ecological study of the effects of construction and operation of wind power sites. English Summary. 3. Jahrgang/Sonderheft, Endbericht. Norddeutsche Naturschutzakademie, Germany.

⁷² Phillips, J.F. (1994) The effects of a wind farm on the upland breeding bird communities of Bryn Titli, mid-Wales: pp. 1993–1994. Newtown, UK: RSPB.

⁷³ Percival, S. (2005) Birds and windfarms. *British Birds*, 98, 194–204.

⁷⁴ Percival, S. M., Band, B., & Leeming, T. (2000) Assessing the ornithological effects of wind farms-developing a standard methodology. British Wind Energy Assoc., London (United Kingdom).

⁷⁵ Devereux, C. L., Denny, M. J., & Whittingham, M. J. (2008) Minimal effects of wind turbines on the distribution of wintering farmland birds. *Journal of Applied Ecology*, 45(6), 1689–1694.

⁷⁶ Winkleman, J.E. 1994. Bird/wind turbine investigations in Europe. Pp. 43–47 in: Proceedings of the National Avian-Wind Power Planning Meeting, Lakewood, Colorado. Prepared by LGL Ltd., Environmental Research Associates, King City, Ontario.

⁷⁷ Langston, R.H.W. & Pullan, J.D. (2003) Wind farms and Birds: An analysis of the effects of wind farms on birds. Guidance on environmental assessment criteria and site selection issues. BirdLife International Report to the Council of Europe on behalf of the Bern Convention. Sandy, UK: RSPB.

⁷⁸ Hötter, H. (2006) The impact of repowering of wind farms on birds and bats. *Michael-Otto-Institut im NABU, Bergenhusen*.

⁷⁹ Pearce-Higgins, J.W., Stephen, L., Langston, R.H.W., Bainbridge, I.P. and Bullman, R. (2009), The distribution of breeding birds around upland wind farms. *Journal of Applied Ecology*, 46: 1323–1331.

suggest any displacement is in the immediate vicinity of the turbine. Post-construction monitoring has shown that birds move through these sites, with occasional flight adjustments and/or avoidance behaviours close to turbines noted, apparently in response to the presence of the turbines. It is therefore unlikely that displacement/disturbance will take place during the operational phase, and any **adverse** effects are likely to be **negligible** and **not significant**.

Kestrel

- 6.9.32. The Site is considered to be of importance for Kestrel at **Local level**.
- 6.9.33. Kestrel bred off-Site in both years of survey effort and were occasionally observed utilising land on Site when foraging and commuting. The closest breeding location was approximately 216 m from T11, exceeding the minimum buffer distance of 100 m – 200 m during the breeding season as per Goodship and Furness (2022). Some localised displacement from foraging areas may occur around turbines located within open habitats on Site, though there are abundant alternative foraging opportunities within the local area. In line with the oHMP (**Appendix 5P**), areas managed for the restoration of key habitats (including blanket bog, montane heath, upland heath and montane grassland) and non-priority habitat (such as other grasslands) will provide improved foraging opportunities for kestrel on Site. It is therefore unlikely that displacement/disturbance will take place during the operational phase, and any **adverse** effects are likely to be **negligible** and **not significant**.

Curlew

- 6.9.34. The Site is considered to be of importance for curlew at **Local level**.
- 6.9.35. The Site is located entirely within ICA 9. Up to two curlew territories were located within 2 km of the Proposed Development during the survey period; the nearer of these was approximately 1.4 km east-northeast from the nearest infrastructure. Curlew was occasionally recorded flying over the Site. Curlew was not recorded foraging on the Site, with the majority of foraging activity confined to the grassland north and east of Llyn y Tarw, to the south-east of the Site.
- 6.9.36. It is unlikely that displacement of curlew will occur during the operational phase of the Proposed Development as foraging activity took place entirely off-Site, with activity limited to occasional commuting birds over the Site. It is therefore unlikely that displacement/disturbance will take place during the operational phase, and any **adverse** effects are likely to be **negligible** and **not significant**.

Golden plover

- 6.9.37. The Site is considered to be of importance for golden plover at the **Local level**.
- 6.9.38. A total of 24 golden plover flights were recorded across the two years of baseline survey, with variable numbers recorded loafing within suitable habitat across the entire Proposed Development, with a maximum of 175 individuals in Year 1 and 13 individuals in Year 2.
- 6.9.39. Due to the wide area utilised by loafing golden plover, there is limited potential for displacement to occur during the operational phase of the development. Large areas of suitable loafing habitat exist within the local area outside of the Proposed Development, with large, gently gradated plateau to the east and north-west of the Site.

- 6.9.40. It is unlikely that displacement of golden plover will occur during the operational phase of the Proposed Development as foraging activity took place entirely off-Site, with low numbers of birds utilising the Site for loafing, and the majority of activity (and high densities) relating to birds flying within the airspace over the Proposed Development. It is therefore unlikely that displacement/disturbance will take place during the operational phase, and any adverse effects are likely to be **negligible** and **not significant**.

Skylark

- 6.9.41. The Site is considered to be of importance for skylark at the **Local level**.
- 6.9.42. It is unlikely that further displacement of skylark will occur during the operational phase of the Proposed Development, as the overall composition of the habitats present on Site will not change as a result of the development; some localised displacement from breeding areas may occur around turbines, along the access track route and ancillary building compounds (BESS, substation and control building) located within open habitats on Site, though there are abundant alternative foraging opportunities within the local area. It is therefore unlikely that displacement/disturbance will take place during the operational phase, and any **adverse** effects are likely to be **negligible** and **not significant**.

Collision

- 6.9.43. Collision risk analysis for target bird species is contained in **Appendix 6d: Collision Risk Analysis**.
- 6.9.44. The level of collision will depend on the extent to which birds are displaced, and their ability to detect and manoeuvre around rotating turbine blades. Birds that collide with blades are likely to be killed or fatally injured.
- 6.9.45. NRW and other nature conservation consultees recommend that collision risk of birds at wind farms is calculated using the model developed by Bill Band (originally in 2007 and updated in 2024), following the recently amended guidelines (NatureScot, 2024⁸⁰). The extent to which outcomes of modelling reflect observed mortality rates has always been questionable, and the subject of academic debate (Chamberlain *et al.*, 2005⁸¹; Chamberlain *et al.*, 2006⁸²; Madders & Whitfield, 2006⁸³; Drewitt & Langston, 2006⁸⁴; Fernley, Lowther & Whitfield, 2006⁸⁵). The main limitations of the model are that pre-construction use of the airspace above a Proposed Development by birds is assumed to be representative of the use of the airspace following wind farm construction, and that the rate of avoidance applied to the output of the model is often arbitrary. Where empirical estimates of avoidance can be applied, the model becomes a more useful predictive tool.

⁸⁰ NatureScot (2024) Guidance on using an updated collision risk model to assess bird collision risk at onshore wind farms. Available online at: [Guidance on using an updated collision risk model to assess bird collision risk at onshore wind farms | NatureScot](#)

⁸¹ Chamberlain, D.E., Freeman, S.N., Rehfish, M.R., Fox, T. & Desholm, M. (2005). Appraisal of Scottish Natural Heritage's wind farm collision risk model and its application. BTO Research Report 401. British Trust for Ornithology, Thetford

⁸² Chamberlain, D.E., Rehfish, M.R., Fox, A.F., Desholm, M & Anthony, S.J. (2006). The effect of avoidance rates on bird mortality predictions made by wind turbine collision risk models. *Ibis* 148, 198-202

⁸³ Madders, M. & Whitfield, D.P. (2006). Upland raptors and the assessment of wind farm impacts. *Ibis* 148, 43-56

⁸⁴ Drewitt, A.L & Langston, R.H.W. (2006). Assessing the impacts of wind farms on birds. *Ibis* 148: 29-42

⁸⁵ Fernley, J., Lowther, S., & Whitfield, P. (2006) A review of goose collisions at operating wind farms and estimate of the goose avoidance rate. Natural Research

- 6.9.46. The recommended avoidance rate for red kite is 99% derived by Urquhart & Whitfield (2016) based on a study wind farm (Braes of Doune). For kestrel, a 95% avoidance rate is applied given its apparent vulnerability to collision (Whitfield & Madders, 2006). NatureScot (2025) accepts a “default value” avoidance rate of 98% can be applied to modelling in cases where species-specific data deficiencies exist; in this assessment, the 98% avoidance rate was applied to curlew and golden plover.
- 6.9.47. Collision risk modelling (CRM) was undertaken for the following species; red kite, kestrel, golden plover and curlew. The results of the CRM analysis are detailed below. The operational lifespan of the project was assumed to be 40 years for the purpose of this assessment. In the absence of analysis of wind speed and mean rotor speed of turbines, a standardised default value was used in the modelling work.

Red kite

- 6.9.48. The results of the CRM for red kite (based on activity recorded over two full years of VP survey work) were as follows:
- Annual collision rate: 0.7 birds; and
 - Operational lifetime collision rate: 28 birds.
- 6.9.49. The collision rate for red kite was the second highest of the three target species, with flight activity resulting from foraging, commuting and breeding activities. The avoidance rate used for red kite was 99 % (following NatureScot, 2025b).
- 6.9.50. Data collated by Dürr (2026) indicate there have been 955 collisions of red kites with wind turbines recorded in Europe to date (latest update 5 February 2026). Of these, 831 have been in Germany, 1 in Austria, 1 in Denmark, 1 in Czech Republic, 5 in Belgium, 38 in Spain, 56 in France, 5 in Great Britain, 3 in Luxembourg, 2 in Netherlands and 12 in Sweden. Other sources suggest that at least nine collisions of red kites have now occurred in Great Britain (Duffy & Urquhart, 2014), with three at the Braes of Doune Wind Farm (Stirlingshire), one at Fairburn Wind Farm in Ross-shire, one at Llandinam Wind Farm (Powys), one at Mynydd y Gwair Wind Farm (Swansea), a collision near a feeding station at Bwlch Nant-yr-Arian (Aberystwyth, Ceredigion), one reported from Craig Cefn Parc (Swansea) and one at Ffynnon Oer (Neath Port Talbot).
- 6.9.51. At the Braes of Doune Wind Farm, post construction monitoring has included radio tracking of red kites in combination with regular surveys of the area and corpse searches informed by scavenger removal and searcher efficiency studies. Three collisions of red kites have been recorded in 4.5 years, which is less than the estimated number of collisions predicted through modelling to support the planning application for the site (albeit not all corpses may have necessarily been detected). The other UK collisions were not recorded as part of structured post construction monitoring work.
- 6.9.52. There is currently little operational phase monitoring of bird fatality at onshore wind farms in the UK, and there have been no attempts to validate collision fatality predictions from CRM for Welsh wind farms. Clearly birds do collide based on the information included. However, the scale of the issue appears to be far below that recorded in Europe (particularly Germany) where habitats close to turbines in arable landscapes may be more attractive to foraging kites than those further away (due to an inability to plough land beneath turbines⁸⁶), and other factors including the more migratory nature of the population may influence collision rates.

⁸⁶ Resulting the habitat in these areas supporting elevated numbers of rodents.

- 6.9.53. Post-construction survey work completed at the Mynydd y Gwair and Bryn Titli wind farms by BSG Ecology has resulted in observations of frequent avoidance behaviour by red kite, although one likely collision has been recorded from Mynydd y Gwair. This, together with the low number (nine) of reported collisions in the UK, suggests that the predicted collision rate at the Proposed Development (of one collision every 1.5 years) is precautionary. Additionally, the majority of flights recorded at the Site involved low numbers (generally singletons, with a maximum of four birds together) with the highest concentrations to the north-west of the Site, below y Glonc. It is unlikely that the habitats (conifer plantation) within the site would provide suitable a foraging resource to encourage regular flight activity, even following localised felling.
- 6.9.54. Red kite numbers have grown rapidly in Wales over the past 20 years (Pritchard, *et al.*, 2021), and are now considered resilient to additional fatality Hereward *et al.*, (2024). Should the predicted collisions affect young (first winter/sub adult) birds the effect on the population is likely to be imperceptible, as rates of overwinter survival for first year birds are likely to be low. If adult/birds of breeding age were killed, this would potentially open up an opportunity for the recruitment of sub adults into the local population to replace them (which is likely given the expanding regional population). Population viability analysis undertaken by Hereward *et al.*, (2024) focussed on cumulative collision impacts of proposed wind farm development of red kites, concluding that in the event that all proposed wind farms in Wales were constructed, the population would continue to grow at national level. Collision risk data collected for the Proposed Development (Calon y Gwynt) was used in the modelling for this study.
- 6.9.55. A total of 28 collisions were modelled during the 40-year operational lifespan of the Proposed Development. This accounts for an annual rate of approximately 0.7 collisions (approximately one every 1.5 years), which in turn accounts for approximately 0.03% of the total Welsh breeding population (2,117 pairs as per Hereward *et al.*, (2024) when calculated on an annual basis. This percentage is reduced further if the total population size (including immature and non-breeding individuals) is accounted for.
- 6.9.56. The predicted rate of collision mortality of red kite has the potential to result in an impact on the local population, however this is largely cancelled out by the high breeding productivity rates, the recruitment of sub-adult birds into territory vacuums, and a high degree of tolerance within the population to decreased adult survival. Consideration of these factors and the resultant negligible risk of an impact on any national population as a whole, **adverse** effects on red kite arising from the Proposed Development are considered to be **negligible** and **not significant**.

Kestrel

- 6.9.57. The results of the CRM for kestrel (based on activity recorded over two full years of VP survey work) were as follows:
- Annual collision rate: 1.05 birds; and
 - Operational lifetime collision rate: 42 birds.
- 6.9.58. Of a total of 905 officially documented collisions in Europe (Durr, 2025), two are from the UK (both at Novar Wind Farm, Scotland). Large proportions of the total collisions across Europe were reported from France (362 collisions), Germany (162 collisions) and Spain (284 collisions) (Dürr, 2025). Thirty-six of the collisions in Spain have been recorded at the Park Pesur, Gibraltar, and 107 at Tarifa Wind Farm, Cadiz. The collisions at these sites are likely to include migrating birds, as both sites are on / adjacent to the south coast of Spain.

- 6.9.59. A review of data by Whitfield and Madders (2006) suggest that kestrel appear to be relatively vulnerable to collision strikes. This observation was based on collision fatality data collected at 13 wind farms in northern Spain by Lekuona & Ursúa (2006). During the two-year study, a total of 457 observations of kestrel were made, and 12 birds were found dead as a result of collision.
- 6.9.60. Martin (2017) notes that some collision-prone species (including species of crane, bustard, vulture and eagle) have frontal binocular fields that are of restricted vertical extent and include extensive blind areas above and below them. In these birds a relatively small change in the pitch of the head brings this blind area forwards in the direction of travel. The aforementioned species typically spend time looking downwards for habitats in which to forage or roost or for prey/carrion. This is likely to make them susceptible to collision. It is possible, given the manner in which kestrel forage, that this is also a reason why relatively large numbers of collision victims have been recorded in that species in Europe.
- 6.9.61. A total of 42 collisions were modelled during the 40-year operational lifespan of the Proposed Development, which accounts for approximately 2.4% of the total current Welsh breeding population of 1750 pairs (as per Johnstone *et al.*, 2022). Comparison of the expected annual collision rate (1.05 birds) against the snapshot population figure given, would account for a negligible 0.06% of the total Welsh population.
- 6.9.62. Considering the model prediction, collisions of kestrel over the life of the 40-year Proposed Development are likely and adverse effects are likely to be **significant** at the **Local level**. This conclusion is precautionary; in the event that juvenile or first winter birds were killed, the potential for a discernible impact on the population at any geographical level would be minimal.

Curlew

- 6.9.63. The results of the CRM for curlew (based on activity recorded over two full years of VP survey work) were as follows:
- Annual collision rate: 0 birds⁸⁷; and
 - Operational lifetime collision rate: 0 birds.
- 6.9.64. The results of the CRM reflect the low utilisation of, and low flight activity within the Site by curlew. The applied avoidance rate used for curlew was 98%.
- 6.9.65. A total of 21 collisions were documented in Europe (Dürr, 2026), with none recorded from the UK; there were 15 from The Netherlands, four from Germany and two from France.
- 6.9.66. CRM found that there are unlikely to be any collisions of curlew over the 40-year operational lifespan of the Proposed Development, and therefore collision effects on curlew are considered to be **neutral** and **not significant** at any geographical level.

Golden plover

- 6.9.67. The results of the CRM for golden plover (based on activity recorded over two full years of VP survey work) were as follows:
- Annual collision rate: 3.8 birds; and
 - Operational lifetime collision rate: 152 birds.

⁸⁷ NatureScot CRM template only provides collision rates to one decimal place.

- 6.9.68. The collision rate for golden plover was the highest of the four target species, with flight activity resulting from commuting activities. The avoidance rate used for golden plover was 98 % (following NatureScot, 2025b).
- 6.9.69. Data collated by Dürr (2026) indicate there have been 47 collisions of golden plover with wind turbines in Europe to date (latest update 5 February 2026). Of these, 25 have been in Germany, 7 in Norway, 5 each in France and the Netherlands, 3 in Spain and 1 in Denmark.
- 6.9.70. The modelling predicts an average of 3.8 collisions per annum, with a total of 152 collisions over the entire 40-year lifespan of the project. As golden plover mainly utilises the Site during passage and occasionally during the winter months, and the Welsh breeding population is very low, it is likely that the individuals present are not locally-breeding birds and instead reflect the large immigrant population. Considering the number of collisions in the context of the Welsh breeding population is considered invalid.
- 6.9.71. Based on the 25-year average (1997/98 to 2022/23) the estimated number of wintering Golden Plover in Wales is c.11,700 birds (BTO WeBS online portal, 2026), with the total number of collisions therefore accounting for approximately 1.3 % of the total Welsh wintering population. This proportion is likely to be conservative however, as the number of birds present fluctuates significantly between years (as demonstrated in the higher number of registrations and levels of flight activity in Year 2 compared to the same period in Year 1), and the overall wintering population in Wales has declined by 58 % over a 25 year period (1997/98 to 2022/23).
- 6.9.72. The small number of collisions recorded across Europe by Dürr suggest that the collision risk posed to golden plover is lower than the predicted rate modelled. Collision risk modelling works by determining predicted fatality in species that move across the landscape apparently randomly (such as harriers, kites and eagles) singly or in small numbers, or directionally (such as geese or swans) typically in larger numbers. The approach to modelling varies accordingly depending on species. Golden plover doesn't fit either category, occurring in large numbers but moving randomly, and this results in large, predicted fatality levels when the 'random movement' approach is applied.
- 6.9.73. As such, the higher risk of collision resulting from CRM analysis for the proposed development is inferred through the flight behaviour of golden plover; variables including the number of individuals recorded in flight (from singletons to large flocks numbering into their thousands) and the dynamics of golden plover flight behaviour (with rapid, direct flight, as likely to occur as slower, wheeling flight). Resultantly, the high predicted output from CRM analysis is considered precautionary, particularly when the disparity in numbers recorded varies greatly on an annual basis.
- 6.9.74. This conclusion is further supported by long term operational monitoring, such as at Mynydd y Gwair wind farm, where the 16-turbine development was monitored over a 5-year period, with a single golden plover fatality⁸⁸ recorded during this time (BSG, 2024)⁸⁹. The number of golden plover using the site fluctuated over the study period, but consistent presence at the site indicated that birds had not been displaced as a result of the development, providing supporting evidence that the low number of collisions was not as a result of lower utilisation during the operational phase, or fewer birds being present.

⁸⁸ It was not possible to determine the cause of death of the individual on the basis that no corpse was recorded, and species identification was only confirmed through analysis of feathers.

⁸⁹ BSG Ecology (2024) Mynydd y Gwair Wind Farm, Year 5 Species Monitoring Report (2024).

- 6.9.75. The predicted rate of collision mortality of golden plover will result in an impact on the local population but considering the predicted population trends and negligible risk of an impact on any national population as a whole, **adverse** effects on golden plover arising from the Proposed Development are considered to be **significant** at the **Site** level.

POTENTIAL DECOMMISSIONING EFFECTS

- 6.9.76. The effects of decommissioning have the potential to be similar to those during construction phase but are likely to occur over a shorter time period.
- 6.9.77. Species most likely to be disturbed and displaced from the Site during decommissioning are those that breed, roost or forage within it at that time.
- 6.9.78. It is reasonable to expect that there will be changes in legislation concerning protected species, as well as changes in local populations and distribution over the operational life of the Proposed Development. These may be driven by climatic change, landscape-scale land management, increased effectiveness/policing of protection, changes in the attitude of land managers to birds, the spread of reintroduced populations, changes on the wintering and staging grounds of migrant species and other factors.
- 6.9.79. However, based on the current baseline, effects of decommissioning of the Proposed Development are likely to be similar to those for the construction phase outlined above. Pre-decommissioning surveys are recommended to be undertaken in accordance with a Decommissioning-phase Management Plan to identify any ornithological considerations (such as appropriate timing) to avoid impacts on birds.
- 6.9.80. With controls in place, any **adverse** decommissioning-phase effects are predicted to be temporary, **negligible** and **not significant**.

6.10 ADDITIONAL MITIGATION MEASURES

- 6.10.1. This section sets out the additional mitigation measures required to mitigate the likely effects identified.
- 6.10.2. In accordance with ecological good practice and the requirement to achieve net benefits for biodiversity, all mitigation will be delivered to ensure the Proposed Development provides enhancements for ornithological features. This is provided within an Outline Curlew Management and Monitoring Plan (oCMMP; provided as **Appendix 6a**) and Outline Habitat Management Plan (OHMP; provided in **Appendix 5N**) for the Proposed Development, which presents the objectives and targets of the enhancement plan along with prescriptions for management and monitoring to achieve such aims.
- 6.10.3. Consideration has been given to the location of habitat creation with regard to potential collision impacts; for example, habitat features targeting species susceptible to collisions with turbines will be located away from turbines and in areas that would not encourage commuting routes through the proposed turbine array.

6.11 MITIGATION DURING CONSTRUCTION AND DECOMMISSIONING

- 6.11.1. In addition to general measures for mitigating impacts on nesting birds during construction, measures will be implemented to avoid disturbance effects based on published species-specific disturbance distances. These will be set out in the CEMP and implemented by an Ornithological

Clerk of Works (OCOW) prior to any commencement of construction works (such as along the access track, BESS, substation and control building).

- 6.11.2. Suitable locations for the installation of up to three additional nest boxes for breeding kestrel away from the turbine arrays will be identified during the preconstruction surveys. Such locations are likely to be along the access track route, on features such as buildings and mature trees. Installation on the placement and type of nest box to be installed should be informed by guidelines such as Forestry Commission (1992)⁹⁰.
- 6.11.3. Decommissioning mitigation will broadly follow measures proposed for construction of the Proposed Development. Mitigation will be tailored to avoidance of impacts (through disturbance and displacement) on those species that breed, roost or forage within the site at that time.
- 6.11.4. Where new habitat has been created on-going management will be required to ensure these persist beyond decommissioning. Reinstatement of habitats lost during construction will be undertaken.

6.12 MITIGATION DURING OPERATION

- 6.12.1. In line with the commitment to reduce bat collision risk (following recommendations in NatureScot *et al.*, 2021⁹¹) turbine blades will be pitched out of the wind (feathered) to reduce their rotation speeds below 2 rpm when idling (see **Chapter 5: Ecology**). This is only applied when the turbines are not generating a commercial output and may reduce bird fatality rates⁹². Therefore, the turbines at the site will be feathered when not generating a useable output.

6.13 HABITAT COMPENSATION AND ENHANCEMENT

- 6.13.1. In accordance with ecological good practice and the requirement to achieve net benefits for biodiversity, habitat management will be delivered to ensure the Proposed Development has an overall positive effect on ornithological features. An oCMMP has been produced in consultation with NRW and documentation produced by Gylfinir Cymru / Curlew Wales. Consideration has been given to the location of habitat creation with regard to potential collision impacts; for example, habitat features targeting species susceptible to collisions with turbines will be located away from turbines and in areas that would not encourage flights through the turbine array. The oCMMP will be secured as a condition to support the DNS application. On-going habitat management will be undertaken for the operational life of the Proposed Development (40 years). The precise management regime will be detailed in a full Curlew Management and Monitoring Plan and Habitat Management Plan (conditioned on consent) and will build on the outline objectives and measures provided in the outline documents that support this assessment.
- 6.13.2. The primary focus of measures will be to enhance the existing habitat mosaic and to protect and monitor curlew populations within the Site. The measures to be implemented as part of the OCMMP will be to:

⁹⁰ [Nestboxes for kestrels](#) Forestry Commission (1992) Research Information Note 215: nestboxes for kestrels

⁹¹ NatureScot, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust. (2021). Bats and onshore wind turbines: survey, assessment and mitigation. NatureScot, Inverness

⁹² NatureScot *et al.*, (2021) indicate that this measure may reduce bat fatality rates by up to 50 %; however, no information is available to determine whether the same reduction of bird fatality could be achieved by this measure

- **Objective 1:** To increase suitable habitat for breeding curlew within the proposed enhancement area. This will be achieved through establishing appropriate grazing and rush cutting regimes within the enhancement area to improve and maintain the condition of marshy grassland maintain variation in sward height;
- **Objective 2:** To implement and manage wet features for foraging curlew in the proposed enhancement area. This will be achieved through the retention and/or creation of damp areas, scrapes and/or ponds in suitable areas, and desilting and vegetation management of ponds and scrapes to maintain wetter areas for foraging curlew;
- **Objective 3:** To control scrub, bracken and tree succession to maintain open landscapes for breeding and foraging curlew within the proposed enhancement area. This will be achieved by identifying all areas of bracken, scrub and young trees that can potentially be controlled by mechanical means, in addition to identifying all areas where limited livestock management can be utilised as a habitat management technique. A long-term programme of bracken and scrub monitoring and management within the enhancement area is to be produced and implemented; and
- **Objective 4:** To minimise disturbance to nesting curlew within the proposed enhancement area during the breeding season. This will be achieved through restriction of activities such as grazing and vegetation clearance during the curlew breeding season, as well as implementation of exclusion zones and predator fencing around active nests.

6.13.3. In addition, the focus of additional habitat management within the Site (as described in the oHMP) will be to:

- Restore the condition of high sensitivity soil and Blanket Bog habitats; and restore the condition and extend the area of Montane Heaths and Grassland habitat within the Main Site;
- Restore the condition and extent of Upland Heathland habitats within the Main Site;
- Restore the condition of non-priority grassland habitats within the Main Site;
- Restore the condition of non-priority grassland habitats within the Main Site;
- Restore the condition of non-priority grassland habitats within the Main Site; and
- Restore the extent of Inland Rock Outcrops and Scree Habitats with the Site.

6.13.4. The above enhancement measures will provide additional foraging, resting and breeding opportunities for the existing bird communities present on Site; in particular, the restoration of upland habitats (such as heath, bog and grassland) will increase diversity and populations of invertebrates and small mammals, in turn improving foraging opportunities for kestrel and insectivorous BoCC species on Site.

6.14 ASSESSMENT OF CUMULATIVE (INTER-PROJECT) EFFECTS

6.14.1. A cumulative effects assessment (CEA) has been undertaken for the Proposed Development which considers the combined impacts with other developments on the same single receptor or resource (inter-project effects). The detailed method followed in identifying and assessing potential cumulative effects is set out in **Section 2.8 of Chapter 2: Approach to EIA**.

- 6.14.2. The cumulative assessment considers guidance published by Planning Inspectorate (PINS) (Advice Note Seventeen: Cumulative effects assessment⁹³), and SNH (2018⁹⁴).
- 6.14.3. NatureScot (2025) guidance states that a cumulative ornithological assessment should assess the effects of the proposal in combination with:
- Existing development, either built or under construction;
 - Approved development, awaiting implementation; and
 - Proposals awaiting determination within the planning process with design information in the public domain.
- 6.14.4. Cumulative effects are most likely to occur to those receptors for which a significant residual effect is predicted from the Proposed Development, particularly if the core range of these receptors includes other planned, consented or built development. The Zol for ornithological receptors has been defined as 10 km. It is considered unlikely that any disturbance, displacement or collision effects would be cumulative beyond 10 km.
- 6.14.5. This assessment deviates from the NatureScot (2025) guidance in that existing and operational projects within 10 km of the Proposed Development are considered part of the baseline and are therefore not included within the cumulative assessment. The following projects are therefore considered as part of the baseline:
- Mynydd Clogau wind farm – 1 km east;
 - Tirgwynt wind farm – 1.6 km north;
 - Carno I Windfarm – 6.4 km west;
 - Carno II Windfarm – 6.7 km south-west; and
 - Llandinam wind farm – 9.2 km south south-east.
- 6.14.6. The following developments are located within 10 km of the Proposed Development, and are therefore considered as part of the cumulative assessment:
- Carno III Windfarm – 7.9 km south-west;
 - Esgair Cwmowen Wind farm - 7.2 km north-east;
 - Green GEN Vyrnwy Frankton - 3.5 km north;
 - Land at Plas Maldwyn (residential development) - 2.2 km south-east;
 - Llanbrynmair Wind Farm 1 - 7.6 km north-west;
 - Llanbrynmair Wind Farm 2 - 7.6 km north-west;
 - Llyn Lort Energy Park - 3 km north-east;
 - Rhiwlas Green Energy Network – 400 m to the west;
 - Mynydd Lluest y Graig Energy Project - 7.5 km north; and
 - SP Mid Wales (Electricity Connections Project (grid line) - 5.6 km west.

⁹³ Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-17/> [Accessed 28/02/2025]

⁹⁴ NatureScot (2025), Guidance - Assessing the cumulative impacts of onshore wind farms on birds.

- 6.14.7. This assessment considers the potential impacts resulting from operational as well as construction/decommissioning phases where appropriate.
- 6.14.8. The SP Mid Wales, Rhiwlas Green Energy Network and Green Gen Vyrnwy projects are linear infrastructure projects, which are likely to be completed within a shorter timescale than wind farm or other major renewable infrastructure projects, with the land being reinstated as the project is undertaken.
- 6.14.9. The Green Gen Vyrnwy – Frankton development is an overhead line from a collector substation in Powys through the Vyrnwy Valley to a connection point on the national electricity network near Lower Frankton in Shropshire. The project is at the pre-application stage, with submission anticipated in Q4 2026.
- 6.14.10. The Rhiwlas Green Energy Network is a 132kV (132,000 volt) overhead line, measuring approximately 35km in length, with the OHL supported on wood poles. The route passes between Rhiwlas Energy Park near Llangurig and a new substation near Cefn Coch, Llanfair Caereinion. In addition, a new 33kV underground cable route of approximately 3km long, to connect the proposed Banc Du and Rhiwlas Energy Parks. The project is at the pre-application stage, with submission anticipated in 2027.
- 6.14.11. The SP Mid Wales development is a proposal for four 132kV connections in an area known as SSA B North near Sychton, a 132kV connection from a wind farm in SSA B South near Carno-Rhyd, and three 132kV connections in SSA C west of Llanbadarn. The project is at the pre-application stage. The project was suspended in 2015, and further information exchanged in 2019. The application was expected to be submitted 2024/2025.
- 6.14.12. As a result of the development type, shorter construction timescale and reinstatement of land following construction and into the operational phase, impacts to potential receptors identified in this assessment are considered unlikely. None of these schemes were assessed for potential ornithological impacts by developers, and no specific ornithological element has been included within the EIA documentation. As a result, none of the three schemes are considered further for potential cumulative impacts.
- 6.14.13. The land at Plas Maldwyn development is for the erection of 22 residential dwellings (terraced housing) and all associated works (utilities and transport connections) at Plas Maldwyn. The project is currently at the pre-application stage.
- 6.14.14. A PEA of the land was conducted in October 2023, which detailed the presence of four species (blue tit, great tit, magpie and house sparrow) recorded during the PEA. Two additional species were included within the desk study (carrion crow and starling). The site was considered likely to support widespread species as part of its breeding assemblage. None of the species pertinent to this assessment were recorded, and therefore cumulative adverse effects are **negligible**.

Llanbrynmair Wind Farm I and II

- 6.14.15. Llanbrynmair Wind Farm received planning consent in 2021 for a 30-turbine project with generation of up to 90 MW, following a planning application submitted in 2009 (Llanbrynmair Wind Farm I). This consent is valid until 2026. In October 2024, a formal request for a Scoping Direction was submitted to PEDW for a proposed wind farm comprising 15 wind turbines at up to 230m to tip (the previous height was 149m to tip) which would reduce the number of turbines, but increase the generating capacity to 108 MW. A Scoping Direction was published in March 2025 (Llanbrynmair Wind Farm II).

On this basis, even though it is consented, the certainty of delivering Llanbrynmair Wind Farm 1 is low, given that it is clear the developer intends to submit a DNS application for a revised scheme with a reduced scope. As this is currently at scoping stage, the certainty of development is reduced. The two versions of the same scheme have been considered to assess a worst-case scenario; however, the conclusions should be considered in the context of the certainty that can be afforded to either of the proposals, and that Llanbrynmair Wind Farm 2 is more likely to be progressed.

- 6.14.16. The following species were scoped in for further assessment in the Llanbrynmair Wind Farm scoping report; barn owl, crossbill, firecrest, hen harrier, nightjar, red kite. An OIA has not been undertaken for the project at the time of assessment, and therefore an assessment of the cumulative impacts cannot be undertaken.

Mynydd Lluest y Graig Energy Project

- 6.14.17. This development comprises up to 16 turbines with a blade tip height of 200 m, resulting in a total installed capacity of up to 120MW. In addition, ground-mounted solar and energy storage, and hydrogen generation and storage are in consideration for inclusion within the development. The project is currently at the pre-application stage, with scoping submitted in 2021. The Mynydd Lluest y Graig Energy Project is located approximately 7.5 km north of the Proposed Development.
- 6.14.18. The following species were scoped in for further assessment in the Mynydd Lluest y Graig Energy Project scoping report; barn owl, black-headed gull, crossbill, curlew, golden plover, goshawk, great black-backed gull, Greenland white-fronted goose, hen harrier, hobby, kestrel, lapwing, merlin, nightjar, peregrine, red kite, snipe and starling. An OIA has not been undertaken for the project at the time of assessment, and therefore an assessment of the cumulative impacts cannot be undertaken.

Carno III Windfarm

- 6.14.19. This development comprised up to 13 turbines with a blade tip height of up to 149.9 m, rated at a maximum capacity of 39 MW. The turbine arrays will be situated next to existing windfarms of Carno I and Carno II. Consent was granted in 2022, with construction scheduled to begin in 2026. Carno III Wind Farm is located approximately 7.9 km south-west of the Proposed Development.
- 6.14.20. The ornithology assessment for the development for Carno III concluded that the main receptors identified (red kite, hen harrier, kestrel and goshawk) were assessed as being of negligible significance due to low activity levels on the site, and the resultant low levels of expected mortality resulting from collision with turbines. The residual effects of the project following mitigation were assessed as being of negligible significance. Given the low risk of collision predicted for all species at the Carno III proposal, the cumulative risk to these species in combination is not substantially higher than the Proposed Development in isolation. Cumulative effects are therefore considered to be of negligible significance, and therefore the significance of effects predicted for the Proposed Development alone are unlikely to change.

Esgair Cwmowen

- 6.14.21. This development comprised up to 11 turbines with a blade tip height of up to 135 m, rated at a maximum capacity of 37.95 MW. The development also includes associated infrastructure, including transformers, switchgear and grid connections. Planning application was submitted in 2023 and is still in progress at time of assessment. Esgair Cwmowen Wind Farm is located immediately north of the Proposed Development.

6.14.22. The ornithology assessment for the development for Esgair Cwmowen concluded that the site of the scheme was of County/Regional level importance for breeding curlew (two pairs, representing 1.6 % of the Powys population). CRM analysis was undertaken for six species (red kite, curlew, peregrine, merlin, golden plover and snipe) with the results for each species expressed annually as follows: red kite – 0.202 collisions; curlew - 0.315 collisions; golden plover – 0.825 collisions; merlin – 0.047 collisions; peregrine – 0.007 collisions, and; snipe – 0.019 collisions. The residual effects of the project following mitigation were assessed as being of negligible significance. Given the low risk of collision predicted for all species at the Esgair Cwmowen proposal, the cumulative risk to these species in combination is not substantially higher than the Proposed Development in isolation. Cumulative effects are therefore considered to be of negligible significance, and therefore the significance of effects predicted for the Proposed Development alone are unlikely to change.

Llanbrynmair Wind Farm

6.14.23. This development comprises up to 30 turbines with a tip height of up to 126.5 m, with a maximum operational capacity of 108 MW. The development also includes associated infrastructure, including transformers, switchgear and grid connections. The application was approved in 2021, with consent expiring in 2026. Llanbrynmair Wind Farm is located approximately 7.6 km north-west of the Proposed Development.

6.14.24. The ornithology assessment for the development concluded that the site of the Llanbrynmair development was of County level importance for red kite. CRM analysis was undertaken for the following species; red kite, whooper swan and golden plover. Additionally, likely significant effects were considered for barn owl which was recorded breeding on site. The residual effects of the project following mitigation were assessed as being of negligible significance. Cumulative effects are therefore considered to be of negligible significance, and therefore the significance of effects predicted for the Proposed Development alone are unlikely to change.

Llyn Lort Wind Farm

6.14.25. This development comprises up to 24 turbines generating up to 151.8 MW capacity, in addition to overhead powerline installation, anemometer mast and other associated infrastructure. The development is at the pre-application stage, with scoping submitted in February 2025. The application is due to be submitted in 2026. The Llyn Lort Wind Farm is located approximately 3 km north-east of the Proposed Development.

6.14.26. The draft ES chapter for the development for Llyn Lort concluded that the site was of 'medium' or 'high' value importance for the following species; red kite, golden plover, curlew, goshawk, barn owl, hen harrier, snipe and Red and Amber listed BoCC birds (breeding assemblages). CRM analysis was undertaken for the following species; hen harrier, red kite, curlew and golden plover.

6.14.27. The results of the CRM analysis were as follows:

- Red kite: 0.9 collisions per annum / 36 collisions over the operational lifespan of the project;
- Golden plover: 35.6 collisions per annum / 1,424 collisions over the operational lifespan of the project;
- Curlew: 0 collisions;
- Goshawk 0.1 collisions per annum / 4 collisions over the operational lifespan of the project;
- Hen harrier: 0 collisions; and
- Snipe: 0.1 collisions per annum / 4 collisions over the operational lifespan of the project.

- 6.14.28. Due to the low collision risk values for curlew, goshawk, hen harrier and snipe, the cumulative effects were therefore considered to be of negligible significance, and the significance of effects predicted for the Llyn Lort wind farm alone are unlikely to change.
- 6.14.29. The cumulative effect to red kite would account for a combined collision rate of 64 individuals over the lifespan of the wind farm(s). Comparison of the expected annual collision rate (1.6 birds) against the snapshot population figure given, would account for a negligible 0.07% of the total Welsh population. Hereward *et al.* (2024) found that up to 12% of the Welsh red kite population could be lost to turbine collision before a decline in the population was considered likely to occur. The cumulative effects are therefore not considered to be significant at any geographical level.
- 6.14.30. The cumulative effect to golden plover would account for a combined collision rate of 1,576 individuals over the lifespan of the wind farm. Assessment for the Llyn Lort wind farm suggested an adverse non-significant residual effect following implementation of mitigation measures. On the basis that the predicted rate of collisions for the Proposed Development is approximately 10% of the total predicted for Llyn Lort, the combined rate of potential collisions is not considered significant against the baseline and will not result in a greater significant effect than predicted at a geographical level. This is further supported by the wintering population comprising birds which originate from outside of the UK breeding population, and that greater utilisation of Llyn Lort was recorded by golden plover as a result of more extensive areas of suitable foraging and resting habitat.

6.15 CONCLUSION ON CUMULATIVE EFFECTS

- 6.15.1. The cumulative effects on key ornithological receptors are considered variable on the basis of which of the proposals outlined above are consented.
- 6.15.2. Significant cumulative effects on red kite are considered unlikely given the stable to increasing population present within the Zol at present, and the rapidly expanding populations of the species at all geographic levels. This is borne out by the conclusions of Hereward *et al.*, (2024), whereby the population would still be predicted to grow even in the event that all wind farms were constructed.
- 6.15.3. Significant cumulative effects on golden plover are considered unlikely despite the potentially proportionately high number of collisions predicted at some of the other proposed sites (specifically Llyn Lort). The assessment for Llyn Lort suggested that mitigation measures would reduce the significance of impacts to adverse, but non-significant residual effect. Habitat suitable for foraging and resting golden plover are very limited on Site (as evidenced by the results of surveys), and more extensive areas of higher suitability habitat exists within the Zol.
- 6.15.4. Cumulative effects on curlew are considered unlikely, given the relatively low levels of activity recorded at the other proposed sites, with >1 collisions predicted over the operational lifespan at each of the proposed sites.
- 6.15.5. Kestrel are likely to occur, forage and/or breed at a number of other wind farms sites within the Zol, and a cumulative effect on kestrel of significance at the **local** level is anticipated.

6.16 ASSESSMENT OF RESIDUAL EFFECTS

- 6.16.1. The residual effects of the Proposed Development on ornithological receptors are provided in **Table 6-10** below.

Table 6-10 – Summary of Residual Effects

Receptor and summary of predicted effects	Sensitivity/importance/value of receptor	Magnitude of change	Significance	Summary rationale
Curlew: Potential loss of one unproductive territory from ICA 9	Local	Negligible	Not significant.	The potential loss of one unproductive territory from within ICA 9 (representing approximately 2.5% of the population) is considered to be of negligible minor significance to the status of ICA 9. Habitat enhancement measures will create additional suitable habitat for curlew to increase nesting and foraging opportunities. Details of the enhancement can be found in Appendix 6a: oCMMP .
Red kite: Potential loss of 28 individuals over operational lifespan of project resulting from collision with turbines	Local	Negligible	Not significant. Residual collision effects on red kite are unlikely to prevent the continued growth of the SPA population.	Empirical evidence provided to suggest that the Welsh red kite population is sufficiently resilient to potential losses resulting from collisions with turbines.
Kestrel: Potential loss of 42 individuals over operational lifespan of project resulting from collision with turbines	Local	Low	Significant	The potential loss will have a minor detrimental effect at the local level due to the elevated fatality rate without compensation or mitigation. The provision of nestboxes away from the turbine locations and habitat enhancement along the access track are likely to reduce the potential for collision with turbines, as well as providing additional foraging opportunities away from the Proposed Development.

Receptor and summary of predicted effects	Sensitivity/importance/value of receptor	Magnitude of change	Significance	Summary rationale
Golden plover: Potential collision and displacement during construction and operational phases	Local	Negligible	Not significant.	Impacts to passage/wintering golden plover are limited both spatially and temporally during the construction phase. Suitable alternative foraging and resting sites are present within the wider landscape, whilst construction activities are to be undertaken with an ornithological watching brief in place to further reduce negative effects.
Skylark	Local	Low	Not significant.	Impacts to skylark are most likely to result from habitat loss/fragmentation, particularly from the construction of the access track and ancillary buildings/compounds. Additional compensation measures which benefit skylark will also be implemented, including the creation of scrub and the provision of nestboxes/artificially created cavities within natural features. Enhancement of habitat suitable for breeding habitat (such as Upland heath and non-priority grassland) on Site.

6.17 SUMMARY

- 6.17.1. The potential for significant ornithological effects to occur has been substantially mitigated through design of the Proposed Development and the application of standard embedded mitigation measures that will be delivered through a Construction Environmental Management Plan (CEMP), and bespoke measures delivered through a Curlew Management and Monitoring Plan (CMMP).
- 6.17.2. Significant effects during the construction phase will be avoided through embedded and additional mitigation measures such as appropriate timing of the work, pre-construction survey and the use of buffer zones around sensitive receptors where required.
- 6.17.3. The important ornithological receptors on the Site are as follows: curlew, golden plover, kestrel, red kite and skylark. Direct impacts to curlew have been reduced through design considerations (turbine locations), and enhancements for curlew will be actioned on Site through the CMMP. Impacts to both golden plover and red kite are considered to be negligible, due to a combination of low utilisation and seasonality (with regards to golden plover) and an otherwise resilient county – national level breeding population (with regards to red kite).
- 6.17.4. Although there is considered to be a significant effect to kestrel at a local level, this is reduced through compensation and enhancement measures; the provision of nestboxes away from turbine arrays to reduce the likelihood of birds utilising the Site for foraging. Additionally, habitat enhancements elsewhere on Site for wider biodiversity will increase the foraging resource for kestrel. As a result of these measures, the net impact to kestrel is considered not significant.
- 6.17.5. Impacts to skylark are considered negligible due to proposed enhancement measures within the CEMP, which will create additional foraging and breeding opportunities.
- 6.17.6. The turbines pose a risk of collision mortality for birds, with adverse effects predicted for the following species considered within CRM; golden plover (Site level), kestrel (Local level) and red kite (Site level). The assessment has concluded that residual effects on the ornithological receptors during operation of the Proposed Development alone, or cumulatively with other relevant schemes, are adverse, but significant at the Site-level only (and therefore not significant in EIA terms).

Construction, operation and decommissioning phase residual adverse effects for the Proposed Development for the assessed ornithological receptors are not significant, with the exception of kestrel, whereby a precautionary minor detrimental impact at local level is anticipated.



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