Parc Ynni Calon y Gwynt

# ENVIRONMENTAL STATEMENT

## Appendix 6B: Year 1 Ornithology Report 2022-2023

62282400_APP6B_001
JULY 2026

PUBLIC

Parc Ynni Calon y Gwynt

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## Appendix 6B: Year 1 Ornithology Report 2022-2023

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# Calon y Gwynt

Year 1 Ornithology Report
2022-2023

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## Contents

# 1 Introduction

## Background to Commission

1.1 Wind 2 Limited commissioned BSG Ecology in April 2022 to collect baseline ornithological data in relation to a potential wind farm development. The proposed development is at Calon y Gwynt, approximately 11 km to the north-west of Newtown, Powys (central Ordnance Survey Grid Reference (OSGR) SO 00013 98640) hereafter referred to as the 'Site'.

1.2 This report presents the methods and results of ornithological survey work completed during the 2022 breeding season (April 2022 to August 2022 inclusive), and during the 2022/23 non-breeding / winter season (September 2022 to March 2023 inclusive).

## Site Description

1.3 The Site is approximately 340 hectares (ha) in extent. It ranges between 330 m and 485 m elevation, with lower ground in the north-eastern and eastern parts of the Site. The highest points within the Site boundary are at Y Gloncc (OSGR SN 99872 98793, 461 m elevation) and Garreg-hir (OSGR SN 99888 97791, 485 m elevation), towards the western and south-western boundaries respectively.

1.4 The Site comprises unenclosed pasture on the highest ground in the western and south-western, and enclosed pasture in the eastern and north-eastern parts of the Site. Along the slope and on the higher ground, habitats are dominated by acid grassland, with extensive patches of bracken and small areas of wet modified bog. Sward length varies, ranging from relatively short sheep-grazed acid grassland on the upper reaches of the Site, to extensive tall rush cover on some of the lower ground. Rock exposures are present along the ridge, and the most extensive of these result in low cliffs that rise 2-3 m above the adjacent moorland. Minor water courses and wet flushes are a feature of the higher ground. These discharge into the Nant y Llyn Mawr, which runs through the eastern part of the Site, and is itself a tributary of the Afon Rhiw. The boundaries between moorland and improved grassland fields are demarcated by post and wire fences. Scrub is largely limited to localised patches of gorse.

1.5 Three freshwater bodies, Llyn Mawr, Llyn Du and Llyn y Tarw are within 2km of the Site boundary. The closest, Llyn Mawr, is approximately 500 m to the south-east of the Site boundary. Habitats in the wider area are dominated by rolling enclosed, improved pasture with occasional areas of commercial plantation to the west and north-west. These include plantations at Crynarth (340 m west of the Site at its closest edge) and at Bryn yr Ysbyty (400 m north-west of the Site at its closest edge). Y-Gloncc and Esgair Cwmowen (which makes up the remainder of the ridge of land on the edge of the Site) form one of a number of roughly parallel ridges that run through the local landscape. These include Cefn Gwyn, to the east, where the 17-turbine Mynydd Clogau Wind Farm, commissioned in 2006, is situated.

1.6 The Site boundary is shown on **Figure 1**.

## Description of Project

1.7 The proposed wind farm will comprise up to twelve turbines, associated access tracks and drainage infrastructure. Turbine locations are not currently fixed.

1.8 An access route will connect the wind farm to the minor road to the south at OSGR SO 01150 97185.

# 2 Methods

### Desk Study

2.1 A 2 km perimeter search area around the Site is considered sufficient to cover core ranging areas around nest sites of those target bird species likely to occur within the region (Scottish Natural Heritage (SNH)[1], 2017 (see Appendix 1 Table 1.6)). It follows that a 2 km search area around the Site boundary was adopted with regard to contextual ornithological records. Ornithological data concerning protected[2] and notable[3] bird species and protected sites were obtained from the following sources:

- The Biodiversity Information Service for Powys & Brecon Beacons National Park (BIS) for non-statutory sites of nature conservation interest and bird records within 2 km of the Site.
- The National Biodiversity Network (NBN) Gateway for publicly accessible biological records relating to birds.[4]
- Milvus, the journal of the Welsh Ornithological Society (WOS) (WOS, 2022).
- The Multi Agency Geographic Information for the Countryside (MAGIC) website[5] for statutory designated sites notified for their ornithological interest within 2 km of the Site.

### Field Survey

2.2 Bird survey was based on industry standard guidance for onshore wind farms (SNH) (2017). In the absence of their own guidance relating to bird survey at onshore wind farms, SNH guidance is applied in Wales by Natural Resources Wales (NRW) and other nature conservation stakeholders.

#### *Vantage Point (VP) Surveys*

2.3 VP surveys were conducted during the 2022 breeding season (April 2022 to August 2022 inclusive) and non-breeding / winter season 2022/23 (September 2022 to March 2023 inclusive). Key principles of VP survey are set out by SNH (2017). These are:

- VPs should be chosen parsimoniously in order to achieve maximum visibility from the minimum number of survey locations.
- An arc of up to 180 degrees extending up to two kilometres from the observer can be effectively surveyed from each VP.
- VPs are best located outside of the survey area where possible.
- Observers should try to position themselves inconspicuously in order to minimise their effect on bird behaviour / movement.
- VPs that are located within the survey area should not be used simultaneously with other VP locations which overlook them as the presence of an observer either sitting at or moving to / from the VP could affect bird behaviour.
- At least 36 hours of survey per VP should be conducted per 'season' to enable representative data collection.

2.4 Two VP locations were selected for survey of land within the Site during the survey period. Both are located on Site boundaries. The surveyor was able to remain inconspicuous during the VP surveys by positioning himself away from edges / ridges, by wearing appropriately dark / camouflaged clothing and by restricting movements to a minimum. It should be noted that the area is actively

[1] Scottish Natural Heritage is now NatureScot.
[2] Species with European and/or UK legal protection. Environment (Wales) Act (2016) priority species.
[3] Red-listed Birds of Conservation Concern (BoCC) (Bladwell et al., 2018; Stanbury et al., 2021), Local Biodiversity Action Plan (LBAP) species.
[4] Data from the NBN Gateway was used for context only [Accessed November 2022].
[5] Multi-Agency Geographic Information for the Countryside https://magic.defra.gov.uk/magicmap.aspx [Accessed April 2022].

farmed (and under several ownerships / tenancies), with quads and other vehicles often present within the Site boundary.

2.5 The location of the respective VPs and viewsheds are shown on **Figure 1.**

2.6 Three hours was spent at each VP location per "watch" where weather conditions allowed, during which time the surveyor scanned a 180 degree viewshed extending up to two kilometres from the observer using binoculars. During VP survey the viewing arc was scanned constantly until a 'target species' was detected. The bird was then followed until it landed or was lost to view. The following information was recorded for each target species on a standardised form:

- Species
- Time of observation
- Duration of observation
- Count
- Estimated flight height (every 15 seconds)
- Direction of flight
- Estimated distance and direction of bird from the observer
- Flight type and behaviour, where apparent (e.g., flapping / gliding and foraging, displaying, commuting etc.)

2.7 Height bands of 0-15 m, 15-230 m and 230+ m were used for recording flight height. The height range 15-230 m was considered to be collision risk height. Features of known height (or for which height could be estimated accurately), such as small stands of mature trees (associated with isolated buildings) and the stand of coniferous trees at Bryn yr Ysbyty were used as reference points when estimating bird flight height. The method of data collection is consistent with that required for collision risk modelling (using SNH's Band Model).

2.8 SNH Guidance (2017) states that, "*In most circumstances … target species will be limited to those species which are afforded a higher level of legislative protection*." Target (or 'focal') species at Calon y Gwynt were defined as all Schedule 1[6] and Annex 1[7] raptors / owls, waders and wildfowl (excluding re-established greylag goose *Anser anser* and feral Canada goose *Branta canadensis*).

2.9 Gulls and passerines were not treated as target species. However, notes were taken on flight activity of both, with a view to identifying any regularly used flight lines. With regards to passerines, SNH (2017) guidance states, *"It is generally considered that passerine species are not significantly impacted by wind farms."* This is likely to reflect the lack of evidence of population level effects resulting from wind farm mortality in passerine species.

2.10 Information on non-focal species was aggregated and summarised in five-minute intervals on the reverse of the VP recording form.

2.11 A total of 36 hours of survey was completed at each VP location between April 2022 and August 2022 inclusive, and between September 2022 and March 2023 inclusive.

2.12 Weather data were recorded at the start of each watch, with the conditions formally reassessed on at least an hourly basis thereafter (or at such point as it was apparent a change in conditions had occurred). Dates, times and weather conditions during VP surveys are provided in **Tables 1** and **2** in **Appendix 1**.

[6] Of the Wildlife and Countryside Act, 1981 (as amended).
[7] Of Directive 2009/147/EC, often referred to as The Birds Directive.

***Breeding Raptor Surveys***

2.13 SNH (2017) guidance recommends that surveys for breeding raptors including red kite *Milvus milvus* and peregrine *Falco peregrinus* are completed within 2 km of proposed wind farms. For goshawk *Accipiter gentilis* and hobby *Falco subbuteo*, which often nest in plantation habitats, 1 km is applicable.

2.14 There are a number of areas of habitat within 1-2 km of the Site that have the potential to support a breeding pair of one or more of these species:

- Red kite (2 km) – mature coniferous plantation, mixed and deciduous woodland.
- Hen harrier *Circus cyaneus* (2 km) – unenclosed upland moorland and pre-thicket stage plantation.
- Goshawk (1 km) – mature coniferous plantation.
- Kestrel *Falco tinnunculus* (no specified search area in guidance: taken as 1 km) – quarries, buildings and mature trees.
- Hobby (1 km) – mature plantation woodland and more open habitats with scattered trees and small woods.
- Peregrine (2 km) – rock escarpments and quarries.
- Merlin *Falco columbarius* (2 km) – unenclosed upland moorland, pre-thicket and thicket stage plantation (typically at moorland edges).
- Short-eared owl *Asio flammeus* (2 km) – unenclosed upland moorland and pre-thicket stage plantation.

2.15 Surveys of potential breeding areas were completed using a combination of walkover raptor survey and mobile VPs[8] on nine visits between April 2022 and July 2022 inclusive. During the surveys, habitat features[9] were searched for signs of raptors. Cliff faces were scanned using binoculars and a telescope. The surveys also involved walking along plantation edge and undertaking short VP watches of up to one hour duration over woodland / plantation and quarries.

2.16 The survey methods were based on recommendations in SNH (2017) guidance and Hardey *et al*. (2013), and were informed by the emerging results of the ongoing VP survey work. The durations of supplementary VP watches were varied by location depending on the extent to which viewsheds covered the areas in question.

2.17 Dates, times and weather conditions during raptor surveys are provided in **Table 3** in **Appendix 1**. Perimeter survey areas are provided in **Figure 2**.

***Breeding Season Wader Surveys and Llyn Mawr Waterbody Counts***

2.18 Walkover breeding wader surveys of the moorland habitats extended to approximately 800 m beyond the developable area where potentially suitable breeding habitat was present.

2.19 SNH guidance (2017) recommends that the Brown & Shepherd (1993) method is applied, but that surveys are repeated on four occasions (based on recommendations set out in Calladine *et al*. (2009)) between April and July inclusive (with at least seven days between visits).

2.20 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.

[8] Informal watches from VP locations other than those used for the formalised watches, which usually lasted for 2 hours or less.

[9] Habitat features included fence lines, rock outcrops, prominent mounds / tussocks and isolated trees.

2.21 In addition to records from the breeding wader surveys, any evidence of waders during VP work was systematically recorded.

2.22 Dates, times and weather conditions during breeding wader surveys are contained in **Table 4** in **Appendix 1**. The perimeter survey area is provided in **Figure 3**.

2.23 A count of waterfowl using Llyn Mawr was conducted once per month over the breeding season (April 2022 to August 2022 inclusive) and was typically incorporated into the breeding wader survey. All waterfowl present (including waders at the pool margins) were recorded systematically. Details of weather conditions during the survey were also recorded.

2.24 Dates and weather conditions during the Llyn Mawr waterbody counts are contained in **Table 5** in **Appendix 1**.

***Non-Breeding / Winter Waterfowl and Wader Surveys***

2.25 Walkover of moorland habitats and counts of waterbodies[10] extending to approximately 800 m beyond the developable area were conducted over the non-breeding / winter survey period (October 2022 to March 2023 inclusive). The survey area was extended to include Llyn y Tarw and surrounding moorland (which are beyond 800 m from the developable area). All waterfowl present (including gulls, and waders at the pool margins) were recorded systematically. Details of weather conditions during the survey were also recorded.

2.26 Dates and weather conditions during the non-breeding / winter waterfowl surveys are contained in **Table 6** in **Appendix 1**.

***Nightjar Surveys***

2.27 Areas of suitable breeding habitat for nightjar *Caprimulgus europaeus* (defined as permanently open habitat, clear fell and recently re-stocked plantation in accordance with the findings of Scott *et al*. (1998)) were identified. A walked transect with stopping (listening) points was selected, to survey suitable habitat associated with commercial coniferous plantation within 800 m of the developable area[11], to the west.

2.28 Surveys to locate churring male nightjars were completed based on the methods identified by Gilbert *et al* (1998). The transect survey was undertaken in June 2022 and repeated in July 2022. Each stop was eight minutes duration. If, after three minutes, no churring nightjars had been recorded, audio playback was used for a duration of 1 minute to attempt to elicit a response.

2.29 Dates, times and weather conditions during nightjar surveys are tabulated in **Table 7** in **Appendix 1**. The perimeter survey area is provided in **Figure 4**.

**Limitations to Methods**

2.30 There were no limitations to the survey work.

**Project Personnel**

2.31 Stuart Thomas, MCIEEM, conducted the ornithological survey work at the Site. Stuart has over twenty years of professional experience as a field ornithologist. During this time he has worked for SNH managing sites of European importance for their bird populations, for JNCC undertaking marine surveys, and on behalf of consultancy companies on numerous wind farm sites throughout the UK. He has particular experience working in Wales, where he has collected baseline ornithological data to inform wind farm sites including Bryn Titli Extension of Life, Llanbadarn Fynydd, Mynydd Waun Fawr, Carnedd Wen and Llanbrynmair. He has experience of all regularly used ornithological survey techniques and holds several Schedule 1 survey licences.

[10] Llyn Mawr and Llyn Du.

[11] As shown on the shapefile provided (by email) 13 April 2022.

2.32 James Garside BSc was responsible for data management and authored this report. James has worked on wind farms throughout Wales, including various sites in Powys, and schemes in Pembrokeshire, Conwy, Neath Port Talbot, Bridgend, Blaenau Gwent, Carmarthenshire and Torfaen. He has considerable experience completing VP survey as well as specialist survey for goshawk, honey buzzard, nightjar and a range of other species. James also undertakes annual breeding bird surveys for the BTO in the Welsh uplands, and conducts a range of ornithological survey for Natural Resources Wales at their Newport Wetlands reserve.

2.33 Owain Gabb MSc, MCIEEM, CEnv acted as technical director for the work and technically reviewed this report. Owain has worked as a professional ecologist since 1999 and with onshore wind projects since 2002. He has led the ornithological input to schemes throughout the UK and Ireland, and planned and co-ordinated survey work for various protected and / or rare species. Owain formerly sat on the Glamorgan Rarities Committee (rare bird adjudication), is Chairman of the Gower Ornithological Society Committee, and is a bird ringing trainer. He runs a ringing site at NRW's Oxwich Marsh National Nature Reserve where over 40,000 birds have been captured since May 2013; all data are submitted to the British Trust for Ornithology.

# 3 Results and Evaluation

## Desk Study

### *Statutory designated sites*

3.1 One statutory designated site, Llyn Mawr Site of Special Scientific Interest (SSSI), is located within 2 km of the Site boundary. Llyn Mawr SSSI is located approximately 170 m south-east of the Site at its closest edge, and the indicative access track runs adjacent to it, to the east. NRW have confirmed that although waterfowl are included within the citation for the site, the reasons for its notification are the oligotrophic nature of the pool and the associated fringing bog communities, as opposed to its ornithological or faunal interest.

3.2 The nearest internationally designated site, the Berwyn Special Protection Area (SPA) is located approximately 16 km north of the Site boundary at its closest edge. The SPA was classified due to its importance (in a European context) to breeding populations of red kite, hen harrier, peregrine, merlin, golden plover *Pluvialis apricaria* and short-eared owl.

### *Non-statutory designated sites*

3.3 One non-statutory designated site, Llyn Du Site of Importance for Nature Conservation (SINC), is located 570 m south of the Site boundary. The SINC comprises the waterbody and edge habitats and is approximately 4.2 ha in area. No information about this site is publicly available.

### *Species data*

3.4 The NBN Gateway[12] holds records for a range of target raptor, wader and wildfowl species on or within 2 km of the Site.

3.5 The following records of target raptor species are held by the NBN Gateway:

- Kestrel – 62 records (between 1978 and 2019).
- Peregrine, merlin, barn owl *Tyto alba* and short-eared owl within the wider 10 km squares in which the Site is located.

3.6 The following records of target wader species on or within 2 km of the Site boundary are held by the NBN Gateway:

- Oystercatcher *Haematopus ostralegus* – one record (in 2000).
- Ringed plover *Charadrius hiaticula* – two records (in 1978 and 1992).
- Lapwing *Vanellus vanellus* – nine records (between 1992 and 2011).
- Golden plover – 13 records (between 1978 and 2019).
- Common sandpiper *Actitis hypoleucos* – four records (between 1978 and 2003).
- Buff-breasted sandpiper *Calidris subruficollis* – one record (in 2003).
- Woodcock *Scolopax rusticola* – 53 records (between 2008 and 2019).
- Common snipe *Gallinago gallinago* – 32 records (between 1978 and 2019).
- Jack snipe *Lymnocryptes minimus* – one record (in 1996).
- Redshank *Tringa totanus* – two records (in 1978 and 1992).
- Curlew *Numenius arquata* – 29 records (between 1978 and 2014).
- Golden plover and dunlin *Calidris alpina* within the wider 10 km squares in which the Site is located.

[12] The NBN Gateway data are of low resolution and therefore the precise locations of records are not provided.

3.7 The following records of target wildfowl species on or within 2 km of the Site boundary are held by the NBN Gateway:

- Mute swan *Cygnus olor* – one record (in 1992).
- Whooper swan *Cygnus cygnus* – twelve records (between 1978 and 2019).
- White-fronted goose – six records (between 1970 and 1992[13]).
- Mallard *Anas platyrhynchos* – 164 records (between 1978 and 2018).
- Shoveler *Spatula clypeata* – two records (in 2000 and 2007).
- Teal *Anas crecca* – 56 records (between 1978 and 2013).
- Pochard *Aythya ferina* – ten records (between 1978 and 2009).
- Tufted duck *Aythya fuligula* – 209 records (between 1978 and 2018).
- Ring-necked duck *Aythya collaris* – two records (in 2009).
- Goldeneye *Bucephala clangula* – 74 records (between 1978 and 2015).
- Goosander *Mergus merganser* – 33 records (between 1978 and 2018).
- Red-Breasted merganser *Mergus serrator* – one record (in 2007).
- Common scoter *Melanitta nigra* – one record (in 2004).
- Wigeon within the wider 10 km squares in which the Site is located.

### Breeding season data

3.8 The data provided by BIS returned breeding season records for six target raptor species on or within 2 km of the Site: red kite, hen harrier, kestrel, peregrine, merlin and barn owl. Evidence of breeding by the following species were returned:

- Kestrel – successful breeding in nest boxes, to the south of the Site at Llyn Mawr during 2020.
- Barn owl – successful breeding on Site in an agricultural building close to the eastern boundary between 2004 and 2008, and at eleven other locations within 2 km of the Site boundary.

3.9 The data provided by BIS returned breeding season records for five target wader species on or within 2 km of the Site: lapwing, dunlin, common snipe, whimbrel *Numenius phaeopus* and curlew.

- Common snipe – territorial behaviour ('drumming'[14] and 'chipping'[15]), to the south of the Site at Llyn Mawr between 1978 and 1996.
- Curlew – successful breeding, to the south of the Site at Llyn Mawr before 1997 (and birds recorded at Llyn Mawr as recently as 2021).

3.10 Records for which the dates provided were insufficient to ascertain season, were returned for the following target species: red kite, hen harrier, goshawk, hobby, kestrel, peregrine, tawny owl *Strix aluco*, short-eared owl, lapwing, ringed plover, common sandpiper and redshank.

3.11 Green (2022) found three pairs of curlew in the wider area[16] during the 2021 breeding season; one pair near Llyn y Tarw (south-east of the Site) and two pairs at Mynydd Clogau (the area to the north-east of the Site boundary).

[13] Four records referred specifically to individuals of the subspecies Greenland white-fronted goose.
[14] The sound produced by snipe during display flight is commonly referred to as 'drumming'.
[15] The song of common snipe is commonly referred to as 'chipping'.
[16] The data presented within the report was of low resolution.

### Non-breeding / winter season data

3.12 The data provided by BIS returned records outside of the breeding season for four target raptor and four target wader species on or within 2 km of the Site: red kite, kestrel, peregrine, short-eared owl, dotterel *Charadrius morinellus*, golden plover, jack snipe and common snipe.

3.13 The data provided by BIS returned non-breeding / winter records for nine target wildfowl species on or within 2 km of the Site: whooper swan, white-fronted goose *Anser albifrons*, mallard, teal, pochard, greater scaup *Aythya marila*, tufted duck, goldeneye and goosander.

- Whooper swan – records between 1978 and 2010 for which the dates returned were insufficiently detailed to ascertain season, but which are likely to be non-breeding / winter records[17].
- White-fronted goose – records from Llyn Mawr and Llyn Du between 1970 and 1984[18].
- Mallard – records between 1983 and 2021 on waterbodies to the south of the Site (Llyn Mawr, Llyn Du and Llyn y Tarw).
- Teal – a non-breeding / winter record from Llyn y Tarw in 2021.
- Pochard – records between 1978 and 1998 on waterbodies to the south of the Site (Llyn Mawr and Llyn Du).
- Greater scaup – one record from Llyn Mawr in 1997.
- Tufted duck – non-breeding / winter records on waterbodies to the south of the Site (Llyn Mawr and Llyn y Tarw) between 1983 and 2021.
- Goldeneye – records between 1978 and 2021 on Llyn Mawr and Llyn Du.
- Goosander – records between 2015 and 2021 on Llyn Mawr (older records (between 1978 and 2008) were not assigned a date sufficient to ascertain season).

3.14 Breeding season records were returned for three target wildfowl species: pochard, goldeneye and red-breasted merganser.

## Field Survey

3.15 A combined total of 72 hours of VP survey was completed between April 2022 and August 2022 inclusive.

3.16 Target species recorded during the breeding season VP survey work were; red kite, hen harrier, kestrel, hobby, peregrine, mallard and curlew.

### *Red kite*

#### Breeding season VP survey observations

3.17 Forty-two red kite flights were recorded during the breeding season VP surveys, resulting in a total flight time of 2 hours, 9 minutes and 30 seconds. Of the total flight time, 1 hour, 57 minutes and 25 seconds was spent at collision risk height, the remainder below collision risk height.

3.18 Red kite flights occurred as follows:

- Sixteen flights over the 12 hours of survey in April 2022.
- Seven flights over the 18 hours of survey in May 2022.
- Three flights over the 18 hours of survey in June 2022.
- Fourteen flights over the 18 hours of survey in July 2022.
- Two flights over the 6 hours of survey in August 2022.

[17] Whooper swans winter in the UK (and breed in northern Eurasia).

[18] Two records occurred on 15 August 1984, but refer to a non-breeding (presumed wintering) bird.

3.19 Activity was widely distributed, with a concentration over the western part of the Site and off Site to the north-west. Activity involved both commuting and foraging flights, with the majority made by single birds (four flights involved two birds together and one flight involved three birds).

3.20 Red kite flights recorded during the breeding season VP surveys are shown on **Figure 5a**.

#### Non-breeding / winter VP survey observations

3.21 Fifty-four red kite flights were recorded during the non-breeding / winter VP surveys, resulting in a total flight time of 3 hours, 19 minutes and 45 seconds. Of the total flight time, 2 hours, 24 minutes and 5 seconds was spent at collision risk height, the remainder below.

3.22 Red kite flights occurred as follows:

- Six flights over the 12 hours of survey in September 2022.
- Seventeen flights over the 12 hours of survey in October 2022.
- Thirteen flights over the 12 hours of survey in November 2022.
- Two flights over the 12 hours of survey in December 2022.
- Nine flights over the 12 hours of survey in January 2023.
- Six flights over the 6 hours of survey in February 2023.
- One flight over the 6 hours of survey in March 2023.

3.23 Activity was widely distributed over the Site, with minor concentrations over the central and western parts. Most flights involved singletons, five flights involved two birds.

3.24 Red kite flights recorded during the non-breeding / winter VP surveys are shown on **Figure 5b**.

#### Breeding raptor survey observations

3.25 Red kite were recorded frequently during most breeding raptor survey visits, though activity typically involved commuting and foraging. Behaviours indicative of territoriality were recorded at one location, centred on deciduous woodland on the valley slope approximately 450 m south-west of the Site boundary, at OSGR SN 99091 97035 (see **Figure 2**). Red kite records at this location during the breeding raptor surveys are summarised below:

- On 12 May 2022, a red kite was heard calling from the woodland.
- On 19 May 2022, two birds were observed in an apparent display flight over the area and were recorded flying into the woodland.
- On 27 July 2022, two red kites were recorded circling over the woodland.

3.26 No active nest was located in the woodland during the breeding raptor survey work[19].

#### Incidental records

3.27 Red kites were frequently recorded incidentally during breeding wader surveys and non-breeding / winter waterfowl and wader surveys. The patterns of activity and behaviours reflected those recorded during the VP and raptor surveys (described above).

### *Hen harrier*

#### Breeding season VP survey observations

3.28 One hen harrier flight was recorded during the breeding season VP surveys. The flight, recorded on 14 June 2022, lasted for 3 minutes and 15 seconds, and was below collision risk height throughout.

[19] Access was not permitted to the woodland, which was located on private landed.

It involved a female quartering low over the central and northern parts of the Site, from Y Glonc towards Esgair Cwmowen.

3.29 This hen harrier flight is shown on **Figure 6a**.

#### Non-breeding / winter VP survey observations

3.30 Three hen harrier flights were recorded during the non-breeding / winter VP surveys. These resulted in a total flight time of 9 minutes and 15 seconds, all of which was spent below collision risk height. The first and third flights, recorded on 23 September 2022 and 23 November 2022, involved adult male birds quartering over the northern part of the Site, south-east of Y Glonc. The second flight involved a 'ringtail'[20] quartering low over the Site west of Y Glonc on 10 October 2022.

3.31 Non-breeding / winter hen harrier flights are shown on **Figure 6b**.

#### Breeding raptor survey observations

3.32 During the breeding raptor survey on 14 July 2022, a second calendar-year male hen harrier was recorded in commuting flight, approximately 2.2 km north of the Site boundary.

#### Incidental records

3.33 Two hen harrier flights were recorded during the breeding wader survey work, one during May 2022 and one during June 2022. Both flights were located south of the Site boundary (north of Llyn Mawr and Llyn y Tarw, the former involved an adult male bird hunting over moorland and the latter involved a female commuting east.

### *Kestrel*

#### Breeding season VP survey observations

3.34 Fourteen kestrel flights were recorded during the breeding season VP surveys, resulting in a total flight time of 36 minutes. Of the total flight time, 31 minutes and 15 seconds was spent at collision risk height, the remainder below collision risk height.

3.35 Kestrel flights occurred as follows:

- Four flights over the 12 hours of survey in April 2022.
- Two flights over the 18 hours of survey in May 2022.
- Two flights over the 18 hours of survey in June 2022.
- Two flights over the 18 hours of survey in July 2022.
- Four flights over the 6 hours of survey in August 2022.

3.36 Activity was distributed widely, with a particular concentration of flights over the eastern part of the Site. Most activity involved birds hunting (hovering) and commuting to and from the agricultural building on Site (see **Section 3.42**). All except one flight involved singletons; two birds (an adult male and a juvenile) were recorded in flight (together) on 29 July 2022.

3.37 Kestrel flights recorded during the breeding season VP surveys are shown on **Figure 6a**.

#### Non-breeding / winter VP survey observations

3.38 Nineteen kestrel flights were recorded during the non-breeding / winter VP surveys, resulting in a total flight time of 50 minutes and 30 seconds. Of the total flight time, 40 minutes was spent at collision risk height, the remainder below.

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

3.39 Kestrel flights occurred as follows:

- Three flights over the 12 hours of survey in September 2022.
- Nine flights over the 12 hours of survey in October 2022.
- Five flights over the 12 hours of survey in November 2022.
- No flights over the 12 hours of survey in December 2022.
- One flight over the 12 hours of survey in January 2023.
- One flight over the 6 hours of survey in February 2023.
- No flights over the 6 hours of survey in March 2023.

3.40 Activity was widely distributed, with concentrations over the western part of the Site and over the eastern boundary (close to VP2). Most flights involved singletons; one flight involved two birds.

3.41 Kestrel flights recorded during the non-breeding / winter VP surveys are shown on **Figure 6b**.

#### Breeding raptor survey observations

3.42 During the breeding raptor survey on 28 April 2022, an active kestrel nest was located in a nest box on the agricultural building on Site at OSGR SO 01219 98858 (see **Figure 2**). During the breeding raptor survey on 14 July 2022, two adults and at least two recently fledged juveniles were present in the vicinity of the box (one juvenile was perched on top of the box).

#### Incidental records

3.43 Kestrel were recorded outside of viewsheds during VP surveys on 20 April 2022 and 14 June 2022. On the former date, a female was recorded hunting behind VP2, and on the latter, a male was recorded hunting behind VP1.

3.44 Kestrel were recorded during breeding wader surveys in all months during the period April 2022 to July 2022 inclusive. Most activity occurred over the eastern part of the Site, and off Site to the south-east (north of Llyn Mawr). During the June 2022 breeding wader surveys, an adult female with juveniles was recorded south-east of Llyn Mawr.

3.45 Kestrel were recorded frequently during the non-breeding / winter waterfowl and wader surveys, with one to three flights recorded during most surveys[21]. Activity was distributed widely over the Site and surrounding areas.

### *Hobby*

#### Breeding season VP survey observations

3.46 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. It involved an adult bird commuting south-west over the Site, from land east of Y Glonc towards Craig Lithrig.

3.47 This hobby flight is shown on **Figure 6a**.

#### Winter VP survey observations

3.48 No hobby flights were recorded during the non-breeding / winter VP surveys[22].

[21] No kestrel flights were recorded on 22 December 2022.

[22] Hobby are regularly recorded in September and early October in Wales.

***Peregrine***

**Breeding season VP survey observations**

3.49 Four peregrine flights were recorded during the breeding season VP surveys, resulting in a total flight time of 5 minutes and 30 seconds, all but 5 seconds of which was at collision risk height.

3.50 Two of the flights involved adult birds in commuting flight, on 17 May 2022 and 20 July 2022. The former concerned a bird flying north over the central part of the Site, the latter concerned a bird flying north-west over the western part of the Site and Blaen-y-Cwm (the valley adjacent to the western Site boundary).

3.51 The other two flights involved juvenile birds and were both recorded on 19 August 2022. The first involved a bird hunting over the western part of the Site and stooping into Blaen-y-Cwm. The second, approximately 19 minutes after the first, involved a bird commuting north along the western Site boundary.

3.52 Peregrine flights recorded during the breeding season VP surveys are shown on **Figure 6a**.

**Non-breeding / winter VP survey observations**

3.53 No peregrine flights were recorded during the non-breeding / winter VP surveys.

**Breeding raptor survey observations**

3.54 A peregrine breeding attempt was recorded during the breeding raptor surveys, in the quarry located approximately 1.7 km north of the Site (see **Figure 2**). Peregrine observations during the breeding raptor surveys are summarised below:

- On 26 April 2022, an adult male and an adult female were recorded flying together over the quarry and calling, and the male was observed carrying prey into the quarry.
- On 12 May 2022, an adult male was recorded in flight over the quarry.
- On 09 June 2022, a peregrine was heard calling in the quarry.
- On 29 July 2022, two birds were heard calling and the adult male was observed flying into the quarry.
- In late July 2022, at least two recently fledged juveniles were present in the quarry (D Pointon July 2022, personal communication).

**Incidental records**

3.55 A peregrine was recorded flying north-east over the south-eastern part of the Site (east of Craig Lithrig), during the April 2022 breeding wader survey.

***Merlin***

**Breeding season VP survey observations**

3.56 No merlin flights were recorded during the breeding season VP surveys.

**Non-breeding / winter VP survey observations**

3.57 No merlin flights were recorded during the non-breeding / winter VP surveys.

**Breeding raptor survey observations**

3.58 Merlin were recorded twice during the breeding raptor surveys, on 28 April 2022 and 09 June 2022. Both records involved birds perched on fence posts at the edge of an area of open moorland (of

approximately 180 ha), 2.2 km north of the Site boundary, the former concerned an adult female, the latter, an adult male.

#### Incidental records

3.59 A first calendar-year / female bird was recorded flying north along the western Site boundary, during the non-breeding / winter waterfowl and wader survey on 22 November 2022.

***Short-eared owl***

#### Breeding season VP survey observations

3.60 No short-eared owl *Asio flammeus* flights were recorded during the breeding season VP surveys.

#### Non-breeding / winter VP survey observations

3.61 Two short-eared owl flights were recorded during on 13 October 2022, at 17:56 and 18:04, over land at the eastern edge of the Site and at Waun y Llyn (to the east). The first flight lasted for 1 minute and 30 seconds and was below collision risk height throughout. The second involved a bird at collision risk height for 45 seconds, being mobbed by a female sparrowhawk.

3.62 Short-eared owl flights recorded during the non-breeding / winter VP surveys are shown on **Figure 6b**.

***Mallard***

#### Breeding season VP survey observations

3.63 One mallard flight was recorded during the breeding season VP surveys, on 08 May 2022. The flight lasted for 1 minute and 30 seconds, 30 seconds of which was at collision risk height, the remainder below. It concerned an adult male flying east over the western Site boundary (near Blaen-y-Cwm) before returning west.

3.64 This mallard flight is shown on **Figure 7a**.

#### Non-breeding / winter VP survey observations

3.65 No mallard flights were recorded during the non-breeding / winter VP surveys.

#### Breeding wader survey and Llyn Mawr waterbody count observations

3.66 Mallard were recorded during all breeding season waterbody counts. Between one and six birds were typically present on Llyn Mawr during the waterbody counts. The peak count was twelve birds on 15 July 2022. Evidence of breeding was also recorded on 15 July 2022, when four recently hatched ducklings were present in addition to the adults.

3.67 Mallard were recorded incidentally during breeding wader surveys (away from Llyn Mawr in April 2022 and May 2022. During April 2022, two birds (one male, one female) were recorded flying south-west between Craig Lithrig and Llyn Mawr. During May 2022, two birds (one male, one female) flew west from Nant y Llyn Mawr.

#### Non-breeding / winter waterfowl and wader survey observations

3.68 Four mallards were recorded during the non-breeding / winter waterfowl and wader survey on 11 October 2022, two on Llyn Mawr and two on Llyn y Tarw.

***Tufted duck***

**Breeding season VP survey observations**

3.69 No tufted duck flights were recorded during the breeding season VP surveys.

**Non-breeding / winter VP survey observations**

3.70 No tufted duck flights were recorded during the non-breeding / winter VP surveys.

**Waterbody counts**

3.71 Between two and four tufted duck were recorded using Llyn Mawr during all breeding season waterbody counts.

**Non-breeding / winter waterfowl and wader survey observations**

3.72 Tufted duck were recorded on Llyn Mawr during two of the non-breeding / winter waterfowl and wader surveys, on 11 October 2022 and 13 January 2023, with eight and four birds recorded respectively.

***Teal***

**Breeding season VP survey observations**

3.73 No teal flights were recorded during the breeding season VP surveys.

**Non-breeding / winter VP survey observations**

3.74 No teal flights were recorded during the non-breeding / winter VP surveys.

**Non-breeding / winter waterfowl and wader survey observations**

3.75 Twelve teal were recorded on Llyn y Tarw on 13 January 2023, during a non-breeding / winter waterfowl and wader survey.

***Goosander***

**Breeding season VP survey observations**

3.76 No goosander flights were recorded during the breeding season VP surveys.

**Non-breeding / winter VP survey observations**

3.77 No goosander flights were recorded during the non-breeding / winter VP surveys.

**Non-breeding / winter waterfowl and wader survey observations**

3.78 Four goosander were recorded on Llyn Mawr on 13 January 2023, during a non-breeding / winter waterfowl and wader survey.

***Goldeneye***

**Breeding season VP survey observations**

3.79 No goldeneye flights were recorded during the breeding season VP surveys.

**Non-breeding / winter VP survey observations**

3.80 No goldeneye flights were recorded during the non-breeding / winter VP surveys.

**Non-breeding / winter waterfowl and wader survey observations**

3.81 Three goldeneye were recorded on Llyn Mawr on 13 January 2023, during a non-breeding / winter waterfowl and wader survey.

***Golden plover***

**Breeding season VP survey observations**

3.82 No golden plover flights were recorded during the breeding season VP surveys.

**Non-breeding / winter VP survey observations**

3.83 Three golden plover flights were recorded during the non-breeding / winter VP surveys, resulting in a total flight time of 5 minutes, all of which was spent at collision risk height. These involved flocks of eleven, twelve and twenty-seven birds, on 13 October 2022, 29 November 2022 and 08 March 2023 respectively, and all involved birds moving south or south-east over the eastern part of the Site.

3.84 Golden plover flights recorded during the non-breeding / winter VP surveys are shown on **Figure 7b**.

**Non-breeding / winter waterfowl and wader survey observations**

3.85 Golden plover were recorded during the non-breeding / winter waterfowl and wader surveys on 11 October 2022, 22 November 2022, 22 December 2022 and 14 March 2023. The flights were distributed widely over the Site and surrounding land, and involved flocks of between 3 and 175 birds, the maximum count was recorded on 22 November 2022.

***Lapwing***

**Breeding season VP survey observations**

3.86 No lapwing flights were recorded during the breeding season VP surveys.

**Non-breeding / winter VP survey observations**

3.87 One lapwing flight was recorded on 16 December 2022, and involved two birds moving north-west over the northern part of the Site near Y Glonc. The birds were initially at collision risk height for 30 seconds, before dropping below collision risk height for the remaining 1 minute and 30 seconds. The birds landed on Site twice, briefly.

3.88 The lapwing flight recorded during the non-breeding / winter VP surveys is shown on **Figure 7b**.

***Turnstone***

**Breeding season VP survey observations**

3.89 No turnstone flights were recorded during the breeding season VP surveys.

**Non-breeding / winter VP survey observations**

3.90 One turnstone flight was recorded on 16 December 2022, and involved three birds flying south over the eastern part of the Site. The flight lasted for 1 minute and 30 seconds, and was below collision risk height throughout. This is an unusual inland record, and is likely to have involved birds moving in response to a period of hard (cold) weather.

3.91 The turnstone flight recorded during the non-breeding / winter VP surveys is shown on **Figure 7b**.

***Redshank***

**Breeding season VP survey observations**

3.92 No redshank flights were recorded during the breeding season VP surveys.

**Non-breeding / winter VP survey observations**

3.93 No redshank flights were recorded during the non-breeding / winter VP surveys.

**Breeding wader survey and Llyn Mawr waterbody count observations**

3.94 Two redshank were recorded during the breeding wader survey on 15 July 2022. The birds flew in from the south-east and landed briefly on the northern shore of Llyn Mawr, before continuing west shortly after.

***Common snipe***

**Breeding season VP survey observations**

3.95 No common snipe flights were recorded during the breeding season VP surveys.

**Non-breeding / winter VP survey observations**

3.96 Three common snipe flights were recorded during the non-breeding / winter VP surveys, two on 13 October 2022 and one on 14 December 2022. Both of the flights on 13 October 2022 involved two birds flying south over the eastern part of the Site, the first lasted for 45 seconds, the second lasted for 2 minutes and 15 seconds. The flight on 14 December 2022 involved a singleton flying south-west over the western part of the Site for 45 seconds. All three flights were at collision risk height throughout.

3.97 Common snipe flights recorded during the non-breeding / winter VP surveys are shown on **Figure 7b**.

**Non-breeding / winter waterfowl and wader survey observations**

3.98 Common snipe were recorded during all of the non-breeding / winter waterfowl and wader surveys, and were distributed widely over the Site and surrounding land. Birds were typically flushed by the surveyor at close range and observed in flight.

***Curlew***

**Breeding season VP survey observations**

3.99 One curlew flight was recorded during the breeding season VP surveys, on 12 May 2022. The flight lasted for 1 minute and 30 seconds, 45 seconds of which was at collision risk height, the remainder below.

3.100 The flight involved a bird flying south over the Site, east of Y Glonc (close to the eastern boundary), before returning north and landing in open habitat in the north-eastern part of the Site (east of Y Glonc). It appeared that the bird had been flushed from ground to the north (beyond the northern boundary), where a bird was heard singing earlier during the same watch.

3.101 This curlew flight is shown on **Figure 7a**.

**Non-breeding / winter VP survey observations**

3.102 No curlew flights were recorded during the non-breeding / winter VP surveys.

#### Breeding wader survey and Llyn Mawr waterbody count observations

3.103 Curlew were recorded during the breeding wader surveys in April 2022 and May 2022. Two birds were recorded in flight and calling at Esgair Cwmowen, approximately 300 m north-east of the Site boundary, during breeding wader survey work in both months. Two birds were also recorded on open ground north of Llyn y Tarw, approximately 1 km east of the Site boundary, during the breeding wader surveys in April 2022.

3.104 Other activity recorded during breeding wader surveys involved a curlew flying north-east over the Site at Craig Lithrig during April 2022, and one calling from the ground on Site, and in flight, to the south of Y Glonc during May 2022.

3.105 The activity recorded during the VP and breeding wader survey (summarised above) suggested that territories were located in two areas off Site:

- Approximately 300 m north of the Site boundary, in the area of Esgair Cwmowen, during April 2022 and May 2022.
- Approximately 1 km east of the Site boundary, north of Llyn y Tarw, during April 2022.

3.106 The habitat in these areas is suitable for breeding curlew.

3.107 No curlew were recorded during June 2022 and July 2022, and no evidence of successful breeding was recorded.

### *Whimbrel*

#### Breeding season VP survey observations

3.108 No whimbrel flights were recorded during the breeding season VP surveys.

#### Non-breeding / winter VP survey observations

3.109 No whimbrel flights were recorded during the non-breeding / winter VP surveys.

#### Breeding wader survey and Llyn Mawr waterbody count observations

3.110 During the breeding wader survey on 15 July 2022, one whimbrel flew west, south of Llyn Du (off Site), calling.

### *Nightjar*

#### Nightjar surveys

3.111 One nightjar territory was recorded on 14 July 2022, in clearfell adjacent to coniferous plantation on the west slope of the valley at Blaen-y-Cwm, approximately 380 m west of the Site boundary. A bird was recorded churring, wing-clapping and calling in two locations centred on OSGR SN 98354 98565. No nightjar activity was recorded during the June survey.

### *Non-focal Species*

3.112 Fifty-seven non-focal species were recorded during the surveys.

- Buzzard *Buteo buteo* and raven *Corvus corax* were the most frequently recorded species, with both observed during all VP watches.
- Two sparrowhawk *Accipiter nisus* flights were recorded during June 2022, one involving an adult female bird, the other an unsexed / unaged individual. Two sparrowhawk flights, one involving a male, the other a female, were recorded on 22 September 2022 and two flights by female birds were recorded on 13 October 2022.

- Great black-backed gulls *Larus marinus* were recorded frequently during the period April 2022 to early June 2022 inclusive, with flights involving one or two birds. Seven flights of one to four birds was recorded between November 2022 and January 2023. Herring gull *Larus argentatus* were recorded frequently throughout the breeding season and non-breeding / winter surveys, with flights involving between one and seven birds. Lesser black-backed gulls *Larus fuscus* were recorded occasionally with flights involving between one and five birds. A flock of 21 unidentified gulls was recorded flying over the Site and landing in fields near VP2 on 12 May 2022.
- A grey heron *Ardea cinerea* was recorded flying east over the eastern Site boundary on 14 June 2022.
- Seven non-focal waterfowl, wader and gull species were recorded during the breeding season waterbody counts and non-breeding / winter waterfowl and wader surveys; cormorant *Phalacrocorax carbo*, coot *Fulica atra*, moorhen *Gallinula chloropus*, great crested grebe *Podiceps cristatus*, black-headed gull *Chroicocephalus ridibundus*, lesser black-backed gull and great black-backed gull.
    - Cormorants were present at Llyn Mawr on 28 April 2022 and 11 October 2022, both records involving singletons.
    - One or two adult coots were present on Llyn Mawr during all breeding season counts, and on 11 October 2022. Breeding was confirmed on 15 July 2022, when five recently hatched young were present with two adults.
    - One moorhen was recorded on Llyn Mawr during the non-breeding / winter waterfowl and wader survey on 11 October 2022.
    - One great crested grebe was recorded on Llyn Du during the non-breeding / winter waterfowl and wader survey on 13 January 2023.
    - Black-headed gulls were present on Llyn Mawr during all breeding season waterbody counts, with counts in the range two to eight birds.
    - Lesser black-backed gulls were present on Llyn Mawr during most breeding season counts (they were absent only during the May 2022 survey), with all counts in the range one to four birds.
    - Two great black-backed gulls were recorded at Llyn y Tarw during the non-breeding / winter waterfowl and wader survey on 13 January 2023.
- The breeding passerine / near passerine community was dominated by skylark *Alauda arvensis* and meadow pipit *Anthus pratensis* in open habitats, with cuckoo *Cuculus canorus*, pied wagtail *Motacilla alba yarellii*, wheatear *Oenanthe oenanthe*, stonechat *Saxicola rubicola*, grasshopper warbler *Locustella naevia*, linnet *Carduelis cannabina* and reed bunting *Emberiza schoeniclus* also recorded frequently.
- Other species recorded during surveys were; pheasant *Phasianus colchicus*, wood pigeon *Columba palumbus*, stock dove *Columba oenas*, swift *Apus apus*, sand martin *Riparia riparia*, house martin *Delichon urbicum*, swallow *Hirundo rustica*, grey wagtail *Motacilla cinerea*, great spotted woodpecker *Dendrocopos major*, dunnock *Prunella modularis*, robin *Erithacus rubecula*, wren *Troglodytes troglodytes*, redstart *Phoenicurus phoenicurus*, whinchat *Saxicola rubetra*, song thrush *Turdus philomelos*, mistle thrush *Turdus viscivorus*, blackbird *Turdus merula*, garden warbler *Sylvia borin*, whitethroat *Curruca communis*, blackcap *Sylvia atricapilla*, willow warbler *Phylloscopus trochilus*, chiffchaff *Phylloscopus collybita*, goldcrest *Regulus regulus*, great tit *Parus major*, blue tit *Cyanistes caeruleus*, coal tit *Periparus ater*, nuthatch *Sitta europaea*, carrion crow *Corvus corone*, rook *Corvus frugilegus* (a rookery with approximately six nests was located at Ty-uchaf), magpie *Pica pica*, starling *Sturnus vulgaris*, chaffinch *Fringilla coelebs*, lesser redpoll *Acanthis cabaret*, goldfinch *Carduelis carduelis*, siskin *Spinus spinus* and house sparrow *Passer domesticus*.

# 4 Conclusions

4.1 The main findings from the Year 1 ornithological survey work were:

- Two curlew territories were located during April 2022 and May 2022, one approximately 300 m to the north of the Site and one approximately 1 km to the west. No curlew were recorded during June 2022 and July 2022, suggesting that any breeding attempts in these areas failed. The breeding curlew populations in both Wales and Montgomeryshire are in significant decline, with the Welsh population estimated to comprise between 400 and 1700 breeding pairs (Curlew Wales, 2021; Green, 2022).
- Kestrel were frequently recorded throughout the survey period, with activity highest during August 2022 and October 2022. An active nest was located on Site, in a nest box on an agricultural building close to the eastern boundary. At least two juveniles were successfully fledged.

4.2 Other results of the work were more typical / predictable:

- Red kite was the most frequently recorded target species. Birds were recorded throughout the survey period, with activity highest during April 2022, October 2022 and November 2022. No nest sites were recorded, but behaviour suggested that a territory was located approximately 450 m south-west of the Site boundary.
- An active peregrine nest was located in a quarry approximately 1.7 km north of the Site boundary; at least two juveniles successfully fledged. Peregrine activity over the Site was infrequent during the breeding season, and no peregrine flights were recorded during the winter.
- Hen harrier and hobby were both recorded once during the breeding season VP surveys, and hen harrier and merlin infrequently during the breeding raptor surveys or incidentally during breeding wader surveys (with all records off Site). No evidence of breeding on Site or in the local area was recorded for these species. Hen harrier were recorded occasionally during the winter, with three flights recorded, and two short-eared owl flights were recorded on one date during the winter.
- A nightjar territory was recorded in clearfell approximately 380 m to the west of the Site.

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# 6 Figures

(overleaf)

# 7 Appendices

**Appendix 1:** Survey data

**Appendix 2**: Legal protection afforded to birds in Wales

# Appendix 1: Survey data

### Table 1: Breeding season 2022 VP survey data

| Date | VP | Time | Weather | | | | Target Species flight count (number of individuals) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Wind (Beaufort) | Rain | Cloud (Otkas) | Temp (°C) | KT | HH | K. | HY | PE | MA | CU |
| 14/04/2022 | 1 | 11:55-14:55 | 1-3 SW | Nil | 8-7 | 13 | 5 | | | | | | |
| 14/04/2022 | 2 | 15:35-17:05 | 1-2 SW | Nil | 7-6 | 13 | 2 | | 2 | | | | |
| 20/04/2022 | 2 | 10:00-13:00 | 1-2 E | Nil | 1 | 16 | 3 (6) | | 1 | | | | |
| 20/04/2022 | 2 | 13:30-15:00 | 1-2 E | Nil | 2 | 16-17 | 3 | | 1 | | | | |
| 20/04/2022 | 1 | 15:25-18:25 | 1-2 E | Nil | 2-5 | 16-15 | 3 (4) | | | | | | |
| 08/05/2022 | 1 | 15:00-18:00 | 3-5 SSW-SW | Light Intermittent | 7-8 | 15-14 | | | 1 | | | 1 | |
| 08/05/2022 | 1 | 18:30-21:30 | 2-5 SW | Heavy Showers | 7-8 | 13-12 | 3 | | | | | | |
| 12/05/2022 | 2 | 14:20-17:20 | 1-3 W | Nil – Light Showers | 4-7 | 15-13 | 1 | | 1 | | | | 1 |
| 17/05/2022 | 2 | 14:00-17:00 | 1-3 SSE-S | Light Intermittent – Heavy Showers | 7-8 | 17-18 | 1 | | | | | | |
| 17/05/2022 | 2 | 17:30-20:30 | 1-3 S | Showers | 7-8 | 17-15 | | | | | 1 | | |
| 18/05/2022 | 1 | 14:30-17:30 | 1-3 SSW-S | Nil | 6-7 | 16-17 | 2 | | | | | | |
| 04/06/2022 | 1 | 18:15-21:15 | 3-1 E-SE | Nil | 4-7 | 15-13 | | | | | | | |
| 05/06/2022 | 1 | 04:40-07:40 | 2-4 W | Showers | 8 | 11-12 | | | | | | | |
| 14/06/2022 | 2 | 15:15-18:15 | 0-1 E | Nil | 4-3 | 20-19 | | | 2 | | | | |
| 14/06/2022 | 2 | 18:45-21:45 | 1 E-NW | Nil | 4-1 | 18-14 | | 1 | | | | | |
| 15/06/2022 | 1 | 15:40-18:40 | 1-2 WNW-NW | Nil | 8-6 | 19-16 | 1 | | | | | | |
| 28/06/2022 | 2 | 12:50-15:50 | 3-4 S-SSE | Light Showers | 8 | 15-14 | 2 | | | | | | |
| 12/07/2022 | 2 | 11:10-14:10 | 1-2 S-SW | Light Intermittent | 8 | 20 | 2 | | | 1 | | | |
| 12/07/2022 | 1 | 14:45-17:45 | 1-3 SSW-SW | Light Intermittent – Nil | 8 | 20-19 | 2 | | | | | | |
| 14/07/2022 | 1 | 17:30-20:30 | 2-0 WNW-NW | Nil | 5-1 | 19-14 | 3 (4) | | | | | | |
| 20/07/2022 | 1 | 16:00-19:00 | 1-2 NW | Nil | 7-8 | 20-18 | 2 | | | | 1 | | |
| 29/07/2022 | 2 | 05:20-08:20 | 0 | Nil | 7-8 | 14-15 | 1 | | 2 (3) | | | | |

| Date | VP | Time | Weather | | | | Target Species flight count (number of individuals) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Wind (Beaufort) | Rain | Cloud (Otkas) | Temp (°C) | KT | HH | K. | HY | PE | MA | CU |
| 29/07/2022 | 2 | 08:50-11:50 | 1 SW | Nil | 6-8 | 17-18 | 4 (5) | | | | | | |
| 19/08/2022 | 2 | 10:20-13:20 | 3-1 SW-W | Nil | 6-7 | 17-18 | 1 | | 4 | | | | |
| 19/08/2022 | 1 | 13:50-16:50 | 4-1 SW | Nil | 5-6 | 18-19 | 1 | | | | 2 | | |

**Table 2: Non-breeding / winter 2022-2023 VP survey data**

| Date | VP | Time | Weather | | | | Target Species flight count (number of individuals) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Wind (Beaufort) | Rain | Cloud (Otkas) | Temp (°C) | KT | HH | K. | SE | GP | L. | TT | SN |
| 22/09/2022 | 1 | 08:50-11:50 | 2-3 SW | Nil | 7-8 | 12-13 | | | | | | | | |
| 22/09/2022 | 2 | 12:30-15:30 | 2-4 SW | Nil | 6-8 | 14-13 | 2 | | 2 | | | | | |
| 23/09/2022 | 1 | 09:05-12:05 | 2-3 W-NW | Nil | 5-7 | 14-15 | 3 | | | | | | | |
| 23/09/2022 | 2 | 13:00-16:00 | 1-3 NW | Nil | 7-8 | 14-13 | 1 | 1 | 1 | | | | | |
| 10/10/2022 | 1 | 10:50-13:50 | 1-3 NW-NNW | Nil | 4-3 | 13-12 | 7(9) | 1 | | | | | | |
| 10/10/2022 | 1 | 14:20-17:20 | 1-3 NW | Nil | 3-2 | 14-12 | 6 | | 5 | | | | | |
| 13/10/2022 | 2 | 12:05-15:05 | 1 S | Nil | 1-2 | 15-17 | 3 | | 3 | | | | | 1 |
| 13/10/2022 | 2 | 15:35-18:35 | 1-2 SW | Nil | 5-6 | 16-13 | 1 | | 1 | 2 | 1(11) | | | 1(2) |
| 25/11/2022 | 1 | 09:30-12:30 | 1-5 W | Light showers | 3-7 | 10-11 | 5 | | 1(2) | | | | | |
| 25/11/2022 | 1 | 13:00-16:00 | 1-4 WSW-SW | Showers-nil | 3-6 | 12-10 | 5(6) | | 2 | | | | | |
| 29/11/2022 | 2 | 09:55-12:55 | 0-1 E-SE | Nil | 2-4 | 3-5 | 2 | 1 | | | | | | |
| 29/11/2022 | 2 | 13:25-16:25 | 1-0 SE | Nil | 3-6 | 5-4 | 1 | | 2 | | 1(12) | | | |
| 14/12/2022 | 1 | 09:10-12:10 | 0-1 NE | Nil | 1-0 | -2--4 | | | | | | | | |
| 14/12/2022 | 1 | 12:40-15:40 | 0-1 NE | Nil | 1 | -2 | | | | | | | | **1** |
| 16/12/2022 | 2 | 08:00-11:00 | 0-1 W-SW | Nil | 1-2 | -4--2 | | | | | | 1(2) | 1(3) | |
| 16/12/2022 | 2 | 11:30-14:30 | 0-1 SW | Nil | 1 | -2--3 | 2 | | | | | | | |
| 09/01/2023 | 1 | 09:50-12:50 | 1-3 W-NW | Hail-Drizzle | 8-7 | 7-8 | | | | | | | | |
| 09/01/2023 | 1 | 13:20-16:20 | 2-3 WNW | Rain-nil | 8-5 | 8-7 | 1 | | | | | | | |
| 27/01/2023 | 2 | 07:45-10:45 | 1-2 W-NW | Drizzle-nil | 8-7 | 3-4 | 4 | | | | | | | |
| 27/01/2023 | 2 | 11:15-14:15 | 1-2 N-NE | Light rain-nil | 7-8 | 4-2 | 4(5) | | 1 | | | | | |
| 13/02/2023 | 1 | 09:00-12:00 | 1-3 SW | Nil | 0 | 4-9 | 5(6) | | 1 | | | | | |
| 13/02/2023 | 1 | 12:30-15:30 | 1-2 S-SE | Nil | 0 | 8-10 | 1 | | | | | | | |
| 08/03/2022 | 2 | 06:30-09:30 | 2-4 E | Snow flurries | 8 | -1-0 | | | | | 1(27) | | | |
| 08/03/2022 | 2 | 10:00-13:00 | 1-3 E | Snow flurries | 8 | 0-1 | 1 | | | | | | | |

**Table 3: Breeding raptor survey data**

| Date | Time | Weather | | | | Target Species count (number of individuals) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Wind (Beaufort) | Rain | Cloud (Otkas) | Temp (°C) | KT | HH | K. | PE | ML |
| 26/04/2022 | 08:15-13:45 | 1 SE | Nil | 8-4 | 9-14 | 1 | | | 2 | |
| 28/04/2022 | 08:00-12:00 | 1-2 E | Nil | 8 | 14 | 3 | | 2 | | 1 |
| 12/05/2022 | 08:20-14:00 | 1-3 W | Nil | 6-4 | 13-15 | 3 | | | 1 | |
| 19/05/2022 | 08:45-17:30 | 1-3 W | Nil | 4 | 17-18 | 2 | | | | |
| 09/06/2022 | 09:00-16:15 | 1-3 W | Nil | 6-7 | 13-17 | 3 | | | 1 | 1 |
| 15/06/2022 | 08:45-10:45 | 1-2 WNW | Nil | 7 | 18-19 | 2 | | | | |
| 14/07/2022 | 13:30-15:45 | 1-3 NW | Nil | 5-6 | 20-19 | 1 | 1 | 4+ | | |
| 27/07/2022 | 14:30-17:30 | 1-2 SE | Nil | 7-8 | 18 | 2 | | | | |
| 29/07/2022 | 12:30-17:15 | 1-3 SW | Nil | 8-5 | 18-20 | 4 | | | 2 | |

**Table 4: Breeding wader survey data**

| Visit | Date | Time | Weather | | | | Target Species count (number of individuals) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Wind (Beaufort) | Rain | Cloud (Otkas) | Temp (°C) | RK | WM | CU |
| 1 | 22/04/2022 | 07:55-17:45 | 2-5 ESE | Nil | 6-7 | 10-12 | | | 2 |
| | 26/04/2022 | 14:10-17:50 | 1 SE | Nil | 6-2 | 10-13 | | | |
| 2 | 18/05/2022 | 09:00-14:20 | 1-3 SSW | Nil | 5-6 | 16-17 | | | 2 |
| | 31/05/2022 | 08:30-17:45 | 1-4 SW | Nil | 8 | 10-12 | | | |
| 3 | 21/06/2022 | 08:15-13:50 | 1-2 SSW | Nil | 2 | 19-20 | | | |
| | 23/06/2022 | 08:00-17:00 | 1-2 E-SSE | Nil | 2-6 | 22-24 | | | |
| 4 | 15/07/2022 | 09:20-16:50 | 2-4 W | Nil | 7-6 | 17-19 | 2 | 1 | |
| | 20/07/2022 | 08:40-15:40 | 1-2 NW | Nil | 8 | 19-20 | | | |

**Table 5: Llyn Mawr waterbody count data**

| Visit | Date | Weather | | | | Target Species count (number of individuals) | | |
|---|---|---|---|---|---|---|---|---|
| | | Wind (Beaufort) | Rain | Cloud (Otkas) | Temp (°C) | MA | TU | RK |
| 1 | 28/04/2022 | 1-2 E | Nil | 8 | 14 | 2 | 2 | |
| 2 | 31/05/2022 | 2-4 SW | Nil | 8 | 14 | 1 | 2 | |
| 3 | 23/06/2022 | 1 E | Nil | 5 | 23 | 6 | 4 | |
| 4 | 15/07/2022 | 2-3 W | Nil | 7 | 18 | 12 | 2 | 2 |
| 5 | 19/08/2022 | 1-2 SSW | Nil | 3 | 18 | 6 | 4 | |

**Table 6: Non-breeding / winter waterfowl and wader survey data**

| Visit | Date | Time | Weather | | | | Target Species count (number of individuals) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Wind (Beaufort) | Rain | Cloud (Otkas) | Temp (°C) | MA | TU | T. | GD | GN | GP | SN |
| 1 | 11/10/2022 | 08:15-16:25 | 1-2 SW | Nil | 8-5 | 6-12 | 4 | 8 | | | | 3 flights (30, 10, 4) | 4 |
| 2 | 22/11/2022 | 08:05-15:55 | 1-2 NE-W | Nil | 1-6 | 7-8 | | | | | | 2 flights (175, 155) | 7 |
| 3 | 22/12/2022 | 08:45-15:50 | 1-3 SW-W | Drizzle | 8 | 4-9 | | | | | | 3 flights (15, 35, 3) | 8 |
| 4 | 13/01/2023 | 08:15-16:05 | 3-5 W | Drizzle-nil | 7-3 | 7-8 | | 4 | 14 | 4 | 3 | | 2 |
| 5 | 28/02/2023 | 08:30-16:05 | 1-3 NE | Light rain-nil | 7-8 | 3-6 | | | | | | | 3 |
| 6 | 14/03/2023 | 08:15-15:25 | 1-3 NW | Nil | 7-8 | 2-5 | | | | | | 2 flights (17, 17) | 4 |

**Table 7: Nightjar survey data**

| Date | Time | Sunset | Surveyors | Weather | | | | Churring Nightjar Recorded |
|---|---|---|---|---|---|---|---|---|
| | | | | Wind (Beaufort) | Rain | Cloud (Oktas) | Temp (°C) | |
| 04/06/2022 | 21:25-11:10 | 21:30 | ST & AG* | 1-3 E | Nil | 7-8 | 13-12 | Nil |
| 14/07/2022 | 22:05-23:50 | 21:31 | ST & AG | 0-1 SW-W | Nil | 1-0 | 14-13 | 1 |

AG = Amy Griffiths, present as health and safety second only.

# Appendix 2: Legal protection afforded to birds in Wales

7.1 All nesting birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to disturb them whilst they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

7.2 The Conservation of Habitats and Species Regulations 2017 (as amended) 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'.

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).'

[23] 2009/147/EC Birds Directive (30 November 2009). European Parliament and the Council of the European Union.