



Parc Ynni Calon y Gwynt

ENVIRONMENTAL STATEMENT

Appendix 6C: Year 1 Ornithology Report 2023-2024





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Calon y Gwynt

Year 2 Ornithology Report
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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 2023 breeding season (April 2023 to August 2023 inclusive), and during the 2023/24 non-breeding / winter season (September 2023 to March 2024 inclusive). Previous survey effort has been undertaken at the Site, with ornithological surveys conducted during the period September 2022 to March 2023 inclusive (the first year of survey). The findings of these surveys are detailed in the Year 1 Ornithology Report (BSG Ecology, 2023).

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 Glonc (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 Unenclosed pasture is present on the highest ground in the western and south-western parts of the Site with enclosed pasture in the eastern and north-eastern areas of it. 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 Tarws 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-Glonc 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. The current layout proposal is shown on **Figure 1**.
- 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 protected² and notable³ 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
 - An article on curlew featured in *Milvus*, the journal of the Welsh Ornithological Society (WOS) (WOS, 2022).
 - The Multi Agency Geographic Information for the Countryside (MAGIC) website⁵ for statutory designated sites notified for their ornithological interest within 2 km of the Site.
- 2.2 The data received from the desk study was compiled and included within the Calon y Gwynt Wind Farm Year 1 Ornithology Report 2022 – 2023 (BSG Ecology, 2023), and is not reproduced here for brevity.

Field Survey

- 2.3 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

- 2.4 VP surveys were conducted during the 2023 breeding season (April 2023 to August 2023 inclusive) and non-breeding / winter season 2023/24 (September 2023 to March 2024 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 ensure representative data collection.

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].

- 2.5 Surveyors were able to remain inconspicuous during the VP surveys by positioning themselves 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 farmed (and under several ownerships / tenancies), with quads and other vehicles often present within the Site boundary.
- 2.6 Two VP locations were selected for survey of land within the Site during the survey period. 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.
- 2.7 The location of the respective VPs and viewsheds are shown on **Figure 2**.
- 2.8 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.)
- 2.9 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).
- 2.10 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 1⁶ and Annex 1⁷ raptors / owls, waders and wildfowl (excluding re-established greylag goose *Anser anser* and feral Canada goose *Branta canadensis*).
- 2.11 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.
- 2.12 Information on non-focal species was aggregated and summarised in five-minute intervals on a separate VP recording form.
- 2.13 A total of 73 hours of survey was completed at each VP location between April 2023 and March 2024 inclusive.

⁶ Of the Wildlife and Countryside Act, 1981 (as amended).

⁷ Of Directive 2009/147/EC, often referred to as The Birds Directive.

- 2.14 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**.

Breeding Raptor Surveys

- 2.15 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.
- 2.16 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.
- 2.17 Surveys of potential breeding areas were completed using a combination of walkover raptor survey and mobile VPs⁸ on nine visits between April 2023 and July 2023 inclusive. During the surveys, habitat features⁹ 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.
- 2.18 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.
- 2.19 Dates, times and weather conditions during raptor surveys are provided in **Table 3** in **Appendix 1**. Perimeter survey areas are provided in **Figure 3**.

Breeding Season Wader Surveys and Llyn Mawr Waterbody Counts

- 2.20 Walkover breeding wader surveys of the moorland habitats extended to approximately 800 m beyond the developable area where potentially suitable breeding habitat was present.
- 2.21 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).

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.

- 2.22 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.
- 2.23 In addition to records from the breeding wader surveys, any evidence of waders during VP work was systematically recorded.
- 2.24 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**.
- 2.25 A count of waterfowl using Llyn Mawr was conducted once per month over the breeding season (April 2023 to August 2023 inclusive) and was typically incorporated into the breeding wader survey (April 2023 to July 2023 inclusive). All waterfowl present (including 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 Llyn Mawr waterbody counts are contained in **Table 5** in **Appendix 1**.

Non-Breeding / Winter Waterfowl and Wader Surveys

- 2.27 Walkover of moorland habitats and counts of waterbodies¹⁰ extending to approximately 800 m beyond the developable area were conducted over the non-breeding / winter survey period (October 2023 to March 2024 inclusive). The survey area was extended to include Llyn Tarws 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.
- 2.28 Dates and weather conditions during the non-breeding / winter waterfowl surveys are contained in **Table 6** in **Appendix 1**.

Limitations to Methods

- 2.29 There were no limitations to the survey work.

Project Personnel

- 2.30 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 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 Llanbryn-mair. He has experience of all regularly used ornithological survey techniques and holds several Schedule 1 survey licences.
- 2.31 Daniel Watson BSc, ACIEEM was responsible for data management and authored this report. Daniel has worked on wind farms throughout Wales, including sites in Powys, Pembrokeshire, Neath Port Talbot, and Carmarthenshire. He has considerable experience completing VP survey as well as specialist survey for goshawk, nightjar and a range of other species. Daniel has designed and undertaken bird surveys throughout the UK as well as overseas, collecting and interpreting data to inform species-specific mitigation strategies for curlew, raptors and wader assemblages. Daniel has an extensive knowledge of bird identification and behaviour, utilised both in his work as a tour leader and as a volunteer undertaking long-term monitoring of woodland on behalf of the Forestry Commission. He is also a committee member for the Somerset Ornithological Society.
- 2.32 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

¹⁰ Llyn Mawr and Llyn Du.

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 mentioned within the site description, the reason for the notification of the SSSI is 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 point. The SPA was classified due to its importance (in a European context) to breeding populations of red kite, hen harrier, peregrine and merlin.

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 A detailed overview of species data returned by the desk study is provided within the Year 1 ornithology report (BSG Ecology, 2023).

Field Survey

- 3.5 A combined total of 73 hours¹¹ of VP survey was completed between April 2023 and August 2023 inclusive, and a combined total of 72 hours of VP survey was completed between September 2023 and March 2024 inclusive.
- 3.6 Target species recorded during the breeding season VP survey work were; red kite, kestrel, mallard, goosander, golden plover and curlew.
- 3.7 Target species recorded during the non-breeding / winter VP survey work were; red kite, hen harrier, kestrel, short-eared owl, goosander and golden plover.

Breeding season VP survey observations

- 3.8 Red kite were recorded during most breeding season VP surveys, with activity typically involving commuting and foraging. Behaviours indicative of a breeding attempt 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 5**). This territory was located within the same woodland as the territory recorded in 2022.
- 3.9 Twenty-seven red kite flights were recorded during the breeding season VP surveys, resulting in a total flight time of 56 minutes and 36 seconds. Of the total flight time, 21 minutes and 8 seconds was spent at collision risk height, the remainder below collision risk height.
- 3.10 Red kite flights occurred as follows:
- Eleven flights over the 12 hours of survey in April 2023.

¹¹ A minimum of 72 hours (36 hours for each season) is required, exceeding this total was not considered to affect the validity of the survey results.

- Eight flights over the 18 hours of survey in May 2023.
- Four flights over the 18 hours of survey in June 2023.
- Four flights over the 18 hours of survey in July 2023.
- No flights were recorded during August 2023.

- 3.11 Activity was widely distributed, with higher levels of activity recorded over the western part of the Site (and off Site land to the north-west) than elsewhere. Activity involved both commuting and foraging flights, with the majority involving singletons. The exception was two birds flying together on 4 April 2023.
- 3.12 Overall, there was a slight reduction in the number of flights recorded during the 2023 breeding season when compared to 2022; activity was slightly lower in April (eleven flights in 2023 against sixteen in 2022) and August (no flights in 2023 against two in 2022), with a greater disparity in July (four flights in 2023 against fourteen flights in 2022). The distribution of activity over the Site was broadly similar, with records widely distributed over the Site during both breeding seasons.
- 3.13 Red kite flights recorded during the breeding season VP surveys are shown on **Figure 4a**.

Non-breeding / winter VP survey observations

- 3.14 Forty-three red kite flights were recorded during the non-breeding / winter VP surveys, resulting in a total flight time of 1 hour, 56 minutes and 32 seconds. Of the total flight time, 29 minutes and 54 seconds was spent at collision risk height, the remainder below.
- 3.15 Red kite flights occurred as follows:
- Eleven flights over the 6 hours of survey in September 2023.
 - Two flights over the 12 hours of survey in October 2023.
 - Seven flights over the 12 hours of survey in November 2023.
 - No flights over the 12 hours of survey in December 2023.
 - Eight flights over the 12 hours of survey in January 2024.
 - Ten flights over the 12 hours of survey in February 2024.
 - Five flights over the 12 hours of survey in March 2024.
- 3.16 Activity was widely distributed over the Site, with marginally higher levels of activity over the central and western parts of the Site. Thirty-two flights involved singletons, ten flights involved two birds, and one flight involved four birds. Behaviours recorded during the surveys suggested birds were foraging or commuting over the Site.
- 3.17 There was a slight variation in flight activity during the 2023 - 2024 non-breeding season when compared to the same period in 2022 - 2023. This was notable in the period October to January, with nine flights during this period in 2023 compared with thirty-two flights during the same period in 2022. Conversely, activity was slightly higher in September (eleven flights in 2023 against six in 2022), February (ten flights in 2024 against six in 2023) and March (five flights in 2024 against one in 2023). The utilisation of the site broadly matched between the two seasons, with records widely distributed over both breeding seasons.
- 3.18 Red kite flights recorded during the non-breeding / winter VP surveys are shown on **Figure 4b**.

Incidental records

- 3.19 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**

- 3.20 Hen harrier was not recorded during the breeding season VP survey effort.

Non-breeding / winter VP survey observations

- 3.21 One hen harrier flight was recorded during the non-breeding / winter VP surveys. The observation was of a male quartering over clear fell at OS NGR SO0205197763 for 1 minute and 6 seconds on 12 October 2023. Activity was lower compared with the Year 1 non-breeding / winter period (September 2022 – March 2023) when a total of three flights were recorded.
- 3.22 The hen harrier flight is shown on **Figure 6**.

Kestrel**Breeding season VP survey observations**

- 3.23 Eleven kestrel flights were recorded during the breeding season VP surveys, resulting in a total flight time of 17 minutes and 56 seconds. Of the total flight time, 7 minutes and 26 seconds was spent at collision risk height.
- 3.24 Kestrel flights occurred as follows:
- One flight over the 12 hours of survey in April 2023.
 - Four flights over the 18 hours of survey in May 2023.
 - One flight over the 18 hours of survey in June 2023.
 - Five flights over the 18 hours of survey in July 2023.
 - No flights were recorded in August 2023.
- 3.25 Activity was distributed widely, with a particular concentration of flights over the central part of the Site. Most activity recorded involved birds hunting (hovering) or foraging over the Site. All flights involved single individuals, with males being most frequently recorded (7 out of 11 flights).
- 3.26 There was a slight reduction in the overall flight activity on Site, with three fewer flights recorded than during the 2022 breeding season. This was notable when comparing activity in August between the two years, with no activity in 2023 compared with four flights in 2022. Off Site activity was recorded to the south-west.
- 3.27 Kestrel flights recorded during the breeding season VP surveys are shown on **Figure 7a**.

Non-breeding / winter VP survey observations

- 3.28 Seven kestrel flights were recorded during the non-breeding / winter VP surveys, resulting in a total flight time of 10 minutes and 52 seconds. Of the total flight time, 3 minutes and 45 seconds was spent at collision risk height, the remainder below.
- 3.29 Kestrel flights occurred as follows:
- Two flights over the 12 hours of survey in September 2023.
 - Two flights over the 12 hours of survey in October 2023.
 - No flights over the 12 hours of survey in November 2023.
 - No flights over the 12 hours of survey in December 2023.
 - No flights over the 12 hours of survey in January 2024.

- Two flights over the 6 hours of survey in February 2024.
- One flight over the 6 hours of survey in March 2024.

- 3.30 Activity was widely distributed, with slight concentrations over the western part of the Site and over the eastern boundary (close to VP2). All flights involved single individuals.
- 3.31 There was a notable reduction in flight activity when comparing the Year 2 non-breeding season with the Year 1 survey effort, with seven flights recorded in winter 2023 – 2024 compared to nineteen in winter 2022 – 2023. Activity was confined to the south-west of the Site, and occasionally outside of the survey area.
- 3.32 Kestrel flights recorded during the non-breeding / winter VP surveys are shown on **Figure 7b**.

Breeding raptor survey observations

- 3.33 An active kestrel nest was in a nest box on the agricultural building on Site at OSGR SO 01252 96777 (see **Figure 8**). This was a different location to that at which breeding took place in 2022, when nesting took place in an agricultural building located 2 km to the south of the 2023 nest location. Successful breeding was confirmed with the presence of two juveniles and an adult female together close to the building on 19 July 2023.

Incidental records

- 3.34 Kestrel were recorded outside of viewsheds during VP surveys on 19 July 2023 and 30 March 2024. On the former date, an adult male was recorded hunting at OSGR SO 01444 96458, and on the latter, an unaged and unsexed bird was recorded in flight at OSGR SO 01297 96772.
- 3.35 Kestrel were recorded occasionally during the non-breeding / winter waterfowl and wader surveys, with activity distributed widely over the Site and surrounding areas.

Peregrine

Breeding season VP survey observations

- 3.36 Peregrine was not recorded during the breeding season VP survey effort. This contrasts with four flights recorded during the Year 1 breeding season VP surveys. Although peregrine may have bred in 2023 (**Section 4.40**) this was not confirmed, and an absence of activity during the VP surveys may suggest either that the attempt was unsuccessful or that birds were utilising other areas for hunting.

Non-breeding / winter VP survey observations

- 3.37 Three peregrine flights were recorded during the non-breeding / winter VP surveys resulting in a total flight time of 1 minute and 38 seconds. All flights were below collision risk height (see **Figure 6**).
- 3.38 Peregrine flights occurred as follows:
- No flights over the 12 hours of survey in September 2023.
 - No flights over the 12 hours of survey in October 2023.
 - No flights over the 12 hours of survey in November 2023.
 - No flights over the 12 hours of survey in December 2023.
 - One flights over the 12 hours of survey in January 2024.
 - Two flights over the 6 hours of survey in February 2024.
 - No flights over the 6 hours of survey in March 2024.

- 3.39 The flight recorded on 24 January 2024 related to an adult hunting a starling flock as viewed from VP1, whilst the flights on 20 February 2024 related to an adult also hunting starlings on two separate occasions.

Breeding raptor survey observations

- 3.40 A possible peregrine breeding attempt was recorded during the breeding raptor surveys, in the quarry located approximately 1.7 km north of the Site at OSGR SJ 01194 01449 (see **Figure 9**). Peregrine observations during the breeding raptor surveys are summarised below:
- On 24 May 2023, the nesting site used in 2022 in the quarry was checked, with the male present..
 - No further activity was recorded during the following checks of the site on the 8 and 30 of June, so the outcome of any breeding attempt was unknown. The lack of activity at the Site subsequently suggests that the breeding attempt failed.

Incidental records

- 3.41 A peregrine was recorded flying over the Site at OSGR SO 01512 98562 on 29 February 2024 during a non-breeding / winter waterfowl and wader survey.

Short-eared owl

Breeding season VP survey observations

- 3.42 No short-eared owl flights were recorded during the breeding season VP surveys.

Non-breeding / winter VP survey observations

- 3.43 One short-eared owl flight was recorded from VP3. A bird was seen quartering the area north of Llyn Tarws for 43 seconds on 21 September 2023. The entire flight was below collision risk height. This flight was in a similar area to records from Year 1, when two flights were recorded over the winter period from Waun y Llyn (approximately 1 km west-north-west).
- 3.44 The short-eared owl flight is shown on **Figure 6**.

Mallard

Breeding season VP survey observations

- 3.45 Two mallard flights were recorded during the breeding season VP surveys, on 5 and 24 May 2023 respectively. The total (combined) flight period lasted for 41 seconds, all below collision risk height. The flights concerned an adult male on 24 May and an apparent pair on 5 May.
- 3.46 Mallard flights are shown on **Figure 10a**.

Non-breeding / winter VP survey observations

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

Breeding wader survey and Llyn Mawr waterbody count observations

- 3.48 In 2023, Mallard were recorded between April and July. The peak count was from Llyn Mawr, with seven birds on 19 July. There was no evidence of breeding during 2023.

Non-breeding / winter waterfowl and wader survey observations

- 3.49 In 2024, Mallard were recorded on 30 January (when a maximum of 4 individuals was recorded on Llyn Mawr), 29 February (when one male was present on Llyn Tawr) and 30 March (when a maximum of 4 individuals was recorded on Llyn Mawr).

Goosander**Breeding season VP survey observations**

- 3.50 One goosander flight was recorded during the breeding season VP surveys. An adult female was recorded flying north-east from Llyn Mawr for 15 seconds below collision risk height on 5 April 2023.
- 3.51 This goosander flight is shown on **Figure 10a**.

Non-breeding / winter VP survey observations

- 3.52 A single goosander flight was recorded during the non-breeding season VP surveys. A pair was recorded flying in the direction of Llyn Tarws for 37 seconds below collision risk height on 12 March 2024.

Non-breeding / winter waterfowl and wader survey observations

- 3.53 Three records of Goosander occurred during winter wildfowl surveys, with a two present on 30 January 2024 and a maximum of four on 29 February 2024. All records came from Llyn Tarws.
- 3.54 This goosander flight is shown on **Figure 10b**.

Goldeneye**Breeding season VP survey observations**

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

Non-breeding / winter VP survey observations

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

Non-breeding / winter waterfowl and wader survey observations

- 3.57 Three goldeneye were recorded on Llyn Mawr on 30 January 2024, and a single male was recorded on 29 February 2024, both observations were on Llyn Tarws during non-breeding / winter waterfowl and wader survey.

Golden plover**Breeding season VP survey observations**

- 3.58 A single golden plover flight was recorded during the 'breeding season' VP surveys, concerning a flock of 36 individuals on 5 April 2023. The flight lasted 3 minutes 28 seconds, of which 2 minutes four seconds were at collision risk height. The date of this observation falls within the spring passage period for golden plover, which typically undertake northbound flights towards breeding areas between mid-March and mid-April. This flight is shown on **Figure 11a**.

Non-breeding / winter VP survey observations

- 3.59 Twenty golden plover flights were recorded during the non-breeding / winter VP surveys, resulting in a total flight time of 39 minutes and 16 seconds. Of the total flight time, 33 minutes and 42 seconds was spent at collision risk height, 56 seconds was spent above collision risk height, and the remainder was below.
- 3.60 Golden plover flights occurred as follows;
- No flights over the 12 hours of survey in September 2023.

- Fourteen flights involving a maximum count of 125 individuals (12 October) over the 12 hours of survey in October 2023.
- One flight involving 27 individuals over the 12 hours of survey in November 2023.
- No flights over the 12 hours of survey in December 2023.
- Four flights involving a maximum count of 70 individuals (5 January) over the 12 hours of survey January 2024.
- One flight involving 36 individuals over the 6 hours of survey in March 2024.

3.61 The highest counts of golden plover were 125 on 12 October 2023 from VP3 and 70 on 5 January 2024 also from VP 3.

3.62 Golden plover flights recorded during the non-breeding / winter VP surveys are shown on **Figure 11b**.

Non-breeding / winter waterfowl and wader survey observations

3.63 Golden plover were recorded during the non-breeding / winter waterfowl and wader surveys on 30 January 2024 and 29 February 2024. On the first occasion, a flock of 13 were loafing on open ground at OSGR SN9962197920, whilst the latter observation related to 41 flying over the Site at OSGR SN9992498193.

Common snipe

Breeding season VP survey observations

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

Non-breeding / winter VP survey observations

3.65 No common snipe flights were recorded during the non-breeding season VP surveys.

Non-breeding / winter waterfowl and wader survey observations

3.66 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. The maximum count was of 5 individuals on 30 January 2024.

Curlew

Breeding season VP survey observations

3.67 Five curlew flights were recorded during the breeding season VP surveys, all on 5 May 2023. The flights lasted for a total of 3 minutes and 38 seconds, 1 minute and 58 seconds of which was at collision risk height, the remainder below.

3.68 The flights involved one or two birds, with courtship / display flights on two of these occasions.

3.69 This curlew flights are shown on **Figure 10a**.

Non-breeding / winter VP survey observations

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

Breeding wader survey and Llyn Mawr waterbody count observations

- 3.71 In 2024 a pair of curlew was observed together and undertaking song-flights on 30 March south of the Site boundary at OSGR SO 01726 97429, less than 100 m from the locations at which an alarm calling male had been recorded in 2023.
- 3.72 A high count of seven loosely associated individuals were seen calling and foraging within semi-improved pasture north of Llyn Tawrs in 2024, however it was not possible to age the birds.
- 3.73 In 2023 an individual was recorded undertaking song flights on 26 April, and an adult male was observed calling and alarming in the same area (at approximately OSGR SO 02620 98481) on 24 May. Up to four unaged and unsexed birds were observed feeding on 25 May.
- 3.74 It was unclear if the breeding attempt was successful, but the absence of juvenile birds suggested that any attempt most likely failed at the egg-laying stage. Territorial behaviour (courtship and displaying) was noted in both years, however there was no evidence of successful breeding in 2024.
- 3.75 The habitat in off Site (adjacent) areas to the north-west, east and south-east is suitable for breeding curlew, with areas of bog and upland grassland providing nesting habitat and semi-improved grassland suitable for foraging. The habitats on Site are less suitable for breeding curlew, largely comprising enclosed semi-improved grassland with limited bog and upland grassland.

Non-focal Species

- 3.76 A total of seventy-seven species were recorded during the surveys. Sixty-six of these species were non-focal, further information regarding non-focal species is provided below:
- Buzzard *Buteo buteo* and raven *Corvus corax* were the most frequently recorded species, with both observed during all VP watches.
 - Great black-backed gulls *Larus marinus* were recorded on three occasions during surveys; an adult feeding on a sheep carcass on 27 April 2023, an adult loafing and a separate adult in flight on 29 February 2024. Herring gull *Larus argentatus* were recorded twice in 2023 (in May and June), but there were no records in 2024. Lesser black-backed gulls *Larus fuscus* were the most frequently recorded gull species, with groups noted in June and July 2023, including a flock of 63 on 28 June. There were no records in 2024.
 - A grey heron *Ardea cinerea* was recorded hunting at OSGR SO 0089 797204 on 19 July 2023. There were no records in 2024.
 - Nine 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*, Canada goose *Branta canadensis*, tufted duck *Aythya fuligula*, Eurasian teal *Ana crecca*, common sandpiper *Actitis hypoleucos* and black-headed gull *Chroicocephalus ridibundus*, lesser black-backed gull and great black-backed gull.
 - Cormorants were present at Llyn Mawr on 30 January 2024 and 29 February 2024, both records involving three individuals.
 - Little grebe *Tachybaptus ruficollis* were noted on Llyn Mawr on 25 May 2023, 19 July 2023, 30 January 2024 and 29 February 2024. There was no evidence that a breeding attempt had taken place, with a maximum count of two adults on 30 January only.
 - Canada geese were noted either on Llyn Mawr or flying over the Site in April and May 2023 and February and March 2024. In 2023 a pair bred on Site rearing four young. The highest count was of 13 flying east over the Site on 7 May 2024. There were two flights of Canada goose; 2 minutes on the 5 April 2023, and 27 seconds on 12 March 2024. Both flights were below collision risk height.
 - Ten Brent goose *Branta bernicla* were recorded flying north-west over the Site on 2 April 2023 at risk height for a total of 1 minute and 43 seconds.

- Tufted duck were noted on 7 occasions between 26 April and 19 July 2023, and on 5 occasions between 30 January and 30 March 2024. The highest count in 2023 was 6 on 25 May, and 4 on 30 March 2024.
- Teal were noted on three occasions (in 2024 only); 2 on 30 January, and two groups of 2 and 6 on 30 March.
- Single common sandpiper were noted on 19 July 2023 and 7 May 2024.
- Black-headed gulls were present on three dates in 2023, with 27 on 26 April, 15 on 25 May and 7 on 28 June. There were no records in 2024.
- The breeding passerine / near passerine community was dominated by skylark *Alauda arvensis* (201 territories, with successful breeding at least 6 locations) and meadow pipit *Anthus pratensis* (95 territories, with successful breeding at least 9 locations) in open habitats, with cuckoo *Cuculus canorus* (up to 5 territories), pied wagtail *Motacilla alba yarellii* (16 territories), stonechat *Saxicola rubicola* (successful breeding noted at 14 locations), tree pipit *Anthus trivialis* (1 territory), grasshopper warbler *Locustella naevia* (3 territories), linnet *Carduelis cannabina* (9 territories, with successful breeding noted at one location) and reed bunting *Emberiza schoeniclus* (9 territories) also recorded frequently.
- Other species recorded during surveys were; red-legged partridge *Alectoris rufa*, wood pigeon *Columba palumbus*, stock dove *Columba oenas*, swift *Apus apus*, house martin *Delichon urbicum*, grey wagtail *Motacilla cinerea*, great spotted woodpecker *Dendrocopos major*, dunnoek *Prunella modularis*, robin *Erithacus rubecula*, wren *Troglodytes troglodytes*, redstart *Phoenicurus phoenicurus*, whinchat *Saxicola rubetra*, pied flycatcher *Ficedula hypoleuca*, spotted flycatcher *Muscicapa striata* song thrush *Turdus philomelos*, mistle thrush *Turdus viscivorus*, blackbird *Turdus merula*, sedge warbler *Acrocephalus schoenobaenus* garden warbler *Sylvia borin*, 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*, long-tailed tit *Aegithalos caudatus*, treecreeper *Certhia familiaris*, nuthatch *Sitta europaea*, carrion crow *Corvus corone*, rook *Corvus frugilegus* (a rookery with six nests was located at Ty-uchaf), magpie *Pica pica*, starling *Sturnus vulgaris*, bullfinch *Pyrrhula pyrrhula* chaffinch *Fringilla coelebs*, lesser redpoll *Acanthis cabaret*, greenfinch *Chloris chloris* goldfinch *Carduelis carduelis*, siskin *Spinus spinus* and house sparrow *Passer domesticus*.

4 Overview of Year 1 and Year 2

4.1 The key findings of the desk study and two years of survey conducted at the proposed Calon y Gwynt Wind farm are as follows:

- Red kite was the most regularly recorded focal species during the two years of vantage point (VP) survey work. In Year 1 the total number of flights was 96, with 69 flights during Year 2, with highest activity in the non-breeding season (September to March inclusive) in both years. One red kite territory was present 450m south-west of the site in both years.
- Kestrel was recorded during the two years of VP survey work, with a pair nesting at different locations in Year 1 and Year 2. In Year 1 there were 33 flights and in Year 2 18 flights were recorded.
- Peregrine were recorded infrequently over the Site in both years. There was a nesting attempt in Year 1 in a quarry 1.7 km north of the Site that resulted in two juveniles fledging. An adult was present at the same location in Year 2, but it is unknown whether a breeding attempt took place.
- Curlew was recorded occasionally using the Site or flying over it, but held territory on nearby areas of land. Breeding wader surveys recorded two territories off Site in Year 1 (one 300 m north of the Site boundary and one approximately 1 km east of the Site boundary), and one territory in Year 2 (900m east of the Site boundary in a very similar location to one of the Year 1 territories). No evidence of successful breeding was recorded in either year.
- Golden plover were recorded during VP surveys on both years, with 3 flights in Year 1, and 21 flights in Year 2. The highest counts were 175 individuals (Year 1) and 125 individuals (Year 2). Most activity was during spring and autumn passage periods in the eastern part of the site.
- Hobby, hen harrier, merlin and short-eared owl were all recorded infrequently during the survey work. It is likely that the risk of collision in these species will be low or negligible when modelled.
- Goldeneye, goosander, mallard, teal and tufted duck were recorded infrequently on waterbodies to the west and south of the Site, and only mallard was registered during VP surveys. Flight activity of mallard was low, and it is anticipated that the risk of collision will be low or negligible when modelled.
- Lapwing, redshank, snipe, turnstone and whimbrel were all recorded infrequently on the Site. For these species the risk of collision will be low or negligible.
- One nightjar territory was recorded in Year 1 (approximately 700 m from the Site boundary), with the species scoped out of further survey in Year 2 in agreement with NRW.

5 References

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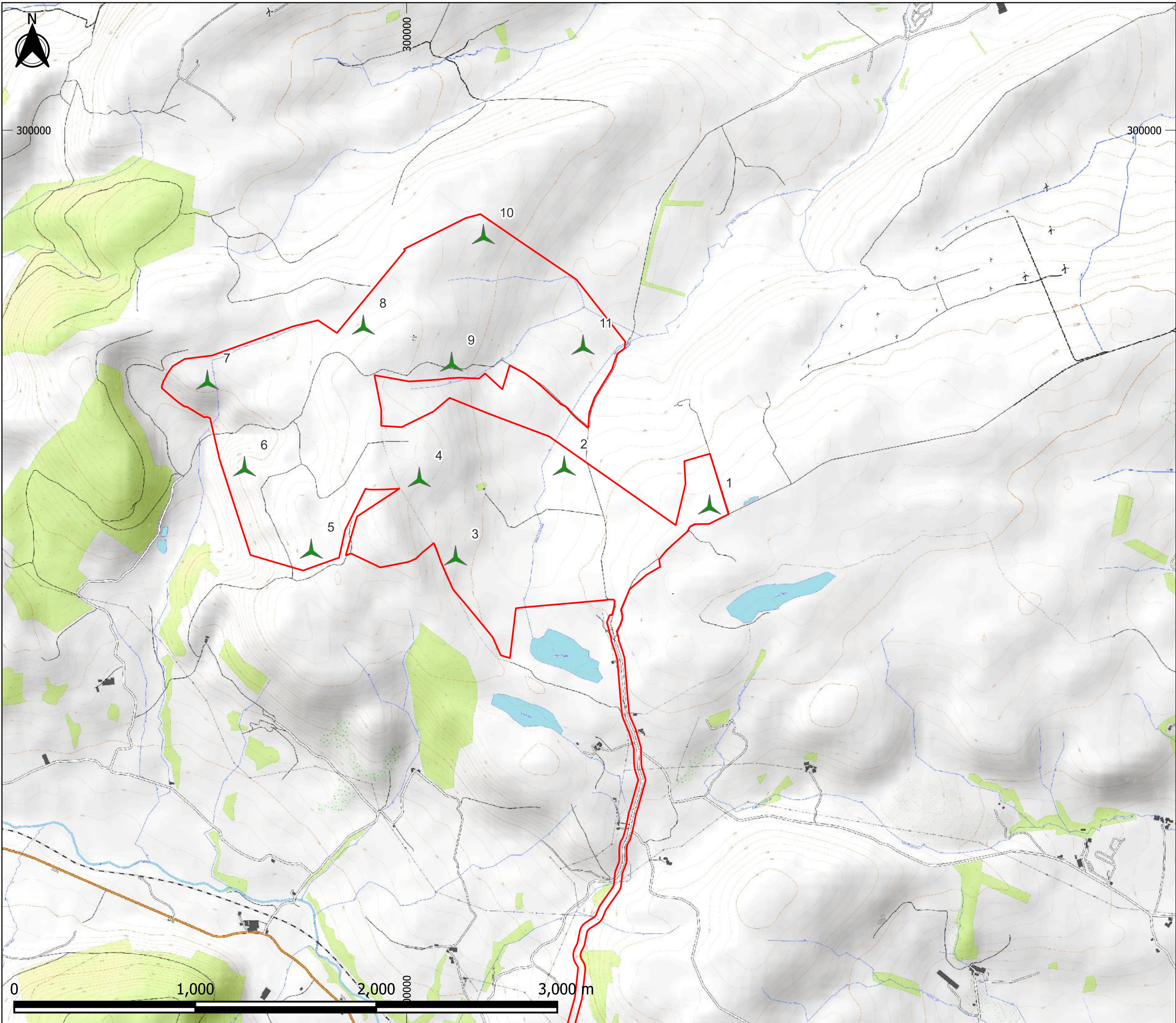
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6 Figures

(overleaf)



Legend

 Turbine

 Site boundary

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PROJECT TITLE
CALON Y GWYNT WIND FARM

DRAWING TITLE
Figure 1: Calon y Gwynt Site Boundary

DATE: 24/07/2024	CHECKED: DW	SCALE: 1:20,000
DRAWN: CF	APPROVED: DW	VERSION:1.1

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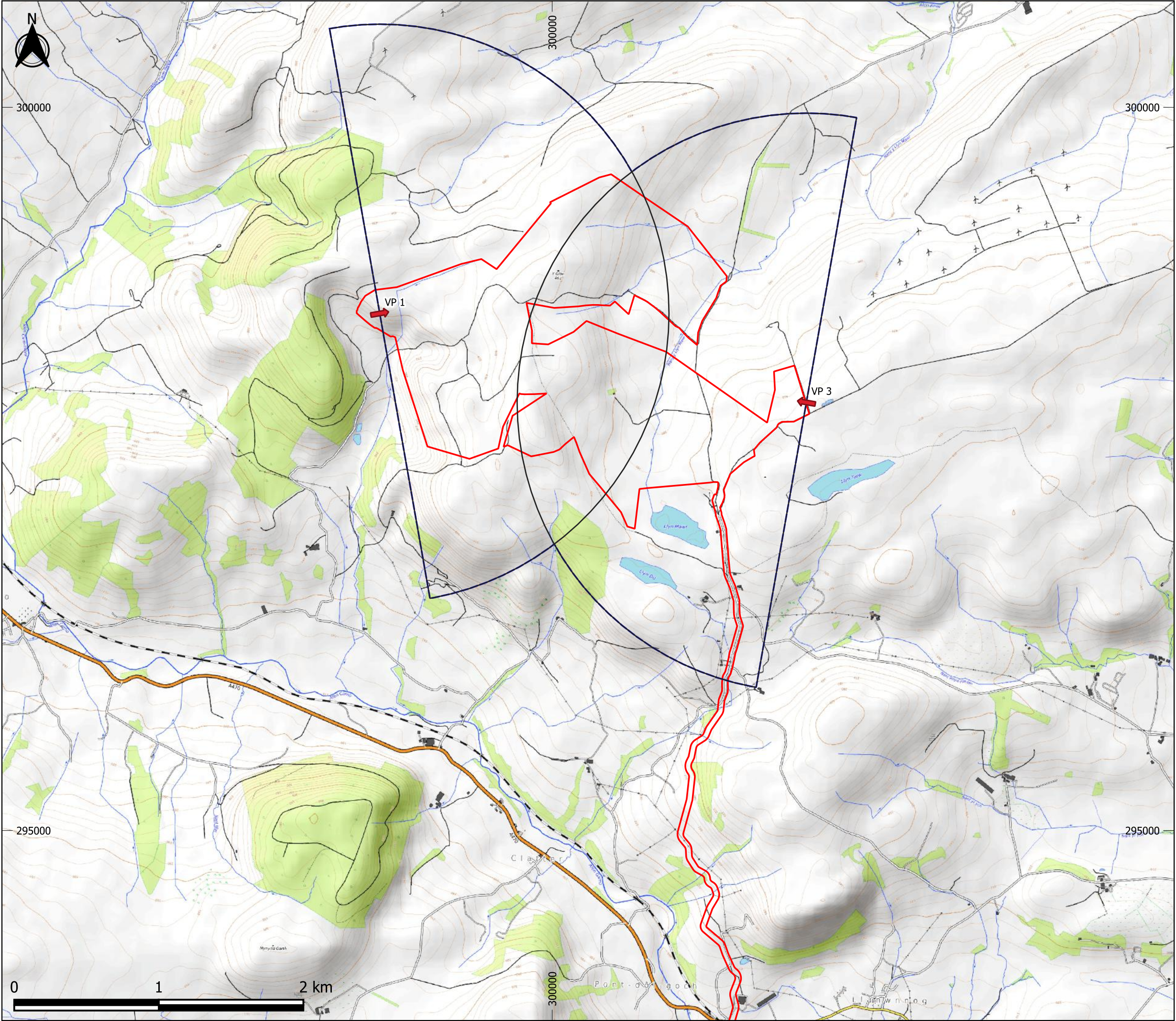
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- Legend
- Vantage Point/Viewing Station
 - 2000m arc
 - Survey boundary
 - Site boundary

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PROJECT TITLE
CALON Y GWYNT WIND FARM

DRAWING TITLE
Figure 2: Calon y Gwynt VP Locations and Viewsheds

DATE: 25/07/2024
DRAWN: CF

CHECKED: DW
APPROVED: DW

SCALE: 1:25,000
VERSION: 1.1

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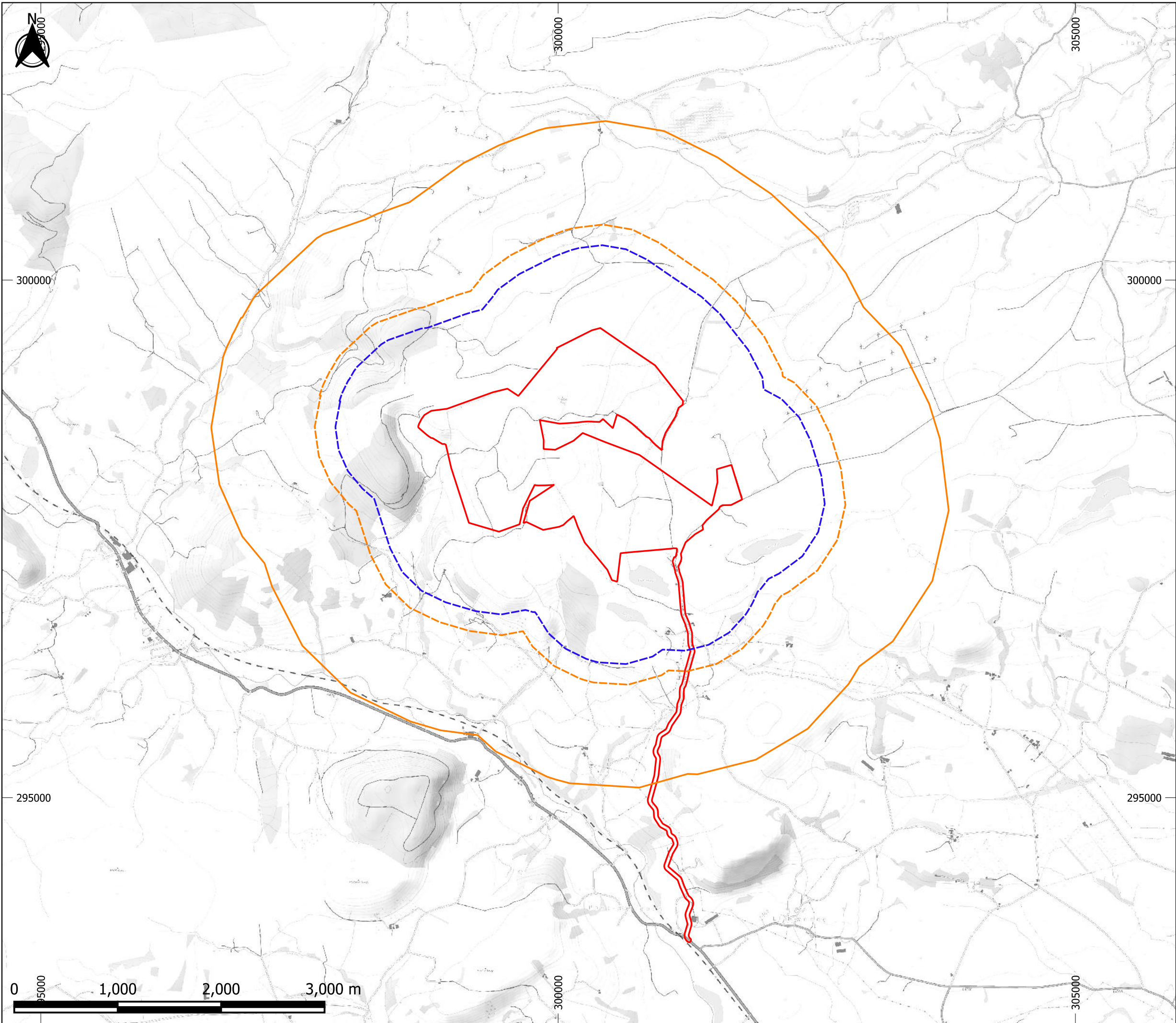
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Sources: BSG Ecology survey data



- Legend
- Breeding Raptor Survey (1km buffer from site boundary)
 - Breeding Raptor Survey (2km buffer from site boundary)
 - Breeding Wader Survey (800m buffer from site boundary)
 - Site boundary



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PROJECT TITLE
CALON Y GWYNT WIND FARM

DRAWING TITLE
Figure 3: Calon y Gwynt Breeding Raptor and Wader Survey Area

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