
Mynydd Fforch Dwm Wind Farm
Naturalis Energy Developments Ltd
Appendix 10.1: Ornithology



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1 INTRODUCTION

1.1.1 This Technical Appendix has been prepared to accompany **Chapter 10: 'Ornithology'** of the Environmental Statement ('ES') for the proposed Mynydd Fforch Dwm Wind Farm (hereafter 'Proposed Development').

1.1.2 It presents detailed methodologies and results of desk study and field surveys completed to establish baseline ornithological conditions and should be read with reference to the following figures presented in Volume 2 of the ES:

- **Figure 10.1:** Ornithological Statutory Designated Sites.
- **Figure 10.2:** Existing Ornithological Records (Non-Sensitive).
- **Figure 10.3:** VP Flight Activity Survey Plan.
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- **Figure 10.5a:** Target Species Flight Activity (Year 1).
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- **Confidential Figure C10.1:** Existing Ornithological Records (Sensitive).
- **Confidential Figure C10.2:** Breeding Raptor Survey Results.

1.1.3 Information considered sensitive is presented separately in **Confidential Appendix C10.1** and associated figures contained within Volume 2 of the ES. Such information will not be made publicly available but will be provided to Natural Resources Wales (NRW) and Neath Port Talbot County Borough Council.

1.1.4 Only common species names are used throughout this appendix. Scientific names for all species referenced (and the conservation status as relevant) are provided in **Annex 1**.

1.2 Key Guidance

1.2.1 Ornithology survey methodologies and subsequent interpretation of results has made reference to the following key industry standard guidance:

- Brown, A.F. and Shepherd, K.B. (1993) *A method for censusing upland breeding waders*. Bird Study 40, 189-195.
- NatureScot (2017) *Recommended bird survey methods to inform impact assessment of onshore wind farms*. Version 2. March 2017.
- Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013) *Raptors: a field guide to survey and monitoring*. Third Edition. The Stationary Office, Edinburgh.

- Gilbert, G., Gibbons, D.W. and Evans, J. (1998) *Bird monitoring methods*. A manual of techniques for key UK species. RSPB, Sandy, Bedfordshire.
- Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. and Win, I. (2021) *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain*. British Birds, 114, pp. 723-747.
- NatureScot (2000) *Windfarms and Birds - Calculating a theoretical collision risk assuming no avoiding action*. SNH Guidance Note.
- NatureScot (2018) *Assessing significance of impacts from onshore wind farm outwith designated areas*. Guidance. Version 2 – February 2018.
- NatureScot (2016) *Assessing connectivity with Special Protection Areas (SPAs)*. Guidance. Version 3 – June 2016.

1.2.2 In the absence of Welsh-specific guidance, baseline information gathering has been undertaken in accordance with NatureScot guidance (listed above).

1.3 Target Species

1.3.1 Target species for survey were identified through desk study, the basis of their known or likely presence, their likely sensitivity to the Proposed Development and those which are afforded a higher level of legislative protection, which is in accordance with current NatureScot guidance (2017 and 2018). Primarily, target species included those species listed on/as:

- Annex I of the EC Birds Directive (2009/147/EC);
- Schedule 1 of the Wildlife and Countryside Act 1981 (as amended);
- Species on Section 7 of the Environment (Wales) Act 2016; and
- Red-listed Birds of Conservation Concern (BoCC) (Stanbury *et al.* 2021)¹.

1.3.2 This has ensured inclusion of “*Priority bird species for assessment when considering the development of onshore wind farms in Scotland*” as per NatureScot guidance (2018).

2 METHODOLOGY

2.1 Desk Study and Consultation

2.1.1 In accordance with NatureScot guidance (2017), a desk study was undertaken to ascertain an overview of likely bird populations and designated sites in proximity to the Proposed Development, in order to identify possible target species to inform the requirements for survey.

2.1.2 The desk study included a review of the following key sources summarised in **Table 2.1**.

¹ This is considered the most appropriate BoCC to consider given classifications are based on the most recent UK-wide estimates, given the most recent country-specific BoCC in Wales 3, which complements the UK-wide BoCC, is six years old.

- 2.1.3 Additional peer reviewed literature and industry guidance, has also been reviewed and is referred to where relevant. Furthermore, existing historic baseline ornithology survey data gathered from the Mynydd Fforch Dwm (MFD) area of the Site in 2015-2016, by Avian Ecology Ltd., has also been reviewed.
- 2.1.4 Details of all consultation undertaken in relation to ornithology is presented in **Table 10.1** of **Chapter 10: 'Ornithology'** in Volume 1 of the ES.

Table 2.1: Desk study key sources and information sought.

Key Source	Date of Consultation	Information Sought	Study Area
Natural Resources Wales website https://naturalresources.wales/?lang=en	October 2022	Proximity to statutory designated sites.	Within 10km of the Site; extended to 20km for internationally designated sites with qualifying migratory waterfowl features (see Figure 10.1).
'MAGIC' website https://magic.defra.gov.uk/magicmap.aspx	October 2022	Proximity to statutory designated sites.	Within 10km of the Site; extended to 20km for internationally designated sites with qualifying migratory waterfowl features (see Figure 10.1).
South East Wales Biodiversity Records Centre (SEWBRC)	October 2022	Existing ornithological records. Proximity to non-statutory designated sites.	Within 1km of the Site (see Figure 10.2).
Pen y Cymoedd Wind Farm Operational Monitoring Reports (Planning Ref: P2009/1053)	October 2022	Ornithology records from monitoring surveys.	Operational wind farm is adjacent to the eastern boundary of the Site.

2.2 Field Surveys

- 2.2.1 Detailed knowledge of bird populations, distributions and flight activity in order to assess the potential effects of the Proposed Development upon ornithological features, has been derived from field surveys undertaken between 2019 and 2022.
- 2.2.2 The scope of surveys undertaken was informed through proximity to designated sites, existing knowledge of sensitive species, and with reference to NatureScot guidance (2017 and 2018).

2.2.3 The following ornithological field surveys were completed:

- Vantage Point (VP) flight activity surveys (March 2019 to February 2020, and March 2021 to February 2022);
- Moorland breeding bird surveys (MBBS) (2019 and 2021);
- Annex 1/Schedule 1 breeding raptor and owl searches (2019 and 2021); and
- Nightjar surveys (2019 and 2021).

VP Flight Activity Surveys

2.2.4 VP flight activity surveys were undertaken between March 2019 and February 2020 and March 2021 and February 2022 for the 'MFD' area within the Site, providing coverage of two full years. VP flight activity surveys were undertaken between March 2021 and February 2022 for the area Mynydd Blaenafon ('MB') within the Site.

VP Locations and Viewsheds

2.2.5 Two VP locations (VP1 and VP2) were used to provide a comprehensive visual coverage of the required VP survey area required for the Proposed Development in accordance with current NatureScot guidance (2017), as illustrated in **Figure 10.3** and detailed within **Table 2.2**.

2.2.6 VP1 was used across two full years of survey, and VP2 was used over one full year of survey.

2.2.7 Modelled areas of visibility within the 2km viewsheds from each VP location are further detailed in **Appendix 10.2** in Volume 3 of the ES and illustrated in **Figure 10.3**.

Table 2.2: VP locations.

VP	Grid Reference
1	SS 82861 97535
2	SS 80768 97785

VP Survey Effort

2.2.8 The total survey effort (hours) completed at each VP location between 2019 and 2022 is summarised in **Table 2.3**.

2.2.9 Full details of all survey times and weather conditions are presented in **Annex 2**.

Table 2.3: VP flight activity survey effort – 2019 to 2022.

VP	2019										2020		Total (Year 1)
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	
1	9	6	12	6	6	6	6	6	6	6	6	6	81
VP	2021										2022		Total (Year 2)
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	
1	9	6	12	6	6	6	6	6	6	6	6	6	81
2	9	6	12	6	6	6	6	6	6	5	6	6	80

- 2.2.10 Survey effort in Year 1 (2019-2020) and Year 2 (2021-2022) exceeded the minimum recommended survey effort outlined within NatureScot guidance (2017) i.e. a minimum of 72 hours per VP location divided between breeding and non-breeding seasons.
- 2.2.11 Survey times were dispersed throughout the day and were also completed in a range of weather conditions, but always conducive to survey and safe access.
- 2.2.12 In accordance with NatureScot guidance (2017), flight lines were mapped for all target species passing through the VP survey area. Details of species, number of birds, flight height in bands, duration and direction were noted on standardised recording forms and field plans.
- 2.2.13 The following height bands (HT) were used in the field to record target species activity at, below or above collision risk height for subsequent use in the calculation of collision mortality risks.
- HT1: 0-30m;
 - HT2: 30-150m; and
 - HT3: >150m.
- 2.2.14 This adopted a precautionary approach to allow for the upper and lower rotor sweeps of the 180m and 200m turbine tip heights of the Proposed Development i.e. ensuring the lower rotor sweep height of the smallest turbine (30m rotor sweep) and higher rotor sweep height of the largest turbine (200m tip height) is considered.

Target Species

- 2.2.15 Target species for recording included all Annex 1/Schedule 1 raptors, waders, swans, geese, ducks (excl. mallard and feral species) as observed during VP watches.

Secondary Species

- 2.2.16 Secondary species were also noted in approximately fifteen-minute summary intervals, with the number of birds present and general behaviour recorded in order to build an overall picture of activity. Fifteen-minute periods were considered appropriate to ensure surveyors were fully alert to target species activity, which took priority during survey.
- 2.2.17 Secondary species are defined here as commoner raptors (e.g. buzzard, kestrel and sparrowhawk), all gulls, feral species, mallard and grey heron, along with any large concentrations of Schedule 1 or Red-listed passerines as observed during survey.

Collision Risk Mortality

- 2.2.18 For species for which there is sufficient (considered ≥ 4 flights over any survey year) “at collision risk” flight activity data, collision risk mortality as a result of birds colliding with rotor blades will be assessed using Collision Risk Model (CRM) Analysis as detailed in Band *et al.* (2007).
- 2.2.19 CRM Analysis has accordingly been undertaken for red kite with explanation and results presented in **Appendix 10.2**.

Moorland Breeding Bird Surveys

- 2.2.20 Moorland breeding bird surveys (MBBSs) were undertaken in 2019 and 2021.

- 2.2.21 The MBBS survey area in 2019 has comprised coverage of the MFD area and accessible areas of open habitats within 500m. In 2021, the MBBS survey area was extended to include the Site (MFD and MB areas), extended to include accessible areas of open habitats within 500m as shown in **Figure 10.4**.
- 2.2.22 The methodology employed followed an adapted Brown and Shepherd (1993) method for censusing upland breeding waders, based upon the recommendations set out in Calladine *et al.* (2009) and as recommended in NatureScot guidance (2017). The methodology is suitable for moorland and open country species including, waders, gulls, red grouse and some wildfowl species however, incidental observations of any raptors, owls or notable passerines (i.e. Schedule 1, BoCC red-listed and Section 7 species²) were also recorded.
- 2.2.23 A series of four staggered visits were completed during each survey year, between April and July each year.
- 2.2.24 During each survey visit a pre-determined route was walked through the survey area, with all birds seen or heard, and their behaviours (e.g. displaying, carrying food etc.) were mapped in the field.
- 2.2.25 All surveys were undertaken during daylight hours and in fine conditions conducive to survey. All surveys were timed to capture the main period optimal for MBBS (08:30-18:00hrs), in accordance with standard guidance (NatureScot, 2017). This ensured that the time when target species (described above) are most active was appropriately covered by the survey period. Survey effort is summarised in **Table 2.5**. Full details of all survey times, field surveyors and weather conditions are presented in **Annex 2**.

Table 2.5: Moorland breeding bird survey effort.

Year	Visit	Date	Start Time (24hrs)	End Time (24hrs)
2019 (Year 1)	1	25/04/2019	12:30	14:30
		26/04/2019	08:30	09:45
	2	30/05/2019	12:30	16:15
	3	26/06/2019	14:25	18:25
	4	17/07/2019	10:00	14:00
2021 (Year 2)	1	12/04/2021	07:00	12:45
	2	01/05/2021	06:30	12:30
	3	18/06/2021	06:00	12:00
	4	12/07/2021	08:00	12:15

Annex 1/ Schedule 1 Breeding Raptor and Owl Searches

- 2.2.26 Breeding raptor and owl searches were undertaken in 2019 and 2022 with reference to species-specific methodologies outlined in Hardey *et al.* (2013), as per NatureScot guidance (2017).
- 2.2.27 A series of search visits were made during each survey year, staggered across the core breeding season.
- 2.2.28 The breeding raptor and owl survey area in 2019 has comprised coverage of the MFD area and accessible areas within 2km. In 2021, the breeding raptor and owl survey area was extended to include

² Environment (Wales) Act 2016.

the Site (MFD and MB areas), extended to include accessible areas within 2km as shown in **Figure 10.4**.

- 2.2.29 All surveys were undertaken during daylight hours and in fine conditions conducive to survey. Survey effort is summarised in **Table 2.6**. Full details of all survey times, field surveyors and weather conditions are presented in **Annex 2**.

Table 2.6: Breeding raptor and owl search effort summary.

Year	Visit	Date	Start Time (24hrs)	End Time (24hrs)
2019 (Year 1)	1	17/04/2019	11:00	13:00
	2	14/05/2019	08:15	10:10
	3	12/06/2019	10:30	15:00
	4	18/07/2019	07:30	10:45
2021 (Year 2)	1	13/04/2021	07:00	14:00
	2	22/05/2021	06:15	14:35
	3	23/06/2021	05:30	13:00
	4	20/07/2021	06:45	13:45

Nightjar Survey

- 2.2.30 Nightjar surveys were carried out with reference to species-specific methodologies outlined in Gilbert *et al.* (1998) and comprised two survey visits (dusk and following dawn) in 2019 and 2021, in favourable conditions.
- 2.2.31 The nightjar survey area in 2019 has comprised coverage of the MFD area and accessible areas of suitable habitat (including clear-fell and regenerating plantation) within 500m, where accessible. In 2021, the nightjar survey area was extended to include the Site (MFD and MB areas), extended to include accessible areas of suitable habitats within 500m as shown in **Figure 10.4**. Habitats within the survey area considered most suitable for nightjar were surveyed, and comprised any clear-felled areas within forestry, and young forestry less than 15 years old and open rides.
- 2.2.32 The survey was undertaken along a pre-determined transect through the survey area and stopping at listening points adjacent to suitable breeding habitats, where singing ('churring') males were listened for. The survey was targeted along the Site boundary where it adjoined plantation forestry and these 'edge' habitats were considered most suitable for nightjar.
- 2.2.33 Survey effort is summarised in **Table 2.7**. Full details of all survey times, field surveyors and weather conditions are presented in **Annex 2**.

Table 2.7: Nightjar survey effort summary.

Year	Visit	Date	Start Time (24hrs)	End Time (24hrs)
2019 (Year 1)	1	27/06/2019	21:30	23:30
	2	28/06/2019	02:30	04:30
2021 (Year 2)	1	08/07/2021	21:20	01:30
	2	09/07/2021	01:45	05:15

Field Survey Personnel

- 2.2.34 All field surveys have been completed by experienced and professional ornithologists named in **Annex 3**; all of whom are all fully conversant in recognised bird survey methodologies for proposed wind turbine developments.

Other Surveys

- 2.2.35 No further field surveys were undertaken. In accordance with standard guidance (NatureScot, 2017) winter walkover surveys were not carried out, given the Site is not within 20km of any designated site with qualifying migratory goose interests. Furthermore, the desk study gathering did not identify the Site (or surrounding area) as being a notable area for migratory species, and ornithology surveys (VP flight activity surveys) were undertaken during the winter period which would have recorded any such bird use of the Site.

Field Survey Limitations

- 2.2.36 Part of the Site (MFD) has been subject to two full years of ornithology survey, with the area MB subject to one full year of ornithology survey. Given the habitats present within MB are of limited ornithological value (grazed land and marshy grassland) with no notable features that could support nesting Annex 1/Schedule raptors, and the desk study records obtained providing context into of the ornithological assemblage in the wider area, it is considered that one full year of ornithology surveys in MB is proportionate and provides a robust baseline for the purposes of impact assessment. Furthermore, given the buffers used for ornithology surveys in Year 1 (particularly the 2km breeding raptor and owl search buffer) the MB area was, at least in part, surveyed during the breeding raptor and owl searches in Year 1.
- 2.2.37 Preliminary digital elevation models (DEM) of the VP viewshed coverage from VP1 and 2 were created using a 20m and 10m above the ground altitudinal cut off, respectively. The viewshed coverage at each VP location was ground-truthed onsite by surveyors, to ensure the viewshed coverage modelled was representative of the actual coverage, after factoring in the location of trees and hedgerows. The VP viewshed coverage was accordingly amended. The viewshed coverage shows that the vast majority of the VP survey area is visible with only very limited “blind spots” (which is typical due to undulating topography and trees). These are very minor in extent and flight activity of target species around these turbines would still have been observed.
- 2.2.38 All habitats within the Site were accessible for survey. Access to and observations of most areas outside the Site (including out to 2km for breeding raptor and owl searches) was possible from suitable locations within the site or public rights of way (PRoWs), scanning areas with the use of optics (telescope and binoculars). Given the good visibility across the survey area from within the Site and the PRoWs this is not considered a limitation to the results obtained.
- 2.2.39 A settling-in period was applied prior to the start of VP flight activity surveys to minimise the likelihood for surveyor presence to influence bird activity. Furthermore, VPs were located where viewshed visibility could be maximised, while keeping as inconspicuous to birds as possible (both VPs were positioned by field boundaries to avoid influencing bird activity).
- 2.2.40 Overall, no limitations to the dataset in establishing an accurate reflection of the levels of target species activity within proximity to the Proposed Development, and respective survey areas.

3 RESULTS

3.1 Desk Study

- 3.1.1 This section provides details of existing ornithological information and existing records of protected and notable bird species identified within and in proximity to the Site from desk study sources listed in **Table 3.1**.

Statutory Designated Sites for Nature Conservation

- 3.1.2 This section should be read with reference to **Figure 10.1**.
- 3.1.3 A review of the 'MAGIC' and NRW websites identifies that the site does not form part of any statutory designated site for nature conservation with qualifying ornithological qualifying features.
- 3.1.4 **Table 3.1** summarises statutory designated sites with ornithological qualifying features. Distances specified within **Table 3.1** are taken from the Site boundary to the designation boundary at its nearest point.
- 3.1.5 There are no internationally designated sites with qualifying migratory waterfowl features located within 20km of the Site.

Table 3.1: Designated sites for nature conservation.

SSSI – Site of Special Scientific Interest.

Designated Site	Distance and Direction from the Site	Ornithological Qualifying Features
Crymlyn Burrows SSSI	8.3km west	Overwintering waders.
Mynydd Ty-Isaf SSSI	8.7km east	Un-named Schedule 1 breeding raptor.
Crymlyn Bog Ramsar and SSSI	9.5km west	Important populations of reed warbler and sedge warbler.

Non-statutory Designated Sites for Nature Conservation

- 3.1.6 In consultation with the SEWBRC the Site is located within 1km of three Sites of Importance for Nature Conservation (SINCs), with Tyle'r Waun SINC comprising the eastern extreme of the Site. A full list is presented in the **Appendix 9.1**. None of the SINCs specify ornithological interest as a qualifying feature.

Existing Ornithological Records

- 3.1.7 A summary of existing ornithological records received for the search areas is provided below. Further details are provided in **Annex 3**, with records (all non-sensitive) provided in **Figure 10.2** and sensitive records provided in **Confidential Appendix C10.1** in Volume 3 of the ES and **Confidential Figure C10.1**.
- 3.1.8 Only records of species which are considered potentially at risk from the Proposed Development, as per Annex 1 of NatureScot (2018) guidance are considered here. However, given NRW requested that species on Section 7 of the Environment (Wales) Act 2016 should be considered (see **Table 10.1** in **Chapter 10: Ornithology**), these species are also regarded here.

South East Wales Biodiversity Records Centre

- 3.1.9 The data request submitted to the SEWBRC returned records of 30 species, including barn owl, hen harrier, peregrine, honey-buzzard and common crossbill.

Pen y Cymoedd Operational Wind Farm Monitoring

- 3.1.10 Operational wind farm monitoring reports have been provided by Vattenfall for the Pen y Cymoedd Wind Farm (Planning Ref: P2009/1053), which is located adjacent to the Site. The results of surveys undertaken in 2017, 2019 and 2021 have been provided, which have comprised of targeted honey-buzzard and nightjar surveys. Survey results identified evidence of churring nightjar in, and adjacent to, the Site. Honey-buzzard activity during surveys was low (maximum of two flights during the targeted VP surveys), with no evidence that the species passed through the Proposed Development.

Previous 2015-2016 Surveys for MFD area of the Site

- 3.1.11 Historic ornithological surveys carried out, by Avian Ecology Ltd., of the MFD area plus survey-specific buffers (out to 2km for Annex 1/Schedule 1 breeding raptor and owl searches) comprised the following:

- VP flight activity surveys in March 2015 to February 2016;
- MBBS in April to July 2015;
- Annex 1/ Schedule 1 Breeding Raptor and Owl Searches in June and July 2015;
- Nightjar survey in June 2015; and
- Winter walkover survey in October 2015 to February 2016.

- 3.1.12 Results from the ornithology surveys carried out in 2015-16 are summarised in **Table 3.2**.

Table 3.2: Survey results from ornithology surveys in 2015-2016.

Species	Information
Nightjar	Seven churring males in habitat adjacent to the eastern Site boundary.
Snipe	Two flights during VP flight activity surveys, with up to 13 snipe recorded during winter walkover surveys.
Short-eared owl	One flight during VP flight activity surveys. No evidence of breeding.
Honey-buzzard	One flight during VP flight activity surveys. No evidence of breeding.
Goshawk	Two flights during VP flight activity surveys. No evidence of breeding.
Red kite	Seventeen flights during VP flight activity surveys. No evidence of breeding.
Merlin	One flight during VP flight activity surveys. No evidence of breeding.
Peregrine	Two flights during VP flight activity surveys. No evidence of breeding.

- 3.1.13 A narrow assemblage of Section 7 species (mainly passerines) was also recorded during MBBS and included skylark, reed bunting, song thrush, lesser redpoll, kestrel and cuckoo.

3.2 Field Surveys

This section presents the results of baseline field surveys, including an overview of birds present within adopted survey areas and their distribution.

VP Flight Activity Surveys

Target Species

- 3.2.1 Target species flight activity recorded during the entire VP survey period (March 2019 to February 2020, and March 2021 to February 2022) from both VPs combined is summarised in **Table 3.2**. The total number of flights, total number of birds and total flight duration recorded (across all height bands) is presented. This includes some flights which were detected outside of the VP survey area and which are not at-risk of collision from the Proposed Development (see the final column in **Table 3.2** for the number of at-risk flights recorded across the survey period).
- 3.2.2 Detailed flight records are presented in **Annex 4**, with flight lines illustrated in **Figures 10.5a-b**.

Table 3.2: Target species flight activity summary (all flights) across two years of survey.

Species	Total. no. of flights	Total. no. of birds	Total flight time (secs) ³	No. of flights passing within the at-risk window
Hen harrier	4	4	205	0
Goshawk	1	1	90	1
Red kite	68	72	7,235	42
Merlin	2	2	135	1
Peregrine	1	1	135	1

Secondary Species

- 3.2.3 Low levels of activity of the following secondary species were also recorded⁴:
- Lesser black-backed gull;
 - Herring gull;
 - Buzzard;
 - Sparrowhawk;
 - Kestrel; and
 - Raven.

Moorland Breeding Bird Surveys

- 3.2.4 In summary, the MBBS survey area supported a very narrow assemblage of breeding species considered typical of the locale and habitats present. Only breeding passerines were recorded, with no breeding ground-nesting waders or waterfowl recorded across the survey period.

³ Time multiplied by the number of birds.

⁴ Of these species, herring gull and kestrel are Section 7 species. For herring gull, no flights were at-risk of collision from the Proposed Development in Year 1, with only three such flights in Year 2. For kestrel, only one and three at-risk of collision flights were recorded in Year 1 and 2, respectively.

- 3.2.5 A summary of recorded breeding territories within the survey area in 2019 (Year 1) is provided in **Table 3.3**, with approximate territory locations illustrated in **Figures 10.6**.
- 3.2.6 In 2021 (Year 2) passerines were not recorded in sufficient detail for territory mapping to be carried out, given NatureScot (2017) guidance states that passerine species are not significantly impacted by wind farm developments, so surveys for lowland and farmland passerines is generally not required. For Year 2, a cross ('x') is shown in **Table 3.3** if the species was recorded during those surveys ('0' if not recorded as breeding).

Table 3.3: Breeding territories within the MBBS survey area.

Species	No. of breeding territories	
	2019	2021
Cuckoo	0	x
Skylark	19	x
Grasshopper warbler	0	x
Starling	0	x
Song thrush	7	x
Dunnock	3	x
House sparrow	5	x
Tree pipit	3	x
Linnet	2	0
Lesser redpoll	1	0
Common crossbill	1	0
Reed bunting	0	x

Annex 1 / Schedule 1 Breeding Raptor and Owl Searches

- 3.2.7 In 2019 the survey area was found to support a red kite breeding territory, with the nest site located within the Site. The nest site was not in use in 2021. This record is provided in the **Confidential Appendix C10.1** in Volume 3 of the ES and **Confidential Figure C10.2**.
- 3.2.8 Other records consisted of a suspected short-eared owl pellet within the Site (MB area) in 2021, but with no evidence of breeding, and a kestrel breeding territory within the survey area in 2019. A female marsh harrier was also anecdotally recorded briefly flying low within the Site (MB area) on 29th March 2021. There was no evidence of breeding of the species.

Nightjar Survey

- 3.2.9 Nightjar surveys in 2019 recorded two churring male birds along forest edge adjoining the Site, two birds close together to the east of the Site, and a bird flying along the southern Site boundary (see **Figure 10.7a**). In 2021, three churring males were recorded, and another bird in flight, with all records in plantation forestry adjacent to the Site (see **Figure 10.7b**).

4 REFERENCES

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ANNEX 1: BIRD SPECIES SUMMARY

Table A1-1 provides a list of bird species referred to within **Chapter 10: 'Ornithology'** and associated appendices of the Mynydd Fforch Dwm Wind Farm ES. Both common and species names are presented along with a summary of each species relevant conservation status using the following abbreviations:

- Annex 1 - species listed on Annex 1 of the Birds Directive;
- S1, S1A, SA1 - species listed on Schedule 1, Schedule 1A or Schedule A1 respectively of the 1981 Wildlife and Countryside Act;
- BoCC - BoCCs as listed by leading bird conservation organisations in the UK, including the RSPB and BTO. Red and Amber categories are given (Stanbury *et al.*, 2021); and
- S7 - species listed in Section 7 of the Environment (Wales) Act 2016⁵.

Table A1-1: Summary of bird species.

Common Name	Species Name	Conservation Status
Shoveler	<i>Anas clypeata</i>	BoCC – Amber
Nightjar	<i>Caprimulgus europaeus</i>	Annex 1, BoCC- Amber, S7
Cuckoo	<i>Cuculus canorus</i>	BoCC- Red, S7
Lapwing	<i>Vanellus vanellus</i>	BoCC- Red, S7
Snipe	<i>Gallinago gallinago</i>	BoCC – Amber
Lesser black-backed gull	<i>Larus fuscus</i>	BoCC – Amber
Herring gull	<i>Larus argentatus</i>	BoCC – Red, S7
Barn owl	<i>Tyto alba</i>	S1
Short-eared owl	<i>Asio flammeus</i>	Annex 1, BoCC – Amber
Honey-buzzard	<i>Pernis apivorus</i>	Annex 1, S1, BoCC – Amber
Hen harrier	<i>Circus cyaneus</i>	Annex 1, S1, S1A, BoCC – Red, S7
Marsh harrier	<i>Circus aeruginosus</i>	Annex 1, S1, BoCC – Amber
Sparrowhawk	<i>Accipiter nisus</i>	-
Goshawk	<i>Accipiter gentilis</i>	S1
Red kite	<i>Milvus milvus</i>	Annex 1, S1, S1A
Buzzard	<i>Buteo buteo</i>	-
Kestrel	<i>Falco tinnunculus</i>	BoCC – Amber, S7
Merlin	<i>Falco columbarius</i>	Annex 1, S1, BoCC – Red
Hobby	<i>Falco subbuteo</i>	S1
Peregrine	<i>Falco peregrinus</i>	Annex 1, S1
Raven	<i>Corvus corax</i>	-

⁵ Note, although there are no specific Local Biodiversity Action Plans for species, the Neath Port Talbot Nature Partnership aims to protect and enhance species and habitats listed on Section 7 of the Environment (Wales) Act 2016 and/or European or UK legally protected species (see <https://www.npt.gov.uk/5405> accessed 03/11/2022).

Common Name	Species Name	Conservation Status
Skylark	<i>Alauda arvensis</i>	BoCC- Red, S7
Sedge warbler	<i>Acrocephalus schoenobaenus</i>	BoCC – Amber
Reed warbler	<i>Acrocephalus scirpaceus</i>	-
Grasshopper warbler	<i>Locustella naevia</i>	BoCC- Red, S7
Wood warbler	<i>Phylloscopus sibilatrix</i>	BoCC- Red, S7
Starling	<i>Sturnus vulgaris</i>	BoCC- Red, S7
Song thrush	<i>Turdus philomelos</i>	BoCC- Amber, S7
Spotted flycatcher	<i>Muscicapa striata</i>	BoCC- Red, S7
Pied flycatcher	<i>Ficedula hypoleuca</i>	BoCC- Amber, S7
Dunnock	<i>Prunella modularis</i>	BoCC – Amber, S7
House sparrow	<i>Passer domesticus</i>	BoCC- Red, S7
Tree pipit	<i>Anthus trivialis</i>	BoCC- Red, S7
Bullfinch	<i>Pyrrhula pyrrhula</i>	BoCC- Amber, S7
Linnet	<i>Linaria cannabina</i>	BoCC- Red, S7
Lesser redpoll	<i>Acanthis cabaret</i>	BoCC- Red, S7
Common crossbill	<i>Loxia curvirostra</i>	S1
Yellowhammer	<i>Emberiza citrinella</i>	BoCC- Red, S7
Reed bunting	<i>Emberiza schoeniclus</i>	BoCC- Amber, S7

ANNEX 2: ORNITHOLOGY FIELD SURVEY EFFORT

The following codes are used to record weather conditions within **Tables A2-1 to A2-7**:

Wind Speed		Wind Direction		Cloud Height	
Calm	0	16 point compass		<150m	0
Light air	1			150-500m	1
Light breeze	2	Rain		>500m	2
Gentle breeze	3				
Moderate breeze	4				
Fresh breeze	5				
Strong breeze	6	None	0	Frost	
Moderate gale	7	Drizzle/mist	1		
Fresh gale	8	Light showers	2		
Strong gale	9	Heavy showers	3	None	0
Whole gale	10	Heavy rain	4	Ground	1
Storm	11			All day	2
		Visibility		Snow	
		Poor	0	None	0
		<1km	1	On site	1
		>1km	2	High ground	2
				Cloud cover	
				0-8 scale (with '0' no cloud & '8' 100% cloud)	

Field surveys were undertaken by the following named surveyors:

Z. Hinchcliffe (ZH), A. Hulme (AH) and S. Shutt (SS).

Table A2-1: VP flight activity survey effort (March 2019 to February 2020, and March 2021 to February 2022).

Date	VP	Surveyor	Start Time	Finish Time	VP Hours	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Frost	Snow
25/03/2019	1	ZH	14:00	17:00	3	1/1/1	NE/NE/NE	0/0/0	1/1/1	2/2/2	2/2/2	0/0/0	0/0/0
26/03/2019	1	ZH	07:00	10:00	3	1/1/1	N/N/N	0/0/0	2/2/2	2/2/2	2/2/2	0/0/0	0/0/0
26/03/2019	1	ZH	10:30	13:30	3	1/1/1	N/N/N	0/0/0	2/2/2	2/2/2	2/2/2	0/0/0	0/0/0
15/04/2019	1	ZH	14:30	17:30	3	5/5/5	ESE/ESE/ESE	0/0/0	6/6/6	2/2/2	2/2/2	0/0/0	0/0/0
16/04/2019	1	ZH	15:00	18:00	3	2/2/2	SE/SE/SE	0/0/0	7/7/7	1/1/1	2/2/2	0/0/0	0/0/0
13/05/2019	1	ZH	15:30	18:30	3	2/2/2	SSE/SSE/SSE	0/0/0	1/1/1	2/2/2	2/2/2	0/0/0	0/0/0
14/05/2019	1	ZH	05:15	08:15	3	2/2/2	E/E/E	0/0/0	2/2/2	2/2/2	2/2/2	0/0/0	0/0/0
31/05/2019	1	AH	07:30	10:30	3	5/5/5	ENE/NE/NE	1/0-1/1	8/8/8	0/1-0/0	0/2-0/0	0/0/0	0/0/0
31/05/2019	1	AH	11:00	14:00	3	5/5/5	ENE/NE/NE	0/1/1	7/8/8	1/1/1	2/2/2-1-2	0/0/0	0/0/0
27/06/2019	1	AH	08:30	11:30	3	5/5/5	W/W/W	0/0/0	0/0/0	-	2/2/2	0/0/0	0/0/0
27/06/2019	1	AH	12:00	15:00	3	5/5/5	W/W/W	0/0/0	0/1/1	-/2/2	2/2/2	0/0/0	0/0/0
16/07/2019	1	AH	14:15	17:15	3	1 /4/4	NE/NE/NE	0/0/0	7 /7/ 4	2/2/2	2/2/2	0/0/0	0/0/0
17/07/2019	1	AH	15:15	18:15	3	6 /6/ 5	E/E/E	1 / 2 / 0	8/8/8	2/2/2	2/2/2	0/0/0	0/0/0
01/08/2019	1	AH	10:45	13:45	3	2 / 1/1	SW/W/NW	0/0/0	5/6/7	2/2/2	2/2/2	0/0/0	0/0/0
02/08/2019	1	AH	07:00	10:00	3	2 / 1 / 2	W/WNW	0/0/0	0/0/3	/- /- / 2/	2/2/2	0/0/0	0/0/0
17/09/2019	1	AH	16:00	19:00	3	4/4/3	E/NE/NE	0/0/0	0/0/0	-	2/2/2	0/0/0	0/0/0
18/09/2019	1	AH	07:00	10:00	3	1/1/1	SE/SE/SE	0/0/0	1/1/1	2/2/2	2/2/2	0/0/0	0/0/0
15/10/2019	1	AH	07:45	10:45	3	0/1/1	-/N/N	1/1/2	8/8/8	1/1/1	1/1/1	0/0/0	0/0/0
15/10/2019	1	AH	11:15	14:15	3	0/1/2	-/N/NW	1/0-1/0-3	8/8/8	0/0-1/1	1/0-1-2/1-2	0/0/0	0/0/0
21/11/2019	1	AH	08:30	11:30	3	7/7/7	E/E/E	0/0/0	7/8/7	2/2/2	2/2/2	0/0/0	0/0/0
21/11/2019	1	AH	12:00	15:00	3	7/7/7	E/E/E	0/0/0	7/8/8	2/2/2	2/2/2	0/0/0	0/0/0
11/12/2019	1	AH	08:20	11:20	3	5/5/5	W/SW/SW	3/4/3	7/8/8	2/1/1	2/2/1	0/0/0	0/0/0
11/12/2019	1	AH	11:50	14:50	3	4/3/2	W/NW/NW	4/2/0	6-8/5-8/4	2/2/2	2/2/2	0/0/0	0/0/0
23/01/2020	1	AH	12:45	15:45	3	1/1/1	E/E/E	0/0/0	8/8/8	1/1/1	2/2/2	0/0/0	0/0/0
24/01/2020	1	AH	08:20	11:20	3	1/1/1	NE/W/W	0/0/0	6/6/8	2/2/1	2/2/1	0/0/0	0/0/0
12/02/2020	1	AH	08:00	11:00	3	5/5/5	E/SE/SE	0/0/0	3/4/4	2/2/2	2/2/2	0/0/0	0/0/0
12/02/2020	1	AH	11:30	14:30	3	6/5/6	SE/E/E	0/0/0	5/4/6	2/2/2	2/2/2	0/0/0	0/0/0
16/03/2021	1	SS	08:30	11:30	3	2/3/3	WNW/WNW/NW	1/0/0	8/8/7	0/1/2	0/1/2	0/0/0	0/0/0

16/03/2021	1	SS	12:00	15:00	3	5/5/5	NW/NW/NW	0/0/0	7/7/6	2/2/2	2/2/2	0/0/0	0/0/0
17/03/2021	2	SS	09:45	12:45	3	2/2/2	WNW/WNW/NW	0/0/0	7/7/8	2/2/2	2/2/2	0/0/0	0/0/0
17/03/2021	2	SS	13:15	16:15	3	2/3/3	WNW/WNW/WNW	0/0/0	8/7/4	2/2/2	2/2/2	0/0/0	0/0/0
30/03/2021	2	SS	08:00	11:00	3	2/2/2	ESE/E/E	0/0/0	1/1/3	2/2/2	2/2/2	0/0/0	0/0/0
30/03/2021	1	SS	12:30	15:30	3	1/1/2	ESE/ESE/ESE	0/0/0	5/5/5	2/2/2	2/2/2	0/0/0	0/0/0
06/04/2021	2	SS	08:00	11:00	3	1/2/1	NNW/NW/NW	0/0/0	7/6/7	2/2/2	2/2/2	0/0/0	1/0/0
06/04/2021	2	SS	11:30	14:30	3	1/2/2	NW/NNW/NNW	0/0/0	7/5/5	2/2/2	2/2/1	0/0/0	0/1/1
07/04/2021	1	SS	08:00	11:00	3	1/2/2	NW/NW/NNW	0/0/0	8/8/8	2/2/2	2/2/2	1/0/0	1/1/0
07/04/2021	1	SS	11:30	14:30	3	2/2/2	NW/NW/NW	0/0/0	8/8/8	2/2/2	2/2/2	0/0/0	0/0/0
05/05/2021	2	SS	11:30	14:30	3	2/2/2	W/W/WNW	0/0/0	5/7/4	2/2/2	2/2/2	0/0/0	0/0/0
05/05/2021	2	SS	15:00	18:00	3	1/2/2	W/W/W	2/0/0	7/6/5	2/2/2	2/2/2	0/0/0	0/0/0
09/05/2021	1	SS	10:00	13:00	3	3/3/3	S/SSW/S	0/0/2	8/6/8	2/2/2	2/2/2	0/0/0	0/0/0
09/05/2021	1	SS	13:30	16:30	3	3/3/2	S/SSW/SSW	0/2/0	8/8/8	2/2/2	2/2/2	0/0/0	0/0/0
17/05/2021	2	SS	08:00	11:00	3	2/1/1	WNW/WNW/WNW	0/0/0	0/5/5	2/2/2	2/2/2	0/0/0	0/0/0
17/05/2021	2	SS	11:30	14:30	3	2/2/2	W/W/W	0/0/0	0/5/7	2/2/2	2/2/2	0/0/0	0/0/0
28/05/2021	1	SS	09:00	12:00	3	2/2/2	ESE/ESE/ESE	2/2/2	8/8/8	2/2/2	2/2/2	0/0/0	0/0/0
28/05/2021	1	SS	12:30	15:30	3	2/2/2	ESE/ESE/ESE	0/0/0	8/7/7	2/2/2	2/2/2	0/0/0	0/0/0
09/06/2021	1	SS	08:00	11:00	3	1/1/1	SSW/S/SSE	0/1/1	8/8/8	2/2/2	2/1/1	0/0/0	0/0/0
09/06/2021	1	SS	11:30	14:30	3	1/1/1	S/SSW/SSW	0/1/0	8/8/8	2/2/2	1/1/1	0/0/0	0/0/0
13/06/2021	2	SS	11:00	14:00	3	3/3/3	SE/SE/S	0/0/0	0/0/0	/-/ /-/	2/2/2	0/0/0	0/0/0
13/06/2021	2	SS	14:30	17:30	3	3/3/3	SSW/SSW/SW	0/0/0	1/2/2	2/2/2	2/2/2	0/0/0	0/0/0
06/07/2021	1	SS	09:00	12:00	3	4/5/5	W/SW/WSW	0/0/0	8/6/6	2/2/2	2/2/2	0/0/0	0/0/0
06/07/2021	1	SS	12:30	15:30	3	5/5/5	WSW/WSW/SW	0/0/3	8/7/8	2/2/1	2/2/1	0/0/0	0/0/0
07/07/2021	2	SS	11:00	14:00	3	3/3/3	SW/SW/SW	0/0/0	7/8/6	2/2/2	2/2/2	0/0/0	0/0/0
07/07/2021	2	SS	14:30	17:30	3	3/3/3	WSW/WSW/WSW	0/0/0	6/7/7	2/2/2	2/2/2	0/0/0	0/0/0
25/08/2021	1	SS	11:00	14:00	3	3/5/5	ESE/ESE/ESE	0/0/0	8/8/6	2/2/2	2/2/2	0/0/0	0/0/0
25/08/2021	1	SS	14:30	17:30	3	4/3/3	ESE/ENE/ENE	0/0/0	6/5/5	2/2/2	2/2/2	0/0/0	0/0/0
26/08/2021	2	SS	08:00	11:00	3	2/1/2	N/N/N	0/0/0	6/8/8	2/2/2	2/2/2	0/0/0	0/0/0
26/08/2021	2	SS	11:30	14:30	3	2/2/2	NNE/NNE/NNW	0/0/0	7/6/7	2/2/2	2/2/2	0/0/0	0/0/0
16/09/2021	2	SS	10:00	13:00	3	3/3/3	W/WSW/WSW	0/0/0	7/4/5	2/2/2	2/2/2	0/0/0	0/0/0

16/09/2021	2	SS	13:30	16:30	3	3/2/3	WSW/SW/WSW	0/0/0	7/7/7	2/2/2	2/2/2	0/0/0	0/0/0
21/09/2021	1	SS	08:00	11:00	3	1/1/2	N/N/N	0/0/0	2/3/4	2/2/2	2/2/2	0/0/0	0/0/0
21/09/2021	1	SS	11:30	14:30	3	3/2/2	SE/SW/WSW	0/0/0	6/5/4	2/2/2	2/2/2	0/0/0	0/0/0
12/10/2021	1	SS	08:30	11:30	3	2/1/2	NW/NW/NNW	0/0/0	7/8/8	2/2/2	2/2/2	0/0/0	0/0/0
12/10/2021	1	SS	12:00	15:00	3	3/2/3	NNW/NNW/NNW	0/0/0	7/7/4	2/2/2	2/2/2	0/0/0	0/0/0
13/10/2021	2	SS	10:00	13:00	3	1/1/1	SSW/SSW/WSW	0/0/0	7/7/7	2/2/2	2/2/2	0/0/0	0/0/0
13/10/2021	2	SS	13:30	16:30	3	1/1/2	WSW/WSW/W	0/0/0	8/8/8	2/2/2	2/2/2	0/0/0	0/0/0
16/11/2021	1	SS	09:30	12:30	3	2/2/2	WSW/WSW/WSW	0/0/1	8/8/8	2/2/2	2/2/2	0/0/0	0/0/0
17/11/2021	2	SS	09:30	12:30	3	3/3/3	WSW/WSW/WSW	0/0/0	3/2/2	2/2/2	2/2/2	0/0/0	0/0/0
17/11/2021	2	SS	13:00	16:00	3	4/5/5	W/W/W	0/0/0	4/5/7	2/2/2	2/2/2	0/0/0	0/0/0
29/11/2021	1	SS	10:00	13:00	3	1/1/1	SSW/SSW/S	0/0/0	8/8/8	2/2/2	2/2/2	0/0/0	0/0/0
16/12/2021	1	SS	09:15	12:15	3	1/1/1	ESE/ESE/ESE	0/0/0	8/8/8	2/2/2	1/1/1	0/0/0	0/0/0
16/12/2021	1	SS	12:45	15:45	3	1/1/1	ESE/E/E	0/0/0	8/8/8	2/2/2	2/2/1	1/1/1	1/1/1
22/12/2021	2	SS	09:00	12:00	3	5/5/4	ESE/ESE/ESE	0/0/0	8/7/8	2/2/2	2/2/2	0/0/0	0/0/0
22/12/2021	2	SS	12:30	14:30	2	5/5/5	ESE/ESE/ESE	0/2/3	7/8/8	2/2/2	2/2/2	0/0/0	0/0/0
05/01/2022	1	SS	09:00	12:00	3	4/4/3	NW/NW/NW	0/0/0	1/2/4	2/2/2	2/2/2	1/1/1	1/1/1
05/01/2022	1	SS	12:30	15:30	3	4/4/3	WNW/WNW/NW	0/0/0	4/7/7	2/2/2	2/2/2	1/1/0	1/1/0
12/01/2022	2	SS	08:30	11:30	3	1/1/1	NE/NE/ESE	0/0/0	2/1/1	2/2/2	2/2/2	0/0/0	0/0/0
12/01/2022	2	SS	12:00	15:00	3	1/1/1	NE/N/WNW	0/0/0	1/1/1	2/2/2	2/2/2	0/0/0	0/0/0
10/02/2022	1	SS	09:00	12:00	3	3/3/4	SSW/SSW/WNW	0/0/0	3/4/4	2/2/2	2/2/2	0/0/0	0/0/0
10/02/2022	1	SS	12:30	15:30	3	4/4/4	WNW/WNW/WNW	0/0/0	4/4/6	2/2/2	2/2/2	0/0/0	0/0/0
11/02/2022	2	SS	09:00	12:00	3	1/1/1	S/S/SSE	0/0/0	1/1/1	2/2/2	2/2/2	1/0/0	0/0/0
11/02/2022	2	SS	12:30	15:30	3	3/3/3	SSE/S/SSW	0/0/0	6/7/7	2/2/2	2/2/2	0/0/0	0/0/0

Table A2-2: MBBS effort - 2019.

Date	Surveyor	Start Time	Finish Time	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Frost	Snow
25/04/2019	AH	12:30	14:30	2	NE	3	5-8	2	2	0	0
26/04/2019	AH	08:30	09:45	6	NE	4	8	2-1	2-1	0	0
30/05/2019	AH	12:30	16:15	5	W	0	8-5	2	2	0	0

26/06/2019	AH	14:25	18:25	5	SE	0	2	2	2	0	0
17/07/2019	AH	10:00	14:00	5	E	0	8	2	2	0	0

Table A2-3: MBBS effort - 2021.

Date	Surveyor	Start Time	Finish Time	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Frost	Snow
12/04/2021	SS	07:00	12:45	1	WNW	0	4	2	2	0	0
01/05/2021	SS	06:30	12:30	2	W	0	6-2	2	2	0	0
18/06/2021	SS	06:00	12:00	4	NNE	0	7	2	2	0	0
12/07/2021	SS	08:00	12:15	1	ENE	0	8	2	2	0	0

Table A2-4: Annex 1/Schedule 1 Raptor and Owl Search effort – 2019.

Date	Surveyor	Start Time	Finish Time	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Frost	Snow
17/04/2019	ZH	11:00	13:00	1	SE	0	1	2	2	0	0
14/05/2019	ZH	08:15	10:10	2	E	0	2	2	2	0	0
12/06/2019	AH	10:30	15:00	4	NW	0	8	2	2	0	0
18/07/2019	AH	07:30	10:45	4	E	0	8-6	2	2	0	0

Table A2-5: Annex 1/Schedule 1 Raptor and Owl Search effort – 2021.

Date	Surveyor	Start Time	Finish Time	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Frost	Snow
13/04/2021	SS	07:00	14:00	1	ENE	0	8	2	2	0	0
22/05/2021	SS	06:15	14:35	2	NW	0	7	2	2	0	0
23/06/2021	SS	05:30	13:00	1	N	0	1	2	2	0	0
20/07/2021	SS	06:45	13:45	1	NNW	0	0	N/A	2	0	0

Table A2-6: Nightjar search effort - 2019.

Date	Surveyor	Start Time	Finish Time	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Frost	Snow
27/06/2019	AH	21:30	23:30	5	NW	0	8	2	2	0	0
28/06/2019	AH	02:30	04:30	7	NW	0	0	-	2	0	0

Table A2-7: Nightjar search effort - 2021.

Date	Surveyor	Start Time	Finish Time	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Frost	Snow
08/07/2021	SS	21:20	01:30	2	W	0	2	2	2	0	0
09/07/2021	SS	01:45	05:15	2	W	0	2	2	2	0	0

ANNEX 3: EXISTING ORNITHOLOGY RECORDS

Table A3-1 provide a summary of existing relevant ornithological records returned by SEWBRC.

Table A3-1: Summary of existing ornithological records.

Species	No. of Records	Date Range	Summary
Barn owl	3	1999, 2005, 2015	Sensitive.
Bullfinch	23	2003-2020	Nearest record from within the Site.
Common crossbill	13	2009-2020	Nearest record from within the Site.
Cuckoo	9	2003-2017	Nearest record adjacent to the Site.
Dunnock	39	2003-2020	Nearest record from within the Site.
Goshawk	6	2001, 2008, 2013, 2015, 2019	Sensitive.
Grasshopper warbler	4	2011-2015, 2019	Nearest record adjacent to the Site.
Hen harrier	3	2011, 2015, 2016	Sensitive.
Herring gull	6	2008, 2012-2017	Nearest record c. 1.2km from the Site.
Hobby	1	2010	Sensitive.
Honey-buzzard	2	2008, 2015	Sensitive.
House sparrow	31	2003-2019	Nearest record from within the Site.
Kestrel	5	1999, 2004, 2005, 2018	Nearest record from within the Site.
Lapwing	1	2005	Record from within the Site.
Lesser redpoll	10	2003, 2011, 2017, 2019, 2020	Nearest record from within the Site.
Linnet	18	1999-2014, 2019	Nearest record adjacent to the Site.
Nightjar	52	1992, 2003-2020	Nearest record from within the Site.
Peregrine	1	2011	Sensitive.
Pied flycatcher	3	1988, 2011	Nearest record c. 400m from the Site.
Red kite	9	2009-2021	Sensitive.
Reed bunting	10	2003-2019	Nearest record from within the Site.
Shoveler	1	2007	Record c. 1.2km from the Site.
Skylark	12	2006-2010, 2016, 2019, 2020	Nearest record from within the Site.
Snipe	2	2006, 2019	Nearest record c. 150m from the Site.
Song thrush	51	2003-2019	Nearest record from within the Site.
Spotted flycatcher	4	2003-2016	Nearest record c. 700m from the Site.
Starling	28	2004-2019	Nearest record c. 450m from the Site.
Tree pipit	10	2003-2011, 2016, 2020-2022	Nearest record from within the Site.
Wood warbler	6	2009-2013, 2016, 2017	Nearest record c. 150m from the Site.
Yellowhammer	1	2019	Record c. 2km from the Site.

ANNEX 4: VP FLIGHT ACTIVITY SURVEY - TARGET SPECIES FLIGHTS

Table A4-1 presents details of target species flight lines recorded during VP flight activity surveys March 2019 to February 2020, and March 2021 to February 2022.

Table A4-1: Target species flights.

Date	VP	Species	No. of Birds	Start Time (24hrs)	Duration (secs)	0-30m	30-150m	>150m	Notes
25/03/2019	1	Red kite	1	15:30	200	0	0	200	
25/03/2019	1	Hen harrier	1	15:33	30	30	0	0	
25/03/2019	1	Hen harrier	1	15:45	100	100	0	0	
26/03/2019	1	Red kite	1	08:40	200	50	50	100	
15/04/2019	1	Red kite	1	14:46	40	40	0	0	
15/04/2019	1	Red kite	1	15:04	170	45	125	0	
15/04/2019	1	Red kite	1	15:50	75	75	0	0	
15/04/2019	1	Red kite	1	16:10	100	30	70	0	
31/05/2019	1	Red kite	1	11:10	110	15	75	20	Mobbed by corvid.
31/05/2019	1	Red kite	1	12:30	70	40	30	0	Went out of view behind hill.
31/05/2019	1	Red kite	1	12:43	40	0	40	0	Went out of view behind hill.
31/05/2019	1	Red kite	1	12:46	40	25	15	0	Went out of view behind hill.
31/05/2019	1	Red kite	1	12:57	70	0	25	45	Went out of view behind hill.
31/05/2019	1	Red kite	1	13:08	45	0	15	30	Went out of view behind hill.
31/05/2019	1	Red kite	1	13:50	20	0	5	15	Went out of view behind hill.
27/06/2019	1	Red kite	1	08:30	30	0	30	0	Juvenile.
16/07/2019	1	Red kite	1	14:29	30	0	30	0	Juvenile.
16/07/2019	1	Red kite	1	16:23	45	0	45	0	Juvenile.
15/10/2019	1	Red kite	2	13:20	75	0	75	0	Circling above wood.
15/10/2019	1	Red kite	1	13:23	20	0	20	0	Lost in cloud.
15/10/2019	1	Red kite	1	13:27	170	0	170	0	Went behind hill into valley.
15/10/2019	1	Red kite	1	13:29	40	0	40	0	Joined one above, also went behind hill into valley.
21/11/2019	1	Red kite	1	11:13	30	30	0	0	Appeared to land in patch of trees.
21/11/2019	1	Red kite	1	14:20	210	30	180	0	Out of view into valley.

Date	VP	Species	No. of Birds	Start Time (24hrs)	Duration (secs)	0-30m	30-150m	>150m	Notes
21/11/2019	1	Red kite	1	14:27	120	120	0	0	Out of view behind hill.
21/11/2019	1	Red kite	1	14:42	330	45	285	0	Out of view behind hill.
21/11/2019	1	Red kite	1	14:50	270	30	240	0	Out of view behind hill.
11/12/2019	1	Red kite	1	12:14	60	60	0	0	Hunting / foraging.
12/02/2020	1	Red kite	1	10:03	60	60	0	0	Out of view behind hill.
12/02/2020	1	Red kite	1	10:14	45	0	45	0	
12/02/2020	1	Red kite	1	10:36	35	35	0	0	Out of view behind hill.
12/02/2020	1	Red kite	1	10:59	100	40	60	0	Out of view behind hill.
12/02/2020	1	Red kite	1	12:52	140	65	75	0	Out of view behind hill.
12/02/2020	1	Red kite	1	12:59	200	140	60	0	Over forest to north-west of the Site.
17/03/2021	2	Red kite	1	13:58	60	0	60	0	Soaring.
17/03/2021	2	Red kite	1	14:39	240	0	60	180	Circling.
06/04/2021	2	Red kite	1	10:37	90	0	90	0	Flew over (circling).
06/04/2021	2	Red kite	1	11:30	30	0	30	0	Flew from behind ridge.
07/04/2021	1	Red kite	1	12:27	45	45	0	0	
07/04/2021	1	Red kite	2	12:35	60	30	30	0	Hunting - possible pair.
05/05/2021	2	Red kite	1	17:25	45	0	45	0	
09/05/2021	1	Red kite	1	15:41	150	45	105	0	
06/07/2021	1	Red kite	1	09:21	90	0	90	0	
06/07/2021	1	Goshawk	1	14:03	90	15	75	0	Mobbed by corvids.
06/07/2021	1	Red kite	1	14:29	60	0	60	0	
07/07/2021	2	Red kite	1	11:00	60	0	0	60	Flew over.
07/07/2021	2	Red kite	1	11:00	75	60	15	0	Circling.
07/07/2021	2	Red kite	1	15:02	105	105	0	0	
07/07/2021	2	Red kite	1	16:52	30	30	0	0	
26/08/2021	2	Red kite	1	09:17	15	15	0	0	Briefly seen, flew over ridge to south-west of VP.
26/08/2021	2	Red kite	1	11:39	60	60	0	0	Circling, flew behind ridge.
26/08/2021	2	Red kite	1	11:48	235	15	30	190	Circling to south-west.

Date	VP	Species	No. of Birds	Start Time (24hrs)	Duration (secs)	0-30m	30-150m	>150m	Notes
26/08/2021	2	Red kite	1	11:48	180	60	90	30	Circling to north-east.
26/08/2021	2	Red kite	1	12:08	180	15	165	0	Circling, then went behind ridge.
26/08/2021	2	Red kite	1	12:17	300	15	285	0	Circling over ridge to south-west of VP.
16/09/2021	2	Red kite	1	15:28	60	15	45	0	Flew north along valley to west.
21/09/2021	1	Red kite	1	09:35	30	30	0	0	
21/09/2021	1	Red kite	1	12:32	480	90	285	105	Quartering the ground/hunting.
21/09/2021	1	Peregrine	1	13:30	135	45	30	60	Juvenile.
12/10/2021	1	Red kite	1	12:25	60	0	60	0	Circling.
12/10/2021	1	Red kite	1	14:41	45	0	0	45	
12/10/2021	1	Merlin	1	14:43	45	15	30	0	
13/10/2021	2	Hen harrier	1	12:55	30	30	0	0	Female, ringtail, juvenile.
17/11/2021	2	Hen harrier	1	14:49	45	45	0	0	Female, hunting small birds.
12/01/2022	2	Merlin	1	14:45	90	90	0	0	Hunting.
10/02/2022	1	Red kite	1	10:16	30	0	30	0	Flew from forestry.
10/02/2022	1	Red kite	1	10:30	15	15	0	0	Circling.
10/02/2022	1	Red kite	1	10:49	60	15	30	15	Circled and landed in field.
10/02/2022	1	Red kite	1	13:32	90	30	60	0	
10/02/2022	1	Red kite	2	13:39	105	30	45	30	Pair including display.
10/02/2022	1	Red kite	2	14:14	90	60	30	0	
10/02/2022	1	Red kite	1	14:28	105	30	60	15	Circled.
11/02/2022	2	Red kite	1	13:02	120	0	30	90	Circling to south.
11/02/2022	2	Red kite	1	13:02	105	30	75	0	Circling to south.
11/02/2022	2	Red kite	1	14:02	150	0	60	90	Circling to north.
11/02/2022	2	Red kite	1	14:32	60	60	0	0	