

Trecelyn Wind Farm

Appendix 8A: Ecology (Non-ornithology) Baseline Report

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On behalf of: Pennant Walters

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Section 1 Introduction

- 1.1 This Ecological Baseline Report has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Pennant Walters (hereafter referred to as 'the Applicant') in relation to proposed wind farm development at Trecelyn, Caerphilly (hereafter referred to as 'the Application Site').
- 1.2 EDP is an independent environmental planning consultancy with offices in Cirencester, Cardiff and Cheltenham. The practice provides advice to private and public sector clients throughout the UK in the fields of landscape, ecology, archaeology, cultural heritage, arboriculture, rights of way and masterplanning. Details of the practice can be obtained at our website (www.edp-uk.co.uk).

SITE CONTEXT

- 1.3 The Application Site is located to the east of Newbridge/Trecelyn within Caerphilly County Borough Council (CCBC), and comprises three parcels of land, referred to hereafter as the northern, central and southern parcels, with the northern parcel roughly centred at approximate Ordnance Survey National Grid Reference ST 235 982, the central parcel at ST 233 969 and the southern parcel at ST 228 963. The location and extents of the Application Site are illustrated on **Plan EDP 8.1**.
- 1.4 Broadly, the Application Site occupies the western part of the plateau of Mynydd Maen. It lies towards the southern end of a large north-south trending ridge of high land between the Afon Lwyd valley to the east and the mid reach of the Afon Ebbw valley to the west. This ridge comprises a series of plateaux typically between 400m and 550m above sea level and is characterised by much unenclosed land grazed by sheep, and to a lesser extent cattle and horses. There is much evidence of historic industrial activity on the slopes of the ridge, particularly on the Avon Lwyd side.
- 1.5 The three parcels of land making up the Application Site comprise agricultural land parcels subject to sheep and cattle grazing, extending between the A472 to the north and Abercarn to the south, bound by coniferous woodland plantation and quarried areas.
- 1.6 Several public footpaths traverse the field parcels and their boundaries, in addition to unmetalled tracks. A number of waterbodies are also present in association with the northern and southern most parcels, many of which are small, but which likely hold water in all but prolonged dry conditions.

DEVELOPMENT PROPOSALS

1.8 In brief, the Proposed Development concerns the construction and operation of a wind farm comprising of a maximum of four turbines with associated infrastructure including access tracks, crane pads and cabling, temporary site offices and construction compound. Each

turbine will comprise a three-bladed rotor with a diameter of up to 117m, a hub height of up to 84m and maximum height to blade tip of 145m.

SCOPE OF ASSESSMENT

- 1.9 This Ecological Baseline Report describes the current ecological interest within and around the Application Site, which has been identified through standard desk and field-based investigations.
- 1.10 The remainder of this report is structured as follows:
 - **Section 2** summarises the methodology employed in determining the baseline ecological conditions within and around the Application Site (with further details provided within Appendices and on Plans where appropriate); and
 - **Section 3** summarises the baseline ecological conditions (with further details also provided within Appendices and on Plans where appropriate) and identifies and evaluates important ecological features/receptors.

Section 2 Methods (Baseline Investigations)

2.1 This section of the Ecological Baseline Report summarises the methods employed in determining the baseline ecological conditions within and around the Application Site. The appraisal has been undertaken by appropriately qualified ecologists using relevant best practice methodologies wherever possible. Reasons for any departure from best practice methodology are given and normally relate to the timing of EDP's commission and/or the availability of access to parts of the Application Site. Full details of the techniques and process adopted are, where appropriate, provided within Appendices and on Plans to the rear of this report.

DESK STUDY

- 2.2 The desk study comprises an important element of the baseline ecological appraisal of a site proposed for development, enabling the initial collation and review of contextual information such as designated sites and past records of protected and priority species¹.
- 2.3 The desk study involved collating information from both statutory and non-statutory bodies, including:
 - South-East Wales Biodiversity Records Centre (SEWBReC);
 - Aderyn (the Biodiversity Information and Reporting Database of Local Environmental Records Centres Wales); and
 - Multi-Agency Geographic Information for the Countryside (MAGIC)².
- 2.4 The desk study was undertaken during April 2020 and updated in April 2022 and August 2023 with the following information requested:
 - International statutory designations (30km radius) (Plan EDP 8.2);
 - National statutory designations (15km) (**Plan EDP 8.3**);
 - Non-statutory local sites (5km) (**Plan EDP 8.4**);
 - Annex II bat species³ records (6km radius); and
 - All other protected/notable species records (2km).

¹ Species which are considered to be of key significance to sustain and improve biodiversity in Wales, as listed under Section 7 of the Environment (Wales) Act 2016.

² www.magic.gov.uk

³ Annex II species comprise those listed under Annex II of the Habitats Directive which occur in the UK and for which SACs are designated. The objectives of the National Site Network, which includes all SACs and SPAs, are to maintain or, where appropriate, restore such species to a favourable conservation status. In respect of bats, these include greater horseshoe bat, lesser horseshoe bat, barbastelle and Bechstein's bat.

2.5 These search areas are considered sufficient to cover the potential Zones of Influence⁴ of a standard residential development in relation to designated sites, habitats and species.

Extended Phase 1 Survey

- 2.6 The principal habitats within the Application Site together with their dominant/characteristic plant species were identified during the Extended Phase 1 survey.
- 2.7 The survey technique adopted for the initial habitat assessment was at a level intermediate between a standard Phase 1 survey technique⁵, based on habitat mapping and description, and a Phase 2 survey, based on detailed habitat and species surveys. The survey technique is commonly known as an Extended Phase 1 survey. This level of survey does not aim to compile a complete floral and faunal inventory for the Application Site.
- 2.8 The level of survey involves identifying and mapping the main habitat types (including priority habitats⁶) and identifying the dominant plant species present within each habitat type. In addition, any actual or potential protected or priority species are identified and scoped.
- 2.9 An Extended Phase 1 survey was undertaken of the Application Site by a suitably experienced surveyor between 30 March and 02 April 2020 during which the weather was predominantly overcast, still and dry. The extent of habitats surveyed is illustrated at **Plan EDP 8.5**.

Limitations

2.10 Whilst March is outside the optimal period, April is within this period for undertaking an Extended Phase 1 survey. Given the nature of the habitats supported by the Application Site, the timing of the survey is not considered a constraint to survey effort.

DETAILED (PHASE 2) SURVEYS

- 2.11 The scope of Phase 2 Surveys undertaken within the Application Site was defined following the initial studies described above (desk study and Extended Phase 1 survey).
- 2.12 The surveys 'scoped in' based upon the findings of the Extended Phase 1 survey are summarised in turn below, with reference to sources of further detailed information where applicable.

Detailed Botanical Survey

2.13 All field parcels were also subject to a further detailed botanical survey to identify any distinct plant communities of note and to further assess the botanical value of the

 $^{^{\}rm 4}$ Zone of Influence - the areas and resources that may be affected by the proposed development.

⁵ Joint Nature Conservation Council (2004) Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit (reprinted with minor corrections for original Nature Conservancy Council publication).

⁶ Habitats which are considered to be of key significance to sustain and improve biodiversity in Wales, as listed under Section 7 of the Environment (Wales) Act 2016.

Application Site. The botanical survey was initially undertaken on 03 August 2021 during which full access was available, with weather conditions being dry and bright.

- 2.14 An update botanical survey was subsequently completed on 22 and 23 August 2023, during which weather conditions were dry and overcast on 22 August and overcast with frequent light rain on 23 August 2023.
- 2.15 The botanical survey followed the DAFOR methodology whereby each plant species was accorded a code relative to its frequency and abundance within the Application Site, as follows:
 - D = Dominant;
 - A = Abundant;
 - F = Frequent;
 - 0 = Occasional; and
 - R = Rare.
- 2.16 Where a species had a particularly localised status within a field it was noted with the prefix L (e.g. rare in the wider field but locally occasional = R/LO).
- 2.17 All vascular plant and bryophyte species were recorded to DAFOR level with species lists and DAFOR scores recorded separately per habitat type surveyed. Vegetation communities identified were subsequently mapped and described in accordance with standard survey protocol⁷. Where possible, National Vegetation Classification (NVC) methodology was also utilised where appropriate to classify distinct plant communities and sub-communities supported with respect to their species composition and relative abundance, in addition to determining their botanical value and relative nature conservation value of the swards present.
- 2.18 The extent of habitats surveyed is illustrated at **Plan EDP 8.5**.

Limitations

2.19 Full access was available whilst weather conditions were considered suitable for the purpose of the survey. The botanical surveys were also undertaken during an optimal period allowing for a high level of accuracy in determining the status of plant species on-site. As such, no significant limitations were identified during the detailed botanical surveys.

Bat Activity Surveys

2.20 To inform an assessment of potential effects arising upon a bat assemblage utilising the Application Site, the following survey effort has been undertaken during 2020, 2021 and 2023 as follows:

⁷ Joint Nature Conservation Council (2004) Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit (reprinted with minor corrections for original Nature Conservancy Council publication).

- Bat Foraging/Commuting Activity:
 - Manual transect surveys conducted at monthly intervals between May and October 2020, repeated in April, May and June 2021 and June, July and August 2023 (**Plan EDP 8.6**); and
 - Automated detector surveys conducted at monthly intervals between May and October 2020, repeated between April and October 2021 and between June and August 2023 (**Plan EDP 8.7**).
- 2.21 In addition to the above, a weather station was deployed onsite between August 2020 and November 2021 and between June and August 2023 to enable recordings of temperature, wind speed and direction, humidity, rainfall and atmospheric pressure to be taken on an hourly basis. The location of the weather station is illustrated at **Plan EDP 8.8**. The weather station was subject to a maintenance check on a roughly fortnightly basis, with the data downloaded during each visit so as to ensure sufficient weather data was captured during the bat survey period.
- 2.22 The weather station comprises a Davis Vantage Vue 6250UK mounted on a Davis Mounting Tripod 7716, which is pegged into the ground to remain sturdy. The data logger itself is stored in a weatherproof Davis 6614 Solar Power Kit Shelter, powered by a 6v lead-acid battery which is kept topped up by a 5W solar panel.
- 2.23 No significant limitations were identified for the bat activity surveys. Full details of the bat activity survey methodologies undertaken are provided in **Appendix EDP 3**.

Bat Roost Surveys

- 2.24 In addition to the above, and to inform an assessment of potential effects arising upon bats potentially roosting onsite, the following surveys were undertaken during 2022 and 2023:
 - Ground level visual assessment of all mature trees located within a 130m buffer (50m buffer plus turbine rotor blade radius assumed to be a maximum of 80m) of each proposed turbine location during May 2022 (**Plan EDP 8.9**);
 - Further detailed ground level and aerial tree inspections on 09 June and 23 August 2022 of potential roost features (PRFs) identified following the initial ground assessment of all mature trees associated with the turbine locations, where categorised as having moderate to high bat roosting potential (**Plan EDP 8.10**);
 - Ground level visual assessment of all suitable trees associated with the proposed access route on 22 August 2023 (**Plan EDP 8.9**);
 - Ground level, visual building assessment on 30 May 2022 of all built structures, where accessible and present within a 280m buffer (200m buffer plus turbine rotor blade radius, assumed to be a maximum of 80m) of each proposed turbine location, as well as additional built structures located within the Application Site boundary (**Plan EDP 8.11**); and

- Dusk emergence and/or dawn re-entry surveys of built structures, where accessible and were assessed to have low to high bat roosting potential, undertaken in August and September 2022 and in July 2023 (**Plan EDP 8.12**).
- 2.25 No significant limitations were identified for the bat roost surveys. Full details of the bat roost survey methodologies undertaken are provided in **Appendix EDP 3**.

Badger Survey

- 2.26 Evidence of badger (*Meles meles*) activity within the Application Site was initially sought for during the Extended Phase 1 survey on 30 March and 01 and 02 April 2020, and further updated through additional observations made on subsequent survey visits to the Application Site thereafter during 2020, 2021 and 2023. During the survey, any signs of badger activity such as holes, latrines, trails, snuffle holes and hairs on fencing or vegetation were recorded. Where holes of a size and shape consistent with badgers were identified, the following signs of badger activity were searched for in order to determine whether they were currently in use:
 - Fresh spoil outside entrances;
 - Bedding material (typically dried grass) outside entrances;
 - Holes being cleared of leaf litter/other debris;
 - Badger guard hairs; and
 - Fresh tracks leading to/from the holes.

Limitations

2.27 Badger surveys can be undertaken at any time of year and are, therefore, not limited by seasonal or climatic factors.

Dormouse Survey

- 2.28 Habitats supported by the Application Site are generally assessed as being sub-optimal for dormouse (*Muscardinus avellanarius*). However, records for this species occur within the wider landscape. To ensure a robust approach, therefore, a presence/absence survey was undertaken over the course of 2020 and 2021 in accordance with best practice guidance⁸.
- 2.29 A total of 80 standard nest tubes, each comprising a wooden tray and nesting tube made from plastic tree guard material⁹, were deployed throughout the Application Site at approximately 20m intervals on 24 April 2020 in association with woodland edges, as illustrated at **Plan EDP 8.13**.
- 2.30 Nest tubes were erected at approximately 1.5m to 2m above ground and tied to suitable branches located within the hedgerows or lower branches of trees. Tubes were left in situ

⁸ Bright, P.W, Morris, P.A. and Mitchell-Jones, T. (2006). The Dormouse Conservation Handbook Second Edition. English Nature, Peterborough.

⁹ Specifications as per Mammal Society nest tube product.

and checked at regular intervals during suitable weather conditions for evidence of use by dormouse on five separate occasions on 28 May, 27 August, 24 September, 19 October and 21 November 2020, and repeated on 28 April, 26 May, 25 June, 27 September, 07 October and 29 November 2021. Given the general absence of hazel (*Corylus avellana*) across the Application Site, no systematic search for characteristically gnawed hazelnuts could be undertaken alongside the tube surveys.

- 2.31 Evidence such as the presence of individuals, nests and/or food caches was recorded during each of the surveys. Incidental sightings or evidence of wood mouse (*Apodemus sylvaticus*), or other small mammals, were also recorded, during which all tubes were emptied of wood mouse nests and individuals, cleaned and re-hung.
- 2.32 In accordance with best practice guidance, whereby the index of probability in detecting dormouse presence within nest tubes is calculated according to set scores given for each of the different months deployed (for a minimum deployment of fifty nest tubes), the total survey effort score employed is considered to be sufficient to assume presence or absence, exceeding the minimum survey effort score of 20 as recommended, as illustrated **Table EDP 2.1**.

Month	Index of Probability	Nest Tubes Checked	Survey Date
April 2020	n/a	Nest tubes deployed	24.04.2020
May 2020	4	✓	28.05.2020
August 2020	5	✓	27.08.2020
September 2020	7	✓	24.09.2020
October 2020	2	✓	19.10.2020
November 2020	2	✓	21.11.2020
April 2021	1	✓	28.01.2021
May 2021	4	✓	26.05.2021
June 2021	2	\checkmark	25.06.2021
September 2021	7	✓	27.09.2021
October 2021	2	✓	07.10.2021
November 2021	2	✓	29.11.2021
Total survey effort score.	38 points per 50 tube surveyed.	es; equivalent to 60.8 po	ints per 80 tubes

Table EDP 2.1: Index of Probability of Finding Dormice Present in Nest Tubes in Any One Month

Limitations

2.33 Dormouse nest tube checks were completed during the main dormouse active season (April to November) and over two consecutive years. As such, the survey is not considered to have been limited by seasonal factors.

Great Crested Newt Survey

2.34 A total of nine waterbodies (P1 – P9) are present within 500m of the Application Site, two of which occur onsite itself (waterbodies P2 and P7). The locations of these waterbodies are shown on Plans EDP 8.14 and 8.15.

Habitat Suitability Assessment of Waterbodies

- 2.35 A Habitat Suitability Index (HSI) assessment, as developed by Oldham *et al.* (2000)¹⁰, was completed to assess the suitability of on-site waterbodies to support great crested newt (*Triturus cristatus*).
- 2.36 Waterbodies P1-P7 were subject to a great crested newt Habitat Suitability Index (HSI) assessment on 21, 22 and 23 April 2020. No access was possible to waterbodies P8 or P9, being located within an active quarry. Update HSI assessments were also completed on 16 June 2023 for water bodies P1-P4, P6 and P7. No access was possible to waterbody P5, being located within private property, whilst access restrictions remained for waterbodies P8 and P9.
- 2.37 The HSI assessment follows a standardised assessment criteria using habitat features such as water quality, fish/waterfowl presence and surrounding terrestrial habitat quality to derive a suitability score, or 'index'. Water bodies with high scores are considered more likely to support great crested newt compared to those with lower scores. HSI scores and the inferred suitability of the waterbodies assessed to support great crested newt are described within **Table EDP 2.2**.

HSI Score	Waterbody Suitability to Support Great Crested Newts		
<0.5	Poor suitability		
0.5-0.59	Below average suitability		
0.6-0.69	Average suitability		
0.7-0.79	Good suitability		
>0.8	Excellent suitability		

 Table EDP 2.2: HSI Scores and Inferred Waterbody Suitability

Environmental DNA Sampling of Waterbodies

- 2.38 Environmental DNA (eDNA) is DNA that is collected from the environment in which an organism lives. In aquatic environments, animals including amphibians shed cellular material into the water via their saliva, urine, faeces, skin cells, etc. This eDNA may persist for several weeks, and can be collected through a water sample, and analysed to determine if the target species of interest (great crested newt) is/has been present in the water body.
- 2.39 Waterbodies **P1-P4**, **P6** and **P7** (**Plan EDP 8.14**) were subject to water sampling for eDNA on 21, 22 and 23 April 2020 by a suitably qualified and NRW licensed ecologist and assistant to confirm the presence/absence of great crested newt.

¹⁰ Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus). Herpetological Journal 10 (4), 143-155.

- 2.40 No water sampling was possible in respect of waterbodies P5, P8 or P9 at the time of the survey due to a lack of access, with waterbody P5 being located within private property and waterbodies P8 and P9 located within an active quarry. However, waterbody P5 was able to be subject to an eDNA survey on 19 April 2021 following granting of access at that time, whilst an update eDNA survey was also conducted of waterbody P6.
- 2.41 Further update eDNA surveys were also completed on 16 June 2023 in respect of waterbodies P1, P4 and P7 (Plan EDP 8.15). No water sampling was possible in respect of waterbodies P2, P3, P5, P6, P8 or P9 however, with waterbodies P2 and P6 surrounded by newly erected, barbed wire fencing preventing access, whilst waterbody P3 retained insufficient water to enable water sampling to be undertaken. Access restrictions also remained in place at the time of the survey in respect of waterbodies P5, P8 and P9.
- 2.42 During the eDNA survey, each water sample was undertaken by a suitably licensed ecologist and assistant in accordance with those methodologies set out by the Freshwater Habitats Trust¹¹ and using separate sterile equipment packs for the collection of eDNA samples. Briefly, the protocol involves:
 - Collecting 20 water samples from selected areas evenly spread around the accessible perimeter of the waterbody, including both open water and vegetated areas;
 - Collecting a ladle of water at each sampling location, stirring the water column without stirring up sediment, shaking the bag thoroughly once all 20 ladles are collected; and
 - Extracting 15ml of this mixed sample into six conical tubes per waterbody containing preserving fluid, shaken thoroughly to homogenize the sample.
- 2.43 Samples were analysed by SureScreen Scientifics for great crested newt eDNA, using real-time Polymerase Chain Reaction (PCR), as detailed within Biggs *et al.* (2014)¹².

Limitations

2.44 No significant limitations were identified for the great crested newt surveys.

Great Crested Newt Population Assessment

- 2.45 Due to the confirmation of great crested newt presence recorded for waterbodies P1, P2, P3, P4 and P7 during the 2020/2021 survey period, with positive eDNA results returned, further detailed surveys were therefore undertaken to determine population size.
- 2.46 Survey visits were undertaken with reference to the best practice guidelines¹³ by a licensed great crested newt survey licence and an assistant. In accordance with the guidelines, the

¹¹ N eDNA protocol, P. Williams, Freshwater Habitats Trust. August 2013.

¹² Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F 2014. Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA. Freshwater Habitats Trust, Oxford.

¹³ English Nature (2001). Great Crested Newt Mitigation Guidelines, English Nature, Peterborough.

following three preferred survey techniques were employed to determine the presence/absence of great crested newt on-site:

- Torching: This involves searching water bodies by torchlight between dusk and midnight and is an effective means of detecting adult newts. Each surveyor used a 1,000,000 candle power torch during this part of the survey;
- Bottle Trapping: This involves the use of funnel traps (made from 2-litre plastic bottles) that are inserted into the water along the margin of the water bodies during the evening and checked the following morning. Access permitting, the traps are spaced at roughly 2m intervals around the margins of the waterbodies; and
- Egg Searching: A search of any suitable aquatic vegetation to check for great crested newt eggs.
- 2.47 The standard survey procedure involved a minimum of six survey visits to each waterbody to allow for an estimation of population size. Where previous eDNA survey confirmed absence of great crested newt however, no further survey effort was necessary. As such, no such detailed surveys were completed in respect of waterbodies **P5** and **P6**, with an absence of evidence of great crested newt eDNA confirmed following surveys completed for these ponds during 2020 and 2021.
- 2.48 The dates of the survey visits and the conditions during the surveys are summarised in **Table EDP 2.3**.

Surveys				
Visit	Dates	Max/Min Overnight Air Temp. (°C)	Max/Min Overnight Water Temp. (°C)	Waterbodies Surveyed
1	29 April 2021	10/2	10.4/7.5	P1-P4 and P7
2	12 May 2021	8.6/7.2	10.6/10.1	P1-P4 and P7

12.6/11.6

20.3/15.6

17.3/14.5

23.4/19.1

Table EDP 2.3: Dates, Timings and Conditions for the Great Crested Newt Population Assessment

 Surveys

Limitations

18 May 2021

01 June 2021

10 June 2021

15 June 2021

11.6/7.5

25.2/15.3

19.3/11.4

17/13

3

4

5

6

- 2.49 The timing and conditions during the surveys are generally in line with those set out in the guidance and as such, it is not considered that they were limited by seasonal or climatic factors.
- 2.50 High turbidity and/or vegetation limited visibility in some waterbodies during the torchlight surveys and may have resulted in great crested newt being undetected. However, the survey design, which includes other survey techniques, is specifically intended to reduce the significance of this limitation.

P1-P4 and P7

P1-P4 and P7

P1-P4 and P7

P1-P4 and P7

Section 3 Results (Baseline Conditions)

3.1 This section of the Ecological Appraisal summarises the baseline ecological conditions determined through the course of desk-based and field-based investigations described in Section 2. In particular, this section identifies and evaluates those ecological features/receptors that lie within the Application Site's potential Zone of Influence, and which are pertinent in the context of proposed development. Further technical details are, where appropriate, provided within Appendices and on Plans to the rear of this report.

DESIGNATED SITES

Statutory Designations

- 3.2 Statutory designations represent the most significant ecological receptors, being of recognised importance at an international and/or national level. International designations include Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites. National designations include Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs). Local level statutory designations include Local Nature Reserves (LNRs).
- 3.3 No part of the Application Site is covered by any statutory designations. However, there are a number of such designations within the Application Site's potential Zone of Influence, as summarised in **Table EDP 3.1** and illustrated on **Plans EDP 8.2** and **8.3**.

Designation	Distance from Site (approx.)	Brief Description
International (30ki	m)	
Aberbargoed Grasslands SAC	6.6km west	42.5 hectare site. Qualifying features include <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils, and it's large and relatively isolated population of marsh fritillary butterfly (<i>Euphydryas aurinia</i>) located across a series of damp pastures and heaths, representing the species on the eastern edge of its range.
River Usk SAC	10km east (closest section)	Important for its fish populations including twaite shad (Alosa fallax), allis shad (Alosa alosa), Atlantic salmon (Salmo salar), bullhead (Cottus gobio), river lamprey (Lampetra fluviatilis), brook lamprey (Lampetra planeri) and sea lamprey (Petromyzon marinus). The site is also important for its otter (Lutra lutra) population and diverse and high-quality riparian habitats supported.

Table EDP 3.1: Statutory Designations Within the Application Site's Potential Zone of Influence

Designation	Distance from Site (approx.)	Brief Description
Usk Bat Sites SAC	12km north (closest section)	The Usk Bat Sites SAC supports dry heaths, raised and blanket bogs, calcareous rocky slopes, caves and <i>Tilio-Acerion</i> forests. Lesser horseshoe bat (<i>Rhinolophus hipposideros</i>) are also a qualifying feature. The SAC supports one of the largest maternity roosts of lesser horseshoe bats in the UK and a number of important hibernacula within the cave systems, comprising up to 5% of the UK population. A number of rare plant species and whitebeams are also found located throughout the SAC.
Cwm Clydach Woodlands SAC	12km north	Cwm Clydach is of particular importance for its stands of beech (<i>Fagus sylvatica</i>) dominated woodland which also support a number of rare and scarce vascular plants and fungi assemblages.
Severn Estuary SPA/SAC/ Ramsar	14km south-east	The Severn Estuary is important for migratory birds with its tidal flats and associated wetlands regularly supporting over 20,000 wintering waterfowl. Internationally important populations of five species of waterfowl are regularly supported by the estuary. These include European white-fronted goose (<i>Answer albifrons</i> <i>albifrons</i>), shelduck (<i>Tadorna tadorna</i>), gadwall (<i>Anas</i> <i>strepera</i>), dunlin (<i>Calidris alpina alpina</i>) and redshank (<i>Tringa totanus</i>). In addition, the islands of Flat Holm and Steep Holm support a nationally important breeding population of lesser black-backed gull (<i>Larus fuscus</i>). The Severn Estuary also regularly supports an internationally important population of Bewick's swan (<i>Cygnus columbianus bewickii</i>), an Annex I species. The estuary is also of importance for migratory fish with species such as allis shad, salmon, sea trout (<i>Salmo trutta</i>), sea lamprey, river lamprey, twaite shad and eel (<i>Anguilla anguilla</i>). The Severn Estuary is noted for its exceptional tidal range and associated unusual estuarine communities, reduced species diversity and high productivity. The estuary supports a diverse assemblage of habitats including Atlantic salt meadows, intertidal mudflats and sandflats, reefs and subtidal sandbanks.
Cardiff Beech Woods SAC	14km south-west	The SAC represents an area of semi-natural broadleaved woodland dominated by beech. Features of particular interest include <i>Asperulo-Fagetum</i> beech forests (45ha) and <i>Tilio-Acerion forests</i> of slopes, screes and ravines (30ha).
Sugar Loaf Woodlands SAC	18.5km north-east	This SAC supports an internationally important area of western sessile oak woodland as well as beech plantation woodland, heathland, bracken, scrub and grassland.
Coed y Cerrig SAC	23km north-east	Coed y Cerrig supports alluvial forests dominated by alder (Alnus glutinosa) and ash (Fraxinus excelsior).

Designation	Distance from Site (approx.)	Brief Description
Wye Valley and Forest of Dean Bat Sites SAC	25km east (closest point)	The Wye Valley and Forest of Dean Bats SAC is situated across the Wales-England border and is underpinned by four SSSI in Wales and nine in England. The SAC is particularly important for lesser horseshoe bat and greater horseshoe bat (<i>Rhinolophus ferrumequinum</i>) with breeding colonies for both species located within the SAC.
River Wye SAC	28km east	The site supports an important fish assemblage including species such as twaite shad, allis shad, Atlantic salmon, river lamprey, brook lamprey and sea lamprey. The site is also important for its otter and white-clawed crayfish (<i>Austropotamobius pallipes</i>) populations. A diverse and high-quality riparian corridor is also supported by the SAC.
Blaen Cynon SAC	28km north-west	Supports the largest metapopulation of marsh fritillary butterfly on the southern edge of the Brecon Beacons National Park.
Llangorse Lake SAC	28km north-west	Important for its aquatic and marginal plants, including several that are rare in this part of Wales. The site also supports several important habitats including submerged and floating plant beds, marginal swamp, fen vegetation, marshy grassland, unimproved grassland, willow scrub and wet woodland.
Wye Valley Woodlands SAC	28km east	A large woodland site which has some of the best examples of <i>Tilio-Acerion</i> forests of slopes, screes and ravines, <i>Asperulo-Fagetum</i> beech forests and <i>Taxus</i> <i>baccata</i> woods of the British Isles. In addition, lesser horseshoe bats use the woodlands for foraging during the breeding period.
Cwm Cadlan SAC	29km north-west	Cwm Cadlan is particularly important for its excellent examples of <i>Molinia</i> meadows and alkaline fens.
Brecon Beacons SAC	30km north-west	Designated for a range of habitats including calcareous and siliceous rocky slopes supporting rich flora, in addition to dry heaths and hydrophilous tall herb fringe communities of plains and of the montane to alpine levels.
National (15km)		
Ty'r Hen Forwyn SSSI	1.2km north	Ty'r Hen Forwyn is of special interest for its species-rich neutral grassland and for the association of this habitat with others including acid grassland, scrub, bracken and well-developed hedgerows.
Coed-y-Darren	3.8km	Designated for its geological interest.
Memorial Park Meadows Pontllanfraith SSSI	4.6km south-west	The site supports a large area of unimproved grassland made up of four fields which are the remnants of a traditionally managed farm.
Henllys Bog SSSI	4.6km south-east	Henllys Bog comprises a small fen with a species-rich ground flora. It is the only site in the County for marsh helleborine (<i>Epipactis palustris</i>).

Designation	Distance from Site (approx.)	Brief Description
Dan y Graig Quarry, Risca SSSI	5km south	Designated for its geological interest.
Penllwyn Grasslands SSSI	5.5km west	This site supports a mosaic of habitats including wet acid grassland, woodland, scrub and tall herb vegetation, alongside an extensive area of species-rich Molinia grassland representing the Juncus acutiflorus – Erica tetralix sub-community of the Molinia caerulea – Cirsium dissectum fen meadow type which is of very local distribution and confined to south-western Britain. The site also supports a diversity of macro-invertebrate communities with more than 12 species of butterfly and 90 species of macro-moths recorded including colonies of marsh fritillary butterfly.
Aberbargoed Grasslands SSSI/NNR	6.2km west	Aberbargoed Grasslands SSSI is of special interest for its marshy grassland communities and population of marsh fritillary butterfly. Part of Aberbargoed Grasslands SAC.
Llandegfedd Reservoir SSSI	7km east	Llandegfedd Reservoir is the largest inland open water habitat in the County and a regionally important area for overwintering wildfowl in Wales. The site is particularly important for the overall numbers and variety of wintering wildfowl, with large numbers of wigeon, pochard and mallard.
Siambre Ddu SSSI	8km north	The cave at the site is of particular interest for its population of hibernating lesser horseshoe bats which is the third largest hibernation site in Gwent for lesser horseshoe bat. Part of the Usk Bat Sites SAC.
Plas Machen Wood SSSI	8.2km south	The site comprises coppice woodland dominated by alder and supporting a diverse ground flora. A number of streams and waterlogged areas support an interesting flora.
Cwm Merddog Woodlands SSSI	8.4km north-west	Cwm Merddog Woodlands is of special interest for its stands of beech woodland close to the westerly limit of its geographical range. The lower slopes of the site support large areas of acid flushes with an open carr community dominated by alder and willows (<i>Salix spp.</i>).
Ruperra Castle and Woodlands SSSI	8.5km south	The site is of special interest for its maternity roost of greater horseshoe bat. The buildings at Ruperra Castle support a colony of greater horseshoe bats of national and international importance. Coed Craig Ruperra, the woodland area to the north of the roost, is also well used by the bats for foraging and commuting to more distant feeding and roosting areas. Also of interest are the site's populations of great crested newt and hazel dormouse.

Designation	Distance from Site (approx.)	Brief Description
Cefn Y Brithdir SSSI	9.2km west	The steep slopes of Cefn Y Brithdir hill support the best example in Mid Glamorgan of a dwarf shrub heath community in which crowberry occurs as a co-dominant species.
Cilwrgi Quarry	9.6km east	Designated for its geological interest.
Nelson Bog SSSI	9.7km west	Nelson Bog is of special interest for its range and diversity of mire communities. The SSSI is also an important ornithological site with over 90 species recorded.
Cwn-Ton, Glascoed SSSI	9.8km north-east	Designated for its geological interest.
Blorenge SSSI	9.8km north-west	A large upland site supporting sub-montane heath with large areas of <i>Calluna – Empetrum - Vaccinium vitis-idaea</i> , a community which is of local distribution in south Wales.
Llanbradach Quarry SSSI	10km south-west	Designated for its geological interest.
River Usk (Lower Usk) SSSI	10km east (closest section)	The River Usk (Lower Usk) is particularly important as a rare example of a large mesotrophic lowland river which has not been subject to significant manmade modification. The site is also important for its invertebrate assemblage, otter population, diverse flora, breeding bird assemblage and diverse and high-quality riparian habitats. Part of the River Usk SAC.
River Usk (Lower Usk) SSSI	10km east (closest section)	The River Usk (Lower Usk) is particularly important as a rare example of a large mesotrophic lowland river which has not been subject to significant manmade modification. The site is also important for its invertebrate assemblage, otter population, diverse flora, breeding bird assemblage and diverse and high-quality riparian habitats. Part of the River Usk SAC.
Wern Ddu Claypits SSSI	11km south	Primarily designated for its geological interest but supports an interesting range of plant and animal species which have colonised the old workings in the period since the cessation of commercial operations.
Cefn Onn SSSI	11.4km south	Cefn Onn is of special interest for its species-rich calcareous grassland and for its important population of frog orchid (<i>Coeloglossum viride</i>). Other priority habitats supported include lowland meadows and lowland dry acid grassland.
Brook Cottage, Llangybi SSSI	12km east	Designated for its geological interest.

Designation	Distance from Site (approx.)	Brief Description
Gwaun Gledyr SSSI	12km south-west	Gwaun Gledyr is of special interest for its extensive area of marshy grassland and smaller area of neutral grassland. These habitats are also associated with smaller areas of acid flush, wet heath, acid grassland and scrub. Broadleaved woodland also forms a significant percentage of the site, often as overgrown field boundaries; there is a large single area in the north-west of the site.
Gwent Levels St Brides SSSI	12.8km south-east	The Gwent Levels – Nash and Goldcliff SSSI is one of a series of SSSIs within the area between Chepstow and Cardiff known as the Gwent Levels. The Severn Estuary SSSI is contiguous with the southern boundary of this area. Of particular botanical interest as well as supporting a diverse aquatic invertebrate fauna including many nationally rare and notable species.
		The St Brides area support a number of interesting plant species, most notably thread-leaved water-crowfoot (<i>Ranunculus trichophyllus</i>) and small pondweed (<i>Potamogeton berchtoldii</i>). Reen bank and green lane habitats in this area are also important for relict meadow plant species. The St Brides area also supports rich invertebrate communities and is the only area on the Gwent Levels where the rare fly <i>Stenomicra cogani</i> has been recorded.
Fforestganol A Chwm Nofydd SSSI/LNR	13km south	Of special interest for its semi-natural broadleaved woodland. Includes wet woodland, and other habitats which add to the ecological and structural diversity of the site. The Cardiff Beech Woods SAC is included within this SSSI.
Cwm Clydach SSSI/NNR	13km north-west	Cwm Clydach is of particular importance for its stands of beech dominated woodland which also support a number of rare and scarce vascular plants including whitebeams (Sorbus spp.) and soft-leaved sedge (<i>Carex disperma</i>). Part of Cwm Clydach Woodlands SAC.
Priory Wood SSSI	13.3km north-east	Priory Wood is assessed to be the best remaining example of ancient semi-natural woodland on the Silurian rocks of the Usk Inlier.
Gilwern Hill SSSI	13.3km north	Gilwern Hill is particularly important for its areas of limestone grassland which support several species that are rare in the county.

Designation	Distance from Site (approx.)	Brief Description
Gwent Levels Rumney and Peterstone SSSI	13.5km south-east	The Gwent Levels – Nash and Goldcliff SSSI is one of a series of SSSIs within the area between Chepstow and Cardiff known as the Gwent Levels. The Severn Estuary SSSI is contiguous with the southern boundary of this area. Of particular botanical interest as well as supporting a diverse aquatic invertebrate fauna including many nationally rare and notable species.
		The Rumney and Peterstone area supports a number of important plant species including the nationally rare brackish water-crowfoot (<i>Ranunculus baudotii</i>) and several regional rarities. The northern section of this SSSI is a stronghold on the Gwent Levels for the flowering rush <i>Butomus umbellatus</i> . Also supports a high invertebrate interest.
Lanishen and Lisvane Reservoir Embankments SSSI	13.9km south	Llanishen and Lisvane Reservoir Embankments is of special interest for its diverse assemblage of grassland fungi, including over 25 species of waxcap <i>Hygrocybe</i> spp.
Lisvane Reservoir SSSI	13.9km south	Notified for its overwinter bird interest, including overwintering and passage migrants. Its boundary is contiguous with the inner boundary of the Llanishen and Lisvane Reservoir Embankments SSSI.
Cwm Llanwenarth Meadows SSSI	14km north	Two unimproved meadows supporting a diverse range of plant communities.
Mynydd Llangatwg (Mynydd Llangattock) SSSI (encompassing Craig Y Cilau NNR)	14.2km north-west	A large upland site comprising mostly common land along the Powys/Blaenau Gwent county boundary. The base-rich grassland, heather dominated blanket mire, and dry heath, are of special interest. The crags, woodland and grassland of the limestone escarpments also support important assemblages of rare and scarce vascular plants, bryophytes and lichens.
Penpergwm Pond SSSI	14.2km north-east	Penpergwm Pond is the best example of a natural mesotrophic water body in the county with a diverse emergent flora and a number of national and county rarities.

Designation	Distance from Site (approx.)	Brief Description
Severn Estuary SSSI	14.5km south-east	Notified for its internationally important populations of wintering and wading birds of passage, supporting estuarine habitats of ornithological significance. The estuary as a whole supports about 10.5% of the British wintering population and is the single most important wintering ground of dunlin in Britain. The SSSI also supports large populations of migratory fish and a range of saltmarsh habitats which are important for their botanical diversity, supporting several nationally scarce species. The estuary's intertidal zone of mudflats, sand banks, rocky platforms and saltmarsh is one of the largest and most important in Britain. Also designated as an SPA/SAC/Ramsar site.
Coed-Y-Person SSSI	15km north-east	A large area of ancient semi-natural woodland on the steep north facing lower slopes of the Blorenge mountain, which includes one of the most extensive areas of coppice beech in the county.
Gwent Levels Nash and Goldcliff SSSI	15.3km south-east	The Gwent Levels – Nash and Goldcliff SSSI is one of a series of SSSIs within the area between Chepstow and Cardiff known as the Gwent Levels. The Severn Estuary SSSI is contiguous with the southern boundary of this area. Of particular botanical interest as well as supporting a diverse aquatic invertebrate fauna including many nationally rare and notable species. The Nash and Goldcliff area forms and important part of the Gwent Levels system and is of particular botanical interest, being the only area in Wales for the least duckweed (<i>Wolffia arrhiza</i>). Also supports a high invertebrate interest.
Gwent Levels Whitson SSSI	17.3km south-east	The Gwent Levels – Whitson SSSI is one of a series of SSSIs within the area between Chepstow and Cardiff known as the Gwent Levels. The Severn Estuary SSSI is contiguous with the southern boundary of this area. Of particular botanical interest as well as supporting a diverse aquatic invertebrate fauna including many nationally rare and notable species. The Whitson aera is of particular importance for its large number of nationally rare and notable invertebrate species, and for its botanical interest, containing the nationally rare hairlike pondweed (<i>Potamogeton</i> <i>trichoides</i>) and is the only location in Gwent for the tussock sedge (<i>Carex elata</i>).
Llanover Quarry SSSI	11.2km north-east	Designated for its geological interest.

Non-statutory Designations

- 3.4 Non-statutory designations are also commonly referred to in planning policies as 'local sites' and are typically considered to be of importance at a County level. In CCBC such designations are named Sites of Importance for Nature Conservation (SINCs). Additional designated sites which should be considered at this level include Local Nature Reserves (LNRs) and Ancient Semi Natural Woodland (ASNW), where these are not covered by other designations.
- 3.5 There are no SINCs which overlap within the Application Site itself. However, a number are present within its immediate vicinity, as summarised in **Table EDP 3.2**. Additional SINCs within 5km of the Site are illustrated on **Plan EDP 8.4**.

Designation	Local Authority	Brief Description
Local (SINC)		
Pwllgwinau, East of Newbridge	Pond P7 on-site (southern parcel).	Muddy pond surrounded by semi-improved pasture with little emergent or aquatic vegetation. Notable for great crested newt, palmate newt, smooth newt and common frog.
Mynydd Maen, East of Newbridge	Adjacent to the northern and central parcels.	Comprises a large upland common with extensive areas of acid grassland, heath and bracken with a number of indicator species. Locally significant bryophyte species also present. Secondary features include rock outcrops/dry stone walls, marshy grassland, semi-improved acid grassland aquatic features.
Coed Cil-Lonydd, East of Newbridge	Adjacent to the northern parcel.	This SINC follows the course of two branches of the wooded Nant Gawni stream and includes two adjoining woodland blocks of former ancient woodland on the steep valley sides. Adjoining woodland SINC areas support a mix of semi-natural woodland.
Gwydon Valley Woodlands, Abercarn	Adjacent to the central and southern parcels.	Large area of forestry plantation on the site of former ancient woodland. Supports large beech trees and areas of larch plantation. Rock outcrops/dry stone walls and streams present.
Cwm Hafod-Fach Woodlands, North of Abercarn	Adjacent to the southern parcels.	An area of mixed woodland on sloping valley-sides surrounding a working quarry. Most of the woodland is classed as semi-natural or cleared/replanted ancient woodland. Acid grassland and heath occurs locally in open areas in the upper parts of the valley.
Craig Gwent Wood Ancient Woodland	328m north of the northern parcel.	Ancient woodland mostly replanted with conifers but a narrow strip of broadleaved woodland remains.

Table EDP 3.2: Non-statutory Designations Within 1km of the Application Site

Designation	Local Authority	Brief Description
Coed Ffordd-Fawr, Abercan	420m south-west of the southern parcel.	A strip of semi-natural Beech woodland on a north-west-facing slope, largely surrounded by roads and housing. There is a steep-sided former quarry to the western part of the site. The quarry base, which is occupied by industrial units, is excluded from the SINC, but its sides and ledges support a mix of heath and scrub species.
Coedcae Watkin Dafydd, East of Crumlin	445m north of the northern parcel.	A north-west-facing slope supporting a mix of conifer plantation and patches of broadleaved woodland. Patches of acid grassland and flush species supported.
Swffryd Wood	559m north of the northern parcel.	No information provided.
Cefn y Crib	660m north of the northern parcel.	Acid and calcareous grassland habitat supported, as well as ancient woodland. Good diversity of grassland fungi and sedges supported.
Pontbren, North of Crumlin	668m north of the northern parcel.	A beech and oak woodland on a steep-south-east facing slope with Bracken and acid grassland communities to the north-eastern and south-western sides. Sheep graze the woodland and there is little understorey and a relatively sparse ground flora. There is evidence of former quarry working near to the top of the slope. The open area to the south-west contains several large stumps and may once have also been woodland. Areas of bracken are interspersed with pockets of acid grassland and heath, particularly on the higher ground.
River Ebbw	734m west.	This SINC comprises the full length of the River Ebbw within the county borough and adjacent semi-natural habitats. Represents a significant linear wildlife corridor for fish species and otter.
Monmouth to Brecon Canal	785m.	This canal forms an important linear corridor for a variety of species. Supports wetland habitat with good bankside plant communities and broadleaved woodland with an assemblage of semi-natural indicator species.
Swffryd Quarry	856m north of the northern parcel.	Supports oak woodland with a species-rich ground flora. Acidic pasture also present.
Tyle-Coch Wood, North of Abercan	874m south-west of the southern parcel.	An area of mixed woodland occupying former cleared ancient woodland on an east-facing slope. A disused railway line runs through the woodland. Supports rock exposures and scrub.

Designated Sites – Important Ecological Features (IEFs)

3.6 In respect of those habitats and species supported by the above designated sites, and in consideration of their distance, separation and connectivity to the Application Site, the potential for direct or indirect impact pathways to occur as a result of the

proposed development will require further consideration for those designations listed at **Table EDP 3.3**.

Potential IEF	Distance from Site and Key Attributes	Nature Conservation Importance
Designated Sites		
Local Sites		
Pwllgwinau, East of Newbridge SINC	Comprises waterbody P7 , located within the southern parcel, supporting amphibian populations including great crested newt, palmate newt, smooth newt and common frog.	Local
Mynydd Maen, East of Newbridge SINC	Adjacent to the northern and central parcels. Comprises a large upland common with extensive areas of acid grassland, heath and bracken with a number of indicator species. Locally significant bryophyte species also present. Secondary features include rock outcrops/dry stone walls, marshy grassland, semi-improved acid grassland aquatic features.	Local
Coed Cil-Lonydd, East of Newbridge SINC	Adjacent to the northern parcel. This SINC follows the course of two branches of the wooded Nant Gawni stream and includes two adjoining woodland blocks of former ancient woodland on the steep valley sides. Adjoining woodland SINC areas support a mix of semi-natural woodland.	Local
Gwydon Valley Woodlands, Abercarn SINC	Adjacent to the central and southern parcels. Large area of forestry plantation on the site of former ancient woodland. Supports large beech trees and areas of larch plantation. Rock outcrops/dry stone walls and streams present.	Local
Cwm Hafod-Fach Woodlands, North of Abercarn SINC	Adjacent to the southern parcel. An area of mixed woodland on sloping valley-sides surrounding a working quarry. Most of the woodland is classed as semi-natural or cleared/replanted ancient woodland. Acid grassland and heath occurs locally in open areas in the upper parts of the valley.	Local
Craig Gwent Wood Ancient Woodland SINC	Adjacent to the northern and central parcels. Comprises a large upland common with extensive areas of acid grassland, heath and bracken with a number of indicator species. Locally significant bryophyte species also present. Secondary features include rock outcrops/dry stone walls, marshy grassland, semi-improved acid grassland aquatic features.	Local

Table EDP 3.3: Potential IEFs (Designated Sites) Within the Study Area's Potential Zone of Influence

Potential IEF	Distance from Site and Key Attributes	Nature Conservation Importance
River Ebbw SINC	734m west at its closest point, but potentially hydrologically connected through seasonally wet ditch in the northern parcel and from any contaminated run-off from all parcels.	Local

3.7 All other statutory and non-statutory designations are not considered likely to be directly or indirectly affected by the Development due to their spatial separation from the Application Site, their interest features and/or lack of any habitat or hydrological connections. These sites have been scoped out of the assessment accordingly.

HABITATS

3.8 Information on habitats within and around the Application Site was obtained during the desk study, Extended Phase 1 survey and detailed botanical survey, as further detailed at **Appendices EDP 1** and **2**. The distribution of the different habitat types within and adjacent to the Application Site is further illustrated on **Plan EDP 8.5**. The main habitat types present are described in turn below.

Habitats – Main Site

Plantation Woodland

3.9 A band of plantation woodland occurs along the south-eastern edge of the northern parcel, dominated by spruce (*Picea sp.*) with alder (*Alnus glutinosa*) also occurring rarely along the woodland edge. Although grazing is suppressed by a fence running along the entire perimeter of this woodland, the understorey and ground layer are otherwise sparse, with holly (ex aquilinum), bramble (*Rubus fructicosus agg.*) and foxglove (*Digitalis purpurea*) occurring rarely.

Scattered Trees

3.10 Field boundaries predominantly comprise lines of mature beech (*Fagus sylvatica*) trees. Beech trees are on average 20m tall with cavities and other features suitable for roosting bats being common. Past laying of beech is evident, with remnant hedgebanks remaining in places.

Hedgerows

- 3.11 A total of 5 hedgerows (**H1-H5**) occur across the Application Site, with hedgerows **H1-H4** located within the northern parcel and hedgerow **H5** located within the southern parcel. These hedgerows are described further below.
- 3.12 Hedgerow **H1** is located within the north-west corner of the northern parcel, alongside an unnamed road running through the Application Site. The hedgerow appears to be largely unmanaged, measuring approximately 15m high and 2m wide. The hedgerow is defunct with several gaps and semi-mature trees. The canopy is dominated by semi-mature beech trees with an intermittent shrub layer comprising holly, elder (*Sambuca nigra*) and hazel (*Corylus avellana*). Bracken (*Pteridium aquilinum*), foxglove and bluebell

(*Hyacinthoides non-scripta*) occur occasionally, with bramble becoming dominant to the west.

- 3.13 Hedgerows H2-H4 are located towards the approximate centre of the northern parcel and have access gaps at their north-west and south-west extremities. These hedgerows occur atop earth banks and measure approximately 2m high and 1.5m wide, with post and wire fencing around their perimeters. All hedgerows appear to be regularly flailed, with hedgerow H2 and H3 becoming relatively gappy throughout their length. The woody component of the hedgerows are species poor, with H1 comprising hawthorn (*Crataegus monogyna*), beech and elder, H2 comprising hawthorn, holly and elder, and H3 comprising hawthorn, beech and holly. In all three hedgerows, hawthorn is the dominant woody species. The understorey of the hedgerows is species poor, with bracken being dominant and bramble, foxglove and lords-and-ladies (*Arum maculatum*) occurring occasionally.
- 3.14 Hedgerow **H5** is located in the southern parcel and comprises a species-poor non-native hedgerow running alongside a driveway leading to the main farmhouse. The hedgerow appears to be managed with dimensions of 2m high and 1.5m wide.
- 3.15 Other boundary features present throughout the Application Site include post and wire fencing, stone walls and earth banks colonised by grassland vegetation.

Scrub

3.16 Scrub habitat, characterised by hawthorn and bramble, is typically limited in extent, being predominantly associated with field margins and boundaries, particularly across field Parcels A and C.

Arable

3.17 Fields **F4** and **F10** within the northern parcel comprise arable land. The 2021 survey confirmed these fields to be sown with fodder beet and exhibiting only a poor arable weed flora, although corn spurrey (*Spergularia arvensis*) was found to be locally common within the field margins at the time of the survey. This species has experienced a considerable national decline in recent years and is listed as 'Vulnerable' in The Vascular Plant Red Data List for Great Britain (2005) and 'Near Threatened' in the Vascular Plant Red List for Wales (2008). The update botanical survey in 2023 however confirmed these fields to currently support arable ley, having been recently sown with perennial rye-grass (*Lolium perenne*), and thus of very low botanical value.

Improved and Poor Semi-improved Grassland

- 3.18 The majority of the fields comprising parcels A, B and C support improved or poor semi-improved grassland of very low botanical value. At the time of surveys in 2021 and 2023, many fields had been mown, with parcels A and B heavily grazed by sheep. The southern parcel was subject to a less intense grazing regime during the survey with cattle also grazing the fields across its southern extent.
- 3.19 In respect of the northern parcel, improved grassland fields (**F1-F3** and **F5-F7**) located across the southern half of this parcel support grassland swards dominated by perennial rye-grass, common bent (*Agrostis capillaris*) and creeping buttercup (*Ranunculus repens*), with much broad-leaved dock (*Rumex obtusifolius*) and other dock (*Rumex spp.*) species

also present. Corn spurrey was also recorded as occasional within field **F2**, whilst yellow rattle (*Rhinanthus minor*) also present across the western third of field **F7**. This latter species was noted to be locally common during the 2021 survey but only rarely recorded within field **F7** during the update botanical survey in 2023.

- 3.20 Improved grassland fields (**F11-13**, **F15**, **F16**, **F19** and **F20**) to the north of the minor public highway within the northern parcel comprise swards dominated by perennial rye-grass, common bent and/or white clover (*Trifolium repens*). Other species recorded include common sorrel (*Rumex acetosa*) ribwort plantain (*Plantago lanceolata*), common cat's-ear (*Hypochaeris radicata*), meadow buttercup (*Ranunculus acris*) and yarrow (*Achillea millefolium*). Of note, corn spurrey was also recorded as locally abundant along an unsurfaced track which bisects field **F19**.
- 3.21 Poor semi-improved grassland fields which occur across the northern parcel include fields **F8**, **F9**, **F14**, **F17** and across the majority of field **F18**. Additional species recorded here include brown bent (*Agrostis vinealis*), creeping soft-grass (*Holcus mollis*), sheep's sorrel (*Rumex acetosella*), common bird's-foot trefoil (*Lotus corniculatus*), yarrow and common cat's-ear.
- 3.22 In respect of the grassland field comprising the central parcel, this comprises an agriculturally-improved sward mown for hay. The sward is dominated by perennial rye-grass, Yorkshire fog (*Holcus lanatus*) and common bent, with yellow rattle also common here.
- 3.23 A total of 23 fields comprise the southern parcel, most of which are contiguous but with a block of five fields separated from the rest by a minor public highway. Some of these fields were grazed by beef cattle at the time of survey whilst others have experienced very light, possibly unintentional sheep grazing. Mowing has also occurred across some fields in the past. Most of the fields here had very slight southerly or westerly gradients and appeared well-drained. Fields F6-F8, most of field F9, and fields F12, F14 and F16 support improved grassland, with forb species limited to occasional occurrences of common cat's-ear and yarrow. Black knapweed (*Centaurea nigra*) was also recorded on occasion within the margins of field F8. Areas of disturbed ground and improved grassland flanking the edges of field F9 were also found to support corn spurrey. Much disturbed and bare ground also occurs across field F12.
- 3.24 The vast majority of fields within the southern parcel otherwise support poor semi-improved grassland (fields F1-F5, F10, F11, F13 and F17-F23). Herbs frequently occurring include common bird's-foot trefoil, white clover, ribwort plantain and common cat's-ear. Small quantities of harebell (*Campanula rotundifolia*), soft rush (*Juncus effusus*) and sheep's sorrel (*Rumex acetosella*) were also noted within field F2. A small quantity of black knapweed was also previously recorded for field F10 during the 2021 survey; however, this field has since been subject to heavy disturbance, with dense nettle (*Urtica dioica*) growth observed across this field during the update 2023 survey. Selfheal (*Prunella vulgaris*) was also recorded for fields F17 and F18, whilst yellow rattle, common cat's-ear, black knapweed and lesser stitchwort (*Stellaria graminea*) were also recorded across fields F19 F23.

Semi-improved Neutral Grassland

- 3.25 Semi-improved neutral grassland habitat is present within the southern part of field **F8** within the northern parcel, exhibiting a steep southerly aspect. Semi-improved neutral grassland is restricted to the steepest, central parts of this field, supporting abundant common cat's-ear, frequent selfheal and lesser stitchwort. Harebell (*Campanula rotundifolia*) and yarrow were recorded as occasional/locally frequent here.
- 3.26 The north-eastern corner of field **F18** within the northern parcel also supports semi-improved neutral grassland, with creeping soft-grass and sweet vernal-grass (*Anthoxanthum odoratum*) frequently recorded, and germander speedwell (*Veronica chamaedrys*) and eyebright (*Euphrasia sp.*) occasionally recorded. Rare occurrences of harebell were also noted.
- 3.27 Field F15 within the southern parcel also comprises semi-improved neutral grassland, with common cat's-ear and selfheal occurring frequently, black knapweed occasional and tormentil (*Potentilla erecta*), harebell, marsh thistle (*Cirsium palustre*) and soft rush rare. No species of note was otherwise recorded. A small area of semi-improved neutral grassland also occurs within the north-east of field F10 where a small quantity of black knapweed and common cat's-ear was recorded, in addition to a small area along the eastern edge of field F11 where some common cat's-ear, red fescue (*Festuca rubra*) and selfheal occur.

Acid Grassland

- 3.28 Within the southern parcel, two very small areas within agricultural improved grassland fields **F9** and **F13** support residual, species-rich unimproved acid grassland, currently subject to unsympathetic management.
- 3.29 Within field **F9** of the southern parcel, relict patches of species-rich, unimproved acid grassland occur along its eastern edge, with notable plants recorded here including sheep's-bit (*Jasione montana*), brown bent, mouse-ear hawkweed (*Pilosella officinarum*), harebell, early hair-grass (*Aira praecox*), black knapweed and tormentil. Debris and soil have been deposited here, restricting the extent of this area, with corn spurrey recorded within the ruderal and ephemeral flora establishing here.
- 3.30 A small patch of species-rich, unimproved acid grassland is also supported along the southern edge of field **F13** of the southern parcel, with species of note including harebell, tormentil, mouse-ear hawkweed, sheep's sorrel, brown bent, heath bedstraw (*Galium saxatile*), and devil's-bit scabious (*Succisa pratensis*), with timber/wood debris and past fires restricting its establishment.

Bracken

3.31 Small areas of scattered bracken occur along the several of the field margins within parcels A-C. A 5-10m wide fringe of dense bracken is also present on southern edge of field **F8** within the northern parcel.

Tall Ruderal and Ephemeral/Short Perennial Vegetation

- 3.32 There are isolated areas of tall ruderal vegetation within the northern parcel, predominantly in association with farmyards and associated outbuildings present therein. Typical species include common nettle (*Urtica dioica*), broad-leaved dock (*Rumex obtusifolius*), spear thistle (*Cirsium vulgare*), creeping thistle (*Cirsium arvense*), willowherb sp. (*Epilobium sp.*) and soft rush (*Juncus effusus*). Smaller areas of common nettle are present throughout the Application Site, predominantly associated with field corners.
- 3.33 The northern half of Field **F14** within the northern parcel also supports a vegetated, raised mound of rubble and subsoil circa 3m higher than the rest of the field, with tall ruderal and ephemeral/short perennial vegetation supported alongside poor semi-improved grassland. Species of note include common mouse-ear (*Pilosella officinarum*) recorded occasionally, along with rare occurrences of sand spurrey (*Spergularia rubra*).

Standing Water

- 3.34 A total of nine waterbodies occur within 500m of the Application Site. In respect of the northern parcel, one waterbody, P2 occurs within its easternmost field, with waterbodies P1 and P3-P5 situated within 250m and waterbody P6 situated within 500m of its boundaries.
- 3.35 In respect of the southern parcel, one waterbody, **P7** is located towards its north-eastern end, with a further two water bodies, **P8** and **P9**, situated beyond 250m to the west of this field parcel within a quarry.

Buildings

3.36 Residential, farm and associated outbuildings are present within parcels A and C, some of which are in current use, others of which are run down and dilapidated. Caravans and other machinery are also present within the southern parcel.

Bare Ground and Quarry

- 3.37 Patches of bare ground largely associated with the heavy use of machinery and prolonged gathering of livestock are spread throughout parcels A and C.
- 3.38 An infilled quarry also occurs along the northern edge of the northern parcel, whilst active quarrying was also noted across the northern half of field **F14** within The northern parcel, situated to the immediate east of a vegetated, raised mound of rubble and subsoil.

Overall Habitat Value – Application Site

- 3.39 With respect to the northern parcel, this is subject to intensive agricultural management, resulting in very species-poor swards. However, there is some botanical interest given the localised occurrence of corn spurrey, a species classed as 'Near Threatened' in the Vascular Plant Red List for Wales.
- 3.40 With respect to the central parcel, this comprises a single field which supports a poor semi-improved sward, albeit with localised frequencies of yellow rattle.

- 3.41 The southern parcel consists almost entirely of species-poor improved and otherwise heavily modified swards of low botanical interest. However, two small relict areas of species-rich acid grassland remain within the larger agriculturally improved fields **F9** and **F13**, albeit subject to very unsympathetic management at the time of the survey.
- 3.42 Overall, the vast majority of the Application Site is thus considered of very low botanical value, with exception to two small areas of species-rich, unimproved acid grassland present within the larger agriculturally improved fields **F9** and **F13** within the southern parcel.

Habitats – Access Route

3.43 Information on those habitats associated with the proposed access route to the immediate west of the northern parcel comprising the Application Site was obtained during the update desk study and detailed botanical survey undertaken during August 2023. The distribution of the different habitat types associated with the access route is illustrated on **Plan EDP 5**. The main habitat types present are described in turn below.

Broadleaved Woodland and Scrub

3.44 An area of young scrub woodland occurs in association with field **F27** and adjacent track. Young goat willow (*Salix caprea*), grey willow (*Salix cinerea*), beech, hazel, silver birch and hawthorn occurs here, with an understorey dominated by bracken, nettle, bramble ad ivy (*Hedera helix*), along with some Montbretia (*Crocosmia x crocosmiiflora*). The scrub woodland bounds a 1m wide species-poor grass verge on the roadside edge, whilst an unsurfaced track runs through the south-western part of this scrub with much bracken and scattered scrub present here.

Field Boundaries

- 3.45 Field boundaries associated with the access road comprise predominantly hedgerows, most of which are defunct and in poor condition. Tree lines and stone walls are also present. Field boundaries are further described below.
- 3.46 Boundary **B1** aligns the southern edge of the road forming the access route and comprises northern boundaries of fields **F21**, **F22** and most of **F23**. This boundary comprises a species-poor hedgerow and drystone wall with flailed self-sown scrub. The hedgerow itself measures circa 1.5m height and 1m wide, its eastern section along fields **F21** and **F22** being largely intact and sitting atop a steep roadside bank. Dominated by beech, other species present within this hedgerow include holly, hazel, blackthorn (*Prunus spinosa*) and bramble. Other species occasionally present include elder, hawthorn, English oak (*Quercus robur*), dog rose (*Rosa canina* agg.) and ash. Bracken otherwise dominates the base of this boundary feature, with scaly male fern (*Dryopteris affinis*), bluebell occasionally recorded together with a single specimen of climbing corydalis (*Ceratocapnos claviculata*).
- 3.47 Hedgerows B2 and B3 form the western corner of field F23 and measure circa 2m in height and 1-1.5m wide. Both hedgerows are intact and subject to regular management. In respect of hedgerow B2, hazel is the dominant species with beech abundant, whilst rowan (Sorbus aucuparia), bramble and holly are also present. Holly and blackthorn otherwise dominate hedgerow B3.

- 3.48 Hedgerows **B4** and **B5** form the eastern and northern boundaries of field **F25** respectively. The eastern boundary hedgerow **B4**, whilst laid in the past is currently defunct, with beech, ash, hazel and hawthorn present. The northern boundary hedgerow **B5** in contrast is relatively intact and subject to regular management, measuring approximately 3m in height and 1.5m wide and supporting additional species such as blackthorn and crab apple (*Malus sylvestris*).
- 3.49 Similar to boundary hedgerows B2 and B5, B6 is largely well-managed and intact, aligning the access route and forming the south-eastern boundary of field F26. Sitting atop a low bank and adjacent to a narrow roadside verge, species supported include beech, hawthorn, hazel, ash, holly and elder. Three young English oak standards are also present, along with bramble. Gated access along this hedgerow allows access into the adjacent livestock corral within field F26. Boundary B7 forms the north-western boundary of field F26, and comprises two disjunct sections of a mature, defunct hedgerow, supporting beech, ash, hawthorn, holly and hazel.
- 3.50 Boundary hedgerow **B8** aligns the northern edge of the access road and forms the southern boundaries of fields **F28** and **F29**. Its western extent is largely species-poor, intact and unmanaged, reaching heights of circa 6m tall and widths of 1-1.5m, and supporting mature hazel, hawthorn, blackthorn and holly. Its eastern extent otherwise comprises a line of mature and semi-mature beech trees. Ground flora supported within the hedge base, where present, include violet, barran strawberry (*Potentilla sterillis*), foxglove (*Digitalis purpurea*) and male fern (*Dryopteris filix-mas*).
- 3.51 Boundaries **B9** and **B10** forming the western and eastern boundaries of field **F29** respectively comprise treelines dominated by mature beech, with some hazel, ash, hawthorn and holly, with post and wire fencing present in places.
- 3.52 Boundary **B11** extends along the southern and western edges of fields **F21-F23** and comprises a defunct, species-poor hedgerow atop degraded banks dominated by semi-mature beech trees. Other species present include holly, ash, rowan, hawthorn, blackthorn and English oak. No notable ground flora was recorded in association with this boundary feature.
- 3.53 Boundary **B12** forming the eastern boundary of field **F21** comprises an intact, species-poor hedgerow measuring circa 1.5m tall and 1m wide, dominated by hawthorn, holly and bramble, with much nettle at the hedge base.

Improved and Poor Semi-improved Grassland

- 3.54 The majority of the fields associated with the access route support improved or poor semi-improved grassland of very low botanical value, as further described below.
- 3.55 Fields **F21** and **F23** support improved grassland. Field **F21** was subject to light grazing at the time of the survey, with botanical interested limited to very localised concentrations of corn spurrey, whilst field **F23** was ungrazed and with no notable botanical species recorded.
- 3.56 Poor semi-improved grassland fields include **F22** subject to light grazing, with botanical interest limited to occasional records of corn spurrey and lesser stitchwort. Most of **F24** also comprises poor semi-improved grassland, in addition to fields **F24**, **F25**, **F26**, **F29** and **F30**.

Grasses typically present include perennial rye-grass, common bent, creeping bent (*Agrostis stolonifera*), red fescue, creeping soft-grass, Yorkshire fog, crested dog's-tail, cocksfoot (*Dactylis glomerata*), and sweet vernal-grass. Forbs include greater plantain (*Plantago major*), ribwort plantain, silverweed (*Potentilla anserina*), white clover, common bird's-foot trefoil, common cat's-ear, common mouse-ear, creeping thistle, lesser stitchwort, creeping buttercup and soft rush. Species of note were only occasionally/rarely recorded however, and include black knapweed, self-heal (*Punella vulgaris*) and corn spurrey in field **F26**, pignut (*Conopodium majus*) and field wood-rush (*Lluzula campestris*) in field **F29** and harebell, eyebright, field wood-rush and violet (*Viola sp.*) in field **F30**.

Acid Grassland

3.57 To the north of the poor semi-improved grassland sward within field **F24** lies a small area of unimproved acid grassland which includes some tormentil (*Potentilla erecta*), common bird's-foot trefoil, lesser stitchwort, common cat's-ear, harebell and perforate St. John's-wort (*Hypericum perforatum*).

Bracken

3.58 A stand of dense bracken occurs along the southern boundary of field **F24**.

Overall Habitat Value – Access Route

3.59 Fields associated with the access route are generally species-poor and typically comprise improved grassland swards with no botanical value. The vast majority of the field boundaries across the southern extent are also highly fragmented, whist intact hedgerows are generally species-poor and in poor condition. Overall, therefore, habitats associated with the access route have very low botanical value.

Habitats - Important Ecological Features (IEF)

3.60 Those habitat types supported by the Application Site including the proposed access route to the immediate west of the northern parcel considered likely to be impacted by the proposed development and which require further consideration, are listed in **Table EDP 3.4**.

Potential IEF	Key Attributes	Nature Conservation Importance
Habitats		
Plantation woodland.	Coniferous woodland block relatively uniform in age and structure.	Site
Treelines and hedgerows.	Priority Habitat. Where present, hedgerows are predominantly defunct and species poor. Field boundaries across agricultural land otherwise defined by lines of semi-mature and mature trees dominated by beech.	Local

Table EDP 3.4: Potential IEFs (habitats) within the Application Site's Potential Zone of Influence

Potential IEF	Key Attributes	Nature Conservation Importance
Broadleaved woodland and scrub.	Priority Habitat. Low distinctiveness and small in extent.	Site
Dense/scattered scrub.	Low distinctiveness and small in extent.	Site
Unimproved acid grassland.	Priority Habitat and species-rich but very restricted in extent, occurs within larger agriculturally improved fields and subject to unsympathetic management.	Site-local
Semi-improved neutral grassland.	Relatively diverse but limited in extent.	Site
Poor semi-improved grassland.	Species-poor grassland, low distinctiveness.	Site
Improved grassland.	Species-poor grassland, low distinctiveness.	Site
Bracken.	Low distinctiveness and limited in extent.	Negligible
Tall Ruderal Vegetation.	Low distinctiveness and limited in extent.	Negligible
Aquatic features.	Priority habitat. Two waterbodies present onsite, a further seven situated within 500m of the parcel boundaries.	Local
Built Structures.	Residential properties and farm buildings present on-site.	Negligible

PROTECTED AND/OR NOTABLE SPECIES

3.61 The likelihood of presence, or confirmed presence, of protected/and or notable wildlife species within the Application Site is summarised below, with reference to desk study records, habitat suitability and detailed surveys where relevant. Further details are made available within the appendices and plans where referenced.

Bats

- 3.62 All species of British bat comprise European Protected Species (EPS) and are protected under the Conservation of Habitats and Species Regulations 2017 (as amended), making it an offence to:
 - Deliberately capture, injure or kill a wild animal of an EPS;
 - Deliberately disturb wild animals of an EPS wherever they are occurring, in particular, any disturbance which is likely to impair their ability to survive, to breed or reproduce, to significantly affect the local distribution or abundance of the species to which they belong, or in the case of hibernating or migratory species, to hibernate or migrate; or
 - Damage or destroy a breeding site or resting place of a wild animal of an EPS.
- 3.63 Additional protection for bats is also afforded under the Wildlife and Countryside Act 1981 (as amended), making it an offence to intentionally or recklessly disturb bats whilst they are
occupying a structure or place which is used for shelter or protection, or to obstruct access to this structure or place. In addition, common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*), greater horseshoe bat, barbastelle bat (*Barbastella barbastellus*), Bechstein's bat (*Myotis bechsteinii*), noctule (*Nyctalus noctula*), and lesser horseshoe bat are also listed as priority species.

3.64 The desk study returned records from 2003 for bat roosts relating to Natterer's bat (*Myotis nattereri*) and long-eared bat (*Plecotus sp.*) to the immediate south of the northern parcel within Blaengawney Farm. A maternity roost for long-eared bat was also returned from 2021, located circa 356m to the west of the southern parcel. Additional records returned within the vicinity of the Application Site relate to the built-up areas of Crumlin, Newbridge, Abercarn and Cwmcarn surrounding the Application Site. In respect of Annex II species, a number of records were returned for greater horseshoe bat and lesser horseshoe bat, the closest roost being a day roost of a single greater horseshoe bat located circa 1.4km west of the site recorded in 2022. In respect of barbastelle bat, only a single record was returned, located circa 1.8km to the west of the site and recorded in 2021. No records for Bechstein's bat were returned, however. Other roost records relating to common pipistrelle, soprano pipistrelle, and lesser horseshoe, long-eared, noctule and myotid (*Myotis* spp.) bats were also returned.

Investigations of Bat Foraging/Commuting Activity

3.65 Bat foraging and commuting activity recorded during the course of both transect and automated detector surveys undertaken between May 2020 and August 2023 is summarised below. The following should be read in conjunction with the manual transect and automated detector survey results presented at **Appendices EDP 4** and **5** respectively, illustrated in **Plans EDP 8.16** –**8.30**.

Species Diversity and Abundance

- 3.66 A total of nine bat species/species groups (Myotis and Plecotus species were not always identified to species level) were recorded foraging and/or commuting across the study area between May and October 2020, April and October 2021 and June and August 2023, including the following species: common pipistrelle, soprano pipistrelle, long-eared bat species, myotis bat species, noctule, serotine, and lesser horseshoe bat. In addition, greater horseshoe bat and Nathusius' pipistrelle (*Pipistrellus nathusii*) were also recorded during the automated detectors surveys in 2020 and 2021 respectively.
- 3.67 Species diversity was broadly consistent between the current proposed locations for wind turbines (static detector locations 3, 6 and 7). Species diversity and activity was highest during the summer months, with lower diversity and activity in spring and autumn.
- 3.68 In respect of 2020 data, on average, circa 750 bat registrations were recorded per automated detector per month deployed, with levels of activity greatest during the month of August (1,312 registrations per detector on average), followed by: June (1,177 registrations), July (1,155 registrations) May (501 registrations), September (284 registrations), and October (70 registrations).

- 3.69 The vast majority of registrations recorded by the automated detectors relate to common pipistrelle (91.4%), followed by soprano pipistrelle (2.96%) and Myotis bat species (2.1%). Big bats, including noctule and serotine, made up a further 3.2% of registrations, with long-eared bat (0.23%), lesser horseshoe bat (0.08%) and greater horseshoe bat (0.03%) otherwise rarely recorded.
- 3.70 In respect of the 2020 walked transects (**Plans EDP 8.16 8.21**), common pipistrelle also dominated bat activity, comprising 86% of bat activity recorded, followed by soprano pipistrelle, (6.3%), Myotis bat species (4.1%) and long-eared bat (3.4%). Remaining calls related to lesser horseshoe (0.1%) and noctule (0.1%), with only one pass recorded in June and July respectively, in association with the northern transect route walked across the northern parcel.
- 3.71 In respect of 2021 data, on average, only c.327 bat registrations were recorded per automated detector per month deployed, with levels of activity greatest during the month of August (583 registrations per detector on average), followed by June (538 registrations), September (441 registrations), July (434 registrations), October (146 registrations), May (124 registrations) and April (24 registrations).
- 3.72 The vast majority of registrations recorded by the automated detectors relate to common pipistrelle (86%), followed by soprano pipistrelle (9.3%) and Myotis bat species (2.9%). Big bats, including noctule and serotine, made up a further 1.45% of registrations, with long-eared bat (0.23%), lesser horseshoe bat (0.1%) and Nathusius' pipistrelle (0.02%) otherwise rarely recorded. In respect of Nathusius' pipistrelle, only a single registration was recorded by two automated detectors (locations 3 and 4) during the July 2021 deployment.
- 3.73 In respect of the 2021 walked transects (**Plans EDP 8.22** –**8.24**), common pipistrelle also dominated bat activity, comprising 91% of bat activity recorded. The remainder of the activity recorded relate to soprano pipistrelle, (6.3%) and Myotis bat species (2.7%) only, with no other bat species recorded during the surveys.
- 3.74 In respect of 2023 data, on average, c.1,195 bat registrations were recorded per automated detector per month deployed, with levels of activity greatest during the month of August (1,672 registrations per detector on average), followed by June (1,338 registrations) and July (574 registrations).
- 3.75 The vast majority of registrations recorded by the automated detectors relate to common pipistrelle (77.3%), followed by soprano pipistrelle (17.7%) and Myotis bat species (4.4%). Long-eared bat (0.17%), serotine (0.15%), noctule (0.13%), lesser horseshoe bat (0.0.5%) and greater horseshoe bat (0.05%) were otherwise rarely recorded (Plans EDP 8.28 8.30).
- 3.76 In respect of the 2023 walked transects (**Plans EDP 8.25** –**8.27**), common pipistrelle also dominated bat activity, comprising 86% of bat activity recorded. The remainder of the activity recorded primarily relate to soprano pipistrelle, (8.4%), noctule (2.9%) and Myotis bat species (1.1%). Occasional passes by Nathusius' pipistrelle (0.64%; 4 passes recorded during the June survey), serotine (0.64%; 4 passes recorded during the August survey) and greater horseshoe bat (0.16%; single pass recorded during the August survey) were also recorded during the surveys.

Investigations of Bat Roosting - Trees (Turbines)

- 3.77 During the initial ground level assessment of trees located within the survey radius of each proposed turbine location on 30 May 2022, a total of 229 trees were identified as having suitability to support roosting bats. Of those trees surveyed, 16 were considered to have high potential; 66 were considered to have moderate potential; and 147 were considered to have low potential to support roosting bats.
- 3.78 Further detailed inspections of trees with moderate-high potential to support roosting bats were undertaken on 09 June and 23 August 2022 to confirm presence/infer absence of roosting bats. Further survey effort comprised inspection of target trees at height and/or from the ground with an endoscope where accessible.
- 3.79 Following completion of the detailed inspections, a total of 14 trees were confirmed as having high potential to support roosting bats, with 59 trees assessed as having moderate potential and 153 trees with low potential. Two trees were downgraded to negligible potential to support roosting bats. A summary of the bat tree assessment results is provided within **Table EDP 3.5** below.

Bat Roosting Potential	Tree/Tree Group References	Total
Confirmed Bat	None.	0
Roost		
High	T32; T35; T47; T55; T63; T68; T70; T85; T100; T118; T119;	14
	T122 ; T124 and T125	
Moderate	T1; T4; T6; T10; T11; T13; T19; T20; T23; T24; T26; T28; T30;	59
	T33; T34; T37; T39; T40-T43; T46; T52; T54; T58; T59; T62; T66;	
	T69; T71; T72; T74-T76; T80-T82; T89-T91; T96; T115-T117;	
	T128; T129; T141; T142; T149; T153; T170; T171; T214; T216;	
	T217; T220; T222; T223 and T225.	
Low	T3; T5; T7-T9; T12; T14-T18; T21; T22; T25; T27; T29; T31; T36;	153
	T38; T44; T45; T48-T51; T53; T56; T57; T60; T61; T64; T67; T73;	
	T77-T79; T83; T84; T86-T88; T92-T95; T97-T99; T101; T104-	
	T114; T120; T121; T123; T126; T127; T130-T140; T143-T148;	
	T150-T152; T154-T169; T172-T213; T215; T218; T219; T221;	
	T224 and T226-T229.	

 Table EDP 3.5:
 Summary of Ground Level and Aerial Bat Roost Tree Results - 2022

3.80 No evidence of roosting bats was identified during survey effort. The findings of the detailed tree assessments undertaken in relation to the proposed turbine locations are summarised at **Annex EDP 6** and illustrated at **Plans EDP 8.9** and **8.10**.

Investigations of Bat Roosting – Trees (Access Route)

3.81 During the initial ground level assessment of trees located within the vicinity of the proposed access route subject to improvement works undertaken on 07 June 2023, six trees/tree groups, **T257**, **G266**, **G267**, **G268**, **G277** and **T283** are considered to have low suitability to support roosting bats. The findings of the tree assessment undertaken in relation to the proposed improvement works along the access route are summarised at **Annex EDP 6** and illustrated at **Plan EDP 8.9**.

Investigations of Bat Roosting - Buildings

Visual Inspection

- 3.82 A visual assessment of eight built structures associated with the southern parcel confirmed three structures (B1, B2 and B3) to have moderate potential to support roosting bats, whilst one structure (B4) is considered to have low potential. The remaining four structures (B5, B6, B7 and B8) were considered to be of negligible potential to support roost bats.
- 3.83 A description of those built structures occurring within the Application Site alongside their preliminary bat roosting potential is summarised within **Annex EDP 7** and illustrated at **Plan EDP 8.11**.

Dusk Emergence Surveys

- 3.84 Dusk emergence surveys of buildings **B1-B4** were undertaken in August and September 2022 and in July 2023. Building **B4** was also subject to an endoscope survey prior to the September 2022 dusk emergence survey.
- 3.85 The farmhouse, **B1**, was confirmed to support common pipistrelle roosts during the September 2022 survey, this species recorded emerging from three locations during the survey. However, no bat emergence was recorded during the August 2022 or July 2023 surveys. Building **B1** is therefore considered to support occasional day roosts of common pipistrelle bat.
- 3.86 In addition, the stone barn **B3** was also confirmed to support a common pipistrelle roost, with a single individual recorded emerging from the southern elevation during the August and September 2022 surveys. No evidence of roosting activity was recorded during the July 2023 survey however. As such, **B3** is also considered to support an occasional day roost for common pipistrelle.
- 3.87 No bat emergences were recorded from buildings **B2** or **B4** during the dusk emergence surveys. In addition, no evidence of bats or their signs of use was recorded during the endoscope survey of **B4**.
- 3.88 Bat roosts supported by the Application Site are illustrate at **Plan EDP 8.12**.

Badger

- 3.89 Badgers and their setts receive protection under the Protection of Badgers Act 1992, which protects badgers from deliberate harm and injury. The protection afforded to badgers is primarily due to animal welfare issues and not due to concerns over their unfavourable nature conservation status. Restrictions under this act, which apply to development include any killing, injuring, possession or cruel treatment to badgers, any interference to a sett through damage or destruction, any obstruction of access to any entrance of a sett, or any disturbance to a badger whilst it is occupying a sett.
- 3.90 The desk study returned several records of setts within woodland surrounding the Application Site, the closest records relating to setts situated c.115m to the west of the southern parcel, recorded in 2007, and c.190m to the south-west of the northern parcel,

recorded in 2013. More recent records relate to deceased individuals found on the A472 Hafodyrynys Road to the north of the southern parcel in 2017 and 2019.

3.91 No evidence of badger activity or their setts were recorded during the initial survey nor on subsequent survey visits to the Application Site throughout 2020, 2021 and 2022. Based upon the findings to date, badgers are assessed to be likely absent from the Application Site and can be scoped out from further assessment.

Dormouse

- 3.92 The hazel dormouse is listed as a European Protected Species, thereby receiving protection under the Conservation of Habitats and Species Regulations 2017 (as amended). Additional protection is also afforded to this species under the Wildlife and Countryside Act 1981 (as amended), making it an offence to intentionally or recklessly disturb dormice whilst they are occupying a structure or place, which is used for shelter or protection, or to obstruct access to this structure or place. This species is also listed as a priority species.
- 3.93 An unconfirmed record was returned circa 660m to the south of the site in 2003, and in 2022 a dormouse nest was recorded 1.6km to the north of the Application Site. Habitat connectivity between the Application Site and these recorded locations is limited, whilst habitats supported by the Application Site are generally assessed as being sub-optimal for this species.
- 3.94 Dormouse surveys conducted between May 2020 and November 2021 found no evidence of dormice. In addition, no evidence of wood mouse (*Apodemus sylvaticus*), evidence of their activity (including nests and food caches), or signs of other mammal usage was recorded during the surveys.
- 3.95 Based on the survey results above, dormouse is considered absent from the Application Site and thus does not pose a constraint to its future development.

Great Crested Newt

- 3.96 Great crested newt is listed as a European Protected Species, thereby receiving protection under the Conservation of Habitats and Species Regulations 2017 (as amended). Additional protection is also afforded to this species under the Wildlife and Countryside Act 1981 (as amended), making it an offence to intentionally or recklessly disturb great crested newt whilst they are occupying a structure or place, which is used for shelter or protection, or to obstruct access to this structure or place. This species, as well as common toad (*Bufo bufo*), comprise priority species.
- 3.97 Numerous records for this species were returned during the desk study, including records relating to parcels A and C. In respect of the northern parcel, a record was returned in relation to waterbody P1 in 2010 and waterbody P3 in 2005, confirming the presence of adult male and female great crested newts and their eggs within each of these waterbodies. In respect of the southern parcel, multiple records for great crested newt were returned for waterbody P7, including a record from 1987 confirming the presence of two adults, efts in 1998 and eggs in 2005. A recorded sighting of two adult male great crested newt individuals

in 2005 was also returned beyond 500m from the Application Site, relating to an area of woodland located to the south of the northern parcel and east of parcels B and C.

Habitat Suitability Assessment of Waterbodies

3.98 The habitat suitability assessments undertaken in 2020 and updated in 2023 confirmed waterbodies **P1**, **P6** and **P7** to be of 'average' suitability, waterbody **P5** to be of 'below average' suitability and waterbodies **P2**, **P3** and **P4** to be of 'poor' suitability. A summary of the survey findings is detailed at **Annex EDP 8**.

Environmental DNA Sampling of Waterbodies

- 3.99 Waterbodies **P1**, **P2**, **P3** and **P4** associated with the northern parcel and waterbody **P7** located within the southern parcel tested positive for great crested newt eDNA following the April 2020 surveys.
- 3.100 Remaining waterbody **P5** (surveyed in April 2021) and waterbody **P6** (surveyed in April 2020 and subject to an update survey in April 2021) tested negative for great crested newt eDNA however, confirming likely absence of this species for these waterbodies.
- 3.101 Update water sampling surveys of waterbodies **P1** and **P7** in June 2023 reconfirmed great crested newt presence; however, no evidence of great crested newt eDNA was recorded for waterbody **P4** during the 2023 update survey.
- 3.102 Whilst no access to waterbodies P2, P3, P5, P6, P8 or P9 was possible during the 2023 update surveys, continued great crested newt presence is assumed for waterbodies P2 and P3. Likely continued absence of this species is otherwise assumed for waterbodies P5 and P6.
- 3.103 Analysis was conducted in the presence of the following controls: extraction blank, and appropriate positive and negative PCR controls for each of the TaqMan assays (great crested newt, inhibition, and degradation). All controls were noted to have performed as expected, with samples confirmed to pass a sample integrity check¹⁴, inhibition check¹⁵and degradation check¹⁶.
- 3.104 A summary of the results of the surveys are provided at **Annex EDP 8** and illustrated at **Plans EDP 8.14** and **8.15**.

Great Crested Newt Population Assessment

3.105 Detailed surveys completed during 2021 confirmed great crested newt presence within waterbodies **P1-P4** associated with the northern parcel and within waterbody **P7** located

¹⁴ Sample Integrity Check (Pass/Fail): When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

¹⁵ Inhibition Check (Pass/Fail): The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

¹⁶ Degradation Check (Pass/Fail): Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may indicate a risk of false negative results.

within the southern parcel. A summary of the survey findings is detailed at **Annex EDP 8** and further illustrated at **Plan EDP 8.14**.

- 3.106 The highest count of adult great crested newt individuals per waterbody on any given survey was 13, recorded within waterbody P1 located to the immediate north of the northern parcel, indicating presence of a medium-size population albeit at the lower end of this scale. The maximum count for great crested newt at all other waterbodies surveyed was as follows: five at P2; six at P3, one at P4 and three at P7.
- 3.107 In respect of waterbodies P1, P2, P3 and P7, both adult male and female great crested newt individuals were recorded during the surveys, confirming these waterbodies to likely be breeding ponds. Whilst only a maximum of one female great crested newt was recorded within waterbody P4, given its proximity to waterbodies P2 and P3, this waterbody also has potential to support a breeding population in future.
- 3.108 Waterbodies P2, P3 and P4 are clustered, occurring between 65m and 170m from each other, with waterbody P1 located c.700m to the north-west of this cluster at its closest point. It is therefore considered that those waterbodies associated with the northern parcel and their surrounding habitats currently support a breeding metapopulation which is medium-sized, albeit at the lower end of this scale. In respect of the small great crested newt population supported by waterbody P7, this waterbody is situated over 1.7km away, and thus may represent a separate great crested newt population within the wider landscape.
- 3.109 With respect to terrestrial habitat onsite, field margins, tree lines and hedgerows likely facilitate the dispersal of this species across the wider landscape and between waterbodies present in the locality.
- 3.110 Great crested newt is considered to be widespread in south Wales, including within Caerphilly County Borough, although populations are noted as becoming fragmented and increasingly isolated. In respect of the Application Site, desk study records confirm the continued use of waterbodies P1 and P3 for breeding since at least 2010 and 2005 respectively, as well as for waterbody P7, where records returned date back to 1987, 1998 and 2005. Suitable habitat for refuge and foraging is also present across the Application Site and within the vicinity of those waterbodies confirmed to support this species.
- 3.111 The medium-sized metapopulation of great crested newt associated with the northern parcel and a small population associated with the southern parcel are therefore considered to be of Local Level importance.
- 3.112 With respect to other amphibian species recorded, both smooth newt and palmate newt were identified within all waterbodies subject to survey. Palmate and smooth newts are relatively widespread in Wales, though considered to be in general decline. Populations supported by the Application Site are therefore considered to be of importance at the Site level.

Reptiles

3.113 All species of common reptile, including common lizard (*Zootoca vivipara*), slow-worm (*Anguis fragilis*), grass snake (*Natrix helvetica*) and adder (*Vipera berus*), receive at least

limited protection from harm under the Wildlife and Countryside Act 1981 (as amended), making it an offence to cause intentional killing and injuring of these species. In addition, these species are also listed as priority species.

- 3.114 A number of records for common lizard were returned, including two records from 1991 relating to a field circa 380m to the south of the southern parcel. Additional records from 2002 and 2007 were also returned in relation to this parcel, located circa 700m and 1.2km to the south and west respectively. A further record for common lizard was also returned in 2007, located circa 1.8km to the north-west of the northern parcel. A number of records of slow-worm were also returned within close proximity of the Application Site, c.350-500m to the west of the Application Site, with records dating between 2006 and 2014. More recent records of slow worm were returned from 2022: two located 1.5km to the west and two 2.1km to the south. A single record for adder was also returned, relating to a sighting of three adult females and two juveniles along Forest Drive, Cwmcarn, in 2021, located c.2.2km to the south of the Application Site. No records for grass snake were returned, however.
- 3.115 During the course of the surveys undertaken across the Application Site, occasional, incidental sightings of common lizard were also recorded in association with the southern parcel, albeit beyond this parcel's boundaries. The Application Site therefore has potential to support a low population of common lizard¹⁷, whilst the presence of other common species, particularly slow worm and grass snake should not be ruled out. Given their relative widespread distribution across south Wales¹⁸ more generally, common reptiles are considered to be of importance at the Local Level only.

Species – Important Ecological Features

3.116 Species considered likely to be impacted by the proposed development which require further consideration are listed in **Table EDP 3.6**.

Potential IEF	Distance from Application Site & Key Attributes	Nature Conservation Importance
Species (excluding b	irds)	
Commuting and foraging bats	Common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, long-eared bat species, myotis species, noctule, serotine, greater horseshoe bat and lesser horseshoe bat recorded foraging and commuting across the Application Site.	Local
Roosting bats	Numerous trees onsite with potential to support roosting bats. Common pipistrelle day roosts associated with building B1 and B3 located within the southern parcel.	Local

 Table EDP 3.6: Potential IEFs (species) within the Application Site's Potential Zone of Influence

¹⁷ As set out in Evaluating Local Mitigation/Translocation Programmes: Maintaining Best Practice and Lawful Standards. HGBI Advisory Notes for Amphibian and Reptile Groups (Args). HGBI, 1998.

¹⁸ As illustrated by the distribution maps found at http://www.arc-trust.org/advice/species-id/reptiles

Potential IEF	Distance from Application Site & Key Attributes	Nature Conservation Importance
Great crested newt	Continued presence of a medium-sized metapopulation of great crested newt associated with the northern parcel (waterbodies P1-P4) and a small population associated with the southern parcel (waterbody P7).	Local
Common reptiles	Presence of a common reptile population assumed based on local records and habitat suitability.	Site

- 3.117 Based on desk study and field data collated during the 2020, 2021 and 2023 surveys, and in consideration of the suitability of habitats supported by the Application Site, the following species are not considered to pose a constraint to future development of the Application Site:
 - Dormouse; and
 - Badger.

Annex EDP 1 Habitat Descriptions – Application Site

A1.1 The distribution of those habitat types present on-site is illustrated at **Plan EDP 8.5**, with detailed survey findings provided at **Table EDP A1.1**.

The Northern Parcel		
Field Number	Description	
Field Number F1	Description An Improved sward of very low botanical interest; a greater diversity and abundance of common weed species were observed here than were recorded in 2021. Grazed by sheep at the time of survey.	
	Field F1 looking south-west.	
F2	Very similar to F1 but with far fewer weed species, there is locally frequent broad-leaved dock and occasional corn spurrey. To the south-east of this	
	field is a small open grove of beech with a shaded species-poor grassy field layer.	
F3	Improved sheep-grazed species-poor sward similar to fields F1 and F2.	
F4	A recently-sown ley of perennial rye-grass.	
F5	An improved sward which had just been cut for hay and with the arisings still in situ. The sward was dominated by perennial rye-grass, common bent and creeping buttercup with much dock.	
F6	Improved and very species-poor; this field had been mown (with arisings removed) not long prior to the survey and was sheep-grazed.	
F7	Essentially as per F6 ; in 2021 yellow-rattle was locally common in the western third of the field but in 2023 this species appeared to be rare.	

Table EDP A1.1: Application Site - Habitat Fescriptions (2021, Updated 2023)

The Northern Parc	cel
	First Province media
FQ	Field F7 looking north.
	poor semi-improved sward but the steepest, central, parts of this field support a semi-improved neutral grassland sward where the following species of note (with DAFOR scores) were recorded: harebell (O/LF); lesser stitchwort (F); selfheal (F); yarrow (O/LF) and common cat's-ear (A). A 5-10m wide fringe of dense bracken is present on this field's southern edge and this area of bracken appears to have expanded slightly into the field since 2021.
	A CARLES CONTRACT OF THE
F 0	Field F8 looking west.
F9	sheep at the time of survey, but in the western third of the field the sward is
	slightly more diverse but still remains poor semi-improved. The bank on the

The Northern Pare	The Northern Parcel	
	eastern boundary of this field has some brown bent, creeping soft-grass and	
	sheep's sorrel.	
F10	A recently-sown ley of perennial rye-grass with a very low botanical value.	
F11	Improved and mown just prior to the survey with the arisings removed. It was however clear that perennial rye-grass was dominant here and that white clover was the only other species identified.	
F12	Identical to field F11.	
F13	Very similar to fields F11 and F12 and thus an improved sward but here there is also much common sorrel as well as small quantities of ribwort plantain and common cat's-ear.	
F14	A narrow linear field in the centre of the survey area. The northern half of this field mostly comprises a vegetated raised mound of rubble and subsoil approximately 3m above the height of the rest of the field; on the eastern side of this mound is a small area of active quarrying. The vegetation on the mound comprises poor semi-improved grassland with ephemeral/short perennial vegetation and some tall ruderal vegetation with the only species of note recorded being common mouse-ear (0) and sand spurrey (R). The southern half of the field (and the area east of the quarry) supports a poor semi-improved sward, where no species of any note were recorded apart from occasional plants of common bird's-foot trefoil and common cat's-ear.	
	Field F14 – looking north-west from the mound.	
F15	A species-poor Improved sward.	
F16	This field was unmown and ungrazed at the time of survey and it was possible to determine that this was an improved sward where perennial rye- grass and common bent are the dominant species, and no plants of any note were recorded.	
F17	Like field F16 unmown and unmanaged but with a poor semi-improved	
F10	sward with occasional yarrow and common cat's-ear.	
LTO	mown sward identical to field F17 ; however, in the north-eastern corner there is a semi-improved neutral grassland sward which was not apparent in 2021. In this north-eastern corner the sward includes eyebright (0), harebell	

The Northern Parcel		
	(R), sweet vernal-grass (F), germander speedwell (O) and creeping soft-grass	
E10	(F).	
LT2	ahundant along an unsurfaced track which bisects the field	
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	Field F19 -looking east.	
F20	A large unmown and ungrazed field with an Improved sward dominated by	
	perennial rye-grass and with much common bent and meadow buttercup.	
The Central Parce	4	
	A single field situated at ST233969 this was lightly grazed at the time of	
	survey and thus offered better survey conditions than had prevailed in 2021	
	when the field had been recently cut very short with arisings removed.	
	This is a poor semi-improved sward where perennial rye-grass, Yorkshire fog	
	and common bent, crested dog's-tail, sweet vernal-grass and white clover	
	are all abundant. Meadow buttercup was also recorded as frequent/locally	
	abundant here whilst red clover, creeping buttercup, common cat's-ear, and	
	cocksfoot were all frequent. Red fescue and Timothy are occasional here	
	and yellow rattle is locally frequent.	
The Southern Pare	cel	
F1	Heavily-grazed by beef cattle prior to the survey this this is a grass-	
	dominated poor semi-improved field where the only herbs of any note	
	appeared to be common bird's-foot trefoil and common cat's-ear which were	
	both recorded as Frequent.	
F2	Very similar to field F1 but on the field edges are small quantities of	
	harebell, soft rush and sheep's sorrel.	
F3	harebell, soft rush and sheep's sorrel. Cattle-grazed at the time of survey this supported a poor semi-improved	
F3	harebell, soft rush and sheep's sorrel. Cattle-grazed at the time of survey this supported a poor semi-improved sward with small quantities of common bird's-foot trefoil, white clover.	
F3	harebell, soft rush and sheep's sorrel. Cattle-grazed at the time of survey this supported a poor semi-improved sward with small quantities of common bird's-foot trefoil, white clover, ribwort and creeping buttercup.	
F3 F4	harebell, soft rush and sheep's sorrel. Cattle-grazed at the time of survey this supported a poor semi-improved sward with small quantities of common bird's-foot trefoil, white clover, ribwort and creeping buttercup. This field is similar to field F2 and is a poor semi-improved grassland with	
F3 F4	harebell, soft rush and sheep's sorrel. Cattle-grazed at the time of survey this supported a poor semi-improved sward with small quantities of common bird's-foot trefoil, white clover, ribwort and creeping buttercup. This field is similar to field F2 and is a poor semi-improved grassland with only a slightly more elevated herb content than fields F1 and F3 .	
F3 F4 F5	harebell, soft rush and sheep's sorrel. Cattle-grazed at the time of survey this supported a poor semi-improved sward with small quantities of common bird's-foot trefoil, white clover, ribwort and creeping buttercup. This field is similar to field F2 and is a poor semi-improved grassland with only a slightly more elevated herb content than fields F1 and F3 . Similar to fields F2 and F4 with a cattle-grazed poor semi-improved sward	

The Northern Pa	arcel
F6	An ungrazed field but with a species-poor improved sward with common
	cat's-ear and yarrow the only species of any note.
F7	Ungrazed, improved grassland field and very similar to field F6 .
F8	A lightly sheep-grazed species-poor improved sward but with occasional
F 0	A lightly grazed pacture this has four distinctive plant communities. The
F9	A lightly-grazed pasture this has four distinctive plant communities. The most important of these communities is present in a narrow area of higher ground which runs along the eastern edge of the field; here there are relict patches of species-rich acid grassland. Notable plants recorded here include sheep's-bit, brown bent, mouse-ear hawkweed, harebell, early hair- grass <i>Aira praecox</i> , black knapweed, and tormentil.
	 This unimproved acid grassland area is subject to very unsympathetic management – debris and soil are being dumped on the western edge of the higher ground and are consequently smothering the notable flora. This disturbed ground has a ruderal and ephemeral flora which includes some corn spurrey but no other species of any note was recorded here. To the west of the dumped soil and debris there is a broad band of disturbed improved pasture where corn spurrey is locally abundant. This vegetation is repeated in another band on the western edge of the field. The majority of this field supports a species-poor improved sward.



The Northern Parcel	
	cat's-ear, red fescue and self-heal are the most notable components of a
	small area of semi-improved neutral grassland.
F12	An improved pasture with no botanical interest. In the south-western corner
	of this field there is much disturbed and bare ground with a sparse
	ephemeral/short perennial community.
F13	The diffuse boundary between fields F12 and F13 comprises several old beech trees and a low residual hedge bank which supports a small quantity of heath bedstraw. The majority of field F13 is a poor semi-improved pasture but on the southern edge of the field is an area of higher ground where a species-rich unimproved acid grassland flora is recorded. Of note here are harebell, tormentil, mouse-ear hawkweed, sheep's sorrel, brown bent, heath bedstraw, and devil's-bit scabious <i>Succisa pratensis</i> . The latter species were notably more frequent in 2023 than in 2021 and the area of unimproved acid grassland also appeared to be larger; this may be due to the lighter grazing regime in evidence in 2023.
	This small area of unimproved acid grassland sward is, however, being negatively impacted by timber and wood debris being dumped on it and large fires being subsequently lit, scorching the species-rich turf. Betony was recorded here in 2021 but was not evident in 2023; it is believed that the small area within which it was recorded had subsequently been burned during the disposal of rubbish.
F14	A lightly-grazed species-poor improved sward with no apparent botanical interest.
F15	Situated on a relatively steep north-westerly slope this is a cattle-grazed pasture of semi-improved neutral grassland of relatively low botanical interest where common cat's-ear and self-heal are frequent, black knapweed is occasional and tormentil, harebell, marsh thistle and soft rush rare.
F16	An ungrazed, improved sward of no botanical interest.
F17	Cattle-grazed poor semi-improved grassland with occasional self-heal.
F18	Identical to field F17.
F19	A recently-mown poor semi-improved sward with the arisings still in situ; yellow-rattle is locally frequent here, common cat's-ear frequent and black knapweed occasional.
F20	As field F19 but with lesser stitchwort also recorded.
F21	As fields F19 and F20 .
F22	As fields F19, F20 and F21.



Annex EDP 2 Habitat Descriptions – Access Route

A2.1 The distribution of those habitat types present along the main access route to the immediate west of the northern parcel is illustrated at **Plan EDP 8.5**, with detailed survey findings provided at **Table EDP A2.1**.

Description
A lightly-grazed improved sward with botanical interest limited to localised
concentrations of corn spurrey.
A lightly grazed poor semi-improved sward where the only botanical interest lies
in occasional records of corn spurrey and lesser stitchwort.
An ungrazed improved sward with no botanical interest.
Field F23 looking north-east.
This is a small area of unenclosed land on the southern edge of a minor road and
is possibly a section of common land. Much of this area supports stands of dense
bracken and there is a disturbed grassy track running through the middle of it
clover and perennial rye-grass. Monthretia is locally frequent here
To the north the sward is an unimproved acid grassland which includes some
tormentil, common bird's-foot trefoil, lesser stitchwort, common cat's-ear
harebell and perforate St John's-wort.

Table EDP A2.1: Access Route (The Northern Parcel) – Habitat Descriptions (2023)

Field (F)/	Description
Boundary (B) Number	
(B) Number	<image/>
F 24c	Field F24 -looking west.
F24a	forming a small triangular-shaped island at the centre of the adjacent road junction. This is heavily disturbed by vehicle movements but includes common bird's-foot trefoil, common cat's-ear and ribwort.
F25	An ungrazed poor semi-improved sward dominated by common bent, crested dog's-tail and perennial rye-grass with much common mouse-ear, creeping thistle, cocksfoot and sweet vernal-grass; lesser stitchwort is present and can be locally frequent.
F26	Cattle-grazed, this is a poor semi-improved sward with very little botanical interest where crested dog's-tail, common bent, creeping bent, white clover, greater plantain and perennial rye-grass are all abundant. The only species of note are black knapweed and self-heal - both of which are rare/locally occasional. A livestock corral is present on the eastern side of this field and there is much disturbed ground here where a small quantity of corn spurrey is present.

Field (F)/ Boundary (B) Number	Description
	Within Field F26 - looking north-east with the livestock corral on the right.
F27	This is an area of young scrub woodland where goat willow, grey willow, beech, hazel, silver birch, and hawthorn are present. The understorey is dominated by bracken, nettle, bramble and ivy along with some Montbretia. There is a 1m wide species-poor grassy verge on the roadside edge of this area whilst an unsurfaced track runs through the south-western part of the scrub with much bracken and some scattered scrub alongside it.
F28	A relatively large field which was ungrazed and uncut at the time of survey. This field has a poor semi-improved sward dominated by red fescue, creeping bent, common bent, creeping soft-grass and perennial rye-grass with much Yorkshire fog and cocksfoot along with lesser quantities of sweet vernal-grass. With the

Field (F)/	Description
Boundary	
(B) Number	
	exception of creeping buttercup (which is frequent) herbs are relatively scarce but lesser stitchwort, common cat's-ear and nettle are present in small quantity. Soft rush is present but rare.
	Field F28 looking north.
F29	Similar in many ways to field F28 this is a poor-semi-improved grass-dominated
	sward but it has a slightly elevated herb component with pignut, common bird's-
520	toot trefoil, and field wood-rush all present in low quantity.
F30	Inis is a short section of green lane on the north-eastern edge of the access route. Its western boundary is the bedgerow of boundary B10 (see below) and its
	eastern boundary is a complex of scattered bushes, post and wire fences and
	relict sections of dry stone wall. Much of the green lane supports a poor semi-
	improved grassland sward with much bracken however there are specimens of
	harebell, eyebright, field wood-rush and violet.
B1	Forming the northern boundary of fields F21 , F22 and most of F23 this is in part
	an old drystone wall with managed (flailed) self-sown scrub and in part a gappy
	85% of the boundary has dense woody vegetation although it does not have a
	classic hedgerow structure for much of its length. The average height of this
	hedgerow is 1.5m above the adjacent field ground level and average width is
	approximately 1m. In the eastern section (the northern boundary of fields F21
	and F22) it sits atop a steep roadside bank with the base of the hedge at varying
	heights above the level of the road.
	Beech is the most commonly recorded woody species here but holly, hazel,
	Diacktriorn and bramble; elder, nawthorn, English oak, dog rose, and ash are also
	and the only plant species of any note recorded here was a single specimen of
	climbing corydalis. Ferns such as scalv male fern are occasional and there are
	small populations of bluebell.
	The eastern two thirds of this boundary are essentially an intact hedgerow albeit
	of low botanical value whilst the western third of B1 is a defunct hedgerow. However, it is likely that the origins of this entire boundary are as a dry stone wall

Field (F)/ Boundary	Description
(B) Number	
	which has developed a linear scrub flora that in turn has been flailed as a
	hedgerow on occasion and may well have had sections of this linear scrub laid.
	Although not part of Boundary B1 the northern edge of the covered reservoir
	boundary supported a single large specimen of great burnet which is an unusual
	species to find in this situation. It's location and large size suggests that it may
	have originated from a wildflower seed mix.
B2	A small length of hedgerow forming the north-western boundary of field F23 this
	has a 1m wide grass-dominated roadside verge which is mostly steep. The hedge
	averages 2m in height above the adjacent field level and averages 1.5m wide; it
	is intact and would appear to be regularly halled and was laid in the relatively
	recent past. Hazer is dominant here, whilst beech is abundant but there is also
	No species of any note were recorded at the base of the bodge
	No species of any note were recorded at the base of the nedge.
	Boundary B2 on the left and the northern part of Boundary B6 on the right.
B 3	Forming the boundary between field F23 and an adjacent track this is a 2m tall
	and 1m wide managed hedgerow of holly and blackthorn with no species of any
	note recorded in the hedge base. This feature continues to the east outside the
	surveyed area and appears to be more species diverse there.
B4	Forming the boundary between field F23 and an adjacent track this is a 2m tall
	and 1m wide managed hedgerow of holly and blackthorn with no species of any
	note recorded in the hedge base. This feature continues to the east outside the
DE .	Survey area and appears to be more species diverse there.
60	high grass dominated bank. It has many similarities with Poundary P2 but
	antains blackthorn and one chooimen of such apple. The bodge is approximately
	2 contains blackthorn and one specifien of crab apple. The nedge is approximately
	sin in neight and 1.5m while, it appears to be regularly managed and is million
R6	This is the eastern (readeide) boundary of field E26 and has many similarities
BU	with boundaries B2 and B5 on the opposite side of the read, it too is lorgely well
	managed and has few gans. This hedge is aton a low bank and has a narrow
	roadside verge, beech hawthorn hazel ash holly and elder are present bere
	reactive relige, second numerorn, nazel, don, nony and elder are present here

Field (F)/	Description
Boundary	
(B) Number	
	along with bramble and three young English oak standards. On the field side the hedge base contains much greater stitchwort and a violet species. The hedgerow has a gate halfway along its length which allows access into a livestock corral in field F26 .
B7	This is the western and northern boundary feature of field F26 and comprises two disjunct sections of old and very gappy mature hedgerow. This is a defunct hedgerow system with only several mature specimens of beech, ash, hawthorn, holly, and hazel. The hedgerows are atop a very degraded bank which supported no hedge base flora of any note. Livestock have free access through this feature to access fields on either side.
B8	The southern (and part of the south-western) boundary of field F28 and the southern boundary of field F29 this is a hedgerow which grows atop a roadside bank which is mostly 1-2m high, steep and narrow. The roadside edge of the hedge is either flailed regularly or is clipped by passing high vehicles but the rest of the hedge appears to be unmanaged. In part this is a line of mature and semi-mature beech trees with many gaps between them, but other parts of the hedge are dominated by mature hazel with hawthorn, blackthorn and some holly. Overall, this can be described as largely a defunct hedgerow albeit with some botanical value whilst other parts are an intact but species-poor hedgerow. The average height of the latter is approximately 6m and its average width is approximately 1m to 1.5m but the height of the sections dominated by mature beech can exceed 20m. On the roadside the hedge base supports violets, barren strawberry <i>Potentilla sterilis</i> , foxglove and male fern of note.
	Part of boundary B8 on the left with the edge of field F24 on the right
B9	The boundary between fields F28 and F29 this is a line of tall mature beech
	trees with some ash, hazel, hawthorn and holly. There are numerous gaps within
	the hedgerow and no species of any note in the hedge base.
B10	A broken line of mature beech trees with some ash, hazel, hawthorn and holly but mostly an old post and wire fence. No species of any note were recorded here.

Field (F)/	Description
Boundary	
(B) Number	
B11	This is a composite of eight former hedgerows which form the southern boundaries of fields F21 , F22 and F23 as well as the internal boundaries of those fields. All are defunct hedgerows upon degraded banks and with semi- mature beech trees being their most notable features; frequently there are very considerable gaps between individual trees/bushes here and no hedge base flora of any note was recorded. These are effectively open lines of trees and bushes rather than hedgerows. Beech, holly, ash, rowan, hawthorn, blackthorn and English oak are present here.
	One of the very gappy, species-poor and defunct hedgerows which collectively
	comprise Boundary B11 .
B12	The eastern boundary of field F21 this is a trimmed 1.5m tall and 1m wide line of
	bramble, hawthorn and holly with much nettle in the hedge base.

Annex EDP 3 Bat Survey Methods

INVESTIGATIONS OF BAT FORAGING/COMMUTING ACTIVITY

- A3.1 To inform an assessment of potential effects arising upon a bat assemblage utilising the Application Site, the following survey effort has been undertaken between 2020 and 2023 as follows:
 - Manual transect surveys conducted at monthly intervals between May and October 2020, repeated in April, May and June 2021 and June, July and August 2023 (**Plan EDP 8.6**); and
 - Automated detector surveys conducted at monthly intervals between May and October 2020, repeated between April and October 2021 and June and August 2023 (**Plan EDP 8.7**).

Manual Transect Surveys

A3.2 Full details including the survey type, date, timing, and weather conditions during each of the transect surveys undertaken during 2020 and 2021 are provided within **Table EDP A3.1**. Weather conditions were largely optimum for bat surveys, being relatively warm with light winds and no rain.

			Suprico/	Weather conditions				
Survey date	Dusk/ dawn	Survey time	sunset time	Temp (°C)	Cloud (%)	Rain	Wind (Beaufort scale)	
28.05.20	Dusk	21:18 - 00:18	21:18	14.0-17.0	20	Nil	3	
25.06.20	Dusk	21:34 - 00:34	21:34	22.0-23.0	5-90	Nil	0-2	
29.07.20	Dusk	21:03 - 00:03	21:03	19.0-20.0	20-30	Nil	1-2	
27.08.20	Dusk	20:09 - 23:09	20:09	11.0-15.0	95-100	Rain	1-2	
29.09.20	Dusk	18:53 - 21:53	18:53	10.0-12.0	40-90	Nil	0-3	
15.10.20	Dusk	18:18 - 21:18	18:18	7.0-10.0	0-10	Nil	1-3	
26.04.21	Dusk	20:27 - 23.27	20.27	7.0-12.0	80-100	Nil	2	
17.05.21	Dusk	21:00 - 00:00	21:00	8.0-12.0	0	Nil	0	

Table EDP A3.1: Manual Transect Survey Dates, Times and Weather Conditions

Survey date	Dusk⁄ dawn	Survey time	Sunrise/ sunset time	Weather conditions			
				Temp (°C)	Cloud (%)	Rain	Wind (Beaufort scale)
23.06.21	Dusk	21:35 - 00:35	21:35	12.0-15.0	75-95	Nil	0-2
19.06.23	Dusk	21:34 - 00:15	21:34	20.0-17.0	70-80	Nil	1-2
26.07.23	Dusk	21:11- 23:30	21:11	18.0-13.0	10-0	Nil	1-2
15.08.23	Dusk	20:36 - 23:30	20:36	17.0-14.0	0-25	Nil	0-1

- A3.3 Manual transect surveys were completed by experienced bat surveyors, with two transect routes designed to provide a representative cover of potential foraging or commuting habitats onsite, namely the field boundaries and woodland edges adjacent. Where necessary, the transect route extending across the southern parcel was subject to minor modifications during the survey period to avoid livestock. (illustrated at **Plan EDP 8.6**). Transect routes were walked at a slow and steady pace with all bat activity and their behaviour marked on survey maps, to characterise the value of the Application Site and its component habitats to foraging and commuting bats.
- A3.4 Activity surveys were conducted using Elekon Batlogger M detectors and observations of the time, location and activity of all bats seen or heard were noted. Bats were identified on the basis of their characteristic echolocation calls, which were recorded and analysed using computer sonogram analysis (BatExplorer) to confirm species identification. Species of Myotis bats and long-eared bats (*Plecotus sp.*) are difficult to tell apart solely from their echolocation calls and were therefore grouped as such.

Automated Detector Surveys

- A3.5 To supplement the manual transect survey data, and given the nature of habitats occurring onsite coupled with the presence of known bat roosts within the locality, bat activity within the Application Site was also sampled using automated bat detectors which automatically trigger and record bat echolocation calls. In accordance with best practice guidance¹⁹²⁰²¹, one detector per proposed turbine location was deployed as a minimum, with additional detectors deployed where necessary so as to capture all suitable habitats and topographical features encompassed by the Application Site.
- A3.6 Whilst the number and locations of turbines proposed across the Application Site had yet to be defined during 2020, up to five turbine locations were assumed. To ensure comprehensive coverage of all suitable habitats across the Application Site therefore, five

¹⁹ Collins, J. (ed.) (2016). Bat Surveys: for Professional Ecologists: Good Practice Guidelines (3rd edition). The Bat Conservation Trust, London

²⁰ Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Version: January 2019.

²¹ Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Version: August 2021.

detectors were deployed onsite during 2020 and 2021. This was reduced to four during 2023 following a refinement of the proposals, as illustrated at **Plan EDP 8.7**.

A3.7 Automated static detectors were deployed across the Application Site at monthly intervals between May and October 2020, April and October 2021, and June and August 2023. Each automated detector was deployed for a minimum of ten consecutive nights per month deployed. Full spectrum detectors were used, comprising Anabat Swift detectors. On each occasion, detectors were fixed securely in their location, with an external microphone attached circa 1m - 2m above ground and directed away from vegetation to maximise detector sensitivity. **Tables EDP A3.2**, **A3.3** and **A3.4** provides the microphone details for the detectors deployed during the sampling periods.

				Microphone		
Sampling Period	Detector ID	Location Description	Adjacent/Nearby Habitat	Height (m)	Direction	Sensitivity
	1	On a mature beech tree	Sheep grazing grassland field	2.0	NE	14
May 18.05.20 - 28.05.20	2	On a fir tree which makes up a boundary between two fields	Agricultural field growing crop for sheep grazing	1.75	E	14
	3	On a large branch in the first mature beech tree on the field boundary	Sheep grazing grassland field	1.75	E	14
	4	Attached to a small hawthorn near the corner of a field	Cow grazing grassland field	1.0	W	14
	5	Within a mature beech hedge	Cow grazing grassland field	1.75	W	14
	1	On a mature beech tree	Sheep grazing grassland field	2.0	E	14
June 15.06.20 - 25.06.20	2	On a fir tree which makes up a boundary between two fields	Agricultural field growing crop for sheep grazing	1.9	E	14
	3	On a large branch in the first mature beech tree on the field boundary	Sheep grazing grassland field	1.6	E	14
	4	Attached to a small hawthorn near the corner of a field	Cow grazing grassland field	1.4	N	14
	5	Within a mature beech hedge	Cow grazing grassland field	1.5	N W	14

Table EDP A3.2: Automated Detector ID, Location and Adjacent Habitat - 2020

				Microphone		
Sampling Period	Detector ID	Location Description	Adjacent/Nearby Habitat	Height (m)	Direction	Sensitivity
	1	On a mature beech tree	Sheep grazing grassland field	2.0	NE	14
July 17.07.20 - 27.07.20	2	On a fir tree which makes up a boundary between two fields	Agricultural field growing crop for sheep grazing	1.0	E	14
	3	On a large branch in the first mature beech tree on the field boundary	Sheep grazing grassland field	1.5	E	14
	4	Attached to a small hawthorn near the corner of a field	Cow grazing grassland field	1.0	SE	14
	5	Within a mature beech hedge	Cow grazing grassland field	1.75	w	14
	1	On a mature alder tree by wall	Sheep grazing grassland field	1.1	E	14
	2	On a fir tree which makes up a boundary between two fields	Agricultural field growing crop for sheep grazing	2	SE	14
August 14.08.20 - 24.08.20	3	On a large branch in the first mature beech tree on the field boundary	Sheep grazing grassland field	1.5	E	14
	4a	Attached to a small hawthorn near the corner of a field	Cow grazing grassland field	1.8	S	14
	5	Within a mature beech hedge	Cow grazing grassland field	1.8	N	14
	1	On a mature beech tree	Sheep grazing grassland field	1.6	W	14
September 15.09.20 - 25.09.20	2	On a fir tree which makes up a boundary between two fields	Agricultural field growing crop for sheep grazing	1.5	E	14
	3	On a large branch in the first mature beech tree on the field boundary	Sheep grazing grassland field	1.6	E	14
	4	Attached to a small hawthorn near the corner of a field	Cow grazing grassland field	1.7	SW	14
	5	Within a mature beech hedge	Cow grazing grassland field	1.75	N W	14

				Microphone		
Sampling Period	Detector ID	Location Description	Adjacent/Nearby Habitat	Height (m)	Direction	Sensitivity
	1	On a mature beech tree	Sheep grazing grassland field	1.5	NE	14
October 16.10.20 - 26.10.20	2	On a fir tree which makes up a boundary between two fields	Agricultural field growing crop for sheep grazing	1.5	S	14
	3	On a large branch in the first mature beech tree on the field boundary	Sheep grazing grassland field	1.5	N	14
	4	Attached to a small hawthorn near the corner of a field	Cow grazing grassland field	1.5	E	14
	5	Within a mature beech hedge	Cow grazing grassland field	2	SE	14

				Microphone		
Sampling Period	Detector ID	Location Description	Adjacent/Nearby Habitat	Height (m)	Direction	Sensitivity
April 16.04.21 - 26.04.21	1	On a mature beech tree	Sheep grazing grassland field	1.6	W	14
	2	On a fir tree which makes up a boundary between two fields	Agricultural field growing crop for sheep grazing	1.5	E	14
	3	On a large branch in the first mature beech tree on the field boundary	Sheep grazing grassland field	1.6	E	14
	4	Attached to a small hawthorn near the corner of a field	Cow grazing grassland field	1.5	SW	14
	5	Within a mature beech hedge	Cow grazing grassland field	1.75	N W	14
Мау	1	On a mature beech tree	Sheep grazing grassland field	1.5	N W	14
23.05.21 - 01.06.21	2	On a fir tree which makes up a boundary between two fields	Agricultural field growing crop for sheep grazing	1.5	SE	14

				Microphone		
Sampling Period	Detector ID	Location Description	Adjacent/Nearby Habitat	Height (m)	Direction	Sensitivity
	3	On a large branch in the first mature beech tree on the field boundary	Sheep grazing grassland field	2	w	14
	4	Attached to a small hawthorn near the corner of a field	Cow grazing grassland field	2	SE	14
	5	Within a mature beech hedge	Cow grazing grassland field	2	N W	14
June 18.06.21 - 28.06.21	1	On a mature beech tree	Sheep grazing grassland field	0.7	W	14
	2	On a fir tree which makes up a boundary between two fields	Agricultural field growing crop for sheep grazing	1.0	E	14
	3	On a large branch in the first mature beech tree on the field boundary	Sheep grazing grassland field	1.5	E	14
	4	Attached to a small hawthorn near the corner of a field	Cow grazing grassland field	1.6	E	14
	5	Within a mature beech hedge	Cow grazing grassland field	1.4	s	14
	1	On a mature beech tree	Sheep grazing grassland field	2.0	NE	14
July 08.07.21 - 18.07.21	2	On a fir tree which makes up a boundary between two fields	Agricultural field growing crop for sheep grazing	1.75	E	14
	3	On a large branch in the first mature beech tree on the field boundary	Sheep grazing grassland field	1.5	E	14
	4	Attached to a small hawthorn near the corner of a field	Cow grazing grassland field	1.75	w	14
	5	Within a mature beech hedge	Cow grazing grassland field	1.75	N	14

				Microphone		
Sampling Period	Detector ID	Location Description	Adjacent/Nearby Habitat	Height (m)	Direction	Sensitivity
August 05.08.21 - 15.08.21	1	On a mature beech tree	Woodland	1.6	N W	14
	2	On a fir tree which makes up a boundary between two fields	Agricultural field growing crop for sheep grazing	1.4	E	14
	3	On a large branch in the first mature beech tree on the field boundary	Sheep grazing grassland field	1.4	SE	14
	4	Attached to a small hawthorn near the corner of a field	Cow grazing grassland field	1.4	S	14
	5	Within a mature beech hedge	Cow grazing grassland field	1.75	N	14
September 17.09.21 - 27.09.21	1	On a mature beech tree	Sheep grazing grassland field	2.0	N	14
	2	On a fir tree which makes up a boundary between two fields	Agricultural field growing crop for sheep grazing	1.75	E	14
	3	On a large branch in the first mature beech tree on the field boundary	Sheep grazing grassland field	1.5	E	14
	4	Attached to a small hawthorn near the corner of a field	Cow grazing grassland field	1.75	w	14
	5	Within a mature beech hedge	Cow grazing grassland field	1.75	N	14
	1	On a mature beech tree	Sheep grazing grassland field	2.0	SW	14
October 13.10.21 - 23.10.21	2	On a fir tree which makes up a boundary between two fields	Agricultural field growing crop for sheep grazing	2	E	14
	3	On a large branch in the first mature beech tree on the field boundary	Sheep grazing grassland field	1.7	E	14
	4	Attached to a small hawthorn near the corner of a field	Cow grazing grassland field	1.8	W	14

	Detector ID	Location Description		Microphone		
Sampling Period			Adjacent/Nearby Habitat	Height (m)	Direction	Sensitivity
	5	Within a mature beech hedge	Cow grazing grassland field	2	W	14

				Microphone	
Sampling Period	Detector ID	Location Description	Adjacent/Nearby Habitat	Height (m)	Direction
	1	On a mature beech tree	Grazed pasture and woodland edge	2.0	W
June	3	On a mature beech tree	Grazed pasture	1.5	SW
29.06.23	6	On edge of treeline	Grazed pasture	2.0	NE
	7	Midway along treeline	Grazed pasture	2.0	w
July 11.07.23 - 20.07.23	1 (replacement from June due to failure)	On a mature beech tree	Grazed pasture	2.0	W
	1	On mature beech tree	Grassland	1.75	W
July	3	In treeline	Grazed pasture	1.50	W
03.08.23	6	In treeline	Grazed pasture	1.50	S
00100120	7	On mature beech tree	Grazed pasture	1.50	SW
August 15.08.23 -	1	On mature beech tree	Grassland	1.75	W
	3	In treeline	Grazed pasture	1.50	W
24.08.23	6	In treeline	Grazed pasture	1.50	Е
	7	In treeline	Grazed pasture	1.50	W

Table EDP A3.4: Automated Detector ID, Location and Adjacent Habitat - 2023

A3.8 The sound files recorded by the automated detectors were filtered specifically for each of the UK's bat species/species groups using Anabat Insight's filter function. The parameters

for the species filters are based on that proposed by Chris Corben and Kim Livengood²² and have been fine-tuned using known call parameters for each of the species. All files passing the various filters were checked manually using Anabat Insight software in accordance with published parameters²³²⁴ to confirm the species identification of each bat call.

Limitations

- A3.9 Static detectors have been deployed within those habitats of greatest value for a foraging/commuting bat assemblage (e.g. treelines) and thus are likely to have recorded greater activity compared to open habitat in which turbines are predominantly located. As such, it is considered that an assessment of impacts will have adopted a precautionary approach, based on data acquired from those habitats likely to support greatest bat activity within the vicinity of each turbine.
- A3.10 A static detector was moved from its usual location at Location 4 in August 2020 due to the presence of cows with young calves. This is marked on the map as Location **4a**.
- A3.11 Two static detectors failed to record in October 2020. Given that activity was generally recorded as being low in the months of October across other detectors, and all detectors recorded without issue in October 2021, this is not considered to be a significant constraint.
- A3.12 One static detector failed in June 2023 with a replacement detector was positioned in July to compensate. This is therefore not considered to be a significant constraint.
- A3.13 Although the temperature at sunset dropped to below 10 degrees on a few nights, this was generally in the spring and autumn months when bat activity will generally be lower. Such natural fluctuations are usual for the seasons, and given that the majority of survey nights had temperatures of 10 degrees or above at sunset, it is not considered that the survey results were adversely impacted.
- A3.14 The identification of calls and species using Anabat Insight software is dependent upon the quality of the recording made, which can be influenced by the following factors that may limit levels of activity and species recorded:
 - Weather conditions rainfall and wind;
 - Distance of bat from detector;
 - Presence of obstructions through which the noise must pass i.e. trees; and
 - Proximity of other noise sources such as roads.
- A3.15 Furthermore, certain species, such as long eared bats (*Plecotus sp.*), which echolocate very quietly, and horseshoe bats (*Rhinolophus sp.*), which have a very directional call, can be

²² Taken from Analook W training course and workshop, September 2013

²³ Russ (2012). *British Bat Calls, a guide to species identification*. Pelagic Publishing, Exeter

²⁴ Russ (2021). Bat Calls of Britain and Europe, a guide to species identification. Pelagic Publishing, Exeter.

under recorded. However, given that a range of survey types was carried out, this is not considered to be a significant limitation.

Weather Station Data

- A3.16 A weather station was deployed onsite throughout the bat activity survey period to enable recordings of temperature, wind speed and direction, humidity, rainfall and atmospheric pressure to be taken on an hourly basis. The location of the weather station is illustrated at **Plan EDP 8.8**.
- A3.17 Temperature, precipitation levels and windspeed at sunset were recorded throughout the deployment period of the automated detectors, as further detailed in **Tables EDP A3.5**, **A3.6** and **A3.7** below.

Automated Detector Deployment Date	Sunset time	Temperature (°C) at sunset	Precipitation (mm) at sunset	Windspeed (mph) at sunset	
August 2020	•	•	•	•	
14.08.2020	20:36	16.9	0.0	0.0	
15.08.2020	20:34	15.1	0.0	2.0	
16.08.2020	20:32	15.0	0.6	0.0	
17.08.2020	20:30	14.9	0.0	3.0	
18.08.2020	20:28	16.9	0.0	2.0	
19.08.2020	20:26	17.3	0.0	2.0	
20.08.2020	20:24	15.6	0.0	3.0	
21.08.2020	20:22	14.6	0.0	14.0	
22.08.2020	20:20	12.6	0.2	12.0	
23.08.2020	20:18	12.8	0.0	7.0	
September 2020					
15.09.2020	19:26	19.9	0.0	0.0	
16.09.2020	19:24	16.9	12.9	0.0	
17.09.2020	19:21	14.7	8.0	0.0	
18.09.2020	19:19	14.8	17.7	0.0	
19.09.2020	19:17	15.4	17.7	0.0	
20.09.2020	19:14	15.5	11.3	0.0	
21.09.2020	19:12	18.2	4.8	0.0	
22.09.2020	19:10	13.1	11.3	0.0	
23.09.2020	19:07	8.7	6.4	0.5	
24.09.2020	19:05	7.6	0.0	0.0	

 Table EDP A3.5: Weather data collected during automated detector deployment period – 2020.

Automated Detector Deployment Date	Sunset time	Temperature (°C) at sunset	Precipitation (mm) at sunset	Windspeed (mph) at sunset		
April 2021		1				
16.04.2021	20:11	5.2	0	4.0		
17.04.2021	20:13	7.9	0	3.0		
18.04.2021	20:15	8.9	0	2.0		
19.04.2021	20:16	9.9	0	1.0		
20.04.2021	20:18	11.6	0	0.0		
21.04.2021	20:20	9.1	0	6.0		
22.04.2021	20:21	9.8	0	4.0		
23.04.2021	20:23	11.6	0	4.0		
24.04.2021	20:25	11.5	0	6.0		
25.04.2021	20:26	8.8	0	10.0		
26.04.2021	20:28	8.9	0	2.0		
May 2021		•				
22.05.2021	21:09	5.9	0	4.0		
23.05.2021	21:10	5.8	0.4	8.0		
24.05.2021	21:12	7.6	0	5.0		
25.05.2021	21:13	7	0	3.0		
26.05.2021	21:14	10.8	0	1.0		
27.05.2021	21:15	11.4	0	1.0		
28.05.2021	21:17	12.7	0	1.0		
29.05.2021	21:18	14.1	0	1.0		
30.05.2021	21:19	12.3	0	3.0		
31.05.2021	21:20	15.7	0	1.0		
June 2021						
18.06.2021	21:34	11.7	0	3.0		
19.06.2021	21:34	11.3	1.4	2.0		
20.06.2021	21:34	10.8	0	6.0		
21.06.2021	21:34	10.4	0	4.0		
22.06.2021	21:35	10.3	0	0.0		
23.06.2021	21:35	12.3	0	1.0		
24.06.2021	21:35	13.3	0	4.0		
25.06.2021	21:35	10.7	2.2	0.0		

Table EDP A3.6: Weather data collected during automated detector deployment period - 2021

Automated Detector Deployment Date	Sunset time	Temperature (°C) at sunset	Precipitation (mm) at sunset	Windspeed (mph) at sunset	
26.06.2021	21:35	13.8	0	4.0	
27.06.2021	21:35	14.7	0	4.0	
July 2021					
08.07.2021	21:30	15.3	0	1.0	
09.07.2021	21:29	13.3	0	3.0	
10.07.2021	21:28	14.7	0	1.0	
11.07.2021	21:28	11.8	0.2	1.0	
12.07.2021	21:27	14.5	0.6	1.0	
13.07.2021	21:26	17.7	0	3.0	
14.07.2021	21:25	16.7	0	2.0	
15.07.2021	21:24	17.4	0	0.0	
16.07.2021	21:23	19.8	0	1.0	
17.07.2021	21:22	21.1	0	0.0	
August 2021					
05.08.2021	20:54	13.7	0	6.0	
06.08.2021	20:52	12.3	0.6	10.0	
07.08.2021	20:50	12.6	0	7.0	
08.08.2021	20:48	12.1	0	6.0	
09.08.2021	20:46	13.1	0	4.0	
10.08.2021	20:45	13.4	0	3.0	
11.08.2021	20:43	15.1	0.6	4.0	
12.08.2021	20:41	13.1	0	5.0	
13.08.2021	20:39	13.9	0	10.0	
14.08.2021	20:37	15.9	0	1.0	
15.08.2021	20:35	14.2	0	2.0	
16.08.2021	20:33	12.1	0	3.0	
17.08.2021	20:31	14.2	0	5.0	
September 2021					
17.09.2021	19:22	15.8	0	5.0	
18.09.2021	19:20	17.1	0	0.0	
19.09.2021	19:17	12.9	0	2.0	
20.09.2021	19:15	14.7	0	1.0	
21.09.2021	19:13	14.9	0	2.0	
Automated Detector Deployment Date	Sunset time	Temperature (°C) at sunset	Precipitation (mm) at sunset	Windspeed (mph) at sunset	
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22.09.2021	19:10	13.6	0	6.0	
23.09.2021	19:08	14.4	0	3.0	
24.09.2021	19:06	15.9	0	4.0	
25.09.2021	19:03	16.2	0	0.0	
26.09.2021	19:01	15.8	0	4.0	
October 2021					
13.10.2021	18:23	12.2	0	0.0	
14.10.2021	18:20	11.7	0	7.0	
15.10.2021	18:18	9.6	0	2.0	
16.10.2021	18:16	11.4	0	0.0	
17.10.2021	18:14	13	0	2.0	
18.10.2021	18:12	14.7	0	4.0	
19.10.2021	18:10	15.1	2.4	9.0	
20.10.2021	18:08	10.3	0	1.0	
21.10.2021	18:06	7.1	0	3.0	
22.10.2021	18:04	7.7	0	2.0	

Table EDP A3.7: Weather data collected during automated detector deployment period - 2023

Automated Detector Deployment Date	Sunset time	Temperature (°C) at sunset	Precipitation (mm) at sunset	Windspeed (mph) at sunset
June 2023				
19.06.2023	21:34	16.0	0	1.5
20.06.2023	21:34	14.9	0	2.5
21.06.2023	21:34	16.6	0	2.0
22.06.2023	21:35	17.4	0	1.5
23.06.2023	21:35	16.9	0	7.0
24.06.2023	21:35	19.3	0	2.0
25.06.2023	21:35	14.2	0	6.5
26.06.2023	21:35	14.0	0	4.5
27.06.2023	21:35	15.3	0.1	8.5
28.06.2023	21:34	14.5	0	4.0
29.06.2023	21:34	12.7	0	1.5

Automated Detector Deployment Date	Sunset time	Temperature (°C) at sunset	Precipitation (mm) at sunset	Windspeed (mph) at sunset
July 2023				
11.07.2023	21:28	13.6	0	5.5
12.07.2023	21:27	13.0	0	7.0
13.07.2023	21:26	13.6	0	5.0
14.07.2023	21:25	13.4	0	11.0
15.07.2023	21:24	12.9	1.0	11.0
16.07.2023	21:23	11.7	0	7.0
17.07.2023	21:22	12.4	0	3.5
18.07.2023	21:21	12.7	0	4.5
19.07.2023	21:20	14.2	0	1.0
20.07.2023	21:19	13.4	0	2.0
July 2023	•		·	
25.07.2023	21:12	12.8	0	1.0
26.07.2023	21:11	13.7	1.2	10.0
27.07.2023	21:09	14.3	0	5.0
28.07.2023	21:08	13.6	0	8.0
29.07.2023	21:06	13.1	0	8.0
30.07.2023	21:05	14.2	0.6	11.0
31.07.2023	21:03	13.2	0	6.0
01.08.2023	21:01	12.2	0.2	3.0
02.08.2023	21:00	14.6	0	2.0
03.08.2023	20:58	12.3	0	3.0
August 2023				
15.08.2023	20:36	16.8	0	5.5
16.08.2023	20:34	17.3	0	5.0
17.08.2023	20:32	17.5	0	5.5
18.08.2023	20:30	17.6	2.2	5.0
19.08.2023	20:28	15.4	0	5.5
20.08.2023	20:26	15.5	0	6.5
21.08.2023	20:24	15.3	0	5.5
22.08.2023	20:22	14.7	0	1.5
23.08.2023	20:20	18.2	0	1.0
24.08.2023	20:17	13.6	0	1.0

INVESTIGATIONS OF BAT ROOSTING

Investigations of Trees

Preliminary Ground Level Assessment

- A3.18 To determine the potential impacts of the proposed development on bats potentially roosting within trees, all trees located within the survey buffer for each of the four proposed turbine locations were subject to a ground level visual assessment with reference to current best practice guidance.
- A3.19 The surveyed area encompassed all suitable trees within a 130m radius from each proposed turbine location (50m radius from each proposed turbine plus an 80m turbine blade radius).
- A3.20 Each tree/tree group within the survey buffer was subject to a ground level assessment by a suitably qualified Natural Resource Wales (NRW) bat licensed ecologist and assistant on 30 May 2022 for the presence of, or potential to support, roosting bats. A further ground level assessment was undertaken of those trees associated with the proposed access route associated with the northern parcel of the Application Site on 22 August 2023 by a suitably qualified NRW bat licensed ecologist.
- A3.21 Each tree was searched as thoroughly as possible with the use of binoculars where necessary, on all elevations where accessibility allowed. Where groups of trees, particularly coniferous woodland blocks, were encountered, an assessment was made of the tree group's potential to support roosting bats rather than an assessment of each individual tree. The location of each tree subject to survey is illustrated at **Plan EDP 8.9**.
- A3.22 Suitable features for roosting bats sought for during the assessment included:
 - Loss/peeling/fissured bark;
 - Natural holes e.g. rot holes and holes from fallen limbs;
 - Woodpecker holes;
 - Cracks/splits or hollow tree trunks/limbs; and
 - Thick-stemmed ivy/epicormic growth.
 - Signs of roosting bats sought for included:
 - Bat/s roosting *in-situ*;
 - Bat droppings within or beneath a feature (hole or split);
 - Staining around or beneath a feature;
 - Oily marks (staining) around roost access points;
 - Audible squeaking from the roost;

- Large/regularly used roosts or regularly used sites may produce an odour; and
- Flies around the roost, attracted by the smell of guano.
- A3.23 All accessible Potential Roost Features (PRFs) were also subject to an endoscopic inspection utilising a 'Ridgid seesnake' endoscope with either a 15mm or 5mm diameter head attached to a 1.8m extension, alongside use of a digital camera where necessary.
- A3.24 Based upon the results of the visual assessment and features/evidence identified, the following ratings for trees were used during the assessment:
 - Known or confirmed roost European Protected Species (EPS) licence required for works to tree to be completed lawfully;
 - High suitability One or more PRFs that are capable of supporting larger numbers of bats on a regular basis;
 - Medium suitability One or more PRFs that are capable of supporting bats but are unlikely to support a roost of high conservation status;
 - Low suitability A tree of sufficient size to contain PRFs but none seen from the ground, or only very limited roosting potential; and
 - Negligible suitability Negligible suitability to support roosting bats.

Detailed Ground Level and Aerial Tree Inspections

- A3.25 All trees identified as having moderate or high potential to support roosting bats were subject to further inspections of their PRFs on 09 June 2022 and 23 August 2022, ensuring two inspections on all trees with moderate potential and three inspections on all trees with high potential. Trees subject to inspections are illustrated at **Plan EDP 8.10**.
- A3.26 Detailed tree inspection surveys were undertaken by a suitably qualified NRW bat licensed ecologist and assistant. To inspect hollows and cavities at both ground level and at height, a 'Ridgid seesnake' endoscope with a 15mm or 5mm diameter head with a 1.8m extension was used, alongside a digital camera. In respect of aerial inspections, these were carried out using recognised arboricultural tree climbing techniques, with the use of a rope, harness and ladder to allow inspection of bat roost potential features.
- A3.27 Details of each potential roosting feature were recorded including the type of feature, location within the tree, height and orientation of feature, notes relating to the feature including any evidence of bats and the potential of each feature to support roosting bats (categorised as having a confirmed roost, or else having high, moderate, low or negligible potential to support roosting bats).

Limitations

A3.28 Visual assessments for roosting bats can be undertaken at any time of year. As such, these investigations were not limited by seasonal or climatic factors.

- A3.29 Bats are mobile animals and will move between a series of different roost sites, frequently establishing and occupying new roost sites depending on seasonal requirements and resources available locally. This survey, therefore, only provides a snapshot of the conditions present at the Application Site at the time of survey.
- A3.30 Due to the large size of many of the trees located within the survey area, particularly beech specimens, it was not possible to be certain that all PRFs were identified from ground level.

Investigations of Built Structures

Preliminary Roost Assessment of Built Structures

- A3.31 To determine the potential impacts of the proposed development on bats that could potentially be roosting within built structures, all buildings located within the survey radius were subject to a visual assessment on 30 May 2022, where accessible, with reference to current best practice guidance.
- A3.32 The surveyed area encompassed all buildings/structures within 200m radius of each proposed turbine plus an 80m turbine blade radius, and therefore a 280m survey radius was applied to each of the proposed turbine locations. In addition, visual assessments of additional buildings/structures identified within 280m of the Application Site (where access was available) were also undertaken. The location of each building within the Application Site is illustrated at **Plan EDP 8.11**.
- A3.33 The exterior walls and roofs of the buildings were viewed from ground level using a highpowered torch and binoculars where appropriate. Features searched included cracks/holes in the stone/brick/woodwork, gaps under roof or ridge tiles, loose/lifted lead flashing or roof felt, cavity walls with potential access points, gaps between lintels above doors and windows, gaps between the barge- or soffit-boards and outside walls, and cracks between the window frames and the walls. Possible bat access points around the eaves and bargeboarding of some buildings were noted, and areas where bat droppings may accumulate such as on the ground, ledges, windowsills and walls below such features were inspected.
 - The signs searched for comprised the following:
 - Bat(s) roosting *in situ*;
 - Bat droppings or urine splashes within or beneath a feature/access point;
 - Feeding remains (e.g., insect wings and beetle wing cases);
 - Oily marks, smoothly worn surfaces or staining around a feature/access point;
 - Audible squeaking from the roost; and
 - Large/regularly used roosts may produce a distinctive odour.
- A3.34 Based upon the evidence/features identified, each building was assigned one of the following categories:

- Known or confirmed roost European Protected Species (EPS) licence may be required for modifications, and will be required for demolition, to be completed lawfully;
- High suitability Structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat;
- Moderate suitability Structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only);
- Low suitability Structure with one or more potential roost sites that could be used by individual bats opportunistically. These roost sites do not provide enough space, shelter, protection, appropriate conditions and suitable surrounding habitat to be used on a regular basis or by larger numbers of bats; and
- Negligible suitability No potential to support roosting bats.

Limitations

- A3.35 Preliminary roost assessments of buildings can be undertaken at any time of year and these assessments were therefore not limited by seasonal or climatic factors.
- A3.36 Bats are mobile animals and will move between a series of different roost sites, frequently establishing and occupying new roost sites depending on seasonal requirements and resources available locally. This survey, therefore, only provides a snapshot of the conditions present at the Application Site at the time of survey.
- A3.37 Due to Covid-19 restrictions, internal access to residential buildings and associated outbuildings within the survey radius was not possible. As such, all built structures were subject to an external assessment only, during which any evidence of, or potential to support roosting bats was recorded.
- A3.38 No access was possible to buildings located within the central parcel or to some buildings in the northern parcel which are privately owned, with no access granted.

Dusk Emergence/Dawn Re-entry Surveys

A3.39 With reference to best practice guidance, structures **B1**, **B2**, and **B3** were considered to have moderate suitability to support roosting bats and were therefore subject to two dusk emergence surveys to confirm presence/infer absence of roosting bats. Building **B4** was considered to have low suitability to support roosting bats and was therefore subject to a single dusk emergence survey. Building **B4** was also endoscoped on the 14 September 2022 by an NRW licenced bat ecologist. All surveys were completed during the main bat active season (May - September).

- A3.40 Given that roosting bats were confirmed within buildings **B1** and **B3**, a third emergence survey was carried out of buildings **B1** and **B3** in July 2023, which included an updated emergence survey of **B2** at the same time.
- A3.41 All surveys were undertaken by suitably experienced surveyors, including NRW bat licensed ecologists, equipped with Batlogger bat detectors who were suitably positioned to ensure adequate coverage of all elevations of each structure (where land access was permitted) and suitable roosting features/access points previously identified during the roost assessment. Surveyor locations are illustrated at **Plan EDP 8.12**. Detailed field notes and recordings were also made during the surveys to allow for in-situ and ex-situ identification and analyses.
- A3.42 Each dusk emergence survey commenced approximately 15 minutes before sunset and continued for 1.5 to 2 hours after sunset. A summary of survey effort date including dates, timings and weather conditions is included within **Table EDP A3.8**.

Date	Start/ Finish Time	Sunset/ Sunrise Time	Temp (C°)	Cloud (%)	Rain	Wind (Beaufort Scale)	Buildings Surveyed
30.08.22	19:47 -	20:02	17-19	10	0	2	B1
	21:32						B2
							B 3
							B4
14.09.22	19:15 -	19:30	15-18	<5%	0	0	B1
	21:00						B2
							B 3
27.07.23	20:54 -	21:09	17-18	100	0	3	B1
	22:39						B2
							B 3

Table EDP A3.8: Summary of Bat Emergence Surveys

Limitations

- A3.43 All surveys completed were undertaken during suitable weather conditions at an appropriate time of year and as such are not considered to be limited by seasonal or climatic factors.
- A3.44 On the first dusk emergence survey, one of the Batloggers had technical issues. However, the surveyor did not visually record any bats interacting with the building (**B2**). Therefore, this is not considered to be a significant constraint.
- A3.45 Between the 30 August 2022 and 14 September 2022, there was a fire in the single-storey south-eastern extension of **B1**. This section of building primarily comprised garage units and was not noted as having features suitable for bats (based on an external assessment only). Following the fire, this section of building had been mostly dismantled prior to the second dusk emergence survey, due to its structural instability. Given that bats were recorded roosting within another unaffected section of **B1** on the second dusk emergence survey, this is not considered to be a constraint.

A3.46 On the second survey, a bat was not echolocating as it emerged from building **B1**. Given that all other bats roosting in the building were identified as common pipistrelle, and in consideration of its early emergence time, size and characteristic flight, with only this species recorded in the preceding and following minutes, this record was attributed to common pipistrelle bat.

Annex EDP 4 Manual Bat Transect Survey Results

- A4.1 The results of the manual transect surveys are summarised in the tables below and should be read in conjunction with **Plans EDP 8.16 8.27**.
- A4.2 Common pipistrelle was the most abundant species recorded, forming between 75%-100% of total recordings each month across the survey period. Soprano pipistrelle was the second most frequently recorded species, with Myotis spp., serotine, noctule, Nathusius' pipistrelle, lesser horseshoe and long-eared bats rarely recorded. August had the most activity overall, with April, September and October having significantly less activity.

Month	Species	North Transect	South Transect	Total	Species Proportion (%)
	Common pipistrelle	73	73	146	96.69
May	Soprano pipistrelle	2	1	3	1.99
way	Myotis spp.	0	2	2	1.32
	Total	75	76	151	100.00
	Common pipistrelle	86	115	201	96.63
	Soprano pipistrelle	1	3	4	1.92
luno	Myotis spp.	0	1	1	0.48
Julie	Lesser Horseshoe	1	0	1	0.48
	Plecotus spp.	0	1	1	0.48
	Total	88	120	208	100.00
	Common pipistrelle	51	120	171	83.01
	<i>Myoti</i> s spp.	0	20	20	9.71
lub/	Soprano pipistrelle	1	6	7	3.40
July	Plecotus spp.	1	1 6		3.40
	Noctule	1	0	1	0.49
	Total	54	152	206	100.00
	Common pipistrelle	94	242	336	76.54
	Soprano pipistrelle	6	45	51	11.62
August	Plecotus spp.	1	28	29	6.61
	Myotis spp.	2	21	23	5.24
	Total	103	336	439	100.00
	Common pipistrelle	42	59	101	93.52
Sontombor	Soprano pipistrelle	1	5	6	5.56
September	Plecotus spp.	1	0	1	0.93
	Total	44	64	108	100.00

Table EDP A4.1: Manual Transect Survey Results 2020

Month	Species	North Transect	South Transect	Total	Species Proportion (%)
October	Common pipistrelle	11	2	13	92.86
	Soprano pipistrelle	1	0	1	7.14
	Total	12	2	14	100.00

Table EDP A4.2: Manual Transect Survey Results 2021

Month	Species	North Transect	South Transect	Total	Species Proportion (%)
April	Common pipistrelle	0	1	1	100.00
Арпі	Total	0	1	1	100.00
	Common pipistrelle	0	20	20	62.50
Mov	Soprano pipistrelle	0	11	11	34.38
Ividy	Myotis spp.	0	1	1	3.13
	Total	0	32	32	100.00
	Common pipistrelle	47	131	178	95.70
luna	Myotis spp.	5	0	5	2.69
June	Soprano pipistrelle	0	3	3	1.61
	Total	52	134	186	100.00

Table EDP A4.3: Manual Transect Survey Results - 2023

Month	Species	North Transect	South Transect	Total	Species Proportion (%)
	Common pipistrelle	52	81	133	92.36
	<i>Myoti</i> s spp.	3	3	4	2.78
June	Nathusius' pipistrelle	0	4	6	4.17
	Soprano pipistrelle	0	1	1	0.69
	Total	55	89	144	100.00
	Common pipistrelle	39	117	156	90.70
lub/	Soprano pipistrelle	0	15	15	8.72
July	<i>Myotis</i> spp.	0	1	1	0.58
	Total	39	133	172	100.00

Month	Species	North Transect	South Transect	Total	Species Proportion (%)
August	Common pipistrelle	141	106	247	80.72
	Soprano pipistrelle	23	13	36	11.76
	Myotis spp.	4	13	17	5.56
	Serotine	3	1	4	1.31
	Noctule	1	0	1	0.33
	Greater horseshoe	0	1	1	0.33
	Total	172	134	306	100.00

Table EDP A4.4: Summary of Transect Results - Table and Graph

Date	Common pipistrelle	Soprano pipistrelle	Myotis spp.	Plecotus spp.	Nathusius' pipistrelle	Serotine	Noctule	Greater horseshoe	Lesser Horseshoe	Grand Total
2020										
Мау	146	3	2	0	0	0	0	0	0	151
June	201	4	1	1	0	0	0	0	1	208
July	171	7	20	7	0	0	1	0	0	206
August	336	51	23	29	0	0	0	0	0	439
October	13	1	0	0	0	0	0	0	0	14
September	101	6	0	1	0	0	0	0	0	108
Total	968	72	46	38	0	0	1	0	1	1,126
2021										
April	1	0	0	0	0	0	0	0	0	1
Мау	20	11	1	0	0	0	0	0	0	32
June	178	3	5	0	0	0	0	0	0	186
Total	199	14	6	0	0	0	0	0	0	219
2023										
June	133	1	4	0	6	0	0	0	0	144
July	156	15	1	0	0	0	0	0	0	172
August	247	36	17	0	0	4	1	1	0	306
Total	536	52	22	0	6	4	1	1	0	622
Grand Total	1703	138	74	38	6	4	2	1	1	1,967



Annex EDP 5 Automated Bat Detector Results

- A5.1 A total of nine species/species groups were recorded using automated static detectors, including: common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, noctule, serotine, *Plecotus* spp., *Myotis* spp., lesser horseshoe bat and greater horseshoe bat, with species diversity broadly consistent between the current proposed locations for wind turbines (static detector locations 3, 6 and 7).
- A5.2 Species diversity and activity was highest during the summer months, with lower diversity and activity in spring and autumn.
- A5.3 The results of the automated static detector surveys are summarised in the tables below, with 2023 data illustrated at **Plans EDP 8.28 8.30**.

 Table EDP A5.1: Automated Detector Survey Results May 2020

					Numbe	er of Bat P	asses per	Night					(%
Location	Species	18 May	19 May	20 May	21 May	22 May	23 May	24 May	25 May	26 May	27 May	Total	Species Proportion (
L1	Common pipistrelle	0	0	2	0	0	0	10	30	11	3	56	96.5
	Myotis spp.	1	0	0	0	0	0	0	0	0	0	1	1.7
	Serotine	0	1	0	0	0	0	0	0	0	0	1	1.7
	Total	1	1	2	0	0	0	10	30	11	3	58	100.0
L2	Common pipistrelle	0	3	3	0	0	0	4	4	1	0	15	83.3
	Myotis spp.	1	1	0	0	0	1	0	0	0	0	3	16.6
	Total	1	4	3	0	0	1	4	4	1	0	18	100.0
L3	Common pipistrelle	11	20	20	9	9	3	27	29	5	6	139	90.8
	Soprano pipistrelle	0	0	6	0	0	0	0	0	0	0	6	3.9
	Myotis spp.	2	0	0	1	0	0	1	0	0	0	4	2.6
	Serotine	0	0	0	0	0	0	1	2	1	0	4	2.6
	Total	13	20	26	10	9	3	29	31	6	6	153	100.0
L4	Common pipistrelle	21	22	32	3	104	67	87	93	36	31	496	56.8
	Myotis spp.	0	0	0	0	0	0	0	1	1	0	2	0.2
	Noctule	0	1	0	0	0	0	0	0	0	0	1	0.1
	Nyctalus/Eptesicus spp.	3	0	2	223	49	8	1	1	34	48	369	42.2
	Soprano pipistrelle	0	0	0	0	0	0	0	1	2	1	4	0.4
	Serotine	0	0	1	0	0	0	0	0	0	0	1	0.1
	Total	24	23	35	226	153	75	88	96	73	80	873	100.0

					Numbe	r of Bat P	asses per	Night					(%)
Location	Species	18 May	19 May	20 May	21 May	22 May	23 May	24 May	25 May	26 May	27 May	Total	Species Proportion (
L5	Common pipistrelle	22	171	268	36	4	4	166	290	172	190	1,323	94.4
	Greater horseshoe	0	0	1	0	0	0	0	0	0	0	1	0.1
	Myotis spp.	1	0	0	0	0	0	1	1	3	0	6	0.4
	Noctule	0	1	0	0	0	0	0	0	0	0	1	0.1
	Soprano pipistrelle	0	1	6	0	0	0	3	39	10	3	62	4.4
	Serotine	0	0	1	0	0	0	1	4	2	0	8	0.6
	Total	23	173	276	36	4	4	171	334	187	193	1,401	100.0
	Grand Total	62	221	342	272	166	83	302	495	278	282	2,503	

 Table EDP A5.2: Automated Detector Survey Results June 2020

				N	lumber of	Bat Passes	s Recorded	l per Night					uo
Location	Species	15 June	16 June	17 June	18 June	19 June	20 June	21 June	22 June	23 June	24 June	Total	Species Proporti (%)
L1	Common pipistrelle	51	42	15	6	34	33	113	48	37	12	391	92.4
	Soprano pipistrelle	0	0	0	2	7	0	9	3	1	8	30	7.1
	Noctule	1	0	0	0	1	0	0	0	0	0	2	0.5
	Total	52	42	15	8	42	33	122	51	38	20	423	100.0
L2	Common pipistrelle	32	33	52	1	18	2	39	6	6	2	191	94.6
	Plecotus spp.	0	0	0	0	0	0	0	0	1	0	1	0.5
	Myotis	0	1	1	0	0	0	1	0	0	0	3	1.5
	Soprano pipistrelle	5	0	1	0	1	0	0	0	0	0	7	3.5
	Total	37	34	54	1	19	2	40	6	7	2	202	100.0
L3	Common pipistrelle	170	106	74	0	295	180	353	239	122	46	1,585	98.3
	Soprano pipistrelle	2	2	2	0	0	2	0	2	2	0	12	0.7
	Myotis spp.	1	0	0	0	0	0	1	1	1	2	6	0.4
	Plecotus spp.	0	0	5	0	0	0	0	0	0	0	5	0.3
	Serotine	0	0	1	0	0	0	0	0	0	3	4	0.2
	Noctule	0	0	0	0	0	0	0	0	0	1	1	0.1
	Total	173	108	82	0	295	182	354	242	125	52	1,613	100.0

				N	lumber of	Bat Passes	s Recorded	l per Night					Ion
Location	Species	15 June	16 June	17 June	18 June	19 June	20 June	21 June	22 June	23 June	24 June	Total	Species Proport (%)
L4	Common pipistrelle	91	88	19	7	25	87	24	86	154	88	669	97.1
	Soprano pipistrelle	0	2	0	0	1	0	0	4	5	1	13	1.9
	Myotis spp.	0	0	0	2	0	0	0	1	1	0	4	0.6
	Noctule	1	0	0	0	0	0	0	0	1	0	2	0.3
	Lesser horseshoe	1	0	0	0	0	0	0	0	0	0	1	0.1
	Total	93	90	19	9	26	87	24	91	161	89	689	100.0
L5	Common pipistrelle	261	244	109	0	195	480	118	603	599	280	2,889	97.6
	Soprano pipistrelle	2	3	1	0	1	2	12	12	6	4	43	1.5
	Myotis spp.	4	0	2	0	1	1	1	7	2	3	21	0.7
	Noctule	0	0	0	0	0	0	0	0	0	3	3	0.1
	Lesser horseshoe	0	0	0	0	1	0	0	0	1	0	2	0.1
	Serotine	0	0	0	0	0	0	0	1	0	0	1	0.0
	Total	267	247	112	0	198	483	131	623	608	290	2,959	100.0
	Grand Total	622	521	282	18	580	787	671	1,013	939	453	5,886	

 Table EDP A5.3: Automated Detector Survey Results July 2020

Ę				N	lumber of	Bat Passes	s Recorded	l per Night					s on
Locatio	Species	17 Jul	18 Jul	19 Jul	20 Jul	21 Jul	22 Jul	23 Jul	24 Jul	25 Jul	26 Jul	Total	Specie Proporti (%)
L1	Common pipistrelle	34	88	17	20	12	16	6	1	6	18	218	96.5
	<i>Myoti</i> s spp.	1	0	0	0	2	2	1	0	0	1	7	3.1
	Soprano pipistrelle	0	0	0	0	0	1	0	0	0	0	1	0.4
	Total	35	88	17	20	14	19	7	1	6	19	226	100.0
L2	Common pipistrelle	96	7	19	11	10	16	8	0	6	0	173	60.5
	Nyctalus/Eptesicus spp.	4	9	1	1	3	0	1	3	1	65	88	30.8
	Myotis spp.	4	1	0	0	4	3	6	1	3	1	23	8.0
	Noctule	0	0	0	0	1	0	0	0	0	0	1	0.3
	Soprano pipistrelle	0	0	0	0	0	1	0	0	0	0	1	0.3
	Total	104	17	20	12	18	20	15	4	10	66	286	100.0
L3	Common pipistrelle	501	76	6	32	54	181	73	267	66	150	1,406	98.5
	Soprano pipistrelle	4	0	0	2	0	1	0	0	0	2	9	0.6
	Noctule	1	1	1	0	0	0	0	0	1	2	6	0.4
	Myotis spp.	0	0	0	0	1	0	2	0	2	0	5	0.4
	Plecotus spp.	0	0	0	0	0	0	0	0	1	0	1	0.1
	Serotine	1	0	0	0	0	0	0	0	0	0	1	0.1
	Total	507	77	7	34	55	182	75	267	70	154	1,428	100.0

Ę				N	lumber of	Bat Passes	s Recorded	l per Night					s
Locatio	Species	17 Jul	18 Jul	19 Jul	20 Jul	21 Jul	22 Jul	23 Jul	24 Jul	25 Jul	26 Jul	Total	Specie Proporti (%)
L4	Common pipistrelle	212	58	72	111	57	82	111	1,256	315	871	3,145	94.3
	Soprano pipistrelle	1	2	0	1	0	1	1	58	4	61	129	3.9
	Myotis spp.	4	1	7	1	3	6	7	1	17	9	56	1.7
	Lesser horseshoe	0	0	0	0	0	2	0	0	0	0	2	0.1
	Plecotus spp.	0	0	0	0	0	0	1	0	0	0	1	<0.1
	Serotine	0	0	0	0	0	1	0	0	0	0	1	<0.1
	Total	217	61	79	113	60	92	120	1,315	336	941	3,334	100.0
L5	Common pipistrelle	76	20	56	76	75	66	51	6	6	26	458	91.8
	Myotis spp.	3	1	0	2	6	2	1	3	1	5	24	4.8
	Soprano pipistrelle	1	0	2	6	1	1	0	2	1	2	16	3.2
	Greater horseshoe	0	0	1	0	0	0	0	0	0	0	1	0.2
	Total	80	21	59	84	82	69	52	11	8	33	499	100.0
	Grand Total	943	264	182	263	229	382	269	1,598	430	1,213	5,773	

 Table EDP A5.4: Automated Detector Survey Results August 2020

Ę				N	lumber of l	Bat Passes	Recorded	per Night					s on
Locatio	Species	14 Aug	15 Aug	16 Aug	17 Aug	18 Aug	19 Aug	20 Aug	21 Aug	22 Aug	23 Aug	Total	Specie: Proporti (%)
L1	Common pipistrelle	12	3	29	53	90	0	0	0	6	9	202	69.4
	Noctule	5	4	5	3	6	2	3	6	1	14	49	16.8
	Myotis spp.	4	1	4	4	7	0	0	0	0	3	23	7.9
	Plecotus spp.	1	0	2	0	1	0	0	0	1	0	5	1.7
	Nyctalus/Eptesicus spp.	0	0	1	0	3	0	0	0	0	1	5	1.7
	Soprano pipistrelle	1	0	0	1	3	0	0	0	0	0	5	1.7
	Greater Horseshoe	1	0	0	0	0	0	0	0	0	0	1	0.3
	Lesser horseshoe	0	0	1	0	0	0	0	0	0	0	1	0.3
	Total	24	8	42	61	110	2	3	6	8	27	291	100.0
L2	Common pipistrelle	87	74	197	51	42	0	0	0	35	65	551	85.2
	Greater Horseshoe	0	0	1	0	0	0	0	0	2	1	53	8.2
	Plecotus spp.	0	1	1	0	0	0	0	0	1	6	19	2.9
	Myotis spp.	5	0	3	0	4	0	0	0	1	0	15	2.3
	Noctule	9	0	2	1	2	0	0	0	3	0	5	0.8
	Nyctalus/Eptesicus spp.	0	0	1	0	0	0	0	0	1	1	3	0.5
	Soprano pipistrelle	11	1	28	3	7	0	0	0	0	0	1	0.2
	Total	112	76	233	55	55	0	0	0	43	73	647	100.0

5				N	lumber of	Bat Passes	Recorded	per Night					s
Locatio	Species	14 Aug	15 Aug	16 Aug	17 Aug	18 Aug	19 Aug	20 Aug	21 Aug	22 Aug	23 Aug	Total	Specie: Proporti (%)
L3	Common pipistrelle	76	1	75	1	250	77	487	0	0	0	967	94.7
	Plecotus spp.	0	0	0	0	2	0	0	0	0	0	15	1.5
	Myotis spp.	4	0	3	0	7	0	0	0	0	0	14	1.4
	Noctule	0	0	1	0	6	1	0	0	0	0	11	1.1
	Nyctalus/Eptesicus spp.	2	0	3	0	9	1	0	0	0	0	8	0.8
	Soprano pipistrelle	1	0	0	0	3	0	0	0	0	0	4	0.4
	Serotine	2	0	2	0	6	0	1	0	0	0	2	0.2
	Total	85	1	84	1	283	79	488	0	0	0	1,021	100.0
L4a	Common pipistrelle	137	16	235	179	409	178	47	392	528	920	3,041	95.3
	Myotis spp.	16	1	5	0	4	0	1	2	7	11	47	1.5
	Nyctalus/Eptesicus spp.	6	0	4	0	9	1	1	3	4	14	42	1.3
	Soprano pipistrelle	4	1	2	1	23	0	0	1	1	2	35	1.1
	Noctule	1	3	1	0	3	0	0	1	1	3	13	0.4
	Plecotus spp.	7	0	1	0	0	0	0	0	2	0	10	0.3
	Serotine	0	0	0	0	2	0	0	0	0	0	2	0.1
	Total	171	21	248	180	450	179	49	399	543	950	3,190	100.0

_				N	lumber of	Bat Passes	Recorded	per Night					s
Locatio	Species	14 Aug	15 Aug	16 Aug	17 Aug	18 Aug	19 Aug	20 Aug	21 Aug	22 Aug	23 Aug	Total	Specie: Proporti (%)
L5	Common pipistrelle	95	90	164	84	431	239	81	13	7	6	1,210	85.1
	Myotis spp.	1	1	4	1	66	30	16	6	6	1	132	9.3
	Soprano pipistrelle	1	10	4	4	25	2	2	1	0	1	50	3.5
	Plecotus spp.	0	1	0	0	8	0	6	0	0	0	15	1.1
	Nyctalus/Eptesicus spp.	0	0	3	2	3	1	0	0	0	0	9	0.6
	Noctule	2	1	0	0	2	0	0	0	0	0	5	0.4
	Serotine	1	0	0	0	0	0	0	0	0	0	1	0.1
	Total	100	103	175	91	535	272	105	20	13	8	1,422	100.0
Grand T	otal	492	209	782	388	1,433	790	645	425	607	1,058	6571	

Table EDP A5.5: Automated Detector Survey Results September 2020

	Species				Numb	er of Bat Pa	asses per l	Night					s on
Location		15 Sept	16 Sept	17 Sept	18 Sept	19 Sept	20 Sept	21 Sept	22 Sept	23 Sept	24 Sept	Total	Specie: Proporti (%)
L1	Common pipistrelle	28	1	11	0	0	0	7	15	0	0	62	64.58
	Myotis spp.	6	0	0	0	0	5	5	0	0	0	16	16.67
	Noctule	6	1	0	0	0	0	0	0	0	0	7	7.29
	Soprano pipistrelle	2	2	0	0	0	0	1	0	0	0	5	5.21
	Lesser horseshoe	3	0	0	0	0	1	0	0	0	0	4	4.17
	Plecotus spp.	1	0	0	0	0	0	0	0	0	0	1	1.04
	Serotine	0	0	0	0	0	0	1	0	0	0	1	1.04
	Total	46	4	11	0	0	6	14	15	0	0	96	100.00
L2	Common pipistrelle	54	6	6	0	0	5	8	12	0	0	91	65.47
	Soprano pipistrelle	4	0	2	0	2	3	5	2	1	0	19	13.67
	Myotis spp.	9	0	1	0	1	1	2	0	0	0	14	10.07
	Noctule	2	2	0	1	1	1		1	0	2	10	7.19
	Nyctalus/Eptesicus spp.	1	0	1	0	0	0	1	0	0	0	3	2.16
	Greater horseshoe	0	0	1	0	0	0		0	0	0	1	0.72
	Serotine	0	0	0	0	0	0	1	0	0	0	1	0.72
	Total	70	8	11	1	4	10	17	15	1	2	139	100.00
L3	Common pipistrelle	23	1	0	0	0	4	17	90	0	0	135	82.32
	Soprano pipistrelle	4	0	0	0	0	0	8	8	0	0	20	12.20
	Myotis spp.	1	0	0	0	0	1	4	3	0	0	9	5.49
	Total	28	1	0	0	0	5	29	101	0	0	164	100.00

	Species				Numb	er of Bat Pa	asses per l	Night					suo
Location		15 Sept	16 Sept	17 Sept	18 Sept	19 Sept	20 Sept	21 Sept	22 Sept	23 Sept	24 Sept	Total	Specie: Proporti (%)
L4	Common pipistrelle	52	28	165	56	70	130	36	24	0	38	599	87.83
	Myotis spp.	8	2	2	0	1	4	9	0	0	1	46	6.74
	Nyctalus/Eptesicus spp.	1	0	0	0	0	6	1	0	0	0	26	3.81
	Soprano pipistrelle	3	2	4	1	2	15	6	12	0	0	8	1.17
	Serotine	0	0	1	0	2	0	0	0	0	0	3	0.44
	Total	64	32	172	57	75	155	52	36	0	39	682	100.00
L5	Common pipistrelle	64	6	26	22	5	61	47	19	2	11	263	77.81
	Soprano pipistrelle	14	3	5	0	0	6	19	2		1	50	14.79
	Myotis spp.	4	0	0	0	0	1	3	1	0	0	9	2.66
	Nyctalus/Eptesicus spp.	3	0	1	0	0	0	4	0	0	0	8	2.37
	Lesser horseshoe	0	0	0	0	0	0	2	1	0	1	4	1.18
	Serotine	0	0	0	0	0	0	1	2	0	0	3	0.89
	Greater horseshoe	0	0	0	0	0	0	0	1	0	0	1	0.30
	Total	85	9	32	22	5	68	76	26	2	13	338	100.00
Grand T	otal	265	54	226	80	84	242	188	193	3	54	1419	

 Table EDP A5.6: Automated Detector Survey Results October 2020

Ę					Numb	er of Bat P	asses per	Night					s on
Locatio	Species	16 Oct	17 Oct	18 Oct	19 Oct	20 Oct	21 Oct	22 Oct	23 Oct	24 Oct	25 Oct	Total	Specie Proporti (%)
L1	Common pipistrelle	0	0	3	0	0	0	0	0	0	0	3	75.00
	Soprano pipistrelle	1	0	0	0	0	0	0	0	0	0	1	25.00
	Total	1	0	3	0	0	0	0	0	0	0	4	100.00
L2	Common pipistrelle	0	0	0	0	0	0	8	0	0	0	8	57.14
	Plecotus spp.	0	2	4	0	0	0	0	0	0	0	6	42.86
	Total	0	2	4	0	0	0	8	0	0	0	14	3.87
L3	Common pipistrelle	2	0	3	5	4		3	1	0	0	18	66.67
	Myotis spp.	1	0	1	0	0	0	0	0	0	0	5	18.52
	Nyctalus/Eptesicus spp.	0	1	1	0	0	0	3	0	0	0	2	7.41
	Soprano pipistrelle	0	0	0	0	0	0	1	0	0	1	2	7.41
	Total	3	1	5	5	4	0	7	1	0	1	27	100.00
L4	Common pipistrelle	0	0	4	6	5	0	209	13	0	3	240	86.33
	Lesser horseshoe	0	0	0	0	0	1	1	0	0	3	32	11.51
	Myotis spp.	0	0	0	0	0	0	1	0	0	0	2	0.72
	Nyctalus/Eptesicus spp.	2	0	0	0	0	0	0	0	0	0	2	0.72
	Soprano pipistrelle	1	0	2	1	2	0	20	3	0	0	1	0.36
	Serotine	0	0	1	0	0	0	0	0	0	0	1	0.36
	Total	3	0	7	7	7	1	231	16	0	6	278	100.00

Ľ					Numb	er of Bat P	asses per	Night					s
Locatio	Species	16 Oct	17 Oct	18 Oct	19 Oct	20 Oct	21 Oct	22 Oct	23 Oct	24 Oct	25 Oct	Total	Specie Proporti (%)
L5	Common pipistrelle	0	0	8	9	3	0	1	0	0	1	22	75.86
	Lesser horseshoe	0	0	1	0	0	0	0	0	0	1	6	20.69
	Soprano pipistrelle	0	0	0	2	3	0	0	0	0	0	1	3.45
	Total	0	0	9	11	6	0	1	0	0	2	29	100.00
Grand To	otal	7	3	28	23	17	1	247	17	0	9	352	

Table EDP A5.7: Automated Detector Survey Results April 2021

ç					Numb	er of Bat Pa	asses per l	Night					s on
Locatio	Species	16 April	17 April	18 April	19 April	20 April	21 April	22 April	23 April	24 April	25 April	Total	Specie: Proporti (%)
L1	Myotis spp.	0	2	0	0	3	0	0	0	0	0	5	71.43
	Common pipistrelle	0	0	0	0	1	0	0	0	0	0	1	14.29
	Noctule	0	0	0	0	1	0	0	0	0	0	1	14.29
	Total	0	2	0	0	5	0	0	0	0	0	7	100.0
L2	Common pipistrelle	0	0	0	3	5	0	0	2	0	0	10	71.43
	Myotis spp.	1	0	0	1	0	0	0	0	2	0	4	28.657
	Total	1	0	0	4	5	0	0	2	2	0	14	100.00

5					Numb	er of Bat Pa	asses per l	Night					őn
Locatio	Species	16 April	17 April	18 April	19 April	20 April	21 April	22 April	23 April	24 April	25 April	Total	Specie: Proporti (%)
L3	Common pipistrelle	0	0	1	0	4	0	0	1	0	0	6	54.555
	Myotis spp.	0	2	1	0	0	0	0	0	0	1	4	36.36
	Soprano pipistrelle	0	0	0	0	1	0	0	0	0	0	1	9.09
	Total	0	2	2	0	5	0	0	1	0	1	11	100.00
L4	Common pipistrelle	0	4	10	11	19	0	0	18	5	3	70	78.65
	Myotis spp.	3	1	1	3	0	3	1	2	2	0	16	17.98
	Lesser horseshoe	0	0	0	1	0	0	0	0	0	0	1	1.12
	Serotine	0	0	0	0	0	0	0	1	0	0	1	1.12
	Soprano pipistrelle	0	0	0	0	0	0	0	0	0	1	1	1.12
	Total	3	5	11	15	19	3	1	21	7	4	89	100.00
L5	Lesser horseshoe	1	0	0	0	0	0	0	0	0	0	1	100.00
	Total	1	0	0	0	0	0	0	0	0	0	1	100.00
Grand T	otal	5	9	13	19	34	3	1	24	9	5	122	

Table EDP A5.8: Automated Detector Survey Results May 2021.

Ę					Numb	er of Bat Pa	asses per l	Night					s
Locatio	Species	22 May	23 May	24 May	25 May	26 May	27 May	28 May	29 May	30 May	31 May	Total	Specie: Proporti (%)
L1	Common pipistrelle	0	0	0	0	0	0	0	1	0	1	2	100.00
	Total	0	0	0	0	0	0	0	1	0	1	2	100.00
L2	Common pipistrelle	0	0	0	0	0	2	2	3	3	0	10	83.33
	Myotis spp.	0	0	0	0	0	1	0	0	0	0	1	8.33
	Soprano pipistrelle	0	0	0	0	0	0	0	0	0	1	1	8.33
	Total	0	0	0	0	0	3	2	3	3	1	12	100.00
L3		Failed to Record											
L4	Common pipistrelle	3	0	0	8	29	34	37	39	51	63	264	88.00
	Soprano pipistrelle	0	0	0	0	2	3	1	6	4	11	27	9.00
	Myotis spp.	0	0	0	0	2	2	3	1	0	0	8	2.67
	Pipistrellus spp.	0	0	0	0	0	1	0	0	0	0	1	0.33
	Total	3	0	0	8	33	40	41	46	55	74	300	100.00
L5	Common pipistrelle	0	0	0	0	11	45	41	15	33	48	193	83.19
	Soprano pipistrelle	0	0	0	0	4	2	7	3	9	10	35	15.09
	Pipistrellus spp.	0	0	0	0	1	1	0	0	1	0	3	1.29
	Myotis spp.	0	0	0	0	1	0	0	0	0	0	1	0.43
	Total	0	0	0	0	17	48	48	18	43	58	232	100.00
Grand T	otal	3	0	0	8	50	91	91	68	101	134	546	-

 Table EDP A5.9: Automated Detector Survey Results June 2021.

Ę					Numb	er of Bat P	asses per	Night					s on
Locatio	Species	18 June	19 June	20 June	21 June	22 June	23 June	24 June	25 June	26 June	27 June	Total	Specie Proporti (%)
L1	Common pipistrelle	72	11	6	45	220	97	128	15	70	47	711	99.58
	Myotis spp.	0	2	0	0	0	0	0	0	0	0	2	0.28
	Soprano pipistrelle	0	0	0	0	0	0	1	0	0	0	1	0.14
	Total	72	13	6	45	220	97	129	15	70	47	714	100.00
L2	Common pipistrelle	2	3	6	0	4	41	52	23	129	37	297	91.10
	Soprano pipistrelle	1	0	0	0	1	2	0	1	3	15	23	7.06
	Myotis spp.	0	1	0	0	1	0	1	0	0	0	3	0.92
	Plecotus spp.	0	1	0	0	0	1	0	0	0	0	2	0.61
	Lesser horseshoe	0	0	0	0	0	1	0	0	0	0	1	0.31
	Total	3	5	6	0	6	45	53	24	132	52	326	100.00
L3	Common pipistrelle	38	3	43	0	82	151	273	258	18	11	877	100.00
	Total	38	3	43	0	82	151	273	258	18	11	877	100.00
L4	Common pipistrelle	9	12	8	6	12	47	36	20	35	16	201	85.17
	Soprano pipistrelle	2	0	0	1	0	0	23	5	1	0	32	13.56
	Plecotus spp.	0	0	0	0	1	0	0	0	1	0	2	0.85
	Myotis spp.	0	1	0	0	0	0	0	0	0	0	1	0.42
	Total	11	13	8	7	13	47	59	25	37	16	236	100.00
L5						Fai	led to Rec	ord					
Grand T	otal	124	34	63	52	321	340	514	322	257	126	2,153	

 Table EDP A5.10: Automated Detector Survey Results July 2021

ç					Numb	er of Bat P	asses per	Night					s on
Locatio	Species	8 July	9 July	10 July	11 July	12 July	13 July	14 July	15 July	16 July	17 July	Total	Specie Proporti (%)
L1	Common pipistrelle	23	1	0	0	0	18	34	8	4	6	94	98.95
	Myotis spp.	0	0	0	0	0	0	0	0	0	1	1	1.05
	Total	23	1	0	0	0	18	34	8	4	7	95	100.00
L2	Common pipistrelle	12	7	5	4	16	38	48	17	8	7	162	81.41
	Soprano pipistrelle	2	2	0	0	0	15	1	9	0	3	32	16.08
	Myotis spp.	0	0	0	0	1	0	0	1	1	0	3	1.51
	Noctule	0	1	0	0	0	0	0	0	0	0	1	0.50
	Plecotus spp.	0	0	0	0	0	0	0	0	0	1	1	0.50
	Total	14	10	5	4	17	53	49	27	9	11	199	100.00
L3	Common pipistrelle	196	181	59	74	0	43	131	21	5	2	712	98.61
	Soprano pipistrelle	0	2	0	0	0	0	1	1	0	0	4	0.55
	Serotine	1	1	1	0	0	0	0	0	0	0	3	0.42
	Lesser horseshoe	0	1	0	0	0	0	0	0	0	0	1	0.14
-	Nathusius' pipistrelle	0	1	0	0	0	0	0	0	0	0	1	0.14
	Noctule	0	0	0	0	0	0	1	0	0	0	1	0.14
	Total	197	186	60	74	0	43	133	22	5	2	722	100.00

					Numb	er of Bat P	asses per	Night					s uo
Locatio	Species	8 July	9 July	10 July	11 July	12 July	13 July	14 July	15 July	16 July	17 July	Total	Specie: Proporti (%)
L4	Common pipistrelle	23	75	73	90	36	105	96	97	126	77	798	81.26
	Myotis spp.	0	1	0	2	0	0	0	0	2	2	7	0.71
	Plecotus spp.	0	0	0	0	0	0	0	0	0	2	2	0.20
N S	Nathusius' pipistrelle	0	0	1	0	0	0	0	0	0	0	1	0.10
	Noctule	0	1	0	0	0	0	0	0	0	0	1	0.10
	Soprano pipistrelle	3	17	17	15	4	11	27	21	37	21	173	17.62
	Total	26	94	91	107	40	116	123	118	165	102	982	100.00
L5	Common pipistrelle	26	50	91	0	0	0	0	0	0	0	167	97.09
	Soprano pipistrelle	0	1	3	0	0	0	0	0	0	0	4	2.33
-	<i>Myotis</i> spp.	0	0	1	0	0	0	0	0	0	0	1	0.58
	Total	26	51	95	0	0	0	0	0	0	0	172	100.00
Grand Tota	al	286	342	251	185	57	230	339	175	183	122	2,170	

 Table EDP A5.11: Automated Detector Survey Results August 2021

					Numb	er of Bat Pa	asses per l	Night					u
Location	Species	06 Aug	07 Aug	08 Aug	09 Aug	10 Aug	11 Aug	12 Aug	13 Aug	14 Aug	15 Aug	Total	Species Proportic (%)
L1	Common pipistrelle	1	1	1	3	6	0	4	1	23	4	44	47.31
	Myotis spp.	0	1	2	0	4	3	2	3	12	2	29	31.18
	Noctule	0	0	0	0	3	0	0	0	3	2	8	8.60
	Serotine	1	0	0	0	3	1	0	0	2	0	7	7.53
	Soprano pipistrelle	0	1	1	0	0	0	1	0	2	0	5	5.38
	Total	2	3	4	3	16	4	7	4	42	8	93	100.00
L2	Common pipistrelle	2	1	2	21	11	0	12	12	29	193	283	82.51
1	Myotis spp.	1	0	1	2	5	0	0	4		8	21	6.12
	Soprano pipistrelle	0	0	0	0	0	0	1	1	6	7	15	4.37
	Serotine	1	0	0	1	1	0	1	1	6	1	12	3.50
	Noctule	0	0	0	0	1	0	1	1	3	3	9	2.62
	Plecotus spp.	0	0	0	0	1	0	2	0	0	0	3	0.87
	Total	4	1	3	24	19	0	17	19	44	212	343	100.00
L3	Common pipistrelle	367	138	225	122	115	62	116	92	47	141	1,425	91.76
	Myotis spp.	0	1	1	9	6	1	4	1	16	7	46	2.96
S S	Soprano pipistrelle	0	0	0	0	2	0	3	1	7	17	30	1.93
	Serotine	1	3	4	4	5	2	5	1	0	0	25	1.61
	Noctule	0	1	2	2	0	1	4	2	7	0	19	1.22

Species Number of Bat Passes per Night													, uo
Locatio		06 Aug	07 Aug	08 Aug	09 Aug	10 Aug	11 Aug	12 Aug	13 Aug	14 Aug	15 Aug	Total	Species Proportio (%)
L3	Plecotus spp.	0	2	0	0	1	0	0	0	1	2	6	0.39
	Greater horseshoe	0	0	0	0	0	0	0	0	0	1	1	0.06
	Lesser horseshoe	0	0	0	0	1	0	0	0	0	0	1	0.06
	Total	368	145	232	137	130	66	132	97	78	168	1,553	100.00
L4	Common pipistrelle	124	63	65	73	51	32	77	86	42	56	669	69.25
	Soprano pipistrelle	6	46	79	20	11	0	40	14	5	9	230	23.81
-	Noctule	0	0	8	10	9	0	0	0	2	1	30	3.11
	Myotis spp.	0	2	8	6	1	0	3	0	3	1	24	2.48
	Serotine	0	3	0	0	1	0	2	5	0	1	12	1.24
	Plecotus spp.	0	0	0	1	0	0	0	0	0	0	1	0.10
	Total	130	114	160	110	73	32	122	105	52	68	966	100.00
L5	Common pipistrelle	31	22	19	37	76	8	17	18	90	71	389	80.54
	Soprano pipistrelle	48	0	1	5	8	6	0	5	5	5	83	17.18
	Myotis spp.	0	1	0	0	1	1	0	0	2	0	5	1.04
	Noctule	0	0	1	1	0	0	0	0	1	0	3	0.62
	Serotine	0	0	0	0	0	0	2	0	0	1	3	0.62
	Total	79	23	21	43	85	15	19	23	98	77	483	100.00
Grand Tot	al	583	286	420	317	323	117	297	248	314	533	3,438	

Table EDP A5.12: Automated Detector Survey Results September 2021

Ę					Numb	er of Bat Pa	asses per	Night					s
Locatio	Species	17 Sept	18 Sept	19 Sept	20 Sept	21 Sept	22 Sept	23 Sept	24 Sept	25 Sept	26 Sept	Total	Specie Proporti (%)
L1	Common pipistrelle	7	23	109	110	109	31	45	8	9	4	455	83.79
	Myotis spp.	3	6	9	7	5	2	3	5	6	5	51	9.39
	Soprano pipistrelle	1	2	8	6	4	4	4	1	2	3	35	6.45
	Noctule	1	0	0	0	0	0	0	0	0	0	1	0.18
	Serotine	0	0	0	0	0	0	0	1	0	0	1	0.18
	Total	12	31	126	123	118	37	52	15	17	12	543	100.00
L2	Common pipistrelle	5	43	84	23	34	18	18	7	10	4	246	74.32
	Soprano pipistrelle	0	10	7	9	9	5	0	3	1	1	45	13.6
	Myotis spp.	3	1	5	3	1	7	4	3	2	1	30	9.06
	Serotine	0	1	1	1	1	0	0	1	0	0	5	1.51
	Plecotus spp.	0	2	1	1	0	0	0	0	0	0	4	1.21
	Noctule	0	0	0	0	1	0	0	0	0	0	1	0.3
	Total	8	57	98	37	46	30	22	14	13	6	331	100.00
L4	Common pipistrelle	57	78	34	32	49	9	29	21	32	49	390	82.45
	Soprano pipistrelle	5	12	1	3	13	3	2	3	4	4	50	10.57
-	Myotis spp.	2	7	0	1	6	0	2	1	2	6	27	5.71
	Plecotus spp.	0	0	1	0	0	0	0	0	1	2	4	0.85
	Lesser horseshoe	0	0	0	0	0	0	0	0	1	0	1	0.21

u					Numb	er of Bat P	asses Per	Night				_	es tio
Locati	Species	17 Sept	18 Sept	19 Sept	20 Sept	21 Sept	22 Sept	23 Sept	24 Sept	25 Sept	26 Sept	Tota	Speci Propor n (%
L4	Serotine	0	0	0	0	0	0	0	0	1	0	1	0.21
	Total	64	97	36	36	68	12	33	25	41	61	473	100.00
L5	Common pipistrelle	109	92	48	41	99	99	33	28	76	36	661	77.13
	Soprano pipistrelle	20	23	6	19	44	3	8	6	12	25	166	19.37
	<i>Myoti</i> s spp.	2	4	1	0	4	7	1	3	0	2	24	2.8
	Serotine	0	2	0	0	0	0	0	0	1	1	4	0.47
	Plecotus spp.	0	1	0	0	1	0	0	0	0	0	2	0.23
	Total	131	122	55	60	148	109	42	37	89	64	857	100.00
Grand Tota	al	215	307	315	256	380	188	149	91	160	143	2,204	

 Table EDP A5.13:
 Automated Detector Survey Results October 2021

Ľ					Numb	er of Bat P	asses per	Night					s on
Locatio	Species	13 Oct	14 Oct	15 Oct	16 Oct	17 Oct	18 Oct	19 Oct	20 Oct	21 Oct	22 Oct	Total	Specie Proporti (%)
L1	Common pipistrelle	6	0	0	2	1	0	0	0	0	0	9	75.00
	Myotis spp.	1	2	0	0	0	0	0	0	0	0	3	25.00
	Total	7	2	0	2	1	0	0	0	0	0	12	100.00
L2	Common pipistrelle	23	13	29	1	2	0	0	2	1	0	71	83.53
	Soprano pipistrelle	3	2	0	0	0	0	0	0	0	0	5	5.88

Ę					Numb	er of Bat P	asses per	Night					suo
Locatio	Species	13 Oct	14 Oct	15 Oct	16 Oct	17 Oct	18 Oct	19 Oct	20 Oct	21 Oct	22 Oct	Total	Specie: Proporti (%)
	Noctule	1	0	1	0	1	0	0	0	0	0	3	3.53
	Lesser horseshoe	1	0	0	0	0	0	0	0	1	0	2	2.35
	Myotis spp.	1	1	0	0	0	0	0	0	0	0	2	2.35
	Serotine	0	0	2	0	0	0	0	0	0	0	2	2.35
	Total	29	16	32	1	3	0	0	2	2	0	85	100.00
L3	Common pipistrelle	5	147	1	5	2	0	0	1	2	2	165	94.83
	Myotis spp.	1	0	0	0	1	0	0	0	0	1	3	1.72
	Soprano pipistrelle	2	0	0	0	0	0	0	1	0	0	3	1.72
	Lesser horseshoe	0	0	1	0	0	0	0	1	0	0	2	1.15
	Serotine	0	0	0	0	0	0	0	0	1	0	1	0.57
	Total	8	147	2	5	3	0	0	3	3	3	174	100.00
L4	Common pipistrelle	13	33	34	45	19	13	2	8	2	5	174	84.47
	Soprano pipistrelle	0	3	2	5	7	1	2	0	0	3	23	11.17
	Myotis spp.	3	0	0	1	0	0	0	0	1	1	6	2.91
	Serotine	0	1	0	0	0	0	0	0	1	0	2	0.97
	Lesser horseshoe	0	0	0	0	0	0	0	0	0	1	1	0.49
	Total	16	37	36	51	26	14	4	8	4	10	206	100.00
L5	Common pipistrelle	4	3	10	34	126	27	0	0	10	11	225	88.58
	Soprano pipistrelle	0	0	0	9	3	0	0	2	0	1	15	5.91
	Myotis spp.	3	2	0	1	0	0	0	0	1	0	7	2.76
	Serotine	1	1	2	2	0	0	0	0	0	0	6	2.36
Ę					Numb	er of Bat P	asses per	Night					s on
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Locatio	Species	13 Oct	14 Oct	15 Oct	16 Oct	17 Oct	18 Oct	19 Oct	20 Oct	21 Oct	22 Oct	Total	Specie Proporti (%)
	Lesser horseshoe	0	0	0	1	0	0	0	0	0	0	1	0.39
	Total	8	6	12	47	129	27	0	2	11	12	254	100.00
Grand Tot	al	68	208	82	106	162	41	4	15	20	25	731	

 Table EDP A5.14:
 Automated Detector Survey Results June 2023.

ition	Snecies				Numb	er of Bat P	asses per	Night				tal	cies ortion 6)
Loca	operies	19 Jun	20 Jun	21 Jun	22 Jun	23 Jun	24 Jun	25 Jun	26 Jun	27 Jun	28 Jun	10 1	Spe Propo
L1	No data												
L3	Common pipistrelle	239	146	657	671	7	527	22	39	0	255	2,563	78.72
	Soprano pipistrelle	88	19	177	201	1	99	6	11	0	28	630	19.35
	Myotis spp.	3	2	8	41	0	0	0	2	0	0	56	1.72
	Plecotus spp.	1	0	2	0	0	0	0	1	0	0	4	0.12
	Greater horseshoe	0	1	1	0	0	0	0	0	0	0	2	0.06
	Lesser horseshoe	0	0	0	1	0	0	0	0	0	0	1	0.03
	Total	331	168	845	914	8	626	28	53	0	283	3,256	100.00
L6	Common pipistrelle	3	44	17	17	71	20	233	290	195	187	1077	87.49
	Soprano pipistrelle	0	14	7	7	12	2	18	13	11	59	143	11.62
	Myotis spp.	1	0	0	2	3	0	1	0	1	2	10	0.81
	Plecotus spp.	0	0	0	0	0	0	0	0	1	0	1	0.08
	Total	4	58	24	26	86	22	252	303	208	248	1,231	100.00
L7	Common pipistrelle	17	24	21	36	19	508	3	39	9	6	682	82.77
	Soprano pipistrelle	8	10	7	13	1	85	0	10	5	0	139	16.87
	Myotis spp.	0	0	0	1	0	1	0	1	0	0	3	0.36
	Total	25	34	28	50	20	594	3	50	14	6	824	100.00
Grand To	otal	360	260	897	990	114	1,242	283	406	222	537	5,311	

uo					Numb	er of Bat P	asses per	Night				-	es tion
Locati	Species	11 Jul	12 Jul	13 Jul	14 Jul	15 Jul	16 Jul	17 Jul	18 Jul	19 Jul	20 Jul	Tota	Speci Propor (%)
L1	Common pipistrelle	3	0	0	0	0	0	1	0	12	19	35	87.50
	Myotis spp.	0	0	0	0	0	0	0	0	1	2	3	7.50
	Greater horseshoe	0	0	0	0	0	0	0	0	0	1	1	2.50
	Soprano pipistrelle	0	0	0	0	0	0	0	0	1	0	1	2.50
Grand Tot	tal	3	0	0	0	0	0	1	0	14	22	40	100.00

Table EDP A5.15: Automatic Static Detector Results - replacement detectors from June 2023 deployment

Table EDP A5.16: Automated Detector Survey Results July 2023

ion					Numb	er of Bat P	asses per	Night				le	ies tion
Locat	Species	25 Jul	26 Jul	27 Jul	28 Jul	29 Jul	30 Jul	31 Jul	01 Aug	02 Aug	03 Aug	Tota	Speci Propor (%)
L1	Common pipistrelle	6	0	0	0	0	0	4	1	46	23	80	89.89
	Myotis spp.	0	0	2	0	0	0	0	0	1	1	4	4.49
	Soprano pipistrelle	0	0	0	0	0	0	1	1	0	2	4	4.49
	Lesser horseshoe	1	0	0	0	0	0	0	0	0	0	1	1.12
	Total	7	0	2	0	0	0	5	2	47	26	89	100.00

ç					Numb	er of Bat Pa	asses per l	Night					s
Locatio	Species	25 Jul	26 Jul	27 Jul	28 Jul	29 Jul	30 Jul	31 Jul	01 Aug	02 Aug	03 Aug	Total	Specie Proporti (%)
L3	Common pipistrelle	27	0	1	1	7	0	5	97	29	23	190	85.97
	Soprano pipistrelle	11	0	0	0	2	0	1	7	2	2	25	11.31
	<i>Myoti</i> s spp.	3	0	0	0	0	0	0	0	1	0	4	1.81
	Greater horseshoe	1	0	0	0	0	0	0	0	0	0	1	0.45
	Noctule	1	0	0	0	0	0	0	0	0	0	1	0.45
	Total	43	0	1	1	9	0	6	104	32	25	221	100.00
L6	Common pipistrelle	226	0	86	196	273	0	359	37	181	276	1634	86.27
	Soprano pipistrelle	29	0	10	7	15	0	64	6	30	37	198	10.45
	Myotis spp.	4	0	1	6	2	0	18	1	9	17	58	3.06
	Serotine	0	0	1	0	0	0	0	0	0	1	2	0.11
	Noctule	0	0	0	1	0	0	0	0	1	0	2	0.11
	Total	259	0	98	210	290	0	441	44	221	331	1,894	100.00
L7	Common pipistrelle	18	0	0	2	7	0	12	32	6	5	82	88.17
	Soprano pipistrelle	2	0	1	0	0	0	0	2	1	0	6	6.45
	Myotis spp.	1	0	0	0	0	0	0	1	2	0	4	4.30
	Noctule	0	0	0	0	0	0	0	0	0	1	1	1.08
	Total	21	0	1	2	7	0	12	35	9	6	93	100.00
Grand To	otal	330	0	102	213	306	0	464	185	309	388	2,297	

 Table EDP A5.17: Automated Detector Survey Results August 2023

u					Numb	er of Bat P	asses per	Night				_	es tion
Locati	Species	15 Aug	16 Aug	17 Aug	18 Aug	19 Aug	20 Aug	21 Aug	22 Aug	23 Aug	24 Aug	Tota	Speci Proport (%)
L1	Common pipistrelle	44	49	4	11	8	5	8	19	31	10	189	75.30
	Myotis spp.	6	3	1	0	6	0	3	2	3	3	27	10.76
	Soprano pipistrelle	3	8	1	0	2	0	0	2	3	3	22	8.76
	Plecotus spp.	2	0	0	0	0	0	0	1	3	1	7	2.79
	Serotine	1	0	2	0	0	0	2	0	0	0	5	1.99
	Lesser horseshoe	1	0	0	0	0	0	0	0	0	0	1	0.40
	Total	57	60	8	11	16	5	13	24	40	17	251	100.00
L3	Common pipistrelle	78	93	16	0	13	4	1	36	54	12	307	83.88
	Soprano pipistrelle	12	4	2	3	2	1	0	4	13	3	44	12.02
	Myotis spp.	3	0	0	0	0	0	0	2	4	1	10	2.73
	Noctule	0	0	0	0	0	2	0	0	1	0	3	0.82
	Serotine	1	0	0	0	0	0	0	0	0	0	1	0.27
	Lesser horseshoe	0	0	0	0	0	0	0	0	1	0	1	0.27
	Total	94	97	18	3	15	7	1	42	73	16	366	100.00
L6	Common pipistrelle	317	153	205	201	435	375	263	142	748	267	3106	66.82
	Soprano pipistrelle	90	52	213	44	249	109	175	98	99	46	1175	25.28
	Myotis spp.	17	8	7	10	47	77	44	51	52	30	343	7.38
	Plecotus spp.	2	0	0	0	9	1	0	0	0	0	12	0.26
	Serotine	2	0	0	0	0	0	1	0	4	0	7	0.15
	Noctule	0	0	0	0	1	0	1	0	1	0	3	0.06

_					Numb	er of Bat P	asses per	Night					Ę
Location	Species	15 Aug	16 Aug	17 Aug	18 Aug	19 Aug	20 Aug	21 Aug	22 Aug	23 Aug	24 Aug	Total	Species Proportio (%)
	Greater horseshoe	0	0	0	0	0	0	0	0	0	2	2	0.04
	Total	428	213	425	255	741	562	484	291	904	345	4,648	100.00
L7	Common pipistrelle	110	109	89	236	74	68	159	93	90	111	1139	80.04
	Soprano pipistrelle	19	30	7	5	14	6	12	18	29	10	150	10.54
	Myotis spp.	13	14	9	6	12	14	11	9	17	9	114	8.01
	Noctule	1	0	0	0	3	0	1	2	2	0	9	0.63
	Serotine	2	1	0	0	2	1	0	0	0	0	6	0.42
	Lesser horseshoe	0	1	0	0	0	1	0	0	1	0	3	0.21
	Plecotus spp.	0	0	0	0	0	0	0	0	0	1	1	0.07
	Greater horseshoe	1	0	0	0	0	0	0	0	0	0	1	0.07
	Total	146	155	105	247	105	90	183	122	139	131	1423	100.00
Grand To	tal	725	525	556	516	877	664	681	479	1,156	509	6,688	

Table EDP A5.18: Summary of Static Data Results for the Proposed Turbine Locations (and associated graph)

u				202	20						2021					2023	
Locatio	Species	Мау	June	July	Aug	Sept	Oct	April	Мау	June	July	Aug	Sept	Oct	June	July	Aug
L1	Common pipistrelle	56	391	218	202	62	3	1	2	711	94	44	455	9	35	80	189
	Myotis spp.	1	0	7	23	16	0	5	0	2	1	29	51	3	3	4	27
	Soprano pipistrelle	0	30	1	5	5	1	0	0	1	0	5	35	0	1	4	22

u				202	20						2021					2023	
Locatio	Species	Мау	June	July	Aug	Sept	Oct	April	Мау	June	July	Aug	Sept	Oct	June	July	Aug
	Noctule	0	2	0	49	7	0	1	0	0	0	8	1	0	0	0	0
	Serotine	1	0	0	0	1	0	0	0	0	0	7	1	0	0	0	5
	Plecotus spp.	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0	7
	Lesser horseshoe	0	0	0	1	4	0	0	0	0	0	0	0	0	0	1	1
	Nyctalus/ Eptesicus spp.	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0
	Greater horseshoe	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0
	Total	58	423	226	291	96	4	7	2	714	95	93	543	12	40	89	251
L3	Common pipistrelle	139	1,585	1,406	967	135	18	6		877	712	1,425		165	2,563	190	307
	Soprano pipistrelle	6	12	9	4	20	2	1		0	4	30		3	630	25	44
	Myotis spp.	4	6	5	14	9	5	4		0	0	46		3	56	4	10
	Noctule		1	6	11	0	0	0		0	1	19		0	0	1	3
	Serotine	4	4	1	2	0	0	0	No	0	3	25	No	1	0	0	1
	Plecotus spp.	0	5	1	15	0	0	0	data	0	0	6	data	0	4	0	0
	Nyctalus/ Eptesicus spp.	0	0	0	8	0	2	0		0	0	0		0	0	0	0
	Lesser horseshoe	0	0	0	0	0	0	0		0	1	1		2	1	0	1
	Greater horseshoe	0	0	0	0	0	0	0		0	0	1		0	2	1	0

u				202	20						2021					2023	
Locatic	Species	Мау	June	July	Aug	Sept	Oct	April	Мау	June	July	Aug	Sept	Oct	June	July	Aug
	Nathusius' pipistrelle	0	0	0	0	0	0	0		0	1	0		0	0	0	0
	Total	153	1,613	1,428	1,021	164	27	11	0	877	722	1,553	0	174	3,256	221	366
L6	Common pipistrelle	496	669	3,145	3,041	599	240	70	264	201	798	669	390	174	1,077	1,634	3,106
	Soprano pipistrelle	4	13	129	35	8	1	1	27	32	173	230	50	23	143	198	1,175
	Myotis spp.	2	4	56	47	46	2	16	8	1	7	24	27	6	10	58	343
	Nyctalus/ Eptesicus spp.	369	0	0	42	26	2	0	0	0	0	0	0	0	0	0	0
	Noctule	1	2	0	13	0	0	0	0	0	1	30	0	0	0	2	3
	Lesser horseshoe	0	1	2	0	0	32	1	0	0	0	0	1	1	0	0	0
	Serotine	1	0	1	2	3	1	1	0	0	0	12	1	2	0	2	7
	Plecotus spp.	0	0	1	10	0	0	0	0	2	2	1	4	0	1	0	12
	Greater horseshoe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	Nathusius' pipistrelle	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	Pipistrellus spp.	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Total	873	689	3,334	3,190	682	278	89	300	236	982	966	473	206	1,231	1,894	4,648
L7	Common pipistrelle							No data							682	82	1,139

n				202	20						2021					2023	
Locatio	Species	Мау	June	July	Aug	Sept	Oct	April	Мау	June	July	Aug	Sept	Oct	June	July	Aug
	Soprano pipistrelle														139	6	150
	<i>Myoti</i> s spp.														3	4	114
	Noctule														0	1	9
	Serotine														0	0	6
	Lesser horseshoe														0	0	3
	Greater horseshoe														0	0	1
	Plecotus spp.														0	0	1
	Total														824	93	1,423
Gran	d Total	1,084	2,725	4,988	4,502	942	309	107	302	1,827	1,799	2,612	1,016	392	5,351	2,297	6,688

*Data for Location 1 in June 2023 is shown using redeployment data (early July).









Annex EDP 6 Bat Tree Assessment

- A6.1 The results of the ground level tree assessment are provided in **Table EDP A6.1** below. Each tree that has been identified as having some bat roosting suitability has been identified with a number, its species and level of suitability to support roosting bats recorded from ground level.
- A6.2 All trees identified as having moderate or high suitability to support bat roosts were subject to further aerial tree-climbing surveys to inspect potential roost features identified from the ground, and to search for the presence of any evidence of bats or their roosts. Where the aerial survey recorded the potential as being different from that of the ground level assessment (either increasing the suitability if larger or additional cavities are found, or decreasing if the features observed from the ground turn out to not extend into any cavities), this change in classification has also been recorded.
- A6.3 The results of the ground level tree assessment undertaken for the section of the access route associated with the northern parcel are provided in **Table EDP A6.2** below.
- A6.4 This table should be read in conjunction with **Plans EDP 8.9** and **8.10**.

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roosting Suitability Assessment	Reclassification following Aerial Surveys (where undertaken)
T1	Beech	Knot holes and small basal cavities.	Moderate	
T2	Beech	Knot holes 3m high, facing south. Three broken branches with tear outs and crevices.	Moderate	Negligible
тз	Beech	Lifted bark and crevices.	Low	
Т4	Beech	Knot holes and small basal cavities.	Moderate	
Т5	Beech	Small hole where limbs meet at 1.5m.	Low	
Т6	Beech	Multiple splits in trunk.	Moderate	
Т7	Beech	Small crevices where limbs meet.	Low	
Т8	Beech	Shallow hole at 1.5m.	Low	
Т9	Beech	Shallow crevice at 1m.	Low	
T10	Beech	Multiple holes, splits and crevices 1-2m.	Moderate	
T11	Beech	Rot hole at 1m.	Moderate	
T12	Beech	Gap behind fencepost 1m.	Low	
T13	Beech	Two holes in trunk.	Moderate	Moderate
T14	Beech	Narrow gaps where stems meet and a rot hole.	Low	
T15	Beech	Shallow cavities.	Low	
T16	Beech	A few small crevices between 1-2m.	Low	
T17	Beech	Hole in central trunk at 5m.	Low	
T18	Beech	Gap where limbs meet, open cavity ground level to 1m.	Low	
T19	Beech	Cavity between stems.	Moderate	Moderate
T20	Beech	Limb hole.	Moderate	Moderate
T21	Beech	Shallow crevices.	Low	

Table EDP A6.1: Results of the Ground Level Tree Assessment for Roosting Bats - Turbine Locations

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roosting Suitability Assessment	Reclassification following Aerial Surveys (where undertaken)
T22	Beech	Gap where stems meet at 1.5m.	Low	
T23	Beech	Multiple large cavities at low level.	High	Moderate
T24	Beech	Rot hole below branch at 2m, various other smaller holes, and rot in broken limb at 4m.	High	Moderate
T25	Beech	Holes in main stem at 2 & 3m.	Low	
T26	Oak	Shearing cracks and a hollow at 1-2m on eastern aspect.	Moderate	
T27	Beech	Rotten cut stem at 3m.	Low	
T28	Beech	Hollow stem from 0.5m, large hole to open cavity, extends upward.	Moderate	Moderate
T29	Beech	Rotten where limb has been cut, 4m, could be shallow.	Low	
Т30	Beech	Potential hole where stems have grown together 6m, other smaller holes lower down.	Moderate	
T31	Beech	Narrow gap at 1.5m.	Low	
T32	Beech	Partially hollow trunk, holes in both stems, one at ground level, one at 2m.	High	
Т33	Beech	Partially hollow stem, open, at ground level.	Moderate	
T34	Beech	Large rot hole at 3m.	Moderate	
T35	Beech	Two stems grown together with deep crevice.	High	
Т36	Beech	Hole at 0.5m beech, endoscope.	Low	
T37	Beech	Large rot hole, potentially too open/wet but could extend far into trunk.	Moderate	
T38	Beech	Buttress rot on western aspect. Cavity circa 40cm deep and dark internally.	Moderate	Low
Т39	Beech	Various holes and gaps between stems, beech.	Moderate	

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roosting Suitability Assessment	Reclassification following Aerial Surveys (where undertaken)
T40	Beech	Holes in main stem, rot hole in cut branch, beech.	Moderate	
T41	Beech	Gap where stems join.	Moderate	
T42	Beech	Lifted bark, hole at 1.5m.	Moderate	
T43	Beech	Hollow stem open at bottom, other cracks and gaps.	Moderate	
T44	Beech	Hole at 1m.	Low	
T45	Beech	Small knot hole at 1.5m.	Low	
T46	Beech	Holes in all three stems at >2m.	Moderate	
T47	Beech	Potential for large cavity in trunk, several access holes at 1-2m.	High	
T48	Beech	Small beech tree with several small holes.	Low	
T49	Beech	Holes along horizontal limb which go right through but some crevices.	Low	
T50	Beech	Gap under overhang at 1m, rotten branch.	Low	
T51	Beech	Hole at top of stem join, 0.5m.	Low	
T52	Beech	Hole where stems meet at 1.5m.	Moderate	
T53	Beech	Various cracks, holes and lifted bark.	Low	
T54	Beech	Large hole at 2m. Blackbird nest.	Moderate	
T55	Beech	Several large holes in trunk at 1m.	High	
T56	Beech	Crevice where stems meet.	Low	
T57	Beech	Small splits and gaps, nothing too deep.	Low	
T58	Beech	Gaps where stems meet and partially hollow stem.	Moderate	
Т59	Beech	Rotten where limb has been cut, hole into base of trunk at 0.5m.	Moderate	
T60	Beech	Rot hole, cavity extends 20cm into bowl.	Low	

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roosting Suitability Assessment	Reclassification following Aerial Surveys (where undertaken)
T61	Beech	Various crevices where limbs join.	Low	
T62	Beech	Partially hollow trunk and gap where stems meet.	Moderate	
т63	Beech	Various holes and cavities where stems meet 1-2m and tear outs.	High	
T64	Beech	Open gap at 0.5m, could extend up, currently in use by nesting wren.	Low	
T65	Beech	Hollow at base of truck but open and light, could extend up.	Low	
T66	Beech	Partially hollow trunk at ground level, and various other holes 1-2m.	Moderate	
T67	Beech	Open split in stem, small hole in one stem.	Low	
T68	Beech	Large crevice which extends far into bowl.	High	
T69	Beech	Various holes in several stems.	Moderate	
т70	Beech	Partially hollow trunk and many holes 1-2m endoscope.	High	
T71	Beech	Knot hole and wounds on eastern aspect.	Moderate	Moderate
T72	Beech	Hole where limbs join.	Moderate	
т73	Beech	Hole in trunk, 1-2m.	Low	
T74	Beech	Small holes in trunk, 1m.	Moderate	
T75	Beech	Rot hole with chamber extending back at 1.5m.	Moderate	
T76	Beech	Horizontal hollow stem, flaking bark.	Moderate	
Т77	Beech	Tear out at 5m and hole in cut stem at 1m.	Low	
T78	Beech	Woodpecker holes and multiple tear outs.	Moderate	Low
T79	Beech	Small hole in in trunk at 1m.	Low	
T80	Beech	Knot holes and tear outs from storm damage.	Moderate	Moderate

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roosting Suitability Assessment	Reclassification following Aerial Surveys (where undertaken)
T81	Beech	Various crevices and holes 1-2m.	Moderate	
T82	Beech	Various crevices and holes 1-2m.	Moderate	
T83	Beech	Shallow crevices.	Low	
T84	Beech	Holes in stem.	Low	
T85	Beech	Large opening to partially hollow stem.	High	
T86	Beech	Tear out with gaps around 2m.	Low	
T87	Beech	Various shallow crevices.	Low	
T88	Beech	Flaking bark.	Low	
T89	Beech	Crevice between stems at 1m.	Moderate	
Т90	Beech	Hole in main trunk at 2.5m.	Moderate	
T91	Beech	Hole where stems meet.	Moderate	
T92	Beech	Holes in main trunk at 3m.	Low	
Т93	Beech	Shallow crevices in trunk.	Low	
Т94	Beech	Potential hole in main stem above joining branches.	Moderate	Low
T95	Holly	Gaps and crevices where stems meet.	Moderate	Low
Т96	Beech	Several deep crevices 1-2m.	Moderate	Moderate
T97	Beech	Various crevices, large tear out and flaking bark.	Low	
T98	Beech	Two small holes in trunk at 1-3m.	Low	
Т99	Beech	Several small crevices where stems grown together.	Low	
T100	Apple	Hole in main trunk at 1m.	Moderate	High
T101	Beech	Dead, hole at 1m, and tear out.	Low	
T102	Beech	Few holes at 1-2m.	Moderate	Low
T103	Beech	Several holes in trunk at 1m.	Moderate	Low

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roosting Suitability Assessment	Reclassification following Aerial Surveys (where undertaken)
T104	Beech	Open cavity with some small crevices within.	Low	
T105	Beech	Gap under chainsaw cut 2.5m.	Low	
T106	Beech	Crevices between stems.	Low	
T107	Dead	Dead tree with splits and flaking bark.	Low	
T108	Beech	Shallow crevice.	Low	
T109	Dead	Dead tree with tear outs flaking bark.	Low	
T110	Beech	Low hollow stem from ground.	Low	
T111	Beech	Small holes in trunk.	Low	
T112	Beech	Crevice behind rot hole and flaking bark.	Moderate	Low
T113	Beech	Cavity at base of tree, light and open.	Low	
T114	Beech	Small crevice in knot at 1m.	Low	
T115	Beech	Hollow trunk at base with horizontal cavity 0.5m.	Moderate	
T116	Beech	Large open cavity at 0.5m but extends upwards slightly.	Moderate	
T117	Beech	Open cavity at 1m and hollow at base of trunk.	Moderate	Moderate
T118	Beech	Deep cavity extending up 1-2m.	High	
T119	Beech	Deep cavity extending upwards 1m.	High	
T120	Beech	Shallow cavity 1m.	Low	
T121	Beech	Small crevices and lifted bark.	Low	
T122	Beech	Deep rot hole 1m.	High	
T123	Beech	Crevices alongside rot.	Low	
T124	Beech	Cut stem of tree only, large horizontal cavity at 1m.	High	
T125	Beech	Cavity in main trunk.	High	
T126	Beech	Shallow crevices.	Low	

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roosting Suitability Assessment	Reclassification following Aerial Surveys (where undertaken)
T127	Beech	Small hole above wound.	Low	
T128	Beech	Cavity shallow at 0.5m.	Moderate	
T129	Beech	Cavity where stems meet at 0.5m.	Moderate	
T130	Beech	Knot holes 3m high, facing east.	Low	
T131	Beech	Small holes in trunk.	Low	
T132	Beech	Knot holes on two pruned branches, 2.5m high facing south.	Low	
T133	Beech	Cankers with small hollow in trunk at 1m high, facing west.	Low	
T134	Beech	Cankers with small hole at 1m, facing north.	Low	
T135	Beech	Hollow trunk at 1m high - very light and exposed inside. Some smaller crevices.	Low	
T136	Beech	Cavity at 0.5m high on western aspect, circa 30cm deep. Welds.	Low	
T137	Beech	Tear outs. Bird nesting in crevice 2.5m on northern aspect.	Low	
T138	Beech (fallen)	Cavity circa 30cm deep and 2m high on western aspect.	Low	
T139	Beech	Lightning struck with multiple cavities/crevices through trunk. No evidence seen, quite cobwebbed.	Low	
T140	Beech	Buttress rot, although cavities appear superficial.	Low	
T141	Beech	Tear out which possibly extend into the trunk from the branch on eastern aspect. Small canker on west and buttress rot on southern aspect.	Moderate	
T142	Beech	Buttress rot with entrance on western aspect and secondary entrance at 1m high on eastern aspect. Trunk mostly hollow.	Moderate	

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roosting Suitability Assessment	Reclassification following Aerial Surveys (where undertaken)
T143	Beech	Cavities where trunk split. Large but bright internally and quite exposed on eastern aspect.	Low	
T144	Beech	Knot holes at 2.5m on eastern aspect.	Low	
T145	Beech	Buttress rot, although cavities appear superficial	Low	
T146	Beech	Buttress rot, with entrance 0.5m on western aspect. Open at top with light ingress.	Low	
T147	Beech	Broken trunk and some lifting bark.	Low	
T148	Beech	Tear outs 4m high on western aspect. Small knot hole 2m on eastern aspect.	Low	
T149	Beech	Subsidence cracks and hollow throughout.	Moderate	
T150	Beech	Knot holes at 2m high on western aspect.	Low	
T151	Beech	Small knot holes at 3m on eastern aspect. Possibly superficial.	Low	
T152	Beech	Multiple small linear crevices on deadwood branches.	Low	
T153	Oak	Hollow 1-2m on eastern aspect.	Moderate	
T154	Beech	Knot holes at 5m on eastern aspect.	Low	
T155	Beech	Some small tear outs and buttress rot.	Low	
T156	Beech	Knot holes at 4m eastern aspect.	Low	
T157	Beech	Three small knot holes at 1m. Very leafy growth obscuring view of crown.	Low	
T158	Beech	Tear outs with extend into trunk. Light ingress and exposed.	Low	
T159	Beech	Pruning cuts at 0.5m western aspect with cavity extending downwards 50cm.	Low	

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roosting Suitability Assessment	Reclassification following Aerial Surveys (where undertaken)
T160	Beech	Shearing cracks creating a small cavity on southern aspect with an old bird's nest.	Low	
T161	Beech	Gnarly tree with tear out at 1m on western aspect.	Low	
T162	Beech	Pruning cuts with shallow crevices at 2m on western aspect.	Low	
T163	Beech	No features seen from ground, but possible given size/age/condition. Dense leafy growth obscuring view. Old bird's nest.	Low	
T164	Beech	Tear outs/Split trunk on western aspect which extends all the way through tree. Some small crevices.	Low	
T165	Beech	Buttress rot, although cavities appear superficial.	Low	
T166	Beech	Tear outs and knot holes on southern aspect.	Low	
T167	Beech	Hole in main stem, 1m.	Low	
T168	Beech	Tear outs at 8m on southern aspect and 0.5m on northern aspect. Buttress rot.	Low	
T169	Ash	Hollow horizontal trunk with cankers.	Low	
T170	Ash	Buttress rot which may extend through main stem. Knot holes on northern aspect.	Moderate	
T171	Beech	Buttress rot with cavity extending all the way through the trunk. Lots of light ingress in cavity.	Moderate	
T172	Beech	Knot holes on northern and western aspects at 6m.	Low	
T173	Beech	Buttress rot with small hollow.	Low	
T174	Beech	Tear outs on northern aspect.	Low	
T175	Beech	Pruning cuts on western aspect at 3m.	Low	
T176	Beech	Shearing cracks.	Low	

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roosting Suitability Assessment	Reclassification following Aerial Surveys (where undertaken)
T177	Beech	Wounds leading to a small cavity circa 40cm deep on northern aspect.	Low	
T178	Beech	Pruning cuts and some small features/gnarls.	Low	
T179	Beech	Tear out with linear crevices and some lifting bark.	Low	
T180	Beech	Tear out on southern aspect at 1m.	Low	
T181	Beech	Wounds with small hollow branch near ground level.	Low	
T182	Beech	Knot holes at 3m high on eastern aspect. Possibly superficial.	Low	
T183	Beech	Wounds at 1m on south-western aspect. Some linear cracks.	Low	
T184	Beech	Knot holes on eastern aspect at 2.5m.	Low	
T185	Beech	Welds with entrance at base into small cavity.	Low	
T186	Beech	Knot holes at 2.5m on western aspect.	Low	
T187	Beech	Tearouts at 1m high on western aspect, although quite exposed.	Low	
T189	Beech	Tear outs although fairly exposed.	Low	
T190	Beech	Recent damage with exposed tear out.	Low	
T191	Beech	Hollow trunk on eastern aspect with large cavity. However open and exposed at top.	Low	
T192	Beech	Tear outs although quite shallow.	Low	
T193	Beech	Wound circa 10cm deep on eastern aspect.	Low	
T194	Beech	Pruning cuts at 0.5m on western aspect with small crevice.	Low	
T195	Rowan	Tear outs and crevices where tree has fallen.	Low	
T196	Beech	Pruning cuts and knot holes on western aspect.	Low	

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roosting Suitability Assessment	Reclassification following Aerial Surveys (where undertaken)
T197	Beech	Heavy leaf y growth with potential hidden features. Tree of size/age/condition to likely have features suitable for bats.	Low	
T198	Beech	Wound with hollow through centre of tree with light ingress.	Low	
T199	Beech	Buttress rots at 0.5m eastern aspect and 1m on western aspect.	Low	
T200	Beech	Several small holes and gaps.	Low	
T201	Beech	Knot holes and wounds on eastern and southern aspects.	Low	
T202	Beech	Knot holes and pruning cuts on western aspect.	Low	
T203	Beech	Pruning cuts at 2m on western aspect.	Low	
T204	Beech	Buttress rots with hollow cavities through trunk.	Low	
T205	Rowan	Cracks and crevices where trunk torn away.	Low	
T206	Beech	Tear outs and flaking bark at 3m on northern aspect.	Low	
T207	Beech	Large hole at ground level to cavity that extends into bowl. The aerial inspection noted heavy storm damage, with little suitable for bats.	High	Negligible
T208	Beech	Multiple tear outs on northern aspect.	Low	
T209	Beech	Few small crevices at 1-2m.	Low	
T210	Beech	Knot holes and tear outs from storm damage.	Low	
T211	Beech	Knot holes and tear outs from storm damage.	Low	
T212	Beech	Knot holes and tear outs from storm damage.	Low	
T213	Beech	No obvious features of moderate or high suitability, although some small features present.	Low	
T214	Beech	Knot holes and tear outs from storm damage.	Moderate	

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roosting Suitability Assessment	Reclassification following Aerial Surveys (where undertaken)
T215	Beech	No obvious features present, although tree of sufficient age/size/condition to potentially have features suitable for bats.	Low	
T216	Beech	Knot holes and tear outs from storm damage.	Moderate	
T217	Beech	Knot holes and tear outs from storm damage.	Moderate	
T218	Beech	No obvious features present, although tree of sufficient age/size/condition to potentially have features suitable for bats.	Low	
T219	Beech	No obvious features present, although tree of sufficient age/size/condition to potentially have features suitable for bats.	Low	
T220	Beech	Knot holes and tear outs from storm damage.	Moderate	
T221	Beech	No obvious features present, although tree of sufficient age/size/condition to potentially have features suitable for bats.	Low	
T222	Beech	Knot holes and tear outs from storm damage.	Moderate	
T223	Beech	Knot holes and tear outs from storm damage.	Moderate	
T224	Beech	No obvious features present, although tree of sufficient age/size/condition to potentially have features suitable for bats.	Low	
T225	Beech	Knot holes and tear outs from storm damage.	Moderate	
T226	Beech	No obvious features present, although tree of sufficient age/size/condition to potentially have features suitable for bats.	Low	

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roosting Suitability Assessment	Reclassification following Aerial Surveys (where undertaken)
T227	Beech	No obvious features present, although tree of sufficient age/size/condition to potentially have features suitable for bats.	Low	
T228	Beech	No obvious features present, although tree of sufficient age/size/condition to potentially have features suitable for bats.	Low	
T229	Beech	No obvious features present, although tree of sufficient age/size/condition to potentially have features suitable for bats.	Low	

Table EDP A6.2: Results of the Ground Level Tree Assessment for Roosting Bats – Access Route (The northern parcel)

Tree ID	Species	Description of Potential Roost Features	Ground Level Bat Roost Suitability Assessment
T257	Oak	Missing branch with downward facing cavity hanging over adjacent road – approx. 3.5m from ground facing south south-east.	Low
G266	Beech/ Hazel	Line of beech and hazel with some features low down on trunks on a number of trees - (endoscoped – no evidence of bats recorded).	Low
G267	Beech	Line of beech trees. Several knot holes and cavities (many covered with cobwebs) low down where trunks of previous layered trees join (endoscoped – no evidence of bats recorded).	Low
G268	Beech	Line of beech trees. Several knot holes and cavities (many covered with cobwebs) low down where trunks of previous layered trees join (endoscoped – no evidence of bats recorded).	Low
G277	Beech	Line of beech trees with a number of cavities low down on trunks (endoscoped – no evidence of bats recorded).	Low
G283	Hawthorn	Dead branch with cavities approx. 1.5m from ground, facing road.	Low

Annex EDP 7 Bat Building Assessment

A7.1 A summary of the preliminary roost assessment is given in **Table EDP A7.1** below and on **Plan EDP 8.11**.

Building Ref	Photo	Description	Suitability for Bats	
B1		Farmhouse with various extensions and lean-tos. Loft space has been converted into living space, with vaulted ceilings (from discussions with the owners). Suitability under slates and ridge tiles, around chimneys/leaf flashing, under bargeboards and fascias.	Moderate	
B2		Red-brick outbuilding used as a fowl house. Suitability under slates and ridge tiles. Open doorways, with timber beams. Suitability as feeding roosts/night roost as well as day roost.	Moderate	
B3		Open-sided stone barn that has been recently re-roofed. Suitability in gaps in the mortar and stonework, some gaps under the eaves and around the lintel.	Moderate	

Table EDP A7.1: Summary of preliminary roost assessment

Building Ref	Photo	Description	Suitability for Bats
B4		Ruins of barn. No roof. Some standing stonework with some suitable cavities between the external stonework and internal breezeblocks.	Low
B5		Breezeblock and corrugated asbestos sheeting barn, with metal frame in poor condition.	Negligible
B6		Prefabricated caravan.	Negligible
B7 and B8		Breezeblock and corrugated asbestos sheeting barns, with metal frame in poor condition.	Negligible

DUSK EMERGENCE/DAWN RE-ENTRY SURVEY RESULTS

- A7.2 The farmhouse, **B1**, was found to contain common pipistrelle roosts on the September 2022 survey, although no roosts were recorded on either the August 2022 or July 2023 surveys, indicating these are occasionally used day roosts. Common pipistrelles were recorded emerging from three locations. General foraging activity was significantly higher on survey in September 2022.
- A7.3 In addition, the stone barn, **B3**, was found to have a common pipistrelle roost. One bat was observed to emerge from the southern elevation on both the August and September 2022 surveys, but not on the July 2023 survey, indicating this is an occasionally used day roost of an individual common pipistrelle.
- A7.4 A summary of roosts recorded is given in Table EDP A7.2 below and Plan EDP 8.12.
- A7.5 No bat emergences were recorded from buildings **B2** and **B4**, and no bats were found during the endoscoping survey of **B4**.

Building Ref	Photo	Description	Max Count
B1		Two common pipistrelles emerged from under the bargeboard adjacent to the chimney on the southern elevation. One common pipistrelle emerged from the open window of the fire damaged extension (NB, photo taken in August 2022 and the garage units had been dismantled at the time of the September 2022 survey due to their structural instability). One bat, which was not echolocating but assumed to also be a common pipistrelle (due to the emergence time, size and flight, and other species recorded	4
		ridge of the lean-to on the western elevation.	

Table EDP A7.2: Summary of bat access points

Building Ref	Photo	Description	Max Count
B3		One common pipistrelle emerged from B3 , from beneath the eaves.	1

Annex EDP 8 Great Crested Newt Survey Results

HABITAT SUITABILITY ASSESSMENT

- A8.1 A description of those waterbodies surveyed is provided within **Table EDP A4.1** with the detailed results of the habitat suitability assessment provided within **Table EDP A4.2**. Waterbody locations are further illustrated at **Plans EDP 8.14** and **8.15**.
- A8.2 The habitat suitability assessments undertaken in 2020 and updated in 2023 confirmed waterbodies **P1**, **P6** and **P7** to be of 'average' suitability, waterbody **P5** to be of 'below average' suitability and waterbodies **P2**, **P3** and **P4** to be of 'poor' suitability.

Waterbody	Illustrative Photographs				
P1 April		0.62			
2020		Average			
P2 April	and the second s	0.43			
2020		Poor			

 Table EDP A8.1: Habitat Suitability of Waterbodies P1 - P7 to support Great Crested Newt

Waterbody	Illustrative P	hotographs	HSI Score and Suitability
P2 June 2023			
P3 April 2020			0.29 Poor
P3 June 2023			
P4 April 2020			0.44 Poor

Waterbody	Illustrative Photographs	HSI Score and Suitability
P4 June 2023		
P5	No photo available	0.54 Below average
P6 April 2020		0.65 Average
P6 June 2023		
P7 April 2020		0.64 Average

Waterbody	Illustrative Photographs	HSI Score and Suitability
P7 June 2023		

Suitability Index	Criteria	Definition	Possible Score	P1	P2	P3	P4	P5	P6	P7
SI1	Geographic	Zone A - optimal	1		0.5	0.5	0.5	0.5	0.5	
	Location	Zone B - marginal	0.5	0.5						0.5
		Zone C - unsuitable	0.01							
SI2	Pond Area	Pond surface area to the nearest 50m ²	*	0.2	0.4	0.05	0.05	0.05	0.4	0.4
Sl₃	Permanence	Never Dries	0.9		0.9					
		Rarely dries (Dries no more than 2/10 years or in drought only)	1	0.9		0.1	0.1	0.9	1	1
		Sometimes dries (Dries between 3/10 years to most years)	0.5							
		Dries annually	0.1							
SI4	Water Quality	Good (abundant & diverse invertebrate community)	1	0.67	0.01	0.01	0.67	0.67	0.67	0.67
		Moderate (moderate invertebrate community)	0.67							
		Poor (low invertebrate diversity, few submerged plants)	0.33							
		Bad (clearly polluted, pollutant tolerant invertebrates present, no submerged plants)	0.01							
SI₅	Shade	% shade of pond perimeter to at least 1m from the shore	*	1	1	1	1	1	1	1
SI6	Waterfowl	Absent (no evidence of waterfowl, excluding moorhen)	1	0.67	1	1	1	1		1
		Minor (waterfowl present, though little impact)	0.67						0.67	
		Major (severe impact of waterfowl)	0.01							
SI7	Fish	Absent (no records of fish stocking and no fish seen during survey)	1	0.67	0.67	1	1	1	1	0.67

Table EDP A8.2: Pond Habitat Suitability Assessment of waterbodies associated with the Application Site (April 2020, updated June 2023).
Suitability Index	Criteria	Definition	Possible Score	P1	P2	P3	P4	P5	P6	P7
		Possible (no evidence of fish, but conditions suggest presence)	0.67							
		Minor (small numbers of crucian carp, goldfish or stickleback)	0.33							
		Major (dense populations of fish present)	0.01							
SI8	Pond Count	No. ponds within 1 km of survey pond not separated by major barriers and divided by 3.14	*	0.7	0.88	0.75	0.75	0.75	0.75	0.68
SI9	Terrestrial	Good (extensive habitat offering good opportunities for foraging and shelter surrounding pond)	1							
		Moderate (habitat offering opportunities for foraging and shelter, but not extensive and does not completely surround pond)	0.67	1	0.67	0.67	0.67	0.33	0.67	0.67
		Poor (habitat with poor structure, offering limited opportunities for foraging and shelter)	0.33							
		None (No suitable habitat around pond)	0.01							
SI10	Macrophytes	% pond surface area occupied by macrophyte cover (excluding duckweed) and submerged plants reaching the surface	*	0.45	0.3	0.3	0.3	0.3	0.3	0.3
HSI Score = (SI1*SI2*SI3*SI4*SI5*SI6*SI7*SI8*SI9*SI10) ^{1/10}			0.62	0.43	0.29	0.44	0.54	0.65	0.64	
Pond Suitability (<0.5 = poor; 0.5-0.59 = below average; 0.6-0.69 = average; 0.7-0.79 = good; >0.8 = excellent)			Average	Poor	Poor	Poor	Below Average	Average	Average	

ENVIRONMENTAL EDNA SAMPLING

- A8.3 Waterbodies P1, P2, P3 and P4 associated with the northern parcel and waterbody P7 located within the southern parcel tested positive for great crested newt eDNA following the April 2020 surveys. Remaining waterbody P5 (surveyed in April 2021) and waterbody P6 (surveyed in April 2020 and subject to an update survey in April 2021) tested negative for great crested newt eDNA however, confirming likely absence of this species for these waterbodies.
- A8.4 Update water sampling surveys of waterbodies **P1** and **P7** in June 2023 reconfirmed great crested newt presence; however, no evidence of great crested newt eDNA was recorded for waterbody P4 during the 2023 update survey.
- A8.5 Whilst no access to waterbodies P2, P3, P5, P6, P8 or P9 was possible during the 2023 update surveys, continued great crested newt presence is assumed for waterbodies P2 and P3. Likely continued absence of this species is otherwise assumed for waterbodies P5 and P6.
- A8.6 Analysis was conducted in the presence of the following controls: extraction blank; and appropriate positive and negative PCR controls for each of the TaqMan assays (great crested newt, inhibition, and degradation). All controls were noted to have performed as expected. A summary of the results is provided in **Table EDP A8.3** below.

Date of Sampling	Pond No.	Detection of Triturus cristatus	No. of positive repetitions	Sample integrity	Inhibition	Degradation
April 2020	P1	Positive	12	Pass	Pass	Pass
June 2023		Positive	8	Pass	Pass	Pass
April 2020	P2	Positive	5	Pass	Pass	Pass
April 2020	P3	Positive	10	Pass	Pass	Pass
April 2020	P4	Positive	2	Pass	Pass	Pass
June 2023		Negative	0	Pass	Pass	Pass
April 2021	P5	Negative	0	Pass	Pass	Pass
April 2020	P6	Negative	0	Pass	Pass	Pass
April 2021		Negative	0	Pass	Pass	Pass

 Table EDP A8.3:
 Summary of eDNA Results

Date of Sampling	Pond No.	Detection of Triturus cristatus	No. of positive repetitions	Sample integrity	Inhibition	Degradation
April 2020	P7	Positive	4	Pass	Pass	Pass
June 2023		Positive	12	Pass	Pass	Pass

POPULATION SIZE ASSESSMENT

- A8.7 The highest count of adult great crested newt individuals per waterbody on any given survey was 13, recorded within waterbody P1 located to the immediate north of the northern parcel, indicating presence of a medium-size population albeit at the lower end of this scale. The maximum count for great crested newt at all other waterbodies surveyed was as follows: five at P2; six at P3, one at P4 and three at P7.
- A8.8 In respect of waterbodies **P1**, **P2**, **P3** and **P7**, both adult male and female great crested newt individuals were recorded during the surveys, confirming these waterbodies to likely be breeding ponds. Whilst only a maximum of one female great crested newt was recorded within waterbody **P4**, given its proximity to waterbodies **P2** and **P3**, this waterbody also has potential to support a breeding population in future.
- A8.9 Waterbodies **P2**, **P3** and **P4** are clustered, occurring between 65m and 170m from each other, with waterbody **P1** located circa 700m to the north-west of this cluster at its closest point. It is therefore considered that those waterbodies associated with the northern parcel and their surrounding habitats currently support a breeding metapopulation which is medium-sized, albeit at the lower end of this scale. In respect of the small great crested newt population supported by waterbody **P7**, this waterbody is situated over 1.7km away, and thus may represent a separate great crested newt population within the wider landscape.
- A8.10 Full details of the great crested newt survey are provided within **Table EDP 8.3**.

Survey Visit	Waterbody ID	Trapping Results*	Torching Results*
1	P1	1x PN(m)	1x GCN(f)
(29 April 2021)	P2	-	47x PN/SN
	P3	-	-
	P4	-	1x PN(m) & 1x PN/SN
	P7	1x PN(m) & 2x PN(f)	-
2	P1	1x GCN(m); 1x Pn(m); 2x PN(f); 1x SN(f); 1x SN(m)	3x GCN(m); 5x PN/SN(f)
(11 May 2021)	P2	9x PN(m); 1x PN(f)	3x GCN(f); 108x SN/PN
	P3		4x PN/SN(f)
	P4		1x GCN(f)
	P7	1x GCN(m); 5x PN(m); 1x PN(f); 1x SN(f)	9x PN/SN(f)
3 (17 May 2021)	P1	1x GCN(m); 6x SN(m); 3x SN(f); 9 xPN(m); 3x PN(f)	1x GCn(m); 4x GCN(f); 2x SN(m); 10x SN/PN(f); 1x SN/PN
	P2	27x PN(m); 4x PN(f); 2x SN(m); 1x SN(f)	2x GCN(m); 1x SN(m); 97x SN/PN
	P3	1x SN(m); 2 xSN(f)	4x GCN(m); 2x GCN(f); 15x SN/PN
	P4	-	1x SN(m); 1x PN(m); 1xSN/PN(f); 1x SN/PN
	P7	1x GCN(m); 1x SN(m); 6x SN(f); 7x PN(m); 5x PN(f)	-
4 (01 June 2021)	P1	1x GCN(m); 2x GCN(f); 2x PN(m); 1x SN(m); 1x SN/PN	4x GCN(m); 9x GCN(f); 14x SN/PN
	P2		4x GCN(m); 1x GCN(f); 27 xPN(m); 4x SN(m); 32x SN/PN
	P3	1x GCN(m); 1x SN(m); 2x SN(f); 1x PN(m); x PN(f)	2x GCN(m); 1x GCN(f); 8x PN(m)
	P4	1x GCN(f); 1x SN(f)	6x PN(m)
	P7	1x GCN(m); 2x GCN(f); 4x PN(m); 2x PN(f); 1x SN(m); 1x SN(f)	1x GCN(f); 8x PN(m)

Table EDP A8.3: Findings of the Detailed Great Crested Newt Surveys, 2021

Survey Visit	Waterbody ID	Trapping Results*	Torching Results*
5	P1	3x GCN(m); 2x GCN(f); 1x PN(f)	1x GCN(m); 1x GCN(f); 7x SN/PN(f)
(10 June 2021)	P2	1x GCN(m); 3x PN(m); 3x PN(f); 2x SN(f)	1x GCN(m); 1x GCN(f); 75x SN/PN
	P3	1x GCN(m); 2x PN(m); 1x PN(f)	1x PN(m); 5x PN/SN(f)
	P4	-	4x PN/SN(f)
	P7		1x PN(m); 8x SN/PN(f)
6	P1	1x GCN(m); 2x GCN(f)	1x GCN(f); 2x SN(m); 1x PN/SN
(15 June 2021)	P2	1x GCn(m); 7 xSN(m); 4x SN(f)	2x GCN(f); 4x SN(m); 1xPN(m); 1x PN(f); 174x PN/SN
	P3	2x GCN(m); 2x GCN(f); 7x SN(m); 2x SN(f); 13x PN(m); 7x PN(f)	7x SN/PN
	P4	1x SN(f)	-
	P7	3x SN(m); 2x SN(f); 31x PN(m); 19x PN(f)	1x PN(m); 11 xPN/SN

*GCN = great crested newt; PN = palmate newt; SN = smooth newt; (m) = male; (f) = female

Plans

Plan EDP 8.1: Site Location Plan (edp6366_d020c 31 October 2022 MCa/KHe)

Plan EDP 8.2: Internationally Designated Sites (edp6366_d013b 11 August 2022 MCa/KHe)

Plan EDP 8.3: Nationally Designated Sites (edp6366_d014b 11 August 2022 MCa/KHe)

Plan EDP 8.4: Non-statutory Designated Sites (edp6366_d015b 11 August 2022 MCa/KHe)

Plan EDP 8.5: Phase 1 Habitat Survey (edp6366_d005d 20 October 2023 RBa/KHe)

Plan EDP 8.6: Bat Activity Transect Routes 2021/2022/2023 (edp6366_d024c 24 October 2023 GYo/KHe)

Plan EDP 8.7: Anabat Swift Locations 2020/2021/2023 (edp6366_d023c 24 October 2023 GYo/KHe)

Plan EDP 8.8: Weather Station Location (edp6366_d007b 10 August 2022 MCa/KHe)

Plan EDP 8.9: Ground Level Roost Assessment - Trees (edp6366_d033a 24 October 2023 DJo/RCD)

Plan EDP 8.10: Aerial Roost Assessment – Trees (edp6366_d034 24 October 2023 DJo/RCD)

Plan EDP 8.11: Preliminary Bat Roost Assessment - Buildings (edp6366_d032 24 October 2023 DJo/RCD)

Plan EDP 8.12: Surveyor Locations and Dusk Emergence Survey Result – B1-B6 (edp6366_d043 24 October 2023 VMS/RCD)

Plan EDP 8.13: Dormouse Tube Locations (edp6366_d003b 11 August 2022 MCa/KHe)

Plan EDP 8.14: Great Crested Newt Surveys, 2021 (edp6366_d022b 11 August 2022 MCa/KHe)

Plan EDP 8.15: Great Crested Newt Survey, 2023 (edp6366_d057a 01 November 2023 JFr/KHe)

Plan EDP 8.16: Bat Activity Manual Transect – May 2020 (edp6366_d016d 24 October 2023 MCa/KHe)

Plan EDP 8.17: Bat Activity Manual Transect – June 2020 (edp6366_d017d 24 October 2023 MCa/KHe)

Plan EDP 8.18: Bat Activity Manual Transect – July 2020 (edp6366_d018d 24 October 2023 MCa/KHe)

Plan EDP 8.19: Bat Activity Manual Transect – August 2020 (edp6366_d019d 24 October 2023 MCa/KHe)

Plan EDP 8.20: Bat Activity Manual Transect – September 2020 (edp6366_d028d 24 October 2023 MCa/KHe)

Plan EDP 8.21: Bat Activity Manual Transect – October 2020 (edp6366_d029d 24 October 2023 MCa/KHe)

Plan EDP 8.22: Bat Activity Manual Transect – April 2021 (edp6366_d025d 24 October 2023 GYo/KHe)

Plan EDP 8.23: Bat Activity Manual Transect – May 2021 (edp6366_d026d 24 October 2023 GYo/KHe)

Plan EDP 8.24: Bat Activity Manual Transect – June 2021 (edp6366_d027d 24 October 2023 GYo/KHe)

Plan EDP 8.25: Bat Activity Manual Transect – June 2023 (edp6366_d050 24 October 2023 DJo/RCD)

Plan EDP 8.26: Bat Activity Manual Transect - July 2023 (edp6366_d051 24 October 2023 DJo/RCD)

Plan EDP 8.27: Bat Activity Manual Transect - August 2023 (edp6366_d052 24 October 2023 DJo/RCD)

Plan EDP 8.28: Bat Activity – Automated Static Detector Results – June 2023 (edp6366_d054 24 October 2023 DJo/RCD)

Plan EDP 8.29: Bat Activity – Automated Static Detector Results – July 2023 (edp6366_d055 24 October 2023 DJo/RCD)

Plan EDP 8.30: Bat Activity – Automated Static Detector Results – August 2023 (edp6366_d056 24 October 2023 DJo/RCD)





client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Site Location Plan

date31 OCTOBER 2022drawn byMCadrawing numberedp6366_d020ccheckedKHescale1:15,000 @ A3QAGYo

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Site Boundary

30km Buffer



Special Area of Conservation (SAC)

Special Protection Area (SPA)



Ramsar Site

client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Internationally Designated Sites

 date
 11 AUGUST 2022
 drawn by
 MCa

 drawing number
 edp6366_d013b
 checked
 KHe

 scale
 1:250,000 @ A3
 QA
 GYo

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15km Buffer



Site of Special Scientific Interest (SSSI)



National Nature Reserve (NNR)

National Park

client

Pennant Walters

project title

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drawing title

Nationally Designated Sites

date drawing number edp6366_d014b scale

11 AUGUST 2022 1:125,000 @ A3

drawn by MCa checked KHe QA GYo



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	Site Boundary
/	5km Buffer
	Country Park
	Local Nature Reserve (LNR)
	Wildlife Trust Reserve

Ancient Semi-natural Woodland

Sites of Importance for Nature Conservation (SINC) (by local authority)





Newport



Torfaen

Key to Labels:

B - Blaenau Gwent SINC C - Caerphilly SINC CP - Country Park LNR - Local Nature Reserve N - Newport SINC T - Torfaen SINC WTR - Wildlife Trust Reserve

See appendix for list of site names

client

Pennant Walters

project title

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drawing title

Non-statutory Designated Sites

11 AUGUST 2022 drawn by MCa date drawing number edp6366_d015b checked KHe 1:50,000 @ A3 GYo QA scale

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N		Site Boundary
\Box	F1	Field Number
	Y///////	Tall Ruderal
1	XXXXXX	Scattered Bracken
		Dense Continuous Scrub
	A	Arable
51		Unimproved Acid Grassland
	SI	Semi-improved Neutral Grassland
	I	Improved Grassland
	SI	Poor Semi-improved Grassland
\		Building
		Hardstanding
-		Bare Ground
1	××××	Scattered Bracken
THINH	××××	Scattered Scrub
	• • •	Scattered Trees/Parkland (Broad-leaved)
		Wall
R		Fence
		Defunct Species-poor Hedgerow
The second secon		Intact Species-poor Hedgerow
HANNE	<u>v_v_v_</u>	Defunct Hedgerow with Trees
×		Scattered Trees (Broad-leaved)
F2	×	Scattered Scrub
Ι	client	
	Pennant W	alters
	project title	
****	Trecelyn W	ind Farm
-	drawing title Habitat Su Northern P	rvey, 2020/2021/2023 arcel West (Sheet 1 of 4)
	date drawing numb scale	20 OCTOBER 2023 drawn by RBa er edp6366_d005d checked KHe 1:4,000 @ A3 QA GYo
reads	ec	the environmental dimension partnership
250 m	Registered office:	01285 740427 - www.edp-uk.co.uk - info@edp-uk.co.uk



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		Site Boundary
)	F1	Field Number
		Coniferous Plantation Woodland
1	Y///////	Tall Ruderal
	XXXXX	Scattered Bracken
3	Α	Arable
-	SI	Semi-improved Neutral Grassland
-	I	Improved Grassland
Ρ	SI	Poor Semi-improved Grassland
- 20		Standing Water
		Building
		Bare Ground
	0	Quarry
	××××	Scattered Bracken
	• • •	Scattered Trees/Parkland (Broad-leaved)
		Wall
		Fence
2		Defunct Species-poor Hedgerow
		Dry Ditch
	•	Scattered Trees (Broad-leaved)

client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Habitat Survey, 2020/2021/2023 Northern Parcel East (Sheet 2 of 4)

date	20 OCTOBER 2023	drawn by	RBa
drawing number	edp6366_d005d	checked	KHe
scale	1:4,000 @ A3	QA	GYo



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Habitat Survey, 2020/2021/2023 Central Parcel (Sheet 3 of 4)

date	20 OCTOBER 2023	drawn by	RBa
drawing number	edp6366_d005d	checked	KHe
scale	1:2,500 @ A3	QA	GYo



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N N		Site Boundary
)	F1	Field Number
	'////////	Tall Ruderal
	XXXXXX	Scattered Bracken
	XXXXXXXX	Ephemeral/short Perennial
	А	Amenity Grassland
		Unimproved Acid Grassland
	SI	Semi-improved Neutral Grassland
	I	Improved Grassland
	SI	Poor Semi-improved Grassland
		Standing Water
		Building
dd		Bare Ground
1	××××	Scattered Bracken
x		Scattered Trees/Parkland (Broad-leaved)
		Wall
		Fence
6		Intact Species-poor Hedgerow
		Earth Bank
1	•	Scattered Trees (Broad-leaved)

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Habitat Survey, 2020/2021/2023 Southern Parcel (Sheet 4 of 4)

date	20 OCTOBER 2023	drawn by	RBa
drawing number	edp6366_d005d	checked	KHe
scale	1:5,000 @ A3	QA	GYo



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250 m



Bat Activity Transect Routes, 2020/2021/2023 (Sheet 2 of 4 – May & June 2020)

date	24 OCTOBER 2023	drawn by	GYo
drawing number	edp6366_d024c	checked	KHe
scale	1:5,000 @ A3	QA	RBa

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date	24 OCTOBER 2023	drawn by	GYo
drawing number	edp6366_d024c	checked	KHe
scale	1:5,000 @ A3	QA	RBa



_	_
	_

Bat Transect Routes

---- Transect 2 - Southern Route



Pacing Point



client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Bat Activity Transect Routes, 2020/2021/2023 (Sheet 4 of 4 – June-August 2023)

date	24 OCTOBER 2023	drawn by	GYo
drawing number	edp6366_d024c	checked	KHe
scale	1:5,000 @ A3	QA	RBa

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Anabat Swift Locations 2020/2021/2023

client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Anabat Swift Locations 2020/2021/2023

date	24 OCTOBER 2023	drawn by	GYo
drawing number	edp6366_d023c	checked	KHe
scale	1:12,500 @ A3	QA	RBa



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Weather Station Location

client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Weather Station Location

date drawing number edp6366_d007b scale 1:12,500 @ A3

10 AUGUST 2022

drawn by MCa checked KHe QA GYo

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client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title Ground Level Roost Assessment – Trees (Sheet 2 of 5)

date drawing number edp6366_d033a scale 1:2,500 @ A3

24 OCTOBER 2023 QA

drawn by DJo checked RCD JFr

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Pennant Walters

project title

Trecelyn Wind Farm

drawing title Ground Level Roost Assessment – Trees (Sheet 3 of 5)

date drawing number edp6366_d033a scale

100 m

24 OCTOBER 2023 1:2,500 @ A3 QA

drawn by DJo checked RCD JFr

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Pennant Walters

project title

Trecelyn Wind Farm

drawing title Ground Level Roost Assessment - Trees (Sheet 4 of 5)

date drawing number edp6366_d033a scale

24 OCTOBER 2023 1:2,500 @ A3 QA

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Ground Level Roost Assessment - Trees

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Proposed Turbine Location

130m Turbine Buffer

Bat Tree Roost Suitability



0

Negligible



client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title Aerial Roost Assessment - Trees (Sheet 1 of 2 - June 2022)

date drawing number edp6366_d034 scale

24 OCTOBER 2023 drawn by DJo 1:5,500 @ A3 QA

checked RCD JFr

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130m Turbine Buffer

Bat Tree Roost Suitability



0

Negligible



client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Aerial Roost Assessment - Trees (Sheet 2 of 2 - August 2022)

date drawing number edp6366_d034 scale

24 OCTOBER 2023 1:5,500 @ A3 QA

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client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Preliminary Bat Roost Assessment - Buildings

date	24 OCTOBER 2023	drawn by	DJo
drawing number	edp6366_d032	checked	RCD
scale	1:10,000 @ A3	QA	JFr

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Bat Building Roost Suitability		
Confirmed Roost		
Moderate		
Low		
Negligible		
Surveyor Location		
Common Pipistrelle E	mergence	
client		
client Pennant Walters		
client Pennant Walters project title		
client Pennant Walters project title Trecelyn Wind Farm		
client Pennant Walters project title Trecelyn Wind Farm drawing title Surveyor Locations and Dusk E Survey Results – R1-R6	mergence	
client Pennant Walters project title Trecelyn Wind Farm drawing title Surveyor Locations and Dusk E Survey Results – B1-B6 date date drawing number scale 24 OCTOBER 2023 edp6366_d043 1:500 @ A3	Emergence drawn by checked QA	VMS RCD JFr



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1		

Dormouse Tube Locations and Numbers

client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Dormouse Tube Locations

 date
 10 AUGUST 2022
 drawn by
 MCa

 drawing number
 edp6366_d003b
 checked
 KHe

 scale
 1:20,000 @ A3
 QA
 GYo

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Buffers (250m & 500m)

P1

Pond Number

Great Crested Newt Confirmed Present (eDNA & Traditional Surveys) - 5 ponds

Great Crested Newt Confirmed Absent (eDNA Survey) - 2 Ponds

No Access - 2 Ponds

client

Pennant Walters Ltd

project title

Trecelyn Wind Farm

drawing title

Great Crested Newt Surveys, 2021

date	11 AUGUST 2022	drawn by	MCa
drawing number	edp6366_d022b	checked	KHe
scale	1:15,000 @ A3	QA	GYo

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1000 m

1.64

See

Track



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Pennant Walters Ltd

project title

Trecelyn Wind Farm

drawing title

Great Crested Newt Survey, 2023

 date
 01 NOVEMBER 2023
 drawn by
 JFr

 drawing number
 edp6366_d057a
 checked
 KHe

 scale
 1:15,000 @ A3
 QA
 GYo

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date	24 OCTOBER 2023	drawn by	MCa
drawing number	edp6366_d016d	checked	KHe
scale	1:10,000 @ A3	QA	GYo

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Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Bat Activity Manual Transect – June 2020

date	24 OCTOBER 2023	drawn by	MCa
drawing number	edp6366_d017d	checked	KHe
scale	1:10,000 @ A3	QA	GYo

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500 m



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Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Bat Activity Manual Transect – July 2020

date	24 OCTOBER 2023	drawn by	MCa
drawing number	edp6366_d018d	checked	KHe
scale	1:10,000 @ A3	QA	GYo

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500 m

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date	24 OCTOBER 2023	drawn by	MCa
drawing number	edp6366_d019d	checked	KHe
scale	1:10,000 @ A3	QA	GYo

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client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title Bat Activity Manual Transect – September 2020

date	24 OCTOBER 2023	drawn by	MCa
drawing number	edp6366_d028d	checked	KHe
scale	1:10,000 @ A3	QA	GYo

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500 m

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client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Bat Activity Manual Transect - October 2020

date	24 OCTOBER 2023	drawn by	MCa
drawing number	edp6366_d029d	checked	KHe
scale	1:10,000 @ A3	QA	GYo

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500 m



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date	24 OCTOBER 2023	drawn by	GYo
drawing number	edp6366_d025d	checked	KHe
scale	1:10,000 @ A3	QA	RBa

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date	24 OCTOBER 2023	drawn by	GYo
drawing number	edp6366_d026d	checked	KHe
scale	1:10,000 @ A3	QA	RBa

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drawing number	edp6366_d027d	checked	KHe
scale	1:10,000 @ A3	QA	RBa

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---- Transect 1 - Northern Route

---- Transect 2 - Southern Route

Bat Species

0

0

0

0

Common Pipistrelle

Soprano Pipistrelle

Nathusius' Pipistrelle

Myotis spp.

client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Bat Activity Manual Transect – June 2023

date	24 OCTOBER 2023	drawn by	DJo
drawing number	edp6366_d050	checked	RCD
scale	1:10,000 @ A3	QA	JFr

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500 m



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---- Transect 1 - Northern Route

---- Transect 2 - Southern Route

Bat Species

0

Common Pipistrelle



0

Soprano Pipistrelle

Myotis spp.

client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Bat Activity Manual Transect – July 2023

date 24 OCTOBER 2023 drawn by DJo drawing number edp6366_d051 checked RCD scale 1:10,000 @ A3 QA JFr

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500 m



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date	24 OCTOBER 2023	drawn by	DJo
drawing number	edp6366_d052	checked	RCD
scale	1:10,000 @ A3	QA	JFr

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Species

1

Common pipistrelle

Myotis spp.

Soprano pipistrelle

Long-eared Sp.

Lesser Horseshoe

Greater Horseshoe

client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Bat Activity Automated Static Detector Results - June 2023

 date
 24 OCTOBER 2023

 drawing number
 edp6366_d054

 scale
 1:10,000 @ A3

drawn by DJo QA

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Species



Soprano pipistrelle

Myotis spp.

Common pipistrelle

Serotine

Lesser Horseshoe

Greater Horseshoe

Noctule

client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

Bat Activity Automated Static Detector Results - July 2023

500

 date
 24 OCTOBER 2023

 drawing number
 edp6366_d055

 scale
 1:10,000 @ A3
 drawn by DJo QA

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checked RCD JFr









Anabat Swift Detector ID & Location

<u>Species</u>



Common pipistrelle

Myotis spp.

Soprano pipistrelle



Long-eared Sp.



Serotine

Lesser Horseshoe

Greater Horseshoe

Noctule

client

Pennant Walters

project title

Trecelyn Wind Farm

drawing title

500

Bat Activity Automated Static Detector Results - August 2023

date 24 OCTOBER 2023 drawn by DJo drawing number edp6366_d056 checked RCD scale 1:10,000 @ A3 QA JFr



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CARDIFF 02921 671900

CHELTENHAM 01242 903110

CIRENCESTER 01285 740427

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