

Ecological Impact Assessment

Bears Down Wind Farm

July 2025

A report by

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Report details

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Declaration of compliance

BS 42020:2013

This study has been undertaken in accordance with British Standard 42020:2013 Biodiversity, Code of Practice for Planning and Development.

Code of Professional Conduct

The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Validity of survey data and report

The findings of this report are valid for 24 months from the date of the supporting surveys.

Table of contents

1. Introduction	4
1.1. Background	4
1.2. Purpose of this report.....	4
1.3. Site location	4
2. Assessment methodology	5
2.1. Development site and Zone of Influence	5
2.2. Ecological baseline	5
2.3. Site surveys	5
2.4. Limitations	10
3. Impact assessment method	13
3.1. Method for valuation of receptors.....	13
3.2. Impact Assessment Criteria	14
3.3. Mitigation	15
Map 1. Phase 1 habitats	16
4. Legislation and Policy used to assess ecological receptors.....	17
4.1. Planning policy.....	17
4.2. Nature Conservation Legislation	20
4.3. Biodiversity strategies	21
5. Ecological baseline	22
5.1. Desktop Study	22
Map 2. Statutory Nature Conservation Sites, International important sites within 10km and Nationally important sites within 5km	34
5.2. The need for an appropriate assessment.....	35
5.3. Phase 1 habitats	35
5.4. Species of nature conservation importance	36
6. Assessment of ecological impacts.....	45
6.1. The development.....	45
6.2. Construction phase impacts.....	45
6.3. Operational phase impacts	49
7. Mitigation	61
7.1. Construction phase.....	61
7.2. Operational phase	63
8. Residual impacts.....	64
9. Cumulative effects.....	66

1. Introduction

1.1. Background

Western Ecology has been commissioned to complete an Ecological Impact Assessment for the repowering of turbines for the Bears Down Windfarm.

It is proposed that the 16 existing operational turbines at this site (57m tip height, 35m hub height and 44m rotor diameter) will be replaced by four modern units in nearby locations. The new units each have a hub height of 82m, blade length of 68m and a maximum blade tip height of 150m. Associated infrastructure will include access tracks and a substation.

1.2. Purpose of this report

This report presents the ecological information relating to valued ecological receptors obtained during surveys and the desk-study, assesses the significance of the effects of the proposed development on these features, and sets out proposed mitigation measures.

The impact assessment is informed by the following survey effort:

- Summer, passage and wintering bird vantage point surveys;
- seasonal bat activity transects and remote monitoring;
- bat emergence surveys on any relevant building;
- breeding bird survey
- preliminary ecological appraisal walkover of the site; and
- desktop survey.

This report also assesses the effect of changes in habitat management and additional plantings associated with the development.

This report is intended to be used to inform consultees of the potential ecological impacts and proposed mitigation in relation to this development.

This report was updated in July 2025 due to reduction in the number of turbines from five to four, all the previous survey effort is valid and relevant and the conclusions remain the same.

1.3. Site location

The site lies within a rural area, approximately 7.2km to the south of Padstow and approximately 4.2km to the north of St Columb Major in Cornwall.

2. Assessment methodology

2.1. Development site and Zone of Influence

The Development Site is shown on Map 1 and includes all areas within the planning application boundary and any immediately adjacent areas that may be affected by the proposed development.

The Zone of Influence for the purpose of this assessment is immediate habitats that will be potentially impacted by these proposals, non-statutory nature conservation sites within 2km, and statutory designated sites within 5km unless they have been designated for species at risk of wind turbines whereby they have been considered within 10km.

Biological records for protected/notable species birds, bats and dormice were considered within 5km, with other notable species within 2km.

2.2. Ecological baseline

The ecological baseline for the development site are:

- Desktop survey
- preliminary ecological appraisals
- breeding bird vantage point surveys
- wintering bird vantage point surveys
- bat activity surveys

2.3. Site surveys

Desktop survey

The desktop survey collated existing biological records and identified any nature conservation sites that may be affected by the proposals. This comprises an important part of the assessment process, providing information on ecological issues that may not be apparent during the site survey.

The desktop survey identified any statutory nature conservation sites that may be affected by the proposals. This comprises an important part of the assessment process, providing information on ecological issues that may not be apparent during the site survey.

Consultees for the data search included:

- ERCCIS provided biological records for protected/notable species and non-statutory sites within 2km of the site, and records for bats and birds within 5km.
- Natural England - GIS datasets of Statutory Nature Conservation Sites provided data for statutory sites within 10km.

The location of nature conservation sites was examined to determine their ecological and landscape relationships with the proposed site. An assessment was then made of how the sites may be affected by the proposal, taking into account these relationships, and the species and/or habitat types for which the nature conservation site was chosen.

SSSI Impact Risk Zones are areas where the proposed planned change to the environment could either create significant damage to a local SSSI, or might require additional planning and consultation in order to avoid impacting such sites. The assessments are made according to the particular sensitivities of the features for which the SSSI is notified, and specifies the types of development that have the potential for adverse impacts.

In compliance with the terms and conditions relating to its commercial use, the full desk study data is not provided within this report.

Preliminary Ecological Appraisal

A Preliminary Ecological Appraisal of the site was completed by Alexander Stuart BSc (Hons), MSc.

The survey was completed on 3rd September 2023 in suitable weather conditions. An updated walkover was undertaken on 11th March 2025 in suitable weather conditions.

Habitats were classified using the Phase 1 Habitat Survey methodology developed by the Joint Nature Conservation Committee (JNCC, 2010) and modified by the Institute of Environmental Assessment (IEA, 1995). The main plant species were recorded and broad habitat types mapped. Habitats encountered are described within the Results section, with a map included within the report. Plant species were identified according to Stace (1997).

Vantage point surveys

A series of Vantage Point Surveys (VPs) have been completed between October 2022 to March 2023 and June 2023 to September 2023, to capture bird movements during the accepted passage & wintering and summer periods. The survey methodology followed that given by Scottish Natural Heritage (SNH, 2000) in their guidance 'Recommended bird survey methods to inform impact assessment of onshore wind farms'.

The survey area of the VPs included the proposed turbine locations and visible land to all sides within a prescribed buffer (blade length + 200m) and are shown in Map 1 of the bird survey report.

Wind turbine collision risk for target species has been estimated using the method outlined in the Scottish Natural Heritage (SNH) guidance note on calculating theoretical collision risk (SNH, 2000) and developed by Band et al. (2007). Estimates of collision risk have been calculated for observed target species where there was sufficient data to carry out the analysis.

Species that are not included in the collision risk analysis are either not of conservation concern or are at low collision risk due to their flight behaviour, and/or are species which are infrequently present within the study area.

Breeding bird surveys

The survey methodology was broadly based on the breeding bird survey method, as described by the Bird Survey and Assessment Steering Group¹ (2025), and involved a walked transect at an ambling pace and stopping to scan habitat features (such as trees, dense hedgerows or reed beds). Locations of species were marked on a map together with behavioural notations.

The breeding bird survey was completed by James Gilroy, an ecologist with experience of undertaking a variety of bird surveys. Single early morning survey visits were conducted between sunrise to approximately 11:00 and during suitable weather conditions. All bird registrations and behaviour notations (such as singing, carrying food or active nest) were recorded using standard BTO species codes and symbols.

Territory Mapping

The territory mapping method is based on the observation that many species during the breeding season are territorial. This is most marked in passerines where territories are often determined by conspicuous song, display and territorial disputes with neighbouring conspecifics. The expected outcome of this technique is that mapped registrations fall into clusters, approximately coinciding with territories. Records of birds just visiting the Site (e.g. gulls feeding in fields) and birds flying over the Site were also made and the records of these summarised, however these have been discounted from further analysis, given they are not breeding within the Site and are therefore not considered relevant to the assessment.

Target species primarily consisted of ground nesting farmland birds, typically those that rely on open sightlines (such as skylark and lapwing) and are therefore vulnerable to changes in management of farmland.

Records were made of other *notable species* which were determined based on the following criteria:

- *Schedule 1 of the Wildlife and Countryside Act (1981) (as amended)* - The Wildlife and Countryside Act (WCA) 1981 affords greater protection to certain breeding species and are as such listed as specially protected under Schedule 1 of the Act;
- *Birds of Conservation Concern (BoCC) 5* - Commonly referred to as the UK Red List for birds, this is the fifth review of the status of birds in the UK, Channel Islands and Isle of Man, and updates the last assessment in 2015. Using standardised criteria, 244 species with breeding, passage or wintering populations in the UK were assessed by experts from a range of bird NGOs and assigned to the Red, Amber or Green lists of conservation concern; and
- *Biodiversity Action Plan species* - Species of bird are listed as Biodiversity Action Plan Priority Species and species listed as species of principal importance under Section 41 of the Natural Environments and Rural Communities (NERC) Act 2006.

¹ Bird Survey & Assessment Steering Group. (2025). Bird Survey Guidelines for assessing ecological impacts, <https://birdsurveyguidelines.org> [18/02/2025]

Classification of breeding status

The results of the breeding bird surveys were assessed against the European Ornithological Atlas Committee (EOAC) criteria for breeding bird status as follows:

Non-breeding

- Flying over;
- Species observed but suspected to be still on Migration; and
- Species observed but suspected to be summering non-breeder.

Possible breeder

- Species observed in breeding season in suitable nesting habitat; and
- Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.

Probable breeding

- Pair observed in suitable nesting habitat in breeding season
- Permanent Territory presumed through registration of territorial behaviour (song etc) on at least two different days a week or more at the same place or many individuals on one day;
- Courtship and Display (judged to be in or near potential breeding habitat; be cautious with wildfowl);
- Visiting probable Nest site;
- Agitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby;
- Brood patch on adult examined in the hand, suggesting Incubation; and
- Nest Building or excavating nest-hole

Confirmed breeding

- Distraction-Display or injury feigning;
- Used Nest or eggshells found (occupied or laid within period of survey);
- Recently Fledged young (nidicolous species) or downy young (nidifugous species); Careful consideration should be given to the likely provenance of any fledged juvenile capable of significant geographical movement. Evidence of dependency on adults (e.g. feeding) is helpful. Be cautious, even if the record comes from suitable habitats;
- Adults entering or leaving nest-site in circumstances indicating Occupied Nest (including high nests or nest holes, the contents of which cannot be seen) or adults seen incubating;
- Adult carrying Faecal sac or Food for young;
- Nest containing Eggs;
- Nest with Young seen or heard;

Bat surveys

Transects

Seven 2-hour bat activity transects were completed in Summer and Autumn 2022 and 2023, by a suitably experienced ecologist walking a pre-planned route through this site, with attention being paid to bat activity along boundary features. The survey began around sunset. At locations along the route the surveyor paused to record bat activity in that area

making a note of any bat species encountered, number of passes and any other pertinent information.

Remote monitoring

Five Wildlife Acoustics mini full spectrum bat monitors were deployed, each at the locations of the proposed new turbines in autumn 2022, and summer and autumn 2023

All units were approximately 1.5 -2 metres above the ground and set to start recording 30 minutes before sunset and stop 30 minutes after sunrise. Temperate data is provided from internal logs. After deployment, sonograms were downloaded and analysed using Analook software (ver. 4.2n) and Kaleidoscope Pro (ver. 5.6.3 Bats of Europe Classifier 5.4.0, Balanced, Signal detection minimum pulses = 2) to ascertain which species are using the site. Due to inaccuracies associated with automated identification of Myotis bats, all bats of this genus were aggregated as a species group when generating the Bat Activity Index (BAI).

All calls identified as Noctule and Barbastelle were checked by an experienced ecologist to remove registrations resulting from turbine noise.

The preferred method of analysis is Ecobat, but this is currently offline.

For each survey period at each turbine location, Bat Activity Index (BAI) was calculated based on the total amount of time a given species was recorded at a given location, expressed as a percentage of the monitoring period. Bat activity time is taken from recorded call durations. This provides a percentage which described the proportion of monitoring during which the bat was active. Professional judgement and experience at other site then allows an assessment of activity levels.

Weather data has been provided by Weather Online for Bodmin (Cardinham) station and includes maximum temperature, minimum temperature, precipitation, wind speed at 10m, wind direction and wind gust at 10m. This data is provided in Appendix 2 of the bat survey report.

Bat emergence surveys

Bat emergence surveys were completed on the electrical substation in August and September 2023. The surveyors, including at least one licenced bat ecologist, were stationed around the building in such a way that any bat leaving or entering the structure is likely to be observed. The survey began before sunset and continues until at least 90 minutes after sunset.

In addition to surveyors, night vision aids (infrared capable camcorders - Sony FDR AX100, AX700, HDR-SR12) are used in conjunction with 850nm infrared lighting rigs (Raytec variable beam IR illuminators). Full spectrum, recording bat detectors (Echo Meter Touch 2 Pro or Wildlife Acoustic Song Meter Mini Bat) are time synchronised with camera footage. Heterodyne bat detectors are also used to support full spectrum recordings. Post survey, camera footage was analysed by a suitably experienced bat surveyor.

This survey methodology complies with guidelines produced by the Bat Conservation Trust (Collins, 2016) and Interim Guidance Note: *Use of night vision aids for bat emergence surveys and further comment on dawn surveys*. (BCT, 2022).

2.4. Limitations

Preliminary ecological appraisal

All areas of the assessment site were readily accessible during the survey. However, it must be realized that surveys only provide a snapshot of a site at a given time.

Although some plant species would have not been visible during the preliminary ecological appraisal, this is not considered a significant constraint as the site comprises managed agricultural land of little botanical value.

Bird vantage point surveys

It is recognised that the SNH guidance note published in 2014 states that collision risk estimates should not be calculated from flight activity surveys undertaken at operational wind farms. This is due to the baseline bird activity already reacting to the presence of turbines and therefore it is theoretically difficult to predict the behavioural adjustment to new turbines within the site. However, as the proposed turbines at this site are predominantly located within the envelope of the existing wind farm, it is considered that comparison of collision risk estimates between the existing wind farm and proposed wind farm will still provide a useful assessment. Furthermore, these collision estimates are then considered in conjunction with historic data from nearby or similar developments. It is this combination of data sources that helps to predict impact rather than relying solely on collision risk estimates derived from new flight activity surveys.

The collision risk model used here is based on a variety of standardised assumptions such as biometric data and turbine parameters and therefore provides a mathematical estimate of likely collision, rather than predicting factual scenarios. These estimates must then be used as a tool to inform impact assessments, while associated errors and limitations are recognised.

The positions of the VP locations were selected on the basis of providing the best visible coverage of the survey area from accessible land. Due to restrictions in the local topography this involved surveyors being placed within the survey area and it is acknowledged that this may have had limited effect on bird species particularly sensitive to human presence. However, efforts were made to be as inconspicuous as possible by wearing suitable clothing and using hedgebank vegetation as cover. Furthermore, the baseline for this site involves frequent human presence involving turbine maintenance personnel and farm traffic and therefore bird activity at this site will be relatively normalised to human presence.

The survey effort for passage/winter surveys covered a total period of 45hrs, which meets the minimum survey effort required for seasonal vantage point surveys. The summer surveys commenced mid-way through the season due to late commissioning and as such only resulted in a total of 24hrs of survey effort, which is below the recommended 36hrs. Although a constraint to collision risk modelling, a robust assessment of bird activity has still been made, based on the variety of data sources used.

Weather conditions were suitable for all VP surveys, with sufficient visibility for adequate coverage of the survey area.

Breeding bird surveys

Although a breeding bird survey usually involves up to six visits, this site has been well surveyed previously and the associated bird activity is well understood. Three surveys visits have been carried out at this site and this is considered to be proportionate and appropriate to the aims of the survey.

Bat activity surveys

Surveys were completed at optimal times for assessing bat activity and all remote detectors functioned correctly for the survey period. Weather conditions were largely suitable for bat activity but in an exposed location such as this there will be periods within any season when weather is not suitable for bat activity. By having a large sample of survey nights, data is likely to be representative of actual bat survey activity here.

Bat surveys results for *Myotis* species were aggregated for BAI analysis, as these species have similar risks from wind turbines (SNH, 2021²). This is due to the difficulty in separating this group based on sonograms alone.

All calls identified as Noctule and Barbastelle were checked by an experienced ecologist to remove registrations resulting from turbine noise.

The preferred method of analysis is Ecobat, but this is currently offline and professional judgement was used for assessing likely impact by a suitably qualified ecologist with 16 years of professional bat survey experience including windfarm re-powering and large numbers of single large turbines.

No guidelines on bat activity survey effort for repowering projects in England, Scotland or Wales has been published by the joint SNCB's, whilst Northern Ireland recommends treating the site as undeveloped³.

Current guidelines for ground level static surveys at undeveloped windfarms recommend:

The minimum level of pre-application survey required using static detectors is 10 nights in each of: spring (April-May), summer (June-mid-August) and autumn (mid-August-October). Surveys in adjacent seasons should not be contiguous, i.e. they should be spaced out to include a reasonable time gap between them and should aim to include periods when migration could be taking place. Ideally, surveys should aim for 10 consecutive nights, but in practice weather conditions may preclude this particularly early or late in the year and in more northerly latitudes. The objective is to complete these surveys within a single calendar year, but in a few situations it is accepted that this may not be possible. In such cases, surveys can be split over two

² Bats and onshore wind turbines: Survey, assessment and mitigation Version: August 2021 (updated with minor revisions)

³ NIEA, Natural Environment Division - Guidance on Bat Surveys, Assessment and Mitigation for Onshore Wind Turbine Developments in Northern Ireland

successive calendar years, but a justification must be provided to explain the reason(s) for this.

Survey effort should be focused in those parts of the development site where turbines are most likely to be located, although proposed turbine locations are often subject to change. At sites where the proposed turbine locations are known, static detectors should be placed to provide a representative sample of bat activity at or close to these points. Detectors should be placed at all known turbine locations at wind farms containing less than ten proposed turbines.

At Bears Down, survey designs have focussed on full spectrum bat detector monitoring with monthly walked transects. The site has been assessed of being of Low site risk level. Adopting a precautionary approach to survey effort, it was proposed that monthly monitoring for at least 10 nights at each turbine location would be completed in the period April to October, along with monthly walked transects. However, due to circumstances beyond our control this was not possible and only survey data from September and October 2022, and June, July, August, September and October 2023 have been collected.

Research across 33 windfarm sites found the minimum surveying effort required to classify high bat activity accurately varied between species and was dependent on weather conditions⁴. For common and soprano pipistrelle this was 8 nights, and for Noctule was 12 nights. For less common species data was insufficient for meaningful analysis. It was also found that when assessing the risk to bats from proposed wind farm sites, it is important that seasonality is accounted for to ensure that surveys are conducted at periods of peak bat activity (generally July to September in Europe).

The lack of Spring data does not affect the assessment of this operational site.

The remote monitor at T5 failed in September 2023. It was recovered and the card found to be faulty. A new card was fitted and tested, and unit was deployed again in in October 2023, when it failed again. A new unit was deployed at T5 on 19th October 2023 and this data will be added in once the unit has been recovered and data analysed. T4 also failed in October 2023 and we are also awaiting fresh data from 19th October 2023.

Bat emergence surveys

The initial assessment and emergence/re-entry surveys were completed at an optimal time for such surveys.

All areas of the building could be readily observed during these surveys and all equipment functioned correctly for the period of the survey.

It is the professional opinion of the surveying ecologist that the initial bat assessment in combination with the bat surveys and remote monitoring provide sufficient information in relation to bats to allow the decision-maker to determine the planning permission. Further survey work would not make any material difference to the information provided.

⁴ Suzanne M. Richardson, Paul R. Lintott, David J. Hosken, Fiona Mathews. An evidence-based approach to specifying survey effort in ecological assessments of bat activity. Biological Conservation 231 (2019) 98–102

3. Impact assessment method

The assessment of impacts has been carried out in accordance with the principles described by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018⁵).

The ecological feature or resource that is affected by an impact is referred to as the receptor. Impacts are considered in terms of the value of the receptor in the context of nature conservation, and the character of the impact. From these the significance of the impact is determined.

As part of the impact assessment, the available means to avoid, minimise or mitigate for adverse impacts are incorporated into the design, so that the final impact assessment identifies the residual (net) impacts that are predicted. The consequences for development control, policy guidance and legislative compliance can then be identified.

3.1. Method for valuation of receptors

The ecological value of habitats present is provided in line with Guidelines for Ecological Impact Assessment (CIEEM, 2018), and those which are important in terms of legislation or policy are identified. Table 1 summarises this information and details the extent of each habitat recorded here.

The nature conservation value, or potential value, of the habitat is determined within the following geographic context:

- International importance (e.g. internationally designated sites such as Special Areas of Conservation, Special Protection Areas, Ramsar sites);
- National importance (e.g. nationally designated sites such as Sites of Special Scientific Interest or species populations of importance in the UK context);
- County importance (e.g. SNCI, habitats and species populations of importance in the context of Cornwall);
- Local importance (e.g. important ecological features such as old hedges, woodlands, ponds);
- Site importance (e.g. habitat mosaic of grassland and scrub which may support a diversity of common wildlife species);
- Negligible importance. Usually applied to areas such as built development or areas of intensive agricultural land.

The examples are not exclusive and are subject to further professional ecological judgment.

⁵ CIEEM, 2018. *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Technical Guidance Series*. Chartered Institute of Ecology and Environmental Management, 43 Southgate Street, Winchester, Hampshire.

3.2. Impact Assessment Criteria

The assessment of potential impacts arising due to the development considers on-site impacts (i.e. within the footprint of the works) and those that may occur to adjacent and more distant ecological features.

Potential effects on valued receptors, adverse or positive, are identified for both the construction and operational phases. The effects are then assessed and characterised according to the following criteria:

- Direction (positive, adverse, or neutral)
- Magnitude of impact
- Spatial extent over which the impact would occur
- The temporal duration of the impact
- Permanence
- Frequency and timing
- Potential for cumulative effects.

The assessment identifies any information gaps and any uncertainties that may be material in the confidence of predicting effects. Confidence in predictions is given as:

- Certain/near-Certain: probability estimated at 95% chance or higher.
- Probable: probability estimated above 50% but below 95%.
- Unlikely: probability estimated above 5% but less than 50%.
- Extremely Unlikely: probability estimated at less than 5%.

The precautionary principle is applied whenever there is substantial doubt. The impact timescale is given as:

- Acute, immediate, and discrete;
- Short-term: 0-3 years;
- Medium term 3-10 years; and
- Long term: 10 years +.

Effects include, but are not restricted to:

- loss or change of habitat;
- disturbance during construction, operation, and decommissioning;
- chemical effects from airborne pollutants;
- harm or injury to protected species;
- contravention of legal status or protection (including where the receptor would not meet or exceed the value threshold).

For the purposes of this assessment the significance of the effect is determined using the matrix in Table 1 where the scale of the effect is measured against the value of the receptor.

Ecologically significant impact is defined as an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a

given geographical area. For the purposes of this assessment the effects that are identified in red shaded cells are significant.

Table 1. Matrix for assessment of significance of effect

Scale of effect	Evaluation of nature conservation receptor				
	Very high/ International	High/ national	Medium/ regional	Low/ local	Negligible/site only
Major positive effect	Large positive	Large positive	Large positive	Large positive	Large positive
Intermediate positive effect	Moderate positive	Moderate positive	Moderate positive	Moderate positive	Moderate positive
Minor positive effect	Slight positive	Slight positive	Slight positive	Slight positive	Slight positive
Neutral	None	None	None	None	None
Minor negative effect	Slight adverse	Slight adverse	Slight adverse	Slight adverse	None
Intermediate negative effect	Large adverse	Large adverse	Moderate adverse	Slight adverse	None
Major negative effect	Very large adverse	Very large adverse	Large or moderate adverse	Slight adverse	None

European Protected Sites– definition of significance of effect

For a European Protected Site the integrity of a site is:

‘the coherence of the ecological structure and function across its whole area that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified.’

Disturbance should not have a significant effect on the integrity of a European Protected Site.

3.3. Mitigation

Where there is potential that the proposed development will have a significant effect on a valued ecological feature of nature conservation interest, recommendations for mitigation are made based on the mitigation hierarchy suggested in Paragraph: 018 Reference ID: 8-018-20140306 of National Planning Practice Guidance;

- Avoidance –significant harm to wildlife species and habitats should be avoided through design.
- Mitigation – where significant harm cannot be wholly or partially avoided, it should be minimised by design, or by the use of effective mitigation measures that can be secured by, for example, conditions or planning obligations.
- Compensation – where, despite whatever mitigation would be effective, there would still be significant residual harm, as a last resort, this should be properly compensated for by measures to provide for an equivalent value of biodiversity.



Legend

- Red line boundary
- Target note
- Proposed turbine location
- Native hedgerow - associated with bank or ditch
- g1c - bracken
- g4 - modified grassland
- h3h - mixed scrub
- c1c - cereal crops
- u1b - developed land, sealed surface
- u1b5 - buildings
- u1c - artificial unvegetated unsealed surface
- s - sparsely vegetated land

0 100 200 m

Title: Map 1. UKHabs Habitat Map & Phase 1 survey

Project: Bears Down Wind Farm - repowering, Cornwall

Checked by: CDH

Version: 01
Date: 21/07/2025

4. Legislation and Policy used to assess ecological receptors

4.1. Planning policy

National Planning Policy Framework, 2021

The National Planning Policy Framework sets out the Government's planning policies for England and how these are expected to be applied. It contains a number of policies relating to ecology including "minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures".

Section 15 Conserving and enhancing the natural environment includes the following:

- 174. Planning policies and decisions should contribute to and enhance the natural and local environment by:
 - a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
 - b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
 - c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
 - d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
 - e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
 - f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.
- 175. Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework⁵³; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.
- 180. When determining planning applications, local planning authorities should apply the following principles:
 - a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;

- b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity

[National Planning Practice Guidance 2014](#)

This online resource provides guidance on the Natural Environment and its place with the planning process, including:

- The statutory basis through which planning should seek to minimise impacts on biodiversity and provide net gains in biodiversity where possible.
- How local planning authorities should set about planning for biodiversity and geodiversity.
- Information on ecological networks
- Evidence based ecology
- The legal obligations on local planning authorities and developers regarding European sites designated under the Birds or Habitats Directives, protected species and Sites of Special Scientific Interest
- Why Local Sites are important
- Taking ecosystems services into account in planning
- Nature Improvement Areas
- Taking biodiversity into account in preparing a planning application
- How development can protect and enhance biodiversity
- What questions should be considered in applying policy to avoid, mitigate or compensate for significant harm to biodiversity
- Ensuring mitigation or compensation measures can be delivered where significant harm to biodiversity is unavoidable.

[Cornwall Local Plan](#)

[Policy 23](#) [Natural Environment](#)

3. Biodiversity and Geodiversity

Development should conserve, protect and where possible enhance biodiversity and geodiversity interests and soils commensurate with their status and giving appropriate weight to their importance.

All development must ensure that the importance of habitats and designated sites are taken into account and consider opportunities for the creation of a local and county-wide biodiversity network of wildlife corridors which link County Wildlife Sites and other areas of biodiversity importance, helping to deliver the actions set out in the Cornwall Biodiversity Action Plan.

3 (a). European Sites

The highest level of protection will be given to potential and existing Special Protection Areas, candidate and existing Special Areas of Conservation and listed or proposed Ramsar sites.

Proposals having an adverse impact on the integrity of such areas that cannot be avoided or adequately mitigated to remove any adverse effect will not be permitted other than in exceptional circumstances. These circumstances will only apply where there are:

- a) no suitable alternatives;
- b) imperative reasons of overriding public interest; and
- c) necessary compensatory provision can be secured to ensure that the overall coherence of the Natura 2000 network of European sites is protected.

Development will only be permitted where the Council is satisfied that any necessary mitigation is included such that, in combination with other development, there will be no adverse effects on the integrity of European Nature Conservation Sites.

3(b). National sites

Development proposals within or outside an SSSI or Marine Conservation Zone which would be likely to adversely affect the site (either individually or in combination with other developments) will not be permitted unless the benefits of the development, at this site, clearly outweigh both the adverse impacts on the site and any adverse impacts on the wider network of SSSIs and Marine Conservation Zones.

3 (c). Local Sites

Development likely to adversely affect locally designated sites, their features or their function as part of the ecological network, including County Wildlife Sites, Local Geological Sites and sites supporting Biodiversity Action Plan habitats and species, will only be permitted where the need and benefits of the development clearly outweigh the loss and the coherence of the local ecological network is maintained.

3(d). Priority species and habitats

Adverse impacts on European and UK protected species and Biodiversity Action Plan habitats and species must be avoided wherever possible (i) subject to the legal tests afforded to them, where applicable (ii) otherwise, unless the need for and benefits clearly outweigh the loss.

3(e). Ancient woodland and veteran trees

Development must avoid the loss or deterioration of ancient woodland and veteran trees, unless the need for, or benefits of, development on that site clearly outweigh the loss.

4. Avoidance, mitigation and compensation for landscape, biodiversity and geodiversity Impacts

Development should avoid adverse impact on existing features as a first principle and enable net gains by designing in landscape and biodiversity features and enhancements, and opportunities for geological conservation alongside new development. Where adverse impacts are unavoidable they must be adequately and proportionately mitigated. If full mitigation cannot be provided, compensation will be required as a last resort.

4.2. Nature Conservation Legislation

European Habitats and Species Directive (CEC, 1992)

The main aim of the Habitats Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance.

The Wildlife and Countryside Act (WCA) 1981 (as amended)

This Act is the primary legislation that protects animals, plants and certain habitats in the UK. This includes the designation and protection of some of the best areas of natural environment as Sites of Special Scientific Interest (SSSI).

The Conservation of Habitats and Species Regulations 2017

The Conservation of Habitats and Species Regulations 2017 consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law.

The Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species. These sites form a network termed Natura 2000 and include Special Areas of Conservation (SAC) and Special Protection Areas (SPA).

Protection of Badgers Act 1992

The Protection of Badgers Act 1992 consolidated and improved previous legislation. Under the Act it is an offence to kill, injure or take a Badger, or to damage or interfere with a sett used by a Badger unless a licence is obtained from a statutory authority.

The Hedgerow Regulations 1997

The Hedgerows Regulations 1997 protect certain hedgerows from being removed (uprooted or destroyed) if they meet certain criteria.

The Countryside and Rights of Way (CROW) Act 2000

This Act increases measures for the management and protection for Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation.

Circular 06/2005 Biodiversity and geological conservation – statutory obligations and their impact within the planning system

This circular provides administrative guidance on the application of the law relating to planning and nature conservation as it applies in England. It complements the national planning policy in the National Planning Policy Framework and the Planning Practice Guidance.

[Natural Environment and Rural Communities Act 2006](#)

The Act made amendments to the both the Wildlife and Countryside Act 1981 and the Countryside and Rights of Way (CROW) Act 2000. For example, it extended the CROW biodiversity duty to public bodies and statutory undertakers.

4.3. Biodiversity strategies

[UK Post-2010 Biodiversity Framework, 2012](#)

The 'UK Post-2010 Biodiversity Framework', published in July 2012, succeeds the UK BAP and 'Conserving Biodiversity – the UK Approach', and is the result of a change in strategic thinking.

[The natural choice: securing the value of nature \(2011\) \(Natural Environment White Paper\)](#)

This White Paper outlines the Governments vision for the future of landscape and ecosystem services.

[Biodiversity 2020](#)

This is a national strategy for England's wildlife and ecosystem services based on the White Paper.

[County Level](#)

Cornwall Biodiversity Initiative has identified the local habitats and species of principal importance (also known as priority habitats and species). These are the species and habitats taken from the UK National Biodiversity Action Plan that occur in this area or those that are of sub-regional importance. These habitats and species have individual action plans that enable us to prioritise biodiversity work in the district.

[Local Wildlife Sites](#)

These are not statutory designation like SSSIs, and they do not have any legal status. The National Planning Policy framework (NPPF) requires local authorities to identify and map locally designated sites of biodiversity importance (such as Local Wildlife Sites) as part of the Local Plan process and to draw up criteria based policies against which proposals for development affecting them will be judged. LWS recognition does not demand any particular actions on the part of the Landowner and does not give the public rights of access. However, it may increase eligibility for land management grants.

5. Ecological baseline

5.1. Desktop Study

The biological records search found a number of notable species within 2km of the assessment site. Records for notable species (excluding bat and birds) are detailed in Table 2.

Table 2. Records for notable species within 2km.

Species group	Species Scientific	Species Venacular	Count
Bony fish (Actinopterygii)	<i>Pagrus pagrus</i>	Couch's Sea-bream	1
	<i>Acantholabrus palloni</i>	Scale-rayed Wrasse	1
Conifer	<i>Pinus sylvestris</i>	Scots Pine	1
Flowering plant	<i>Radiola linoides</i>	Allseed	1
	<i>Erica cinerea</i>	Bell Heather	7
	<i>Hyacinthoides non-scripta</i>	Bluebell	8
	<i>Menyanthes trifoliata</i>	Bogbean	1
	<i>Myrica gale</i>	Bog-myrtle	9
	<i>Buddleja davidii</i>	Butterfly-bush	8
	<i>Chamaemelum nobile</i>	Chamomile	3
	<i>Eriophorum angustifolium</i>	Common Cottongrass	6
	<i>Valeriana officinalis</i>	Common Valerian	1
	<i>Vicia sativa subsp. segetalis</i>	Common Vetch	10
	<i>Glebionis segetum</i>	Corn Marigold	3
	<i>Mentha arvensis</i>	Corn Mint	2
	<i>Spergula arvensis</i>	Corn Spurrey	8
	<i>Salix repens</i>	Creeping Willow	2
	<i>Erica tetralix</i>	Cross-leaved Heath	5
	<i>Vicia sativa subsp. sativa</i>	Cultivated Vetch	1
	<i>Succisa pratensis</i>	Devil's-bit Scabious	4
	<i>Prunus cerasus</i>	Dwarf Cherry	5
	<i>Stachys arvensis</i>	Field Woundwort	9
	<i>Carex pulicaris</i>	Flea Sedge	3
	<i>Polygala serpyllifolia</i>	Heath Milkwort	4
	<i>Calluna vulgaris</i>	Heather	7
	<i>Impatiens glandulifera</i>	Himalayan Balsam	1
	<i>Fallopia japonica</i>	Japanese Knotweed	8
	<i>Briza minor</i>	Lesser Quaking-grass	1
	<i>Pedicularis sylvatica</i>	Lousewort	3
	<i>Hydrocotyle vulgaris</i>	Marsh Pennywort	2
	<i>Jacobaea aquatica</i>	Marsh Ragwort	2
	<i>Hypericum elodes</i>	Marsh St John's-wort	3
	<i>Crocasmia pottsii x aurea = C. x crocosmiiflora</i>	Montbretia	20
	<i>Drosera intermedia</i>	Oblong-leaved Sundew	2
	<i>Orchidaceae</i>	Orchid	1
	<i>Viola lactea</i>	Pale Dog-violet	1
	<i>Silene flos-cuculi</i>	Ragged-Robin	1
	<i>Drosera rotundifolia</i>	Round-leaved Sundew	5
	<i>Carex echinata</i>	Star Sedge	3
	<i>Allium triquetrum</i>	Three-cornered Garlic	8
	<i>Potentilla erecta</i>	Tormentil	15
	<i>Hypericum undulatum</i>	Wavy St John's-wort	1
	<i>Rhynchospora alba</i>	White Beak-sedge	3

	<i>Allium ampeloprasum</i>	Wild Leek	4
	<i>Fragaria vesca</i>	Wild Strawberry	10
	<i>Petasites fragrans</i>	Winter Heliotrope	11
	<i>Viola palustris</i> subsp. <i>juressi</i>		1
	<i>Calystegia sepium</i> subsp. <i>roseata</i>		1
	<i>Lamium galeobdolon</i> subsp. <i>argentatum</i>		1
	<i>Betula pubescens</i> subsp. <i>pubescens</i>		1
	<i>Lamium galeobdolon</i> subsp. <i>argentatum</i>		1
	<i>Viola palustris</i> subsp. <i>juressi</i>		1
	<i>Lamium galeobdolon</i> subsp. <i>argentatum</i>		1
	<i>Lamium galeobdolon</i> subsp. <i>argentatum</i>		1
	<i>Lamium galeobdolon</i> subsp. <i>argentatum</i>		1
	<i>Lamium galeobdolon</i> subsp. <i>argentatum</i>		1
	<i>Rhododendron ponticum</i>		1
	<i>Betula pubescens</i> subsp. <i>pubescens</i>		1
	<i>Lamium galeobdolon</i> subsp. <i>argentatum</i>		1
	<i>Lamium galeobdolon</i> subsp. <i>argentatum</i>		1
	<i>Lamium galeobdolon</i> subsp. <i>argentatum</i>		1
	<i>Pedicularis sylvatica</i> subsp. <i>sylvatica</i>		1
Fungus	<i>Dichomitus efibulatus</i>		1
Insect - butterfly	<i>Lasiommata megera</i>	Wall	2
Insect - dragonfly (Odonata)	<i>Ceragrion tenellum</i>	Small Red Damselfly	1
Insect - stick insect (Phasmida)	<i>Acanthoxyla prasina</i> subsp. <i>inermis</i>	Unarmed Stick-insect	2
Insect - true fly (Diptera)	<i>Bombylius canescens</i>	Western Bee-fly	1
Moss	<i>Sphagnum</i>	Bog Moss	1
	<i>Leucobryum glaucum</i>	Large White-moss	1
Reptile	<i>Zootoca vivipara</i>	Common Lizard	1
	<i>Natrix helvetica</i>	Grass Snake	2
	<i>Anguis fragilis</i>	Slow-worm	2
Terrestrial mammal	<i>Lepus europaeus</i>	Brown Hare	4
	<i>Rattus norvegicus</i>	Brown Rat	2
	<i>Sciurus carolinensis</i>	Eastern Grey Squirrel	2
	<i>Meles meles</i>	Eurasian Badger	10
	<i>Neomys fodiens</i>	Eurasian Water Shrew	3
	<i>Oryctolagus cuniculus</i>	European Rabbit	10
	<i>Micromys minutus</i>	Harvest Mouse	1
	<i>Capreolus capreolus</i>	Roe Deer	1
	<i>Mustela erminea</i>	Stoat	1
	<i>Erinaceus europaeus</i>	West European Hedgehog	38
Terrestrial mammal - Dormouse	<i>Muscardinus avellanarius</i>	Hazel Dormouse	1

Bats

The biological record search returned a number of records for bat and dormice species within 5km of the assessment site and these are detailed in Table 3.

Table 3. Records for bats and dormice within 5km of the assessment site

Species Scientific	Species Venacular	Count
<i>Vespertilionidae</i>	Bats	1
<i>Plecotus auritus</i>	Brown Long-eared Bat	27
<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	26
<i>Myotis daubentonii</i>	Daubenton's Bat	12
<i>Rhinolophus ferrumequinum</i>	Greater Horseshoe Bat	8
<i>Rhinolophus hipposideros</i>	Lesser Horseshoe Bat	9
<i>Pipistrellus nathusii</i>	Nathusius's Pipistrelle	3
<i>Myotis nattereri</i>	Natterer's Bat	4
<i>Nyctalus noctula</i>	Noctule Bat	6
<i>Pipistrellus pipistrellus</i>	Pipistrelle	29
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	11
<i>Barbastella barbastellus</i>	Western Barbastelle	4
<i>Myotis mystacinus</i>	Whiskered Bat	4
<i>Myotis mystacinus/brandtii</i>	Whiskered/Brandt's Bat	2
<i>Muscardinus avellanarius</i>	Hazel Dormouse	28

Birds

The biological record search returned a number of records for notable bird species within 5km of the assessment site and these are detailed in Table 4.

Table 4. Records for notable birds species within 5km of the assessment site

Species Scientific	Species Venacular	Count
<i>Puffinus mauretanicus</i>	Balearic Shearwater	1
<i>Anser indicus</i>	Bar-headed Goose	2
<i>Tyto alba</i>	Barn Owl	194
<i>Branta leucopsis</i>	Barnacle Goose	4
<i>Limosa lapponica</i>	Bar-tailed Godwit	3
<i>Phoenicurus ochruros</i>	Black Redstart	25
<i>Chlidonias niger</i>	Black Tern	1
<i>Turdus merula</i>	Blackbird	285
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	42
<i>Limosa limosa</i>	Black-tailed Godwit	7
<i>Gavia arctica</i>	Black-throated Diver	6
<i>Cyanistes caeruleus</i>	Blue Tit	194
<i>Spatula discors</i>	Blue-winged Teal	1
<i>Fringilla montifringilla</i>	Brambling	20
<i>Anthus rubescens</i>	Buff-bellied Pipit	1
<i>Calidris subruficollis</i>	Buff-breasted Sandpiper	1
<i>Pyrrhula pyrrhula</i>	Bullfinch	36
<i>Buteo buteo</i>	Buzzard	191
<i>Branta canadensis</i>	Canada Goose	115
<i>Corvus corone</i>	Carion Crow	79
<i>Bubulcus ibis</i>	Cattle Egret	17
<i>Cettia cetti</i>	Cetti's Warbler	45
<i>Pyrrhocorax pyrrhocorax</i>	Chough	4
<i>Emberiza cirlus</i>	Cirl Bunting	1
<i>Periparus ater</i>	Coal Tit	68
<i>Streptopelia decaocto</i>	Collared Dove	100
<i>Uria aalge</i>	Common Guillemot	9
<i>Larus canus</i>	Common Gull	24
<i>Acanthis flammea</i>	Common Redpoll	2
<i>Actitis hypoleucos</i>	Common Sandpiper	13
<i>Melanitta nigra</i>	Common Scoter	4
<i>Sterna hirundo</i>	Common Tern	1
<i>Fulica atra</i>	Coot	5
<i>Phalacrocorax carbo</i>	Cormorant	28
<i>Emberiza calandra</i>	Corn Bunting	43
<i>Crex crex</i>	Corncrake	2

<i>Grus grus</i>	Crane	3
<i>Loxia curvirostra</i>	Crossbill	3
<i>Cuculus canorus</i>	Cuckoo	32
<i>Calidris ferruginea</i>	Curlew Sandpiper	1
<i>Numenius arquata</i>	Curlew	25
<i>Cinclus cinclus</i>	Dipper	37
<i>Charadrius morinellus</i>	Dotterel	3
<i>Calidris alpina</i>	Dunlin	11
<i>Prunella modularis</i>	Dunnock	126
<i>Alopochen aegyptiaca</i>	Egyptian Goose	1
<i>Somateria mollissima</i>	Eider	1
<i>Gulosus aristotelis</i>	European Shag	25
<i>Anser albifrons albifrons</i>	European White-fronted Goose	8
<i>Turdus pilaris</i>	Fieldfare	50
<i>Regulus ignicapilla</i>	Firecrest	7
<i>Fulmarus glacialis</i>	Fulmar	6
<i>Mareca strepera</i>	Gadwall	5
<i>Morus bassanus</i>	Gannet	4
<i>Larus hyperboreus</i>	Glaucous Gull	2
<i>Regulus regulus</i>	Goldcrest	55
<i>Chrysolophus pictus</i>	Golden Pheasant	1
<i>Pluvialis apricaria</i>	Golden Plover	36
<i>Bucephala clangula</i>	Goldeneye	1
<i>Carduelis carduelis</i>	Goldfinch	121
<i>Mergus merganser</i>	Goosander	4
<i>Accipiter gentilis</i>	Goshawk	1
<i>Locustella naevia</i>	Grasshopper Warbler	39
<i>Larus marinus</i>	Great Black-backed Gull	14
<i>Podiceps cristatus</i>	Great Crested Grebe	1
<i>Lanius excubitor</i>	Great Grey Shrike	1
<i>Gavia immer</i>	Great Northern Diver	15
<i>Dendrocopos major</i>	Great Spotted Woodpecker	64
<i>Parus major</i>	Great Tit	148
<i>Tringa ochropus</i>	Green Sandpiper	14
<i>Picus viridis</i>	Green Woodpecker	15
<i>Chloris chloris</i>	Greenfinch	73
<i>Anser albifrons flavirostris</i>	Greenland White-fronted Goose	1
<i>Tringa nebularia</i>	Greenshank	17
<i>Ardea cinerea</i>	Grey Heron	55
<i>Perdix perdix</i>	Grey Partridge	40
<i>Pluvialis squatarola</i>	Grey Plover	2
<i>Motacilla cinerea</i>	Grey Wagtail	67
<i>Anser anser</i>	Greylag Goose	5
<i>Circus cyaneus</i>	Hen Harrier	39
<i>Larus argentatus</i>	Herring Gull	93
<i>Falco subbuteo</i>	Hobby	17
<i>Upupa epops</i>	Hoopoe	5
<i>Delichon urbicum</i>	House Martin	56
<i>Passer domesticus</i>	House Sparrow	111
<i>Larus glaucoides</i>	Iceland Gull	5
<i>Circus</i>	Indet. Harrier	1
<i>Lymnocyptes minimus</i>	Jack Snipe	2
<i>Coloeus monedula</i>	Jackdaw	189
<i>Garrulus glandarius</i>	Jay	59
<i>Falco tinnunculus</i>	Kestrel	63
<i>Alcedo atthis</i>	Kingfisher	13
<i>Rissa tridactyla</i>	Kittiwake	1
<i>Calidris canutus</i>	Knot	2
<i>Calcarius lapponicus</i>	Lapland Bunting	7
<i>Vanellus vanellus</i>	Lapwing	54
<i>Larus fuscus</i>	Lesser Black-backed Gull	18
<i>Acanthis cabaret</i>	Lesser Redpoll	1
<i>Dryobates minor</i>	Lesser Spotted Woodpecker	11
<i>Curruca curruca</i>	Lesser Whitethroat	9

<i>Linaria cannabina</i>	Linnet	42
<i>Alle alle</i>	Little Auk	1
<i>Emberiza pusilla</i>	Little Bunting	1
<i>Egretta garzetta</i>	Little Egret	24
<i>Tachybaptus ruficollis</i>	Little Grebe	22
<i>Hydrocoloeus minutus</i>	Little Gull	1
<i>Athene noctua</i>	Little Owl	7
<i>Charadrius dubius</i>	Little Ringed Plover	5
<i>Calidris minuta</i>	Little Stint	1
<i>Asio otus</i>	Long-eared Owl	4
<i>Clangula hyemalis</i>	Long-tailed Duck	1
<i>Pica pica</i>	Magpie	111
<i>Anas platyrhynchos</i>	Mallard	45
<i>Circus aeruginosus</i>	Marsh Harrier	3
<i>Poecile palustris</i>	Marsh Tit	14
<i>Anthus pratensis</i>	Meadow Pipit	28
<i>Ichthyaetus melanocephalus</i>	Mediterranean Gull	27
<i>Falco columbarius</i>	Merlin	43
<i>Turdus viscivorus</i>	Mistle Thrush	26
<i>Circus pygargus</i>	Montagu's Harrier	5
<i>Gallinula chloropus</i>	Moorhen	48
<i>Cygnus olor</i>	Mute Swan	15
<i>Nycticorax nycticorax</i>	Night-heron	5
<i>Luscinia megarhynchos</i>	Nightingale	1
<i>Sitta europaea</i>	Nuthatch	25
<i>Emberiza hortulana</i>	Ortolan Bunting	1
<i>Pandion haliaetus</i>	Osprey	10
<i>Haematopus ostralegus</i>	Oystercatcher	20
<i>Falco peregrinus</i>	Peregrine	44
<i>Phasianus colchicus</i>	Pheasant	102
<i>Ficedula hypoleuca</i>	Pied Flycatcher	3
<i>Motacilla alba</i>	Pied Wagtail	15
<i>Anser brachyrhynchus</i>	Pink-footed Goose	8
<i>Anas acuta</i>	Pintail	2
<i>Ardea purpurea</i>	Purple Heron	2
<i>Coturnix coturnix</i>	Quail	23
<i>Alca torda</i>	Razorbill	5
<i>Milvus milvus</i>	Red Kite	17
<i>Ficedula parva</i>	Red-breasted Flycatcher	1
<i>Mergus serrator</i>	Red-breasted Merganser	1
<i>Alectoris rufa</i>	Red-legged Partridge	53
<i>Podiceps grisegena</i>	Red-necked Grebe	2
<i>Tringa totanus</i>	Redshank	10
<i>Phoenicurus phoenicurus</i>	Redstart	5
<i>Gavia stellata</i>	Red-throated Diver	2
<i>Turdus iliacus</i>	Redwing	79
<i>Emberiza schoeniclus</i>	Reed Bunting	9
<i>Turdus torquatus</i>	Ring Ouzel	4
<i>Charadrius hiaticula</i>	Ringed Plover	10
<i>Psittacula krameri</i>	Ring-necked Parakeet	3
<i>Erithacus rubecula</i>	Robin	260
<i>Columba livia</i>	Rock Dove	10
<i>Anthus petrosus</i>	Rock Pipit	5
<i>Corvus frugilegus</i>	Rook	209
<i>Pastor roseus</i>	Rose-coloured Starling	5
<i>Calidris pugnax</i>	Ruff	5
<i>Riparia riparia</i>	Sand Martin	24
<i>Aythya marila</i>	Scaup	2
<i>Acrocephalus schoenobaenus</i>	Sedge Warbler	49
<i>Tadorna tadorna</i>	Shelduck	8
<i>Asio flammeus</i>	Short-eared Owl	43
<i>Spatula clypeata</i>	Shoveler	35
<i>Spinus spinus</i>	Siskin	25
<i>Alauda arvensis</i>	Skylark	69

<i>Podiceps auritus</i>	Slavonian Grebe	12
<i>Mergellus albellus</i>	Smew	1
<i>Gallinago gallinago</i>	Snipe	40
<i>Plectrophenax nivalis</i>	Snow Bunting	2
<i>Turdus philomelos</i>	Song Thrush	83
<i>Accipiter nisus</i>	Sparrowhawk	79
<i>Platalea leucorodia</i>	Spoonbill	1
<i>Porzana porzana</i>	Spotted Crake	1
<i>Muscicapa striata</i>	Spotted Flycatcher	55
<i>Tringa erythropus</i>	Spotted Redshank	1
<i>Sturnus vulgaris</i>	Starling	76
<i>Columba oenas</i>	Stock Dove	43
<i>Saxicola rubicola</i>	Stonechat	30
<i>Burhinus oedicephalus</i>	Stone-curlew	1
<i>Hirundo rustica</i>	Swallow	134
<i>Apus apus</i>	Swift	30
<i>Strix aluco</i>	Tawny Owl	65
<i>Anas crecca</i>	Teal	49
<i>Anthus trivialis</i>	Tree Pipit	18
<i>Passer montanus</i>	Tree Sparrow	1
<i>Certhia familiaris</i>	Treecreeper	17
<i>Aythya fuligula</i>	Tufted Duck	1
<i>Arenaria interpres</i>	Turnstone	5
<i>Streptopelia turtur</i>	Turtle Dove	2
<i>Anthus spinoletta</i>	Water Pipit	10
<i>Rallus aquaticus</i>	Water Rail	13
<i>Oenanthe oenanthe</i>	Wheatear	37
<i>Numenius phaeopus</i>	Whimbrel	20
<i>Saxicola rubetra</i>	Whinchat	7
<i>Ciconia ciconia</i>	White Stork	1
<i>Anser albifrons</i>	White-fronted Goose	3
<i>Curruca communis</i>	Whitethroat	38
<i>Cygnus cygnus</i>	Whooper Swan	4
<i>Mareca penelope</i>	Wigeon	26
<i>Poecile montanus</i>	Willow Tit	18
<i>Phylloscopus trochilus</i>	Willow Warbler	26
<i>Tringa glareola</i>	Wood Sandpiper	1
<i>Phylloscopus sibilatrix</i>	Wood Warbler	2
<i>Scolopax rusticola</i>	Woodcock	7
<i>Lullula arborea</i>	Woodlark	5
<i>Columba palumbus</i>	Woodpigeon	229
<i>Troglodytes troglodytes</i>	Wren	170
<i>Jynx torquilla</i>	Wryneck	6
<i>Motacilla flava</i>	Yellow Wagtail	2
<i>Phylloscopus inornatus</i>	Yellow-browed Warbler	4
<i>Emberiza citrinella</i>	Yellowhammer	64
<i>Larus michahellis</i>	Yellow-legged Gull	1

Statutory Nature Conservation Sites (SNCS)

There are no Ramsar site or Special Protected Areas within 10km.

The relationship between of the following Statutory Nature Conservation Sites and the assessment site is shown in Map 2.

River Camel Special Area of Conservation (SAC) is located 5.5km to the east of the assessment site.

Annex I habitats that are a primary reason for selection of this site;

Not Applicable

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

European dry heaths

Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)

Annex II species that are a primary reason for selection of this site:

Bullhead *Cottus gobio*

The Camel represents bullhead *Cottus gobio* in the extreme south-west of its range in England. The river encompasses a range of ecological conditions with both upland and lowland characteristics. The clean, fast-flowing, relatively oligotrophic waters with their stony bottoms are particularly suitable for bullhead, which forms an important part of the total fish biomass.

Otter *Lutra lutra*

The Camel represents otter *Lutra lutra* in its main stronghold in England in the south-west of the country. Surveys have indicated a dense population along this river. Records show that these populations persisted even during the period when the otter was in serious decline over much of the rest of its range in England, and this area has acted as a nucleus for recolonisation of other parts of England. The river and its tributaries represent the more upland as well as lowland habitat types utilised by otters, satisfying requirements for adequate food supply throughout the year. The wooded lower reaches of the river provide excellent habitat for resting and breeding.

Annex II species present as a qualifying feature, but not a primary reason for site selection:

Atlantic salmon *Salmo salar*

Receptor assessment: River Camel SAC is of European importance

Brenay Common and Goss and Tregoss Moors SAC is located 8.3km to the south east of the assessment site.

Annex I habitats that are a primary reason for selection of this site:

Northern Atlantic wet heaths with *Erica tetralix*

This lowland site exhibits mosaics of various habitats, including 4030 European dry heaths, wet heaths, acid grassland, bog, swamp, fen and open water communities. The soil-structure of these sites reflects past mining operations, which caused poor drainage. The resulting extensive wet communities include the localised M14 Schoenus nigricans – *Narthecium ossifragum* mire, closely associated with M25 Molinia caerulea – Potentilla erecta mire. There are several species of bog-mosses Sphagnum spp., bog asphodel *Narthecium ossifragum*, orchids and some nationally scarce plants, such as yellow centaury *Cicendia filiformis*, marsh clubmoss *Lycopodiella inundata* and pillwort *Pilularia globulifera*. The habitat supports rich assemblages of butterflies (including the Annex II species 1065 marsh fritillary *Euphydryas aurinia*), moths, dragonflies and damselflies, and also a population of European nightjar *Caprimulgus europaeus*.

European dry heaths

Northern Atlantic wet heaths with *Erica tetralix*, and to a smaller extent, dry heath occur in this site. The dry heath is an example of H4 *Ulex gallii* – *Agrostis curtisii* heath, with a limited south-western distribution in Britain.

Transition mires and quaking bogs

Although possibly the site of a former raised bog, this site lying either side of the A30 trunk road and encompassing the River Fowey is now recovering from an intensive period of china clay and gravel extraction. H7140 Transition mire has developed in the hollows between ridges and mounds on which dry heathland forms a mosaic with acid grassland. Wet heath merges into Sphagnum-dominated fen vegetation with common cottongrass *Eriophorum angustifolium*, round-leaved sundew *Drosera rotundifolia*, bog-myrtle *Myrica gale*, bog asphodel *Narthecium ossifragum*, black bog-rush *Schoenus nigricans* and bog pimpernel *Anagallis tenella*. Of particular note are the nationally scarce plants yellow centaury *Cicendia filiformis*, marsh clubmoss *Lycopodiella inundata* and pillwort *Pilularia globulifera*.

Emergent vegetation around the 15 ponds includes water horsetail *Equisetum fluviatile*, bogbean *Menyanthes trifoliata* and marsh cinquefoil *Potentilla palustris*. Many of the transitions include tall fen vegetation with bulrush *Typha latifolia*, common reed *Phragmites australis* and bottle sedge *Carex rostrata*. Other wetland plants found in the pond margins and across the more shallow ponds include marsh St John's-wort *Hypericum elodes*, sharp-flowered rush *Juncus acutiflorus* and ivy-leaved bellflower *Wahlenbergia hederacea*. Of particular note are the nationally scarce Cornish moneywort *Sibthorpia europaea* and wavy St John's-wort *Hypericum undulatum*. Extensive willow carr has developed over much of the central part of the Goss Moor.

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

Not Applicable

Annex II species that are a primary reason for selection of this site:

Marsh fritillary butterfly *Euphydryas* (*Eurodryas*, *Hypodryas*) *aurinia*

This is a cluster of three marsh fritillary *Euphydryas aurinia* sub-populations over a complex of wet heathland sites. This supports the largest metapopulation in Cornwall and probably the most westerly viable population in England.

Annex II species present as a qualifying feature, but not a primary reason for site selection:

Not Applicable

Receptor assessment: Breney Common and Goss and Tregoss Moors SAC is of European importance. Taking into account separation distance, this site is scoped out at this stage due to the limited transboundary effects the proposed development would have ON its interest features.

Bristol Channel and Approaches potential SAC (pSAC) is located 5km to the west of the assessment site. This has been selected for harbour porpoise.

Receptor assessment: Bristol Channel and Approaches potential pSAC is of European importance. Taking into account separation distance, this site is scoped out at this stage due to the limited transboundary effects the proposed development would have ON its interest features.

SSSI Impact Risk Zones

The very eastern edge of the assessment site is within a SSSI risk zone for wind turbines, although no turbines will be constructed within that area. This relates to **Trelow Downs SSSI** 1.1km to the east.

Situated in mid Cornwall on the Staddon grit and Meadfoot grit of the lower Devonian period, Trelow Downs supports a large area of dry and wet heath, valley mire communities, stands of scrub and associated wildlife.

On high ground and slopes, areas of heath dominate and are characterised by western gorse *Ulex gallii*, heather *Calluna vulgaris* and bell heather *Erica cinerea*. Co-dominant with the western gorse in places, particularly in the western section of the site, is bristle bent *Agrostis curtisii*. Other heathland grasses include heath grass *Sieglingia decumbens* and wavy hair grass *Deschampsia flexuosa*. Purple moorgrass *Molinia caerulea* is locally dominant with cross-leaved heath *Erica tetralix* in damper areas. Herbs characteristic of the heathland include tormentil *Potentilla erecta*, lousewort *Pedicularis sylvatica*, eyebright *Euphrasia officinalis* agg, heath spotted orchid *Dactylorhiza maculata* and heath milkwort *Polygalla serpyllifoli*. The sedges carnation sedge *Carex panicea* and green-ribbed sedge *Carex binervis* are also present. Royal fern *Osmunda regalis* and creeping willow *Salix repens* both occur occasionally.

The wetter parts of the site, adjacent to streams, support larger areas of tussocky purple moor-grass with black bog rush *Schoenus nigricans* and bog myrtle *Myrica gale*. In areas between the tussocks locally frequent species include bog mosses *Sphagnum* spp., bog asphodel *Narthecium ossifragum*, devil's-bit scabious *Succisa pratensis*, common cotton-grass *Eriophorum angustifolium*, lesser spearwort *Ranunculus flammula*, toad rush *Juncus bufonius* and soft rush *Juncus effusus*. Of particular interest are common sundew *Drosera rotundifolia*, white beaked sedge *Rhynchospora alba*, pale butterwort *Pinguicula lusitanica* and the nationally scarce pillwort *Pilularia globulifera*, which all occur locally in scattered patches. Bog pondweed *Potamogeton polygonifolius*, slender rush *Juncus tenuis* and sweet floating-grass *Glyceria fluitans* are all locally abundant where there are pools of standing water.

European gorse *Ulex europaeus* scrub occurs in places with locally dominant patches of bramble *Rubus fruticosus*, bracken *Pteridium aquilinum*, grey willow *Salix cinerea*, hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa* and silver birch *Betula pendula*. In some areas of scrub there is an associated neutral grassland flora.

Receptor assessment: Trelow Downs SSSI is of National importance.

Borlasevath and Retallack Moor SSSI is 2.8km to the east and of special interest for its rich mix of fen and associated vegetation types which is rare nationally and the strong and characteristic western (or oceanic) nature of its flora. In addition some of the fen plant communities present are nationally rare. It represents an important part of the range of variation in the wet 'heaths' of Cornwall being one of the largest purple moor grass (*Molinia caerulea*) dominated mire systems.

Receptor assessment: Borlasevath and Retallack Moor SSSI is of National importance. Taking into account separation distance, this site is scoped out at this stage due to the limited transboundary effects the proposed development would have ON its interest features.

Rosenannon Bog and Downs SSSI is 4km to the east. This site has been selected for dry heath dominated by heather *Calluna vulgaris* with frequent western gorse *Ulex gallii* and bell heather *Erica cinerea*, forming a mosaic with purple moor-grass *Molinia caerulea* and bristle bent *Agrostis curtisii*. Associated species include lousewort *Pedicularis sylvatica*, sawwort *Serratula tinctoria*, and heath milkwort *Polygala serpyllifolia*.

Locally, there are good populations of heath spotted-orchid *Dactylorhiza maculata* and deer grass *Trichophorum cespitosum*, a plant of restricted occurrence on Cornish heathland.

Cross-leaved heath *Erica tetralix* and purple moor-grass dominate the wet heath with abundant bog myrtle *Myrica gale*. Black bog-rush *Schoenus nigricans* flourishes in the wet, more base-rich areas. Wet hollows support the bog mosses *Sphagnum* spp. along with large populations of the insectivorous round-leaved sundew *Drosera rotundifolia*.

The valley-bog is enclosed by a fringe of broad-leaved woodland consisting largely of willows *Salix* spp., and sessile oak *Quercus petraea*. The wood is notable for its large stands of Royal fern *Osmunda regalis*, a plant of decreasing occurrence nationally.

The valley bog has remained largely undisturbed for a long period, and supports a rich flora. Amongst the purple moor-grass and cross-leaved heath there is abundant bog asphodel *Narthecium ossifragum*, common cottongrass *Eriophorum angustifolium*, white beak-sedge *Rhynchospora alba*, pale butterwort *Pinguicula lusitanica*, bog pimpernel *Anagallis tenella*, Royal fern and lesser skullcap *Scutellaria minor*. Of particular note is the presence of wavy St. John's-wort *Hypericum undulatum*, a plant of very limited distribution in Britain.

Rosenannon Bog and Downs provide important feeding and nesting habitat for a number of heathland birds. Snipe *Gallinago gallinago*, curlew *Numenius arquata*, and meadow pipit *Anthus pratensis* breed here; as has the stonechat *Saxicola torquata*, a species which has declined nationally in recent years. Both hen harrier *Circus cyaneus* and Montagu's harrier *C. pygargus* have been recorded.

Receptor assessment: Rosenannon Bog and Downs SSSI is of National importance.

Bedruthan Steps and Park Head SSSI is 4.6km to the west. The site is scheduled both for its biological and geological interest. Despite the extreme maritime conditions experienced on these west-facing cliffs, several plant species of interest occur here including golden samphire *Inula crithmoides* and tree mallow *Lavatera arborea*. The site also has interesting areas of maritime grassland and heathland along the coastal margin. Within the maritime grass/heath near Porth Mear, to the north of the site occur the nationally rare autumn squill *Scilla autumnalis* and hairy bird's-foot trefoil *Lotus subbiflorus*. Other noteworthy species occurring here are spring quill *Scilla verna* and the prostrate form of dye's greenweed *Genista tinctoria* var. *prostrata*.

The sheltered valley which runs inland from Porth Mear contains a variety of additional habitats including scrub, streams, tall herb and a small area of woodland which add further interest to the site.

The site also supports two mosses of limited distribution, *Tortella flavovirens* and *Grimmia maritima*. Two noteworthy beetle species *Cteniopus sulphureus* and *Dasytes aerosus*, have also been recorded here.

Receptor assessment: Bedruthan Steps and Park Head SSSI is of National importance. Taking into account separation distance, this site is scoped out at this stage due to the limited transboundary effects the proposed development would have on its interest features.

Legend

SSSI within 5km

- Bedruthan Steps and Park Head
- Borlasevath and Retallack Moor
- Rosenannon Bog and Downs
- Trelow Downs

SAC within 10km

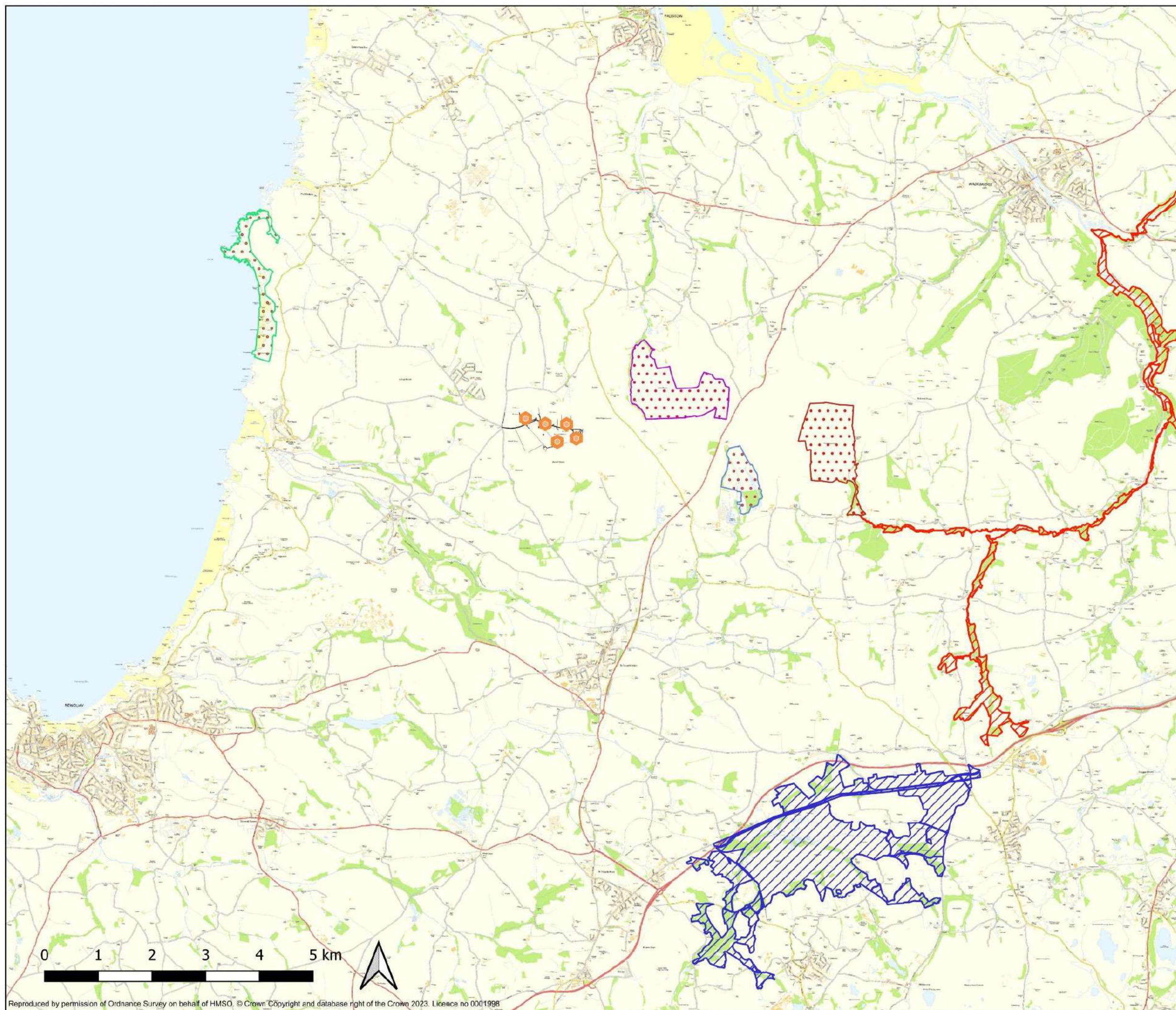
- Breney Common and Goss and Tregoss Moors
- River Camel

- Proposed turbine location

Title: Map 2. Statutory Nature Conservation Sites, International important sites within 10km and Nationally important sites within 5km

Project: Bears Down Wind Farm - repowering

Checked by: CDH Version: 01
Date: 29th October 2023



Non-statutory Nature Conservation Sites (NNCS)

There are two County Wildlife Sites (CWS) within 2km.

- **Music Water CWS** is located 140 metres to the north and was selected for Lowland Heathland and Lowland fens habitat, and common lizard.
- **Denzell Downs to Menadew's Plantation CWS** is located 450 metres to the south and was selected for Purple Moor Grass and Rush Pastures, Wet Woodland, Lowland Fens and Lowland Heathland along with common lizard, dunnoek, wavy St John's wort and badger.

Receptor assessment: CWS are of County (Cornwall) importance.

5.2. The need for an appropriate assessment

An appropriate assessment is required by Regulation 48 of the Habitats Regulations 1994 implementing Article 6(3) of the Habitats Directive (92/43/EEC) in the event that it is considered a plan or project, not connected with the management of that site, is likely to have a 'significant effect' on any European (Natura) site, i.e. Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites.

The purpose of appropriate assessment is to ensure that protection of the integrity of European sites is a part of the planning process at a regional and local level. Permission can only be granted if it can be ascertained that the plan or project will not affect the integrity of the European site.

It is appropriate to use the information assembled for this EclA when carrying out the appropriate assessment under the Habitats Regulations.

The site is not within a SSSI impact zone for a designated site that underpins a Natura 2000 designation. An appropriate assessment is not required.

5.3. UKHabs habitats

Habitats within the assessment site along with an assessment of their biodiversity value are given in Table 5.

Table 5: Habitat description and biodiversity value.

Habitat type	Description	Receptor value
g4: modified grassland	The site largely comprises close grazed improved grassland with perennial rye-grass, white clover and occasional ruderals including common nettle and broadleaved dock. Taller grasses are present at field margins with cock's foot, bents and meadow-grasses.	Negligible
c1c: cereal crops	A single field of well managed cereal was present in the south west of the site.	Negligible
h3h: mixed scrub	European gorse was common across the site on hedgebanks and along the margins of the substation in the east of the site where it was associated with blackthorn and common nettle.	Site
U1c: artificial unvegetated unsealed surface	An access track of compacted hardcore runs through the centre of the Site	Negligible

u1b5: building (sub-station)	A single storey structure with a pitched slate roof is present in the far east of the assessment site. The roof appears well-sealed although gaps are present in at both northern and southern gable verges with hanging tiles present. Soffit boxes were self-sealed. Bat emergence surveys were completed on this building during which time it was found to support low number of day roosting common pipistrelle bats.	Local
Cornish hedgebanks	The majority of field boundaries are provided by low Cornish hedgebanks vegetated with grasses, ruderal herbs and native scrub including cock's foot, false oat-grass, Yorkshire fog, common nettle, common hogweed, creeping thistle, cleavers, bracken, bramble and European gorse. Occasional hawthorn, blackthorn and willow was present, in particular along the western limited of the east/west access track. Although many of these banks lack a strong hedgerow, they are included on the tithe maps of Cornwall.	Habitat or principal Importance, local biodiversity Action Plan Priority habitat Local
Fence	Post and wire fences provide stock-proof field boundaries	Negligible

5.4. Species of nature conservation importance

Amphibians

There is no habitat suitable for breeding amphibians within 500 metres of the site and they are unlikely to be regularly active here.

Receptor value: The assessment site is of Negligible value for amphibians.

Badger

A single badger outlier entrance with bedding was present along the east/west access track within the assessment site.

Receptor value: The assessment site is of Site value for Badger.

Bats - roosting

The substation in the east supports a roost of at least six common pipistrelle which are regularly foraging across the assessment site. This group of bats is below the usual number for a maternity roost of this species, and this is likely to be a non-breeding day roost.

Receptor value: The assessment site is of Site value for roosting bats⁶.

Bats - foraging and commuting

The assessment site is in an elevated location with low hedgerows and land managed for intensive agricultural purposes.

The initial Site Risk Level (SNH, 2021⁷) was calculated at 1 as follows:

Habitat risk = 1 Small number of potential roost features, of low quality. Low quality foraging habitat that could be used by small numbers of foraging bats. Isolated site not connected to the wider landscape by prominent linear features.

⁶ Reason, P.F. and Wray, S. (2023). *UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats*. Chartered Institute of Ecology and Environmental Management, Ampfield.

⁷ <https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation>

Project size is less than 10 turbines. However, other wind farms are present within 10km and the turbines will be higher than 50m. Protect size is Medium.

On this basis, Site Risk Level is 2 - Low

Bat activity transects

Five species and two species groups were recorded during 14hrs of bat activity transects on 7 separate survey nights. The most commonly encountered bat was common pipistrelle.

Table 6 provides a summary of the bats encountered during these transects, how they are using the site and an estimate of the possible numbers active here.

Table 6. Bat activity during bat activity transects. Shading demotes population risk category⁴

Species/Group	Number of passes	Activity summary	Estimated number of bats using the site at any one time
Noctule	82	Noctule calls were largely recorded in the north of the assessment site with 21 calls recorded around the proposed location of Turbine T4 over a period of 14 minutes during the August 23 activity transect, and 23 calls recorded during the October 23 transects over a 10-minute period.	1-2
Nathusius pipistrelle	3	Calls indicative of Nathusius pipistrelle were recorded during the June 2022 transect at two locations in the site.	1
Common pipistrelle	413	The vast majority of common pipistrelle passes were associated with the margins of the fields and the access track that runs east/west through the site, as would be expected in an exposed site such as this. However, occasional calls were recorded away from field margins and in the vicinity of the proposed turbines T3 and T4. This access track is within 10 metres of turbine T2. A small day roost is present in the substations of at least 6 bats.	6
Soprano pipistrelle	10	Soprano Pipistrelle were almost exclusively with the northeast of the assessment site with 8 passes recorded in September 2023 and 2 passes in October 2023. This may reflect the proximity of this area of the assessment site to scrubby woodland 400m to the north of turbine T4.	1
Serotine	16	Serotine were exclusively recorded in a small area to the north of access track, with 15 calls in a 5-minute period in September 2023, and one call in October 2023. This is indicative of foraging in that area.	1
Myotis	6	Myotis were exclusively associated with the access track through the centre of the assessment site and the southern site boundary.	1
Long-eared	2	One long-eared pass was recorded along the access track with a second call on the southern site boundary, both in August 2023.	1

Remote monitoring

Data from a total of 5285 hours of monitoring nights at 4 proposed turbine locations has been collected and analysed. Since this data was collected, the site development has been reduced to 4 turbines with T1 being dropped. However the data is included here as it provides a measure of local bat activity. During this period calls were recorded from 8 species and two species groups.

Data is presented as bat activity index (BAI) in Table 7. BAI provides a percentage of the monitoring time during which bats calls were recorded at a given location and is based on the duration of calls recorded by each remote monitoring device. Where BAI is below 0.00%, the number of seconds activity is shown in brackets.

Table 7. BAI at five turbine locations, including T1 which has been dropped from the scheme

Species	T1 (Dropped)	T2	T3	T4	T5
Barbastelle	0.00 (0)	0.00 (0)	0.00 (7)	0.00 (0)	0.00 (0)
Serotine	0.01	0.00 (186)	0.00 (197)	0.02	0.02

Myotis	0.01	0.05	0.01	0.02	0.17
Noctule	0.08	0.15	0.20	0.23	0.23
Nathusius pipistrelle	0.00 (42)	0.00 (43)	0.00 (139)	0.03	0.00 (92)
Common Pipistrelle	0.54	0.24	0.31	0.82	0.27
Soprano Pipistrelle	0.01	0.01	0.01	0.07	0.00 (75)
Brown Long-eared	0.01	0.04	0.06	0.02	0.04
Greater Horseshoe	0.00 (114)	0.00 (30)	0.00 (98)	0.00 (62)	0.00 (16)
Lesser Horseshoe	0.00 (0)	0.00 (0)	0.00 (15)	0.00 (26)	0.00 (45)

Value of the assessment site has been assessed in line with Reason, P.F., and Wray, S., 2023⁸ for all species present here (Table 8) taking into account:

- Levels of recorded bat activity
- Landscape including habitat type, connectivity, elevation.
- Proximity/connectivity to known roost, or suitable roosting habitats
- Species habitat preferences

Table 8. Value of the assessment site for foraging and commuting bat species

Species	Level of record bat activity	Species habitat preferences ⁹	Landscape value	Proximity/connectivity to known roost, or suitable roosting habitats	Receptor evaluation
Barbastelle	Negligible	Wooded river valleys and occasionally meadows	Low	No known roosts within 5km and assessment site has poor Connectivity - Low	Negligible
Serotine	Low	Open habitats and rivers or lakes	Low	No known roosts within 5km and assessment site has poor Connectivity - Low	Site
Myotis	Low	Woodland, lakes, grassland and rivers.	Low	Nearest known roost in 2.7km away for a single natterer's, with 12 known roosts within 5km and assessment site has poor Connectivity - Low	Site
Noctule	Moderate	Open habitats and rivers or lakes. More often found in lowland areas and those with old forests, rivers and marshland	Low/Moderate	No known roosts within 5km and assessment site has poor Connectivity - Low	Local
Nathusius pipistrelle	Negligible	Woodland areas, both deciduous and coniferous, rides and paths. On the edges of	Low	No known roosts within 5km and assessment site has poor Connectivity - Low	Site

⁸ Reason, P.F. and Wray, S. (2023). *UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats*. Chartered Institute of Ecology and Environmental Management, Ampfield.

⁹ <https://www.bio.bris.ac.uk/research/bats/britishbats/>

		lakes near deciduous woodland and old buildings			
Common Pipistrelle	Moderate	Farmland, open woodland, gardens, lakes and large hedgerows. Tends to avoid very open habitat such as moorland and grassland where linear features are comparatively rare	Low/moderate	Roosting is substation building onsite	Local
Soprano Pipistrelle	Low	Prefers riparian habitats. Tends to avoid open habitat such as farmland, moorland and grassland.	Low	Nearest known roost in 2.7km away for a single bat, with 2 known roosts within 5km and assessment site has poor Connectivity - Low	Negligible
Long-eared	Low	Open woodland including both deciduous and coniferous habitats. Sheltered valleys, parks and gardens.	Low	Nearest known roost in 0.75km away comprising a breeding group of at least 19 bats, with 9 known roosts within 5km and assessment site has poor Connectivity - Moderate	Site
Greater Horseshoe	Low	Usually in areas with mixed deciduous woodland and grazing pastures on steep south-facing slopes.	Low/moderate	Nearest known roost in 2.7km away for a single bat, with 3 known roosts within 5km and assessment site has poor Connectivity - Low	Site
Lesser Horseshoe	Negligible	Sheltered valleys, woodland edge, pasture and wetlands.	Low	Nearest known roost in 0.8km away comprising a single bat, with 3 known roosts within 5km and assessment site has poor Connectivity - Moderate	Negligible

Birds

Habitat assessment

The site of the wind farm comprises fields containing managed arable and agricultural grassland enclosed by Cornish hedgebanks.

The grassland or arable habitats do not provide optimal habitat for ground nesting birds, given the frequency of silage cuts, high stocking levels and cropping regime. The fields themselves provide some limited suitability for over-wintering species, however when assessed on a landscape scale, the site may provide some winter foraging/roosting opportunities.

Vantage point survey- general summary

The majority of bird activity recorded during the VP surveys involved gull flights transiting through the airspace of the wind farm. Gulls were rarely recorded on the ground within the

actual wind farm site, however were frequently recorded foraging and day roosting in mixed flocks in agricultural fields at edge of the survey area. Agricultural activities within nearby fields, such as ploughing or slurry application, also had an influencing factor on both frequency and number gull flights Herring gull activity mostly comprised short flights at risk height in low numbers of 1-3 birds. Other gull species exhibited similar flight patterns although were more often recorded in large flocks. All gull flights exhibited clear avoidance behaviour towards the existing turbines.

Golden plover were mostly recorded in large flocks circling over the airspace of the existing and proposed turbines. Golden plover were recorded during nine surveys between October to March, showing frequent use of the area. The largest flock recorded consisted of approximately 250 birds recorded from VP2 on 21st December 2022. Golden plover activity was associated with foraging and day roosting in nearby fields but away from existing and proposed turbines. Lapwing were recorded during only one survey and were foraging in nearby fields away from existing and proposed turbines. The largest flock of lapwing was recorded from VP1 on 15th December 2022. Clear avoidance behaviour was observed to the existing turbines.

Buzard and kestrel were frequently recorded foraging within the site during both summer and winter surveys and mostly at risk height, however clear avoidance behaviour was observed to the existing turbines.

Other species were seldom recorded within the site and use of turbine air space is likely to be highly limited.

Breeding period VP survey results summary

The number of flights for birds at risk height within the view shed is given in Table 9.

Table 9. Breeding bird period observed flights

Species	No. of flights at risk height		Total flight time at risk height (s)		Combined time at risk height (s)
	VP1	VP2	VP1	VP2	
Black-headed gull	1	5	25	115	140
Buzzard	8	5	310	150	460
Greater black-backed gull	1	1	45	15	60
Herring gull	89	105	2252	2099	4351
Kestrel	4	1	90	75	165
Lesser black-backed gull	6	5	180	141	321

Breeding bird survey results summary

A total of 27 species were recorded using habitats within and around the Site, which is quite typical for a site of the size and composition.

Only one target species was recorded (skylark), and it assessed as a probable breeder with an estimated 3 territories located within (1) and adjacent to the Site (2). Skylark appeared to be well habituated to the existing turbines, with activity frequently observed within ~20m of the turbine structures. Activity across the Site and adjacent areas included display flights, singing from perches and foraging in small groups. Activity was widespread across the site with birds frequently moving across the site. Skylark were also observed using neighbouring

fields (off-site) to the Site which contained a variety of habitats including arable, silage grassland and sheep grazed grassland with wind turbines.

Twelve of the species recorded are considered notable due to current conservation status, with one of these (whitethroat) confirmed to be breeding within the Site. The remainder are widespread and common species.

The hedgerow habitat associated with the Site supported a healthy number of territories of notable species such as dunnoek, whitethroat, linnet and yellowhammer. The hedgerows and scrub also supported breeding territories from common species. Some species exhibited no breeding behaviour (such as buzzard, jackdaw and herring gull) and were foraging over/within the site.

Receptor value: The assessment site is of Site value for breeding birds.

Wintering and passage birds

The number of flights for birds at risk height within the view shed is given in Table 10.

Table 10: Bird flight data for passage/winter survey

Species	Total bird flights at risk height		Total time at risk height (s)		Combined time at risk height (s)
	VP1	VP2	VP1	VP2	
Black-headed gull (BH)	98	66	1175	1026	2201
Buzzard (BZ)	19	5	648	65	713
Common gull (CM)	382	61	17455	1440	18895
Curlew (CU)	2	0	20	0	20
Great black-backed gull (GB)	3	7	105	275	380
Golden plover (GP)	960	1033	10745	62285	73030
Grey heron (H.)	0	1	0	15	15
Herring gull (HG)	483	195	11357	3089	14446
Kestrel (K.)	1	1	20	30	50
Lapwing (L.)	411	0	5285	0	5285
Lesser black-backed gull (LB)	3	1	65	20	85
Mediterranean gull (MG)	1	0	25	0	25
Sparrowhawk (SH)	1	0	15	0	15

Receptor value: The assessment site is of Site value for wintering birds.

Common Dormice

Dormice are arboreal and the majority of habitats within the footprint of the proposed development would not support this species.

The nearest record is for a dead dormouse from 2021 at a site 2.1km to the north west.

Hedgerows are limited in height and lack a diversity of native shrubs to support a permanent population of dormice. There is no ecologically functional connectivity to large areas of woodland where dormice populations may be present, and this animal is extremely unlikely to be active here.

Receptor value: The assessment site is of Negligible value for dormice.

Reptiles

Close grazed habitats contained within the Site provide negligible potential for reptiles, although they are likely to be present along the access track margins and in association with hedgebanks.

Receptor value: The assessment site is of Site value for reptiles.

Otter

There is no potential for Otter to be present within the Site.

Receptor value: The assessment site is of Negligible value for Otter.

Water Vole

There is no potential for Water Vole to be present within the Site.

Receptor value: The assessment site is of Negligible value for Water Vole.

Invertebrates

Habitats within the Site are likely to support common and widespread invertebrates, although priority invertebrate habitats such as flushes, ponds, brown-field land and soft rock cliffs are absent from the site.

Receptor value: The assessment site is of Negligible value for notable invertebrates.

Plants

Close grazed habitats contained within the Site provide negligible potential for plants of limited distribution.

Receptor value: The assessment site is of Negligible value for notable plants.

Invasive Non-native Species (INNS) of Plants

Stands of montbretia (listed in Sch.9 of Wildlife and Countryside Act 1981, as Amended) were observed along the Cornish hedgebank along the east and west access route of the Site.

Receptor value: The assessment site is of Confirmed value for invasive non-native plants.

The ecological receptors to be considered for significant effects are given in Table 11. These are of local or higher value; those ecological receptors that have less than local value are not considered further unless they are European Protected Species and there is potential for them to be present (in which case the regulatory context i.e. the Habitats Regulations 2010 is considered), or they are the subject of national legislation (i.e. Wildlife and Countryside Act 1981).

Table 11. Table of ecological receptors to be considered for significant effects

Receptor	Relevant legislation/policy	Value
River Camel SAC	Conservation of Habitats and Species Regulations (2017)	European
Trelow Downs SSSI	Wildlife and Countryside Act 1981	National
Rosenannon Bog and Downs SSSI	Wildlife and Countryside Act 1981	National
Music Water CWS	Local plan	County
Denzell Downs to Menadew's Plantation CWS	Local plan	County
Cornish hedgebanks	Priority LBAP habitat	Local
Badgers	Protection of Badgers Act 1992	Site
Bats roosting – common pipistrelle	European Protected Species, Wildlife and Countryside Act 1981, Species of Principal Importance	Site
Bat assemblage – foraging and commuting	European Protected Species, Wildlife and Countryside Act 1981, Species of Principal Importance	various
Breeding birds	Wildlife and Countryside Act 1981, Species of Principal Importance	Site
Wintering/passage birds	Wildlife and Countryside Act 1981, Species of Principal Importance	Site
Reptiles	Wildlife and Countryside Act 1981, Species of Principal Importance	Site
Invasive non-native plants	Wildlife and Countryside Act 1981	Present

6. Assessment of ecological impacts

6.1. The development

It is proposed that the 16 existing operational turbines at this site (57m tip height, 35m hub height and 44m rotor diameter) will be replaced by 4 modern units in nearby locations (Map 1). The 5 modern units each have a hub height of 82m and a rotor diameter of 136m. Associated infrastructure will include a permanent access track and electrical housing.

Repowering is proposed to extend over a 25 week/6 month period and will involve the construction of new access tracks and temporary compounds, blade lay down and crane pad areas, installation of the four new turbines and associated cabling and construction of a new substation unit, followed by reinstatement of the temporary construction areas.

6.2. Construction phase impacts

During the construction phase, there is predictable adverse effects which are generally unavoidable; many are short term and can be minimised as part of the construction management, but some have the potential for more lasting effect.

The potential for adverse effects are largely short term impacts associated with noise and vibration, airborne and waterborne, pollutants, short term habitat loss or disturbance. The potential for adverse impacts would be minimised as far as possible through the application of good practice techniques and adherence to well-designed method statements; these would be managed through a Construction Environmental Management Plan (CEMP).

Statutory nature conservation sites

River Camel SAC

The assessment site is not within the catchment of the River Camel, whilst the species it has been selected for would not rely on habitats within it. No realistic ecological pathway of effect exists.

Assessment: It is certain that unmitigated construction would have a negligible impact on River Camel SAC.

Trelow Downs SSSI

This site is 1.1km from the assessment site has been selected for habitats and plant species.

Due to the separation of this SSSI from the assessment site by a ridge, pollutants associated with water runoff can be discounted. However, wind-blown dust could transport pollutants and nutrient-rich soils towards this SSSI, the flora of which relies on a low nutrient status.

Assessment: It is near certain that unmitigated construction would have a negligible impact on Trelow Downs SSSI. Any effect, were it to occur, would be minor adverse and short term.

Rosenannon Bog and Downs SSSI

This site is 4km to the east of the assessment site and was selected its habitats, plants, invertebrates and birds including snipe, hen harrier. Montagu's harrier and curlew.

The only realistic pathway of effect would be if individual birds active within the SSSI relied on habitats within the assessment site. Of these birds, only curlew were recorded within the assessment site with 2 flights in the winter months lasting 20 seconds.

Assessment: It is near certain that unmitigated construction would have a negligible impact on Rosenannon Bog and Downs SSSI.

Non-statutory nature conservation sites

Music Water CWS

This CWS is located 140 metres to the north of the assessment and was selected for Lowland Heathland and Lowland fens habitat, and common lizard.

There is potential connectivity through water runoff from the assessment site that sits above this CWS. In addition, there is potential for airborne pollutants, such as dust, to be created during the construction phase and this may be transported by air movement towards this CWS, although dust deposition is common in areas close to modern farming operations.

Assessment: It is unlikely that unmitigated construction would have an effect on this non-statutory nature conservation site. If an effect were to occur it would be minor, adverse and temporary for the period for construction.

Denzell Downs to Menadew's Plantation CWS

This CWS is located 450 metres to the south of the assessment site and was selected for Purple Moor Grass and Rush Pastures, Wet Woodland, Lowland Fens and Lowland Heathland along with common lizard, duncock, wavy St John's wort and badger.

There is potential connectivity through water runoff from the assessment site that sits above this CWS. In addition there is potential for airborne pollutants, such as dust, to be created during the construction phase and this may be transported by air movement towards this CWS, although dust deposition is common in areas close to modern farming operations whilst this site is down-wind during the prevailing wind directions in this area.

Assessment: It is near-certain that unmitigated construction would have no adverse effect on this non-statutory nature conservation site. If an effect were to occur it would be minor, adverse and temporary for the period for construction.

Habitats

Cornish hedgebanks

Cornish hedgebank and the hedgerows they support are of Local value.

There is potential for adverse effects during the construction phase associated with temporary track widening which could damage the Cornish hedgebanks, whilst vehicle movements along the base of the hedges could erode their margins and lead to sagging.

In addition, approximately 60m of hedgebank will be temporarily removed to allow construction with a further 60m realigned.

Assessment: Unmitigated construction phase is certain to have an adverse effect on Cornish hedge banks. The effect would be permanent, minor adverse.

Species

Badger

A single badger outlier is present along the access track.

There is potential for adverse effects during the construction phase associated with temporary track widening which will damage or destroy this sett entrance or disturb a badger whilst in it. There is also potential for accidental damage to the sett during vehicle movements.

Assessment: Unmitigated construction phase is near-certain to have an adverse effect on Badgers. The effect would be minor, short term, permanent adverse.

Harm, or disturbance of a badger whilst in its sett, or damage or obstruction to set could be considered an offence under relevant wildlife legislation.

Bats – roosting

The assessment site is of Site value for roosting bats with a small group of Common Pipistrelles day roosting at the substation.

Proposals will not result in the loss of this roost, although there is potential to impact roosting bats in the substation through disturbance or harm/injury during removal and installation of new electrical equipment.

Assessment: Unmitigated construction phase is near-certain to have an adverse effect on day roosting bats. The effect would be short term, minor adverse.

Harm, or disturbance of bats would be considered an offence under relevant wildlife legislation.

Bats – foraging and commuting

The assessment site is of Negligible value for Barbastelle and Lesser Horseshoe, Site value for Nathusius's Pipistrelle, Myotis, Brown Long-eared and Greater Horseshoe, and Local value for Noctule and Common Pipistrelle.

The primary pathway of effect during the construction phase would be through impacts to habitat features used by foraging bats, such as direct habitat loss and damage. There will be a short-term loss in agricultural habitat associated with construction due to storage areas/compounds, although these habitats are of little value for bats.

No night-time works are planned during the construction phase and mature trees will be retained. Short term disturbance to grassland habitats is unlikely to affect local bat populations.

Temporary loss of three short sections of hedgebank (60m total) are unlikely to affect these bats that are active across open habitats, whilst hedgerow realignment (60m) will not lead to a net loss in habitat extent.

Assessment: Unmitigated construction is near certain to have a negligible effect on foraging and commuting bats. Any effects were it to occur would be temporary, minor and associated with temporary loss of habitat to construction such as grassland and hedgebank.

Breeding birds

The assessment site is of Site value for breeding birds. Species that are actively breeding within/around the Site may be susceptible to disturbance during the breeding period. This impact would be temporary during the works phase.

There is potential for construction activities to result in limited habitat loss for breeding birds at this site. None of the target species recorded during the VP surveys are likely to breed here given the lack of suitable habitat. The majority of breeding activity was recorded within hedgerows and scrub located at the edges of the fields and will be largely unimpacted during the construction phase.

A single skylark territory was estimated to be within part of the grass field close to the proposed T2.

Any construction activities that directly impact breeding habitats (i.e grassland, hedgerows and scrub) have potential to damage or destroy active birds' nests. However this impact would be short-term and temporary given the reinstatement of much of these areas.

Assessment: It is probable that unmitigated construction would have a minor, temporary adverse effect on nesting birds. Any destruction of active birds nests could be considered an offence under relevant wildlife legislation.

Wintering/passage birds

The assessment site is of Site value for passage/wintering birds. Species that are active in/around the site during the passage/winter months may be susceptible to disturbance. This impact would be temporary and limited to the construction phase.

The existing baseline of this site involves frequent human activities such as agricultural operations and daily maintenance visits from wind farm personnel and as such, the majority of species recorded here are likely to be normalised to some levels of on-site disturbance. Species that are more sensitive to disturbance such as golden plover or lapwing were only present during winter months (October to March) but were not recorded using the ground within the actual wind farm (possibly due to presence of the existing turbines). Disturbance to wintering birds is generally thought to involve larger distances during construction (Percival, 2005¹⁰), however this impact would only be temporary during the works phases, as

¹⁰ Percival, S. M. (2005). Birds and wind farms: what are the real issues? British Birds, 98: 194-204.

a study by Pearce-Higgins *et al.* 2021¹¹ has shown consistent post-construction population declines are unlikely. This finding is consistent with this site, given the recorded bird activity and presence of existing turbines within Bears Down, and Denzell Downs Wind Farm located within 1km.

Assessment: It is probable that unmitigated construction would have a minor, temporary adverse effect on winter/passage birds.

Reptiles

The assessment site is Site value for common and widespread reptiles.

The primary pathway of effect would be potential for direct harm during the construction phase in areas of grassland along the access track, at field margins and at hedgebanks, although reptiles would likely relocate as the construction site will move forwards slowly. The temporary loss of habitat associated with construction works would not affect foraging reptiles, or reptile populations, due to the extent of this habitat.

Grassland along the access track has sufficient structure for hibernating reptiles, whilst adjacent hedgebanks are also suitable for hibernation.

Assessment: It is likely that unmitigated construction would have an adverse effect on individual reptiles were they to be present. Any affect was it to occur would be adverse, minor and short term.

Intentional killing for injuring of reptiles would be considered an offence under relevant wildlife legislation.

Invasive Non-native Species (INNS) of Plants

The assessment site is of Confirmed value for INNS. The primary pathway of effect would be potential for accidental spreading of the INNS on or off-site during site clearance or groundworks in affected areas.

Assessment: It is likely that unmitigated construction in affected areas would have an adverse effect INNS. Any affect was it to occur would be adverse, minor and short term.

Causing INNS to spread would be considered an offence under relevant wildlife legislation.

6.3. Operational phase impacts

Overview

During the operational phase, there are predictable adverse effects including the permanent loss of habitat under the development, disturbance during maintenance, and barrier effects and displacement of birds.

¹¹ Pearce-Higgins, J.W., Stephen, L., Douse, D., and Langston, R.H.W. (2012). Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. *Journal of Applied Ecology* 2012, 49, 386–394.

There is also the potential for effects on birds and bats due to changes in the turbine locations, number of units, and their size, which can affect impacts associated with the moving blades of the turbines.

[Statutory nature conservation sites](#)

River Camel SAC

The assessment site is not within the catchment of the River Camel, whilst the species it has been selected for would not rely on habitats within it. No realistic ecological pathway of effect exists.

Assessment: It is certain that unmitigated operation would have a negligible impact on River Camel SAC.

Trelow Downs SSSI

This site is 1.1km from the assessment site has been selected for habitats and plant species.

Due to separation distance no realistic pathway of effect exists.

Assessment: It is certain that unmitigated operational phase would have a negligible impact on Trelow Downs SSSI.

Rosenannon Bog and Downs SSSI

This site is 4km to the east of the assessment site and was selected its habitats, plants, invertebrates and birds including snipe, hen harrier. Montagu's harrier and curlew.

The only realistic pathway of effect would be if individual birds active within the SSSI relied on habitats within the assessment site. Of these birds, only curlew were recorded within the assessment site with 2 flights in the winter months lasting 20 seconds.

Assessment: It is near certain that unmitigated operational phase would have a negligible impact on Rosenannon Bog and Downs SSSI.

[Non-statutory nature conservation sites](#)

Music Water CWS

This CWS is located 140 metres to the north of the assessment and was selected for Lowland Heathland and Lowland fens habitat, and common lizard.

There is potential connectivity through water runoff from the assessment site that sits above this CWS. Although there will be no habitat loss within this CWS, whilst the features for which this site has been selected are not susceptible to other operational effects associated with wind turbines, there is potential for accidental spills of pollutants during maintenance and operation to be transported through rainfall into the small watercourse associated with this CWS.

Assessment: It is near-certain that unmitigated operational phase would have no effect on this non-statutory nature conservation site. If an effect were to occur it would be minor, adverse and temporary due to accidental spills.

Denzell Downs to Menadew's Plantation CWS

This CWS is located 450 metres to the south of the assessment site and was selected for Purple Moor Grass and Rush Pastures, Wet Woodland, Lowland Fens and Lowland Heathland along with common lizard, dunnoek, wavy St John's wort and badger.

There is potential connectivity through water runoff from the assessment site that sits above this CWS. Although there will be no habitat loss within this CWS, whilst the features for which this site has been selected are not susceptible to other operational effects associated with wind turbines, there is potential for accidental spills of pollutants during maintenance and operation to be transported through rainfall into the small watercourse associated with this CWS.

Assessment: It is near-certain that unmitigated operational phase would have no effect on this non-statutory nature conservation site. If an effect were to occur it would be minor, adverse and temporary due to accidental spills.

Habitats

Cornish hedgebank

Cornish hedgebank and the hedgerows they support are of Local value.

Approximately 40m hedgebank habitat will be permanently lost to access track widening and new gateways. This loss is mitigated under the accompanying biodiversity net-gain plan which delivers >10% net-gain in hedgerow habitat.

Assessment: Unmitigated operational phase is near-certain to have minor adverse effect on Cornish hedge banks.

Species

Badger

A single badger outlier is present along the access track.

Adverse effect is unlikely during the operational phase with no reasonable ecological pathway of effect.

Assessment: Unmitigated operational phase is near-certain to have no adverse effect on badgers.

Bats – roosting

The assessment site is of Site value for roosting bats with a small group of Common Pipistrelles day roosting in the substation.

Proposals will not result in the loss of this roost, whilst there is little potential to impact roosting bats in the substation through disturbance or harm/injury during the operational phase of the development.

Assessment: Unmitigated operational phase is near-certain to have no adverse effect on day roosting bats.

Normal operation of the substation would be extremely unlikely to result in an offence under relevant wildlife legislation.

Bats – commuting and foraging

In the absence of Ecobat analysis, this assessment is derived from available research, recorded activity levels, published collision risks and population vulnerability¹⁰, and professional judgement.

The assessment site is of Negligible value for Barbastelle and Lesser Horseshoe, Site value for Nathusius's Pipistrelle, Myotis, Brown Long-eared and Greater Horseshoe, and Local value for Noctule and Common Pipistrelle.

It is proposed that the 16 existing operational turbines at this site (57m tip height, 35m hub height and 44m rotor diameter) will be replaced by 5 modern units in nearby locations (150m tip height, 82m hub height and 136m rotor diameter). This will increase the area of the site swept by moving blades from 1520m² to 4536m², whilst reducing the number of installations from 16 to 5.

Current generating capacity is approximately 20GWh per annum, with the proposed 71GWh per annum.

The blade tips currently pass within 13m of the ground and the proposed turbines will pass within 14m.

Due to their extremely low levels of activity during walked transects and remote monitoring, no realistic ecological pathway of effect exists for Lesser Horseshoe.

Individual Barbastelle are considered to be a medium collision risk species, although populations are high vulnerability¹² due to their rarity. This bat was recorded for a 7s period at one turbine and no adverse effect is predicted from re-powering.

Assessment: It is near certain that the operational phase would have a negligible impact on individual barbastelle bats and their populations.

Greater horseshoe are considered to be a low collision risk species, although populations are moderate vulnerability due to their rarity. Although this bat was recorded in the vicinity of all proposed turbines, the remotes were at ground level with a total of just over 5 minutes activity recorded during 5285 hours of monitoring. This bat typically flies and forages close to the ground and due to a lack of tall hedgerows or woodland within the vicinity of proposed turbines is extremely unlikely to fly at heights where it is at risk of harm from the passing blades. No adverse effect is predicted from re-powering.

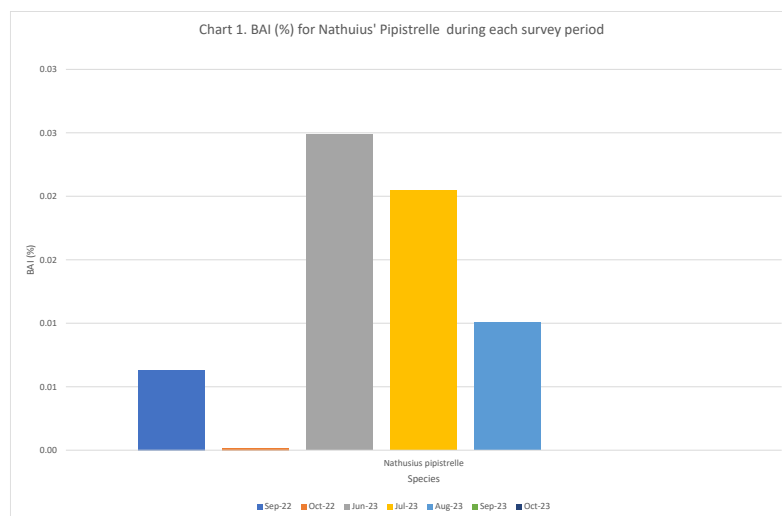
Assessment: It is near certain that the operational phase would have a negligible impact on individual greater horseshoe bats and their populations.

¹² Bats and onshore wind turbines: Survey, assessment and mitigation Version: August 2021 (updated with minor revisions)

For species that are considered low collision risk and low population vulnerability from turbines, *Myotis* and Brown Long-eared, no adverse effect is predicted from re-powering as the ecology of these bats results in very few flights at height, whilst the new turbine blade tips will be a similar distance from ground level as the existing.

Assessment: It is near certain that the operational phase would have a negligible impact on individual *Myotis* and Brown Long-eared bats and their populations.

Nathusius' pipistrelle is considered a high collision risk species and high population vulnerability. This is due to its rarity and ecology which includes a migratory phase. Studies in Germany found higher vulnerability of female and juveniles *Nathusius'* to wind turbine mortality and recommended wind turbine construction should be limited in sensitive areas for bats, such as forested areas with large water bodies¹³. Although it is very unlikely for these bats to pass the assessment site during migration due to distances to continental Europe and Ireland, the potential for migration of this bat has been considered at this site due to its near coastal location and certain amount of uncertainty in migration routes within and beyond the UK. Migration probably occurs in Autumn and Spring during which time elevated activity levels would be expected. The highest levels of activity recorded in summer months (Chart 1) and migrating *Nathusius* can be discounted.



Total recorded activity during 5285 hours of remote monitoring was only 1367s and its presence onsite is unlikely to be affected by proposed repowering. No adverse effect is predicted.

Assessment: It is near certain that the operational phase would have a negligible impact on individual *Nathusius' Pipistrelle* bats and their populations.

¹³ Cecilia Kruszynski, Liam D. Bailey, Lothar Bach, Petra Bach, Marcus Fritze, Oliver Lindecke, Tobias Teige, Christian C. Voigt. High vulnerability of juvenile *Nathusius'* pipistrelle bats (*Pipistrellus nathusii*) at wind turbines. *Ecological Applications* Volume 32, Issue 2 March 2022.

Soprano Pipistrelle are considered a high collision risk species and medium population vulnerability. Activity levels during both remote monitoring and walked transects were very low, and this will be an effect of their foraging activity which is generally associated with riparian habitats and taller hedgerows/woodland margins, when compared to common pipistrelle, combined with less likelihood for their elevated activity levels in the vicinity of operational turbines¹⁴. It is unlikely that re-powering will have adverse effect on this bat.

Assessment: It is near certain that the operational phase would have a negligible impact on individual Soprano Pipistrelle bats and their populations. Any effect, were it to occur, would be at an individual level due to collision mortality and would be minor adverse.

Serotine are considered a medium collision risk species and medium population vulnerability. This bat was recorded for very short periods at all proposed wind turbine locations during remote monitoring, and along the northern assessment site boundary during the bat activity transects. This bats forages across cattle grazed grassland and would not be foraging at height in this location due to a lack of woodland and trees. It is unlikely that re-powering will have adverse effect on this bat.

Assessment: It is near certain that the operational phase would have a negligible impact on individual Serotine bats and their populations. Any effect, were it to occur, would be at an individual level due to collision mortality and would be minor adverse.

Common pipistrelle were the most commonly recorded bat at this site whilst a small day roost present in the substation. This bat is considered a high collision risk species and medium population vulnerability. Taking into account landscape, habitat and land use, and informed by personal experience, activity levels at the assessment site are considered within the normal range for Cornwall. Activity levels of this bat has been shown to be elevated in the vicinity of operational turbines⁹, although the reasons for this are not yet clear and could relate to foraging opportunities or roost seeking. Repowering this site will result in an increase in swept area to approximately three times the existing, but at the same time will reduce the number of turbine locations to less than a third, making the landscape less cluttered. In addition, 14 of the existing turbines are within 50m of a hedgebank feature, whilst only one of the proposed turbines has a similar relationship (T2). As this bat is known to regularly forage along hedgeline, it is judged that on balance, the overall outcome of repowering is likely to result in little change to the numbers of common pipistrelle impacted by wind turbines at this site and could actually reduce impacts due to proposed turbine locations.

Assessment: It is probable that re-powering will have no adverse effect on populations of common pipistrelle. Any effect, were it to occur, would be at an individual level due to collision mortality and would be minor adverse.

Noctule are considered a high collision risk species and high population vulnerability. This is a bat of open spaces which regularly fly's and forages at the heights swept by large wind turbines. Studies in German coastal areas found that greater than 70% of noctule avoided

¹⁴ Richardson, S.M., Lintott, P.R., Hosken, D.J. *et al.* Peaks in bat activity at turbines and the implications for mitigating the impact of wind energy developments on bats. *Sci Rep* 11, 3636 (2021). <https://doi.org/10.1038/s41598-021-82014-9>

turbines at a local scale¹⁵, although they admit that their sample sizes are small and close to roosts this bat tends to fly towards turbines. Taking into account landscape, habitat and land use, and informed by personal experience, activity levels at the assessment site are considered within the normal range for Cornwall. In common with the assessment common pipistrelle, it is judged that on balance the increase in swept area and the reduction of turbine numbers will probably result in repowering resulting in little change to the numbers of noctule impacted by wind turbines at this site. Decluttering this site is likely to have a positive effect for this bat which flies across open spaces and does not regularly rely in linear features.

Assessment: It is probable that re-powering will have no adverse effect on populations of Noctule. Any effect, were it to occur, would be at an individual level due to collision mortality and would be minor adverse.

Breeding birds

The assessment site is of Site value for breeding birds.

The primary pathways of adverse impact are collision and displacement.

A total of one estimated skylark territory is associated with the Site, while a further two are located within adjacent off-site areas. Skylark were also recorded in off-site neighbouring land. During the breeding bird survey, skylark were observed to be highly habituated to the existing turbine structures with activity such as displaying and foraging recorded frequently within ~20m. This trend has been documented in monitoring at other wind farms, which has shown skylark to be highly tolerant to turbine structures and construction activities¹⁶. It is not considered likely that the operation of proposed development would adversely impact skylark at a population level through displacement, given the extent of available breeding habitat in the immediate area, and the species observed and documented tolerance to wind turbines.

Furthermore, the existing sixteen turbines will be dismantled, and the former habitats reinstated, which will result in net increase in breeding habitat availability.

The majority of bird activity recorded during the summer period VP survey related to gull species which are non-breeders at this site. Breeding species which are likely to be active across the assessment site (such as skylark, linnet and yellowhammer) will be normalised to commuting, breeding and foraging close to operational wind turbines. The agricultural grassland habitat is also readily available across the wider site and into the immediate area. As such, displacement from, and the loss of, a limited extent of agricultural grassland habitats to the development is not considered likely to adversely affect the conservation status of these species, or impact local populations. Disturbance/displacement therefore represents a negligible impact to breeding bird species.

Collision estimates vary greatly depending on specific wind farm parameters, such as turbine specification, local topography and land use, as well as between bird species groups whose

¹⁵ Christine Reusch, Maja Lozar, Stephanie Kramer-Schadt, Christian C. Voigt. Coastal onshore wind turbines lead to habitat loss for bats in Northern Germany. *Journal of Environmental Management* 310 (2022) 114715

¹⁶ Ecology Consulting (2021). Report to Renewable Energy Systems Ltd: Kelburn Windfarm: Post Construction Phase Breeding Bird Surveys 2021 (Operational Year 10).

behaviour will also influence collision risk. Although collision estimates appear to provide very precise figures, given the variable assumptions used, these figures should be used as a guide of order of magnitude of predicted collision risk rather than absolute figures (Gittings, 2018¹⁷).

For most target species recorded, the predicted number of collisions is >1 individual, which is considered to be a negligible impact on local populations (Table 12).

Table 12. Estimated collisions for breeding/summer birds target species

Bird species	Collision rate (%)	No. of collisions during summer
<i>Survey data</i>	<i>Average collision risk derived from the SNH probability spreadsheet</i>	<i>With applied avoidance rate and operational time</i>
Black headed gull	8.1	0.055
Buzzard	7.3	0.123
Great Black-backed Gull	9.5	0.03
Herring Gull	9.8	2.074
Kestrel	9.5	0.064
Lesser Black-backed Gull	9.4	0.147

Herring gull were the only species where predicted collisions was >1 during the summer period. The predicted number of collisions was 2.074 per season, compared to 0.272 collisions resulting from the existing wind farm calculated from our survey data. This increase in predicted collisions is consistent with results from St Breock repowering which estimated a mean of 3 collisions per annum. Herring gull is a non-breeder at Bear Downs, using the site and adjacent areas for foraging and roosting.

Observed herring gull activity mostly concerned short flights of 1-3 birds and this species appear to be highly habituated to the existing turbines. Just over two collisions per breeding season is not predicted to impact local breeding populations, while it is anticipated that this species will adapt to presence of new, larger turbines quickly.

For the remaining species considered in Table 12, collision risk is below one collision every five years and would have no adverse effect.

Assessment: It is near-certain that the operational phase will have a negligible effect on local breeding bird populations.

Wintering/passage birds

The assessment site is of Site value for passage/wintering birds.

Passage/wintering species which are active around the assessment site (such as gulls, lapwing and golden plover) will be normalised to commuting, roosting and foraging close to operational wind turbines. The proposed new turbines will not result in the loss of areas where target species have been recorded foraging/roosting. As such, habitat loss is not

¹⁷ Gittings, T. (2018). Derryadd Wind Farm: Collision risk modelling. November 2018.

predicted to adversely affect the conservation status of these target bird species, or impact local populations. Habitat loss therefore represents a negligible impact, and no specific mitigation is recommended.

Disturbance would usually be likely to impact a greater area than direct habitat loss, however in the case of this site where there are already sixteen existing turbines to be replaced by 4 new units, the impact is considered to be lower, as observed bird activity and behaviour suggests normalisation to the presence of operational turbines. As a species group, gulls are generally not considered to be vulnerable to disturbance or displacement.

The operation of the new turbines would involve taller structures (150m tip height) which may result in an increase in disturbance. Analysis of wintering bird activity at other wind farms (Hötter *et al.* 2006¹⁸) suggests that taller turbines can lead to greater disturbance distances, with lapwing in particular being negatively impacted. In the same study, a mean displacement distance for non-breeding lapwing was calculated to be 260m. Lapwing were only recorded during one survey visit which suggests that use of the general area is opportunistic and occasional. In addition, they were recorded foraging in fields beyond the existing site boundary, approximately 200m from the existing turbines. The locations of the new turbines will increase the distance between the turbines and these foraging areas, so that much of these foraging areas will remain beyond 260m from the turbines. This may result in a slightly reduced extent of foraging area, although given the occasional use of the area by lapwing this is not predicted to impact this species at a population level.

As with lapwing, golden plover were not recorded using habitats within Bears Down Wind Farm but within adjacent fields. Studies have documented golden plover displacement distances vary between 50-200m (Hötter *et al.* 2006; Nairn, 2012¹⁹). The bird surveys undertaken for the repowering of St Breock Wind Farm determined that golden plover were displaced by no more than 20m from the existing turbines. The areas where golden plover were recorded foraging at Bears Down will remain beyond 200m of the new turbines and therefore displacement is unlikely to occur.

Another form of operational disturbance that has been shown to impact bird species is disruption of flight lines across a landscape, which may prevent passage/wintering birds accessing areas for foraging. However, given the presence of sixteen existing turbines at the assessment site which have been operational for the past 22 years, and an additional 5 turbines at Denzell Downs (within 1.5km), local bird populations will be normalised to the presence of turbines in the landscape and it is likely they will have already developed flight patterns which take these turbines into account. The replacement of sixteen turbines with four new turbines will help to create a less cluttered airspace, allowing for wider flight lines between turbines. The proposed repowering is therefore very unlikely to create any new barriers within the landscape and birds will be able to continue to use the site, as they are

¹⁸ Hotker, H, Thomsen, K & Jeromin, H (2006). Impacts on biodiversity of exploitation of renewable energy sources: the example of birds and bats – facts, gaps in knowledge, demands for further research, and ornithological guidelines for the development of renewable energy exploitation. Miachael-Otto-Institut im NABU, Bergenhusen.

¹⁹ Nairn, R. (2012). Do wind turbines disturb waterbirds? [Online] Available at:

http://www.ciem.net/data/files/Resource_Library/Conferences/2012_Autumn_Renewables/11-Richard_Nairn.pdf

currently. This impact is considered to be negligible, and no mitigation is recommended for barrier effect.

No specific mitigation for operational disturbance/displacement is recommended.

Collision estimates for passage/wintering species have been calculated for the proposed repowered wind farm. For most target species recorded, the predicted number of collisions per annum is >1 individual, which is considered to be a negligible impact on local populations (Table 13).

Table 13: Estimated collisions for winter/passage target species

Bird species	Collision rate (%)	No. of collisions during passage/winter
<i>Survey data</i>	<i>average collision risk derived from the SNH probability spreadsheet</i>	<i>With applied avoidance rate and operational time²⁰</i>
Black headed gull	8.1	0.455
Buzzard	7.3	0.100
Common Gull	7.6	3.665
Curlew	7.1	0.010
Great Black-backed Gull	9.5	0.100
Golder Plover	5.8	19.143
Herring Gull	9.8	0.739
Kestrel	9.5	0.010
Lapwing	5.6	1.007
Lesser Black-backed Gull	9.4	0.020

Three passage/wintering species were estimated to experience collisions in excess of 1 bird and these are discussed further below.

Common gull

Predicted number of collisions are 3.665 with the repowered wind farm. Collisions for common gull are estimated to be higher than other gulls, as this species was recorded in larger flocks more frequently. A mean of 1.5 collisions was also predicted from the St Breock repowering which was deemed to be a negligible impact.

The order of magnitude with this increase taken into account, remains the same and is predicted to have negligible impact on common gull populations in the local area.

Golden plover

Predicted number of collisions are 19.143. The order of magnitude for the repowered wind farm is fairly consistent with collision estimates for golden plover at similar and nearby wind farms (Denzell Downs – 39.03; St Breock – 27.5; Scotland Corner – 21.25). The collision estimate is based on the biometric data of individual birds and therefore makes an assumption that birds make individual flights. Golden plover are however flock birds and

²⁰ Avoidance rate of 99% and 85% operational time applied to no. of collisions, as detailed in Section 2.4

nearly always congregate in large groups with flocks of up to 250 recorded at Bears Down and up to 800 at St Breock. This behaviour is considered to result in an over representation of 'at risk' bird flights. For example, a flock of 100 birds is regarded as 100 individual flights, however a flock of 100 birds is not necessarily comprised of 100 birds acting individually.

During the surveys, no golden plover collisions were observed, and although large flocks were frequently recorded flying above and between existing turbines, the flocks consistently exhibited avoidance behaviour to existing rotor airspace. This aligns with findings by Whitfield (2007²¹) which suggested actual avoidance rates are likely to be higher than 99% for wading birds including golden plover. Replacement of sixteen turbines with five larger units will result in an increase in combined rotor area, although this will also result in a less cluttered airspace which, based on observed flight behaviour at this site, is predicted to benefit flocking behaviour.

19.143 predicted collisions are approximately 0.1% of the Cornish wintering population, estimated to be in the region of 20000 from available sources²². Based on the background survival rate of 0.73²³, an increase of approximately 19 collisions per winter would increase mortality of the Cornish population to 0.731 and is considered unlikely to have a significant impact.

Lapwing

Predicted number of collisions is 1.007 and reflects the same order of magnitude as the results from bird surveys at Scotland Corner proposal (0.74 collisions).

Lapwing were recorded during only one survey, suggesting that their use of the area around Bear Downs is occasional. Bird surveys undertaken for Denzell Downs Wind Farm did not record any lapwing activity which further suggests that this species is seldom active in this area. Waders such as lapwing are generally considered more susceptible to disturbance than collision, and incidences of recorded collisions are very rare (Hötter *et al.* 2006²⁴).

Given the larger disturbances associated with larger turbines and lapwing described in above, this collision estimate is considered to represent a highly conservative figure, and in reality is likely to be <1 collision per annum. This low number of collisions would have a negligible impact on local populations when viewed in context of the background survival rate of 0.705²⁵.

²¹ Whitfield, D. P. (2007) The effects of Wind Farms on shorebirds (Waders: Charadrii), especially with regard to wintering golden plovers

²² Reported to be 20000 between 2007-2009, from Birds in Cornwall Reports

²³ Obtained from BTO Bird Facts; Survival and longevity. Available at: <https://www.bto.org/understanding-birds/birdfacts/golden-plover>

²⁴ Hotker, H, Thomsen, K & Jeromin, H (2006). Impacts on biodiversity of exploitation of renewable energy sources: the example of birds and bats – facts, gaps in knowledge, demands for further research, and ornithological guidelines for the development of renewable energy exploitation. Michael-Otto-Institut im NABU, Bergenhusen.

²⁵ Obtained from BTO Bird Facts; Survival and longevity. Available at: <https://www.bto.org/understanding-birds/birdfacts/lapwing>

Assessment: It is near-certain that the operational phase will have a negligible effect on local passage/wintering bird populations.

Reptiles

The assessment site is Site value for common and widespread reptiles.

The proposed development will result in a small loss or suitable reptile habitat, although additional habitat will be required as part of biodiversity net gain requirements.

Assessment: It is near-certain that the operational phase will have a negligible effect on local reptile populations.

Invasive Non-native Species (INNS) of Plants

The assessment site is of Confirmed value for INNS. The primary pathway of effect would be potential for accidental spreading of the INNS on or off-site during site clearance or groundworks in affected areas.

Assessment: It is near-certain that the operational phase would no effect on the distribution of this plant.

7. Mitigation

7.1. Construction phase

The following mitigation would be provided to minimise the unavoidable effects during the construction phase:

- Design and delivery of a Construction Environment Management Plan that incorporates ecological protections for all sensitive ecological features. This will include:
 - statement of responsibilities
 - duties of the ecological clerk of works
 - ecological mitigation during the construction phase
 - rigid control of worksite boundaries
 - control of waste
 - storage of materials
 - dust management plan
 - pollution prevention plan
 - invasive non-native species plan
- Precautionary mitigation is recommended to prevent accidental damage to the retained sections hedgebanks during the construction phase. This should involve implementation of a 2 metre protection zone (as a minimum) from the outer edge of all retained hedgebank habitat. During the construction phase this 2m protection zone should include:
 - A temporary fence situated along the outer edge of the protection zone, during the entire construction phase;
 - No storage of machinery, chemicals or other materials, within the protection zone;
 - No ground disturbance or burning within the protection zone;
 - No vehicles tracking within this protection zone;
 - Construction staff briefed during induction as to the purpose of these protection zones.
- Hedgebank loss to temporary construction areas will be mitigated by reinstatement adopting the following method:
 - Careful dismantling of hedgebank and separate storage of stone, topsoil and subsoil in order to reinstate in new location;
 - Hedgebank recreation should follow an accepted methodology such as the best practice method produced by the Guild of Cornish Hedgers²⁶
- Hedgerow realignment along the access track will adopt the following method:
 - Translocation will be completed during winter months under the guidance of a suitably qualified ecologist.
 - Prior to translocation, bank vegetation will be cut back in two stages. The first cut will be 20cm from the bank face and top, followed by a second cut 48hrs later to the bank surface. This will displace any reptiles, were they to be present, into habitats to the rear of the bank. To avoid the bird nesting and

²⁶ Code of Good Practice; Building and repairing Cornish Hedges – The Guild of Cornish Hedgers, 2001. Available at: <https://www.cornishhedgers.org.uk/wp-content/uploads/2021/09/2021-Guild-Code-MASTER.pdf>

reptile hibernation seasons, this pre-commencement management will be completed in the period September to November inclusive. If the bank is not moved immediately, vegetation will be maintained very short until translocation commences.

- Prior to the start of translocation, the top 30cm of soil on the bank will be removed by bladed bucket and stored in a location outside the working area.
- A trench approximately 200mm deep and 2 metres wide will be created in the receptor location to provide a key for the new bank.
- The existing bank will be carefully lifted in sections using a toothed bucket and transported to the new location. The largest machine available will be used in an attempt to maintain some of the bank structure. However, it is accepted that some of the bank structure will not be maintained, although the main aim of this translocation is to retain the seed bank and soils associated with the bank.
- Once the bank material is translocated, it will re-shaped where necessary, with minimum compaction, to create a bank that mirrors the existing bank in width and height and the top soil will be spread over the resulting bank surface and firmed down by trampling.
- After a settling period of 18 months, gaps along the upper surface of the new bank will be planted with a hedgerow of native shrubs comprising a double staggered row of Blackthorn (60%), Hawthorn (20%) and European Gorse (20%).
- Prior to the start of development an update badger survey will be required. If works are likely to affect a badger sett that is in current use, the entrance may need closure before those works can begin.
- To proceed lawfully, works associated with the substation will probably require a Natural England European Protected Species (EPS) mitigation licence for bats. This licence will need to be supported by a mitigation strategy to ensure that bats are not killed or injured during the works, and to make sure alternative roosting opportunities are provided during the works.
- Decommissioning of retired turbines and construction of new turbines carried out as a phased approach to minimise the extent of bird foraging/roosting habitat that is disturbed, and so minimising any fragmentation or constriction of the Site for birds.
- The construction period will be timed to avoid the bird breeding season (March to August, inclusive). If this is not possible, nesting bird checks will need to be undertaken, and within 48 hours prior to any works likely to impact suitable breeding habitat (such as hedgebanks, open field areas and scrub). If active nests are found, they shall be enclosed by a suitable buffer zone and left undisturbed until the nest is no longer active, as confirmed by a suitably qualified ecologist.
- Vehicle and machinery movements should follow only designated routes to help contain disturbance to the works areas.
- Prior to widening of the access track and hedgerow removal/realignment, the following methods will be adopted in relation to reptiles:
 - Construction in period late March to October
 - If construction is to occur during the active reptile season (late March to October), areas to be affected by construction activities should be de-vegetated prior to any site activities under the supervision of a suitably

qualified ecologist. Any grassland, or ecotone between grassland and shrub or bank to be removed or realigned, will initially be strimmed to a height of no more than 20 cm, having first used an ecologist to walk and beat the habitat. This will encourage reptiles to disperse naturally into the neighbouring uncut vegetation. After at least 24 hours, a second cut will be made as close to ground/bank level as possible. This should ensure that any reptiles, if present, are displaced from the construction site onto adjacent intact habitats.

Construction during the period November to mid-March:

- Clearance of areas that may provide hibernacula (such as hedgebanks, hedgerows, scrub and tussocky grassland) should be avoided during these periods as there is unknown potential for hibernating reptiles to be present. If this is planned but unavoidable, it is recommended that vegetation is cut back to bank level during September and October and kept close-managed to deter hibernating reptiles.

7.2. Operational phase

The following mitigation would be provided to minimise the unavoidable effects during the operational phase:

- Handling and storage of chemicals and oils in line with Government guidelines and manufacturers recommendations.

8. Residual impacts

Residual impacts on valued ecological receptors during the construction and operational phases are minimal, with no effect being significant at the level of assessment. Detail of potential impacts and their significance at the level of assessment are given in Table 14. Where no reasonable pathway of effect exists and pre-mitigation impact has been discounted, the receptor is not considered here.

This section does not consider de-commissioning effects as there are too many unknowns at this stage.

Table 14. Summary of residual impacts following mitigation

Receptor (valuation)	Description of impact	Magnitude of potential impact	Level of effect (incl: adverse or beneficial, short term or permanent, short, medium or long term)	Mitigation	Residual impact - Significant / not significant?
Construction phase					
Trelow Downs SSSI (National)	Adverse effects may arise from increased airborne pollution	Minor	Short term, adverse	Adoption of a suitable CEMP	Negligible
Music Water CWS (County)	Adverse effects may arise from waterborne and airborne pollution	Minor	Short term, adverse	Adoption of a suitable CEMP	Negligible
Denzell Downs to Menadew's Plantation CWS (County)	Adverse effects may arise from waterborne and airborne pollution	Minor	Short term, adverse	Adoption of a suitable CEMP	Negligible
Cornish hedgebanks (Local)	Accidental damage, losses during temporary compound creation and damage through realignment along access track	Minor	Permanent, adverse	Protection of retained hedgerows, and restoration/realignment of hedgerows completed under a suitable method statement.	Negligible
Bats – roosting (Site)	Disturbance or harm/injury during removal and installation of new electrical equipment	Minor Potential for offence	Short term, adverse	Works completed under licence with supporting method statement	Minor – not significant at the level of assessment Offence avoided
Badgers (Site)	Damage or destroy this sett entrance or disturb a badger whilst in it	Minor Potential for offence	Permanent, adverse	Closure of sett entrance under licence	Minor – not significant at the level of assessment Offence avoided
Breeding birds (Site)	Temporary loss of nesting habitats, and disturbance/damage to nests and harm to chicks.	Moderate Potential for offence	Short term, adverse	Adoption of a suitable CEMP Construction phase to avoid breeding bird season, or if not possible, nesting bird checks undertaken prior to any works likely to impact suitable breeding habitat. Vehicle and machinery movements should follow only designated routes to help contain disturbance to the works areas	Minor – not significant at the level of assessment Offence avoided
Wintering/passage birds (Site)	Temporary loss of loafing/feeding habitats and disturbance	Minor	Short term, adverse	Adoption of a suitable CEMP Vehicle and machinery movements should follow only designated routes to help contain disturbance to the works areas	Minor – not significant at the level of assessment
Reptiles (Site)	Harm or injury	Minor Potential for offence	Short term, adverse	Works completed under a suitable method statement	Minor – not significant at the level of assessment Offence avoided
Invasive non-native plants (present)	To cause spread	Minor Potential for offence	Temporary, adverse	Adoption of a suitable CEMP	Negligible Offence avoided
Operational phase					

Music Water CWS (County)	Adverse effects may arise from waterborne pollution	Minor	Short term, adverse	Handling and storage of chemicals and oils inline with Government guidelines and manufacturers recommendations.	Negligible
Denzell Downs to Menadew's Plantation CWS (County)	Adverse effects may arise from waterborne pollution	Minor	Short term, adverse	Handling and storage of chemicals and oils inline with Government guidelines and manufacturers recommendations.	Negligible

9. Cumulative effects

Cumulative impacts are those additional changes caused by a proposed development in conjunction with similar developments, or as the combined effect of several developments taken together.

An assessment of the cumulative impact arising from the wind farm development at this site requires that the relevant information relating to the individual impact of adjacent developments is available.

Operational windfarms have already influence the baseline and do not need to be considered here.

Approved developments that have the potential for a cumulative impact, and with sufficient data available within the public domain, are considered.

Cumulative impacts arising from two or more developments may be:

- Additive - effects are summed
- Antagonistic – the cumulative impacts are less than their summed values
- Synergistic – the cumulative impact is greater than the summed impact.

No pending decision applications were found on the Cornwall planning portal within 10km on 29th October 2023.

Cumulative effect is unlikely.