

**Bat Surveys –  
Land at Grouse Hill Caravan Park, Blacksmith Hill,  
Fylingdales, Whitby,  
North Yorkshire**

**January 2024**



Ecology & Forestry Ltd  
Foremans Cottage,  
Kelstern, Louth,  
Lincolnshire,  
LN11 0RG

Tel: 07881 666215  
E-mail: [rodstrawson@btconnect.com](mailto:rodstrawson@btconnect.com)

Report Prepared by Rod Strawson BSc (Hons)

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| Name              | Organisation             | Email Address                   |
|-------------------|--------------------------|---------------------------------|
| Melanie Edwardson | Edwardson Associates Ltd | melanie@edwardsonassociates.com |
|                   |                          |                                 |

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**EXECUTIVE SUMMARY**

|                             |  |
|-----------------------------|--|
| <b>Site Address</b>         | Grouse Hill Caravan Park, Blacksmith Hill, Fylingdales, Whitby, North Yorkshire, YO22 4QH  |
| <b>Grid Reference</b>       | NZ 928003 (approximate centre)   |
| <b>Site Area</b>            | Approximately 0.57 ha (wider site)   |
| <b>Current Site Use</b>     | Improved pasture, cropped for forage, equine grazing and tarmac vehicular access road.   |
| <b>Proposed Development</b> | The survey is required in connection with the North York Moors National Park Authority planning application number: NYM/2023/0168. The proposed works entail an 'Application for erection of one wind turbine (max height to blade tip 27.13 metres) at Grouse Hill Caravan Park, Blacksmith Hill, Fylingdales'.   |
| <b>Results</b>              | There were no man-made features or trees within the survey site with the potential to support roosting bats. Limited bat activity was recorded off site, both commuting (particularly along the access road) and foraging adjacent to the western woodland edge of Wragby Wood. Activity along the western, northern and north eastern site boundaries was not recorded, probably as a result of the exposed nature of wider site. The proposed turbine site is not in proximity to any natural/semi-natural features associated with bat commuting activity. Lower levels of bat activity were recorded in proximity to the turbine site as opposed to foraging activity observed in excess of 50 metres away adjacent to trees and woodland in the wider locality. |
| <b>Requirements</b>         | It is acknowledged that the proposed turbine is located a satisfactory distance from the eastern edge of Wragby Wood where bat activity on site was found to be concentrated. It is recommended that livestock grazing is restricted within a 20 metre radius of the turbine base, to further minimise the risk of bat collisions with turbine blades.   |

## **Bat Surveys – Land at Grouse Hill Caravan Park, Blacksmith Hill, Fylingdales, Whitby, North Yorkshire**

### **1 INTRODUCTION**

The survey is required in connection with the North York Moors National Park Authority planning application number: NYM/2023/0168. The proposed works entail an *'Application for erection of one wind turbine (max height to blade tip 27.13 metres) at Grouse Hill Caravan Park, Blacksmith Hill, Fylingdales'*.

Following receipt of consultee comments dated 23 March 2023:

*'2. Please provide a Bat Scoping Survey. This is to ensure that nature conservation interests are not unduly affected by the development. Guidance can be found in Planning Advice Note 2 – Planning and Biodiversity'*,

Ecology and Forestry Ltd was commissioned by Edwardson Associates Ltd to undertake bat surveys on land at Grouse Hill Caravan Park, Blacksmith Hill, Fylingdales, Whitby, North Yorkshire, YO22 4QH.

The site had been subject to an Ecological Appraisal, undertaken by Ecology & Forestry Ltd, dated January 2020.

This report details the methods used and discusses the results.

#### **1.1 Accurate lifespan of ecological data**

The majority of ecological data remains valid for only short periods of time due to the inherently transient nature of the subject. Where the species/group being surveyed for is present within the site, the data is considered to be accurate for two years. However, an update may be needed in order to obtain a European Protected Species licence, if such a licence is required. Where absent, although the data is considered accurate for two years, an update may be required if the habitats surrounding the site are of a quality that are likely to encourage the species to move into the site in the interim.

### **2 SITE DESCRIPTION**

#### **2.1 Site communities and habitats**

The wider site footprint is comprised exclusively of improved pasture, which is cut annually for forage, and is located at NGR: NZ 928003 (approximate centre) is located in open countryside, approximately south of Blacksmith Hill road and associated hamlet and approximately 300 metres south of the A171 between Normanby and Cloughton. The field is



largely bordered by low, flail managed hawthorn *Crataegus monogyna* dominated hedgerows supporting post and wire livestock fencing. Elements of the boundaries are defined in part by post and wire stock fencing alone and/or remnant hedging. An arrangement of ground mounted solar panels and a shipping container housing a battery bank are present on site, at the southern end of the land parcel and the south eastern corner is horse grazed, utilising temporary electric fencing. The site is accessed via an existing tarmac road.

Site location is shown below in Figure 1. A site location layout of site is given in Appendix 1 as Figure 2.

**Figure 1:**



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## 2.2 Site footprint and access road

The site is comprised of an improved grassland field, bound and divided by a mix of post and wire stock fencing and mechanical flail managed hawthorn dominated hedgerows. The eastern edge of site is defined by an existing tarmac vehicular access road leading to Grouse Hill Caravan Site. This is bordered to the east by a close mown, narrow verge adjacent to a 'gappy; blackthorn dominated hedgerow, further containing hawthorn, semi-mature sycamore *Acer pseudoplatanus*, ash *Fraxinus excelsior* and rowan *Sorbus aucuparia*; often planted in the verge offset from the hedgerow. Adjacent to the western side of the road is an expanse of post and wire stock fence containing elements of hawthorn dominated hedgerow.

The boundary hedgerows are hawthorn dominated. All of these hedgerows are located on low hedge banks, are maintained at approximately 1.5 metres in height in a 'box' shape. Evidence of historical hedge laying is present. No drainage ditches, water courses or water bodies are present. Occasionally present additional woody species present within the hedgerows include:

|                  |                         |
|------------------|-------------------------|
| dog-rose         | <i>Rosa canina</i>      |
| hazel            | <i>Corylus avellana</i> |
| holly            | <i>Ilex aquifolium</i>  |
| ornamental holly | <i>Ilex sp</i>          |

Ground flora is largely comprised of:

|               |                              |
|---------------|------------------------------|
| bracken       | <i>Pteridium aquilinum</i>   |
| Bramble       | <i>Rubus fruticosus</i>      |
| cleavers      | <i>Galium aparine</i>        |
| Cock's-foot   | <i>Dactylis glomerata</i>    |
| common nettle | <i>Urtica dioica</i>         |
| cow parsley   | <i>Anthriscus sylvestris</i> |
| herb-robert   | <i>Geranium robertianum</i>  |
| hogweed       | <i>Heracleum sphondylium</i> |
| Ivy           | <i>Hedera helix</i>          |
| Willowherb    | <i>Epilobium sp</i>          |

The southern boundary is comprised exclusively of post and rail and post and wire fencing. The utilisation of online satellite imagery suggests historical hay and silage production. An area in the south eastern corner of site is given over to equine grazing and associated activities. This is bound by temporary electric fencing. The pasture was found to contain the following species:

|                     |                                  |
|---------------------|----------------------------------|
| bramble             | <i>Rubus fruticosus.</i>         |
| broad-leaved dock   | <i>Rumex sp</i>                  |
| cock's-foot         | <i>Dactylis glomerata</i>        |
| common chickweed    | <i>Stellaria media</i>           |
| common chickweed    | <i>Stellaria media</i>           |
| common nettle       | <i>Urtica dioica</i>             |
| common ragwort      | <i>Senecio jacobaea</i>          |
| common vetch        | <i>Vicia sativa</i>              |
| creeping bent       | <i>Agrostis stolonifera</i>      |
| creeping buttercup  | <i>Ranunculus repens</i>         |
| creeping thistle    | <i>Cirsium arvense</i>           |
| daisy               | <i>Bellis perennis</i>           |
| dandelion           | <i>Taraxacum sp</i>              |
| false oat-grass     | <i>Arrhenatherum elatius</i>     |
| herb-robert         | <i>Geranium robertianum</i>      |
| hogweed             | <i>Heracleum sphondylium</i>     |
| prickly sow-thistle | <i>Sonchus asper</i>             |
| red clover          | <i>Trifolium pratense</i>        |
| red fescue          | <i>Festuca rubra</i>             |
| ribwort plantain    | <i>Plantago lanceolate</i>       |
| rough meadow-grass  | <i>Poa trivialis</i>             |
| rye grasses         | <i>Lolium sp</i>                 |
| scentless mayweed   | <i>Tripleurospermum inodorum</i> |
| timothy             | <i>Phleum pratense</i>           |
| white clover        | <i>Trifolium repens</i>          |
| Yorkshire-fog       | <i>Holcus lanatus</i>            |

The pasture receives applications of artificial fertiliser and herbicide annually (Mr A Butterfield pers. comm).

### 2.3 Surrounding habitats

The site footprint is immediately bordered to the south by a close mown, landscaped playing field, Grouse Hill Caravan Park and associated infrastructure. To the east of the existing tarmac access road, a farmhouse and agricultural buildings, Wragby Wood and further permanent pasture. Fylingdales Moor and permanent sheep grazed pasture, (often rush pasture), is located immediately west. Immediately north is Blacksmith Hill road and adjacent hamlet. Beyond and surrounding, is open moorland, livestock grazed pasture and steep wooded valleys.

### 2.4 Associated buildings

There are no directly associated buildings.

## 3 METHODS

The site was surveyed by Rod Strawson (Natural England bat licence number 2016-11496-CLS-CLS and great crested newt licence number 2016-19648-CLS-CLS). Surveys followed the 2016 Bat Conservation Trust Guidelines 3<sup>rd</sup> Edition, (current at the time of surveys), and Natural England Technical Information Note TIN051: *Bats and onshore wind turbines Interim guidance*. The objectives of the bat activity surveys were:

- To establish the presence of any bat roosts within the site
- To establish bat species composition within the site
- To record and map spatial distribution and temporal bat activity within the site
- To highlight any potential ecological constraints with respect to bats
- To outline further survey work that may be required
- To make suggestions for mitigation, compensation and enhancement of the natural features identified within the project site with respect to bats

Survey work undertaken included:

### 3.1 Bat tree survey

Trees on and adjacent to the proposed development site were assessed for potential suitability for bat roosts by means of a walkover survey. All trees were inspected to assess their potential to hold bat roosts; the following signs were looked for:

- Holes, frost cracks, splits in branches/trunk
- Fissures, hollow sections of trunk, branches and roots
- Broken Limbs and loose bark
- Dense ivy



- Urine staining, droppings, fur rubbing and scratch marks
- Audible squeaking, strong smell of ammonia and flies around potential access points

The trees were inspected with the aid of close focusing binoculars (Minox BL 10 X 42 BR). Bat surveys of trees can be undertaken throughout the year.

Any trees were categorised for their bat roosting potential (Collins, 2016) as described in Table 1 below:

**TABLE 1. BAT ROOSTING POTENTIAL ASSESSMENT – TREES (COLLINS, 2016).**

| <b>CATEGORY</b>   | <b>DESCRIPTION</b>   |
|-------------------|--|
| <b>Negligible</b> | A tree with no potential bat roosting features. (Usually young trees without any deadwood or holes).   |
| <b>Low</b>        | A tree of sufficient size and age to contain potential roost features, but with none seen from the ground or features seen with only very limited roosting potential.  |
| <b>Moderate</b>   | A tree with one or more potential roosting features, which could support bats, but is of a suitability meaning that it would be unlikely to support a roost of high-conservation status. (Such as holes, cracks and crevices and loose bark suitable for roosting bats but no obvious roost signs such as staining and droppings at entrances).  |
| <b>High</b>       | A tree with several potential roosting features which would be able to support a large number of bats on a regular basis and for longer periods of time. (Trees within this category will contain all the obvious roost features such as holes, cracks and crevices and loose bark and will also contain staining and droppings at the roost entrance or have been identified as a roost via a visual sighting of an exiting bat). |

### 3.1.1 Bat Activity surveys

Bat activity surveys were undertaken on 07 June 2023, 12 July 2023 and 29 August 2023. Each survey consisted of a surveyor walking a pre-determined transect route at a steady pace around the site. The transect contained 7 Survey Points (SPs) which the surveyors stopped at for twenty minutes each. The start point of the two transects was varied during the two visits to reduce bias. The weather conditions for all surveys was recorded. During the survey on 07 June 2023 the survey started at SP1, on 12 July 2023 the survey started at SP 3 and 29 August SP 5. The transect surveys began 20 minutes before sunset and continued for up to 2.5 hours after sunset. A full spectrum frequency division detector was used (Echo Touch Meter Pro) and digital recordings made to assist with species identification if required.

The locations of the SPs are shown on Figure 3, given in Appendix 2.

### 3.1.2 Static Monitoring

Between 16 – 25 August and 01 – 07 September 2023, two static bat detectors (Anabat

Express) were deployed on site. The equipment was positioned immediately north of the solar panels on site and on the eastern edge of Wragby Wood, opposite the proposed turbine site (see location on Figure 3).

The equipment recorded between 18.00hrs and 06.00hrs in August and September 2023. Data collected from both static detectors was analysed with the aid of Anabat software.

### 3.2 Survey limitations

Long-eared bats have very quiet calls and these are often not recorded on bat detectors. Where long-eared bats are suspected but the call has not been recorded then the long-eared bat (possible) category has been used.

## 4 RESULTS

### 4.1 Bats

#### Bat tree survey

There were no man-made features or trees within the survey site with the potential to support roosting bats. Any trees contained within the site footprint boundary hedgerows or immediately are young or semi-mature and were considered to offer a 'negligible potential' of bat interest.

Boundary hedgerows and woodland within the locality were thought to offer potential as bat flight and foraging corridors.

### 4.2 Bat activity surveys

Bat activity surveys were undertaken on 07 June 2023, 12 July 2023 and 29 August 2023.

A summary table for each visit is given below.

**Key:** P.pip - Common Pipistrelle, P.pyg - Soprano Pipistrelle, N.noc – Noctule, P.aur – Brown long-eared

**Table 2.** 07 June 2023

| Sample Point | Time          | Bat Activity  |
|--------------|---------------|---|
| 1            | 21.23 – 21.43 | Nil   |
| 2            | 21.45 – 22.08 | Nil   |
| 3            | 22.11 – 22.34 | 22.13 – 22.26 – single P.pip foraging on northern element of access road (x4 passes).         |
| 4            | 22.36 – 22.56 | 22.48 Single P.pip pass (foraging east – west, return on hedgerow north west of survey site). |
| 5            | 22.58 – 22.19 | Nil   |
| 6            | 22.21 – 22.41 | Nil   |
| 7            | 22.43 – 23.03 | Intermittent foraging activity, up to two P.pip and single pass by P.pyg.                     |

The first bats recorded were at 22.13, approximately 40 minutes after sunset and therefore

unlikely to have roosted/emerged close by, with this species typically emerging approximately 20 minutes after sunset. There were only two species noted. Common pipistrelle which was recorded at survey points 3 & 7, with a total of 16 registrations on the bat detector and Soprano pipistrelle which was noted in much smaller numbers and detected only once.

There is likely to be an element of double counting as bats largely moved north/south along the western edge of Wragby Wood and individuals were probably recorded on several occasions.

**Table 3.** 12 July 2023

| Sample Point | Time          | Bat Activity  |
|--------------|---------------|---|
| 3            | 20.14 – 20.24 | Nil   |
| 4            | 20.25 – 20.45 | Nil   |
| 5            | 20.47 – 21.07 | Nil   |
| 6            | 21.08 – 21.28 | Intermittent foraging activity by a single P.pip (under semi-mature trees on caravan site to the south west of survey footprint). |
| 7            | 21.30 – 21.50 | Intermittent foraging activity, up to three P.pip bats along tree line and around farmhouse.                                      |
| 1            | 21.52 – 22.12 | Intermittent foraging activity, up to two P.pip along tree line and a single commuting pipistrelle bat on woodland edge.          |
| 2            | 22.13 – 22.33 | Intermittent foraging activity, up to two P.pip along tree line.  |

The first bats recorded were at 21.08, approximately 34 minutes after sunset and therefore unlikely to have roosted/emerged close by, with this species typically emerging approximately 20 minutes after sunset. There was only a single species noted - common pipistrelle which was recorded at survey points 6, 7, 1 & 2, with a total of 37 registrations on the bat detector.

Again, there is likely to be an element of double counting as bats largely moved north/south along the western edge of Wragby Wood and individuals were probably recorded on several occasions.

**Table 4.** 29 August 2023

| Sample Point | Time          | Bat Activity   |
|--------------|---------------|--|
| 5            | 18.35 – 18.55 | Nil  |
| 6            | 18.56 – 19.16 | Nil  |
| 7            | 19.18 – 19.38 | Intermittent foraging activity, up to 2 P.pip bats along tree line and around farmhouse.   |
| 1            | 19.39 – 19.59 | Intermittent foraging activity, up to 2 P.pip bats along tree line and around buildings. A single pass on woodland edge by a individual P.aur. |
| 2            | 20.00 – 20.21 | 20.17 Single P.pip pass (commuting north-south, on access road).   |
| 3            | 20.23 – 20.43 | Nil  |
| 4            | 20.44 – 21.05 | Three consecutive P.pip passes (foraging east – west, return on hedgerow north west of survey site).   |

The first bats recorded were at 19.18hrs, approximately 23 minutes after sunset, and therefore they probably roosted/emerged close by. Activity was again concentrated around

the farmhouse and buildings, woodland edge and occasionally the access road. Some activity was noted north west of site.

Generally, the level of bat activity was considered lower than the first survey. The weather conditions were fine, with no rain recorded during the survey, but it was blustery with strong winds, which may have impacted bat activity within open areas of the site.

No Noctule *Nyctalus noctula* or *Myotis sp* bats were recorded.

Sample points and general bat activity locations from the surveys are shown in Figure 3, given in Appendix 2.

All surveys clearly show the importance of the boundary hedgerows and woodland for commuting, and foraging activity.

#### 4.3 Static bat activity (Anabat Express)

The static monitoring equipment was located:

- on the northern edge of the solar panel arrangement, (See Figure 3, given in Appendix 2). The equipment was positioned in a north westerly direction to record any bat activity within the locality of the proposed turbine.
- on the eastern edge of Wragby Wood, opposite the proposed turbine location, facing west.

Data recorded on the static Anabats was analysed using Anabat software. Static bat detector locations are shown in Figure 3, given in Appendix 2.

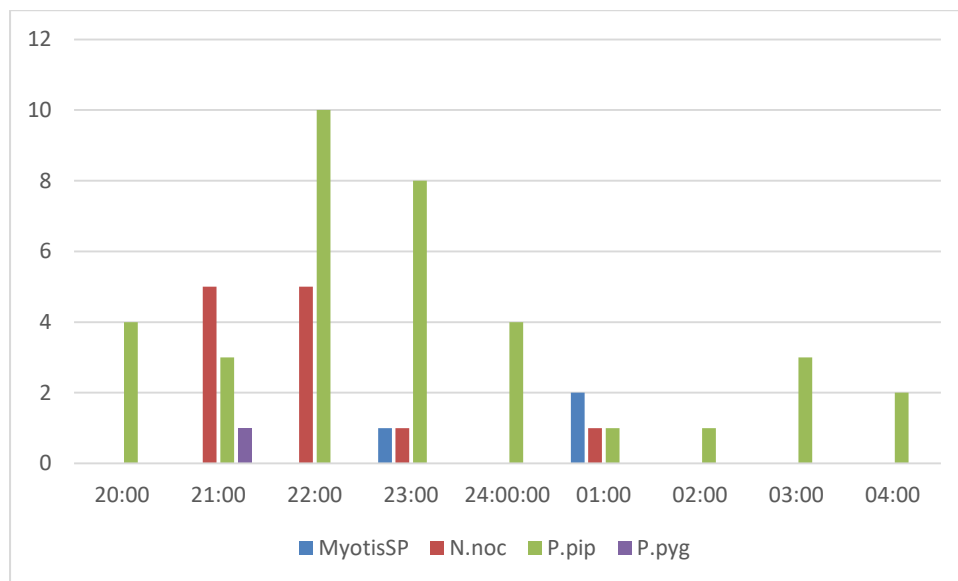
Bats were recorded during all overnight periods. Table 5 shows the number of registrations recorded for each overnight period of static monitoring at the Solar Array 16 August – 25 August 2023:

|                 | 20:00 | 21:00 | 22:00 | 23:00 | 24:00 | 01:00 | 02:00 | 03:00 | 04:00 |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>MyotisSP</b> |       |       |       | 1     |       | 2     |       |       |       |
| <b>N.noc</b>    |       | 5     | 5     | 1     |       | 1     |       |       |       |
| <b>P.pip</b>    | 4     | 3     | 10    | 8     | 4     | 1     | 1     | 3     | 2     |
| <b>P.pyg</b>    |       | 1     |       |       |       |       |       |       |       |

**Table 5. Bat registrations from solar array – 16 August – 25 August 2023**

The Myotis SP is almost certainly Whiskered / Brandt's bat *Myotis mystacinus / brandtii*.  
(P.Pip Common Pipistrelle, P.pyg Soprano Pipistrelle and N.noc Noctule)

Figure 4 illustrates the number of recordings per hour during the recording period:



**Figure 4. Bat registrations per hour from solar array – 16 August – 24 August 2023**

The static equipment recorded for 9 over-night period. The level of activity was extremely variable with no bats recorded on 18<sup>th</sup> August and just individuals recorded on 21<sup>st</sup> and 22<sup>nd</sup> August 2023.

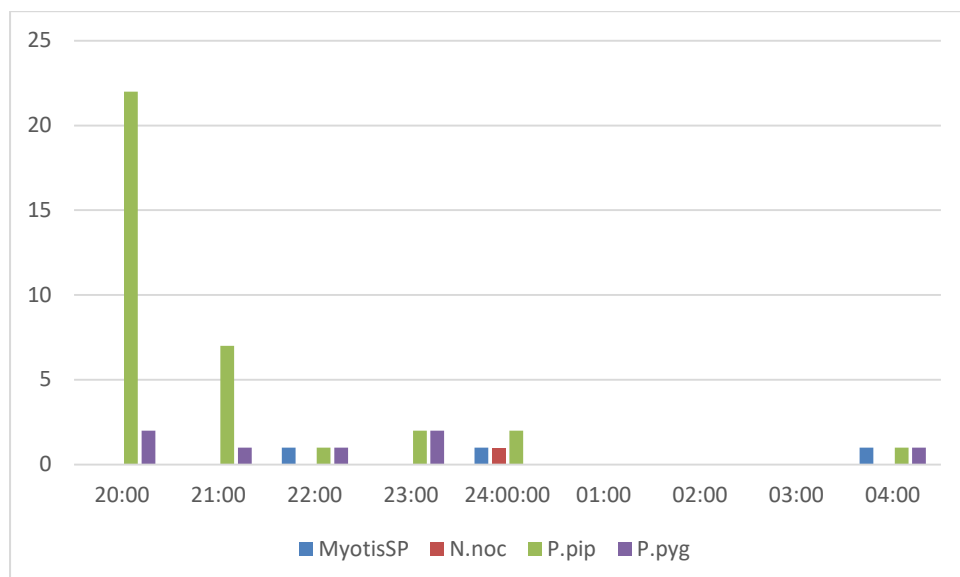
Table 6 overleaf, shows the number of registrations recorded for each overnight period of static monitoring at the Solar Array 01 September – 07 September 2023:

|                 | 20:00 | 21:00 | 22:00 | 23:00 | 24:00 | 01:00 | 02:00 | 03:00 | 04:00 |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>MyotisSP</b> |       |       | 1     |       | 1     |       |       |       | 1     |
| <b>N.noc</b>    |       |       |       |       | 1     |       |       |       |       |
| <b>P.pip</b>    | 22    | 7     | 1     | 2     | 2     |       |       |       | 1     |
| <b>P.pyg</b>    | 2     | 1     | 1     | 2     |       |       |       |       | 1     |

**Table 6. Bat registrations from solar array – 01 September – 07 September 2023**

Figure 5 overleaf, illustrates the number of recordings per hour during the recording period:





**Figure 5. Bat registrations per hour from solar array - 01 September – 07 September 2023**

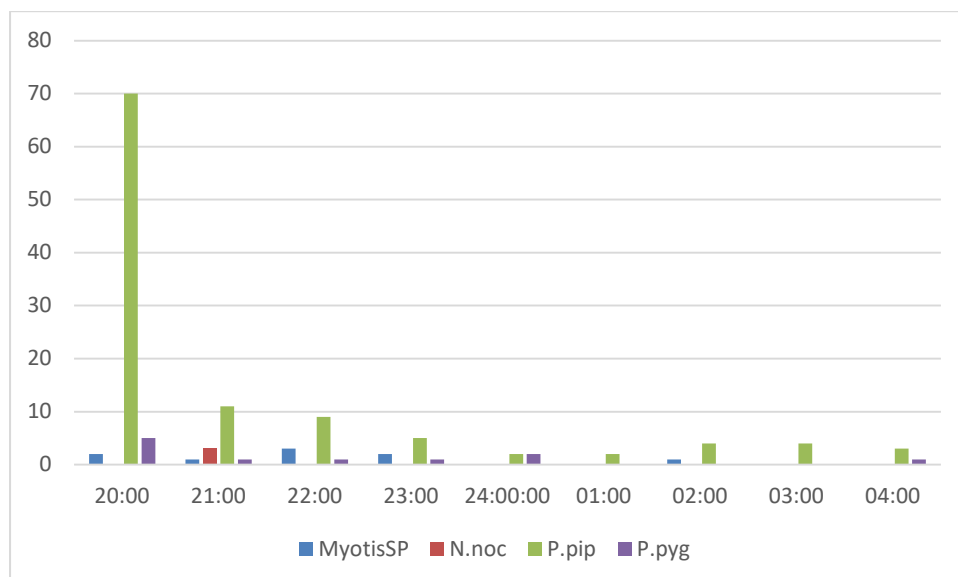
The data was affected by activity on 02 September when over 50% of the common pipistrelle registrations were recorded between 20.00 - 21.00hrs, which was potentially the same individual bat foraging near the survey equipment.

Table 7 shows the number of registrations recorded for each overnight period of static monitoring at the woodland edge, 01 September – 07 September 2023:

|                 | 20:00 | 21:00 | 22:00 | 23:00 | 24:00 | 01:00 | 02:00 | 03:00 | 04:00 |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>MyotisSP</b> | 2     | 1     | 3     | 2     |       |       | 1     |       |       |
| <b>N.noc</b>    |       | 3     |       |       |       |       |       |       |       |
| <b>P.pip</b>    | 70    | 11    | 9     | 5     | 2     | 2     | 4     | 4     | 3     |
| <b>P.pyg</b>    | 5     | 1     | 1     | 1     | 2     |       |       |       | 1     |

**Table 7. Bat registrations from woodland edge – 01 September – 05 September 2023**

Figure 6 overleaf, illustrates the number of recordings per hour during the recording period:



**Figure 6. Bat registrations per hour from woodland edge – 01 September – 05 September 2023**

## 5 DISCUSSION AND RECOMMENDATIONS

All recommendations provided in this section are based on the current understanding of the site proposals, correct at the time the report was compiled. Should the proposals alter, the conclusions and recommendations made in the report should be reviewed to ensure that they remain appropriate.

The following section outlines the assessment of the site and provides recommendations where required.

### 5.1 Bats

#### 5.1.1 Legal protection

In England, Scotland and Wales, all bats are strictly protected under the Wildlife and Countryside Act 1981 (and as amended); in England and Wales this legislation has been amended and strengthened by the Countryside and Rights of Way (CRoW) Act 2000.

Bats are also protected by European legislation; the EC Habitats Directive is transposed into UK law by The Conservation of Habitats and Species Regulations 2010 – often referred to as 'The Habitat Regs'. Taken together, all this legislation makes it an offence to:

- Deliberately capture (or take), injure or kill a bat
- Intentionally or recklessly disturb a group of bats where the disturbance is likely to significantly affect the ability of the animals to survive, breed, or nurture their young or likely to significantly affect the local distribution or abundance of the species whether

in a roost or not

- Damage or destroy the breeding or resting place of a bat
- Possess a bat (alive or dead) or any part of a bat
- Intentionally or recklessly obstruct access to a bat roost
- Sell (or offer for sale) or exchange bats (alive or dead) or parts of bats

A roost is defined as being ‘any structure or place that is used for shelter or protection’, and since bats regularly move roost site throughout the year, a roost retains such designation whether or not bats are present at the time.

### 5.1.2 Discussion

There were no man-made features or trees within the survey site with the potential to support roosting bats. Limited bat activity was recorded off site, both commuting (particularly along the access road) and foraging adjacent to the western woodland edge of Wragby Wood. Activity along the western, northern and north eastern site boundaries was not recorded, probably as a result of the exposed nature of wider site. The proposed turbine site is not in proximity to any natural/semi-natural features associated with bat commuting activity. Lower levels of bat activity were recorded in proximity to the turbine site as opposed to foraging activity observed in excess of 50 metres away adjacent to trees and woodland in the wider locality.

All static Anabats recorded four species of bats: common pipistrelle, soprano pipistrelle, and a myotis species (almost certainly Whiskered / Brandt's bat *Myotis mystacinus* / *brandtii*) and Noctule.

The commonest species was common pipistrelle which made up the majority of all registrations.

Activity near the solar array was extremely variable, which some overnight periods recording no bat activity.

Activity along the woodland edge was dominated by common pipistrelles, mostly in the first hour after dusk.

It is highly likely that during the transect surveys there was both a ‘turnover’ of bats utilising the field boundaries of the survey site and a degree of double counting as bats foraged within the local landscape, with individuals probably recorded on several/many occasions. It is also likely that there is a regular ‘turnover’ of bats which would utilise the survey site throughout the night as animals move around the landscape in response to changing food resources.

The number of registrations along the woodland edge was much higher than at the proposed

turbine location. There is likely to be an element of double counting as bats moved around the site and individuals were probably recorded on several occasions, particularly along the woodland edge where bats are probably foraging. Therefore, the population level is likely to be much lower than the actual total number of bats recorded.

The first bats recorded during both surveys were common pipistrelles, as early as 23 minutes after sunset suggesting that they are probably roosting locally (possibly in woodland west of the survey site).

The results of the transect surveys undertaken and the period of overnight monitoring, suggest that the locality is regularly used by three species of bats (common pipistrelle, soprano pipistrelle and brown long-eared) for both foraging and commuting.

Noctules were recorded locally in very low numbers, they are a high flying and wide-ranging species. The survey results do not suggest this species is linked with the survey site.

Bats typically forage in/over woodlands, scrub, hedgerows, unimproved/semi-improved pasture, field margins and over water. Decline and deterioration of foraging habitat and its fragmentation due to agricultural intensification and development, is probably the principal cause of the decline of bat populations over the last hundred years.

Many bat species in the UK are reluctant to cross open ground, and so usually commute between their foraging areas and roosts, following linear features such as hedgerows, lanes, fence-lines, watercourses and along woodland edges. Such features are vital to bats for orientation, attracting prey, and affording shelter from the elements and predators; they facilitate both movement within existing home ranges and wider dispersal.

The information currently available on bat behaviour in the UK is not sufficient to assess the threat that wind turbines may pose to populations. Anecdotal records of individual collisions exist but no quantified data at the colony or population level are available (Natural England 2014).

The wider site boundaries and is believed to offer good foraging potential for a number of bat species, particularly along existing hedgerows on the wider site. The proposed turbine is relatively small, (max height to blade tip of 27.13 metres) and bats probably move around the features relatively quickly. The proposed location of the turbine is not in relative proximity to any semi-natural feature likely to be utilised by bats for foraging or commuting purposes. The wider land parcel within which the proposed turbine is to be located is not livestock grazed. However, the immediate locality is currently horse grazed. As such, faeces deposited by the grazing animals will play host to an increased level and diversity of insect life which could

encourage foraging by bats.

For this site it is recommended that the following recommendation is considered:

### 5.1.3 Recommendation

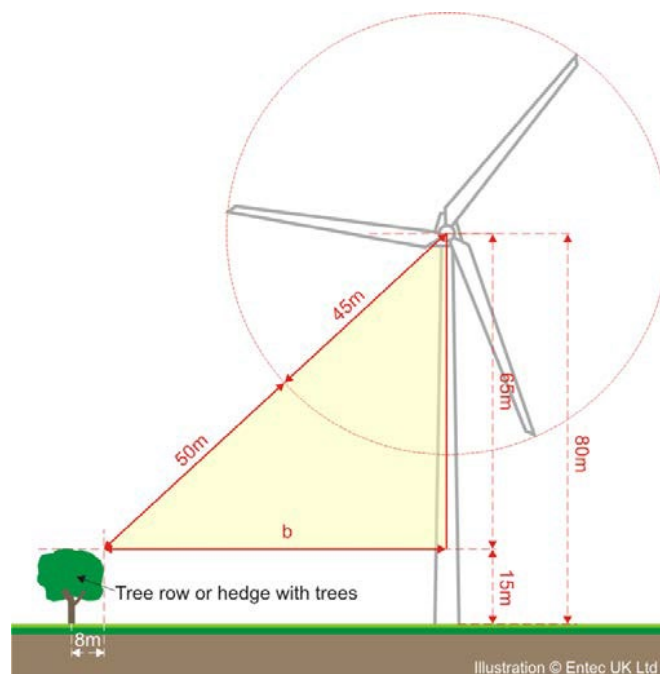
Ten species of bat are currently known to occur in the North York Moors National Park and all are covered by this plan. UK BAP species present include the soprano pipistrelle, the noctule and the brown long-eared. The other species recorded are the common pipistrelle, Nathusius' pipistrelle, whiskered, Brandt's, Daubenton's and Natterer's bats. Alcaethoe bat is a recent addition to the UK bat species list and was discovered at the windy pits in 2010.

(North York Moors Biodiversity Action Plan – Bat Species Action Plan 2013-2017)

The following recommendation is taken from Natural England Technical Information Note TIN051: *Bats and onshore wind turbines Interim guidance*:

To minimise risk to bat populations our advice is to maintain a 50 m buffer around any feature (trees, hedges) into which no part of the turbine intrudes. This means the edge of the rotor-swept area needs to be at least 50 m from the nearest part of the habitat feature. Therefore, 50m should be the minimum stand-off distance from blade tip to the nearest feature.

It is incorrect to measure 50 m from the turbine base to habitat feature at ground level as this would bring the blade tips very close to the canopy of a tall hedgerow tree and potentially put bat populations at risk. Instead, it is necessary to calculate the distance between the edge of the feature and the centre of the tower ( $b$ ) using the formula:  $b = \sqrt{(50 + bl)^2 - (hh - fh)^2}$



where:  $bl$  = blade length,  $hh$  = hub height,  $fh$  = feature height (all in metres).

For the example above,  $b = 69.3$  m (Natural England 2014).



It is acknowledged that the proposed turbine is located a satisfactory distance from the eastern edge of Wragby Wood where bat activity on site was found to be concentrated.

It is recommended that livestock grazing is restricted within a 20 metre radius of the turbine base, to further minimise the risk of bat collisions with turbine blades.

## 6 REFERENCES

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North York Moors National Park Biodiversity Duty Statement

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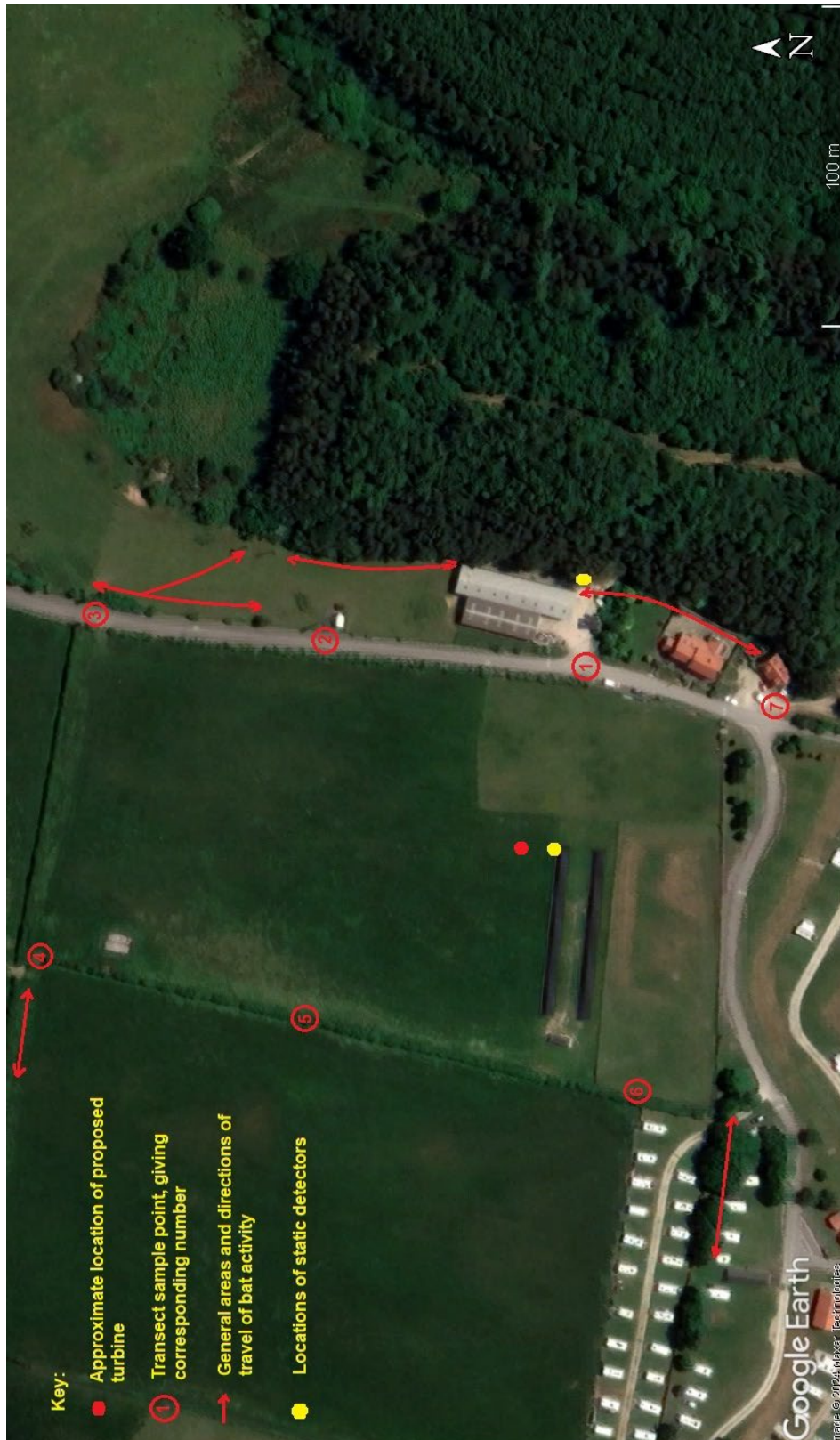
APPENDIX 1  
Figure 2: Site Plan



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APPENDIX 2

Figure 3: Plan showing transect sample points, general bat activity and location of static detectors



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