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PUBLIC

Rhondda Cynon Taf County Borough Council

GOAT MILL ROAD RIBA STAGE 2

Bat Survey Report

October 2025

70121691-WSP-74-XX-RP-L0007



Merthyr Tydfil County Borough Council

GOAT MILL ROAD RIBA STAGE 2

Bat Survey Report

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1 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

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Signature				
Checked by	Trevor Fletcher (Senior Ecologist)			
Signature				
Authorised by	Geraint Pitman (Associate Ecologist)			
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NIGHT-TIME BAT WALKOVER (NBW) SURVEY DATA TABLES

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VALUING BATS IN ECOLOGICAL IMPACT ASSESSMENT (WRAY ET AL.)

EXECUTIVE SUMMARY

Site Location:

The Site of a proposed business enterprise park is on land north of the A4102 Goat Mill Road, Pen-y-Darren, Merthyr Tydfil (approximate British National Grid (BNG): S0 0617706853).

Bat activity surveys including Night-time Bat Walkover surveys and bat static detector surveys were carried out on the Site. The objective was to identify any ecological constraints in relation to bats associated with the proposed development.

Surveys were undertaken between June and October in 2024.

The results of the survey were as follows;

- Two species of bat were recorded across the three Night-time bat walkover surveys; common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*.
- Generally bat activity recorded during the Night-time bat walkovers was low across the Site.
- During the static detector deployment surveys seven distinct species and one group identified to genus level were recorded.
- Notable species recorded during the static detector deployment surveys included greater horseshoe *Rhinolophus ferrumequinum* and lesser horseshoe *R. hipposideros*.
- The Site was assessed as having regional importance for foraging habitat and commuting routes.

Recommendations and mitigation include;.

- Lighting should be carefully designed to minimise impact on bats.
- Woodland habitat should be shielded using natural planting to ensure dark commuting routes and foraging habitat is maintained.
- General bat mitigation must be followed for the duration of the works.
- Further surveys are recommended to monitor the impact on bats from the post-development works. Activity surveys should be undertaken in years 1 and 3 after completion.

Ecological enhancement measures recommended for the Site include;

- Installation of three summer roost boxes for bats.
- Landscape design to include planting of grassland edges to enhance the area for invertebrates.

Contact name Geraint Pitman

Contact details +44(0)7876356277 | Geraint.Pitman@wsp.com

1 INTRODUCTION

1.1 BACKGROUND

1.1.1. WSP were commissioned by Merthyr Tydfil County Borough Council (MTCBC) to carry out bat surveys including Nighttime Bat Walkover (NBW) surveys and static detector surveys of an area of land adjacent to Goat Mill Road, Merthyr Tydfil (approximate central grid reference (CGR): SO 06177 06853).

1.1.2. Potential for foraging and commuting bats was identified during the Preliminary Ecological Appraisal (PEA) survey undertaken in February 2024 (Redstart, 2024).

1.1.3. This report includes details of the survey methodologies and results and contains recommendations for further survey, and mitigation measures and post-construction monitoring where needed.

1.1.4. The area of proposed works will be described as “the Site” throughout this report.

1.2 SITE DESCRIPTION

1.2.1. The Site is located in Pen-y-Darren, east of Merthyr Tydfil. The A4060 lies to the east of the Site and

1.2.2. The Site is located in Pen-y-Darren, east of Merthyr Tydfil and is bound to the east by the A4060 and to the west and north by the A4102 Goat Mill Road which links to residential and industrial areas. Land to the east of the A4060 comprises open moorland and opencast mine workings.

1.2.3. The Site comprises an area of reclaimed land, formerly the location of Dowlais Great Tip which was associated with Dowlais ironworks. The Site is surrounded by plantation woodland with the central area comprising sparsely vegetated grassland with patches of bare ground and scattered trees. There are engineered watercourses within the Site.

1.2.4. The Site is frequently used by recreational walkers/ dog walkers and does not appear to be under any current management.



Figure 1-1 - The approximate boundary of the Site is outlined in yellow. Adapted from Google Earth (Google Earth, 2024). Not to scale.

1.3 PROPOSED DEVELOPMENT

1.3.1. This report has been completed in advance of enabling works on the Site, which will include vegetation clearance and ground investigation works. The long-term vision for the Site is for the development of a business enterprise park, comprising mixed use commercial and industrial premises, with individual plots of land within the Site being sold to developers by MTCBC once essential infrastructure is in place.

1.4 PLANNING POLICY AND LEGISLATION

1.4.1. Bats (and their habitat) are protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Under this legislation it is an offence to:

- deliberately capture, kill or injure a bat;
- deliberately disturb wild bats (disturbance is defined as any activity likely to impair the ability to breed, reproduce, rear or nurture young, hibernate, migrate and/or significantly affect the local distribution or abundance of the species);
- damage or destroy a breeding site or resting place (i.e., roost; and
- possess, control, transport, sell, exchange, offer for sale or exchange, any live or dead animal or part of an animal.

1.4.2. Bats are also partially protected under the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally or recklessly:

- damage or destroy any structure or place which bats use for shelter or protection;
- disturb bats while occupying a structure or place which is used for shelter or protection; and
- obstruct access to any structure or place which bats use for shelter or protection.

1.4.3. Noctule bat *Nyctalus noctula*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and brown long-eared bat *Plecotus auritus* are also listed on Section 7 of the Environment (Wales) Act 2016 as species of principal importance for maintaining and enhancing biodiversity in Wales. Additionally, under Section 6 of the Act, public authorities (including Welsh Government) must “seek to maintain and enhance biodiversity” and to “promote the resilience of ecosystems”.

2 METHODOLOGY

2.1 NIGHT-TIME BAT WALKOVER (NBW)

2.1.1. Three NBW surveys were undertaken between 17th June and 10th October 2024 by experienced bat surveyors.

2.1.2. The survey included a Vantage Point (VP) survey and a walkover survey. The VP started at both the northern and southern ends of the Site, alternating for each survey. The walkover survey followed a pre-determined route with scope for deviation where surveyors identified higher levels of bat activity away from the pre-determined route.

2.1.3. The survey was undertaken in conditions conducive to bat activity i.e., little or no rain and temperature in excess of 10°C (Mitchell-Jones and McLeish, 2004).

2.1.4. The VP survey started approximately 10 minutes before sunset and continued for 45 minutes after sunset, when the walkover started.

2.1.5. Surveys were undertaken in line with the Bat Conservation Trust (BCT) best practice guidelines (Collins, 2024).

2.1.6. Table 2-1 shows the start/finish time, sunset time, and environmental conditions for the surveys.

Table 2-1 - Summary of NBW survey times and environmental conditions (wind speed shown as Beaufort Scale).

Survey Date	Sunset Time	VP Start Location	VP Start Time	VP Finish Time	NBW Start Time	NBW Finish Time	Temp Start (°C)	Temp Finish (°C)	Rain	Wind Speed
17/06/2024	21:35	South	21:25	22:20	22:20	23:36	16	14	None	0
12/08/2024	20:45	North	20:30	21:30	21:30	22:38	17	14	None	1SW
10/10/2024	18:30	North	18:20	19:20	19:20	20:26	8	8	None	0

2.1.7. Surveyors were equipped with either SSF Bat 2 or Batbox Duet heterodyne/frequency division bat detectors to aid identification of species encountered. An Anabat Swift passive bat detector/Elekon Batlogger M2 was also used in transect mode to provide a GPS location for each of the bats recorded. All bat activity and bat species encountered were documented using a transect recording form. Bat sonograms were analysed to identify bats recorded to species level where possible with reference to (Russ, 2021) and (Middleton et. Al, 2014). Data tables for NBWs can be found in Appendix A, and the location of bats recorded in Drawings 70121691-RED-74-XX-M2-L-3009 to 3012.

2.2 STATIC DEPLOYMENT

2.2.1. Static detectors were deployed in discrete locations across the Site. The static detectors were deployed for seven consecutive nights per visit between July and October 2024 inclusive. Detectors deployed were Anabat Swift models to allow full spectrum sonograms to be captured. Detectors were deployed randomly each month so that variations in the operation of individual detectors wouldn't adversely affect or influence the data recorded.

2.2.2. Bat detector locations were chosen to provide a sample of bat activity from each habitat present within the Site to identify bat foraging areas and commuting routes. Data was recorded from half an

hour before sunset to half an hour after sunrise, the period during which bats are usual active and away from their roosts. The duration of the recording per night varied throughout the survey period according to the duration of day/night length. The bat detector sound files were then analysed using Anabat Insight software to assess the level of bat activity at each location.

2.2.3. Grid references of each static detector location are provided in Table 2-2 below and are shown in Drawing 70121691-RED-74-XX-M2-L-3006.

Table 2-2 – Static detector locations

Location	NGR	Details
1	SO 06355 07204	Installed on willow *Salix* sp., facing south towards drainage channel
2	SO 06355 07016	Installed on an Italian alder *Alnus cordata* tree, facing east towards woodland
3	SO 06201 06789	Installed on silver birch *Betula pendula*, facing grassland.
4	SO 06217 06593	Installed on cherry *Prunus* sp. tree, facing north adjacent to dried water channel
5	SO 06245 06450	Installed on willow tree, facing east towards woodland.
6	SO 06105 07061	Installed on willow tree, facing north within a small opening in woodland on the west of the Site.

2.3 ANALYSIS OF BAT ECOLOCATION DATA

2.3.1. Full spectrum sound files from Anabat Swifts were analysed in Anabat Insight using the Bat-Classify Auto ID program. 10% of the data was manually checked for files identified as common pipistrelle, soprano pipistrelle, or noise. Where bat species were being consistently identified within noise files, the noise checks were increased until no further bats were detected. 100% of the data was manually checked for all the other bat species. Bat species which are rarer or have more complex calls, or any calls which could not be identified, were referred by the first checker to a bat licensed ecologist. Validating the data through manual checks follows the Bat Conservation Trust (BCT) best practice guidelines (Collins, 2024).

2.3.2. Bats from the *Myotis* genus produce frequency modulated calls with overlapping call parameters and often cannot be reliably distinguished to a species level on call alone. As such, Myotis calls were identified as Myotis sp. If undetermined.

2.3.3. The initial check of sound files was carried out by Megan Watts (Ecologist) and rarer species and queries were checked by Natural Resources Wales (NRW) bat licence holder Richard Poole (Principal Ecologist).

2.3.4. Table 2-3 is a key to abbreviated species names used throughout the report. Tables 3-1 to 3-6 in Section 3.2 show the number of passes of different bat species the static detectors recorded throughout the survey period.

Table 2-3: Key to abbreviated species names.

Abbreviation	Full species name
Pp	Common pipistrelle *Pipistrellus pipistrellus*
Ppy	Soprano pipistrelle *Pipistrellus pygmaeus*

Abbreviation	Full species name
Myotis	Myotis species *Myotis*
Mdau	Daubenton's bat *Myotis daubentonii*
Rfer	Greater horseshoe bat *Rhinolophus ferrumequinum*
Rhip	Lesser horseshoe bat *Rhinolophus hipposideros*

2.4 BAT ACTIVITY INDEX

2.4.1. To ensure that results from each static detector location was comparable the data was transformed to the number of bat passes per hour, for use as a Bat Activity Index (BAI), using the following equation:

2.4.2. $$\text{Bat Activity Index} = \frac{\text{Total bat passes recorded at a location}}{\text{Total number of hours the detector was recording}}$$

2.4.3. This data transformation allows adjustment for the differences in the hours of recording due to detector failures or varying dates of deployment as well as the variations in night length throughout the year.

2.5 OVERALL VALUE OF THE SITE FOR BATS

2.5.1. The Site was evaluated using Chartered Institute of Ecology and Environmental Management (CIEEM) guidance (Wray *et al*., 2010) to determine its value for roosting, foraging and commuting bats.

2.5.2. Valuation of site importance is made with reference to a geographical framework, e.g., a site is of local, regional, national value etc., the species assemblage and relative levels of activity recorded at the Site were considered in the context of national abundance and geographical range of the species concerned. Tables detailing the evaluation process and scoring are found in Appendix B.

2.5.3. The importance of the biodiversity resource and the magnitude and significance of impacts on bats from the proposed development was determined using the Conservation Status of British Mammals (Mathews *et al*., 2018).

2.6 SURVEY CONSTRAINTS

Recording of Acoustic Data

2.6.1. Each bat species differs in its likelihood of detectability, repetition rate and call intensity. Additionally, there is also variation in the sensitivity of different models of bat detectors to different bat calls and this variation should ideally be taken into account when using particular bat detectors.

2.6.2. Detectors may also be positioned in a way that limits the amount of data collected e.g., placed facing a roost feature may result in partial calls being recorded when bats are flying behind the detector. Sensitivity settings may also affect the quantity of data recorded as detectors may have had the sensitivity adjusted to survey a noisy environment and not reset for use at a quiet location.

General

2.6.3. Any ecological survey can only identify what was present on site at the time it was conducted, and habitat use by species can change over time. The length of time that the survey data remains valid will depend on a case-by-case basis, but it is generally considered that if the development or

proposed works do not commence within 2 years of the date of this report an update may be required (CIEEM, 2019).

3 RESULTS

3.1 NIGHT-TIME BAT WALKOVER (NBW)

3.1.1. The results of the NBW visits are provided in Appendix A (NBW Tables). Figures 3-1 to 3-3 show the location of species recorded during the NBW visit, locations can also be seen in Drawings 70121691-RED-74-XX-M2-3009 to 3011 and a full overview of bat locations across the Site are in Drawing 70121691-RED-74-XX-M2-L-3012.

VISIT 1 – 17TH JUNE 2024

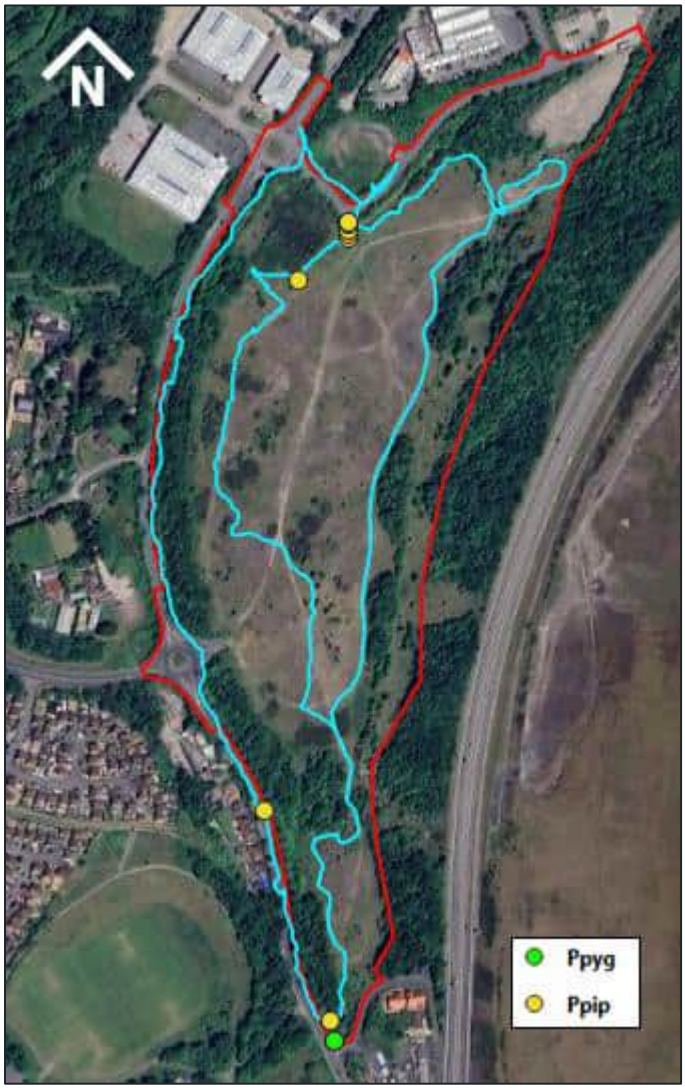


Figure 3-1 - Location of bat species recorded during Visit 1. The Site is highlighted in red and route walked is highlighted in blue (adapted from Google Satellite, 2024).

3.1.2. **Summary of Visit 1 –** The Vantage Point (VP) survey started at 21:25 at the southern end of the Site. Three bats were recorded during the VP survey, the first was a pipistrelle species commuting along a hedgerow, common and soprano pipistrelle were also recorded during the VP survey. At 22:20 the VP survey ended and NBW started. The only species recorded during the NBW was common pipistrelle with most of the activity being recorded at the northern end of the Site. Bat activity across the Site was low. The survey ended at 23:36 at the northern end of the Site.

3.1.3. Common and soprano pipistrelle were the only species recorded with the Anabat Swift detector, with 17 passes of common pipistrelle and one pass of soprano pipistrelle.

VISIT 2 – 12TH AUGUST 2024

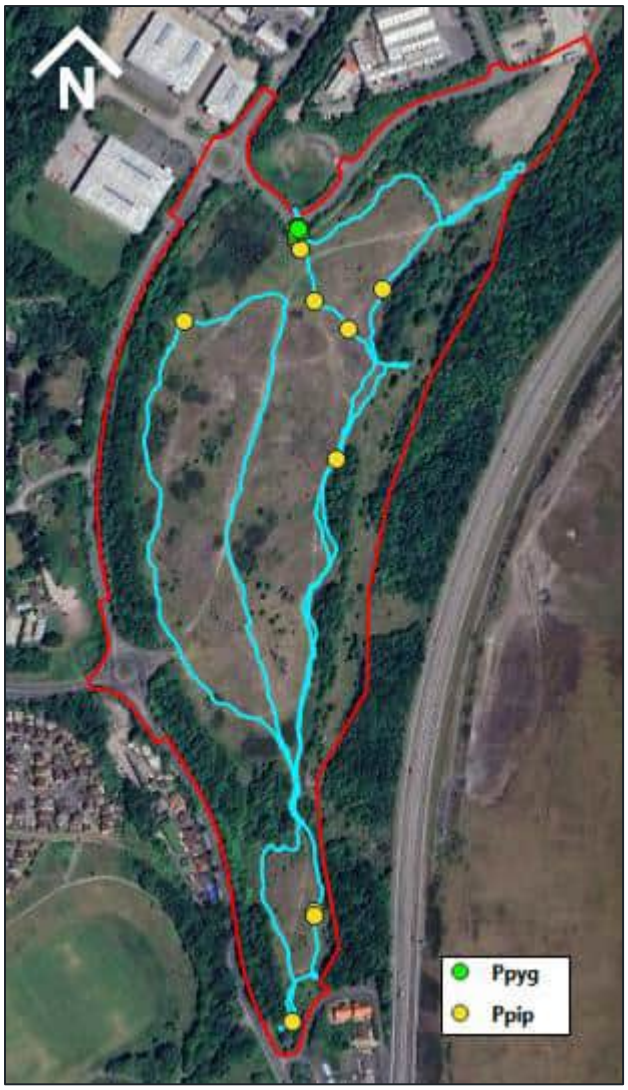


Figure 3-2 - Location of bat species recorded during Visit 2. The Site is highlighted in red and route walked is highlighted in blue (adapted from Google Satellite, 2024).

3.1.4. **Summary of Visit 2 –** The VP survey started at 20:30 at the northern end of the Site. During the VP at least five common pipistrelles were recorded commuting west to east and at least two soprano pipistrelles were recorded commuting east to west. Regular passes of both common and soprano pipistrelle was recorded until the end of the VP. Bats were passing between the tree lines west and east. At 21:30 the VP survey ended and NBW started. The only species recorded during the NBW was common pipistrelle with activity throughout the Site. The survey ended at 22:38 at the northern end of the Site.

3.1.5. Common and soprano pipistrelle were the only species recorded with the Anabat Swift detector, with 28 passes of common pipistrelle and six passes of soprano pipistrelle.

VISIT 3 – 10TH OCTOBER 2024

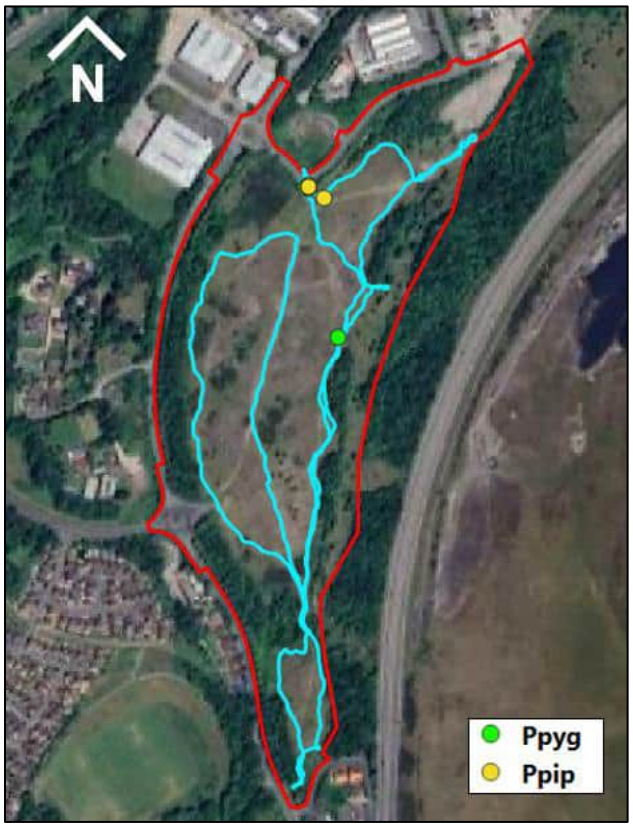


Figure 3-3 - Location of bat species recorded during Visit 3. The Site is highlighted in red and route walked is highlighted in blue (adapted from Google Satellite, 2024).

3.1.6. **Summary of Visit 3 –** The VP survey started at 18:20 at the northern end of the Site. During the VP at least two common pipistrelles were recorded commuting west to east and one soprano pipistrelle was recorded commuting east to west. Regular passes of common pipistrelle were recorded until the end of the VP. At 19:20 the VP survey ended and NBW started. Only common and soprano pipistrelle were recorded during the NBW and the bat activity levels were low, with only four bat passes recorded during the NBW. The survey ended at 20:26 at the northern end of the Site.

3.1.7. Common and soprano pipistrelle were the only species recorded with the bat logger detector, with eight passes of common pipistrelle and three passes of soprano pipistrelle.

3.2 STATIC DETECTOR DEPLOYMENT

STATIC DETECTOR LOCATION 1

3.2.1 Table 3-1 shows the number of passes of each bat species the static recorded throughout the survey period.

Table 3-1: Total bat passes per species – Static detector location 1.

Date	Ppip	Ppyg	Myotis	Mdau	Rfer	Rhip	Nnoc	Paur
July 2024	51	0	0	0	0	0	0	0
August 2024	26	2	0	0	0	0	0	0
October 2024	39	8	0	1	0	0	0	0

Date	Ppip	Ppyg	Myotis	Mdau	Rfer	Rhip	Nnoc	Paur
Total	115	10	0	1	0	0	0	0
BAI	0.75	0.06	0	0.01	0	0	0	0

STATIC DETECTOR LOCATION 2

3.2.2 Table 3-2 shows the number of passes of each bat species the static recorded throughout the survey period.

Table 3-2: Total bat passes per species – Static detector location 2.

Date	Ppip	Ppyg	Myotis	Mdau	Rfer	Rhip	Nnoc	Paur
July 2024	1	0	0	0	0	0	0	0
August 2024	128	14	0	3	0	0	1	2
October 2024	35	1	0	0	0	0	0	0
Total	164	15	0	3	0	0	1	2
BAI	0.75	0.07	0	0.01	0	0	0.00	0.01

STATIC DETECTOR LOCATION 3

3.2.3 Table 3-3 shows the number of passes of each bat species the static recorded throughout the survey period.

Table 3-3: Total bat passes per species – Static detector location 3.

Date	Ppip	Ppyg	Myotis	Mdau	Rfer	Rhip	Nnoc	Paur
July 2024	1	0	0	0	0	0	0	0
August 2024	76	7	0	0	0	0	1	1
October 2024	343	29	0	1	0	0	0	1
Total	420	36	0	1	0	0	1	2
BAI	1.92	0.16	0	0.00	0	0	0.00	0.01

STATIC DETECTOR LOCATION 4

3.2.4 Table 3-4 shows the number of passes of each bat species the static recorded throughout the survey period.

Table 3-4: Total bat passes per species – Static detector location 4.

Date	Ppip	Ppyg	Myotis	Mdau	Rfer	Rhip	Nnoc	Paur
July 2024	46	3	0	5	4	0	0	0
August 2024	14	4	0	2	0	0	1	0

Date	Ppip	Ppyg	Myotis	Mdau	Rfer	Rhip	Nnoc	Paur
October 2024	4	1	0	0	0	1	0	0
Total	64	8	0	7	4	1	1	0
BAI	0.29	0.04	0	0.03	0.02	0.00	0.00	0

STATIC DETECTOR LOCATION 5

3.2.5 Table 3-5 shows the number of passes of each bat species the static recorded throughout the survey period.

Table 3-5: Total bat passes per species – Static detector location 5.

Date	Ppip	Ppyg	Myotis	Mdau	Rfer	Rhip	Nnoc	Paur
July 2024	33	44	0	2	2	0	9	0
August 2024	27	12	0	7	0	0	6	0
October 2024	77	3	4	0	0	1	0	0
Total	137	59	4	9	2	1	15	0
BAI	0.62	0.27	0.02	0.04	0.01	0.00	0.07	0

STATIC DETECTOR LOCATION 6

3.2.6 Table 3-6 shows the number of passes of each bat species the static recorded throughout the survey period.

Table 3-6: Total bat passes per species – Static detector location 6.

Date	Ppip	Ppyg	Myotis	Mdau	Rfer	Rhip	Nnoc	Paur
July 2024	Detector failure							
August 2024	149	20	0	2	0	0	0	0
October 2024	31	7	0	0	0	2	0	1
Total	180	27	0	2	0	2	0	1
BAI	1.14	0.17	0	0.01	0	0.01	0	0.01

SUMMARY

3.2.7 Table 3-7 below provides a summary of the above tables and shows the monthly totals for each bat species recorded between June 2024 and October 2024, together with the total time each static detector was deployed.

Table 3-7: Static 1-6 locations monthly totals for passes recorded.

Static Location	Ppip	Ppyg	Myotis	Mdau	Rfer	Rhip	Nnoc	Paur	Total Time (hrs)
Static 1	116	10	0	1	0	0	0	0	154.17
Static 2	183	15	0	3	0	0	1	2	219.07
Static 3	420	36	0	1	0	0	1	4	218.2
Static 4	64	8	0	7	4	1	1	0	221.48
Static 5	137	59	4	9	2	1	15	0	220.35
Static 6	180	27	0	2	0	2	0	1	158.48
Total	1100	155	4	23	6	4	18	7	1191.72

3.3 BAT ACTIVITY

3.3.1. Static detectors recorded 1317 bat passes during their deployment between July 2024 and October 2024. A total of seven species and one taxonomic family were confirmed and these were:

- Common pipistrelle
- Soprano pipistrelle
- Myotis species
- Daubenton's bat
- Greater horseshoe bat
- Lesser horseshoe bat
- Noctule bat
- Brown long-eared bat

3.3.2. The Bat Activity Index (BAI) for each species group at each static location is shown in Table 3-8 below.

Table 3-8: BAI for Statics 1 – 6 showing static locations with the highest BAI for each species recorded highlighted in green. BAI recorded to 2 decimal places.

Static Location	Ppip	Ppyg	Myotis	Mdau	Rfer	Rhip	Nnoc	Paur
Static 1	0.75	0.06	0	0.01	0	0	0	0
Static 2	0.75	0.07	0	0.01	0	0	0.00	0.01
Static 3	1.92	0.16	0	0.00	0	0	0.00	0.01
Static 4	0.29	0.04	0	0.03	0.02	0.00	0.00	0
Static 5	0.62	0.27	0.02	0.04	0.01	0.00	0.07	0
Static 6	1.14	0.17	0	0.01	0	0.01	0	0.01

GREATER HORSESHOE BATS

3.2.8 Greater horseshoe bats were recorded on Static Detector Location 4 and Static Detector Location 5. A total of six passes were recorded over the survey period.

3.2.9 Static Detector Location 4 saw the highest BAI for greater horseshoe with 0.02 (four passes over 221.48 hours). The most passes was recorded on Static Detector Location 4 in week 1 (July 2024, four passes).

LESSER HORSESHOE BATS

3.2.10 Lesser horseshoe bats were recorded on Static Detectors Locations 4, 5 and 6. A total of four passes were recorded, all within the Week 3 deployment (October 2024).

3.2.11 Static Detector Location 6 saw the highest BAI for lesser horseshoe with 0.01 (two passes over 158.48 hours).

PIPISTRELLE BATS

3.2.12 Both common and soprano pipistrelle bats were recorded at all static locations. A total of 1100 passes of common pipistrelle was recorded and 155 soprano pipistrelle passes over the survey period.

3.2.13 Static Detector Location 3 saw the highest BAI for common pipistrelle with 1.92 (420 passes over 218.2 hours). Static 5 had the highest BAI for soprano pipistrelle with 0.27 (59 passes over 220.35 hours).

MYOTIS BATS

3.2.14 Daubenton's bat was recorded at all static locations, and Myotis species were only recorded on Static Detector Location 5. A total of 23 passes of Daubenton's bat was recorded and four passes of Myotis species.

3.2.15 Static Detector Location 5 had the highest BAI for both Daubenton's bat and Myotis bat species with 0.04 and 0.02 respectively (nine passes for Daubenton's and four passes for Myotis species over 220.35 hours).

NOCTULE BATS

3.2.16 Noctule bats were recorded on Static Detectors Locations 2, 3, 4 and 5. A total of 18 passes were recorded over the survey period.

3.2.17 Static Detector Location 5 had the highest BAI for noctule bats with 0.07 (15 passes over 220.35 hours).

BROWN LONG-EARED BATS

3.2.18 Brown long-eared bats were recorded on Statics Detectors Locations 2, 3 and 6, with seven passes over the survey period.

3.2.19 Static 3 had the highest BAI with 0.01 (4 passes over 218.2 hours).

3.4 OVERALL VALUE OF THE SITE FOR BATS

3.4.1. The Chartered Institute of Ecology and Environmental Management (CIEEM) guidance (Wray et al., 2010) was used to determine the value of the site for foraging and commuting bats (see Appendix B). Tables 3-9 and 3-10 provide the scores relating to the value of the Site for commuting (Table 3-9) and value of the Site for foraging (Table 3-10) based on bat data outputs from the various Site surveys.

Table 3-9: Scoring results for the valuation of commuting routes.

Valuation of commuting routes		
Criteria		**Score**
Rarest bat encountered	Greater horseshoe	20

Valuation of commuting routes		
Number of bats	Small number of bats	10
Number of bat roosts within local area	Unknown	4
Value of commuting routes	Isolated well-grown hedgerows and moderate field sizes	3
Total		37
Overall value of the Site	Regional	

Table 3-10: Scoring results for the valuation of foraging habitats.

Valuation of foraging habitats		
Criteria		**Score**
Rarest bat encountered	Greater horseshoe	20
Number of bats	Small number of bats	10
Number of bat roosts within local area	Unknown	4
Value of foraging habitat	Isolated woodland patches, and small towns and villages	3
Total		37
Overall value of the Site	Regional	

3.4.2. The rarest bats encountered in the surveys were greater horseshoe bats. In the Wales Assessment of the IUCN Red List Category (REF) bats population numbers are 2,700 therefore Red List Category is ‘Near Threatened’.

4 EVALUATION OF IMPACTS

4.1 SHORT-TERM IMPACTS: DISTURBANCE

4.1.1. The proposed works may cause short-term disturbance to foraging and commuting bats during the Site preparation and construction phases, particularly in areas where vegetation clearance is required.

4.2 LONG-TERM IMPACTS: ROOST DESTRUCTION, LOSS OF FORAGING HABITAT

4.2.1. No long-term impacts are expected regarding potential roost features as none were identified during the initial PEA survey or further bat surveys including static detector surveys and Night-time bat walkovers.

4.2.2. Greater horseshoe bats are at risk of being impacted by additional lighting of the Site. Additional lighting during the operational phase of the Site is likely to negatively impact the available habitat for foraging and commuting bats, particularly species such as horseshoe bats and Myotis that are light averse species. Artificial lighting with sources of ultra-violet spectrum light draws invertebrates from the wider habitat, which are subsequently predated by bats such as pipistrelle species that are less light averse. This is described as the 'vacuum effect' (van Langevelde *et al*., 2017).

4.3 MAINTAINING FAVOURABLE STATUS FOR BATS

4.3.1. The majority of bats species recorded were pipistrelles, the most common species present within Wales with a combined population estimate of 775,000 individuals (297,000 common pipistrelle and 478,000 soprano pipistrelle; Mathews *et al.,* 2018).

4.3.2. No roosts are being impacted by the proposed works and therefore will be no impact on breeding sites.

4.3.3. Bat species using the Site for foraging and commuting will be negatively impacted with the installation of new lighting. Therefore, careful lighting design is required to maintain a favourable status for bats.

5 RECOMMENDATIONS

5.1 MITIGATION

LIGHTING

5.1.1 Any lighting installed in association with the Site should be discussed with an experienced ecologist and be appropriate for bats, such as:

- Lighting should be directional and shielded to minimise spill into the surrounding woodland habitat.
- Luminaries should be LED and should not exceed a temperature of 2700K (ILP, 2023)
- Retained woodland habitats should be shielded with a linear belt of dense planting to be planted with scrubby species such as hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, honeysuckle *Lonicera periclymenum,* rowan *Sorbus aucuparia* and guelder rose *Vibernum opulus*, to ensure a dark zone suitable for foraging and commuting bats.

5.1.2 These would also help reduce the 'vacuum effect' normally experienced when using white light containing a blue spectrum element which attracts invertebrates away from nearby habitats, reducing food availability to light-averse species.

GENERAL BAT MITIGATION

5.1.3 Standard bat mitigation should be followed during construction, as follows:

- Habitats around the Site should be retained as far as possible and damage to habitats should be avoided where possible. Where it is necessary to clear vegetation, this work should be carried out during winter months to minimise impacts upon foraging bats.
- Work on Site should be carried out during daylight hours; commencing one hour after sunrise and ending one hour before sunset, to reduce disturbance to bats utilising the Site for commuting and foraging. If night-time working is unavoidable, then artificial construction lighting is to be kept to a minimum and should be directional and positioned to prevent excessive light spill from the construction area onto the woodland habitat. Advice should be sought from a suitably qualified ecologist in regard to lighting design.
- All site operatives should receive a toolbox talk from a suitably qualified ecologist prior to commencement of works. This should outline any constraints relating to bats and other affected species and cover actions to be taken in the event of unexpectedly discovering any bats or roosts.

MONITORING

5.1.4 Further surveys are recommended to assess the impact of the proposed full development works following completion. Bat activity surveys should be undertaken in years 1 and 3 after completion to assess the immediate impact upon foraging and commuting bats to compare activity levels and species composition with pre and post construction data. Three NBW surveys undertaken in June to September each year would provide sufficient data to allow a comparison of bat activity and determine the impact of the development on bats.

5.2 ENHANCEMENT OPPORTUNITIES

5.1.5 **Bat boxes –** Three 'summer roost' crevice bat boxes are recommended to be installed within the retained woodland surrounding the Site under guidance of an ecologist. These should be erected on a tree located as far away from lighting as possible, and each box positioned facing south, south-

east and south-west to give a range of temperatures throughout the season. Recommended make and model: Improved Crevice Bat Box: Treble Crevice; NHBS reference #187784; available at: https://www.nhbs.com/improved-crevice-bat-box.

5.1.6 **Landscape design –** The Site landscape planting design should include planting grassland edges surrounding the Site with a variety of plant species to enhance the area for invertebrates as additional food source for bats. Example plant species such as lavender (Lavandula sp.) and honeysuckle (BCT, 2015).

6 REFERENCES

- Bat Conservation Trust (BCT; 2015) Encouraging bats: A guide for bat-friendly gardening and living.
- Collins, J., (ed.) (2023). Bat Surveys for Professional Ecologists. Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.
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- Reason, P.F. & Wray, S. (2023) UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Version 11. Chartered Institute of Ecology and Environmental Management, Ampfield.
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- van Langevelde, F., Braamburg-Annegarn, M., Huigens, M. E., Groendijk, R., Poitevin, O., van Deijk, R., Ellis, W. N., van Grunsven, R. H. A, de Vos, R. Vos, R.A., Franzen, M. & WallisDeVries, M.F. (2017) Declines in moth populations stress the need for conserving dark nights. Global Change Biology. DOI: 10.1111/gcb.14008.
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DRAWINGS

70121691-RED-74-XX-M2-L-3006 – Static detector locations

70121691-RED-74-XX-M2-L-3009 – Night-time Bat Walkover (NBW) Visit 1

70121691-RED-74-XX-M2-L-3010 – Night-time Bat Walkover (NBW) Visit 2

70121691-RED-74-XX-M2-L-3011 – Night-time Bat Walkover (NBW) Visit 3

70121691-RED-74-XX-M2-L-3012 – Bat Location Overview



Key

- Static locations
- Site

P01 MW XX GP First Issue. 14/10/2025

Purpose of issue
S0 - Work In Progress

Classification
Public

Client
Merthyr County Borough Council

Project
Goatmill Road

Drawing Title
Static detector locations

Drawn MW Checked XX Approved GP

Project No	Date	Scale	Size
70121691	January 2025	1:5,500	A3

Drawing identifier Revision: P01
70121691-RED-74-XX-M2-L-3005

REDSTART
Quest House, St Mellons Business Park, Fortran Rd, St. Mellons, Cardiff, CF3 0EY
www.redstartwales.com

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Key

- Site
- Visit 1 - Route
- South Vantage Point

Bat Species

- Soprano pipistrelle
- Common pipistrelle

100 200 m

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P01	MW	RP	GP	First Issue.	14/10/2025

Purpose of issue
S2 - Suitable for Information

Classification
Public

Client
Merthyr Tydfil County Borough Council

Project
Goatmill Road

Drawing Title
Nighttime Bat Walkover (NBW) Visit 1

Drawn MW Checked RP Approved GP

Project No	Date	Scale	Size
70121691	May 2025	1:6,000	A3

Drawing identifier Revision: P01
70121691-RED-74-XX-M2-L-3009

REDSTART
Quest House, St Mellons Business Park, Fortran Rd, St. Mellons, Cardiff, CF3 0EY
www.redstartwales.com

Key

- Site
- Visit 2 - Route
- North Vantage Point

Bat Species

- Soprano pipistrelle
- Common pipistrelle

100 200 m

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P01	MW	RP	GP	First Issue.	14/10/2025

Purpose of issue
S2 - Suitable for Information

Classification
Public

Client
Merthyr Tydfil County Borough Council

Project
Goatmill Road

Drawing Title
Nighttime Bat Walkover (NBW) Visit 2

Drawn MW Checked RP Approved GP

Project No	Date	Scale	Size
70121691	May 2025	1:6,000	A3

Drawing identifier Revision: P01
70121691-RED-74-XX-M2-L-3010

REDSTART
Quest House, St Mellons Business Park, Fortran Rd, St. Mellons, Cardiff, CF3 0EY
www.redstartwales.com

Key

- Site
- Visit 3 - Route
- North Vantage Point

Bat Species

- Soprano pipistrelle
- Common pipistrelle

100 200 m

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P01 MW RP GP First Issue.

Purpose of issue
S2 - Suitable for Information

Classification
Public

Client
Merthyr Tydfil County Borough Council

Project
Goatmill Road

Drawing Title
Nighttime Bat Walkover (NBW) Visit 3

Drawn MW Checked RP Approved GP

Project No	Date	Scale	Size
70121691	May 2025	1:6,000	A3

Drawing identifier Revision: P01
70121691-RED-74-XX-M2-L-3011

REDSTART
Quest House, St Mellons Business Park, Fortran Rd, St. Mellons, Cardiff, CF3 0EY
www.redstartwales.com

Key

Site

Bat Species

- Soprano pipistrelle
- Common pipistrelle

Visit 2

- Ppyg
- Ppip

100 200 m

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P01	MW	RP	GP	First Issue.	14/10/2025

Purpose of issue
S2 - Suitable for Information

Classification
Public

Client
Merthyr Tydfil County Borough Council

Project
Goatmill Road

Drawing Title
Bat Location Overview

Drawn MW Checked RP Approved GP

Project No	Date	Scale	Size
70121691	May 2025	1:6,000	A3

Drawing identifier Revision: P01
70121691-RED-74-XX-M2-L-3012

REDSTART
Quest House, St Mellons Business Park, Fortran Rd, St. Mellons, Cardiff, CF3 0EY
www.redstartwales.com

Appendix A

NIGHT-TIME BAT WALKOVER (NBW) SURVEY DATA TABLES

PUBLIC

ACROMNYMS IN SURVEY DATA TABLES

- VP – Vantage Point
- NBW – Nighttime Bat Walkover
- HNS – Heard Not Seen
- SNH – Seen Not Heard
- Pp – Common pipistrelle *Pipistrellus pipistrellus*
- Ppy – Soprano pipistrelle *Pipistrellus pygmaeus*

Project	Goatmill Road		
Surveyors	Megan Watts & Natalie Pyatt		
Date	17 June 2024 – Visit 1		
VP Start Time	21:25	**VP Finish Time**	22:20
NBW Start Time	22:20	**NBW Finish Time**	23:36
Sunset Time	21:35	**Detectors Used**	Anabat Swift & SSF Bat2
Temperature Start (°C)	16	**Temperature Finish (°C)**	14
Cloud Cover Start (%)	5	**Cloud Cover Finish (%)**	20
Wind Start	0	**Wind Finish**	0
Precipitation	None		

Vantage Point Activity Description





21:25		Vantage point survey started at southern end of site
21:58	Pip sp.	Commuting north to south along hedgerow (see arrow on google image)
22:16	Ppy	Brief call, HNS

Project	Goatmill Road

22:19	Pp	Commuting west to east with foraging
22:20		Vantage point survey ended – NBW started

Time	Species	Description of bat activity
22:23	Pp	Foraging around trees north of surveyors
22:25	Pp	Foraging low to ground
22:30	Pp	HNS – quick, brief call
22:35	Pp	Foraging
22:40	Ppy	HNS
22:43	Ppy	HNS
23:11	Ppy	Foraging south to north above the trees
23:16	Pp	Foraging north to south & back with 4 passes
23:35	Pp	HNS
23:36		End of survey – bats were foraging around the tree light at the end of the survey

Project	Goatmill Road		
Surveyors	Megan Watts & Richard Bluck		
Date	12 August 2024 – Visit 2		
VP Start Time	20:30	VP Finish Time	21:30
NBW Start Time	21:30	NBW Finish Time	22:38
Sunset Time	20:45	Detectors Used	Batbox Duet, Echo Meter Touch Pro & Anabat Swift
Temperature Start (°C)	17	Temperature Finish (°C)	14
Cloud Cover Start (%)	25	Cloud Cover Finish (%)	40
Wind Start	1SW	Wind Finish	0-1SW
Precipitation	None		
Vantage Point Activity Description			

Project	Goatmill Road



20:30 Vantage Point start
21:11 – 21:18 Pp x 5 commuting west to east
21:18 – 21:19 Ppy x 2 commuting east to west
Regular passes of Pp & Ppy commuting between trees from west to east and east to west until end of Vantage Point at 21:30

Time	Species	Description of bat activity
21:30		NBW Start
21:38	Psp.	HNS
21:40	Pp	Foraging above trees
21:51	Pp	HNS
21:56	Pp	HNS
22:20	Pp	HNS – feeding buzz
22:30	Pp	HNS
22:35	Pp	HNS
22:37	Pp	HNS
22:38		End of NBW

Project	Goatmill Road
Surveyors	Megan Watts & Richard Bluck
Date	10 October 2024 – Visit 3

Project	Goatmill Road		
VP Start Time	18:20	**VP Finish Time**	19:20
NBW Start Time	19:15	**NBW Finish Time**	20:26
Sunset Time	18:30	**Detectors Used**	Elekon Batlogger M2
Temperature Start (°C)	8	**Temperature Finish (°C)**	8
Cloud Cover Start (%)	70	**Cloud Cover Finish (%)**	40
Wind Start	0	**Wind Finish**	0
Precipitation	None		

Vantage Point Activity Description



18:20 Vantage Point Start
19:00 Pp
19:03 Ppy
19:08 Pp
19:20 End of Vantage Point

Time	Species	Description of bat activity
19:20		Start of NBW
19:20	Pp	Commuting west to east as leaving VP
19:22	Ppy	HNS
20:36		End of NBW – very low activity levels

Appendix B

VALUING BATS IN ECOLOGICAL IMPACT ASSESSMENT (WRAY EL AL.)

PUBLIC

OVERALL VALUE OF THE SITE FOR BATS

The importance of the Site for commuting and foraging has been assessed using the approach by Wray et al., 2010 shown in tables below:

Categorising bats by distribution and rarity (adapted from Wray et al., 2010).

Rarity within range	England	Wales
Rarest (population under 10,000)	Greater horseshoe Bechstein's Alcathoe Greater mouse-eared Barbastelle Grey long-eared	Greater horseshoe Whiskered Brandt's Bechstein's Alcathoe? Noctule Nathusius' pipistrelle Serotine Barbastelle
Rarer (population 10,000 – 100,000)	Lesser horseshoe Whiskered Brandt's Daubenton's Natterer's Leisler's Noctule Nathusius' pipistrelle Serotine	Lesser horseshoe Daubenton's Natterer's Brown long-eared
Common (population over 100,000)	Common pipistrelle Soprano pipistrelle Brown long-eared	Common pipistrelle Soprano pipistrelle

Valuing commuting routes (scoring levels in brackets)

Species	Number of bats	Roost/potential roosts nearby	Type and complexity of linear habitat features
Common (2)	Individual bats (5)	None (1)	Absence of (other) linear features (1)
-	-	Small number (3)	Unvegetated fences and large field size (2)
Rarer (5)	Small number of bats (10)	Moderate number/not known (4)	Walls, gappy or flailed hedgerows, isolated well-grown hedgerows, and moderate field sizes (3)
-	-	Large number of roosts, or close to a SSSI for the species (5)	Well-grown and well-connected hedgerows, small field sizes (4)
Rarest (20)	Large number of bats (20)	Close to or within SAC for the species (20)	Complex network of mature and well-established hedgerows, small fields and rivers/streams (5)

Valuing foraging habitats (scoring levels in brackets)

Species	Number of bats	Roost/potential roosts nearby	Type and complexity of linear habitat features
Common (2)	Individual bats (5)	None (1)	Industrial or other site without established vegetation (1)

Species	Number of bats	Roost/potential roosts nearby	Type and complexity of linear habitat features
-	-	Small number (3)	Suburban areas or intensive arable land (2)
Rarer (5)	Small number of bats (10)	Moderate number/not known (4)	Isolated woodland patches, less intensive arable and/or small towns and villages (3)
-	-	Large number of roosts, or close to a SSSI for the species (5)	Larger or connected woodland blocks, mixed agriculture, and small villages/hamlets (4)
Rarest (20)	Large number of bats (20)	Close to or within SAC for the species (20)	Mosaic of pasture, woodlands and wetland areas (5)



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