



**Image EDP A2.6:** Neutral Grassland area **NG6** in the foreground looking over to **NG4** opposite the driveway.

A2.38 Although unimproved neutral grassland across the Site would collectively qualify for SINC status, this habitat is highly fragmented within the Site and is further isolated from similar habitat in the wider landscape. On that basis the neutral grassland on-site is judged to be of Local level importance.

#### **Introduced Shrub**

A2.39 Large laurel cherry specimens are present along the access driveway on entering the Site. This species is also present behind building **B3** and between **B3** and **B4** and encroaches into the woodland edge. It is likely this species has been used as amenity planting, although it appears to have been managed in the past (with some evidence of recent removal, presumably to maintain access). A ground flora community is largely absent.



**Image EDP A2.7:** Cherry laurel between buildings **B3** and **B4**.

A2.40 Non-native shrub planting has very limited ecological value and is considered to be of Negligible importance.

#### **Tall Ruderal**

A2.41 This habitat is predominantly associated with the plant beds surrounding the caretakers house **B2** and is typically dominated by nettle with rosebay willowherb (*Chamerion angustifolium*) appearing frequently.

A2.42 Due to limited species diversity and small extent within the Site, tall ruderal vegetation is considered to be of Site level importance.

#### **Running Water**

A2.43 A small watercourse is culverted under the access road at the entrance to the Site and continues in a north-westerly direction flowing adjacent to the A4226 Weycock Road. As this was the only section of the watercourse included within the Site boundary, with the majority culverted under the access road, the watercourse was not fully surveyed. At this location there was no flora of note, with the woodland casting dense shade.

A2.44 The watercourse appears to have its source c.100m south-east of the Site and converges with the River Weycock c.670m north-west. Although not a significant waterbody in itself, rivers comprise priority habitats for Wales. Although the watercourse is directly connected to the River

Weycock further downstream, given only a small culverted section is present within the Site boundary, this habitat is considered to be of Site level importance.

### Buildings and Hardstanding

A2.45 These are the dominant habitats present within the Site and includes former college buildings including disused workshops, garages and storage areas, internal roads and hardstanding car parks. The buildings are described in further detail within **Appendix EDP 3**. In brief, however, buildings are typically characteristic of single storey, prefabricated structures set between some stone-built buildings, together with a residential property and garage. These habitats are considered to be of Negligible importance.

**Table EDP A2.1:** Woodland DAFOR Species List

Common Name	Scientific Name	DAFOR			
		W1	W2	W3	W4
Field maple	<i>Acer campestre</i>	R	O	R	O
Sycamore	<i>Acer pseudoplatanus</i>	R	R	R	R
Cow parsley	<i>Anthriscus sylvestris</i>	O		O	R
Cuckoo pint	<i>Arum maculatum</i>	R	R	O	O
Hartstongue	<i>Asplenium scolopendrium</i>	R	R	R/LO	O
Remote sedge	<i>Carex remota</i>		R	R	
Wood sedge	<i>Carex sylvatica</i>	R	R	R	R/LF
Enchanter's nightshade	<i>Circaea lutetiana</i>	O	O	O	O
Hazel	<i>Corylus avellana</i>	O	F	O	A
Hawthorn	<i>Crataegus monogyna</i>	O/LF	O	O	O
Broad buckler fern	<i>Dryopteris dilatata</i>				R
Male fern	<i>Dryopteris felix-mas</i>	R		R	R
Spindle	<i>Euonymus europaeus</i>			R	R
Lesser celandine	<i>Ficaria verna</i>	R		O	O
Wild strawberry	<i>Fragaria vesca</i>				R
Ash	<i>Fraxinus excelsior</i>	F	F	F	F
Goosegrass	<i>Galium aparine</i>	O/LF	R	F	O
Sweet woodruff	<i>Galium odoratum</i>			R	O/LF
Herb robert	<i>Geranium robertianum</i>	O	R	O/LF	O
Herb benet	<i>Geum urbanum</i>	R/LO	R	F	O
Ground ivy	<i>Glechoma hederacea</i>	R		O	R
Ivy	<i>Hedera helix</i>	D	D	D	D
Hogweed	<i>Heracleum sphondylium</i>	O		O	
Bluebell	<i>Hyacinthoides non-scripta</i>	R	R	R	R
Holly	<i>Ilex aquifolium</i>	R	O	R	O

Common Name	Scientific Name	DAFOR			
		W1	W2	W3	W4
White deadnettle	<i>Lamium album</i>			R	
Nipplewort	<i>Lapsana communis</i>			R	
Garden privet	<i>Ligustrum ovalifolium</i>			R	
Honeysuckle	<i>Lonicera periclymenum</i>	R	R	O	O
Dog's mercury	<i>Mercurialis perennis</i>				R/LO
Rough meadow-grass	<i>Poa trivialis</i>	R		F	
Polypody	<i>Polypodium vulgare</i>				R
Soft shield fern	<i>Polystichum setiferum</i>				R
Selfheal	<i>Prunella vulgaris</i>			R	
Blackthorn	<i>Prunus spinosa</i>	O/LF	O	O	R
English oak	<i>Quercus robur</i>	R	O	R	F
Creeping buttercup	<i>Ranunculus repens</i>			O	
Dog rose	<i>Rosa canina</i> agg.	R	R	O	O
Bramble	<i>Rubus fruticosus</i> agg.	A	F	A	A/LD
Wood dock	<i>Rumex sanguineus</i>	F	R	F	O
Goat willow	<i>Salix caprea</i>	O			R
Elder	<i>Sambucus nigra</i>	O	O	F	O
Black bryony	<i>Tamus communis</i>	R	R	O	R
Yew	<i>Taxus baccata</i>	R			R
English elm	<i>Ulmus procera</i>				R
Nettle	<i>Urtica dioica</i>				R
Wood speedwell	<i>Veronica montana</i>	O/LF	R	F/LA	O/LA
Guelder rose	<i>Viburnum opulus</i>			R	R
Bush vetch	<i>Vicia sepium</i>			R	R
Common dog violet	<i>Viola riviniana</i>	R		O	R

**Table EDP A2.2:** Grassland DAFOR Survey Results

Common Name	Scientific Name	DAFOR						
		NG1	NG2	NG3	NG4	NG5	NG6	NG7
Yarrow	<i>Achillea millefolium</i>					R	O	
Agrimony	<i>Agrimonia eupatorium</i>	<b>O</b>					<b>R</b>	<b>R</b>
<b>Bugle</b>	<b><i>Ajuga reptans</i></b>						R	
Meadow foxtail	<i>Alopecurus pratensis</i>			O				F

Common Name	Scientific Name	DAFOR						
		NG1	NG2	NG3	NG4	NG5	NG6	NG7
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	O			F	F	R	
False wood-brome	<i>Brachypodium sylvaticum</i>	R					O	R
<b>Quaking grass</b>	<b><i>Briza media</i></b>	<b>F</b>				<b>R</b>	<b>F</b>	
<b>Cuckoo flower</b>	<b><i>Cardamine pratensis</i></b>			<b>R</b>				
Glaucous sedge	<i>Carex flacca</i>	F					O/LF	
Wood sedge	<i>Carex sylvatica</i>				F			
Black knapweed	<i>Centaurea nigra</i>						R	
Common mouse-ear	<i>Cerastium fontanum</i>	R		R				R
Marsh thistle	<i>Cirsium palustre</i>						R	
Wild clematis	<i>Clematis vitalba</i>					R		
Crested dog's-tail	<i>Cynosurus cristatus</i>	R						
Cocksfoot	<i>Dactylis glomerata</i>	O		O				A
Field horsetail	<i>Equisetum arvense</i>	R						
Red fescue	<i>Festuca rubra</i>	F		F	O		F	F
<b>Lady's bedstraw</b>	<b><i>Galium verum</i></b>			<b>O/LF</b>	<b>O/LF</b>	<b>R</b>	<b>O/LF</b>	<b>O</b>
Cut-leaved crane's-bill	<i>Geranium dissectum</i>				O			
Herb Robert	<i>Geranium robertianum</i>		R					
Wood avens	<i>Geum urbanum</i>			R				
Ground ivy	<i>Glechoma hederacea</i>				O/LF		F	O
Ivy	<i>Hedera helix</i>	O					O	
<b>Downy oat-grass</b>	<b><i>Helictotrichon pubescens</i></b>						<b>R</b>	

Common Name	Scientific Name	DAFOR						
		NG1	NG2	NG3	NG4	NG5	NG6	NG7
Hogweed	<i>Heracleum sphondylium</i>				R			
Yorkshire fog	<i>Holcus lanatus</i>		O/LF		O	R	F	
Common cat's-ear	<i>Hypochaeris radicata</i>						R	
<b>Meadow vetchling</b>	<b><i>Lathyrus pratensis</i></b>	<b>O/LF</b>				<b>F</b>	<b>F</b>	
<b>Rough hawkbit</b>	<b><i>Leontodon hispidus</i></b>		<b>F/LA</b>		<b>F</b>			
Perennial rye-grass	<i>Lolium perenne</i>						R	R
<b>Bird's-foot trefoil</b>	<b><i>Lotus corniculatus</i></b>	<b>R</b>			<b>O</b>	<b>R</b>		
<b>Field wood-rush</b>	<b><i>Luzula campestris</i></b>			<b>O</b>				
<b>Mouse-ear hawkweed</b>	<b><i>Pilosella officinarum</i></b>		<b>F/LA</b>		<b>F</b>	<b>O</b>	<b>O</b>	
Ribwort	<i>Plantago lanceolata</i>				F		O	
Smooth meadow grass	<i>Poa pratensis</i>	R		R	R		O	
Rough meadow-grass	<i>Poa trivialis</i>		O	R		O	O	
Tormentil	<i>Potentilla erecta</i>						R	
Creeping cinquefoil	<i>Potentilla reptans</i>	F	F	F	O			F
<b>Cowslip</b>	<b><i>Primula veris</i></b>			<b>R</b>	<b>R</b>	<b>R</b>	<b>O</b>	
Selfheal	<i>Prunella vulgaris</i>							O
Fleabane	<i>Pulicaria dysenterica</i>						R/LO	
Meadow buttercup	<i>Ranunculus acris</i>		R		O		R	
Creeping buttercup	<i>Ranunculus repens</i>	O				R		
Sorrel	<i>Rumex acetosa</i>						R	

Common Name	Scientific Name	DAFOR						
		NG1	NG2	NG3	NG4	NG5	NG6	NG7
<b>Salad burnet</b>	<b><i>Sanguisorba minor</i></b>	R						
<b>Hoary ragwort</b>	<b><i>Senecio erucifolius</i></b>						R	
<b>Betony</b>	<b><i>Stachys officinalis</i></b>						R	
Dandelion	<i>Taraxacum officinale agg.</i>	R						
Goats beard	<i>Tragopogon pratense</i>				R		R	
Lesser trefoil	<i>Trifolium dubium</i>				O	R		
<b>Zig-zag clover</b>	<b><i>Trifolium medium</i></b>					A		
<b>Red clover</b>	<b><i>Trifolium pratense</i></b>						O	
White clover	<i>Trifolium repens</i>	F						
Germander speedwell	<i>Veronica chamaedrys</i>	R		F	O/LF		O	O
Common vetch	<i>Vicia sativa</i>			R			F	
Bush vetch	<i>Vicia sepium</i>				R			

\*Species in bold are those listed in Table 2 of the Guidelines for Selection of Wildlife Sites in South Wales prepared by Gwent Wildlife Trust on behalf of the South Wales Wildlife Partnership 2004

## Appendix EDP 3 Bat Surveys

### METHODOLOGY

- A3.1 During the Extended Phase 1 Habitat survey, seven trees and seven buildings present within, or immediately adjacent to, the Site were identified as having potential to support roosting bats.
- A3.2 In addition, habitats present within the Site including grassland and woodland were identified as being of moderate suitability to support a foraging and commuting bat assemblage. The following surveys for bats were, therefore, completed during 2023 with reference to best practice guidelines<sup>27</sup> current at the time of survey.

#### **Bat Roost Inspection Surveys – Trees**

- Preliminary ground level roost assessment of trees within/immediately adjacent to the Site for bat roosting suitability, undertaken on 26 June 2023; and
- Detailed aerial inspections of trees with bat roosting suitability were undertaken on 05 July, 17 August and 01 September 2023.

#### **Bat Roost Inspection Surveys – Buildings**

- Preliminary roost assessment of on-site buildings to search for evidence of bats and determine the suitability of features to support roosting, undertaken on 09 June 2023;
- Dusk emergence and/or dawn re-entry surveys of buildings **B1-B7** to confirm presence/likely absence of roosting bats between August and early October 2023; and
- Environmental eDNA (eDNA) analysis of faecal matter collected from external roosting features identified during dusk emergence and dawn re-entry surveys.

#### **Bat Activity Surveys**

- Manual transect surveys conducted monthly between May and October 2023; and
- Automated detector surveys conducted monthly between May and October 2023.

#### **Bat Roost Surveys**

##### **Preliminary Roost Assessment of Trees**

- A3.3 Owing to the presence of suitably mature trees within or adjacent to the Site, a preliminary ground level roost assessment of these trees was undertaken to record any external evidence of roosting bats or any features capable of supporting roosting bats.

---

<sup>27</sup> Collins, J. (ed.) (2016). *Bat Surveys: for Professional Ecologists: Good Practice Guidelines (3rd edition)*. The Bat Conservation Trust, London



A3.4 The survey was completed on 26 June 2023 by a bat licensed ecologist in accordance with the best practice guidelines referred to above. The trees were searched as thoroughly as possible from ground level with all elevations covered where these could be accessed.

A3.5 Suitable features for roosting bats recorded (where present) include the following:

- Loss/peeling/fissured bark;
- Natural holes e.g., rot hole, cavities and wounds from fallen limbs;
- Woodpecker holes;
- Cracks/splits or hollow tree trunks/limbs;
- Bat, bird or dormouse boxes; and
- Crevices formed by thick-stemmed ivy.

A3.6 Signs of roosting bat presence recorded (where present) include the following:

- Bat/s roosting *in situ*;
- Bat droppings within, around or beneath a potential roost feature;
- Staining around or beneath a feature;
- Audible squeaking from the roost at dusk during warm weather; and
- Large/regularly used roosts may produce a distinctive odour.

A3.7 Based upon the evidence/features identified, each tree was assigned to one of the following categories:

- Known or confirmed roost – European Protected Species (EPS) licence likely to be required for works to tree to be completed lawfully;
- High suitability – One or more potential roost features present that are obviously suitable for use by larger numbers of bats on a more regular basis, and potentially for longer periods of time;
- Moderate suitability – One or more potential roost features present that could be used by bats but are unlikely to support a roost type of high conservation status (with respect to roost type only);
- Low suitability – A tree of sufficient size and age to contain potential roost features but with none seen from the ground, or features seen but with only very limited roosting potential; and
- Negligible suitability – No potential to support roosting bats.

### *Limitations*

- A3.8 As with any ground level assessments of trees, certain features may not be visible or fully visible from the ground, particularly in May when most trees are in leaf. However, full access to the Site was granted and there were no access limitations around the elevations of the trees.
- A3.9 Bats are mobile animals and will move between a series of different tree roost sites, frequently establishing and occupying different potential roost features, depending on seasonal requirements and resources available locally. Furthermore, existing potential roost features on trees can be transient and new features formed regularly. This survey, therefore, only provides a snapshot of the conditions present at the Site at the time of survey.
- A3.10 It should be noted that this type of assessment is based on features visible from ground level and is not considered to be a definitive bat roosting survey.
- A3.11 Limitations are, however, not considered a significant constraint to an assessment, with trees of moderate-high bat roost suitability to be likely impacted by development proposals subject to further detailed inspections at height.

### ***Aerial Inspection Survey of Trees***

- A3.12 An initial aerial inspection survey was undertaken on 05 July 2023 of all trees with roosting potential identified during the preliminary ground level roost assessment (a total of seven trees, namely **T001, T051, T055, T062, T075, T080** and **T251**). The purpose of the aerial inspection was to comprehensively assess the identified potential roost features at height, to more accurately determine the suitability of each feature to support roosting bats in addition to searching internally for evidence of past and present bat use.
- A3.13 The aerial inspection survey was undertaken by a suitably bat licensed and trained tree climber and assistant, using a combination of tree climbing equipment and ladders to access each potential roost feature. An endoscope (Ridgid CA-300 inspection camera with extension cable), torches and mirrors were utilised, where necessary, to internally inspect each feature. Physical details and measurements of each potential roost feature were recorded during the survey, in addition to any evidence of bats.
- A3.14 A second aerial inspection was undertaken of all trees with moderate and high suitability (namely **T001, T051, T055, T062, T075** and **T080**) on 17 August 2023. Those trees with high suitability (**T001, T051, T055, T062** and **T080**) were subject to a third inspection on 01 September 2023.

### *Limitations*

- A3.15 All potential roost features present on six of the seven trees identified for survey were accessible and able to be fully inspected by the surveyors. There were therefore no access or health and safety limitations to the aerial inspection survey.
- A3.16 **T062** was determined as unsafe for climbing (as a standing dead tree/stump) and inspected using high powered binoculars from the ground from all sides on 17 August 2023. The only suitable feature identified, however, was the bat box. Ground level inspections using binoculars and torch was sufficient to determine the occupancy of the bat box given its open-ended design. A ladder was used to access the bat box on subsequent site visits.

A3.17 Aerial inspection surveys can be undertaken at any time of year, although May to September is optimal to increase the likelihood of finding bats or evidence of their recent use within features. However, repeat visits are best spread across the seasons to detect bats that use trees at different times of year, and if the potential roost feature has hibernation suitability, a survey should be undertaken during winter. These trees were surveyed across spring and summer and the potential roost features were not considered to be suitable for hibernation. As such, the survey was not limited by seasonal or climatic factors.

A3.18 Bats are mobile animals and will move between a series of different tree roost sites, frequently establishing and occupying different potential roost features, depending on seasonal requirements and resources available locally. Furthermore, existing potential roost features on trees can be transient and evidence of past bat use (e.g. droppings) disintegrates quickly in trees. This survey, therefore, only provides a snapshot of the conditions present at the Site at the time of survey.

#### **Preliminary Roost Assessment of Buildings**

A3.19 Owing to the presence of potentially suitable buildings within the Site, a preliminary roost assessment of these buildings was undertaken to record any evidence of roosting bats or any features capable of supporting roosting bats.

A3.20 The survey was completed on 09 June 2023 by a bat licensed ecologist in accordance with the best practice guidelines referred to above. All external features considered potentially suitable for bats were assessed using a high-powered torch and binoculars, from all aspects, where access allowed. Buildings were not inspected internally due to safety concerns regarding potential presence of asbestos within the buildings.

A3.21 Suitable features for roosting bats recorded (where present) include the following:

- Cracks/crevices in stone/brickwork/timber;
- Missing/broken/raised roof/ridge/hanging tiles;
- Loose/lifted lead flashing/bitumen felt;
- Loft voids (particularly if relatively undisturbed, potential bat access points present, clear flight space with simple truss formation, roof lining and insulation present);
- Gaps between lintels above doors and windows;
- Gaps in soffits, barge boards or fascias; and
- Cavity walls with potential bat access.

A3.22 Signs of roosting bat presence recorded (where present) include the following:

- Bat(s) roosting *in situ*;
- Bat droppings or urine splashes within or beneath a feature/access point;
- Feeding remains (e.g. insect wings and beetle wing cases);

- Oily marks, smoothly worn surfaces or staining around a feature/access point;
- Audible squeaking from the roost; and
- Large/regularly used roosts may produce a distinctive odour.

A3.23 Based upon the evidence/features identified, each building was assigned to one of the following categories:

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

#### *Limitations*

A3.24 Preliminary roost assessments of buildings can be undertaken at any time of year and these assessments were therefore not limited by seasonal or climatic factors.

A3.25 There was no internal access to buildings due to health and safety constraints associated with asbestos; however, this is not considered to be a significant limitation to the survey with each building subject to further dusk emergence/dawn re-entry surveys to reliably confirm presence/infer absence of roosting bats.

#### ***Dusk Emergence/Dawn Re-entry Surveys***

A3.26 Owing to the presence of buildings with features suitable for roosting bats which are at risk of impacts from development, dusk emergence and dawn re-entry surveys of these buildings were conducted in accordance with the best practice guidelines referred to above. The date and type of surveys conducted on each relevant building (see **Plan EDP 6** for building reference numbers) are set out in **Table EDP A3.1**.

**Table EDP A3.1:** Dusk Emergence and Dawn Re-entry Surveys

Building Reference	Date	Dusk/Dawn	Number of Surveyors / Infrared Cameras
B3	11/08/23	Dawn	3/3
B7	21/08/23	Dusk	4/4
B5	23/08/23	Dawn	2/2
B1	23/08/23	Dusk	2/2
B2, B3 and B4	24/08/23	Dusk	7/6
B6	29/08/23	Dusk	3/3
B1, B4 and B5	07/09/23	Dusk	4/5
B3	11/09/23	Dusk	3/3
B6	14/09/23	Dawn	3/3
B7	21/09/23	Dusk	4/4
B5	27/09/23	Dusk	2/2
B6	04/10/23	Dusk	3/3

A3.27 During each survey, suitably qualified ecologists each equipped with an infrared-capable video camera (Canon XA11) with external lighting arrays (JC Infrared 12-Led 90° Wide Angle High-Power IR Illuminator) were positioned in appropriate locations, so that all the relevant building elevations/features could be observed. The dusk surveys commence 15 minutes prior to sunset and continued until at least two hours after, and the dawn surveys start at least two hours before sunrise and finished 15 minutes after sunrise, as per best practice guidelines. The surveyors used Elekon Batlogger M bat detectors to record the echolocation calls of any bats observed during the survey.

A3.28 The weather conditions were generally suitable for such surveys, as detailed in **Table EDP A3.2**.

**Table EDP A3.2:** Weather Conditions During Emergence/Re-entry Surveys

Date	Sunset/- Sunrise Time	Start- Finish Time	Temperature (°C)	Cloud Cover (%)	Wind (Beaufort)	Precipitation
11/08/23	05:50	03:50- 06:05	19	100	1-2	Light at start for short period; dry for remainder of survey.
21/08/23	20:22	20:07- 22:22	20-21	50-90	0-1	Nil
23/08/23	06:12	04:12- 06:27	14-15	70-90	0-1	Nil
23/08/23	20:18	20:03- 22:18	20-23	20-80	0	Nil
24/08/23	20:16	20:01- 22:16	14-19	0-5	2	Nil

Date	Sunset/- Sunrise Time	Start- Finish Time	Temperature (°C)	Cloud Cover (%)	Wind (Beaufort)	Precipitation
29/08/23	20:05	19:50- 22:05	13-17	20-30	0-2	Nil
07/09/23	19:45	19:30- 21:45	23-25	50-70	0-1	Nil
11/09/23	19:40	19:25- 21:40	12-18	40-50	2	Nil
14/09/23	06:46	04:46- 07:01	16-17	20-90	0-1	Nil
21/09/23	19:14	18:59- 21:14	11-15	10-20	0-1	Nil
27/09/23	19:01	18:46- 21:01	13-15	100	6	Nil
04/10/23	18:45	18:30- 20:28	15-16	100	3-4	Light drizzle throughout survey.

A3.29 All sonogram recordings made during the dusk/dawn surveys were later analysed using BatExplorer sound analysis software to confirm species identification.

#### *Limitations*

A3.30 Due to the lack of available access to the Site out of hours during July, combined with unseasonal inclement weather during July and August 2023, several surveys extended into September and early October, outside of the optimal period for detecting the presence of maternity roosts. This is, however, not considered a significant constraint to this appraisal, with at least one survey of each building undertaken during the optimum season for bats (May-August inclusive) in order to determine presence of breeding behaviour.

A3.31 Surveys were generally undertaken during suitable weather conditions. Light drizzle was, however, recorded during the survey on 27 September 2023 between 19:01 and 19:04. Given its short duration this is not considered a significant constraint to survey effort. Light drizzle was persistent during the dusk emergence survey on 04 October 2023. In spite of this, bat activity including emergence behaviour continued to be recorded such that weather conditions were not considered a significant constraint to survey effort.

A3.32 There was limited visibility of the buildings in places during dusk emergence/dawn re-entry surveys, due to proximity of the tree canopy. This also meant the Site got dark very quickly after sunset further limiting visibility of external features for surveyors. Surveyors were, however, paired with infrared cameras to assist detection of bat behaviours such that this is not considered a significant constraint to survey effort.

### **Environment DNA (eDNA) Sampling**

- A3.33 Environmental DNA (eDNA) is DNA that is collected from the environment in which an organism lives. Samples of bat droppings were collected from confirmed external roosting features identified during the dusk emergence and dawn re-entry surveys. where found.
- A3.34 Samples were collected on 21 August 2023 and sent to Swift Ecology to be determine the species present, using eDNA sequencing methodologies. The report was returned on the 01 September 2023.

### **Limitations**

- A3.35 It was only possible to find and obtain samples from buildings **B3**, **B5** and **B6** with a total of three samples obtained. Only one of these, however, yielded eDNA of sufficient quality/quantity to determine bat species.

### **Bat Activity Surveys**

- A3.36 During the Extended Phase 1 Habitat survey, an initial assessment was undertaken of suitability of the habitats within and immediately adjacent to the Site for foraging and commuting bats. In accordance with the best practice guidelines referred to above, the Site was assigned to one of the following categories:

- High suitability – Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, treelined watercourses and grazed parkland. Site is close to and connected to known roosts;
  - Moderate suitability – Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water;
  - Low suitability – Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub; and
  - Negligible suitability – Negligible habitat features on-site likely to be used by commuting or foraging bats.
- A3.37 Overall, the habitats present within the Site were assessed as being of up to moderate suitability for foraging and commuting bats. This was due to the relatively small area of the Site coupled with limited extent of semi-natural habitat therein (some woodland edge and scrub habitat, but predominantly hardstanding and buildings). Habitat within the immediate and wider landscape include mature woodland, woodland edge, lowland meadow and pastoral farmland which is well connected to the wider landscape via a network of hedgerows and additional woodland blocks,

which combined provide habitats of high suitability for a commuting and foraging bat assemblage. However, these high suitability areas will be retained and buffered from the proposals by the presence of the existing woodland. The focus of the activity survey therefore was to characterise the value of the Site and its component habitats for foraging and commuting bats.

A3.38 Having determined that the overall suitability of the Site is moderate, a proportionate level of survey effort was expended in terms of the number and frequency of manual transect surveys and automated detector surveys. These are described in further detail below.

### **Transect Surveys**

A3.39 Manual transect surveys were undertaken across the Site with the objective of identifying important foraging areas and/or commuting routes used by bats. A total of six dusk surveys and one dawn survey were undertaken over the course of the active bat season in 2023.

A3.40 Details of the survey type, date, timing, and weather conditions during each of the transect surveys are given in **Table EDP A3.3**. All visits were completed in weather conditions that were generally suitable for such surveys.

**Table EDP A3.3:** Date, Timing and Weather Conditions during Transect Surveys

Survey Date	Sunset/ Sunrise Time	Start – Finish Time	Weather Conditions			
			Temp (°c)	Cloud Cover (%)	Wind (Beaufort Scale)	Precipitation
23/05/23	21:08	21:08–23:08	13–17	0–5	0	Nil.
20/06/23	21:33	21:33–23:33	17–20	20–40	0	Nil.
17/07/23	21:24	21:21–23:24	18–14	10–80	0	Nil.
03/08/23	03:40	03:40–06:00	18–20	100	0–2	Intermittent brief showers.
22/08/23	20:20	20:20–22:20	17	10–20	1–2	Nil.
19/09/23	19:19	19:19–21:19	18–19	100	3–4	Nil.
12/10/23	18:28	18:28–20:28	16–17	100	2	Drizzle/light rain.

A3.41 During each survey the transect route is walked by a pair of surveyors, with the route designed to provide coverage of the most suitable foraging or commuting habitats within the Site; namely the woodland edge, scrub and grassland areas. The transect routes are illustrated on **Plan EDP 8**. The transect routes were walked by an experienced bat surveyor and an assistant at a slow and steady pace for two hours after sunset or two hours before sunrise. All bats are recorded, and their behaviour marked on survey maps, in order to characterise the value of the Site and its component habitats for foraging and commuting bats.

A3.42 The transect surveys were conducted using Elekon Batlogger M bat detectors. Observations of the time, location, and activity of all bats seen or heard were noted. Bats are identified on the basis of their characteristic echolocation calls, which were recorded and analysed using



computer sonogram analysis (BatExplorer) to confirm species identification. Species of Myotis bat and long-eared bat are difficult to tell apart solely from their echolocation calls and are therefore grouped as such.

#### *Limitations*

- A3.43 The surveys were generally undertaken during suitable weather conditions although intermittent showers were experienced during the dusk transect on 03 August 2023. These were, however, short in duration with some bat activity still recorded. This is, however, not considered a constraint to overall survey effort with a second dusk survey completed during August 2023 in mitigation.
- A3.44 Light rain was recorded throughout the survey undertaken in October 2023 which may have suppressed activity. No further survey was undertaken at a later date due to the lateness of the season and forecasted drop daytime/night time temperatures.

#### **Automated Detector Surveys**

- A3.45 To supplement the bat transect survey data, bat activity within the Site was also sampled using Swift detectors (hereafter referred to as 'automated detectors'), which were deployed in fixed locations to automatically trigger and record bat echolocation calls over multiple nights at a time. In this case, automated detectors were deployed at two locations within the Site during each survey, as shown on **Plan EDP 8**, which were judged to be representative of the habitats within the Site. The automated detectors were fixed in secure locations, with an external microphone attached c.1-2m above ground, where possible, and directed away from the tree/branch to maximise detection sensitivity. In total seven surveys were completed over the course of the active bat season in 2023, each comprising sampling by automated detectors for five consecutive nights. Details of dates, sampling locations and weather conditions during each of the surveys undertaken to date are given in **Table EDP A3.4**.

**Table EDP A3.4:** Automated Detector Survey Details

Sampling Period Dates	Location (Reference number and OS grid reference)	Microphone		Weather (max, min temp/ rainfall/max, min wind speed)
		Height	Direction	
22/05/23-27/05/23	SW11 - ST 09355 69047	1.5m	North	9-21°C 6-17 mph winds
	SW12 - ST 09391 69102	1.5m	West	
20/06/23-25/06/23	SW11 - ST 09355 69047	1.5m	North	14-25°C, 4-19 mph winds
	SW12 - ST 09391 69102	1.5m	West	
18/07/23-23/07/23	SW11 - ST 09355 69047	1.5m	North	12-32°C 6-16 mph winds
	SW12 - ST 09391 69102	1.5m	West	
22/08/23-27/08/23	SW11 - ST 09355 69047	1.5m	West	12-24°C 5-15 mph winds
	SW12 - ST 09391 69102	1.5m	North	
19/09/23-23/09/23	SW11 - ST 09355 69047	1.5m	West	7-19°C 4 - 20 mph winds
	SW12 - ST 09391 69102	1.5m	North	
12/10/23-16/10/23	SW11 - ST 09355 69047	1.5m	West	3 - 19 °C 6-16 mph winds
	SW12 - ST 09391 69102	1.5m	North	

A3.46 The sound files recorded by the automated detectors were filtered for each of the UK's bat species/species groups using Insight software's filter function. The parameters for the species filters are based on those proposed by Chris Corben and Kim Livengood<sup>28</sup> and have been fine-tuned using known call parameters for each of the species/contained within the BatClassify UK Auto ID plugin feature. All files passing the various filters plus approximately 10% of files that did not pass any species filters (noise files) were checked manually using sonogram analysis in accordance with published guides to confirm the species identification of each bat call.

#### *Limitations*

A3.47 The identification of calls and species using Insight software is dependent upon the quality of the recording made which can be influenced by the following factors, which may limit levels of activity and species recorded:

- Weather conditions - rainfall and wind;
- Distance of bat from the detector's microphone; and
- Presence of obstructions through which the noise must pass i.e. trees/leaves.

## **RESULTS**

### **Bat Roost Surveys**

#### ***Roost Assessment of Trees***

A3.48 The preliminary ground level roost assessment of trees within and immediately adjacent to the proposed development footprint for the Site identified a total of seven trees with suitable features for bat roosting, including three trees with bat boxes installed (**T051, T055** and **T062**). Of this total, five were found to be of High suitability (**T001, T055, T051, T062** and **T080**), with one of Moderate suitability (**T075**) and one of Low suitability (**T251**). Further details for each of these trees are provided in **Table EDP A3.5** and their locations are shown on **Plan EDP 5**.

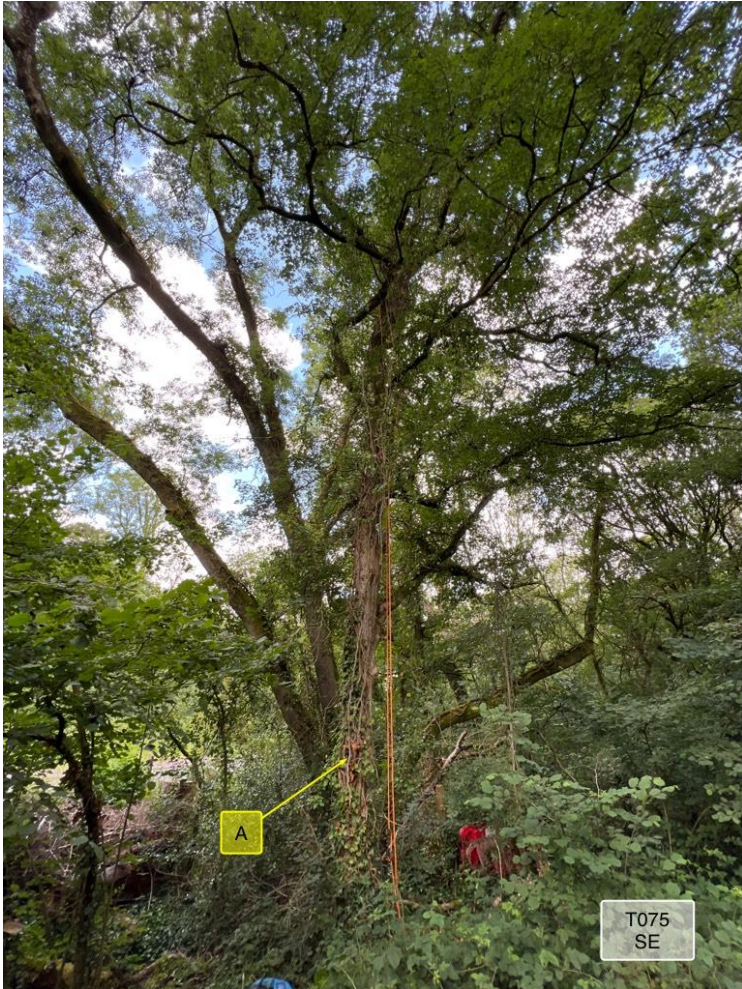
A3.49 Aerial inspection surveys of the trees revealed that none of the suitable features are currently in use by bats or have evidence of recent bat occupation. One bat box (installed upon tree **T062**) was in use by up to seven common pipistrelle bats (on two separate occasions with a bat observed emerging from this box during a dusk emergence survey of **B2** on 24 August 2023).

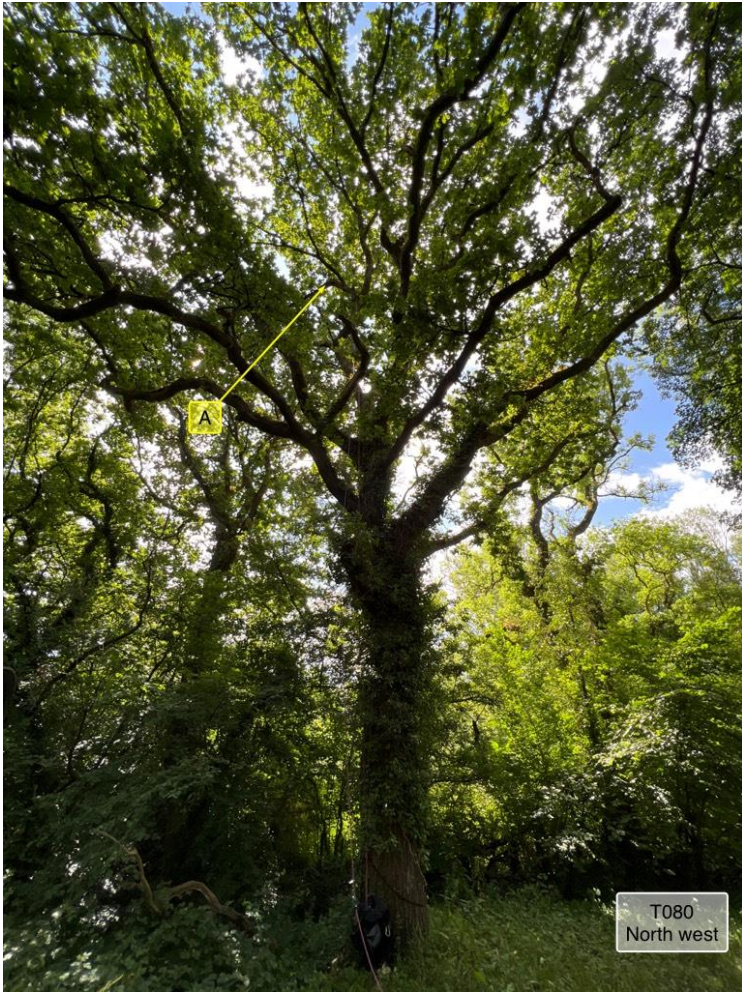
A3.50 All other trees surveyed were found to be of negligible suitability for roosting bats and have not been mapped/described.


---


<sup>28</sup> Taken from Analook W training course and workshop, September 2013


**Table EDP A3.5:** Details of Trees with Bat Roost Suitability


Tree Tag ID	Photograph	Tree Species	Potential Bat Features	Roosting Suitability
T075		<p>Field Maple  <i>(Acer campestre)</i></p>	<p>SE facing knot hole at 2m, 22cm vertical wedge cavity.</p> <p>No staining or evidence of roosting bats.</p>	<p>Moderate</p>

Tree Tag ID	Photograph	Tree Species	Potential Bat Features	Roosting Suitability
T080		Pedunculate Oak ( <i>Quercus robur</i> )	<p>Aerial inspection noticed hazard beam at 14m N on first climb inspection with a suitable split and substrate indicators but no evidence.</p> <p>Second climb discovered another hazard beam, newly formed with fresh splintering. Jagged edges but suitable shelter in both apexes.</p> <p>No evidence of roosting bats.</p>	High


Tree Tag ID	Photograph	Tree Species	Potential Bat Features	Roosting Suitability
T251	 A photograph of a large, mature Goat Willow tree with dense green foliage and several prominent, split, and dead-looking branches. Two green arrows point to specific features on the tree, labeled 'A' and 'B'. A small white tag with the text 'T251 South east' is visible in the bottom right corner of the photo.	Goat Willow ( <i>Salix caprea</i> )	Split limbs, mostly exposed with limited shelter.  No evidence of roosting bats.	Low

Tree Tag ID	Photograph	Tree Species	Potential Bat Features	Roosting Suitability
T051		Common Ash ( <i>Fraxinus excelsior</i> )	Bat box, lifting bark, cankers, dead wood limbs.  No evidence of roosting bats.	High

Tree Tag ID	Photograph	Tree Species	Potential Bat Features	Roosting Suitability
T055		<p>Silver Birch  <i>(Betula pendula)</i></p>	<p>Bat box, no other features.</p> <p>On first inspection a paper wasp was actively building a nest.</p> <p>On second inspection paper wasp nest destroyed and cleaned out. No further change observed.</p> <p>No evidence of roosting bats.</p>	<p>High</p>

Tree Tag ID	Photograph	Tree Species	Potential Bat Features	Roosting Suitability
T062		<p>Silver Birch  <i>(Betula pendula)</i></p>	<p>Standing deadwood/trunk with bat box.</p> <p>Initial inspection observed wasp nest inside bat box when torched from the ground.</p> <p>Tree considered dry and unsafe to climb. Potentially unsafe for leaning ladder.</p> <p>On second inspection wasps were no longer present. The bat box was checked via use of a ladder with seven common pipistrelles identified. On third inspection same number of common pipistrelles present.</p> <p>Appeared to have heavy levels of bat droppings in the bat box.</p> <p>A bat was observed emerging from the bat box during a dusk emergence survey of building <b>B2</b> on 24 August 2023.</p>	<p>High – Roost confirmed</p>






Tree Tag ID	Photograph	Tree Species	Potential Bat Features	Roosting Suitability
T001 (no tag)		Multi stem Oak - hybrid ( <i>Quercus</i> spp.)	Shearing crack at 5m NE facing providing vertical wedge cavity.  No evidence of roosting bats.	High



***Preliminary Roost Assessment of Buildings***



- A3.51 The preliminary roost assessment comprising an external visual inspection of on-site buildings assessed **B3** and **B6** to be of high suitability, **B1**, **B5** and **B7** to be of moderate suitability and **B2** and **B4** to be of low suitability. The buildings are considered to offer limited opportunities for hibernating bats, however, with no cellars or underground areas that offer stable and suitable conditions during the winter months. The potential for cavities suitable for crevice dwelling bats within each building cannot be ruled out however, although such internal building features are not characteristic of a classic hibernation site.
- A3.52 Further details for each of the buildings inspected are provided in **Table EDP A3.6** and their locations are shown on **Plan EDP 6**.


**Table EDP A3.6:** Preliminary Bat Roost Assessment of Buildings


Building Ref. No.	Photograph	Description and Potential Bat Features	Roosting Suitability
B1		<p>Single storey double garage 3m x 6m x 6m (H x W x L). Structure comprises of brickwork covered in a pebbledash exterior with two wooden garage doors on eastern aspect. Wooden bargeboards above door. Building covered in dense ivy which could obscure features behind. There are some areas where the root network is exposed.</p> <p>Small crevices above the garage doors c.2-7cm wide provides potential access to bats. Heavily cobwebbed at time of survey but leads directly into interior space.</p>	Moderate

Building Ref. No.	Photograph	Description and Potential Bat Features	Roosting Suitability
B1		<p>Pebbledash and brickwork exterior damaged on north-west corner of building. Small crevices where cement is missing provides suitable roosting opportunities for bats.</p>	
B1		<p>Large crack towards centre of building on western elevation, c.15cm by c.2-5cm wide. Crack leads straight into building so provides direct access into the interior for bats. There are also numerous smaller crevices in the crack which are more sheltered and could be used as roosting features by crevice dwelling bats.</p>	


Building Ref. No.	Photograph	Description and Potential Bat Features	Roosting Suitability
B1		<p>Mono-pitch sloping roof (sloping downwards towards eastern aspect) comprises of roofing felt sealed to wooden boards below.</p> <p>Small crevices present between the boards and roofing felt provide potential roosting features for bats.</p>	
B2		<p>Two storey high dwelling with a gable-to-gable roof. Building c.7m x 5 x 8m. Structure comprises of brickwork covered in pebbledash exterior and is primarily well sealed.</p> <p>Metal vents present towards apex of gables on north and south aspects. Southern metal vent damaged and could provide direct access into roof void. Can see presence of void space through windows.</p>	Low


Building Ref. No.	Photograph	Description and Potential Bat Features	Roosting Suitability
B2		<p>Plastic soffits well-sealed.</p> <p>Roof comprises of well-sealed interlocking tiles. Chimneys and associated lead flashing also well-sealed.</p> <p>Flat roof extension along eastern aspect comprises of similar materials to main dwelling except with roofing felt flat roof.</p> <p>Exterior wooden barge boards support minor crevices where boards have warped over time. Crevices appeared to be mainly superficial with depth of c.5cm and heavily cobwebbed.</p>	
B3		<p>Two-storey high dwelling with hip-to-hip roof c.10 x 10 x 8m. Appeared to be brick based covered in pebbledash exterior and stone masonry present around windows. Wooden soffits present with connecting metal guttering.</p> <p>Minor crevices present between stone masonry and wooden window frame around ground floor windows on southern aspect, c.2-3cm wide.</p> <p>Wooden soffits in poor condition and rotted in several areas on south, east and western aspects. Substantial holes present adjacent to chimney breast on east and west aspects potentially lead to void. Crevices on west aspect currently used by nesting birds.</p>	High


<b>Building Ref. No.</b>	<b>Photograph</b>	<b>Description and Potential Bat Features</b>	<b>Roosting Suitability</b>
<b>B3</b>		Crevices in central ridge tiles where cement is missing, primarily present on north and south-east aspects.	



Building Ref. No.	Photograph	Description and Potential Bat Features	Roosting Suitability
B3		<p>Dense ivy on north aspect could obscure other suitable features and/or nesting birds.</p> <p>Crevices in chimney breast along east aspect where mortar is missing. Crevices heavily cobwebbed at time of survey.</p> <p>Hole in wall along east aspect where air vent is missing. Hole c.15cm wide x 10cm tall. Heavily cobwebbed at time of survey but two small holes were present, potentially used as access points into roof void or cavity walls.</p> <p>Lean-to extension on west aspect comprises of same materials as main house including slate tiles, wooden soffits and pebbledash exterior c.2 x 2 x 3m.</p> <p>Wooden soffits rotten in north-west corner leads to soffit void. No obvious interior void present but timber support frame observed.</p>	






Building Ref. No.	Photograph	Description and Potential Bat Features	Roosting Suitability
B4		<p>Single storey high terrapin classroom on wooden stilts raised c.0.5m above the ground. Gap covered in metal grid mesh along north, west and south aspects and open on east aspect.</p> <p>Wooden soffit boards warped/lifted along north and south aspects creating small crevices between the roof and soffit boards.</p> <p>Building appeared to comprise of a timber frame enclosed in wooden cladding.</p> <p>C.3–5cm crevice present between interior and exterior wooden cladding with upward cavity leading c.15–30cm up along north and south aspects.</p> <p>Roof gently sloping and covered in roofing felt. No interior roof void present.</p>	Low



<b>Building Ref. No.</b>	<b>Photograph</b>	<b>Description and Potential Bat Features</b>	<b>Roosting Suitability</b>
<b>B5</b>		<p>Single-storey classroom. Building covered in well-sealed pebbledash exterior with stone masonry around windows. Wooden soffits are present across the building and guttering and appeared to be made of asbestos c.5 x 30 x 6m.</p> <p>Wooden soffits rotted in numerous locations along north and south aspects whilst north-west and south-west corner has a particularly large crevice. This appeared to be damaged by a mixture of birds and rot.</p>	Moderate


<b>Building Ref. No.</b>	<b>Photograph</b>	<b>Description and Potential Bat Features</b>	<b>Roosting Suitability</b>
<b>B5</b>		<p>Damage to stonework on west aspect. Headstone above window supports a small hole. This did not appear to lead into any voids but the crevice could be suitable for a single bat.</p> <p>Roof gable to gable roof clad in slate tiles with clay ridge tiles. Four chimneys present on roof. Brickwork and lead flashing all well-sealed.</p> <p>Tiles slipped in locations and mortar missing in areas along east and west aspects.</p> <p>Tiles missing in north-west corner, potentially due to tree damage. Gaps created from missing tiles did not appear to lead into roof void and crevices appeared to be largely superficial.</p> <p>Small extension on north and south aspects c.3 x 3 x 2.5m in size. Comprise of same materials as main building.</p>	

Building Ref. No.	Photograph	Description and Potential Bat Features	Roosting Suitability
B6		<p>Single-storey high building clad in pebbledash exterior. Small extensions present along west aspect. Wooden soffits primarily well-sealed but rotted in areas. Gable to gable roof clad in slate tiles with clay ridge tiles. Dense ivy covers roof along east and south aspects. Well-sealed stone masonry present around windows.</p> <p>Crevices present where tiles have lifted along east aspect.</p> <p>Damage to roof tiles and soffits in north-east corner, likely due to tree falling on building. Crevices could lead directly into building but from the exterior appeared to only lead into soffits.</p> <p>Damage to stonework along north aspect. Crevices heavily cobwebbed and c.10 x 15cm in size.</p>	High
B6		<p>Two small timber-clad ventilation structures present towards centre of roof. Comprised of similar materials to main building but support timber cladding along all aspects covered in roofing felt along north, east and south aspects.</p> <p>Cladding damaged on northern structure along west aspect. Likely leads directly into ventilation structure.</p>	

Building Ref. No.	Photograph	Description and Potential Bat Features	Roosting Suitability
B6		<p>Small lean-to structure present along west aspect with similar composition to main building c.3 x 1.5 x 1.5m in size. Structure mainly used as a porch.</p> <p>Decorative stonemasonry by door provides crevices between the main brick/stonework and the masonry which could be used by a small number of bats. Majority are heavily cobwebbed.</p>	
B6		<p>Small lean-to structure present along north-east aspect with similar composition to main building with a timber support frame. Roof sloping from west to east aspect comprising of slate roof tiles c.3 x 5 x 3m in size.</p> <p>Rotted soffits along east aspect leads into small roof cavity between tiles and interior wood cladding.</p>	

Building Ref. No.	Photograph	Description and Potential Bat Features	Roosting Suitability
B7		<p>Main building two-storeys high covered in pebbledash exterior with stonemasonry around windows. Numerous small extensions present along north, south and east aspects. Gable to gable roof supports slate roof tiles and clay ridge tiles.</p> <p>Crevices present where tiles have slipped and/or mortar is missing from central ridge tiles along east and west aspects.</p> <p>Numerous small crevices present behind bargeboards along east and south aspect where the wooden boards have warped.</p> <p>Damage to tiles and soffit in south-east corner, likely due to tree branches falling onto building.</p> <p>Rotted window frame in south-east corner leads directly into interior space. No suitable interior features identified from the outside.</p> <p>Rotted wooden boarding present above doorframe along west aspect. Bird nesting material present in crevice at time of survey.</p>	Moderate

Building Ref. No.	Photograph	Description and Potential Bat Features	Roosting Suitability
B7		<p>Single-storey high extension along north aspect comprises of a timber frame enclosed in timber cladding. Building supports a flat roof covered in a lead lining and roofing felt with a small timber-clad ventilation structure towards centre of the building.</p> <p>Numerous areas along all aspects where the timber cladding has warped/lifted and could provide crevices for small bat species. Small rot hole also present along east aspect could lead to crevice between interior and exterior wood cladding but difficult to gauge from exterior.</p>	
B7		<p>Vent on ventilation structure missing along east aspect. View through binoculars confirmed hole leads directly into structure but difficult to gauge if any suitable features present within.</p>	

Building Ref. No.	Photograph	Description and Potential Bat Features	Roosting Suitability
B7		<p>Small extension along west aspect supports a flat roof which appeared to comprise wood roofing sheets covered in roofing felt. Structure c.2.5 x 4 x 5m in size.</p> <p>Small access point via open window along west aspect leads directly into interior space. No suitable features identified within the interior space (based on exterior view).</p> <p>Small, pitched roof extension along south aspect comprised of similar materials to the main building c.2.5 x 2 x 1.5m in size.</p> <p>Numerous crevices behind slipped/lifted roof tiles. Minor crevices present in central ridge where mortar is missing.</p> <p>Numerous small crevices in wooden bargeboards along main building two-storeys high covered in pebbledash exterior with stonemasonry around windows. Gable to gable roof supports slate roof tiles and clay ridge tiles.</p>	

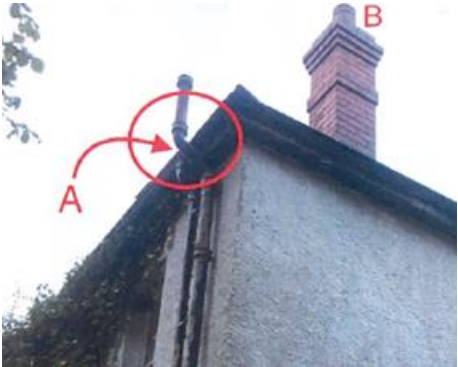



### **Dusk Emergence/Dawn Re-entry Surveys**


- A3.53 Given their high suitability to support roosting bats, buildings **B3** and **B6** were subject to two dusk emergence and one dawn re-entry survey between August and September whilst **B1**, **B5** and **B7** were subject to two dusk emergence/dawn re-entry surveys. **B2** and **B4** were subject to one survey each during August 2023 with a second survey of **B4** undertaken using a remote IR camera on 07 September 2023.
- A3.54 No bats were recorded emerging from building **B1** with moderate bat roost during a dusk emergence survey on 23 August 2023 and 07 September 2023 confirming absence of a bat roost in association with this building.
- A3.55 No bats were recorded emerging from building **B2** with low bat roost potential following a dusk emergence survey on 24 August 2023 confirming absence of a bat roost in association with this building.
- A3.56 No bats were recorded from building **B3** during a dusk survey on 23 August 2023 survey on 11 September 2023. Seven myotis bat species were recorded entering building **B3** during a dawn survey on 11 August 2023, spread across two locations. Building **B3** is thus considered to support a summer day roost for low numbers of Myotis bats. Although identification of Myotis bats to species level was not possible, it is considered likely that these are Natterer's or whiskered bats with these species being more common and widespread than other *Myotis* sp. but also typically favouring buildings for use as roosts whilst other *Myotis* sp. are typically associated with trees of other built structures such as bridges.
- A3.57 During a dusk emergence survey of building **B4** on 24 August 2023, two soprano pipistrelle bats were recorded emerging from below the roof at the south-east corner of the building. Deployment of an IR camera and bat detector at this location on 07 September 2023 recorded a single soprano pipistrelle bat emerging from a loose panel under the gutter. It is considered that building **B4** supports a summer day roost for low numbers of soprano pipistrelle bats.
- A3.58 Two soprano pipistrelle bats were recorded re-entering from beneath the eaves of building **B5** on 23 August 2023 on the south gable end. A single soprano pipistrelle bat was also recorded emerging from the south-west corner of this building during a dusk survey on 27 September 2023, confirming presence of a summer day/transitional roost for low numbers of soprano pipistrelle bats.
- A3.59 A dusk survey of building **B7** on 21 August 2023 noted a possible soprano pipistrelle emergence from building **B6**. During a dusk emergence survey of **B6** on 29 August 2023, two soprano pipistrelle bats were observed re-entering a feature beneath the wood boarding that lines the top of the porch on the western elevation. A soprano pipistrelle bat was also observed emerging from this feature on 04 October 2023 whilst a myotis bat was recorded re-entering a feature beneath the barge board of the porch on 14 September 2023. A second soprano pipistrelle roost was identified in association with the northern roof turret with an emergence and re-entry recorded here on 14 September and 04 October 2023 respectively.
- A3.60 The turret similarly supports a roost of myotis bats with a single bat recorded emerging from this feature on 29 August 2023 and 04 October 2023. This is in addition to two brown long eared bats recorded emerging from the south-west corner of the building during the dusk

emergence survey in August with further emergences and re-entries recorded during a dawn survey in September.

**Table EDP A3.7:** Bat Dusk Emergence and Dawn e-entry Survey Results.

Building Number	Bat Species	Estimated Number	Roost Location/Access Point	Roost Status
<b>B3</b>	<i>Myotis</i> sp. (possible Natterer's)	Min five	<p><b>11 August 2023:</b> Up to seven Myotid bats observed swarming above chimney with common pipistrelle observed flying at east side. Three confirmed re-entry via ridge tile on hip nearest chimney, third tile down from apex.</p> <p>Two Myotid bats entered under ridge tile above guttering on north- west corner after several mock-landings at 05:30.</p> 	Summer day roost for low numbers of Myotid bats.
<b>B4</b>	Soprano Pipistrelle	Two	<p><b>24 August 2023:</b> Two bats emerged from below roof in south-east corner of building at 20:34 and 20:39.</p> <p><b>07 September 2023:</b> Emergence of a single bat from loose panel under gutter.</p> 	Summer day roost for low numbers of soprano pipistrelle bats.

Building Number	Bat Species	Estimated Number	Roost Location/Access Point	Roost Status
<b>B5</b>	Soprano pipistrelle	Two	<p><b>23 August 2023:</b> Re-entry under eaves on south gable end at 05:47. A previous re-entry was recorded at 05:43 but there was no sonogram recording. Assumed to be soprano pipistrelle. Mock-landing at apex in minute prior to confirmed re-entry.</p> <p><b>27 September 2023:</b> One emergence from south-west corner of building below roof/soffit.</p>	Summer day roost for low numbers of soprano pipistrelle bats.
<b>B6</b>	Soprano pipistrelle	Two	<p><b>21 August 2023:</b> Possible emergence of a single soprano pipistrelle bat observed during survey of <b>B7</b>. Thought to have emerged from south-west corner at 20:08.</p> <p><b>29 August 2023:</b> Two bats re-entered feature at top of porch on western elevation during dusk survey.</p> <p><b>14 September 2023:</b> One possible re-entry into gap on west side of northern roof turret.</p> <p><b>04 October 2023:</b> One bat emerged from south-west corner of porch on western elevation at 18:50. One bat emerged from south-west corner of turret in roof at 19:00.</p>	Two summer day/transitional roosts for low numbers of soprano pipistrelle bats.
<b>B6</b>	<i>Myotis spp.</i>	One	<p><b>29 August 2023:</b> Two bats exited from under guttering on south-west corner. A third emerged from beneath fascia on south-west corner all between 20:10 and 20:51.</p> <p>A myotis bat also emerged from top of roof on western elevation at 29:04.</p>	Two summer day/transitional roosts for low numbers of myotis bats.

Building Number	Bat Species	Estimated Number	Roost Location/Access Point	Roost Status
<b>B6</b>	Brown long-eared (not echolocating)	Three	<p><b>14 September 2023:</b> Re-entry recorded at the south-west corner of the porch, under the wooden bargeboard approx. 10–15cm from the south-west porch corner.</p>  <p>Possible emergence from south-west corner of building at 03:35 followed by a return to this feature at 05:50. Two re-entries at the south-west corner of the building confirmed. Bats flew into gap between edge tile and wooden edge. Evidence of swarming.</p>	Two transitional roosts comprising low numbers of brown long-eared bats.
<b>B7</b>	Soprano pipistrelle	Two	<p><b>21 August 2023:</b> One bat exited from under barge board on western elevation at 20:30.</p> <p><b>21 September 2023:</b> One bat re-entered feature under middle window on eastern elevation at 20:21.</p> <p>One bat emerged from west corner of northern wooden extension at 19:33. No sonagram but assumed to be soprano pipistrelle.</p>	Summer day/ transitional roost for low numbers of soprano pipistrelle.

A3.61 With respect to buildings **B3**, **B4**, **B5**, **B6** and **B7** combined, it is estimated these support up to three *Myotis* sp, five soprano pipistrelle and two brown long-eared bat roosts with each roost supporting low numbers of non-breeding individuals. Although identification of Myotid bats to species level was not possible, it is considered likely that these are Natterer's or whiskered bats with these species being more common and widespread than other *Myotis* sp. but also typically favouring buildings for use as roosts whilst other *Myotis* sp. are typically associated with trees or other built structures such as bridges.

A3.62 In accordance with bat mitigation guidelines<sup>29</sup>, soprano pipistrelle, Natterer's/whiskered and brown long-eared bats roosts are individually considered to be of Site level importance given their usage by individual/small numbers of common and widespread species (non-maternity). In respect of the numbers of roosts supported by the Site, however, a roosting bat assemblage is overall considered to be of Local importance.

### **Bat Activity Surveys**

A3.63 As noted above in relation to the scope/design of the bat activity surveys, the initial habitat assessment of the Site found the Site to be of moderate suitability for foraging and commuting bats by virtue of its small extent and dominance of hardstanding, albeit with good connectivity to the wider landscape.

A3.64 The results of the transect surveys are illustrated on **Plans EDP 9a-h** and results of the automated detector surveys are provided, in detailed and summary form, within **Tables EDP A3.8 to A3.15**. These results are also described below for the assemblage as a whole and on a species-by-species basis. The species accounts also draw upon information collated during the desk study and published data on national conservation status<sup>30</sup>.

### **Overall Diversity, Abundance and Distribution**

A3.65 A total of nine bat species/species groups (Myotis and long-eared bat species were not identified to species level), were confirmed to be present foraging and/or commuting within the Site during the transect and/or automated detector surveys. With reference to the automated detector data tables, the vast majority of recorded bat calls were of soprano pipistrelle with calls of *Myotis* sp. making up a small minority of the total. Other species rarely recorded include common pipistrelle, long-eared, noctule, Leisler, serotine and lesser horseshoe bats.

A3.66 Five species of bat were confirmed to be foraging and/or commuting within the Site during the course of manual transect surveys undertaken on seven occasions between May and October 2023. Levels of bat activity recorded during the transect surveys were generally moderate. The distribution of this activity was generally evenly spread across the Site although this is not surprising given the small size of the Site which also represents a break in the canopy of the wider wooded landscape. A foraging/commuting assemblage was generally dominated by soprano pipistrelle with noctule, *Myotis* sp., serotine, *Nyctalus* sp. and common pipistrelle rarely recorded across the survey season. In June and August however, activity was dominated by *Myotis* sp with activity largely centred in the west of the Site around building **B3**. Naturally, bat activity was lowest in October with only a single soprano pipistrelle and *Myotis* sp. registration recorded.

### **Species/Species Groups Recorded**

#### *Common Pipistrelle and Soprano Pipistrelle*

A3.67 Common pipistrelle and soprano pipistrelle bats are common and widespread across the UK, representing the most, and second most, abundant bat species in the UK respectively. Whilst

---

<sup>29</sup> 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.

<sup>30</sup> Bat Conservation Trust, 2023. The National Bat Monitoring Programme Annual Report 2022. Bat Conservation Trust, London. Available at [www.bats.org.uk/our-work/national-bat-monitoringprogramme/reports/nbmp-annual-report](http://www.bats.org.uk/our-work/national-bat-monitoringprogramme/reports/nbmp-annual-report).

having suffered significant historic declines, national population monitoring indicates that common pipistrelle and soprano pipistrelle bats are increasing nationally.<sup>31</sup>

A3.68 Soprano pipistrelle recordings were the most frequent across the Site during the automated detector surveys with soprano pipistrelle the dominant species recorded during the manual transect surveys in May, July, late August and September. Activity was generally well distributed across the Site with foraging activity noted along the access road and around the buildings. In contrast, common pipistrelle was rarely recorded during manual transect surveys with relatively low levels of activity recorded during the automated detector surveys.

A3.69 Several roosts of soprano pipistrelle were identified within on-site buildings during dusk emergence/dawn re-entry surveys, specifically buildings **B4-B6** with each roost comprising low numbers of this species.

A3.70 Particularly given their common and widespread distribution, common pipistrelle and soprano pipistrelle bats using the Site are considered to be of Site importance.

#### *Myotid Bat Species*

A3.71 Myotid (*Myotis* sp.) bat species occur throughout most of the UK, their populations considered to be either stable or increasing, with the exception of Bechstein's bat, which is listed in Annex II of the European Commission (EC) Habitats Directive and is considerably rarer. Moderate levels of Myotid bat were recorded during the manual transects surveys and was generally the second highest recorded species during the automated bat detector surveys. This species was dominant over soprano pipistrelle during manual transect surveys in June and August 2023 which is unsurprising given the presence of several roosts of this species associated with on-site buildings. Roosts are believed to comprise Natterer's or whiskered bats these species being more common and widespread than other *Myotis* sp. but also typically favouring buildings for use as roosts whilst other *Myotis* sp. are typically associated with trees of other built structures such as bridges. Particularly in respect of on-site roosts, albeit whiskered/natterer's bats are widespread within Wales, *Myotis* is considered to be of Local level importance.

#### *Long-eared*

A3.72 Brown long-eared bat is found throughout the UK, its populations considered to remain stable nationally. In contrast, the grey long-eared bat (*Plecotus austriacus*) is considerably rarer and its population appears to be declining. This species is primarily confined to the extreme south of the British Isles, from Sussex to Devon. Long-eared bat was recorded rarely during automated detector surveys between June and October and was recorded on one occasion during manual transect surveys in June 20023. A dawn emergence survey of building **B6** also identified a possible brown long-eared bat roost in association with building **B6** during October 2023. Bats observed entering the building were not echolocating, however, based on the timing of the survey combined with behaviour observed, brown long-eared bat is considered most likely. Brown long-eared bats using the Site are considered to be of Site level importance.

---

<sup>31</sup> Bat Conservation Trust, 2023. The National Bat Monitoring Programme Annual Report 2022. Bat Conservation Trust, London. Available at [www.bats.org.uk/our-work/national-bat-monitoringprogramme/reports/nbmp-annual-report](http://www.bats.org.uk/our-work/national-bat-monitoringprogramme/reports/nbmp-annual-report).

*Noctule*

A3.73 Uncommon, but considered to be widespread in the UK with population levels stable since 1999, noctule bats are listed as a species of principal importance for conservation in Wales. Only low levels of this species were recorded during the automated detector surveys and manual transect surveys. Noctule bats using the Site are therefore considered to be of Site level importance.

*Serotine/Leislars*

A3.74 Serotine bats are rarely recorded in Wales, to the extent that there is insufficient data available to understand their current population trend (albeit with populations considered to remain stable in England). Whilst only infrequently encountered on-site during manual transect and automated bat detector surveys, given their rarity, serotine bats using the Site are considered to be of Local importance.

A3.75 With respect to Leisler's bats, insufficient data is available to understand their current population trend, although this species is considered to be widespread albeit uncommon in Great Britain. Only one registration of Leislars bat was recorded during the automated bat detector surveys, specifically in August 2023 although several *Nyctalus* sp. registrations which may be attributed to serotine or Leislars. Given the very low levels of activity recorded for this long-ranging species during the bat activity season, it is likely that the Site is used predominantly by commuting individuals. Leisler's bats supported by the Site are not considered to be significant beyond a Site context.

*Lesser Horseshoe*

A3.76 Lesser horseshoe is a rare and endangered species in the UK, being predominantly confined to the west/south-west of England and South Wales, though its population status is understood to have increased since 1999. However, usage of the Site by this species was notably limited, with this species rarely recorded during automated detectors surveys and only encountered once during the course of dusk emergence/dawn re-entry surveys at the Site. Nonetheless its rarity warrants these species to be considered of Local importance.

**Automated Detector Data Tables**

**Table EDP A3.8:** Automated Detector Survey Results May 2023.

Location	Bat Species	Number of Bat Passes Recorded per Night					Total (and percentage)
		22 May	23 May	24 May	25 May	26 May	
1	Common pipistrelle	16	12	9	8	11	<b>56 (11)</b>
	Myotis	5	4	5	3	3	<b>20 (4)</b>
	Soprano pipistrelle	150	76	41	46	106	<b>419 (85)</b>
	<b>Total</b>	<b>171</b>	<b>92</b>	<b>55</b>	<b>57</b>	<b>120</b>	<b>495 (100)</b>
2	Common pipistrelle	18	8	35	12	15	<b>88 (6)</b>

Location	Bat Species	Number of Bat Passes Recorded per Night					Total (and percentage)
		22 May	23 May	24 May	25 May	26 May	
	Lesser horseshoe	0	1	3	1	0	5 (<1)
	Myotis	11	3	5	18	4	41 (3)
	Noctule	1	1	3	3	2	10 (<1)
	Serotine	0	1	0	1	0	2 (<1)
	Soprano pipistrelle	343	161	194	224	308	1230 (95)
	<b>Total</b>	<b>355</b>	<b>167</b>	<b>205</b>	<b>247</b>	<b>314</b>	<b>1288 (100)</b>

**Table EDP A3.9:** Automated Detector Survey Results June 2023

Location	Bat Species	Number of Bat Passes Recorded per Night					Total (and percentage)
		20 Jun	21 Jun	22 Jun	23 Jun	24 Jun	
1	Common pipistrelle	8	20	18	18	13	77 (15.5)
	<i>Myotis</i> sp.	2	4	4	8	7	25 (5)
	Noctule	3	4	2	6	6	21 (4)
	<i>Nyctalus</i> sp.	1	0	0	0	2	3 (0.5)
	Serotine	0	1	3	1	1	6(1)
	Soprano pipistrelle	94	76	66	45	90	371 (74)
	<b>Total</b>	<b>108</b>	<b>105</b>	<b>93</b>	<b>78</b>	<b>119</b>	<b>503 (100)</b>
2	Common pipistrelle	9	8	10	17	15	59 (10)
	Leislars	0	0	0	3	2	5 (1)
	Long-eared bat	0	0	3	0	0	3 (1)
	Myotis	5	7	7	6	2	27 (4.5)
	Noctule	6	8	4	8	2	28 (5)
	<i>Nyctalus</i> sp.	0	0	0	2	0	2 (<1)
	Serotine	0	0	0	1	1	2 (<1)
	Soprano pipistrelle	109	118	81	76	77	461 (78)
	<b>Total</b>	<b>129</b>	<b>141</b>	<b>105</b>	<b>113</b>	<b>99</b>	<b>587 (100)</b>



**Table EDP A3.10:** Automated Detector Survey Results July 2023

Location	Bat Species	Number of Bat Passes Recorded per Night					Total (and percentage)
		17 Jul	18 Jul	19 Jul	20 Jul	21 Jul	
1	Common pipistrelle	41	45	52	39	45	<b>222</b>
	Long-eared	1	3	1	0	0	<b>5</b>
	Myotis	156	162	90	81	162	<b>651</b>
	Noctule	4	1	6	3	1	<b>15</b>
	Serotine	0	5	1	0	0	<b>6</b>
	Soprano pipistrelle	136	662	142	123	1062	<b>2125</b>
	<b>Total</b>	<b>338</b>	<b>878</b>	<b>292</b>	<b>246</b>	<b>1270</b>	<b>3024</b>
2	Common pipistrelle	10	36	26	22	35	<b>129 (16)</b>
	Lesser horseshoe	1	0	0	0	0	<b>1 (&lt;1)</b>
	Myotis	43	28	64	23	27	<b>185 (22)</b>
	Noctule	7	6	6	2	4	<b>25 (3)</b>
	Soprano pipistrelle	118	70	119	93	75	<b>475 (58)</b>
	Serotine	5	2	1	0	0	<b>8 (1)</b>
	<b>Total</b>	<b>184</b>	<b>142</b>	<b>216</b>	<b>140</b>	<b>141</b>	<b>823</b>

**Table EDP A3.11:** Automated Detector Survey Results August 2023

Location	Bat Species	Number of Bat Passes Recorded per Night					Total (and percentage)
		22 Aug	23 Aug	24 Aug	25 Aug	26 Aug	
1	Common pipistrelle	49	37	12	18	5	<b>121 (4)</b>
	Long-eared	2	2	0	0	0	<b>4 (&lt;1)</b>
	Myotis	34	22	12	13		<b>81 (3)</b>
	Noctule	28	23	19	7	9	<b>86 (3)</b>
	Serotine	28		1	2	0	<b>31 (1)</b>
	Soprano pipistrelle	842	934	223	349	147	<b>2495 (88.5)</b>
	<b>Total</b>	<b>983</b>	<b>1018</b>	<b>267</b>	<b>389</b>	<b>161</b>	<b>2818</b>
	Common pipistrelle	36	20	7	5	5	<b>73 (7.5)</b>
	Leislars	1	1	0	0	0	<b>2 (&lt;1)</b>
	Lesser horseshoe	0	2	0	0	0	<b>2 (&lt;1)</b>

Location	Bat Species	Number of Bat Passes Recorded per Night					Total (and percentage)
		22 Aug	23 Aug	24 Aug	25 Aug	26 Aug	
	Long-eared	2	3	1	0	0	<b>6 (1)</b>
	Myotis	9	6	1	0	0	<b>16 (2)</b>
	Noctule	11	18	5	5	2	<b>41 (4)</b>
	Serotine	7	2	0	1	1	<b>11 (1)</b>
	Soprano pipistrelle	194	299	151	93	164	<b>901 (86)</b>
	<b>Total</b>	<b>260</b>	<b>351</b>	<b>165</b>	<b>104</b>	<b>172</b>	<b>1052</b>

**Table EDP A3.12:** Automated Detector Survey Results September 2023

Location	Bat Species	Number of Bat Passes Recorded per Night					Total (and percentage)
		19 Sep	20 Sep	21 Sep	22 Sep	23 Sep	
1	Common pipistrelle	26	3	3	10	3	<b>45 (6)</b>
	Lesser horseshoe	0	4	0	0	0	<b>4 (1)</b>
	Long-eared	0	0	0	6	3	<b>9 (1)</b>
	Myotis	2	0	0	0	0	<b>2 (&lt;1)</b>
	Noctule	2	0	1	0	0	<b>3 (&lt;1)</b>
	Soprano pipistrelle	176	7	123	358	37	<b>701 (92)</b>
	<b>Total</b>	<b>206</b>	<b>14</b>	<b>127</b>	<b>374</b>	<b>43</b>	<b>764</b>
2	Common pipistrelle	3	4	3	5	9	<b>24 (2)</b>
	Long-eared	0	1	0	0	0	<b>1 (&lt;1)</b>
	Lesser horseshoe	0	6	0	0	0	<b>6 (1)</b>
	Myotis	1	4	3	4	2	<b>14 (1)</b>
	Noctule	0	2	5	1	1	<b>9 (1)</b>
	Serotine	1	0	0	0	1	<b>2 (&lt;1)</b>
	Soprano pipistrelle	248	357	115	69	145	<b>934 (94)</b>
<b>Total</b>	<b>253</b>	<b>374</b>	<b>126</b>	<b>79</b>	<b>158</b>	<b>990</b>	

**Table EDP A3.13:** Automated Detector Survey Results October 2023

Location	Bat Species	Number of Bat Passes Recorded per Night					Total (and percentage)
		12 Oct	13 Oct	14 Oct	15 Oct	16 Oct	
1	Common pipistrelle	0	2	0	1	0	<b>3 (1)</b>
	Long-eared	0	0	0	1	0	<b>1 (&lt;1)</b>
	Myotis	3	3	3	3	3	<b>15 (6)</b>
	Noctule	0	1	0	0	0	<b>1 (&lt;1)</b>
	Serotine	0	1	0	0	0	<b>1 (&lt;1)</b>
	Soprano pipistrelle	1	167	82	5	12	<b>267 (92)</b>
	<b>Total</b>	<b>4</b>	<b>174</b>	<b>85</b>	<b>10</b>	<b>15</b>	<b>288</b>
2	Common pipistrelle	4	16	0	6	3	<b>29 (16)</b>
	Myotis	2	26	2	2	19	<b>51 (29)</b>
	Noctule	2	1	0	0	0	<b>3 (2)</b>
	Soprano pipistrelle	17	64	4	5	5	<b>95 (53)</b>
	<b>Total</b>	<b>25</b>	<b>107</b>	<b>6</b>	<b>13</b>	<b>27</b>	<b>178</b>

### Evaluation of Overall Bat Assemblage

A3.77 Hardstanding and species-poor semi-improved grassland and dense scrub which dominated the Site is considered to be of negligible-limited importance to a foraging/commuting bat assemblage given its small extent and poor botanical diversity. Species-rich grassland is of great value to an assemblage but similarly small in extent. Nevertheless, such habitats are contiguous with woodland habitat along the peripheries of the Site and in the wider landscape comprising optimal habitat, whilst on-site buildings provide roosting opportunities for an assemblage with several roosts confirmed during the course of survey effort in 2023, including roosts for low numbers of soprano pipistrelle, *Myotis* sp. and brown long-eared bats.

A3.78 Taking into account the diversity of bat species utilising the Site and the extent of their roosting, foraging and commuting activity, the overall bat assemblage using the Site is judged to be of County importance.

**Appendix EDP 4**  
**Parameter Plan 1-3 (Lichfields, IL60108/03-002RevB, 05.12.23)**



**Key**

Site Boundary



Vehicular & Pedestrian Access



**Notes**

Provision is to be made for one vehicular and pedestrian access from Weycock Road at a point between point A and point B - Refer to drawings:

216432\_PD05 *Rev D* - Priority Junction GA

216432\_PD06 *Rev D* - Proposed Carriageway Alignment GA



Project Weycock Cross Campus, Barry

Title **Parameter Plans**  
Parameter Plan 1: Access

Client Cardiff and Vale College

Date 05.12.23

Scale 1:1000 @ A3

Drawn by SG

Drg. No. IL60108/03-002 RevB



Based upon Ordnance Survey mapping with the permission of Her Majesty's Stationery Office. © Crown Copyright reserved. Licence number 100017707 LF/60108/03

