



BAT SURVEYS AND ASSESSMENT

**Woolaston Methodist Church, Netherend
Woolaston, Gloucester GL15 6NT**

**Report
20th September 2021**

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QUALITY ASSURANCE

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

Every reasonable attempt has been made to comply with BS42020 (Biodiversity: Code of practice for planning and development); the CIEEM Guidelines for Ecological Report Writing (CIEEM, 2017) and Bat Conservation Trust's Bat Surveys for Professional Ecologists: Good practice guidelines 3rd edition (Collins, 2016). If compliance has not been achieved, justification/explanation has been given.

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SUMMARY

- A Preliminary Bat Roost Assessment was undertaken of a Methodist Church at Netherend, Woolaston, Gloucestershire on 26th May 2021. This was followed by bat activity surveys of the building in August and September 2021. The survey and assessment were required in connection with proposals for conversion of the building into a residential dwelling; the detailed final plans are yet to be confirmed.
- The purpose of this report is to identify and describe the potential impacts of the work on bats and whether a protected species mitigation licence application may be required; and to outline potential mitigation, enhancement and compensation requirements. Nesting birds are also considered.
- Based on the surrounding habitat, and external and internal features of the building, the church is assessed of having 'moderate' suitability for a range of roosting bat species. The preliminary roost assessment also revealed the presence of scattered bat droppings on the floor of the roof void; DNA analysis of the droppings confirmed that common pipistrelle *Pipistrellus pipistrellus*, serotine *Eptesicus serotinus* and brown long-eared bat *Plecotus auritus* have used the roof void for roosting. There are opportunities for both void and crevice-roosting species, however, there is no flight access into the building for horseshoe bats.
- Bat activity surveys were undertaken in August and September 2021 to confirm locations of bat roosts and fully characterise the status of any roosts present. The surveys confirmed the presence of a single common pipistrelle and a single serotine bat roosting within the roof void/roof structures of the church. No brown long eared bats were recorded roosting within the building, and evidence of this species, comprising old, and mostly disintegrated bat droppings, is suggestive of historical roosting only. The roosts currently present are of low to moderate conservation significance.
- **Currently, conversion of the building to residential is not thought to include impacts to the roof void or roof structures. However, because bat roosts are present in the building, if these areas/features are impacted, a comprehensive bat mitigation plan will be required to inform planning consent, and should be conditioned upon approval. A protected species mitigation licence, issued by Natural England, will also be required before the works can be undertaken. Natural England will require up-to-date information from bat activity surveys to inform the licence application.**
- Planning policy requires that development projects incorporate biodiversity enhancement elements; recommendations are therefore made for appropriate bat and bird boxes to be installed.
- Bats may move and change roosts, and numbers of individuals or species in any one roosting location may increase or decrease at any time. Consequently, if the proposed development does not take place within two years of the most recent survey (i.e. September 2022), further bat activity surveys should be carried out to provide up-to-date information on the status of the bat roost present.

1 INTRODUCTION

1.1 *Background*

Swift Ecology Ltd. were commissioned to undertake a Preliminary bat Roost Assessment of a Methodist Church at Netherend, Woolaston, Gloucestershire GL15 6NT. The survey was undertaken on 26th May 2021. This was followed bat roost characterisation surveys in August and September 2021, respectively. The site is located at an approximate OS grid reference of SO592006.

The surveys and assessment were required in connection with proposals for conversion of the building into residential accommodation, which will include removal and/or modification of some parts of the building. However, the final details of the proposals, and therefore of potential impacts upon bats, were not known at the time of writing (September 2021). Because of the nature of the works, which may involve impacts upon structures that could potentially be used by roosting bats, there is a risk that offences could occur if bats or bat roosts are present.

1.2 *Personnel*

The surveys and assessment were undertaken by Rhiannon Taylor and Dr Nick Underhill-Day MCIEEM of Swift Ecology Ltd. Nick is employed as Principal Ecologist with Swift Ecology Ltd and is an experienced bat surveyor and holder of a Natural England (NE) survey licence for bats (Class Licence reference WML-CL18). He has been actively involved with bat work for the last ten years and has undertaken numerous bat surveys, including both preliminary roost assessments and activity surveys, of a variety of buildings and structures such as residential dwellings, farm buildings, industrial buildings, bridges, derelict buildings and churches. He also has considerable experience in the associated ecological appraisal of bat roosts and in methods required for appropriate mitigation. Nick is the named ecologist or accredited agent on over 15 protected species licence applications and is qualified in tree climbing and aerial rescue techniques.

The report was prepared by Rhiannon Taylor (Qualifying member of CIEEM) who is employed as Assistant Ecologist at Swift Ecology Ltd. Rhiannon has a BSc in Marine Biology and Oceanography and an MSc in Applied Ecology and has approximately two years' experience of conducting ecological surveys and prepared subsequent reports with appropriate recommendations for mitigation.

1.3 *Ecological Context*

Woolaston Methodist Church is located in a rural location on the outskirts of the village of Woolaston in the Forest of Dean District of Gloucestershire. Woolaston is located on the north side of the River Severn estuary and the church is located approximately 2 km north of the river. The church borders a field of semi-improved grassland on its northwest elevation but is otherwise surrounded by residential dwellings and associated gardens.

The surrounding landscape is rural and comprises a mixture of arable and pasture farmland with woodlands and hedgerows providing good ecological connectivity and foraging opportunities for bats. Several hundred metres to the east of the church is the tree-lined riparian corridor of the

Cone Brook. There are extensive areas of woodland within 2 km to the north and west, including Rookery Wood, Kear's Grove woodlands and Oakhill Wood. Woolaston Common, a mosaic of woodland, scattered trees, scrub/tall herb and grassland, lies within 1 km to the north-west. These habitats provide good opportunities for roosting, foraging and commuting bats within the local area.

An aerial view of the Methodist Church is provided in Figure 1.1 below and the landscape context in Figure 1.2.



Figure 1.1: The location of Woolaston Methodist Church, with the building surveyed outlined in red.



Figure 1.2: Aerial photograph showing the location and environmental context of the site (red star).

1.4 Purpose of Report

The purpose of this report is to identify and describe the potential impacts of the proposed works on bats; to identify the need for further surveys and whether a protected species mitigation licence application may be required in relation to bats; and to set out the mitigation, enhancement and compensation measures required to ensure compliance with nature conservation legislation and to address any potentially significant ecological effects. The report also provides information on the legislative requirements relating to bats. In addition, impacts on nesting birds are considered.

The legal protection and planning policies relevant to the species mentioned in this report are detailed in Appendix 1.

2 METHODS

2.1 Background Desk Study

A background data search was undertaken in May 2021 by the Gloucestershire Centre for Environmental Records Centre (GCER) for records of bats within a 2 km radius of the site.

Reference was also made to Natural England's MAGIC website¹ for detail on nearby statutorily designated sites and records of granted Natural England protected species bat mitigation licences within a 2 km radius of the site.

2.2 Preliminary Bat Roost Assessment

2.2.1 General

The preliminary survey was undertaken on 26th May 2021 by Nick Underhill-Day and Rhiannon Taylor of Swift Ecology Ltd. Weather conditions at the time of the survey are shown in Table 2.1. The survey covered the church, as shown in Figure 1.1, Section 1.

Table 2.1: Survey conditions

Date	Approximate start time	Weather conditions
26.05.21	14:00	14°C, dry and bright (50 % cloud cover) with a light breeze (Beaufort F1-2).

2.2.2 Assessment of Bat Roost Potential

The building was assessed for its potential to support bats or bat roosts according to industry standard guidelines (Collins, 2016). This involves a consideration of various factors including:

- Light levels
- Temperature regime and protection from weather
- Access to the interior of the building or to other suitable roost sites
- Potential roost sites
- Building construction
- Habitat context

Based on these factors, an assessment was made of whether the building might support bats, and the type and number of roosts that might be present. The building was assigned a roost potential category (Collins, 2016) according to the criteria outlined in Table 2.2 below, based on the results of the assessment.

¹ <https://magic.defra.gov.uk/MagicMap.aspx>

Table 2.2: Guidelines for assessing the potential suitability of buildings/structures for roosting bats (based on Collins, 2016).

Category	Category description
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A building or structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).
Moderate	A building or 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).
High	A building or 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.
Known roost	Building or structure currently supporting bats (based on presence of bats, or evidence of use such as droppings, carcasses etc.).

2.2.3 Survey for Signs of Bats

A detailed inspection was made of the exterior and interior of the building for any evidence of bat use, such as live or dead bats, droppings, scratch marks, staining and prey remains (e.g. moth or butterfly wings), and in some cases the absence of cobwebs. Large quantities of cobwebs in roof voids or at access points tend to be suggestive of no bat use, although this evidence is not conclusive.

Bat dropping samples were collected from the roof void and sent for DNA analysis at Ecotype Genetics Ltd.

Features identified as possible bat access points or potential roosting locations were thoroughly searched where possible, using powerful torches, binoculars and an endoscope to facilitate the process. Ladders were available to enable more detailed inspection of cracks and crevices as far as access allowed.

2.3 Bat Activity (Roost Characterisation) Surveys

Bat activity dusk emergence surveys were carried out of the church on 16th August and 2nd September 2021, respectively.

During the surveys, surveyors were positioned outside the building to watch for evidence of bats entering or emerging from their roosts. The roof void was inspected prior to the start of the second dusk activity survey.

Digital recording devices were used to store bat echolocation calls for subsequent analysis using Batsound and Analook software. All surveyors are experienced in the use of bat detectors and familiar with undertaking such surveys.

The bat activity survey approach was based upon Collins, 2016. Details of timings, personnel and weather conditions are given in Table 2.3.

Table 2.3: Bat Activity Survey Details

Survey type	Dusk emergence survey	Dusk emergence survey
Date	16/08/2021	02/09/2021
Weather conditions	Dry and overcast (70 % cloud cover)	Dry, overcast cloud cover 100%
Start temperature (°C)	15°C	18°C
End temperature (°C)	13°C.	16°C
Wind (Beaufort)	1-2	1
Precipitation	None	None
Sunset	2133	1956
Start time	2120	1950
End time	2300	2125
Surveyors (numbered locations)	Rhiannon Taylor Camilla Winder	Camilla Winder (1), Nick Underhill-Day (2),
Equipment	Anabat Walkabout (1), Anabat Scout (1)	Anabat Walkabout (2)

2.4 Limitations

The Preliminary bat Roost Assessment was undertaken in good light and weather conditions. All the roof voids were accessible for detailed inspection, and thus there were no significant constraints to the survey. It should be noted that a Preliminary bat Roost Assessment cannot rule out bat presence, as bats may roost in areas that are not accessible other than by a destructive search (such as in crevices between roof slates and lining).

As access into the building would not have been possible during a dawn survey, it was decided to undertake a second dusk emergence survey in order to inspect the roof void prior to the survey.

Both bat activity surveys were undertaken in good weather conditions, and there were no significant limitations to the surveys.

3 RESULTS

3.1 Background Desk Study

3.1.1 Designated Sites

There is one statutory site within 2 km of Woolaston Methodist Church; the Severn Estuary Special Area of Conservation (SAC)/Special Protection Area (SPA)/RAMSAR/Site of Special Scientific Interest (SSSI) is located approximately 2 km south of the site. The Severn Estuary supports important intertidal and wetland/saltmarsh habitats, with nationally important populations of wildfowl and migratory fish. However, because of the nature and very limited extent of the planned works, this statutory site will not be affected by the proposed development and as such is not considered further in this report.

The Wye Valley & Forest of Dean Special Area of Conservation (SAC) Bat Sites are a complex of sites scattered across the Forest of Dean which between them support important breeding and hibernating populations of lesser horseshoe bat *Rhinolophus hipposideros* and greater horseshoe bat *Rhinolophus ferrumequinum*. The nearest of these sites is located approximately 4.1 km northeast of Woolaston Methodist Church; Devil's Chapel Scowles SSSI is designated for populations of lesser horseshoe and greater horseshoe bats, and comprises approximately 20 ha of mine system, approximately 18 ha of woodland, limestone scowles and shafts in fields (approximately 0.08 ha). The site is also an important swarming and hibernation site for both species.

3.1.2 Bats

GCER provided 57 records of bats within a 2 km radius of the site, recorded between 1990 and 2017. At least nine species have been recorded, namely common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *P. pygmaeus*, brown long-eared bat *Plecotus auritus*, noctule *Nyctalus noctula*, serotine *Eptesicus serotinus*, whiskered bat *Myotis mystacinus*, Daubenton's bat *M. daubentonii*, lesser horseshoe bat and greater horseshoe bat, as well as indeterminate species records.

The closest record is of common and soprano pipistrelles recorded flying during an activity survey of a building approximately 200 m southeast of the site in 2017. The nearest recorded maternity roost is for brown long-eared bats of up to 31 individuals roosting in the primary school approximately 700 m southeast of the site; individual common pipistrelle, soprano pipistrelle and lesser horseshoe bats were also recorded roosting at the school in 2009.

A map of bat records within 2 km of the church is provided in Appendix 2. The full data search from GCER is available on request.

Reference to Natural England's MAGIC website, which holds records of granted protected species licences, identified three licences for bat species within 2 km of the site. The nearest licence is for the lawful destruction of a common pipistrelle resting place 400 m south of the site (EPS Licence: EPSM2010-2592); a second licence was granted for the destruction of a breeding and resting site for common pipistrelle, soprano pipistrelle, brown long-eared bat and lesser horseshoe bats in 2009 at a location 700 m south of the site (EPS Licence: EPSM2009-1389). A third licence within

2 km of the site was granted in 2011 for the destruction of a resting and breeding site for common pipistrelle, lesser horseshoe and greater horseshoe bats at a location 1.65 km northeast of the site (EPS Licence: EPSM2011-3719).

An absence of records does not mean that a particular species is not present, merely that it has not been recorded. Many species records are not obtainable from the sources utilised and therefore there may be further undetected records for such species on the study site or in the local area.

3.2 Assessment of Habitats

The surrounding environmental context of the church is good for bats, with Cone Brook, a wooded stream corridor approximately 200 m east of the site across gardens and pasture fields, providing high quality foraging opportunities. The fields and gardens have hedgerows and lines of trees that provide good ecological connectivity to foraging sites within the wider area such as Rookery Wood and Kear's Grove which are both within 2 km of the site; the River Severn lies approximately 2 km south of the site. The cover in the immediate vicinity is moderate with the nearest mature tree cover (oak *Quercus* sp.) located approximately 10 m from the north-east gable of the church, across the public highway; there are several smaller trees at the rear (south-west) of the church. There is some external lighting on the church above entrances and street lighting along the adjacent public highway to the immediate east; there may also be some light spill from nearby dwellings.

3.3 Preliminary Bat Roost Assessment

3.3.1 Building Description

Woolaston Methodist Church was built in 1867 (sections 1 and 4). It was enlarged in 1893 with a single storey sloped roof extension (section 2) and a Sunday School room with a flat roof added in 1967 (section 3); the layout is shown in Figure 3.1 below. The church was used as a place of worship up until December 2020. The church and extension are constructed of stone walls and modern concrete interlocking roof tiles; the Sunday School extension is constructed of modern brick with a bituminous felt flat roof.

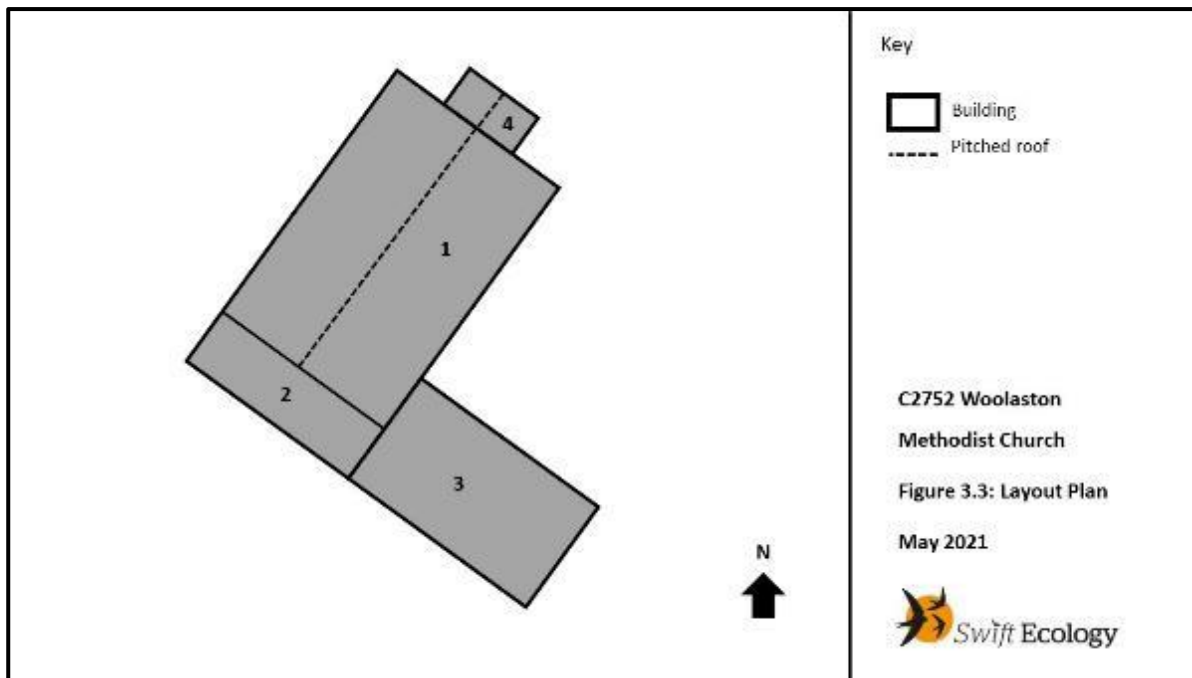


Figure 3.1: Woolaston Methodist Church layout plan

3.3.3 Exterior

The church comprises four main parts (Figure 3.1; Plates 1 and 2): an original rectangular stone-built building with a pitched roof (section 1), a stone-built extension with sloping roof on the southwest elevation (section 2, Plate 3), a flat roofed brick-built Sunday School room extension (section 3, Plate 4) and a small stone porch with a pitched roof (section 4) located on the northern roadside elevation.

The stone walls of sections 1, 2 and 4 are generally in good condition although there are several gaps in the pointing which might offer potential for roosting bats (Plate 5). A house sparrow *Passer domesticus* was noted nesting in a gap on the eastern elevation of the main building where mortar was missing. The brick walls of Section 3 are tightly sealed with no gaps in the pointing noted.

The main roof of the church (section 1) supports modern, interlocking concrete roof tiles and concrete ridge tiles. These are in good condition and well-sealed with no visible gaps for roosting bats, except for several small gaps noted under a few of the ridge tiles. There are several cracks along the tile verges of section 1. There are wooden soffits covering the eaves on section 1 with numerous gaps between the soffit and brick work that could offer bats access into the roof void of the original church (Plate 6), and frequent gaps between the gable end render and soffits. The lead flashing at the rear of the building has some lifting and there is potential for crevice dwelling bat species to roost around the rear of the single storey extension (section 2) between the render and the wooden barge boards. The modern extension (section 3) is flat roofed and is tightly sealed, offering very limited potential for roosting bats, except for occasional or opportunistic roosting within gaps behind the plastic fascia boards; however, these gaps contained extensive cobwebbing, suggestive of no recent bat use.

The building has wooden doors which are well sealed and maintained in good condition, with no gaps noted providing bats access opportunities into the interior of the building. The windows are

uPVC double glazed, with cut stone surrounds; the stonework is in good condition with all window frames tightly sealed.

3.3.4 Interior

Internally the church comprises the main church with nave and alter (Plate 7), accessed via a porch (section 4, Plate 8) on the north-eastern elevation or internally through the sloped roof extension (section 2; Plate 9) which consists of a small kitchen, two lavatories and a hallway with another pedestrian entrance with access into the Sunday School extension (section 3; Plate 10).

There is a large single void accessed through a hatch in the ceiling of the main church (Plate 11). The void is approximately 12 – 14 m in length by 4 m in width, and approximately 2.2 – 2.4 m in height at the apex. There is a ridge board along the apex with purlins at a third height; the timbers are square cut and in good condition (Plate 12). The internal gable stonework is roughly mortared, and thus there may be gaps and cracks providing suitable roosting opportunities for crevice-dwelling bats (Plate 13). The void is relatively dark, although some daylight is visible through the eaves, which is likely to provide access for bats into the loft. The void provides good protection from wind and adverse weather. The roof is lined with traditional bitumastic felt, mostly in good condition with few holes, tears or sags which would provide easy access for bats into the void from the spaces above, although there is one area of sagging felt above a section of the ridge board; the lining appears to have been replaced within the last 20 years (Plate 14). Levels of human disturbance are likely to be very low.

The void contained a small number (~30) of bat droppings localised around the access hatch; these were relatively fresh and were of a size and shape characteristic of a pipistrelle bat species. A number (~50) of droppings from a large bat species were also present beneath the ridge board where the felt is damaged. The void floor also contained an extensive covering of dust along its entire length, directly below the roof apex; on closer inspection there were some very pale and crumbled medium-sized bat droppings within the dust, which was considered to represent the remnant evidence of an historical bat roost of a medium-sized bat species, such as brown long-eared bat. Dropping samples were collected and sent for DNA analysis to confirm species.

There is no suitable flying access for horseshoe bats; although the internal flight space is good for void-roosting bats, such as brown long-eared or Natterer's bats, with few obstructions and a reasonable void height.

There are no other roof voids in the building; the 1893 single storey extension has a sloping roof with no void and the modern Sunday School extension has a flat roof.



Plate 1: North-east elevation showing the original Church (section 1) and front porch (section 4).



Plate 2: Western elevation and adjacent pasture field.



Plate 3: Rear of the Church showing the single storey sloped roof extension from 1893 (section 2) and the joins of sections 1 -3.



Plate 4: Sunday School room extension (section 3).



Plate 5: Gaps in the pointing of section 1.



Plate 6: Gaps under the soffits.



Plate 7: Interior of the nave (section 1).



Plate 8: Interior of the porch (section 4).



Plate 9: Interior of section 2- corridor and lavatory with kitchen door on the left-hand side.



Plate 10: Interior of the Sunday School room (section 3).

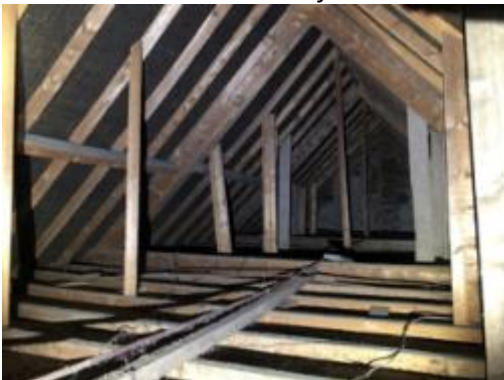


Plate 11: Large loft void above the main Church building (section 1).



Plate 12: Square cut timbers in good condition in the loft void.



Plate 13: Internal stonework of the west gable.

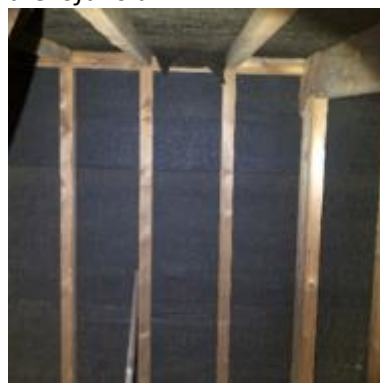


Plate 14: Bitumen felt roof lining of the loft void.

3.3.5 Assessment of Bat Roost Potential

The presence of bat droppings on the floor of the roof void confirms that bats have utilised the building for roosting. The various ages of the droppings suggest the voids have been used by bats for some time. Results of the DNA analysis (Appendix 3) confirmed that the small and large bat droppings (relatively fresh) were from common pipistrelle and serotine, respectively. DNA analysis also confirmed roosting by brown long-eared bat, although the medium-sized droppings were not recent, and were considered likely to represent an historical roost.

Bat activity surveys were subsequently undertaken to establish whether the building is still currently used by these species, and to characterise the nature of the roosts present.

Places where bats could potentially roost include:

- Gaps between the concrete tiles and bitumastic felt lining;
- Gaps underneath the ridge tiles;
- Gaps within the mortar;
- In the roof void via access through gaps between the soffits and walls of section 1;
- Cracks along tile verges;
- Cracks and crevices within the internal gable stone walling;
- Under lifted lead flashing at the rear where sections 1, 2 and 3 join; and
- Shallow gaps under the plastic fascia boards of section 3 may be suitable for temporary roosting.

In summary, the PRA confirmed that the church is a roost for two-three species of bats, and is considered to have 'moderate' roosting suitability for other species.

3.4 Bat Activity Surveys

Two bat activity surveys were conducted, as described in section 2. The raw data is presented in Appendix 4 and the main findings are summarised below. Figures 3.2 and 3.3 included below illustrate the key results of the surveys.

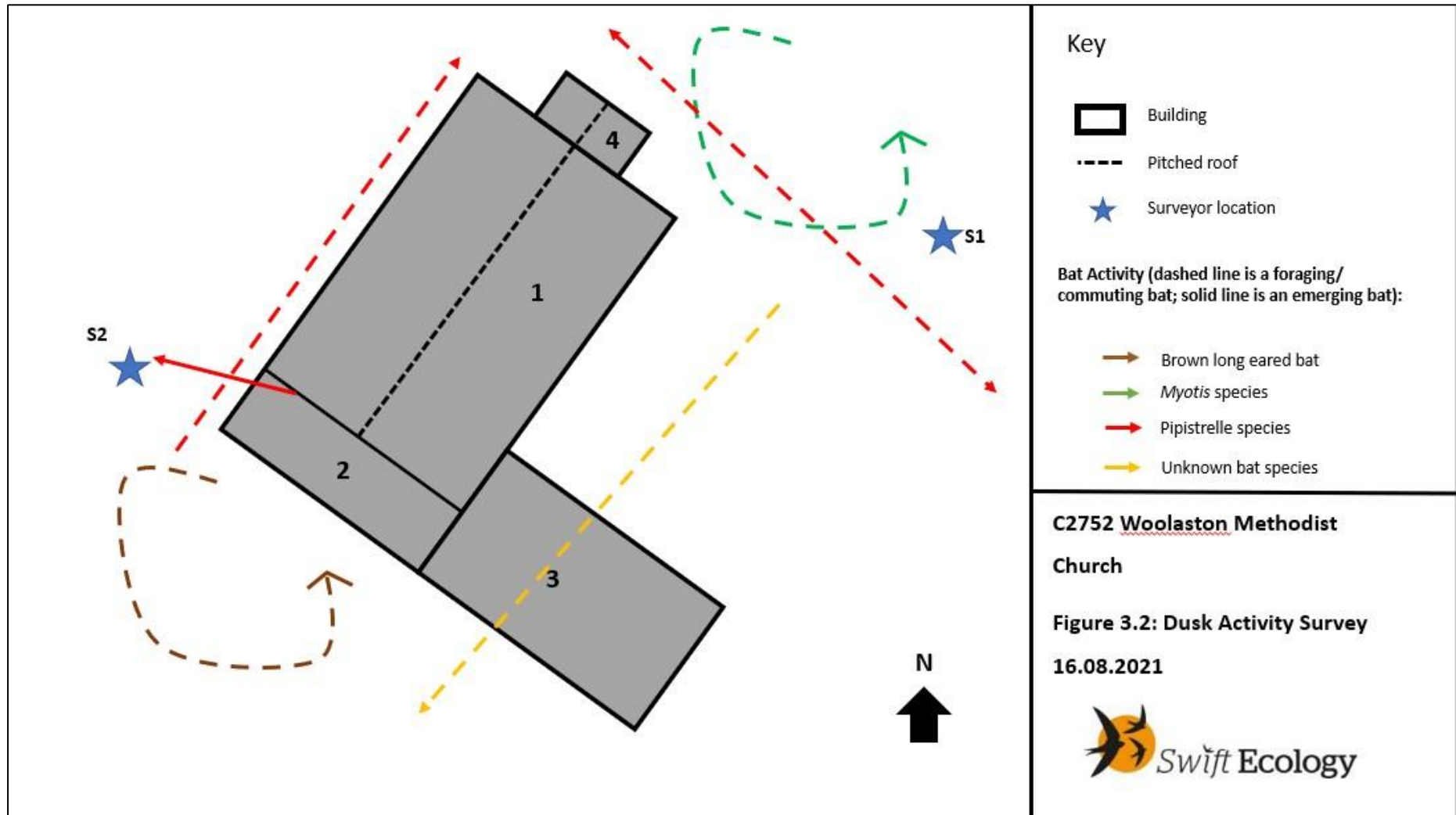
3.4.1 Dusk emergence survey 16th August 2021

General bat activity levels during the dusk emergence survey were moderate; comprising observations and recordings of the following species: common pipistrelle, soprano pipistrelle, *Myotis* species, brown long eared bat, noctule and lesser horseshoe bat.

The first bat recorded during the survey, 18 minutes after sunset, was a common pipistrelle which flew along the ridge of the church and across the road to forage under tree canopies northeast of the church. A short flurry of brown long eared activity was observed by Surveyor 2 at the rear of the church (southwest) at 2053. A possible *Pipistrelle* species emerged from the south elevation of Section 1 at 2059 and flew away in a northwesterly direction.

Both surveyors had a single lesser horseshoe bat pass during the survey, and a single noctule pass was recorded by Surveyor 2. Activity from *Myotis* species was predominantly recorded across the road to the east of the Church.

Key results from the survey are shown in Figure 3.2.



3.4.2 Dusk emergence survey 2nd September 2021

Prior to the start of the second dusk survey, an inspection of the church roof void did not record any bats within the void and there were no fresh brown long eared bat or pipistrelle bat droppings.

General bat activity levels during the dusk emergence survey were moderate and similar to the first dusk emergence survey except for the lack of brown long eared bats. Species recorded during the survey were: noctule, common pipistrelle, soprano pipistrelle and *Myotis* species and a single pass by a lesser horseshoe bat. An unseen serotine was recorded at 2031hrs by surveyor 1, and was considered to be a potential emergence of this species from the church roof considering the time of the recording.

The first bat recorded during the survey, eight minutes after sunset, was an overhead pass by a noctule.

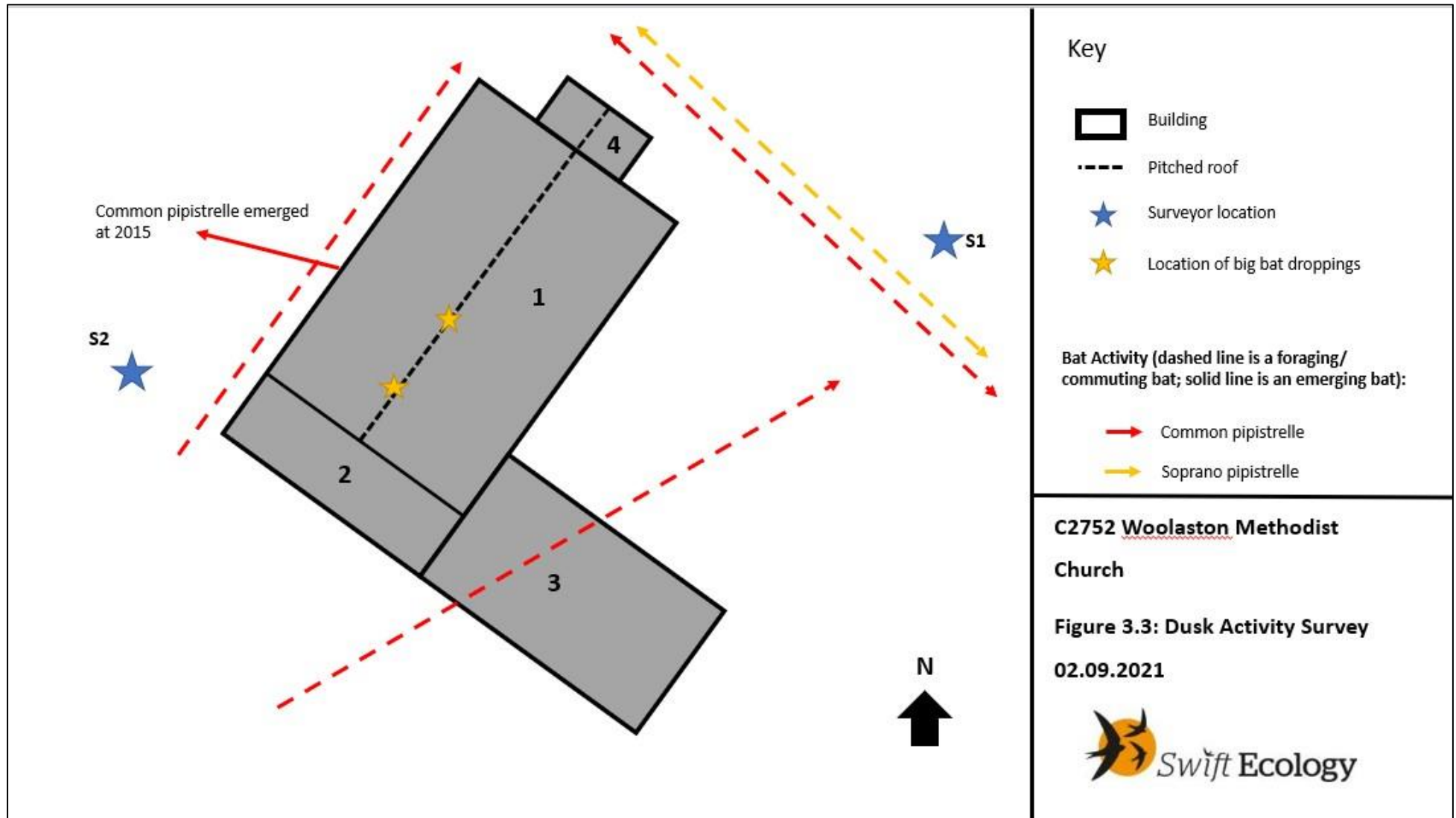
A single common pipistrelle emerged at 2015hrs from mid-way along the western board/soffit of Section 1; the bat flew around the gable end and north along the east elevation.

Between 2032 and 2034 surveyor 1 observed common and soprano pipistrelles flying up and down the lane chasing each other, with aggressive territorial behaviour between the two bats.

Key results from the survey are shown in Figure 3.3.

3.5 Nesting birds

A house sparrow *Passer domesticus* was noted nesting in a gap on the eastern elevation of the main building where mortar was missing. There was no other evidence of birds' nests within the roof void or externally on the building however the presence of other nesting birds cannot be ruled out.



4 EVALUATION AND IMPACT ASSESSMENT

4.1 *Statutory Designated Sites*

The site is located approximately 4.1 km south of the nearest Wye Valley and Forest of Dean Bat SAC Sites; Devil's Chapel Scowles SSSI is notified for its lesser horseshoe and greater horseshoe bat populations. Caerwood and Ashberry Goose House SSSI is located approximately 6 km southwest of the site and is a breeding site for lesser horseshoe and greater horseshoe bats, as is Sylvan House Barn SSSI approximately 6 km northwest of the site; both are also part of the Wye Valley and Forest of Dean Bat SAC Sites.

Because of the nature and small size of the project, and distance from the nearest SAC bat site, it is considered that there will be no impacts upon summer breeding, swarming or hibernating lesser or greater horseshoe bat sites as the church lies outside the Core Sustainance Zones² for these species during the summer breeding and hibernation periods, and supports no suitable bat foraging habitat. In addition, there are no opportunities for flight access into the roof void for these species, and thus the building does not offer opportunities for roosting, including night-roosting, for horseshoe bats. The proposed development will have no impacts on the status of the Wye Valley and Forest of Dean Bat SAC Sites.

4.2 *Bat Roosts*

The Church is a confirmed bat roost for an individual common pipistrelle and an individual serotine bat, but also has evidence of an historic roost for brown long-eared bat, as identified from DNA analysis of bat dropping samples taken from the roof void. The building is assessed as having 'moderate' suitability for other bat species.

An individual common pipistrelle was recorded roosting in the roof structure. According to English Nature's *Bat Mitigation Guidelines* (Mitchell-Jones, 2004), the conservation significance of this roost, involving an individual of a common species, with no maternity colony present, is low.

An individual serotine was recorded potentially emerging from the church roof, and is considered to roost within the church roof void; according to English Nature's *Bat Mitigation Guidelines*, the conservation significance of this roost, involving an individual of a rarer species, with no maternity colony present, is low to moderate.

Common pipistrelle is common and widespread in Gloucestershire and in the UK. Serotine is widespread over southern England, but relatively uncommon.

The church roof void contained old evidence of brown long-eared bat; however, no bats of this species were recorded emerging or roosting within the church during the bat activity surveys, and the evidence is considered to represent an historical roost of this species.

² Core Sustainance Zone: area surrounding communal roost (maternity and hibernation) within which habitat availability (available foraging areas and connectivity) and quality will have a significant influence on the resilience and conservation status of the colony using the roost.

4.3 *Nesting birds*

Structures within the church roof could potentially support nesting birds and there is a known house sparrow roost within a gap in the mortar on the north elevation; all nesting birds are protected by law, regardless of how common the species.

4.4 *Impact assessment*

Bats

The proposals are for the conversion of the church into a residential dwelling; at the time of writing no final plans had been provided so the exact details of the proposals are not known. However, it is understood that the scheme will not include impacts to the roof void, roof structure and associated features. However, depending upon the final submitted plans, impacts upon bat roosts and associated access points cannot be ruled out.

The modern extension (section 3) was assessed as having low suitability to support roosting bats as it contains few features suitable for bat roosting; activity surveys confirmed that there are no roosting bats utilising this part of the building.

On the evidence provided by the surveys undertaken, if the proposed renovation and conversion works affect the roof and associated structures then they will have an impact upon bats and their roosts and, therefore, offences will occur without appropriate mitigation.

Depending on the final detail of the planning proposals, and level of works to the roof, roof void and associated structures, without appropriate mitigation, the proposed works could potentially result in the following adverse impacts on bats:

- Disturbance to bats while works are going on, including increased noise, dust and vibration, and changes to the lighting and temperature regime in and around roosts;
- Death or injury of bats that may be roosting within or under materials to be removed/modified;
- Loss, interference with and/or obstruction of access points and associated flight lines;
- Temporary or permanent modification of existing voids or structures so that they are no longer accessible or suitable for use by roosting bats, for example if the voids lose space or internal flight connectivity within one another;
- Destruction of bat roosts.

Because the presence of bat roosts has been confirmed, a bat mitigation plan may be required (dependant on final plans) to ensure that the favourable conservation status of the bats at the site can be maintained during and after works.

In order to avoid offences a protected species mitigation licence will be required from Natural England before works can commence if works to the roof structures/ void are planned. Natural England will require up-to-date survey information to inform any licence application.

Birds

In the absence of mitigation, the proposed conversion of the building could have impacts on nesting birds, particularly house sparrow, if undertaken during the breeding season. Precautions will be needed to prevent harm or disturbance to breeding birds.

5 RECOMMENDATIONS

5.1 *Bats*

Because bat roosts are confirmed as present, a comprehensive mitigation plan will be required if roof structures or the roof void are to be affected as a result of the development of the church (e.g. conversion of the roof void, re-roofing or replacements of soffits/fascia). The mitigation plan should be designed to accommodate the species of roosting bat present and to ensure that bats are not harmed during works and that there are no negative effects on bat populations. Detailed mitigation measures for bats should be designed into the scheme and incorporated into a method statement/mitigation plan; this can be conditioned upon approval or supplied as part of the planning application.

If bat roosts are impacted, a protected species mitigation licence will be needed from Natural England prior to commencement of the works. The licence can be applied for only after any necessary Planning Permissions are in place. Up-to-date bat activity surveys may be required in the bat active season (May to August) prior to the licence application being made.

5.2 *Nesting Birds*

The building is used by nesting birds. All nesting birds are protected by law. To avoid committing an offence, any works to the external walls and roof structures should be undertaken outside the bird breeding season (March to August inclusive). If this is not possible, the building should be checked immediately prior to works commencing by a suitably qualified ecologist. If there are breeding birds present, works cannot continue until the chicks have fledged and left the nest.

5.3 *Validity of report*

Bats may move and change roosts, and numbers of individuals or species in any one roosting location may increase or decrease at any time. Consequently, if the proposed development does not start before the end of September 2022, further bat surveys are likely to be needed.

6 BIODIVERSITY ENHANCEMENTS

Current planning policy requires that development projects minimise ecological damage and should contain elements of ecological enhancement. The Natural Environment White Paper (2011) and National Planning Policy Framework (2021) require that development results in net gains for biodiversity.

- To increase the value of the development for biodiversity, consideration should be given to incorporating additional features for use by bats and birds, in addition to compensation required for loss of roosting/nesting sites. Various bat roost and bird nesting boxes are available, including designs that are incorporated into the fabric of the building, and others that are placed on the outside of the building. See Appendix 5 for details.

7 RELEVANT LITERATURE

Bat Conservation Trust (2016). *Core Sustainance Zones: Determining zone size*

http://www.bats.org.uk/data/files/Core_Sustainance_Zones_Explained_-_04.02.16.pdf

British Standard (2013). *BS 42020:2013: Biodiversity. Code of practice for planning and development.*

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

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Mitchell-Jones, A. J. (2004). *Bat Mitigation Guidelines.* Natural England, Peterborough.

Ministry of Housing, Communities & Local Government (2019). *National Planning Policy Framework.* Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf [Accessed August 2020].

Natural England (2005). *EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora Citation for Special Area of Conservation (SAC). Wye Valley and Forest of Dean Bat Sites.* 14 June 2005.

Schofield, H.W. & Mitchell-Jones, A.J. (2004). *The bats of Britain and Ireland.* The Vincent Wildlife Trust, Ledbury, England.

APPENDIX 1: LEGISLATION AND PLANNING POLICY

A1.1 Introduction

This section briefly lists legal protection/planning policy applying to designated sites, species or habitats mentioned in this report. It does not comprehensively reflect the text of the legislation/policy and it should not be relied upon in place of it. The following documents are relevant:

- The Local Government Act 1985;
- The Wildlife and Countryside Act 1981 (as amended);
- The Environmental Protection Act 1990;
- The Countryside and Rights of Way (CROW) Act 2000 (in England and Wales);
- The Natural Environment and Rural Communities (NERC) Act 2006;
- The Conservation of Habitats and Species Regulations 2017, as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019;
- The Natural Environment White Paper (England) (DEFRA, 2011);
- Biodiversity 2020: A strategy for England's wildlife and ecosystem services (DEFRA, 2011), which underpins the UK Post-2010 Biodiversity Framework (JNCC & DEFRA, 2012);
- National Planning Policy Framework (MHCLG, 2019); and
- Forest of Dean adopted Local Plan (to 2026).

A1.2 Protected Species

A1.2.1 All species of British bat

All species of British bat (*Vespertilionidae* and *Rhinolophidae*) are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and receive some limited protection under Section 9. These species are also all listed as protected species in Schedule 2 of The Conservation of Habitats and Species Regulations 2017, as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, which gives them full protection under Regulation 43.

It is also an offence to set and use articles capable of catching, injuring or killing such species (for example a trap or poison), or knowingly cause or permit such an action.

Seven species of British bat are listed as species of principal importance for the purpose of conserving biodiversity in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

Where it is necessary to carry out an action that could result in an offence relating to a species protected under The Conservation of Habitats and Species Regulations 2017 (as amended), it is possible to apply for a protected species licence from Natural England. Licences are only issued where Natural England is satisfied that the relevant legal tests have been met including that works are unavoidable and that reasonable steps have been taken to ensure that adverse effects on protected species are minimised.

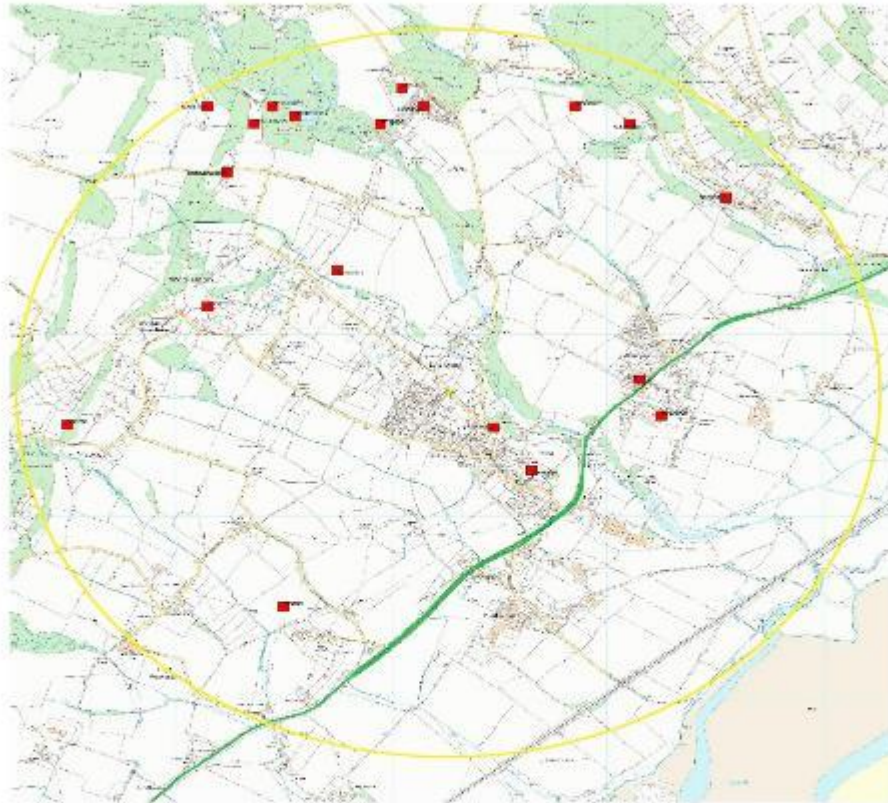
A1.2.2 Birds

All species of bird are protected under Section 1 (1) of the Wildlife and Countryside Act 1981 (as amended). Certain species are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and receive protection under Section 1(5). There are special penalties where offences are committed for any Schedule 1 species.

Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 includes 49 bird species which are of principal importance for the purpose of conserving biodiversity in England.

APPENDIX 2: GCER RECORDS OF BATS WITHIN 2 KM

Centroid grid references of bat species records mapped within 2km



Zoom in for more detail



Map data © OpenStreetMap contributors, Imagery © Mapbox
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Date produced: 22/11/20

APPENDIX 3: RESULTS OF DNA ANALYSIS

Ecotype Genetics Ltd provided results of DNA analysis from the bat droppings collected from the roof void during the preliminary roost assessment, the results are shown below.

Swift Ecology		FOR LABORATORY USE ONLY				Ecotype Genetics				
Company	Swift Ecology	POSITIVE CONTROL SAMPLE			Report date to SEL	COMMENTS				
Date	080621				Author					
SAMPLES										
SAMPLE NUMBER	Group	Suspected identity of sample	DNA EXTRACT	SPECIES	COMMENTS	qPCR		Sequencing		
			code			primers	Ct	primers	match%	bases
SEL4782-1	C. Bats.	ble	EG-2021-0401	Pipistrellus pipistrellus (Common pipistrelle bat) and Plecotus auritus (Brown long-eared bat)		Ppipcytb/Paurscytb	15/16			

A second sample of relatively fresh droppings was collected prior to the start of the second dusk emergence survey, the results are shown below.

Swift Ecology		FOR LABORATORY USE ONLY				Ecotype Genetics				
Company	0	POSITIVE CONTROL SAMPLE			Report date to SEL	COMMENTS				
Date	0				Author					
SAMPLES										
SAMPLE NUMBER	Group	Suspected identity of sample	DNA EXTRACT	SPECIES	COMMENTS	qPCR		Sequencing		
			code			primers	Ct	primers	match%	bases
SEL4957-1	C. Bats.	Serotine	EG-2021-0792	Eptesicus serotinus (Serotine bat)		Esercytb	19			

APPENDIX 4: BAT ACTIVITY SURVEY RESULTS

Table A4.1: Bat Activity Survey Results from dusk emergence survey 16th August June 2021 at Woolaston Methodist Church. Bold text indicates a bat confirmed, probably or possibly emerging from a roost site within the building. HNS = heard not seen.

Time	Species (and No. where observed)	Activity
Surveyor 1 Rhiannon Taylor – east and north elevation		
2050	Common pipistrelle	Flew along the ridge of the church and across road to the tree canopy NE
2052	Common pipistrelle	Flew E to W across road and through gully between Sunday School and main church
2053	Common pipistrelle	HNS
2057	Soprano pipistrelle	Single bat flew N to S along road
2058	<i>Myotis</i> sp.	HNS
2103	<i>Myotis</i> sp.	Foraging under large oak across road east of Church
2105 – 2114	Common pipistrelle	1 – 2 bats foraging along lane and under oak canopy
2115	Lesser horseshoe bat	Heard briefly
2120	Brown long eared	Faint pass
2121	Common pipistrelle	Foraging under trees
2124	<i>Myotis</i> sp.	Foraging under trees east of the church
2125 – end	Common pipistrelle	Fairly constant foraging and feeding buzzes, bats visible under street lighting to north and south
Surveyor 2 – Camilla Winder – west and south elevation		
2053	Brown long-eared x 1	Flying close to hazel at SW corner adjacent to lean-to corridor at back of church, appeared from south-east. Foraging in tree canopy for a few seconds. (1).
2058	Bat sp. x 2	Two bats (unknown sp.) v. fast/direct flight along SE edge of main roof ridge, directly towards trees at back (south-west) of church. (2)
2059	pipistrelle sp.	Possible emergence, south elevation. Flew across lean-to roof at back of church in north-westerly direction. (3)
2102	Lesser horseshoe x 1	Commuting (pass)
2103	Common pipistrelle	Flying to NE along edge of church (from south-westerly direction). (4).
2109	Possible BLE	Pass, south-west corner, from south-easterly direction.
2140	Common pipistrelle	Commuting, pass, flying along edge of church in SW direction.
2148	Common pipistrelle	Foraging, eaves along NE edge of church roof.
2152	Noctule	Pass. Overhead.
2053	Brown long-eared x 1	Flying close to hazel at SW corner adjacent to lean-to corridor at back of church, appeared from south-east. Foraging in tree canopy for a few seconds. (1).

Time	Species (and No. where observed)	Activity
2058	Bat sp. x 2	Two bats (unknown sp.) v. fast/direct flight along SE edge of main roof ridge, directly towards trees at back (south-west) of church. (2)
2059	(possible) pipistrelle sp.	Flew across lean-to roof at back of church in north-westerly direction. (3)
2102	Lesser horseshoe x 1	Commuting (pass)
2103	Common pipistrelle	Flying to NE along edge of church (from south-westerly direction). (4).
2109	Possible BLE	Pass, south-west corner, from south-easterly direction.

Table A4.2: Bat Activity Survey Results from dusk emergence survey 2nd September 2021 at Woolaston Methodist Church. Bold text indicates a bat confirmed, probably or possibly emerging from a roost site within the building. HNS = heard not seen.

Time	Species (and No. where observed)	Activity
Surveyor 2 – CW – West corner, covering SW and NW elevations		
2004	Noctule x1	Overhead, HNS
2009	Noctule x1	Overhead, HNS
2015	Common pipistrelle x 1	Emerged from mid-way along western barge board/soffit, flew around gable end and northwards along eastern elevation.
2016	Common pipistrelle x 1	Same bat as emerged above, circled church and flying fast/foraging north-south along western elevation.
2017	Noctule x1	Overhead, HNS.
2017-2024	Common pipistrelle x 1	Single pip foraging north-south along western elevation, at 2024, flew directly to west in direction of surveyor.
2019-2020	Noctule x1	Overhead, HNS.
2025-2028	Common pipistrelle x 2	Appeared from trees (hazel hedgerow) to south, foraging around lean-to roof/hazel trees at south, elevation, then foraging N-S along western elevation.
2025	Lesser horseshoe	Commuting, overhead HNS.
2029-2050	Common pipistrelle x 1	Foraging N-S along western elevation.
2046	Soprano pipistrelle	Commuting/Pass
2052-2054	Common pipistrelle x 1	Foraging N-S along western elevation.
2057	Common pipistrelle x 1	Commuting/Pass from west to east along south elevation.
2059-2109	Common pipistrelle x 1	Foraging, along western elevation, field to west and trees to south.
2112-2116	Common pipistrelle x 1	Foraging N-S along western elevation, field to west and trees to south.

Time	Species (and No. where observed)	Activity
2116	Common pipistrelle x 2	(Possibly common & soprano pipistrelle), one at 45kHz, one at 50kHz.
2116-2119	Common pipistrelle x 1	Foraging N-S along western elevation, field to west and trees to south.
2120	Noctule	HNS
2120-2121	Common pipistrelle x 1	Foraging N-S along western elevation, field to west and trees to south.
2121	Myotis sp.	Possible Brandt's?
2121-2125	Common pipistrelle	Foraging N-S along western elevation, field to west and trees to south, 1 or 2 bats.
Surveyor 1 – NUD – East corner, covering NE and SE elevations		
2009	Common pipistrelle	Flew over church SW to NE
2011	Common pipistrelle	Foraging passes to NE
2014	Common pipistrelle	Flew from NE towards church and back again
2015	Common pipistrelle	Flew SW to NE
2017	Noctule	Overhead pass, SE to NW high over church
2018	Common pipistrelle	Foraging to NE
2025	Common pipistrelle	Flew along road
2026	<i>Myotis</i> sp.	Pass. HNS.
2027	Lesser horseshoe bat	Pass. HNS.
2030	Noctule	Overhead pass. HNS.
2031	Serotine	Pass. HNS.
2032-2034	Common pipistrelle, soprano pipistrelle	Flying up and down lane chasing each other, with aerial combat. Soprano pipistrelle social calling.
2058	Common pipistrelle, soprano pipistrelle	Foraging passes of both species.
2101	<i>Myotis</i> sp.	Brief pass. HNS.
2121	<i>Myotis</i> sp.	Pass. HNS.
Inspection of church roof void at 1930 found two clusters (<50) of relatively fresh bat droppings of a large species directly below the ridge board (see accompany map). No bats were visible within the void and there were no fresh BLE or pipistrelle droppings.		

APPENDIX 5: BAT AND BIRD BOXES

A range of bat and bird boxes could be included in the converted church building. All boxes must be installed according to manufacturer's instructions.

Bat Box Products

Examples of suitable bat boxes to be installed on flat walls of the converted church building include:

- Schwegler 1WQ summer and winter roost
- Schwegler 1FQ bat box



Figure A5.1: Schwegler 1FQ bat box (left) and Beaumaris Woodstone bat box (right)

Suitable bat box products to be installed integral to the walling of the converted church building include:

- Segovia Build-in Woodstone bat box
- Schwegler 2FR Bat Tube



Figure A5.2: Segovia Build-in Woodstone bat box (left) and Schwegler 2FR Bat Tube (right)

Bird Box Products

Suitable bird box products to be installed on suitable walls of the converted church building could include:

- Schwegler 1SP sparrow terrace
- Vivara Pro WoodStone House Sparrow Nest Box
- WoodStone Build-in House Sparrow Nest Box
- Schwegler 9a house martin nests
- Schwegler slide-out house martin nest
- Schwegler swift box No. 17
- Schwegler 16s swift box



Figure A5.3: Schwegler 1SP sparrow terrace (left), Vivara Pro WoodStone house sparrow nest box (middle) and WoodStone Build-in house sparrow nest box (right)



Figure A5.4: Schwegler 9A house martin nests (left) and slide-out house martin apex nest (right)



Figure A5.5: Schwegler swift box No. 17 (left) and 16S Schwegler swift box (right)