



ECOLOGICAL IMPACT ASSESSMENT

**The Boars Head Public House,
14 Lynch Road, Berkeley,
Gloucestershire GL13 9TA**

**Final Report
9th August 2023**

Client:



Report author:



**Report reference:
C3022-2**

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QUALITY ASSURANCE

SURVEY CONDUCTED BY		SURVEY DATE	17.11.2022 28.06.2023 25.07.2023
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DATE	VERSION	PREPARED BY	CHECKED AND APPROVED BY
09.08.23	V1		

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 BS 42020 (Biodiversity: Code of practice for planning and development); the CIEEM Guidelines for Ecological Report Writing (CIEEM, 2017); the CIEEM Guidelines for Ecological Impact Assessment 2018 and the 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.

VALIDITY OF REPORT

The results of this assessment are only valid for a maximum of two years from the date the most recent site visit was carried out (July 2023). Should the works be delayed beyond this date, the survey should be updated to determine any changes to the status of the site and the assessment of effects. It should also be noted that local planning authorities may require updated surveys within a shorter timescale than two years.

The proposed development details provided by the client (see Section 4 of this report) were used to determine the assessment of effects. If the proposed development changes, the report will need to be reviewed to determine if there will be any changes to the assessment of effects and the overall outcome of the development.

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SUMMARY

- A Preliminary Roost Assessment for bats was undertaken of buildings at The Boars Head Public House, 14 Lynch Road, Berkeley, Gloucestershire GL13 9TA in November 2022. This was followed by a Preliminary Ecological Appraisal, comprising a habitat survey and assessment for protected, priority and invasive non-native species, of land associated with the site and two bat activity surveys in June and July 2023 of the main public house building. In addition, a Biodiversity Net Gain assessment was carried out using the DEFRA 4.0 Biodiversity Metric.
- The surveys and assessments were required in connection with proposals for developing the site, including remodelling the main pub building into residential accommodation; demolition of a single-storey extension and brick outbuilding; construction of two new semi-detached bungalows and two new terraced dwellings; and creation of associated access, parking areas and gardens.
- The purpose of this report is to identify and describe all potentially significant ecological effects associated with the proposed development in order to assess the impacts of the development; set out the mitigation, compensation and enhancement measures required to ensure compliance with nature conservation legislation and planning policy; and address any potentially significant ecological effects.
- The site has no designation for nature conservation within or adjacent to its boundary, and no such sites will be affected by the proposals. The site falls within a SSSI Impact Risk Zone for the Severn Estuary SSSI but the proposals do not fall into any of the categories likely to have an impact on the SSSI, and given the distance and small scale of the proposed works, no impacts are likely.
- The site comprises mostly urban habitats, with buildings and hardstanding, as well as a small pub garden (dominated by modified grassland). The habitats on the site provide very limited value for wildlife.
- The two-storey sections of the public house offers 'moderate' suitability for bat roosting; bat activity surveys confirmed the presence of summer day roosts of an individual common pipistrelle and whiskered bat. **The roofs and roof voids supporting these roosts will be retained but renovation/repair works to the roofs could result in impacts upon roosting bats; therefore a bat mitigation plan will be adopted prior to development; this is appended to this report. A protected species mitigation licence (bats) from Natural England will also be required prior to the commencement of any roof works.** The other buildings on the site (single-storey extension and outbuilding) are assessed as having 'negligible' suitability to support roosting bats.
- The survey identified low potential for the site to support other protected and priority species to shelter, nest, forage or commute through/over the site, including birds, [REDACTED] great crested newt and hedgehog. None of these species are expected to be adversely impacted by the proposed works, but precautionary mitigation measures will be required to ensure compliance with legislation and planning policy, as detailed in this report.
- No legally controlled invasive non-native plant species were recorded on site; precautionary measures are detailed in this report.

The DEFRA 4.0 Biodiversity Metric calculation demonstrates that the project will result in Biodiversity Net Gain (habitat units +25.83%) in accordance with legislation and planning policy. Biodiversity enhancements for species can be incorporated as additional positive measures; suggestions are made in the report for measures that would benefit local wildlife.

The results of this assessment are valid for up to two years from the date of the most recent survey (July 2023). Should the further surveys and proposed development be delayed beyond this date, the preliminary survey should be updated; it should also be noted that regulatory authorities may require updated surveys within a shorter timescale than two years. For licensing purposes (i.e. for bats), Natural England will require survey data from the most recent summer survey period.

1 INTRODUCTION

1.1 Background

Swift Ecology Ltd. were commissioned to undertake a Preliminary Roost Assessment (PRA) for bats of several buildings at The Boars Head, 17 Lynch Road, Berkeley, Gloucestershire GL13 9TA. The survey was undertaken on 17th November 2022. The site is located at OS grid reference ST 6810 9933. Following the PRA, a Preliminary Ecological Appraisal, comprising a habitat survey and assessment for protected, priority and invasive non-native species was carried out on the site on 28th June 2023. In addition, two dusk emergence bat activity surveys were undertaken of the main public house building on 28th June and 25th July 2023.

A Biodiversity Net Gain assessment was carried out using the DEFRA 4.0 Biodiversity Metric spreadsheet.

The surveys and assessments were required in connection with proposals to develop the site, to include demolition of parts of the buildings and conversion into residential accommodation, and construction of additional residential units.

Because of the nature of the works, which would involve impacts upon habitats and structures that could potentially be used by protected species, including roosting bats and nesting birds, there is a risk that offences could occur as a result of development.

The client has confirmed that they have not commissioned any previous ecological surveys of the site.

1.2 Personnel

The assessment and reporting were carried out by Dr Nick Underhill-Day of Swift Ecology Ltd. Nick is employed as a Principal Ecologist with Swift Ecology Ltd and is a licensed bat, great crested newt and barn owl surveyor (Natural England licences WML-CL18 2015-15526-CLS-CLS, WML-CL08 2015-17764-CLS-CLS and CL29/00317 respectively). He has carried out numerous habitat and protected species assessments and has considerable experience in the associated ecological appraisal of protected species, and in the preparation of schemes for ecological mitigation and biodiversity enhancement.

In addition, Nick has attended training on the use of Biodiversity Net Gain (BNG) assessments, provided by both Warwickshire County Council (Biodiversity Impact Assessment (BIA) calculator), CIEEM and UKHab Ltd. (DEFRA 4.0 Metric), and has completed BNG assessments for development sites using these Metrics.

1.3 Ecological Context

The Boars Head public house comprises a collection of adjoining buildings, car park and pub garden located within the village of Berkeley in south-west Gloucestershire, with an area of approximately 0.11 ha. Berkeley lies approximately 2 km to the east of the Severn Estuary, within low lying land of the Vale of Berkeley and Severn Vale.

The Boars Head public house encompasses an original end-of-terrace Victorian brick-built building, to which several rear extensions have been added. These include both single and two-storey extensions with pitched and flat roofs. In the north-east corner of the pub garden is an old brick outbuilding with a sloping corrugated metal roof; this is believed to be an old coach house. The curtilage of the public house also includes a car park of hardstanding immediately west of the main building and a small pub garden to the rear (north) of the pub and car park.

The Boars Head is located along the main high street (Lynch Road and Salter Street) running east to west through Berkeley, and is surrounded by residential dwellings and their gardens. Beyond the village the countryside includes both arable and pastoral farmland, with field boundary hedgerows and scattered trees; this is a relatively flat and open landscape with only small stands of trees; the nearest woodland, Bushy Grove, lies roughly 2 km to the north-east.

The landscape context of the site is illustrated in Figure 1 below. An aerial view of the surveyed site and buildings is provided in Figure 2.



Figure 1: Site location (red) and surrounding landscape (Image dated 21/07/2021).



Figure 2: Aerial photo showing the site and the buildings, outlined in red and yellow, respectively (Image dated 21/07/2021).

1.4 Purpose of Report

The purpose of this report is to identify all important ecological features that could be affected by the development; identify, describe and evaluate all the potential impacts associated with the proposed development, and identify likely significant ecological effects of the development.

This report also sets out the mitigation, compensation and enhancement measures required to address significant ecological effects and to ensure compliance with nature conservation legislation and planning policy.

The legal protection/controls and planning policies relevant to the designated sites, habitats or species mentioned in this report are detailed in Appendix 1.

The report format follows the 2018 CIEEM guidance, modified to reflect the small size of the site and the limited impact of the development.

2 METHODS

2.1 Scope of Assessment

The scope of the assessment reflects the relatively small size and the likely limited impacts of the proposed development. The zone of influence is considered to be the habitats and buildings within the red line boundary within which the development will occur; its boundary features and immediately adjoining features of biodiversity interest; and the Local Wildlife Sites and other designated sites within a 1-2 km radius. The important ecological features considered as part of this assessment are designated sites¹, protected/priority habitats and species², and legally controlled invasive non-native species³.

2.2 Background Data Search

A background data was undertaken in November 2022 by the Gloucestershire Centre for Environmental Records Centre (GCER) for records of bats and nesting birds within a 2 km radius of the site. A second background data search was undertaken in July 2023 by GCER for records of designated sites and other protected, priority and invasive non-native species within a 1 km radius.

Reference was also made to Natural England's MAGIC website⁴ for:

- Statorily designated sites within 2 km of the site.

- Site of Special Scientific Interest (SSSI) Impact Risk Zones (IRZ) within the site.

- records of granted Natural England protected species licences within a 1 km radius (great crested newt) and 2 km radius (bats).

- records from great crested newt class survey licence returns within a 1 km radius.

- pond surveys (Habitat Suitability Index and eDNA) carried out by Natural England between 2017 and 2019 within a 1 km radius.

2.3 Field Survey

2.3.1 General

A Preliminary Ecological Appraisal, comprising a habitat survey and assessment for protected, priority and invasive non-native species, was undertaken following standard methods as described in the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017). As a part of the protected species assessment, a preliminary bat roost assessment was undertaken of the buildings in accordance with the standard methods in Collins (2016).

¹ Designated sites are taken to mean statutory sites designated under international conventions or European legislation, statutory sites designated under national legislation, and locally designated sites. Impact zones (e.g. SSSI) are also included.

² Priority habitats and species are taken to mean habitats and species of principal importance for the conservation of biodiversity in England, local biodiversity action plan habitats and species, and red-listed, rare and legally protected species, and species endemic to a country or geographic location (as defined within Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017)).

³ Invasive non-native animal and plant species that are listed on Schedule 9, Parts I and II respectively, of the Wildlife and Countryside Act 1981 (as amended), and EU Regulation 1143/2014 on Invasive Alien Species (as amended).

⁴ <https://magic.defra.gov.uk/MagicMap.aspx>

The PRA survey of the buildings was undertaken on 17th November 2022. This was followed by a PEA of the site on 28th June 2023. The surveys were undertaken by Nick Underhill-Day of Swift Ecology Ltd. Weather conditions at the time of the surveys are shown in Table 1. The survey covered the site and buildings, as shown in Figure 2, Section 1. Adjacent habitats were also briefly assessed.

Table 1: Survey conditions

Date	Approximate start time	Weather conditions
17.11.2022	11 am	12°C, dry with sunny spells (40% cloud cover) and a light breeze (Beaufort F1).
28.06.2023	7 pm	20°C, dry and warm (90% cloud cover) and a light breeze (Beaufort F1-2).

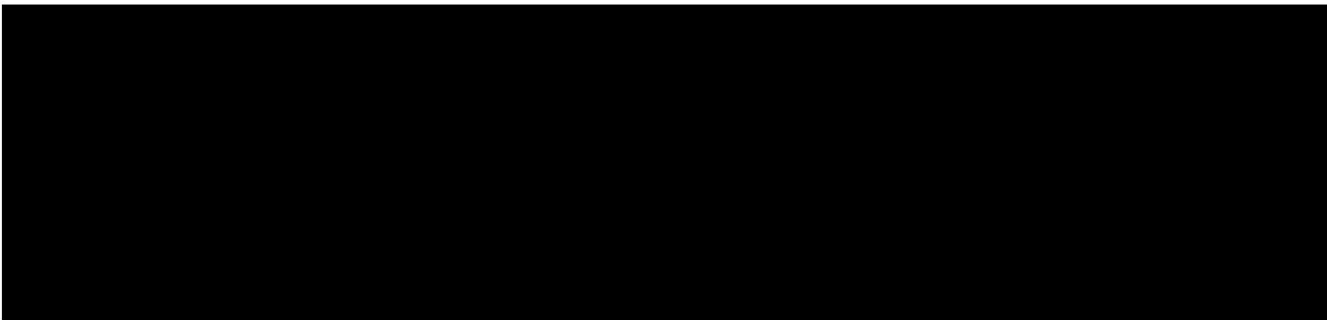
2.3.2 Habitat Survey

The habitat survey was carried out in accordance with the UK Habitat Classification System Professional edition (Butcher *et al.*, 2020), adapted to align with the DEFRA 4.0 Metric where appropriate. This comprised the following elements:

- Habitat map (locations of all habitat/site boundaries, etc. are approximate).
- Habitat descriptions for each separate habitat type.
- Target notes to identify particular areas of interest or concern.

The fine-scale minimum mapping unit (25 m² area and 5 m length) was used for this survey, and habitats were mapped to Level 4 Primary Habitats where possible.

Only the mandatory secondary habitat codes were used for this survey because a detailed description of each habitat and its features is provided within the report.



Bats

Habitats

There are no trees on the site, but several trees along the site boundaries, owned by neighbouring properties; these were briefly assessed from ground level for their potential to support roosting bats. Habitat was assessed for its bat foraging and commuting potential.

Preliminary bat roost assessment of structures

The buildings were assessed for their 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 buildings might support bats, and the type and number of roosts that might be present. The buildings were assigned a roost potential category (Collins, 2016) according to the criteria outlined in Table 2 below, based on the results of the assessment.

Table 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.).

Survey for signs of bats

A detailed inspection was made of the exterior and interior of the buildings 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.

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.

Bat droppings were collected from one of the roof voids and sent for DNA analysis at Ecotype Genetics Ltd.

Bat activity surveys

Two roost characterisation bat activity surveys were undertaken on 28th June and 25th July 2023 (dusk emergence surveys). During the surveys, surveyors were positioned outside the building to

watch for evidence of bats entering or emerging from roosts. The building was inspected internally prior to the start of the survey to check for bats or evidence of bats.

Digital recording devices were used to store bat echolocation calls for subsequent analysis using Batsound and Anabat Insight software. During the surveys Guide TrackIR Pro 19mm thermal imaging cameras and Sony Nightshot digital cameras with infrared light arrays were deployed to supplement the digital sound recording devices.

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 3.

Table 3: Bat Activity Survey Details

Survey type	Dusk emergence survey	Dusk emergence survey
Date	28/06/2023	25/07/2023
Weather conditions	Dry, warm evening. Overcast – cloud cover 100%. Light breeze – BF1-2.	Dry, clear, calm, cloud cover 5-10%, Slight breeze BF0-1.
Start temperature (°C)	18°C	15°C
End temperature (°C)	17°C.	12°C
Wind (Beaufort)	1-2	0-1
Precipitation	None	None
Sunset	2132	2110
Start time	2115	2055
End time	2300	2245
Surveyors (numbered locations)	Camilla Winder (1) Mike Sharp (2) Nick Underhill-Day (3)	Mike Sharp (1) Nick Underhill-Day (2) Camilla Winder (3)
Equipment	3 x Anabat Walkabout, 2x Guide TrackIR Pro 19mm thermal imaging cameras. 3x Sony Nightshot digital cameras with an infrared light arrays.	3 x Anabat Walkabout, 2x Guide TrackIR Pro 19mm thermal imaging cameras. 3x Sony Nightshot digital cameras with an infrared light arrays.

Dormouse

The data search identified no records of this species within the 2 km search radius. The development site supports no habitat for dormouse, and it is considered extremely unlikely that this species is present within the village and surrounding area due to historical declines and the lack of suitable habitat/connectivity. As such it is not considered further in this report.

Otter, water vole and white-clawed crayfish

There are no waterbodies on or close to the site; the nearest watercourses lie between 200 and 250 m to the north and south, respectively. Because of the small size and nature of the site, its distance from local watercourses, and built nature of adjacent land, these species are

considered extremely unlikely to be present, and thus they are not considered further in this report.

Nesting birds

Habitats on site were assessed for their suitability for nesting birds. Any incidental sightings, or active/old nests were recorded.

Reptiles

Because the site comprises buildings, hardstanding and a small managed pub garden, surrounded by fencing, roads and other houses, the likelihood of reptiles occurring on-site is considered to be negligible and they are not considered further in this report.

Great crested newt

Great crested newts use terrestrial habitat within 500 m of breeding ponds; if used by the species for resting, such habitat is protected. The nearest mapped pond lies approximately 150 m to the north-east and there are several additional waterbodies within 500 m of the site.

As for reptiles, the nature of the site makes it highly unlikely that this species would be present. Nonetheless, because there are nearby ponds, terrestrial habitats on site were assessed for their potential to support the species, based on factors including vegetation structure and composition, the availability of shelter and foraging resources. The proximity of ponds and intervening habitats are an important factor in determining the likelihood of this species being present on site.

2.3.4 Other Priority Species

General habitat suitability and incidental sightings of other priority species, including species of principal importance for the purpose of conserving biodiversity in England (NERC Act 2006) and Local Biodiversity Action Plan species, were noted. However, the presence of many priority species cannot be confirmed without targeted surveys (e.g. lower plants, insects) and thus the type and quality of habitats present (e.g. freshwater) were used to help assess the likelihood of such species being present. Species particularly considered as part of this assessment were mostly limited to mammals, reptiles, amphibians, birds and more easily visible/identifiable plants and insects likely to be present in the geographical region, and which could potentially occur on the site.

2.3.5 Invasive Non-Native Species

Any incidental sightings of relevant invasive non-native species with legal controls were recorded. A full survey was not undertaken.

2.4 Biodiversity Net Gain Assessment

Baseline habitat survey data and information on the proposed development was used to determine the impact of the development on biodiversity, using the DEFRA Biodiversity Metric 4.0.

This metric is a tool to quantitatively measure the biodiversity impact of development proposals; full methods are provided in Appendix 7.

2.5 Limitations

The interior of the buildings, including all roof voids, were accessible for detailed inspection during the PRA and subsequent bat activity surveys. Weather conditions and visibility were good and there were no constraints to the bat surveys.

Some parts of the building exterior (i.e. eastern elevations bordering the neighbouring garden) were not accessible for detailed inspection during the PRA. However, these areas were inspected and covered during the bat activity surveys, and thus this is not considered a significant constraint to the assessment.

June is a suitable time of year for habitat survey and there were no constraints to the survey. It should be noted that any assessments based on a few site visits will miss a proportion of the species present on or using the site. As such this report includes an assessment only of the likely presence of protected, priority and invasive species.

3 BASELINE ECOLOGICAL CONDITIONS

3.1 Designated Sites

The site has no statutory or non-statutory designation for nature conservation within or directly adjacent to its boundary.

The nearest statutorily designated sites are the Severn Estuary Site of Special Scientific Interest (SSSI)/Special Area of Conservation (SAC)/Special Protection Area (SPA)/RAMSAR, located 1.5 km to the north-east at its nearest point. The site also falls within the Impact Risk Zone for the Severn Estuary SSSI/SAC/SPA/RAMSAR.

GKER provided details of one non-statutory designated sites within a 1 km radius of the survey area; this is Berkeley Heath Water Meadows Local Wildlife Site (LWS), located 844 m to the north-east, on the far side of the B4066 public highway. The LWS (SO60/058) is designated for its marsh, bog, swamp, mire and tall herb fen habitats.

Maps illustrating the locations of the designated sites are provided in Appendices 2A and 2B.

3.2 Habitats

3.2.1 General

The site comprises several buildings, areas of hardstanding, including a car park, and a small pub garden. The habitats are illustrated in Figure 4 and in Plates 1 to 12, and Target Notes are listed in Table 4.

3.2.2 g4 Modified Grassland

The short-mown pub garden has several picnic tables and is dominated by perennial rye-grass *Lolium perenne* with areas of compacted soil/sparse vegetation around the picnic tables (Plates 1 and 2).

Additional species include annual meadow-grass *Poa annua*, ribwort plantain *Plantago lanceolata*, white clover *Trifolium repens*, dandelion *Taraxacum officinalis* agg., herb-Robert *Geranium robertianum* and creeping cinquefoil *Potentilla reptans*.

3.2.3 u1b Developed Land, Sealed Surface

The Boars Head public house comprises a collection of adjoining building structures and a separate brick outbuilding a few metres to the north (UKHab: u1b5) (Plates 5-10).

The original Victorian brick-built building is an end-of-terrace with a pitched, tiled roof and two brick chimney columns (Figure 3, structure 1). An L-shaped brick extension adjoins the original building (Figure 3, structure 2); this has pitched, tiled roofs with two additional brick chimneys.

A more recent brick and breezeblock extension has been added above a former flat roofed section on the western elevation of the building (Figure 3, structure 3); this has a short, tiled roof merging with the roof of structure 2.

A long, single-storey, modern brick/breezeblock extension, with a pitched tiled roof, has been added onto the north gable of structure 2 (Figure 3, structure 4).

A few metres to the north of the main building complex is an old brick outbuilding with a shallowly sloping corrugated metal roof, wooden doors and glazed windows on its southern elevation (Figure 3, structure 5).

To the west of the main building complex is a large Tarmacadam car park and external seating area on paving slabs, beneath a canopy (UKHab: u1b6).

Figure 3 and Plates 5 to 10 show the different building structures.

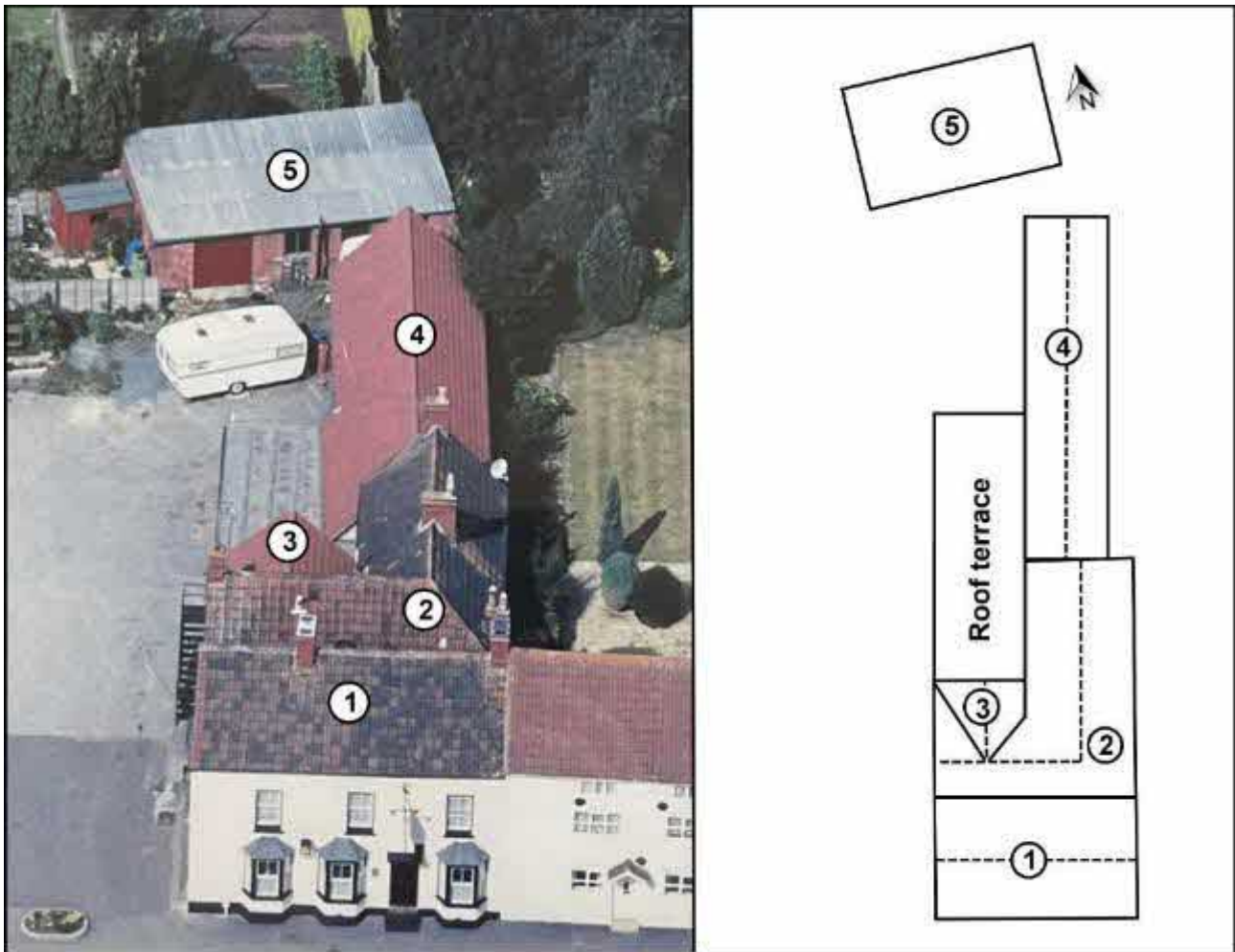


Figure 3: Old aerial photo (circa 1970s) showing the layout of The Boars Head public house (left) and schematic of the buildings surveyed (right); showing 1) original Victorian end-of-terrace; 2) modern L-shaped two-storey extension; 3) modern small two storey extension; 4) modern single-storey extension; and 5) old brick outbuilding (former coach house & stables). A single-storey extension with a flat roof (terrace) is also present.

3.2.4 Other

A narrow verge, comprising ephemeral and colonising plant species, is present along part of the western boundary of the site (Target Note 1, Plate 11). The verge contains slate shingles and supports species including false oat-grass *Arrhenatherum elatius*, Italian rye-grass *Lolium multiflorum*, Yorkshire-fog *Holcus lanatus*, wall barley *Hordeum murinum*, ragwort *Jacobaea* sp., field bindweed *Convolvulus arvensis*, scarlet pimpernel *Anagallis arvensis*, groundsel *Senecio vulgaris*, sowthistle *Sonchus* sp., creeping cinquefoil, willowherb *Epilobium* sp., common sorrel *Rumex acetosa*, nettle *Urtica dioica*, herb-Robert and sun spurge *Euphorbia helioscopia*.

In the corner of the pub garden is a small, raised bed containing false-oat grass, willowherb and bamboo *Bambuseae* sp. (Target Note 2, Plate 12).

At the entrance to the car park are two isolated woody shrubs comprising variegated holly *Ilex* sp., yew *Taxus baccata* and bramble *Rubus fruticosus* agg. (Target Note 3, see Plate 3).

On the south elevation of the brick outbuilding is a large elder *Sambucus nigra* shrub (Target Note 4), while ivy *Hedera helix* covers part of the eastern end of the building.



Plates 1 and 2: Modified grassland of pub garden.



Plates 3 and 4: The Boars Head - buildings and car park



Plates 5 and 6: The Boars Head main building; showing southern elevation (left) and western gables (right) of structures 1 and 2 (see Figure 3), with pitched, tiled roofs and brick chimneys.



Plate 7: Western elevation; showing the two-storey extensions (structures 2 and 3, Figure 3) and single-storey extension with a flat roof (structure 4, Figure 3) and adjoining wooden canopy.

Plate 8: Single-storey extension; and part of the roof terrace (structure 4, Figure 3).



Plates 9 and 10: Brick outbuilding (former coach house) to north of main pub complex: showing corrugated metal roof and glazed windows (Figure 3, structure 5).



Plate 11: Vegetation along western boundary verge.



Plate 12: Small raised bed with bamboo.

Table 4: Target notes (all relate to Figure 4)

Target note	Description
1	Narrow (<1 m) slate verge some ephemeral/colonising species
2	Small, raised bed with bamboo
3	Planted woody shrubs: variegated holly and yew.
4	Elder bush



Figure 4: The Boars Head, Berkeley – UK Habitat Map. Google Earth aerial image dated 21/07/2021.

3.3 Protected and Priority Species

Relevant protected and priority species records within 1 km of the site are given below and maps are provided in Appendix 3. None of the records provided relate directly to the study site. The full data search is available on request.

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

3.3.1 Bats

3.3.1.1 Background Data Search: Bats

GCER provided 31 records of bats within a 2 km radius of the site, recorded between 1993 and 2020. At least eight 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 *Myotis daubentonii* and lesser horseshoe bat *Rhinolophus hipposideros*, as well as indeterminate species records.

16 records are from locations within Berkeley, with the nearest record, from 2020, of two roosting soprano pipistrelles from a building 50 m to the south-east. The next nearest record, from 2013, is of two common pipistrelles in flight, from a location 150 m to the north-west, on the edge of the village. The remaining 14 records are from locations within Berkeley, between 2008-2016, and are of bats in flight (foraging and/or commuting) from two locations on the eastern outskirts of the village, between 500 m and 700 m distant. Only one record (described above) is of roosting bats.

A map of bat records within 2 km of the site is provided in Appendix 3B. The full data search from GCER is available on request.

Reference to Natural England's Magic website, which holds records of granted bat mitigation licences issued by Natural England since 2009, identified no granted bat licences within 2 km of the site.

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.

3.3.1.2 Environmental Context of Buildings

The Boars Head public house is located in an area of moderate density residential housing and is surrounded on all sides by roads, residential dwellings and associated gardens. There are several scattered mature trees along the northern (rear) boundary of the site, and within the garden to the east, which might provide vegetative cover for bats, if present. However, the southern and western elevations are relatively exposed, with few trees and very little cover for bats, if roosting in the buildings.

Foraging opportunities for bats in the immediate vicinity of the Boars Head are relatively poor and limited to small gardens and patches of amenity grassland. However, there is open countryside within 200 m to the north, west and south, comprising areas of grassland, lines and small stands of trees, field boundary hedgerows and the riparian corridor of the Berkeley Pill watercourse. However, bats would have to cross roads and artificially lit areas to reach these habitats, and thus connectivity to nearby foraging areas is suboptimal for many bat species.

Further out the surrounding landscape is largely unwooded and intensively managed, with few large areas of semi-natural vegetation, and thus is likely to provide only moderate quality commuting and foraging habitats for bats.

Street lighting is present along Lynch Road to the immediate south, while the western and southern elevations of the building have external artificial lighting at eaves level (flood lights) and above doorways. This may deter more light-averse bat species, such as long-eared bats, horseshoe bats or *Myotis* species, from accessing the building from these elevations, or for roosting or foraging. However, the eastern and northern elevations of the buildings border residential gardens so may be darker.

3.3.1.3 Preliminary Roost Assessment – Building Exteriors

Main Building (structures 1-4, Figure 3)

The original end-of-terrace Victorian building comprises rendered brickwork with a combination of uPVC and wooden window frames and doors. The rendered brickwork is well-sealed with no features suitable for roosting bats. The eaves are closed with wooden fascia boarding, which is tightly sealed to the rendered brickwork. Similarly, the lintels of the rear extensions are in relatively good condition and tightly sealed to the window and door frames and associated brickwork. The eaves of the extensions are closed and tightly sealed with wooden fascia or soffits, with no access for bats into the roof voids via the eaves.

All visible gable tile verges (western and southern elevations) are in good condition, with no areas of crumbling mortar, crevices or gaps that might offer access or roosting opportunities for bats. The brick chimneys in the original building and in the two-storey extensions are well-sealed with lead flashing to the roof tiles below, with no areas of lifting flashing. The brick chimneys are in good condition, with no potential roost features visible.

The pitched roofs of the building are covered with modern concrete pantiles; these appear mostly well sealed when viewed from ground level, although there are likely to be small gaps within the overlapping tiles that might allow bats access opportunities into the roof voids or spaces below the tiling. There are also several slipped, broken and missing tiles on some of the roof pitches, including missing and slipped tiles on the south roof pitch of the original building (Plate 13; structure 1, Figure 3); and a missing tile on the south roof pitch of the two-storey extension (Plate 14; structure 2, Figure 3). There are also visible gaps between the concrete ridge tiles and pitch tiles below where the mortar has fallen out, offering access opportunities for bats into the voids or to spaces beneath the ridge tiles.

No bats or evidence of bats was found anywhere on the exterior structures of the building.

Brick outbuilding (structure 5, Figure 3)

The outbuilding has solid brick walls below a corrugated, metal panelled roof. There are gaps in the corrugations of the roof panels; however, the roof panels are likely to be subject to extremes of temperature, and thus these gaps are considered suboptimal for roosting bats. The eaves are closed and any gaps at the wall tops are obscured by gutters.

The eastern end of the building is covered in dense ivy *Hedera helix*, with potential to support nesting birds.

The building has two main rooms, each accessed through doorways on the south elevation. There are also several glazed windows on the south elevation allowing light into both rooms. The wooden door and window frames are well-sealed to the adjacent brickwork, with no noted gaps likely to offer opportunities for bat access or roosting.

No bats or evidence of bats was found anywhere on the exterior structures of the outbuilding.

Preliminary Roost Assessment – Building Interiors

Main Building (structures 1-4, Figure 3)

The Boars Head main building has four roof voids as follows:

Structure 1: Plates 15-16

Above the original Victorian building (structure 1) the void measures approximately 10 m long by 5 m wide, and is roughly 2.25 m from the ceilings joists to the ridge board at the roof apex. The void has an internal brick wall and chimney column roughly 3 m from the west gable; a large hole in the wall would provide easy access for bats, if present, between the two sections of the void.

The roof is supported by large timber purlins, horizontal and vertical supporting struts and rafters, and is relatively uncluttered, so would offer a reasonable flight space for void-roosting bats species. The roof is mostly lined with bitumastic felt but the top row of tiles on the south roof pitch, and a section of tiling at the eastern end, is unlined, and thus access into the void would be possible from above.

The apex ridge board has some cobwebs along its length, which is suggestive of no recent bat use. The ridge tiles are visible above the ridge board, with the enclosed cavities below the tiles appearing relatively un-mortared; these cavities are likely to offer suitable access and roosting opportunities for bats. The missing tile on the south roof pitch near the west gable (Plate 13) would provide easy flying access for bats into the void.

No bats or evidence of bats were visible within the void.

Structure 2: Plates 17-20

The L-shaped void above the rear second-storey extension measures approximately 10 m in length from east to west and 11 m from north to south. The void measures between 2.5 m and 4 m wide and ranges from 1 m (north-south section) to 1.5 m (east-west section) in height. A large brick chimney column passes through the north-south void.

The roof is supported by timber purlins, supporting struts and rafters merging at the apex ridge board. The void is relatively uncluttered and has east/west and north/south aspects, so would provide a range of environmental conditions for bats and provide a reasonable internal flight space, albeit of limited height, particularly the north-south section of the void.

The first-floor rooms below are partially built into the roof space, and thus there is no eaves access for bats into the void.

The east-west section of the void is lined with bitumastic felt; there are several large gaps and tears in the lining, with the tiles visible above. The north-south section of the void is unlined. There are missing tiles (Plate 14) as well as many small gaps visible in the tiling that would provide easy access for bats into the void. The ridge boards within the void are mostly heavily cobwebbed, suggesting no recent or extensive bat use, for example by a large number of bats.

Where the voids merge there is a short (c. <0.5 m) section of ridge board without cobwebs; below this was a small collection of bat droppings (<30) characteristic of a small-sized bat species, such as pipistrelle or small *Myotis* species. The droppings ranged from pale brown to dark, reflecting a range of ages. There were several (<10) butterfly wings also scattered on the void floor, possible bat feeding remains.

A sample of droppings was collected for DNA analysis, which confirmed the droppings were from whiskered bat (Appendix 4). However, no bats were observed within the void during the site visit.

Structure 3: Plate 21

Above the smaller second-storey extension is a relatively small void, measuring approximately 3 m long by 4 m wide, and roughly 1.5 m in height to the apex. The void was not accessible for close inspection but could be viewed by lifting up a section of plastic sheeting which separates the void from the larger L-shaped void in structure 2 (see Figure 3).

The roof is supported by timber purlins and rafters and is lined with bitumastic felt, in relatively good condition, with no gaps or tears visible. The void contains heavy cobwebbing along the ridge board, suggestive of no recent bat use. The plastic sheeting is likely to prevent bat access between the two voids as it is relatively tightly sealed to the timbers.

No bats or evidence of bats was visible within the void.

Structure 4: Plate 22

The roof void above the single-storey northernmost extension measures approximately 16 m long by 5 m wide and roughly 2.25 m in height to the roof apex.

The extension is of modern construction with the majority of the roof supported by closely spaced fink trusses and rafters, with a short section at the southern end containing cross struts and rafters. The void is large but very cluttered, and thus suboptimal as a flight space for void-roosting bats. Only the southern end has a section of ridge board at the roof apex, a feature often favoured by void-roosting bats, and thus most of the roof apex is suboptimal for roosting bats.

The roof is lined with bitumastic felt; this is in good condition with no gaps or tears visible. Glass fibre insulation abuts up against the lining preventing access from the eaves, if bats were able to access the soffits. The void contained numerous cobwebs, suggesting no recent bat use.

Vegetation has grown into the void via the eaves area, along much of the lower eastern roof edge, indicating the likely presence of climbing vegetation along the outside wall. This indicates the eastern eaves may be covered with dense vegetation, further restricting any potential bat access via the eastern eaves. However, this area was not accessible for inspection.

No bats or evidence of bats was visible within the void.

Structure 5 - brick outbuilding: Plates 23-24

The rooms of the brick outbuilding are relatively well-lit from light ingress through the windows, and thus the building interior is suboptimal for void-roosting bats, which generally prefer darker roosting conditions.

There are no enclosed roof voids in the building; the roofs are covered with corrugated metal panels to which either wood panelling (west room) or thin MDF-type boarding have been attached as ceilings. Part of the MDF-type boarding has bowed with bitumastic felt visible above, below the roof panels. The timbers supporting the roof are tightly sealed into the brickwork. The building is currently used for storage but is otherwise relatively undisturbed.

No bats or evidence of bats was found within the building.



Plate 13: Missing and slipped roof tiles on south Pitch of structure 1.



Plate 14: Missing roof tile on south pitch of structure 2



Plates 15-16 Roof void – structure 1: showing roof timbers, brick gables and roof linings.



Plates 17 and 18: Roof void – structure 2 (L-shaped void): showing the east-west section of the void.



Plates 19 and 20: Roof void – structure 2 (L-shaped void): showing the north-south section of the void.



Plate 21: Roof void - structure 3.



Plate 22: Roof void - structure 4 (above single storey) extension.



Plates 23 and 24: Rooms of brick outbuilding (structure 5, Figure 3)



3.3.1.4 Bat Activity Surveys

Two bat activity dusk emergence surveys were undertaken on 28th June and 25th July 2023 as described in Section 2.3.3.

Figure 5 included below illustrates the locations of surveyors and equipment deployed and summarises the results of the surveys.

Dusk Emergence Survey 28th June 2023

Inspection of the roof voids found a whiskered bat roosting against the apex ridge board in structure 2 (Figure 5) above the location where bat droppings had been found previously (in November 2022). No bats or fresh evidence of bats was found in any of the other roof voids.

The bat activity presence/absence survey was conducted as described in Section 2.4. The data is presented in Appendix 5 and the main findings are summarised below.

General bat activity levels during the dusk emergence survey were moderate and comprised frequent foraging passes by individual common and soprano pipistrelles, and frequent overhead passes by noctules.

The first bats recorded during the survey were foraging passes at 2141 by a soprano pipistrelle and noctule (high overhead), nine minutes after sunset. At 2150-51 a common pipistrelle was recorded by two surveyors emerging from between the valley between the roofs of section 1 and section 2 (Figure 5). The exact location of the roost could not be seen from ground level.

This was followed by frequent foraging passes by common pipistrelle, centred around the buildings, and with occasional flying passes through the roof valley.

At 2203 a *Myotis* species was recorded by two surveyors, with observation of the bat flying close to the east eaves of the section 2, within the adjacent garden. The bat is considered most likely to be the whiskered bat roosting within the roof above, but the emergence point was not detected. Several passes by whiskered bat were subsequently recorded, until 2208.

During the remainder of the survey frequent to occasional foraging passes by common pipistrelle and noctule were recorded.

Dusk Emergence Survey 25th July 2023

Inspection of the roof voids prior to the start of the survey recorded the presence of a whiskered bat in the same location as previous (Plate 25).

General bat activity levels during the survey were similar to the previous survey.

The first bat recorded, at 2134, was a common pipistrelle considered to have emerged from near the base of the eastern chimney (north side) of section 1 (Figure 5, Plate 26).

This was followed by frequent to occasional foraging passes, from 2136 until the end of the survey, by both common and soprano pipistrelle. The soprano pipistrelle was first observed flying towards the building from a location to the west, and thus is considered likely to be roosting elsewhere.

At 2157 a *Myotis* sp. bat was recorded emerging from under a ridge tile on the eastern slope of section 2 (Figure 5, Plate 27), very close to where the whiskered bat was roosting; this is likely to be the same bat.

High overhead passes by noctule were also recorded during the survey.

Summary of bats and bat roosts

The buildings at The Boars Head public house comprise a mixture of structures of different character and age. Overall, the two-storey sections of the building (structures 1-3, Figure 3) are considered to offer 'moderate' bat roost potential and are confirmed roosts for two species of bat, while the more modern single-storey rear extension (structure 4, Figure 3), roof terrace, and brick outbuilding (structure 5, Figure 3) are assessed as being of 'negligible' bat roost potential.

Considering the site's location and surrounding habitats, the likely presence of most bat species, including all four Habitats Directive Annex 2 species, can be ruled out. Equally, the absence of larger accumulations of bat droppings within any of the voids, and suboptimal conditions, suggests the presence of larger bat roosts is unlikely, including those of maternity colonies.

Nonetheless, the Preliminary bat Roost Assessment and two bat activity surveys confirmed the presence of the following bat roosts:

- Summer day roost of an individual common pipistrelle.
- Summer day roost of an individual whiskered bat.

Because common pipistrelle and whiskered bat were roosting as individuals, it is considered they are non-maternity roosts. Common pipistrelle is widespread and abundant in Gloucestershire and in the UK, while whiskered bat is widespread but less abundant in Gloucestershire and in the UK (CIEEM, 2021). Therefore, these roosts, comprising non-breeding individuals of widespread and abundant/less abundant species, are considered to be of local importance only (CIEEM, 2021).

According to English Nature’s Bat Mitigation Guidelines (Mitchell-Jones, 2004), the conservation significance of these roosts, involving small numbers of common species, with no maternity colony present, is low. Overall, the Boars Head public house supports an assemblage of bats (individuals of two species) of local importance only (CIEEM, 2021).

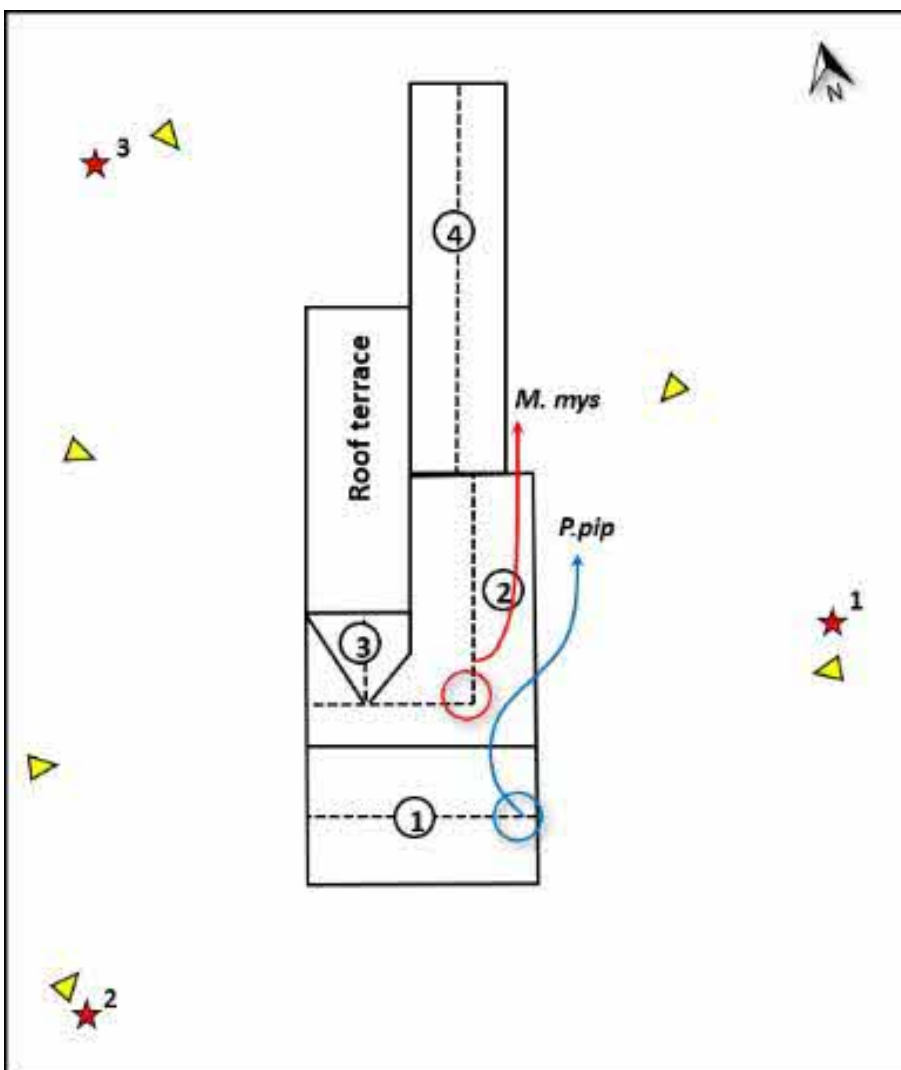


Figure 5: Summary of bat activity surveys undertaken in June and July 2023; showing locations of surveyors (red stars) and infrared camera/light arrays and/or thermal imaging cameras (yellow triangles). The locations of the whiskered bat (DNA analysis and individual bat) (red circle) and common pipistrelle (blue circle) roosts are shown.



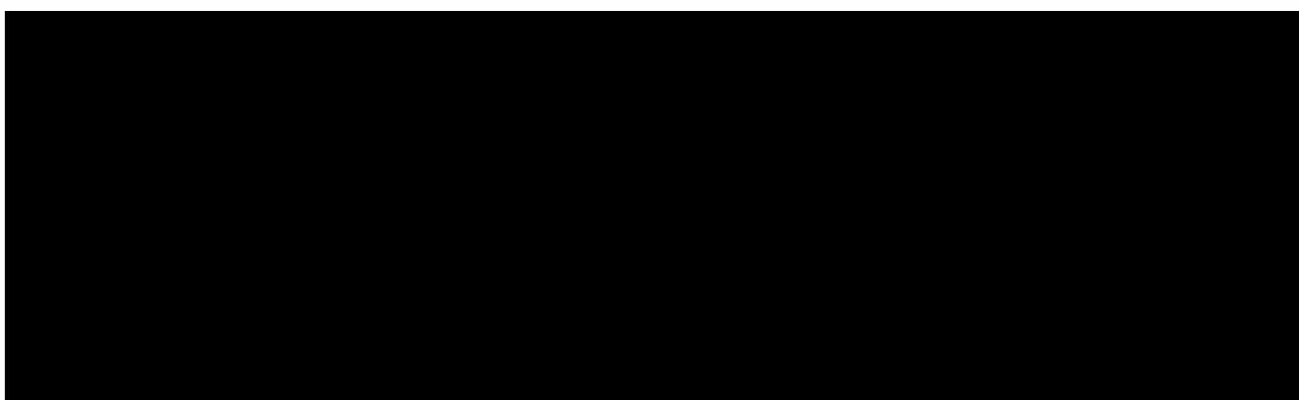
Plate 25: Whiskered bat roosting against the ridge board in the roof of section 2 (see Figure 5 for location) on 25th July 2023. The bat (assumed to be the same animal) was also present on 28th June.



Plate 26: Still from thermographic video showing the flight path of an emerging common pipistrelle from near the base of the east chimney on the south roof, at 2134 on 25th July 2023. The video clip is available on request.



Plate 27: Still from thermographic video showing the flight path of an emerging whiskered bat from beneath a tile on the eastern side of the roof of Section 2 (see Figure 5) at 2157 on 25th July 2023. The recorded sonogram of the bat is shown top left. The video clip is available on request.



3.3.3 Birds

GCER provided 505 records of birds within a 2 km radius of the site, recorded between 2000 and 2021; most of the records are of species listed on WCA 1981 Schedule 1⁵, Species of Principal Importance for the purpose of conserving biodiversity⁶ and/or species of high (red-listed) or medium (amber-listed) conservation concern⁷. Species recorded locally within a 2 km radius, and which could potentially nest within the building, if there were suitable features present, include house sparrow *Passer domesticus*, house martin *Delichon urbicum*, swift *Apus apus*, swallow

⁵ Species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).

⁶ Species designated as “Species of Principal Importance for the purpose of conserving biodiversity” as listed under Section 41 (England) of the Natural Environment and Rural Communities Act 2006; these species are priority species for the UK Post-2010 Biodiversity Framework and form a key component of the Biodiversity Strategy for England.

⁷ Birds of Conservation Concern 5 (Stanbury *et al.*, 2021).

Hirundo rustica, starling Sturnus vulgaris, spotted flycatcher Muscicapa striata and wren Troglodytes troglodytes. A map of bird records within 2 km of the site is provided in Appendix 3C.

There was no evidence of birds' nests within the buildings. However, the dense ivy covering the eastern end of the brick outbuilding (structure 5) and vegetation likely to be covering the eastern elevation of the single-storey extension (structure 4) is likely to offer suitable features for nesting birds. An old birds' nest was also observed on the floor of the roof in structure 1, and thus bird nesting in this void cannot be ruled out.

A colony of house sparrows was heard during the PRA survey, and house sparrows were observed nesting in the roof of the adjacent property to the east during the June bat activity survey.

The presence of nesting birds within vegetation or within roof structures during the spring and summer breeding period (March to August inclusive) cannot be ruled out.

3.3.4 Great Crested Newt

GCER provided 18 records of great crested newt, from between 2013 and 2020, within 1 km of the site. The nearest record, from 2020, is of a single animal of this species from a location 320 m to the north-east of the site. All the other records are from similar locations in the north-east of the village.

Reference to Natural England's Magic website, which holds records of granted great crested newt mitigation licences issued by Natural England since 2009, identified two licences within 1 km of the site. The nearest record (EPSM2009-1403) is for the destruction of a resting place from a location 400 m to the east; the second record (2015-6699-EPS-AD2-1) is for the damage of a resting place from a location approximately 550 m to the north-east.

Natural England holds five licence returns within 1 km of the site, the nearest at a location roughly 400 m to the east. There is a single record within 1 km of the site of a pond surveyed as part of Natural England's great crested newt pond survey 2017-2019. The pond lies approximately 420 m to the south-east; however, GCN occurrence was recorded as absent.

There are no waterbodies on site, so there are no suitable opportunities for great crested newt breeding on site. The site has very little vegetation with opportunities for foraging, commuting and shelter by amphibians. The site is also surrounded by roads, buildings and fencing, and by adjacent residential properties, and thus the likelihood of this species being present on site is considered extremely low, but cannot be entirely ruled out.

3.3.5 Other Priority Animals

GCER provided 175 records of other priority animal species include the following:

- 160 records (2020-2022) of 28 priority moth species
- One record (2013) of stag beetle *Lucanus cervus*
- 14 records (2015-2020) of hedgehog *Erinaceus europaeus*

The site does not provide suitable habitat for most priority animal species which are likely to be present within the surrounding landscape. However, hedgehog *Erinaceus europaeus* may occasionally cross the site between surrounding gardens.

3.3.6 Priority Plants and Fungi

GCER provided no records of priority plant species within 1 km of the site. No rare plants or fungi were identified during the PEA survey.

Given the site's lack of vegetation, with the exception of a species-poor pub garden, the likelihood of rare plants or fungi being present is low. No impacts are likely, so these groups are not considered further within this report.

3.4 Invasive Non-Native Species

GCER provided 18 records of invasive, non-native species within the search area, including records of Himalayan balsam *Impatiens glandulifera*, butterfly-bush *Buddleja davidii*, Canadian pondweed *Elodea canadensis*, Japanese knotweed *Fallopia japonica*, Canada goose *Branta canadensis*, Eastern grey squirrel *Sciurus carolinensis*, American mink *Neovison vison* and ring-necked parakeet *Psittacula krameri*. The nearest record is of Canada goose at a location 430 m to the north-east. A map of invasive non-native species within 1 km of the site is provided in Appendix 3D.

No invasive non-native species with legal restrictions were recorded on site.

4 DESCRIPTION OF PROPOSED DEVELOPMENT

The proposal involves conversion of part of the public house into residential accommodation comprising two units; construction of two new semi-detached bungalows to the rear of the public house building; construction of two new terraced house units; creation of a shared vehicular access and car parking for nine vehicles; and creation of new amenity leisure spaces (gardens) for the residential units.

The amenity leisure spaces will comprise areas of grass (new gardens) and hard paving with soft verge edges for planting by residents. Soft landscaping will include planting of at least 3No. small fruit trees, to be located within the grass garden areas, one within a small communal area of grassland in the north-western corner of the site.

The majority of the original public house, including all second-storey sections (Sections 1, 2 and 3, Figure 4), will be retained, with all associated roof voids remaining. The single-storey sections (i.e. roof terrace and section 4, Figure 3) and the brick outbuilding (section 5, Figure 4) will be demolished and new bungalow units constructed in their place. There are no plans to modify the retained roofs and associated voids but potential impacts on these structures (and upon bats) are likely to arise through re-roofing works. The proposed site location plan is illustrated in Figure 6.



Figure 6: Proposed Site Location Plan REV B (20th April 2023) (Drawing No. Plot 001/18/01/2023, courtesy of mmm group).

5 ASSESSMENT OF EFFECTS

5.1 Designated Sites

Potential Impacts

The site falls within a SSSI Impact Risk Zone for the Severn Estuary SSSI, approximately 1.5 km to the north-west at its closest point. However, the proposals do not fall into any of the categories likely to have an impact on the nearby SSSI, and given the distance and small scale of the proposed works, no impacts are likely.

There is one non-statutory Local Wildlife Site within 1 km of the site, but no impacts on this designated site are anticipated due to the small scale of the proposed development and distance from the designated site.

Mitigation and Compensation Measures and Significance of Residual Effects

No mitigation or compensation measures are required, and no residual effects on designated sites are anticipated as a result of the proposed development.

5.2 Habitats

Potential Impacts

The existing building and car parking areas that will be directly affected by the proposals have very limited ecological value. A small area of species-poor managed amenity grassland (pub garden), narrow strip of ephemeral/colonising vegetation and several small woody shrubs will be lost as a result of the development; these features have limited ecological value, so their loss will not result in any significant negative ecological effects. Creation of small garden habitats will partially offset these losses. Planting of small fruit trees within several of the new grassland areas will result in biodiversity net gains, providing a good resource for pollinating insects, birds and mammals.

Impacts from habitat clearance could potentially affect protected and/or priority species; this is discussed below in Section 5.3.

In the absence of mitigation, developmental activities could potentially result in accidental pollution.

Mitigation and Compensation Measures

The following measures are recommended to protect retained habitats both within and outside the development boundary and compensate for habitats lost:

Planting of new areas of grassland/garden (totalling approximately 0.011 ha) will partially offset biodiversity loss. A species-rich flowering lawn mixture, such as Emorsgate EL1, should be selected to help maximise the wildlife value of the new gardens.

Planting small fruit trees within the new grassland areas will result in biodiversity net gains for the site. Suitable species are listed in Appendix 8.

All trees close to the site boundaries (i.e. within adjacent gardens) will be protected in accordance with British Standard BS 5837:2012: Trees in relation to design, demolition and construction. Recommendations. Protection will be installed prior to the commencement of any works, including site clearance.

The proposed development will be confined to land within the survey boundary (Figure 4, Section 3). No land outside this boundary will be used for site compounds, parking or storage of any machinery or materials during works without prior advice and agreement from a suitably qualified ecologist. The development area will be temporarily fenced, with appropriate signage used to ensure there are no accidental incursions on to retained habitats or sensitive habitats off site during works.

Appropriate pollution control measures will be implemented during the site clearance and construction phases to protect the nearby watercourse, and a pollution incident response plan will be prepared in case of emergencies, e.g. fuel spills and site run-off, in accordance with standard government guidance⁸.

Significance of Residual Effects

Providing the above measures are anticipated, no significant residual effects are anticipated as a result of the proposed development.

5.3 Protected and Priority Species

5.3.1 Bats

Potential Impacts

The proposals will include demolition of the brick outbuilding and single-storey northern extension, and reconfiguration of the main building, which will include roof repairs and/or modification, construction of new two storey rear extensions, and conversion of the public house into residential accommodation. Because the presence of bat roosts within the roof voids/structures has been confirmed, there is a potential risk of impacts, and of associated legal offences, upon bats occurring as a result of development.

The proposed works (in the absence of mitigation) could result in the following adverse impacts upon 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;
- Permanent modification of existing roof spaces or structures so that they are no longer accessible for use by roosting bats, for example loss of flight access into the building by bats; and
- Destruction of bat roosts.

Because the presence of bat roosts has been confirmed, a bat mitigation plan is required to ensure that the favourable conservation status of the bats at the site can be maintained during and after works.

⁸ <https://www.gov.uk/guidance/pollution-prevention-for-businesses>

The habitats on site offer minimal value for commuting and foraging bats, and there is already security lighting on the building which may limit the site's value for bats. Any increase in artificial lighting as a result of the development, particularly on the northern and eastern sides, has the potential to affect how bats use the site, with potential for light to spill onto more valuable adjacent garden habitats in the immediate area.

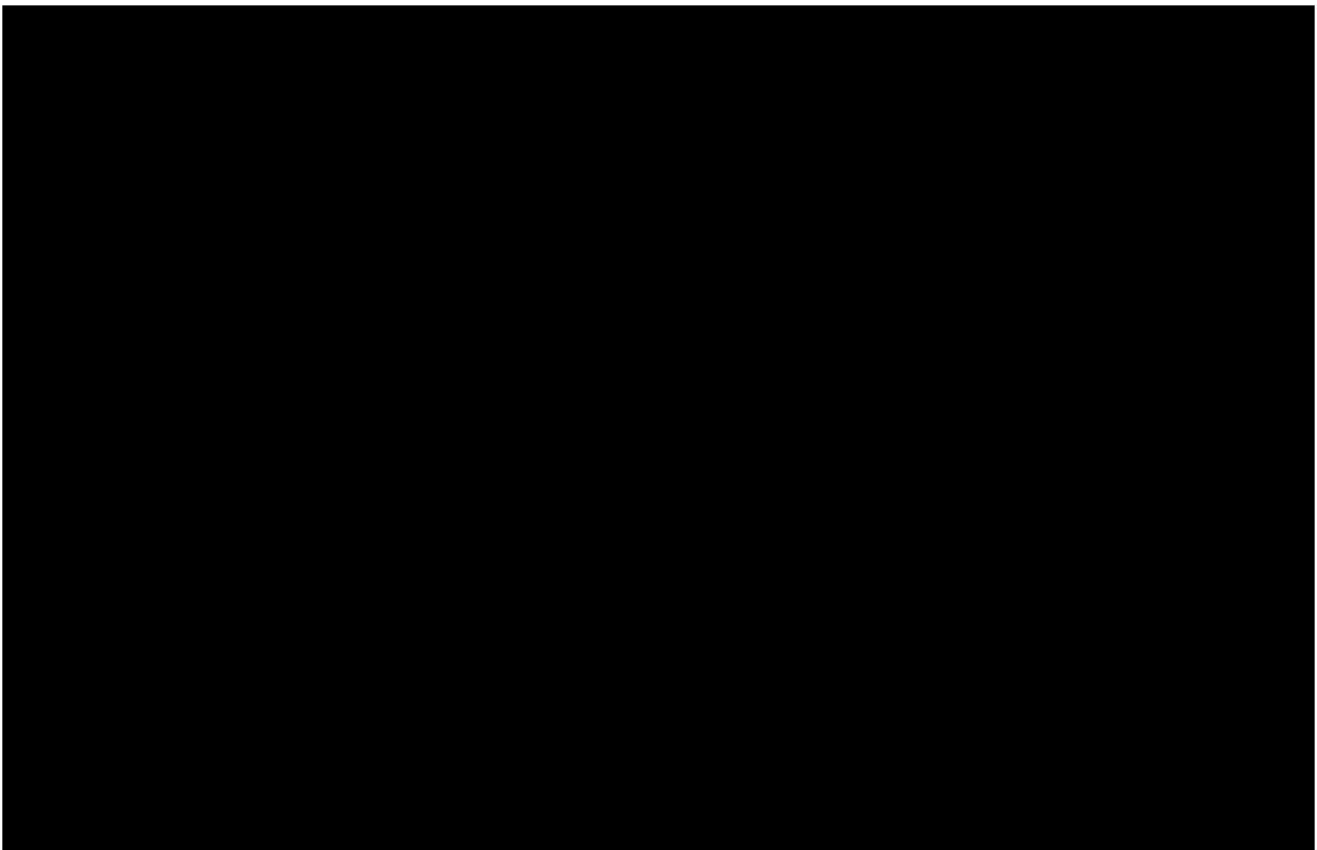
Mitigation and Compensation Measures

The following measures will be implemented to avoid and/or minimise impacts of the development upon bats, and to compensate for potential loss of bat roosts where necessary:

- In order to accommodate the species of roosting bat present, to ensure that bats are not harmed during works and to ensure that there are no negative effects on bat populations, detailed mitigation/compensation measures for bats will be designed into the scheme and will be incorporated into a method statement/mitigation plan. This is attached at Appendix 6.
- Because bat roosts are confirmed as present, a protected species mitigation licence will be needed from Natural England prior to the start of the works.
- Any new lighting of the site must be designed to avoid increased nocturnal illumination levels, especially of all identified roost access points (if required). Please refer to 'Bats and Artificial Lighting at Night; Guidance Note 08/23' (ILP & BCT, 2023) and 'Guidance Note 9/19 Domestic exterior lighting: getting it right!' (ILP, 2019) for further information.

Significance of Residual Effects

Providing the above measures are implemented, no residual effects on bats are anticipated.



5.3.3 Birds

Potential Impacts

Some of the older roofs (structures 1 and 2) and vegetation covering parts of the buildings (east end of the brick outbuilding (structure 5) and east elevation of the single-storey extension (structure 4) have suitability to support nesting birds, although none were found. All nesting birds are protected by law, regardless of how common the species, and thus precautionary measures will be adopted during development works to ensure compliance with legislation.

Mitigation and Compensation Measures

Precautionary measures will be undertaken to ensure that demolition and development work does not impact on any active birds' nests:

To avoid committing an offence, any removal of suitable nesting habitat (e.g. ivy), demolition (e.g. old brick building) or roof repairs (e.g. roof structures of main building) should be undertaken outside the bird breeding season (March to August inclusive). If this is not possible (such as when timing works to avoid impacts on bats), the building/vegetation will be checked immediately prior to works commencing by a suitably qualified ecologist.

If nesting birds are found to be present during works, a suitable buffer zone will be established around the nest (with advice from a suitably qualified ecologist) and disturbing works will be delayed until all the young have naturally fledged and left the nest.

Significance of Residual Effects

Providing the above measures are implemented, no residual effects on birds are anticipated.

5.3.4 Great Crested Newt

Potential Impacts

There are records of this species in the wider landscape and the closest mapped pond lies approximately 150 m to the north-east, with several additional waterbodies within 500 m of the site.

There are no ponds on the site so no suitable opportunities for great crested newt breeding. The very small amount of vegetation (mostly short-mown grassland) offers limited terrestrial habitat for this species, with the value of this further limited by the distance from mapped ponds and known records of this species.

Natural England's great crested newt rapid risk assessment tool has been applied to the site, where the maximum area for the proposed development will be c.0.12 ha and the closest known pond (150 m) is assumed to support great crested newt breeding. The results are shown in Table 5.

Table 5: Natural England’s great crested newt rapid risk assessment applied to site.

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	No effect	0
Land 100-250m from any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.1
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	No effect	0
	Maximum:	0.1
Rapid risk assessment result:	GREEN: OFFENCE HIGHLY UNLIKELY	

It can be seen from the above assessment that the likelihood of an offence being committed during the proposed development is ‘highly unlikely’. Therefore, no further surveys or licensing of the proposals are required. However, the potential for great crested newts to be present on site cannot be completely ruled out, so precautionary measures will be required to avoid breaches of legislation.

Mitigation and Compensation Measures

The measures will ensure that great crested newts are safeguarded (if present in the local area). The following additional measure is recommended to ensure compliance with protected species legislation:

Prior to development, existing short vegetation on site should be kept short (c.50 mm) to ensure these areas remains unsuitable for great crested newt and other animals.

Clear vegetation prior to works commencing using sensitive working measures, e.g. by dismantling the piles carefully, and periodically stopping to check for great crested newts and other animals. Ideally, this should not be undertaken over winter when great crested newts hibernate (November to February inclusive, weather dependent); however, note restrictions regarding nesting birds above. If this is not possible, extra care must be taken to check for hibernating animals.

Where vegetation is longer (including the strip of taller vegetation along the western boundary), it will be cleared in a sensitive manner (e.g. using a staged cutting approach and clearing vegetation in a directional manner). Timing restrictions as above.

Building materials to be imported onto the site could be used by great crested newts for shelter. Any such materials must therefore be stored on land that is of low suitability for these species (i.e. upon areas of hardstanding); all materials should be stored above ground level (e.g. on pallets), so they are less accessible to great crested newts; and dense vegetation will not be allowed to develop within these areas.

If at any point during works a great crested newt is discovered, all work must stop, and a suitably qualified ecologist must be consulted. Telephone numbers of such must be held on site. Further surveys and a licence from Natural England may be required for works to continue.

Significance of Residual Effects

Providing the above measures are implemented, no residual effects on great crested newt are anticipated.

5.3.5 Other Priority Animals

Potential Impacts

There is potential for species such as hedgehog to be occasionally present on site. Individuals could therefore be harmed during works in the absence of mitigation; however, long-term impacts on these species as a result of the proposed works are unlikely to be significant.

Mitigation and Compensation Measures

The measures detailed in the above sections will reduce the likelihood of works adversely affecting other animals that could be present on site, such as hedgehog. The following additional measure will be implemented:

If a hedgehog is discovered during works, it will be carefully moved by hand to an area outside the construction zone (such as an adjacent garden to the east of the development site, with the owner's permission). If a hibernating animal is found, an ecologist must be contacted for advice on how to proceed.

Significance of Residual Effects

Providing the above measures are implemented, no residual effects are expected.

5.4 Invasive Non-Native Species

Potential Impacts

No invasive, non-native species were identified on site during the survey, so no impacts are anticipated.

Mitigation Measures

The following precautionary measure will be implemented to ensure no breaches in legislation occur during works:

If at any point during works an invasive non-native species is discovered a suitably qualified ecologist must be consulted on how to proceed.

Significance of Residual Effects

Providing the above measure is implemented, no residual effects are anticipated.

5.5 Biodiversity Net Gain

The Environment Act (2021), Natural Environment White Paper (2011) and National Planning Policy Framework (2021) require that development results in net gains for biodiversity, with the Environment Act requiring a minimum of a 10% net gain in biodiversity value of the site post-development (as calculated in accordance with a recognised biodiversity metric). Mandatory biodiversity net gain (as set out in the Environment Act 2021) will only be implemented fully through amendment of the Town & Country Planning Act and is likely to become law in November 2023. However, for small sites mandatory biodiversity net gain will be required from April 2024.

Therefore current biodiversity net gain requirements may vary according to local planning policy (see Section A1.1, Appendix 1, for further details on relevant local policy).

The DEFRA 4.0 Biodiversity Metric has been used to assess the impact of the proposed scheme on biodiversity. The results demonstrate that the project will result in the following on site net changes:

Habitat units: +25.83%

The full assessment is provided in Appendix 7 and the accompanying DEFRA 4.0 Metric spreadsheet for the project, dated 08/08/23.

In addition to habitat net gains, species-specific enhancements can be implemented on site, as detailed in Section 6. Such measures cannot be captured within the biodiversity metric, but will provide additional biodiversity value on site once works are completed.

5.6 Cumulative Effects

Due to the nature and scale of the proposals it is considered unlikely that there will be any cumulative effects associated with the proposed development that would have an adverse impact on designated sites, priority habitats, or protected or priority species.

5.7 Summary of Mitigation, Compensation and Enhancement Measures

A summary of mitigation and compensation measures is given below in Table 6; these measures are given in detail within the sections above. These measures must be detailed in full within a Construction Environmental Management Plan (CEMP), which can be conditioned upon approval.

Table 6: Summary of Mitigation and Compensation Measures

Feature	Mitigation and Compensation Measures	How will Measure be Secured?
Habitats	<ul style="list-style-type: none"> • All retained trees in close proximity to the works will be protected in accordance with British Standard BS 5837:2012: Trees in relation to design, demolition and construction. Recommendations. • Standard measures to limit pollution to be implemented during construction and operational phases. • Working area to be clearly defined and fenced to prevent accidental incursions to retained habitats. • Habitat creation (new grassland and tree planting) to deliver Biodiversity Net Gain. 	Project Design; Planning Condition
Bats	<ul style="list-style-type: none"> • Full implementation of Bat Method Statement. • Works affecting bats/bat roosts undertaken under a protected species mitigation licence. • Design scheme lighting during and after construction to avoid illuminating roofs and associated bat access points, and to avoid increase in illumination of adjacent garden habitats to north and east which provide suitable foraging/commuting habitat. 	Planning Condition; Protected Species mitigation licence (bats)
Nesting birds	<ul style="list-style-type: none"> • Remove nesting habitat, demolish the brick outbuilding and undertake roof repairs and/or modification of the main building outside of nesting season. If this is not possible, potential nesting habitat will be checked immediately prior to works commencing by a suitably qualified ecologist. If nesting birds are found, works cannot continue until the chicks fledge and leave the nest. 	Planning Condition
Great crested newt, hedgehog	<ul style="list-style-type: none"> • Precautionary measures during site clearance (vegetation cut and maintained in short condition) and during construction (avoid creation of suitable refuge features). • If at any time a great crested newt is discovered, all work must stop and an ecologist must be consulted. • If a hedgehog is discovered it will be moved to a place of safety nearby. 	Planning Condition

6 ECOLOGICAL ENHANCEMENT FOR SPECIES

Biodiversity Net Gain habitat measures are detailed within Section 5.5 and Appendix 7 of this report and the accompanying Biodiversity Net Gain Metric spreadsheet. Many species-specific enhancement measures cannot be captured within biodiversity net gain metrics, but despite this they remain a vital part of the overall enhancement measures for the site.

A variety of species measures could be implemented at the site, including:

Features for use by roosting bats and nesting birds, for which there are currently few opportunities on site, could be incorporated into the project design. Various nest/roost boxes are available, including designs that can be placed on, or incorporated within, buildings.

Appendix 8 provides lists of suitable bat and bird boxes.

Enhancement measures for the site should be detailed in full within an Ecological Mitigation and Enhancement Plan (EMEP) or similar, which can be conditioned upon approval.

7 RELEVANT LITERATURE

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Natural Environment White Paper (2011). The Natural Choice: Securing the Value of Nature.

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;
- EU Regulation 1143/2014 on Invasive Alien Species, as amended by The Invasive Non-native Species (Amendment etc.) (EU Exit) Regulations 2019;
- Environment Act 2021;
- 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 and DEFRA, 2012);
- National Planning Policy Framework (MHCLG, 2021); and
- Stroud District Local Plan (November 2015) - the relevant policy from the local plan is Delivery Policy ES6 Providing for biodiversity and geodiversity (pages 161-164). The policy considers the safeguard and protection of European Sites, National Sites, Local Sites and protected species, with all new development "required to conserve and enhance the natural environment, including all sites of biodiversity or geodiversity value (whether or not they have statutory protection) and all legally protected or priority habitats and species." Currently the policy does not take into account legislation delivered by the Environment Act 2021 which makes provision for a mandatory 10% biodiversity net gain.

A1.2 Habitats of Principal Importance

Habitats designated as being "of principal importance for the purpose of conserving biodiversity in England" as listed under Section 41 (England) of the Natural Environment and Rural Communities (NERC) Act 2006 are priority habitats for the UK Post-2010 Biodiversity Framework and form a key component of the Biodiversity Strategy for England. They are material considerations in the planning process.

A1.3 Protected Species

A1.3.1 Dormouse, great crested newt, otter, and all species of British bat

The dormouse *Muscardinus avellanarius*, great crested newt *Triturus cristatus*, otter *Lutra lutra*, and 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.

The dormouse, great crested newt, otter and 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.

A1.3.2 White-clawed crayfish

The white-clawed crayfish *Austropotamobius pallipes* is listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and receives protection under Section 9 parts 1, from killing, taking or injury, and Part 5, which prevents their sale. They are also listed under Annexes II and V of The Conservation of Habitats and Species Regulations 2017, as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019; Annex II listing requires that Special Areas of Conservation (SACs) be established specifically to conserve the species.

The white-clawed crayfish is listed as a 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.

A1.3.3 Water vole

Water vole *Arvicola amphibius* is listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and receives full protection under Section 9. Water vole is listed as a 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.

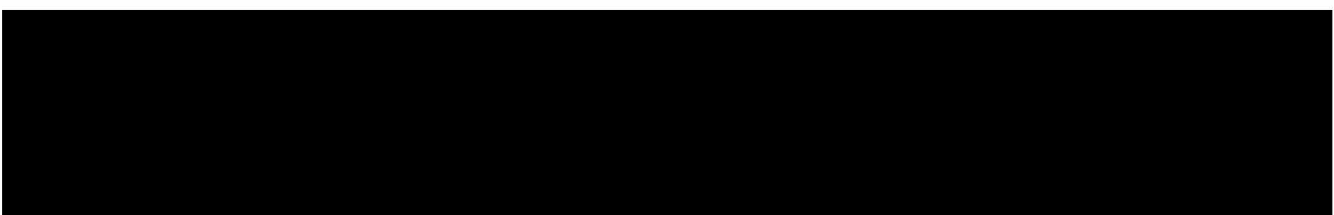
A1.3.4 Common reptiles

Common lizard *Zootoca vivipara*, grass snake *Natrix helvetica*, slow worm *Anguis fragilis*, and adder *Vipera berus* are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), in respect of Section 9(5) and part of Section 9(1). These species are included 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.

A1.3.5 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.



A1.4 Species of Principal Importance

Various vertebrate, invertebrate, plant and fungal species potentially present in the area 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 and form a key component of the Biodiversity Strategy for England. They are a material consideration in the planning process.

A1.5 Invasive Non-Native Species

Several invasive non-native animal and plant species are listed on Schedule 9, Parts I and II respectively, of the Wildlife and Countryside Act 1981 (as amended). Schedule 14 (1 and 2) makes it illegal to release or allow to escape (animals) into the wild, or to plant or cause to grow (plants) in the wild, any animal or plant species listed on schedule 9 (parts 1 and 2).

EU Regulation (1143/2014) on invasive (alien) non-native species, as amended by The Invasive Non-native Species (Amendment etc.) (EU Exit) Regulations 2019, imposes restrictions on 49 animal and plant species. Strict restrictions (subject to certain exemptions) mean that these species cannot be imported, kept, bred, sold, used or exchanged, allowed to reproduce, grown or cultivated, or released into the environment. The Invasive Alien Species (Enforcement and Permitting) Order 2019 provides enforcement provisions, prescribes offences and penalties to comply with the requirements of the regulations.

APPENDIX 2A: STATUTORILY DESIGNATED SITES WITHIN 2 KM

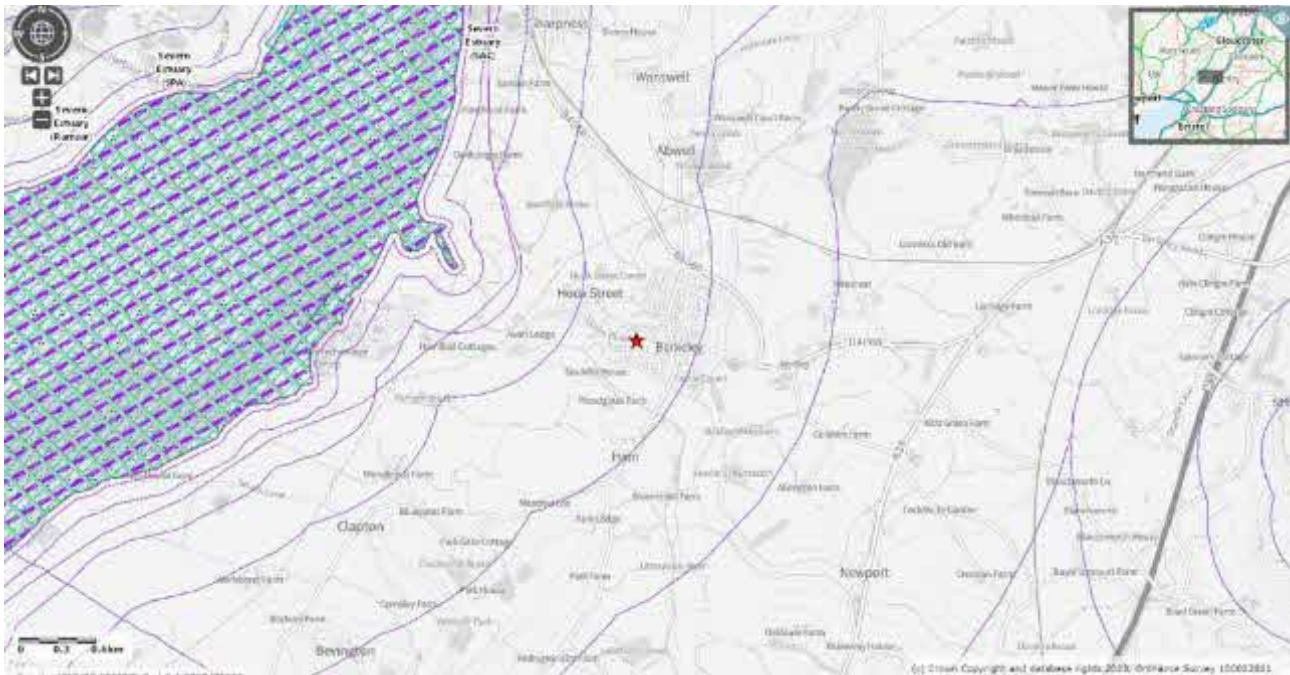
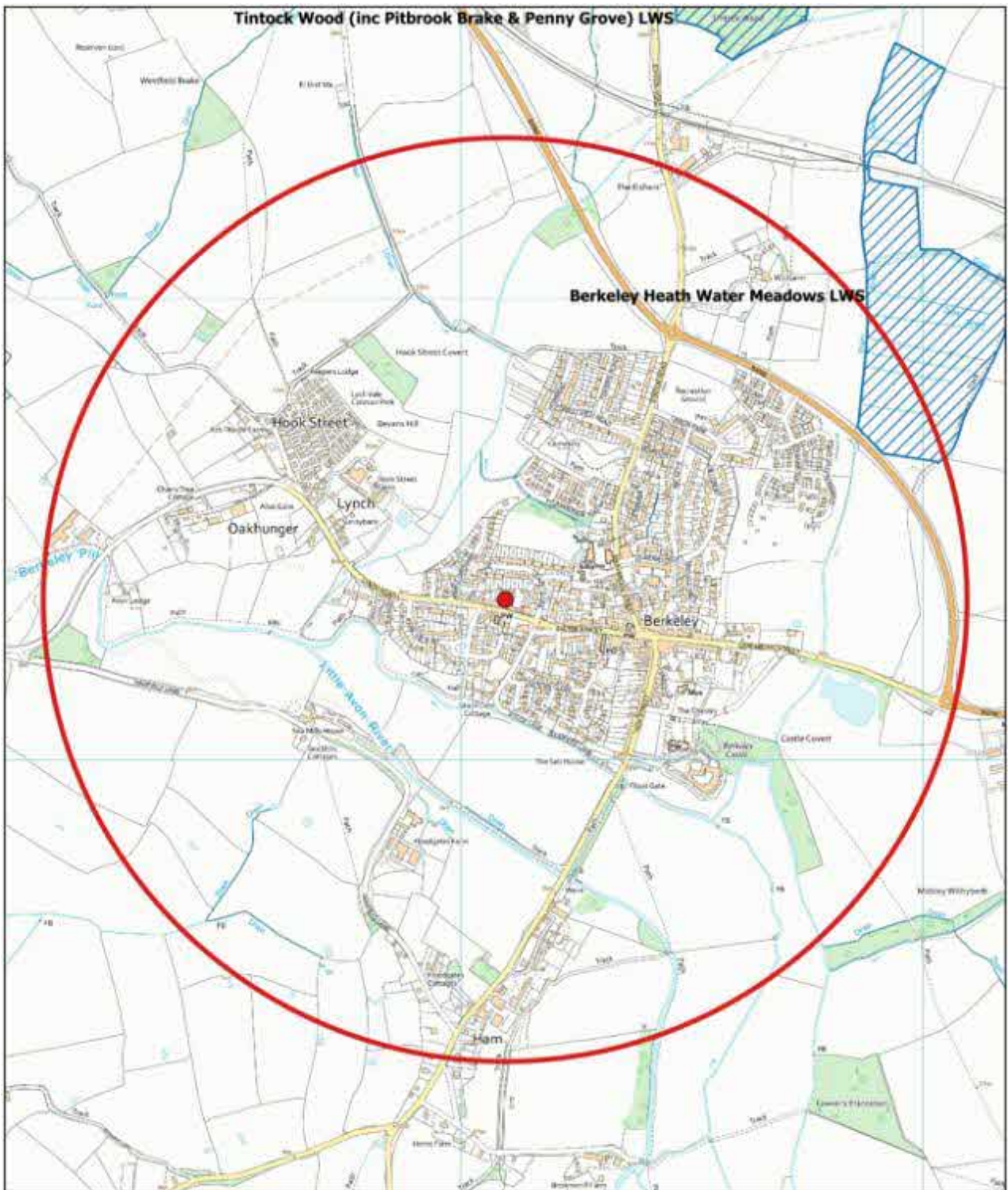


Figure A2.1: Statutorily designated sites in the area surrounding Berkeley. The development site is shown by a red star. The Severn Estuary is designated as an SSSI, SCA, SPA and RAMSAR site.

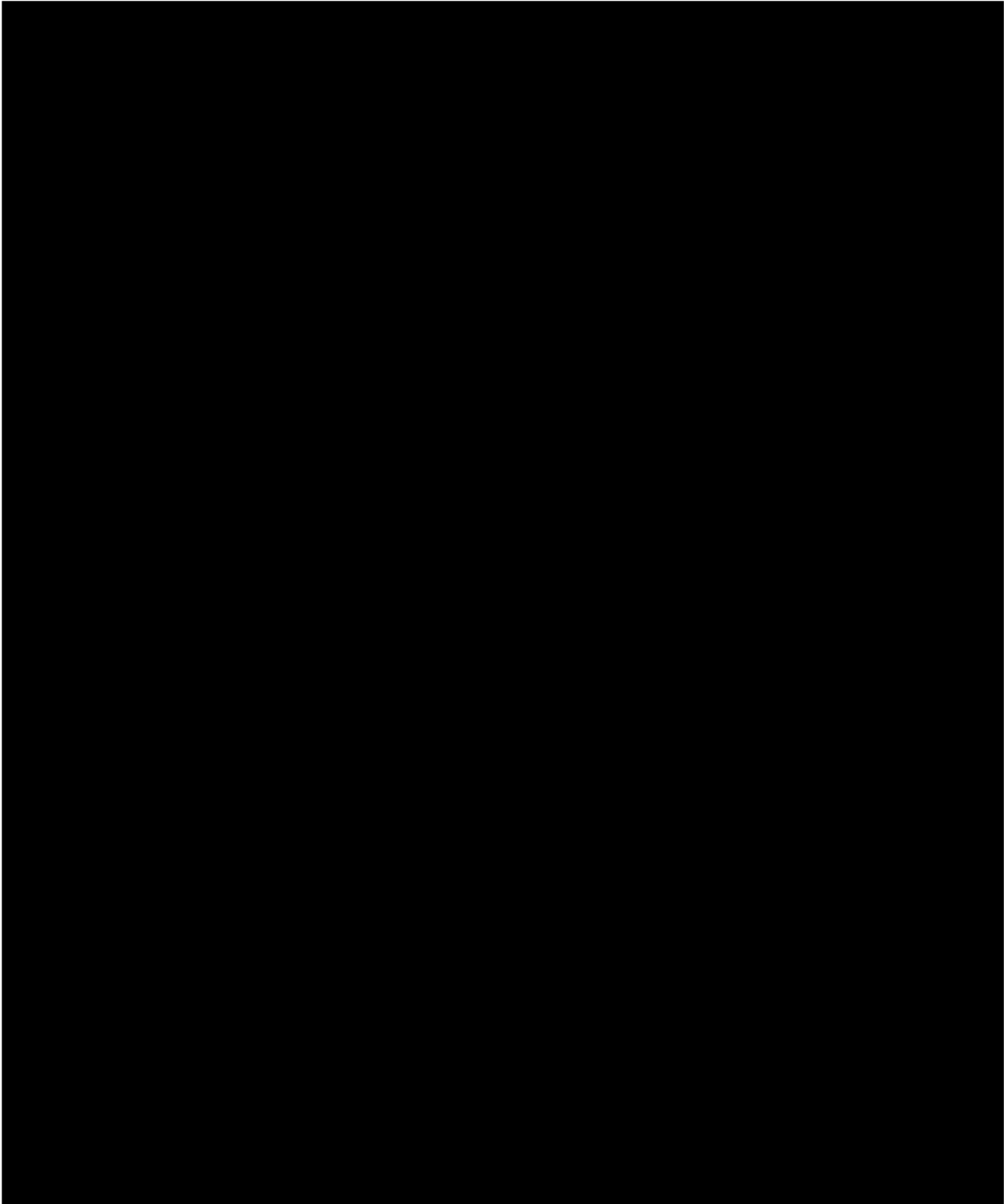
APPENDIX 2B: LOCALLY DESIGNATED SITES WITHIN 1 KM



All Local Sites
Local Wildlife Site

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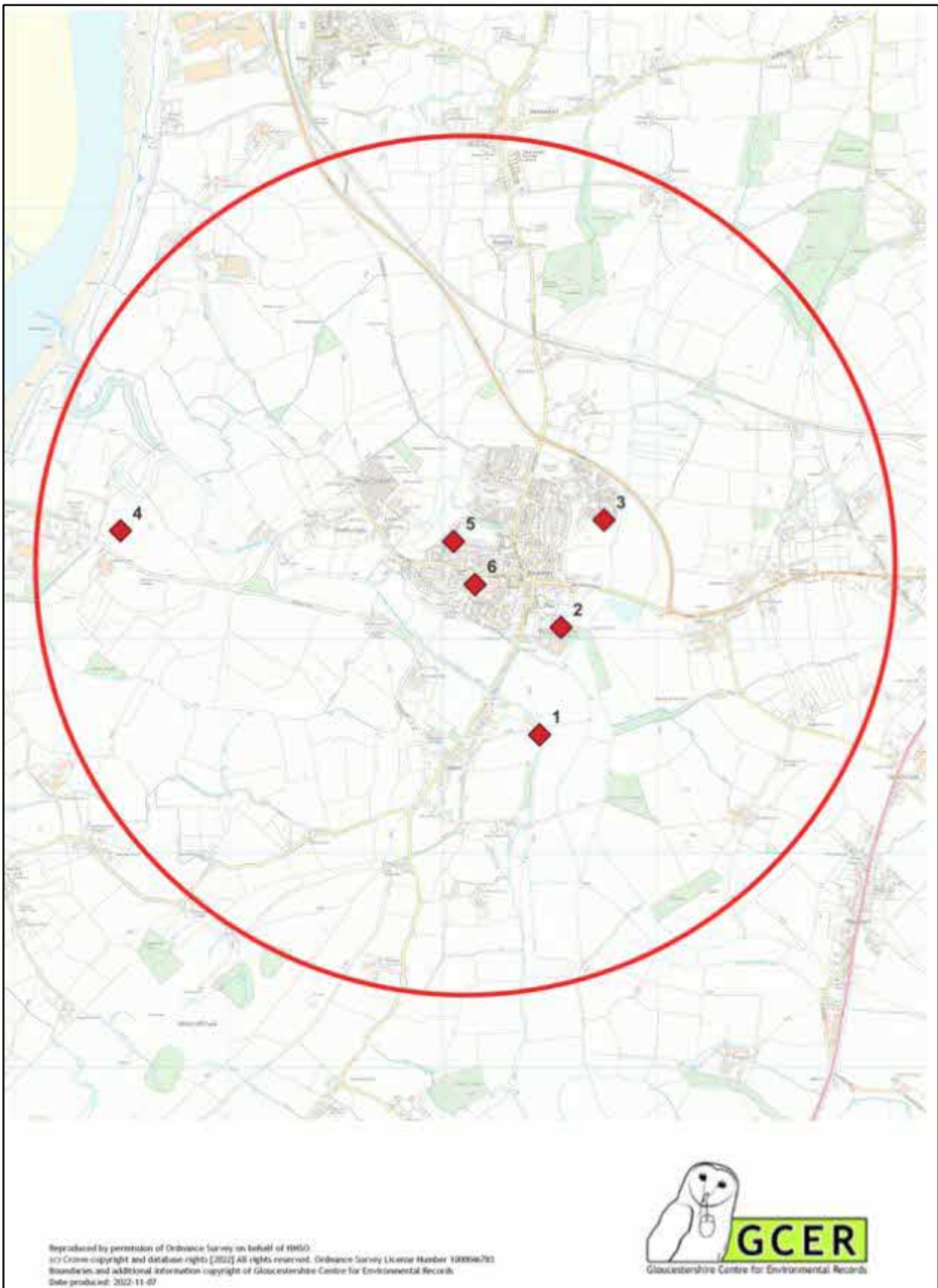


Zoom in for more detail

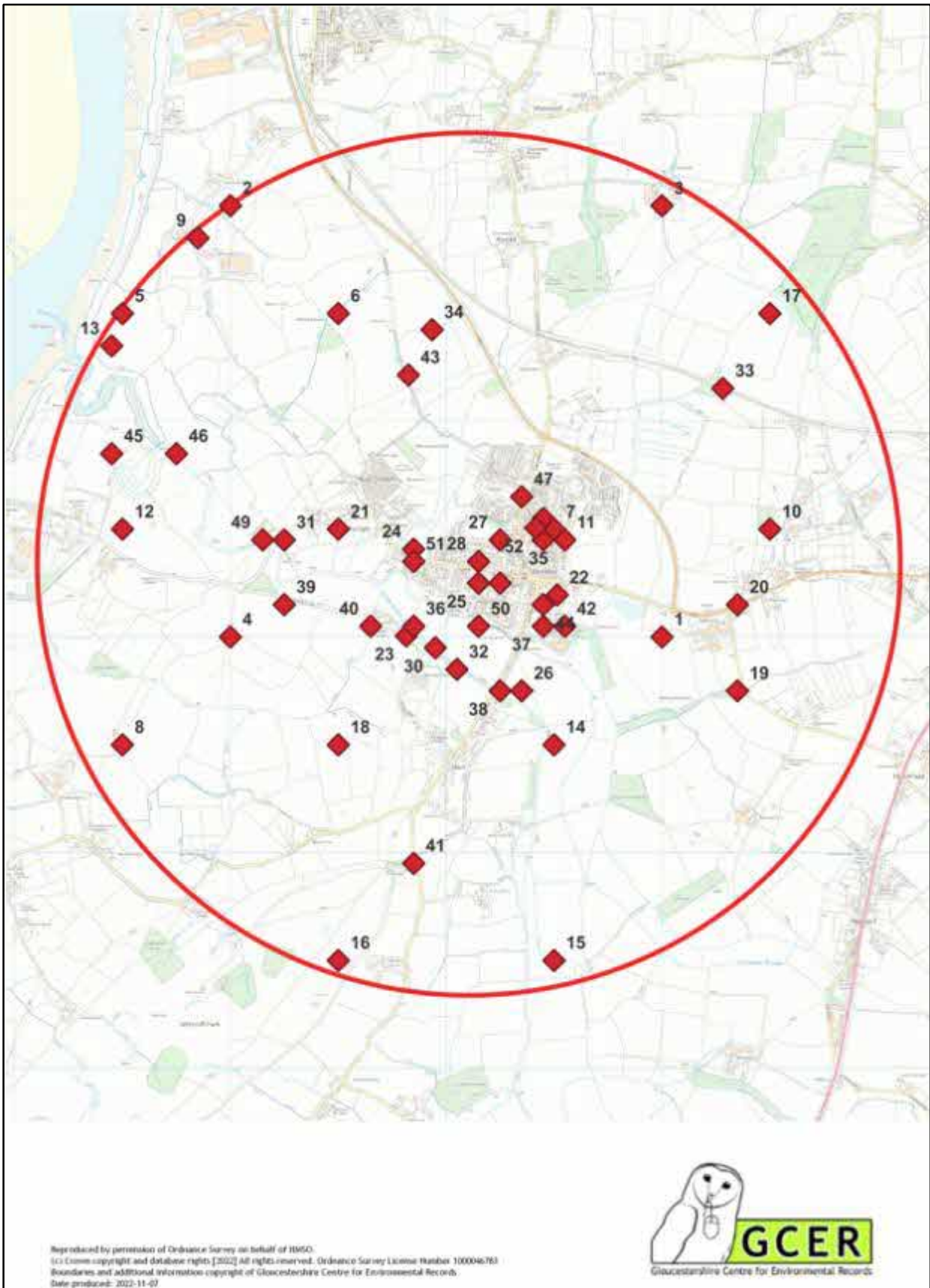
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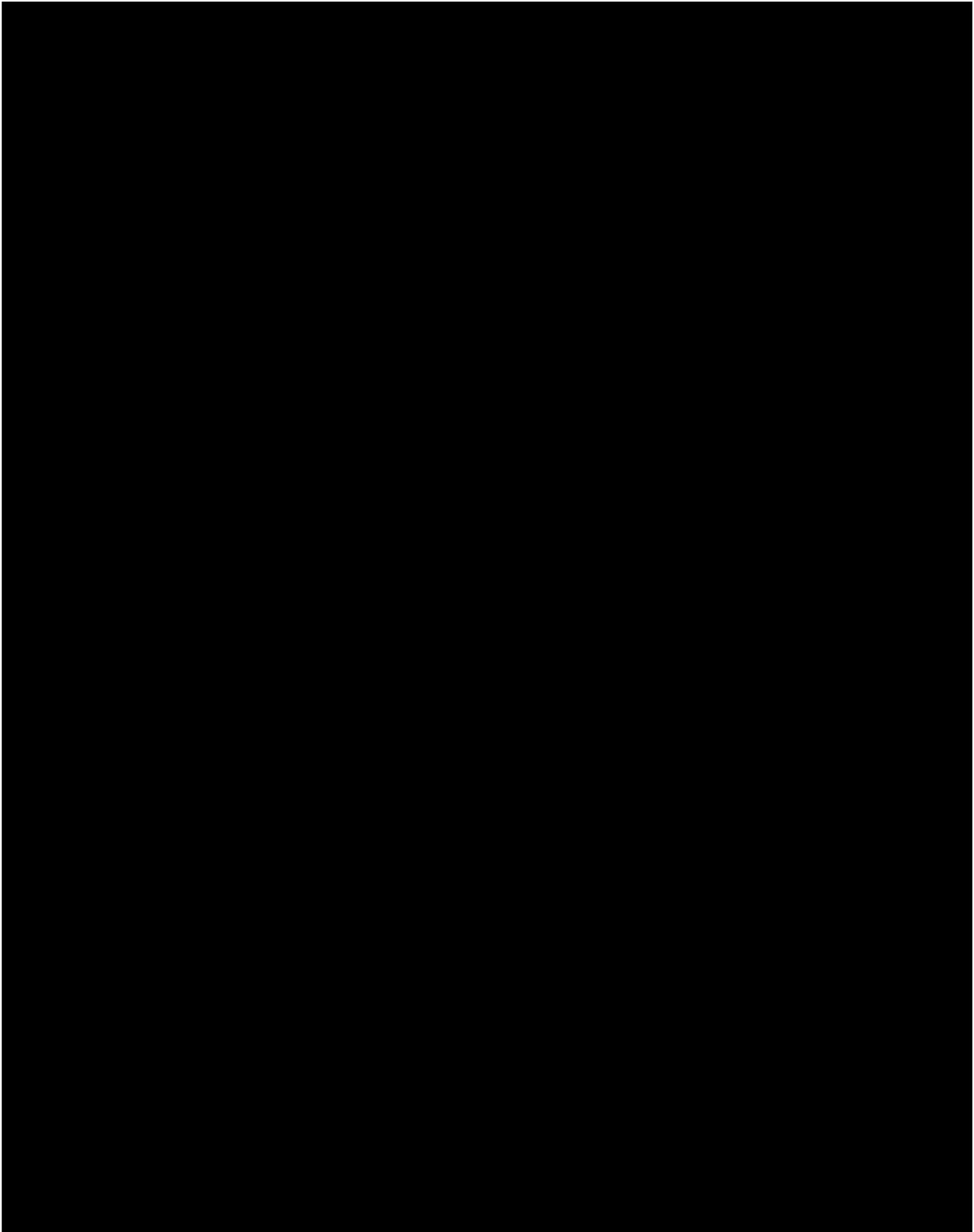


APPENDIX 3B: RECORDS OF BATS WITHIN 2 KM



APPENDIX 3C: RECORDS OF BIRDS WITHIN 2 KM





Zoom in for more detail

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APPENDIX 4: DNA ANALYSIS

Analysis Results

Sample Code	DNA Extraction Code	Species Identified	ID Method	Ct value	% match
SEL-1713-1	EG-2022-1595	Myotis mystacinus (Whiskered bat) Note: Brown long-eared bat suspected - tested for but not detected in this sample	qPCR	15	

APPENDIX 5: BAT ACTIVITY SURVEY RESULTS

Table A5.1: Dusk emergence survey of the Boars Head Public House on 28th June 2023.

Time	Species	Activity
Surveyor 1: CW - North-Eastern elevation (neighbouring garden)		
2141	Soprano pipistrelle	Foraging around apple tree canopy in garden to east
2141	Noctule	High overhead
2149	Noctule	High overhead
2150	Common pipistrelle	Foraging around apple trees
2150-51	Common pipistrelle	Possible emergence. Bat seen flying over ridge of adjacent building to SE. (NB. At same time MS radioed to say he had had an emergence from SW elevation). Social calls recorded.
2152	Common pipistrelle	Bat seen flying around N elevation roof building 1 and chimney/roof area at south end of east elevation roof building 2.
2153-2154	Common pipistrelle	Flying around valley between N elevation roof building 1 and S elevation roof building 2.
2156	Common pipistrelle	Bat flying between valley between N elevation roof building 1 and S elevation roof building 2, flew to NE towards apple trees.
2159	Common pipistrelle	Emergence – bat appeared just below ridge of N elevation roof building 1, flew fast & direct into apple trees in garden (NE direction).
2156 - 2203	Noctule	Several overhead passes.
2203	Myotis sp. (whiskered bat?)	Flying around E elevation of building (likely to have emerged shortly before).
2204-2210	Noctule	Overhead (garden area)
2206	Myotis sp. (whiskered bat?)	Not seen, possible foraging in garden.
2207	Common pipistrelle, Myotis sp.	Faint calls.
2206, 2208	Myotis sp. (whiskered bat?)	Foraging around apple tree canopy (possibly seen flying off towards SW over ridge of roof building 1, at 2209).
2208	Common pipistrelle	Foraging
2212	Common pipistrelle	Foraging
2214	Noctule	Foraging
2215, 2217, 2218	Common pipistrelle	Foraging.
2216-2219	Noctule	Passes overhead/foraging.
2225-2230	Noctule	Passes overhead/foraging.
2226	Common pipistrelle	Pass
2231-2233	Common pipistrelle	At 2231 bat seen flying around edge of apple tree canopy, not echolocating at first.
2234-2235	Noctule	Passes overhead/foraging.

Time	Species	Activity
2237	Common pipistrelle	Passes/foraging.
2239-2240	Myotis sp. (whiskered bat?)	Foraging/Pass overhead around garden
2245-2246, 2251-2253	Noctule	Passes overhead/foraging.
2253, 2255	Common pipistrelle	Passes overhead.
2256, 2258- 2259	Noctule	Passes overhead/foraging.
Surveyor 2: MS – south-west elevations		
2141	Soprano pipistrelle	Foraging pass.
2150-51	Common pipistrelle	Possible emergence. Flight angle makes it seem more likely that bat emerged from rear parts of Boars Head or nearby building and commuted through roof valley, but emergence from ridge area cannot be ruled out.
2150 - 2156	Common pipistrelle	Foraging passes around building, flying through valley on several occasions
2156	Soprano pipistrelle	Foraging pass
2156 -2207	Noctule	Several overhead passes.
2159	Common pipistrelle	Foraging passes.
2203	Myotis sp.	Pass. Heard not seen (HNS)
2206	Myotis sp.	Pass. HNS.
2208	Myotis sp.	Pass. HNS.
2208	Common pipistrelle	Pass.
2209-2259	Noctule	Frequent overhead passes throughout remainder of survey.
2212	Common pipistrelle	Foraging passes.
2218	Common pipistrelle	Foraging passes.
2226	Common pipistrelle	Foraging passes.
2231-2255	Common pipistrelle	Foraging passes at intervals during remainder of survey.
Surveyor 3: NUD – north-west elevations		
2030	Whiskered bat	Roosting in loft 2 near bend.
2156	Soprano pipistrelle	Brief loop around main roof.
2159-2200	Noctule	Overhead pass. HNS.
2202-2210	Noctule	Frequent overhead passes
2209	Common pipistrelle	Quick pass. HNS.
2215	Common pipistrelle	Foraging pass.
2216	Noctule	Overhead pass.
2220-2221	Common pipistrelle	Foraging passes. HNS.
2226	Noctule	Overhead pass. HNS.
2226	Common pipistrelle	Foraging pass.
2227-2253	Noctule	Occasional overhead passes.
2227-end	Common pipistrelle	Occasional foraging passes.

Table A5.2: Dusk emergence survey of the Boars Head Public House on 25th July 2023.

Time		Activity
Surveyor 1: MS - North-Eastern elevation (neighbouring garden)		
2134	Common pipistrelle	Appeared (in flight) from around base of east chimney. Possible emergence, but more likely bat emerged from south facing roof slope of adjacent building to east and flew low over roof before foraging in garden to east of Boars Head. (see plate 26)
2136	Soprano pipistrelle	Second bat appeared from south, over roof of adjacent building to east.
2136 to end	Common pipistrelle	Single bat foraging in regular beat around garden to east of Boars Head for majority of survey.
2140	Soprano pipistrelle	Pass. Not seen.
2144	Soprano pipistrelle	Second bat appeared from north, with two bats (common and soprano pipistrelle) observed briefly flying together.
2153	Indeterminate bat species	Pass of silent bat (no echolocation recorded) from south to north in front of surveyor along east boundary of garden east of Boars Head
2157	Whiskered bat	Emerged from under ridge tile of east roof slope and flew north. Recorded on both Pro 19 thermal camera and infra-red camera. Single pass recorded in garden.
2210	Noctule	Pass overhead.
Surveyor 2: NUD – south-west elevations		
2045	Whiskered bat	Roosting in loft 2 near bend.
2136	Soprano pipistrelle	Pass north to south past west elevation of pub (emergence from elsewhere)
2146	Common pipistrelle	Pass. Foraging in garden to east (south of pub)
2151	Common pipistrelle	Foraging pass in garden to east
2152	Soprano pipistrelle	Foraging pass. HNS.
2153-2200	Common pipistrelle	Frequent foraging passes south of road, in nearby gardens.
2210	Common pipistrelle, noctule	Foraging passes around building, with several flights through valley between south and north sections of pub building. Noctule pass overhead.
2214	Common pipistrelle	Pass. HNS.
2215	Common pipistrelle, noctule	Pass by pipistrelle, overhead pass by noctule.
2217	Common pipistrelle	Foraging pass.
2221	Common pipistrelle	Foraging pass.
Surveyor 3: CW - North-western elevations (pub car park)		

Time		Activity
2141	Soprano pipistrelle	Flew across west edge of car park towards north-east corner Building 4 (trees at north end of garden). Possible emergence from adjacent houses to west?
2146	Non-ID	HNS, gardens to west
2148	Noctule	distant
2200	Noctule	Over car park to north
2215	Noctule	Over car park to north
2220	Common pipistrelle	Distant pass

APPENDIX 6: BAT MITIGATION PLAN

This Mitigation Plan will be available on site throughout the works and will be made available to all contractors to ensure that the requirements and mitigation measures are communicated effectively. All site workers will be briefed by the named ecologist on the licence or an accredited agent prior to the start of works. It is the responsibility of the site owner and/or project manager to ensure that this method statement is complied with during works.

A protected species licence from Natural England must be in place before any roof works can lawfully proceed. The works must then proceed in accordance with the conditions of the granted licence.

A6.1 Introduction

In order to ensure that bats are not harmed during the conversion works, the mitigation plan/method statement contains the following elements:

- Toolbox talk to contractors, and ecological supervision of some aspects of the renovation works affecting bat roosts to ensure minimal disturbance to bats, and avoidance of killing or injury to bats;
- Timing or phasing of works to avoid the most sensitive periods for bats;
- Provision of temporary roosting sites for bats in undisturbed locations during the course of works;
- Provision of compensatory bat roosting features;
- All compensation features within roof structures will require the use of traditional bitumastic roofing felt or TLX Bat Safe membrane – modern breathable roofing membranes will not be used;
- Working methods to ensure minimal disturbance to bats and other protected species;
- Methods to be followed in the event of a bat being discovered during works;
- Use of approved timber treatment chemicals, if required;
- Retention of the integrity of bat flight lines to and from buildings and nearby vegetative cover/flight lines; and
- Final site check to ensure compliance with the mitigation strategy.

A6.2 Works to be Undertaken by the Ecologist

A6.2.1 Contractor briefing

The site manager or site agent will be appointed to ensure that the details of the mitigation strategy are complied with, copies of which will be available on site. Contractors will be made aware of the procedures to be followed in the unlikely event that bats are found during the works in the absence of an experienced bat ecologist. Contractors will be given a 'toolbox talk' by the ecologist at the commencement of works so that they are aware of the particular issues relating to this site and their responsibilities in the event of a bat being found in the absence of an ecologist (see below).

The site briefing will cover the following topics:

the legislation relating to bats;
that bat roosts are present in the building to be converted;
that bats may be present at the time of the works;
measures that will be used to protect bats from injury and death;
good working practices;
licensable activities; and
what to do should bats be found in the absence of an ecologist.

This information will be provided before any works commence on site and a written record that this has been undertaken will be kept.

A6.2.2 Timing of works

The proposed works will be timed to avoid the hibernation period and will therefore take place between March/April and early November to minimise the risk of encountering hibernating bats. No maternity roosts are present, so there are no constraints to the timing of works between late March/April and October/early November in relation to bats.

A6.2.3 Provision of bat boxes

Prior to commencement of works appropriate bat boxes suitable for the species present, such as a Schwegler 1FF (or similar) for common pipistrelle and whiskered bat, will be temporarily installed on an undisturbed wall elevation for the duration of the works, at a height of at least 3-4 m and preferably facing SE, S or SW. The location will be agreed with the ecologist prior to installation.

The bat box provided will remain in place until completion of the development. If bats use the box to roost in, then it cannot be removed without a bat licence.

A6.2.4 Pre-works inspection and exclusion measures

Immediately prior to the commencement of works, a licensed bat ecologist will check the building internally and externally to look for any roosting bats, so far as it is safe to do so. Should any roosting bats be found they will be identified (as far as possible to do so) and their numbers determined to ensure that there is no conflict with the stipulations in the protected species licence.

Any wall crevices in walls will be inspected by the ecologist using an endoscope and torch. If bats are present and cannot be safely captured, or the absence of bats cannot be confirmed, then exclusion methods will be applied, to allow bats to escape but not return to the roost areas. Exclusion devices will need to remain in place for sufficient time (minimum 7 days) and in suitable weather conditions to give confidence that bats have dispersed. This will be advised by the ecologist.

Any works during the breeding bird season (which includes March/April) will be preceded by a check for the presence of nesting birds. If nesting birds are present and works cannot proceed without disturbing them, then works must be halted until all chicks have fledged and left the nest.

A6.2.5 Supervision of works

During the development/roof repair works, removal of structures (e.g. roof materials) with suitability to support roosting bats will take place under supervision from an ecologist to ensure that bats are not harmed during the works.

Any roofing materials will be removed carefully by hand, with contractors briefly inspecting any potential roosting spaces so revealed for the presence of bats. A licensed bat ecologist will be present during this process in order to recover any bats that are revealed. Any roosting bats revealed during this process will be transferred to a pre-installed bat box.

No works will occur during the hours of darkness, so as to avoid impacts upon bats that forage on, or commute across, the site.

A6.2.6 Procedures in the event of discovering a bat in the absence of an ecologist

All site workers will be made aware of the possibilities of finding bats and the procedure to follow should they be found when the ecologist is not on site.

If at any point a bat is discovered, contractors will stop work immediately and telephone an ecological professional qualified to deal with bats. Telephone numbers of such will be held on site (Swift Ecology numbers: 01684 302055 or 07719 329170).

Should any bats fall out of structures or be injured, they will be gently placed in a secure ventilated box (e.g. a cardboard box) and left in a cool dark place, until appropriate advice can be sought. Bats should not be handled without gloves.

A6.3 Works to be Undertaken by the Developer

A6.3.1 Retention of roof void access for whiskered bat and crevice-roosting opportunities for common pipistrelle bat

Mitigation will include retention of roof void access for whiskered bat and creation of crevice-roosting opportunities for common pipistrelle.

This will comprise the following:

Incorporation of two bat access tiles into the roof OR incorporation of two ridge tile gaps in the location close to the existing whiskered bat access point/roost; and
Incorporation of two bat access tiles into the space between the tiles and roof lining close to the existing roost site/access point for common pipistrelle.

The roof of the bat loft will be lined with bat safe membranes. Currently the only products acceptable are:

Traditional bitumen Type 1F roofing felt
TLX Bat Safe (or any other product that has passed the appropriate 'Snagging Propensity Test')

Roofs must be ventilated accordingly, in line with Building Regulations, depending on the membrane use.

The bat access tiles will be located on the first or second course of tiles down from the ridge. Examples of bat access tiles and ridge tile gaps are shown in Figures A6.1 and A6.2, respectively. To allow bat access into the voids, small rectangular access holes (c. 50mm x 30 mm) will be made in the new roof lining below the access tiles, adjacent to a batten.



Figure A6.1. Roof slope crevice roost bat access tile suitable for areas of clay tiling. Bespoke lead access tiles can also be used.

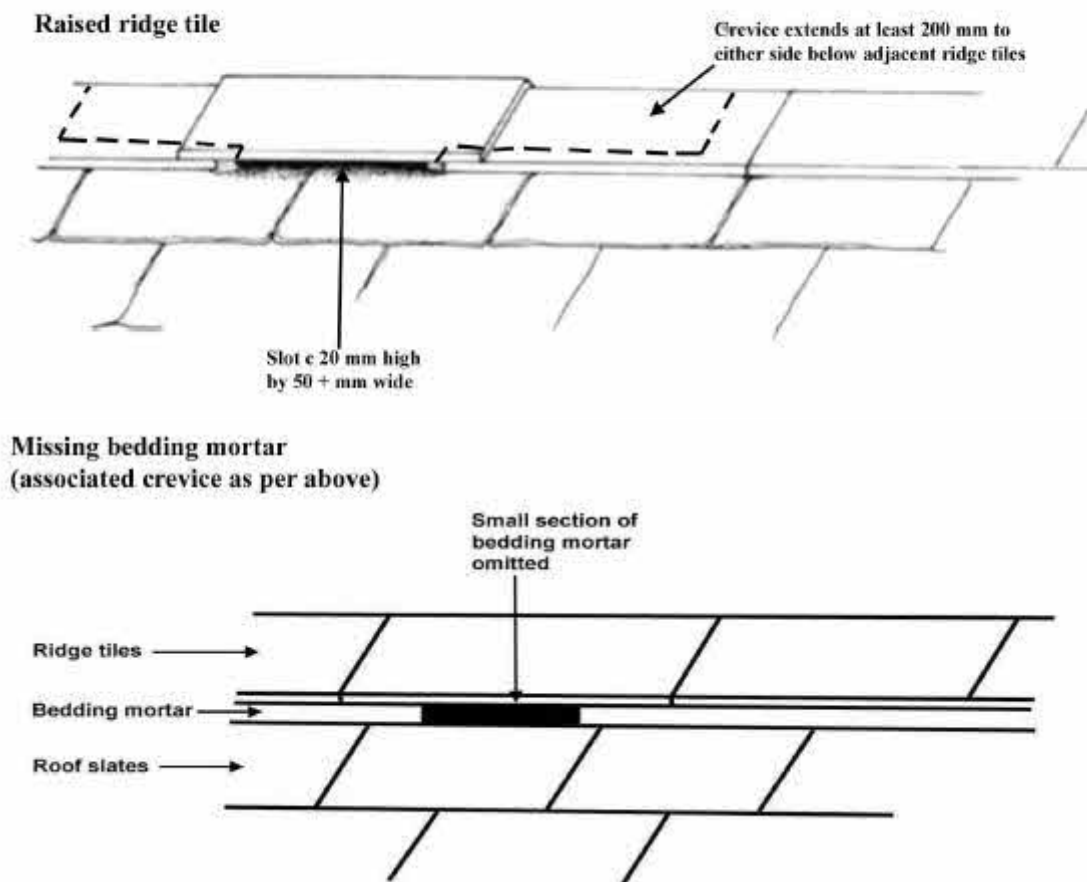


Figure A6.2. Ridge crevice roost design including raised ridge tile (top) and missing bedding mortar (bottom). The gap should be approximately 50mm x 20 mm.

A6.3.2 Timber treatment and roof linings

Should timber treatment be required, only those products approved by Natural England will be used in this development. Advice on suitable timber treatment products and active ingredients approved for use in bat roosts can be found via the link below to the gov.uk website (Bat roosts: use of chemical pest control products and timber treatments in or near them:

<https://www.gov.uk/guidance/bat-roosts-use-of-chemical-pest-control-products-and-timber-treatments-in-or-near-them>.

All replacement roof linings must be of traditional Type 1F hessian-backed bituminous felt or TLX Bat Safe membrane. Other modern breathable roofing membranes (BRMs) or any non-woven, spun-bond or polypropylene products will not be used on the roof as these materials are known to abrade over time and form loose fibres in which bats can become entangled.

A6.3.3 Control of lighting

No night-time working will be carried out during the development phase and there will be no additional lighting installed during this phase of the works.

A6.4 Post Development Site Safeguard

A6.4.1 Habitat/site management and maintenance

The compensatory bat access points will be an integral part of the building function and will remain long-term. Therefore, no particular management is envisaged.

A6.4.2 Population monitoring, roost usage

A single roof void inspection will be undertaken at an appropriate time of year to check for evidence of use of the retained roost by whiskered bat. The inspection, by a suitably qualified ecologist, will take place at least two active seasons post-development and must include an assessment on the condition and suitability of the roost for the species affected.

A6.4.3 Mechanism for ensuring delivery of post-development work

A check will be made by the ecologist following the completion of the works to ensure compliance with the bat licence method statement and reported to Natural England on the bat licence return. A copy of the bat licence return could also be provided to the LPA.

APPENDIX 7: BIODIVERSITY NET GAIN ASSESSMENT

A7.1 Introduction

The proposed development has been assessed using a biodiversity metric, a tool to quantitatively measure the biodiversity impact of development proposals.

A7.2 Methods

A7.2.1 Introduction

The DEFRA Biodiversity Metric 4.0 was undertaken in accordance with standard guidance (Panks et al., 2022a and 2022b) by Nick Underhill-Day MCIEEM; see Section 1.2 of the main report for details of qualifications and experience.

Baseline survey information was taken from the Preliminary Ecological Appraisal (desk study and field survey); see Section 2 of the main report. This information was used to determine the number of biodiversity units present on the existing site.

The proposed scheme was assessed using the following plans provided by the client:
Proposed Site Location Plan REV B (Drawing No. Plot 001/18/01/2023)

The information on the proposed scheme was used to determine the predicted biodiversity units that may be achieved upon completion of the scheme.

Total areas for existing and proposed habitats have been measured to the nearest 0.001 ha using QGIS software and the plans provided.

The results from the existing and proposed plan assessments were used to calculate the predicted net loss/gain for habitats in 'biodiversity units' and the percentage net loss/gain.

A7.2.2 Condition Assessments

For both existing and proposed habitats, the condition of each feature was assessed using. Natural England Joint Publication JP039, The Biodiversity Metric 4.0 – Technical Annex 1: Condition Assessment Sheets and Methodology (Natural England, 2023b) /Natural England Joint Publication JP039: The biodiversity metric 4.0: auditing and accounting for biodiversity. Condition assessment sheets (Excel format).

A7.2.3 Strategic Significance

The strategic significance of the existing and proposed habitats was assessed using the following documents:

Stroud District Local Plan 2015⁹

Stroud Open Space and Green Infrastructure Study 2019¹⁰

A7.2.4 Limitations

The site visit was undertaken during the optimal survey season and there were no significant constraints to the Biodiversity Net Gain assessment.

⁹ https://www.stroud.gov.uk/media/1455/stroud-district-local-plan_november-2015_low-res_for-web.pdf

¹⁰ https://www.stroud.gov.uk/media/1070619/cluster-analysis-part-2-v5_berkeley-cluster.pdf

A7.3 Baseline Habitats

Habitat Condition Assessment

The habitats present on site are described in Section 3. Habitats were assessed and mapped using the UK Habitat Classification methodology.

The site comprises the following habitats*:

- (1) Urban: Developed land: sealed surfaces (buildings) – 0.0415ha
- (2) Urban: Developed land: sealed surfaces (hardstanding) – 0.0583 ha
- (3) Grassland: Modified grassland – 0.0130 ha

*NB Other habitats described in Section 3.2.4 are smaller than 0.001 ha, and so are not included within the calculations.

Each DEFRA 4.0 Metric habitat type is listed in Table A7.1, with results of the habitat condition assessment. The habitats are described in Section 3.2 and are illustrated in Figure 4, Section 3.

Table A7.1: Habitat condition assessment results - baseline.

Habitat Type (BNG Metric Ref)	Condition Assessment	Criteria & Result	Habitat Condition Score
Developed land; sealed surface (1)	n/a*		
Developed land; sealed surface (2)	n/a*		
Modified grassland (3)	Grassland (low distinctiveness) Condition Sheet 5	A) 6-8 vascular plants per m ² present, including at least 2 forbs: FAIL B) Sward height varies (at least 20% of the sward is <7cm and at least 20% is >7cm) creating microclimates for vertebrates /invertebrates: FAIL C) Some scattered scrub may be present but <20% of grassland area: PASS D) Physical damage is evident in <5% of total grassland area: FAIL E) Cover of bare ground is between 1-10%, including localized areas: FAIL F) Cover of bracken is <20%: PASS G) Absence of invasive non-native plant species: PASS	POOR

* Condition automatically allocated within the DEFRA Biodiversity Metric 4.0.

Strategic Significance

Habitats to be lost as a result of development of the site have no strategic significance within local plans, and the site is not located in a strategic area for nature conservation or priority habitats. As such, none of the features on site are allocated as ‘high’ strategic significance. Due to the location of the site within a built-up area, none of the habitats are allocated ‘medium’ significance.

A7.4 Proposed Design

Habitat Condition Assessment

The proposals are detailed and illustrated in Figure 6, Section 4. Total areas of created habitats have been derived from the plans and associated information provided.

At present, the final species mixes for new planting/seeding, and future management of the grassland have not been finalised, although regardless of the mix the condition of the 'Urban: vegetated garden' habitat is automatically assigned by the metric.

Therefore the stated biodiversity outcome is fully achievable within the scope of the proposals.

The proposed project comprises the following elements:

- Renovation and remodelling of existing main public house building.

- Removal of rear modern extension and brick outbuilding and erection of a semi-detached bungalow on a similar (but slightly smaller) footprint to the existing buildings.

- Removal of public house amenity grassland and create access and parking plots.

- Construction of two new terraced units.

- Creation of new grassland areas (Urban: vegetated garden): most areas of new grassland are to be allocated as private gardens, with a small area in the north-west corner as communal space.

- Planting of a minimum of 3No. fruit trees within grassland areas, including two within proposed private gardens and one in the communal area. Only the latter can be used in the BNG assessment, as trees in private gardens cannot be included within the metric.

Strategic Significance

Habitats to be created as a result of development of the site have no strategic significance for nature conservation or priority habitats. As such, none of the features on site are allocated as 'high' strategic significance. Due to location of site within a built-up area, none of the habitats are allocated 'medium' significance.

A7.5 Biodiversity Net Gain Metric

A metric spreadsheet was completed (to be submitted as part of the planning application), using the baseline conditions detailed in Section A7.3 and proposed development details outlined in Sections 4 and A7.4. The proposals will result in the following on-site net percentage changes:

Habitat units: +25.83%

The results of the metric show that the proposed development will result in measurable Biodiversity Net Gain, in accordance with legislation and planning policy. The full calculation is provided in the DEFRA 4.0 Biodiversity Metric spreadsheet prepared by Swift Ecology Ltd dated 08/08/23.

Additional ecological enhancements specific to wildlife species present on site or in the local area cannot be measured within the biodiversity metric, and are discussed separately in Section 6 of the report.

A7.6 Project Implementation and Construction Plan

The final project delivery plans will need to incorporate the proposed habitat creation measures discussed in this appendix, and include the avoidance, mitigation and compensation measures outlined within this report.

A7.7 Management and Monitoring

Good practice guidance¹¹ states that net gains should be secured and maintained in perpetuity alongside the development, or as a minimum 30 years. A habitat management plan could be developed to ensure that the proposed habitats are successfully protected, created and established. Any such management plan will need to be supported by periodic habitat monitoring by a suitably qualified ecologist to ensure the target habitats are achieved, and to identify any requirements for remedial measures.

¹¹ British Standards Institute. (2021). BS 8683:2021. Process for designing and implementing Biodiversity Net Gain – Specification. BSI Standards Ltd., London.

APPENDIX 8: COMPENSATION AND ENHANCEMENT FEATURES

Fruit Trees

Smaller tree species, including fruit-bearing species, can be planted in the new residential gardens where space allows. It is suggested that wildlife-friendly fruit varieties are selected, and could include specimens of the following species or varieties:

- Wild crab *Malus sylvestris* or other apple *Malus* sp. varieties
- Pear *Pyrus* sp.
- Bullace/damson *Prunus domestica* ssp. *insititia*
- Plum *Prunus domestica*
- Birch *Betula* sp.
- Rowan *Sorbus aucuparia* or ornamental *Sorbus* sp. varieties (red berries only)
- Ornamental cherry *Prunus* sp. varieties

Bat Box Products

A range of bat and bird boxes could be incorporated into the renovated/converted buildings, or installed on other suitable walls. All boxes must be installed according to manufacturer's instructions.

Examples of suitable bat boxes to be installed on flat walls include:

- Schwegler 1FQ bat box
- Beaumaris Woodstone bat box



Figure A8.1: 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 buildings could include:

- Segovia Build-in Woodstone bat box
- Schwegler 1FR Bat Tube



Figure A8.2: Segovia Build-in Woodstone bat box (left) and Schwegler 1FR Bat Tube (right)

Bird Box Products

Suitable bird box products to be installed on, or integrated into, suitable walls of the converted buildings 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
- Slide-out house martin apex nest
- Schwegler swift box No. 17
- Schwegler 16s swift box



Figure A8.3: Schwegler 1SP sparrow terrace (left), Vivara Pro WoodStone house sparrow nest box (middle) and WoodStone Build-in house sparrow nest box (right)



Figure A8.4: Schwegler 9A house martin nests (left) and slide-out house martin apex nest (right)



Figure A8.5: Schwegler swift box No. 17 (left) and 16S Schwegler swift box (right)