33.0 ECOLOGY PROPOSAL

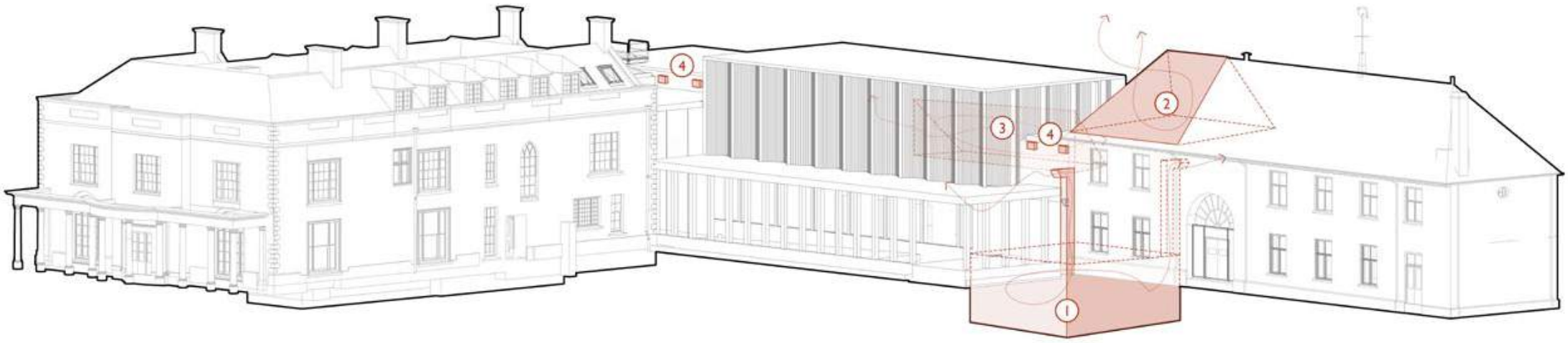
Proposed Interventions

1. The cellar will be modified to incorporate two new entrances and mitigation suitable for Lesser horseshoe bat hibernacula and day roosts. The cellar and well will be closed during construction but the tunnel will remain open to allow bat access. Upon completion of construction, the cellars will be opened up with two new entrances so that bats are able to use the whole underground complex of cellars and tunnels.

2. The current roost in the left hand side of the Barn roof will be retained

3. As compensation for the loss of bat roosts within the Link building, a new bat loft will be created above the new boiler house. This will consist of a large, single-pitched roof void. See next page for more details.

4. Four bat tubes to be placed beneath the stonework/render



Please refer to the 'Preliminary Ecological Appraisal', the 'Preliminary Roost Assessment', the 'Preliminary Roost Assessment of Tunnel & Re-survey of Cellars/Well' and the 'Badger Search Survey report' annexes appended to this document.

32.0 ECOLOGY PROPOSAL AREA 1

Specifications for 'Area 1' (Bat Link cellar)

• The main entrance to the cellars for bats beneath the current Link Building will be created at the rear of the new building (ie the western side of the Link Building and the opposite side from the current entrance to the cellars).

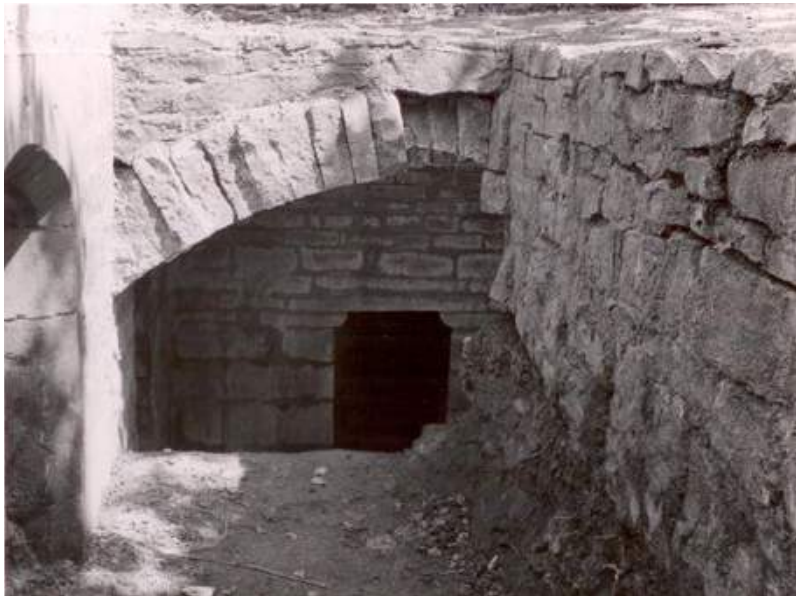
• The bat entrance needs to be vertical, 500mm x 500mm, set in to the wall, 1.5m above ground level and be the entrance to a continuous 'passage' leading down in to the cellar. The bat entrance needs to have a single horizontal bar across its width. The width & depth of the 'passage' can be bigger than 500mm x 500mm to facilitate access for inspection. A door could be fitted beneath the bat access grill.

• The 'passage' itself needs to be made from stone or blockwork.

• At the front of a new building (the eastern side of the new building) a further access point will be created (specifically to ventilate the tunnel). This entrance will be smaller i.e. 300mm x 300mm but could still be utilised by horseshoe bats. This too needs a single horizontal bar across its width.

• There should be no lighting or light spill on to the back (western side) of the new building.

• If lighting is needed at the front of the building (the eastern aspect), this will need to be 'bat friendly'. We will work with the lighting engineers to plan this.



TUNNEL ENTRANCE

BAT 23m IN TUNNEL

ENTRANCE CELLAR

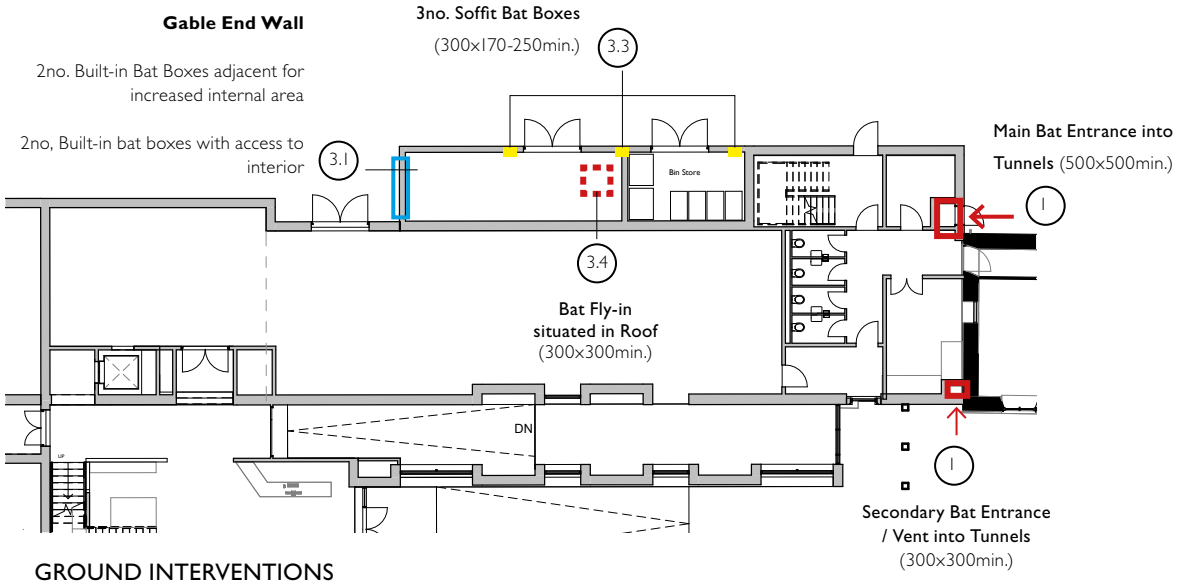
BACK CELLAR

32.0 ECOLOGY PROPOSAL AREA 3

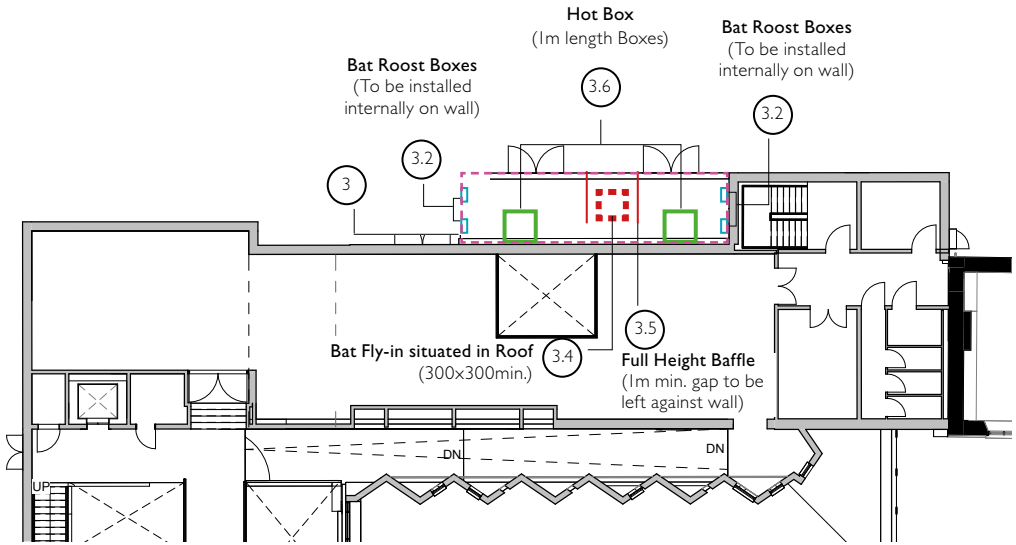
Proposed Interventions

The new bat loft will be connected to:

- (3.1) Four external bat boxes (for long-eared and pipistrelle sp bats)
- (3.2) Four internal bat boxes (for long-eared and pipistrelle sp bats)
- (3.3) Three internal bat boxes within the eaves
- (3.4) A fly-in dormer for long-eared and lesser horseshoe bats and hotboxes for lesser horseshoe bats.
- (3.5) Two wooden 'baffles' will be created within the roof void 50cm either side of the bat fly-in entrance.
- (3.6) A 'hot box' will be built on each side of the roof void in the middle of each section created by the wooden baffles. These will be built to encourage nursery roosts for Lesser Horseshoe bats since the temperature will be warmer in these enclosed spaces.

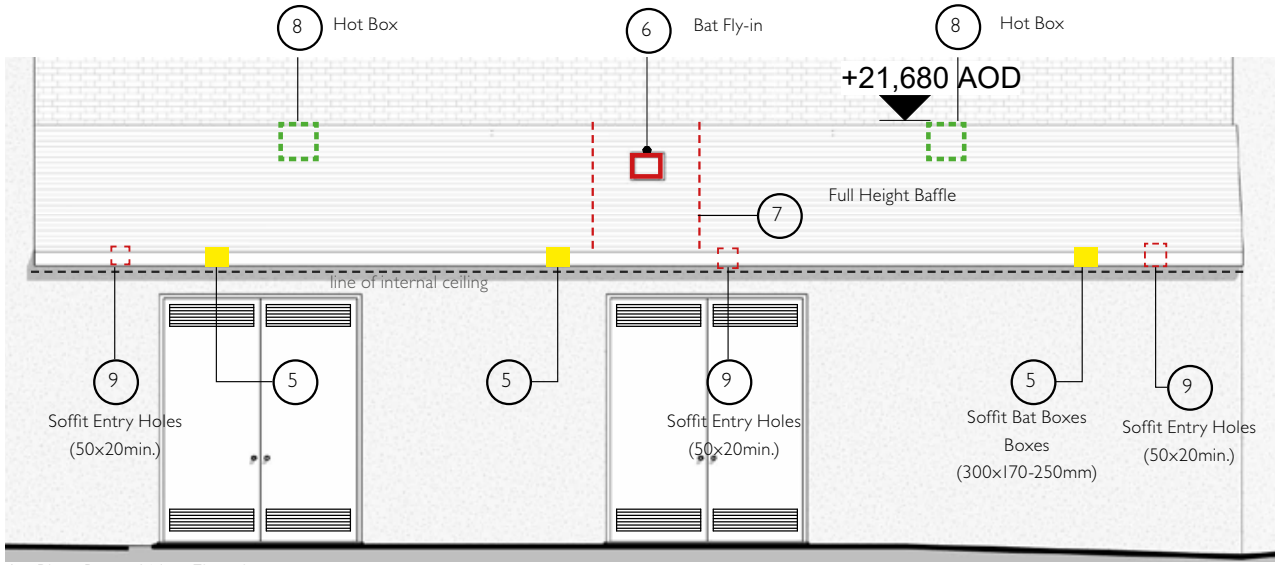


GROUND INTERVENTIONS

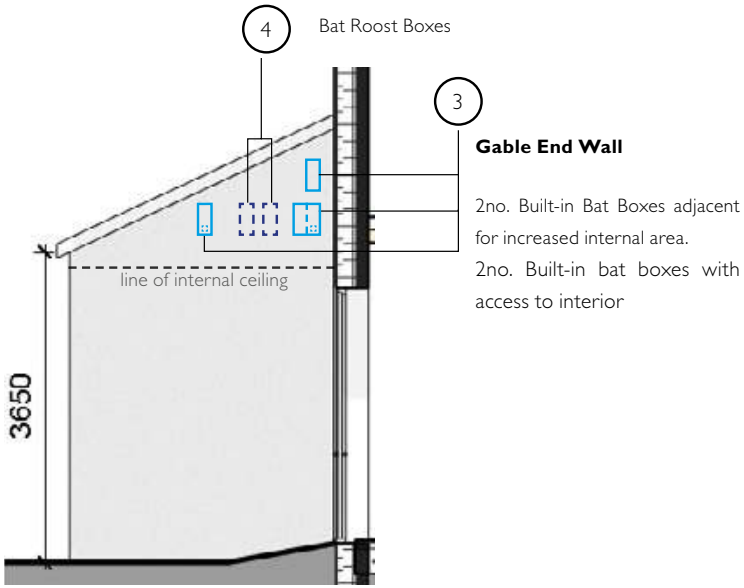


UPPER FLOOR INTERVENTIONS

32.0 ECOLOGY PROPOSAL AREA 3



A - Plant Room West Elevation



B - Plant Room North Elevation

OPEN LOFT SPACE EXAMPLE

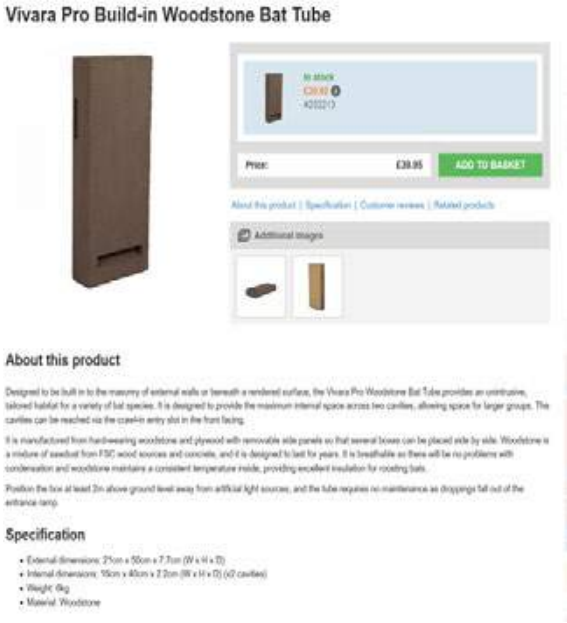
LEAD FORMED FLY-IN

HOT BOX AT PITCH APEX

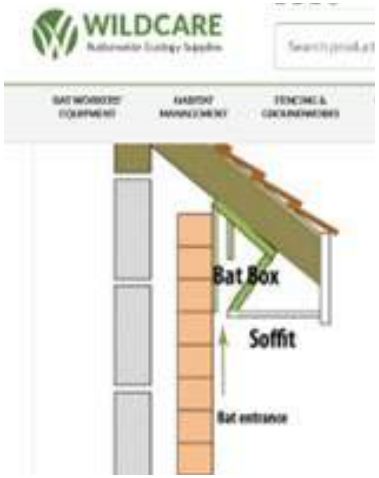
32.0 ECOLOGY PROPOSAL AREA 3

Specification 'Area 3' (Bat Loft)

- Single pitched roof
- Felt or bat safe TLX membrane
- Clay tiles (of your choice)
- Gable end either to be stone or rendered
- Internal roof void should be as open as possible to allow bats to fly freely within (Brown long eared bats like to do this)
- Height of roof void at apex 2.8m minimum
- Length 5m minimum
- Width 4m minimum
- Roof void floor will have an acoustic barrier within it and be boarded. Builders plastic sheeting to be laid over boards and fixed in place.
- A loft hatch will need to be installed to allow for the inspection of the bat roost from time to time by an ecologist. This needs to be lockable and have signing to indicate the presence of a bat roost.
- No lighting to be installed within the roof void.
- The gable end will have 4 Vivara Pro Build-in Woodstone bat tubes installed beneath the cladding / render (on the outside of the building) and situated as high up as possible.
- 2 of these will be placed adjacent to each other so that they connect with each other.
- The other 2 will be placed individually.
- A hole will be made in the back of one of the single bat boxes which will lie above a gap in the wall behind, so connecting it directly to the roof void behind it.
- A hole will also be made in one of the paired bat boxes in the same way, allowing it to connect directly with the roof void behind it.
- The hole in each bat box will be 2cm h x 5cm w. Only the entrances to these 4 boxes will be visible.
- The eaves will be constructed from fascia and soffit boarding.
- There will be three internal bat boxes placed within the eaves (Wildcare soffit bat boxes).
- Where the soffit meets the wall, 4 holes (2cm h x 5cm w) should be created in the soffit, either side and between the three soffit bat boxes. These holes will allow bat crawling access to the roof void.



BUILT IN BAT BOX



SOFFIT BOX

- Two wooden 'baffles' need to be created within the roof void 50cm either side of the bat fly-in entrance. These baffles will extend floor to ceiling but will leave a gap of 1m to allow bats to fly around either side.
- A 'hot box' needs to be built on each side of the roof void in the middle of each section created by the wooden baffles. These are triangular wooden structures built against the wall in the apex of the roof and are 1m long with an opening of 20cm x 20cm on their undersides. See example in the photograph below (which has been built in to a double pitched roof, but can be modified for a single pitched roof). These can be built on site. These are built to encourage nursery roosts for Lesser Horseshoe bats since the temperature will be warmer in these enclosed spaces.

- In addition, 2 x Schwegler 1FF bat boxes should be installed inside the roof void on the walls at either end (i.e. 4 in total). These provide roosting opportunities for long eared and pipistrelle bats. See image below:

INTERNAL BAT BOX

32.0 ECOLOGY PROPOSAL AREA 4

Specification 'Area 4' (Rear + Side Elevations)

- 4 Vivara Pro Build-in Woodstone bat tubes will be placed beneath stonework /render in this area.

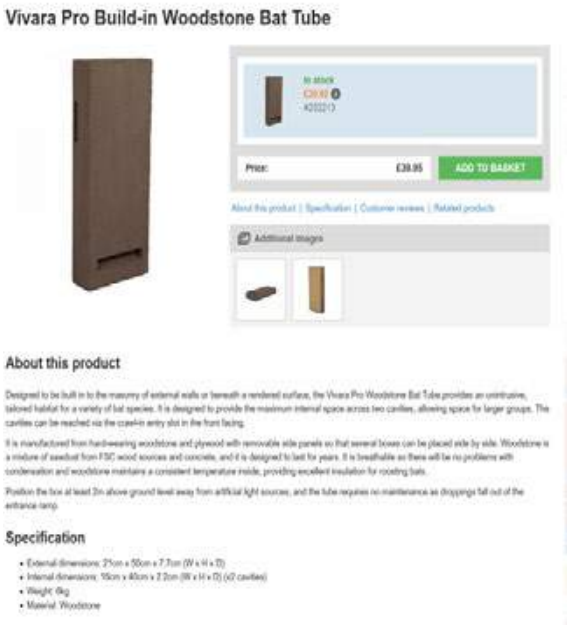
Specification 'Area 4' (Bat Brick Letterbox)

- Access into the tunnels is to be maintained for bats out of construction working hours throughout the construction programme. The bats can be shut in the tunnel in the working day, but the tunnel must be opened at the end of the working day. A photo of the opened hatch must be sent to the ecologist at the end of each day. Please refer to the Mann Williams drawings for details of repairs to the stone wall and arch and retaining walls before the installation of the slab over the cellar entrance (external drop in ground level). This slab has a 400x400mm hole for the bats to leave. Over this slab a 500x500x500mm brick plinth is to be built with a sandstone cap to match the extension. The brick is to match red brick of the new zig-zag face. This plinth could be used as part of the planning conditions sampling approval process. These repairs to the tunnel entrance, new retaining walls and slab installation over the cellar entrance can only take place in March and April due to the bats in the tunnels.

- The ground floor envelope walls around the link cellar must also be built in March and April. This includes:

    - New slab for G35/34 slab, the external walls around the riser, staircase 02 and G34
    - all three bat chutes
    - external wall on gridline F1 around G27 and G33
    - and the RC wall on gridline 9a.
    - the access hatch into the link cellar
    - below ground drainage in the cellar area

- As minimum, these walls need to be constructed up to the first floor level, ideally higher. If only the ground floor walls are erected by May the 1st 2024, please allow for 200mm of Celotex insulation board to be laid over the Link Cellar slab. This area has been hatched in yellow on the plan.
- The internal partitions, sanitaryware and finishes on the ground floor can be installed after the 1st of May. The stairs, colonnade and main Musuem extension can be built after May 1st.



BUILT IN BAT BOX

Preliminary Ecological Appraisal

The Grange, Street

July 2022

Produced by:
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On behalf of:
The Alfred Gillett Trust

Client	Alfred Gillett Trust
Project Name	The Grange, Street
File Reference	PEARP-20220810-The Grange

Contributor	Name	Signature	Position	Date
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1. Summary

A preliminary ecological appraisal was conducted over the grounds of this historic building on 4th July 2022 which was previously subject to a similar survey by the same surveyor in May 2010. The aim of this survey was to establish the inherent ecological interest in the grounds with regard to habitats, plants and animals, especially with regard to protected species. A full bat survey of the structures on this site was conducted at the same time by another survey team; that bat survey is the subject of a separate report.

This appraisal established that:

1. There are no habitats, plant communities or plant species of any note on the site. The many specimen trees within the grounds are of landscape value but no rare or notable native tree species are present.

2. Three badger *Meles meles* sett entrances were recorded to the west of the main building.

3. There was no field evidence of bats roosting within the mature and semi-mature trees however one tree (a large hybrid oak *Quercus x rosacea* on the north lawn) did offer potential bat roost opportunities. An emergence survey on this tree is recommended.

4. There is the potential for birds to nest within the grounds.

5. Hedgehogs *Erinaceus europaeus* could potentially utilise the site but there was no evidence of this species on the site.

6. With the exception of badgers, breeding birds, hedgehogs, slow-worms and bats no other protected species can realistically be anticipated on this site.

7. The results of this survey suggest that works involving disturbance to the grounds on this site will not have an adverse ecological impact.

An ecological data search demonstrated that no protected species not already identified as present or likely to be present on this site can realistically be anticipated to occur here. In addition, no statutory or non-statutory protected site lies within 500m of the survey site.

2. Proposal and Remit

2.1 Proposal

It is proposed to refurbish, and in places re-build, the structures on the site.

2.2 Remit

To inform the proposed works to the structures, which will involve some disturbance to the grounds, with regard to any potential negative impacts upon protected species or notable habitats.

This information to be obtained by conducting an ecological appraisal over the site (primarily by an Extended Phase One Habitat Survey) and making incidental notes on habitats and ecological features. This survey would identify plant communities, record plant species data, identify any field signs of protected or notable mammals and birds and assess the potential for protected or otherwise notable species to be present or likely to utilise the site. To assess the potential impact of the proposals upon habitats or species within both the immediate and wider area, and identify the necessity, if any, for further survey work to further inform the planning process. To produce a report, with annotated site map, detailing all findings and recommendations.

3. Site description

The survey site consists of the grounds of a large historical building and former residence – The Grange - located in the north of the Street urban area (NGR ST482369) and immediately to the west of the Clarks Village Factory Outlet Shopping Centre. The survey site is situated on level well-drained ground with no discernible aspect at 15 metres above sea level.

To the west of the site is an area of residential properties; to the north lies a large car park and the A39 main road; to the south lies an area of industrial / commercial premises. The site is bounded on all sides by a combination of hedges, fences and masonry walls.

The centre of the site is The Grange which has been most recently used as a training facility for C & J Clark International Ltd. Attached to the north-western part of this building is another historic structure – The Barn – which has most recently been used as an educational facility by the same company. These conjoined structures and other structures on the site were subject to a separate bat survey conducted at the same time as the Extended Phase One Habitat Survey of the grounds.

The western edge of the site comprises an access road, ephemeral / short perennial vegetation, a small area of species-poor grassland and a parking area. It is divided from the wider Grange site by fences and walls.

4. Methodology

4.1 General

The site was surveyed in detail over three hours on 4th July 2022 by Phil Quinn MCIEEM: a field ecologist with over 30 years' experience of habitat survey and protected species survey. Weather conditions during the survey were optimal: warm, dry and sunny.

The focus of the survey was the grounds and boundary features surrounding The Grange and The Barn. No structures were surveyed as part of this Extended Phase One Habitat Survey. An assessment was also made of adjacent land use to inform the general suitability of the immediate area for rare or protected species and notable habitats.

The habitats were mapped and described in accordance with the standard protocol contained within the JNCC Handbook for Phase 1 habitat survey: A technique for environmental audit (2007).

The plant communities on site were subject to a detailed botanical survey whereby all identifiable plant species were recorded using the DAFOR scale where:

D= Dominant
A= Abundant
F= Frequent
O=Occasional
R=Rare

Where a species has a localised distribution / abundance notably different from its wider distribution / abundance the letter L is used to identify this localised variation. Thus if a plant is Occasional in part of the site but is locally Abundant in that area its DAFOR score would be O / LA.

The habitat survey and botanical survey were undertaken at an optimal time of year and most of the areas of grassland habitat had not been cut for over a week thus facilitating survey.

The survey was conducted towards the end of the main bird breeding season and the incidental records of birds noted from this site during the survey can be taken as a guide to those species which may be present and breeding on the site between March and September inclusive.

4.2 Bats

All mature and semi-mature trees were subject to a detailed bat survey whereby they were inspected for evidence of bat activity such as: bats present at the time of survey, droppings and feeding remains, as well as grease or urine stains around potential roost entrances.

4.3 Other protected species

A search was also made for evidence of reptiles, great crested newts *Triturus cristatus*, badgers, and dormice *Muscardinus avellanarius*. Reptiles (most realistically slow-worms *Anguis fragilis*) and great crested newts were searched for by examining suitable refugia under which they might shelter and by searching for potential great crested newt breeding sites such as ponds or ditches

Evidence of badgers was sought in the form of distinctive field signs such as droppings (latrines), excavated burrow systems (setts) and feeding remains / foraging activity. Evidence of dormice (in the form of distinctively opened hazelnuts, or woven nests amongst bramble) was also sought.

4.4 Ecological data search

To help determine the value of this site with regard to nature conservation in the wider Street area, and to anticipate any possible protected species issues not identified from the site visit, an ecological data search was commissioned for an area within a 2 km radius around the property. This data was supplied by the Somerset Environmental Records Centre (SERC).

5. Results

5.1 Habitats and plant communities

The majority of the site is a formal garden comprising mown lawns (amenity grassland / poor semi-improved grassland) with scattered mature and semi-mature trees: the whole approximating to the broadleaved parkland habitat of the Phase One Habitat Survey classification. The main exception to this, although still technically broadleaved parkland, is a walled orchard in the north of the site. Some areas of hardstanding support ephemeral / short perennial floras. Internal and external boundaries (fences and walls) are also present.

There were no rare or notable plants or habitat recorded within the survey site.

Orchard (Broadleaved parkland)

The orchard (present in the north of the site) comprises twenty-eight semi-mature apple trees *Malus domestica* along with eight espaliered pears *Pyrus communis* (and one plum *Prunus institia*) trained on the inner faces of the northern and eastern walls (Boundary B2). Grey sedge *Carex divulsa* is dominant in the sward here which is otherwise a species poor turf with abundant common grass species such as common bent *Agrostis capillaris*, fescues *Festuca* spp., meadow-grasses *Poa* spp., perennial rye-grass *Lolium perenne* and Yorkshire fog *Holcus lanatus*. Herbs are very poorly represented here and comprise mainly ground ivy *Glechoma hederacea*, germander speedwell *Veronica chamaedrys* and creeping buttercup *Ranunculus repens* along with some daisy *Bellis perennis*, dandelion *Taraxacum officinale* agg. and ribwort *Plantago lanceolata*.

Grey sedge has expanded considerably since the previous survey of 2010 when it was recorded mainly in that part of The Orchard near The Barn. The only other species of interest here is that of a single plant of mistletoe *Viscum album* on one of the apple trees; Somerset is one of the few areas of the UK where this species is relatively common.

The orchard – looking north-west

Lawns (Amenity grassland)

There are five areas of lawn or amenity grassland with varying concentrations of planted trees and bushes. The sward across these lawns is species poor and very similar to that described for The Orchard although spotted medick *Medicago arabica* and slender speedwell *Veronica filliformis* are occasional on the areas to the east of The Barn and no grey sedge is recorded in these areas.

Lawn on the eastern side of The Grange – looking north

Specimen trees

Trees, mostly mature deciduous specimen trees are present across the lawns to the north, south and east of The Grange. Common lime *Tilia x europaea*, beech *Fagus sylvatica*, horse chestnut *Aesculus hippocastaneum*, and sycamore *Acer pseudoplatanus* are the most frequent species. Holly *Ilex aquifolium*, London plane *Platanus x hispanica*, hybrid oak, yew *Taxus baccata*, monkey puzzle *Araucaria auraucana*, and common laburnum *Laburnum anagyroides* are also present as single specimen trees. Silver birch *Betula pendula* is also present.

Scattered scrub

Around the south-western part of boundary B4 and around the outer entrance to the cellar under The Link / The Barn there is a small quantity of scattered scrub, this is mainly bramble *Rubus fruticosus* agg.

Other areas of grassland

On the western side of the site there is a small area of species-poor grassland (G1) with much white clover, annual meadow-grass, common bent, dandelion, black medick, perennial rye-grass, Yorkshire fog, yarrow *Achillea millefolium* and grey sedge.

Area G1 – looking north

Located directly west of The Grange a similar sward (G2) is present although grey sedge is not recorded here. There has been sporadic disturbance here, some recent disturbance (including by badgers excavating sett entrances) is evidenced as patches of bare ground whilst other areas have partly vegetated over. It is in these skeletal partly vegetated areas that red clover *Trifolium pratense*, and autumnal hawkbit *Leontodon autumnalis* are present.

Area G2 – looking west

Ephemeral / short perennial vegetation

Throughout the areas of gravel driveway there are sparse and scattered plants of the ephemeral / short perennial community. However, to the east of The Grange there is a particular concentration of these plants where very small populations of rue-leaved saxifrage *Saxifraga tridactylites*, fern grass *Catapodium rigidum* and equal-leaved knotgrass *Polygonum arenastrum* are frequent but scattered. Grey field speedwell *Veronica polita* is also present here in small quantity.

A similar plant community is present in the south-west of the site where there is also red valerian *Centranthus ruber*, creeping cinquefoil *Potentilla reptans*, scarlet pimpernel *Anagalis arvensis*, ribwort, sterile brome *Bromposis sterilis*, petty spurge *Euphorbia peplus*, goosegrass *Galium aparine*, and nipplewort *Lapsana communis*.

Ephemeral / short perennial vegetation in the south-west of the survey site

Boundaries

None of the boundaries within the survey site are of any nature conservation value

- B1. Wooden panel fences forming much of the site's western boundary
- B2. A circuit of mortared stone walls enclosing the orchard this is very poor in plant species with only a few ferns and some ivy-leaved toadflax *Cymbalaria hederacea* on the northern wall.
- B3. This fence of metal railings forms most the site's eastern boundary.
- B4. Forming the southern boundary of the survey site this is a wire mesh fence with a significant quantity of ivy *Hedera helix* upon it along with occasional bramble and elder *Sambucus nigra* along with occasional young sycamore.
- B5. A short section of old mortared stone wall approximately 1.5 in height and mostly enclosed within a neatly-trimmed hedge of similar height which contains oriental privet *Ligustrum ovalifolium*, berberis *Berberis* sp., holly, bramble and Oregon grape *Mahonia aquifolium*. Pendulous sedge *Carex pendula* is also common here whilst maidenhair spleenwort *Asplenium trichomanes* is common on the wall.

Along the outer face of the southern wall of The Orchard there is a narrow area of bare ground with frequent clumps of pendulous sedge and some shrubs.

Boundary B5 with The Link (left) and The Barn (right) in the background

5.2 Protected species

Three burrow entrances excavated by badgers were recorded on the lawn area west of the main building (G2). Two of these had recent digging activity around them suggesting that badgers were actively using the setts whilst the third entrance appeared to be disused.

Active badger sett entrance

There was no evidence of any other protected species utilising this area however common generalist bird species such as blackbird *Turdus merula*, robin *Erithacus rubecula*, wren *Troglodytes troglodytes* and woodpigeon *Columba palumbus* were all recorded from the site and could potentially breed here.

The site offers suitable foraging habitat for hedgehog although the potential for this species to shelter or breed on this site is mainly limited to underneath outbuildings, within debris and in the scrub alongside boundary B4.

Some of the site's boundaries (in particular B4 and the base of the inner face of The Orchard's walls) have the potential to support a low population of slow-worms.

The survey site and its immediate surrounds appeared to be unsuitable for other protected or otherwise notable species. However, the mature oak on the lawn to the north of The Grange has a number of holes within the trunk and upper branches that have the potential to act as bat roosts. It is recommended that a bat survey be conducted on this tree

Mature oak (centre left) with bat roost potential

5.3 Surrounding landscape

The survey site is set within an urban environment with some gardens and limited areas of landscaping associated with the adjacent shopping centre. Hard surfaces such as roads, car parks, pavements and yards around commercial properties predominate.

5.4 Structures

The main structure on this site is The Grange – a two storey former private residence – which is present in the southern centre of the survey site. This is an actively-used building and is known to support small numbers of roosting bats (which are subject of a separate survey report).

The Grange – looking south-west

To the north-west of The Grange are two adjoining single storey masonry structures – The Barn in the north and The Link to the south of that; The Link adjoins an annexe of The Grange to its south. A minor bat roost is known to be present in a cellar underneath these buildings.

A dedicated bat house is present in the north-west of the site; this has been proven to be in use by bats (see Simecology Ltd bat survey reports). The bat house lies immediately adjacent to an actively-used gas governor building.

The Archive is a modern building located in the south-west of the site and is used as an archive of shoes and related materials. It is bordered by covered walkways.

In addition, there are four smaller structures in the south-west of the site:

S1. A single storey stone and brick structure with a double pitched clay tile roof. There are window and door apertures in this disused building, but most were boarded up at the time of survey.

S2. Two large, sealed metal shipping containers

S3. A small single storey stone and brick building with a clay tile roof very similar to S1 but with glazed windows and in active use.

S4. A rectangular-shaped single storey, actively-used building attached to the western elevation of The Grange; this too is of stone and brick with glazed windows and has a single pitched clay tile roof.

5.5 Ecological data search

Protected sites. At a distance of approximately 1.8km to the north-west of the survey site there is part of a detached section of the Somerset Wetlands National Nature Reserve (a statutory protected area).

Within the 2km data search area there are 7 non-statutory protected sites (6 Local Wildlife Sites and 1 Local Geological Site). Of these, only part of one of the Local Wildlife Sites (South Moor - a large complex of ditches) is within 500m of the survey site.

Protected species. Excluding records of semi-aquatic mammals and amphibians for which there is no suitable habitat within 500 metres of the site, within the 2km data search area there are records for:

- Badger (71 records of animals dead on roads, sett locations, latrines, sightings of live animals)
- Hedgehog (9 records, a mix of animals dead on the roads and live sightings)
- Slow-worm (15 records, almost all from the Street urban area)

There are in addition:

- 1 record of adder *Vipera berus*, however this is from a location where grass snake is a much more likely species to record and thus it is likely this is a recording error.
- 7 records of dormouse, however there is no suitable habitat for this species on the survey site or within at least 400m of the survey site.

With regards to bats the following species are recorded, however for most of these records there is no detail of the nature of the record beyond date and grid reference.

- Serotine *Eptesicus serotinus* (6 records)
- Common pipistrelle *Pipistrellus pipistrellus* (14 records)
- Soprano pipistrelle *Pipistrellus pygmaeus* (9 records)
- Nathusius pipistrelle *Pipistrellus nathusii* (1 record)
- Pipistrelle bat species *Pipistrellus* sp (2 records)
- Leisler's bat *Nyctalus leisleri* (1 record)
- Noctule *Nyctalus noctua* (4 records)
- Lesser horseshoe *Rhinolophus hipposideros* (4 records)
- Greater horseshoe *Rhinolophus ferrum-equinum* 1 record)
- Long-eared species *Plecotus* sp. (1 record)
- Brown long-eared *Plecotus auritus* (7 records)
- Myotids *Myotis* sp. (3 records)
- Bechstein's bat *Myotis bechsteini* (1 record)
- Barbastelle *Barbastellus barbastellus* (2 records)

This data search demonstrates that there are no records of protected, rare or notable species in the locality, additional to those already identified as definite or possible species utilising the site, and which would realistically be impacted by the proposed development.

6. Recommendations

These recommendations exclude any reference to the structures which have been subject to a separate bat roost survey and subsequent report.

6.1 Badger survey

To establish the level of badger activity on the outlier sett it will be necessary to undertake a dedicated badger survey. This will require the setting of motion-activated cameras.

6.2 Bat survey on oak tree

The mature oak on the lawn north of The Grange will require a detailed visual survey to establish whether it is likely bats will be using the holes present in the trunk and larger branches. It may also be necessary to undertake an emergence or roost return survey on this tree.

6.3 Consideration of breeding birds

Should the site be subject to works between March and September inclusive it is recommended that a suitably experienced ecologist determine whether any breeding bird activity is occurring on those features likely to be disturbed. If breeding activity (including building a nest) is observed, it is recommended that a 5m exclusion zone be enacted around the nest site until all young have fledged.

6.4 Consideration of hedgehogs

Any works which will involve the removal of structures, shrubs or areas of dense vegetation should be preceded by a thorough survey by a suitable experienced ecologist who will determine the proven or likely potential for hedgehogs to be nesting or sheltering in those features. The ecologist will then advise on the potential impact of the proposed works on hedgehogs.

6.5 Consideration of reptiles

There is a realistic potential for a low population of slow-worms to be present around boundary B4 and around the inner edges of The Orchard. Any clearance works or excavations on or near these areas must be informed by a suitably-experienced ecologist.

6.6 Create wildflower meadows

Most of the areas of grassland here are of low botanical interest and are close-mown swards. The potential exists to sow herb-rich swards in some of these areas; it is recommended that such sown grasslands have a species composition similar to semi-natural or unimproved neutral grasslands in the wider Street area. These swards could then be managed as meadows with an annual hay cut where arisings are removed. Such habitat and management would benefit a wide range of invertebrate species.

7. Conclusions

The survey site supports habitats of generally low ecological value although separate bat surveys have demonstrated that three of the structures on this site are known to support roosting bats.

A badger outlier sett (two separate active and one disused entrances) is present here and a dedicated badger survey is required to determine the level of badger activity.

It is likely that common generalist bird species will nest on this site - structures, trees and shrubs are all potential locations where nesting activity can be anticipated between March and September inclusive.

Hedgehogs can be anticipated on this site but the potential for this species to nest or shelter here will be limited to areas of dense vegetation or underneath structures or in association with debris piles.

With the exception of a limited bat roost assessment survey on the oak tree north of The Grange no further ecological works are required with regard to the grounds.

However, should works be proposed to trees, shrubs, structures or areas of dense vegetation the potential impact upon breeding birds and hedgehogs should be considered. A suitably experienced ecologist should determine the likely presence of these species prior to the works commencing and advise the client accordingly.

APPENDIX: Plant species present with relative abundance within the survey site (DAFOR)

		DAFOR		
Common name	**Scientific name**	**Lawns & orchard**	**Boundaries**	**Ephemeral / short perennial**
Yarrow	Achillea millefolium	O/LF		
Sycamore	Acer pseudoplatanus	R	R	
Horse chestnut	Aesculus hippocastaneum	R		
Common bent	Agrostis capillaris	A	R	O
Scarlet pimpernel	Anagalis arvensis			O
Columbine*	Aquilegia vulgaris*		R*	
False oat-grass	Arrhenatherum elatius	O	F	
Cuckoo-pint	Arum maculatum	R	R	
Wall-rue	Asplenium ruta-muraria		O	
Maidenhair spleenwort	Asplenium trichomanes		O	
Monkey puzzle	Araucaria araucana	R		
Azalea	Azalea sp.		R	
Barberry	Berberis sp.		R	
Daisy	Bellis perennis	R/LF		O
Silver birch	Betula pendula		R	
Soft brome	Bromus hordaceus	R		R
Barren brome	Bromopsis sterrilis		O	R
Buddleia	Buddleia davidii		R	
Box*	Buxus smepervirens*		R	
Hedge bindweed	Calystegia sepium		O	
Shepherd's purse	Capsella bursa-pastoralis		R	R
Hairy bitter-cress	Cardamine hirsuta	R	O	O
Grey sedge	Carex divulsa	A / LD	F	
Pendulous sedge	Carex pendula		O / LF	
Fern grass	Catapodium rigidum			O
Common mouse-ear	Cerastium fontanum	O	O	O

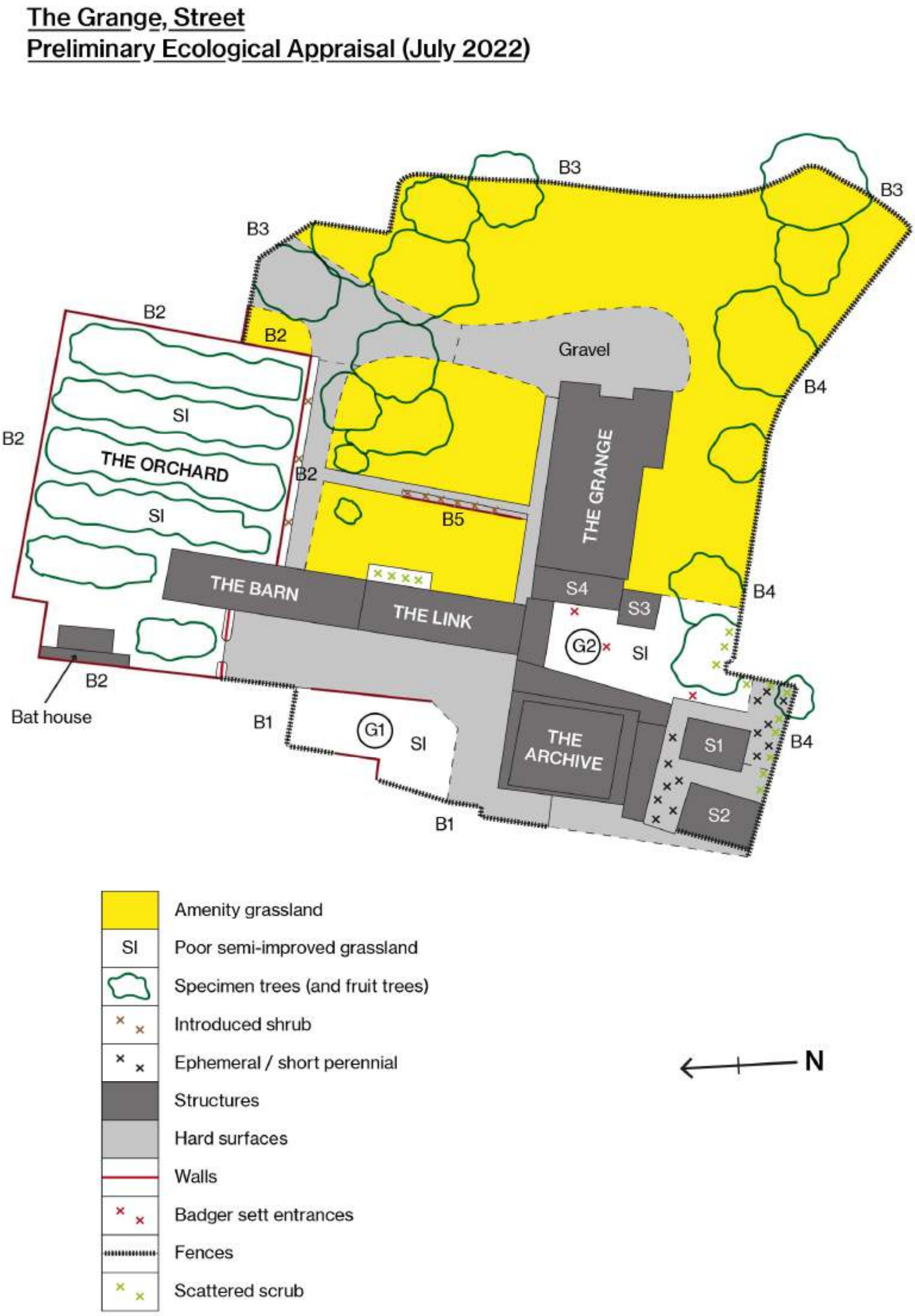
Creeping thistle	Cirsium arvense	R	O	R
Swinecress	Coronopus squamatus	R		
Hazel	Corylus avellana		R	
Cotoneaster	Cotoneaster sp.		R	
Smooth hawksbeard	Crepis capillaris	O	R	
Beaked hawksbeard	Crepis vesicaria		R	
Ivy-leaved toadflax	Cymbalaria muralis		O	
Cock's-foot	Dactylis glomerata	R/LO	O	
Perennial wall-rocket	Diplotaxis tenuifolia		R	
Broad-leaved willowherb	Epilobium montanum		R	
Hoary willowherb	Epilobium parviflorum		O	
Willowherb species	Epilobium spp.		O	F
Petty spurge	Euphorbia peplus			O
Beech	Fagus sylvatica	R		
Black bindweed	Fallopia convolvulus			R
Fescue species	Festuca sp.	A	F	R
Common cleavers	Galium aparine		O	R
Cut-leaved crane's-bill	Geranium dissectum	R	O	R
Dove's-foot cranesbill	Geranium molle	O		R
Herb robert	Geranium robertianum			O
Herb benet	Geum urbanum		O	R
Ground ivy	Glechoma hederacea	F	R	O
Ivy	Hedera helix		A	R
Yorkshire fog	Holcus lanatus	F	O	R
Holly	Ilex aquifolium		R	
Common laburnum	Laburnum anagyroides	R		
White lead-nettle	Lamium album	R	R	O
Red dead-nettle	Lamium purpureum		O	
Nipplewort	Lapsana communis		O	R
Autumnal hawkbit	Leontodon autumnalis	F		R
Garden privet	Ligustrum ovalifolium		O	
Perennial rye-grass	Lolium perenne	F/LD	O	R

Wilson's honeysuckle	Lonicera nitida		O	
Oregon grape	Mahonia sp.		R	
Apple	Malus domestica	F		
Common mallow	Malva sylvestris		R	
Spotted medick	Medicago arabica	O		
Black medick	Medicago lupulina	F/LA		R
Field forget-me-not	Myosotis arvensis			R
Daffodil*	Narcissus pseudonarcissus		R	
Yellow-juiced poppy	Papaver dubium lecoqii		R	
Ribwort	Plantago lanceolata	O		
Greater plantain	Plantago major	R		O
London plane	Platanus x hispanica	R		
Annual meadow-grass	Poa annua	F	F	F
Meadow-grasses	Poa spp.	A		
Equal-leaved knotgrass	Polygonum arenastrum			O
Common knotgrass	Polygonum aviculare	R	O	F
Silverweed	Potentilla anserina		R	
Creeping cinquefoil	Potentilla reptans	F	O	R
Self-heal	Prunella vulgaris	O		R
Cherry laurel	Prunus laurocerasus		R	
Pear	Pyrus communis		R	
Hybrid oak	Quercus x rosaecea	R		
Meadow buttercup	Ranunculus acris	O	R	
Creeping buttercup	Ranunculus repens	O/LF	O	R
Bramble	Rubus fruticosus agg.		F	
Clustered dock	Rumex conglomeratus		R	
Wood dock	Rumex sanguineus	R	R	R
Procumbent pearlwort	Sagina procumbens			O
Elder	Sambucus nigra		R	
Rue-leaved saxifrage	Saxifraga tridactylites			O
Common ragwort	Senecio jacobaea		R	
Groundsel	Senecio vulgaris		O	F

Hedge mustard	Sisymbrium officinale		O	
Field sow-thistle	Sonchus arvensis	R / LO		
Smooth sow-thistle	Sonchus oleraceus		O	
Common chickweed	Stellaria media	R	O	R
Dandelion	Taraxacum officinale	F	O	O
Common lime	Tilia x europaea	O		
Lesser trefoil	Trifolium dubium	R	R	F
Red clover	Trifolium pratense	R		
White clover	Trifolium repens	A	O	O
Nettle	Urtica dioica		O	
Grey field speedwell	Veronica agrestis			R
Germander speedwell	Veronica chamaedrys	O		R
Slender speedwell	Veronica filliformis	O		
Ivy-leaved speedwell	Veronica hederifolia		O	R
Common field speedwell	Veronica persica	R	O	R
Bush vetch	Vicia sepium		R	R
Mistletoe	Viscum album	R		
Chinese wisteria	Wisteria sinensis	R		

* Of garden origin

Site plan


The Grange, Street
Preliminary Ecological Appraisal (July 2022)
B3
B3
B3
B2
B2
B2
B2
B2
B1
B1
B4
B4
B4
B5
SI
SI
SI
SI
THE ORCHARD
Gravel
THE GRANGE
THE BARN
THE LINK
THE ARCHIVE
S1
S2
S3
S4
G1
G2
Bat house
Amenity grassland
Poor semi-improved grassland
Specimen trees (and fruit trees)
Introduced shrub
Ephemeral / short perennial
Structures
Hard surfaces
Walls
Badger sett entrances
Fences
Scattered scrub
N

Preliminary Roost Assessment

The Grange, Street

July 2022

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On behalf of:
The Alfred Gillet Trust

Client	The Alfred Gillet Trust
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1 Summary

1.1 Simecology Ltd. was commissioned by the Alfred Gillett Trust to carry out a preliminary bat roost assessment of buildings and a tree at The Grange, Street, prior to proposed development and refurbishment works at the site. A data search of protected sites and of protected species records within 2 km of the site was commissioned from the Somerset Environmental Records Centre (SERC).

1.2 The assessment was carried out on 4th July 2022 in line with Bat Conservation Trust guidelines.

1.3 Previous bat mitigation works have been carried out at the site under an EPSM licence obtained in 2011 (see Background below).

1.4 Evidence of roosting bats in the form of droppings was found in all of the buildings surveyed (The Grange, the Link Building, the Barn, Tunnel & Cellar, Hodinott's Cottage and the Bat Roost). A lesser horseshoe bat was found roosting in the Bat House. As such, **all buildings surveyed were confirmed as current, active bat roosts**.

1.5 Samples of bat droppings present were collected and sent for DNA analysis.

1.6 The data search yielded 60 bat records relating to 11 species with 2 km of the site.

1.7 It is recommended that **a series of bat detector activity surveys be carried** out at the site. These surveys should be carried out during the bat survey season (May to September) with the majority of surveys being carried out in the optimal period (May – August), and surveys should include:

- 3 x emergence/re-entry (dusk/dawn) surveys of the Link building, Hodinott's Cottage and the Barn carried out by 8 surveyors / IR cameras.
- IR Camera surveys x 3 of the Tunnel and Cellar
- No further surveying is required at The Grange house (since planned works include only internal refurbishment of the second floor) or at the new bat house which will remain untouched. However, should it be necessary for access to be required to the roof space of The Grange for small electrical works / cabling etc, then this work will need to be carried out under the supervision of a licensed bat ecologist.

1.8 In addition, **a hibernacula bat survey of the Cellar and Tunnel** should be carried out between November and February (inclusive).

1.9 The surveys will provide additional information on the bat species present on site and will inform a suitable mitigation strategy to ensure the favourable conservation status of local bat populations is not affected by proposed works.

1.10 The tree was found to have negligible potential to support roosting bats. No further survey effort on the tree is deemed necessary.

2 Introduction

Background

Simecology has carried out previous ecological works at The Grange site. This work was carried out in 2010 /11 prior to the development of the new shoe archive and included the refurbishment of The Grange and its roof and the refurbishment of the Link Building, the Barn and Hodinott's Cottage (not including their roofs, which were untouched). This work was carried out under EPSM licence 2011-2932, granted on 25th March 2011. Within the licence a new stand-alone bat roost was created on site next to the Gas House. During the refurbishment of The Grange mitigation was incorporated into the new roof which included a fly-in for Lesser Horseshoe bats and crevice access for other species.

2.1 Simecology Ltd. was commissioned by the Alfred Gillett Trust to undertake a preliminary roost assessment at The Grange in Street, Somerset, in support of a planning application relating to proposed development and refurbishment works at the site. The proposal is to refurbish the second floor of The Grange building and to demolish the Link Building in order to create space for a new reception and café area for the museum. In the process of doing this, the Barn, the Tunnel and Cellar could potentially be affected (hence the need to survey). It is currently unclear from the plans whether Hodinott's Cottage will be developed, hence it's inclusion in the survey effort.

2.2 The aim of the assessment was to assess the potential of structures on the site to support roosting bats, to inform the need for further surveys where required, and to inform the proposed works with regard to any potential negative impacts on bats.

2.3 The assessment was carried out on 4th July 2022 in line with Bat Conservation Trust guidelines.

2.4 For the purposes of the survey, the buildings on site were divided into five sections (The Grange, the Link Building, the Barn, Tunnel & Cellar, Hodinott's Cottage and the Bat Roost). Each section was categorised according to its potential to support roosting bats. Samples of any bat droppings present were collected and sent for DNA analysis.

2.5 A mature oak close to the site of proposed works was also assessed for its potential to support roosting bats.

2.6 A data search for protected sites and protected species records within 2 km of the site was commissioned from the Somerset Environmental Records Centre (SERC) to enhance understanding of the site's ecological value.

3 Legislation

3.1 All species of bat, their breeding sites and resting places (roosts) are protected under Regulation 41 of The Conservation of Habitats and Species Regulations 2017 (as amended), The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, and Section 9 of the Wildlife and Countryside Act 1981 (as amended).

3.2 It is an offence for anyone to intentionally kill, injure or handle a bat, to possess a bat (whether live or dead), to disturb bats anywhere (roosts, flight lines or foraging areas), or to sell or offer a bat for sale without a licence. It is also an offence to damage, destroy or obstruct access to any place used by bats for shelter, whether they are present or not.

3.3 Development activities that could result in impacts to bats should avoid/minimise the likelihood of impacts occurring. If impacts are unavoidable, the works may need to be carried out under a European Protected Species (EPS) development licence.

3.4 Specific details of British wildlife legislation are provided in Appendix I.

4 Survey Details

The assessment was carried out during daylight hours on 4th July 2022 by licensed bat ecologist Simeon Smith and assistant ecologist Clare Fiennes, BSc (Hons). Weather conditions during the survey are shown in Table 1.

Table 1 Survey timing and weather conditions

Date	**Timing** Start (end)	**Temp. (°C)** Start (end)	**Cloud cover**[1] Start (end)	**Wind**[2] Start (end)	**Rainfall**[3] Start (end)
04/07/22	1030 (1400)	15.0 (18.0)	0 (0)	2 (3)	0 (0)

[1] Estimated cloud cover of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky has complete cloud cover.
[2] Wind speed score of 0-12 against Beaufort scale where 0 = Calm, 2 = Light breeze, 4 = Moderate breeze, 6 = Strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.
[3] Estimated precipitation intensity on scale of 0-5 where 0 = Dry, 1= Light drizzle, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential Rain.

5 Site Location and Description

5.1 The Grange is located to the north of the urban area of Street, Somerset. The site's central Ordnance Survey grid reference is ST 48224 36940 and its postcode is BA16 0BB.

The site comprises a number of buildings of differing ages, areas of amenity grassland and hard standing, a walled orchard and several mature trees (Fig. 1). It is accessed via Farm Road off the A39, which runs to the north of the site.

Fig. 1 Aerial view of survey site, as indicated by red polygon (Google Maps, 2022)

The site is situated in a semi-industrial setting on a relatively flat plane with no appreciable aspect at 15 m above sea level. It is bordered to the north and northeast by the A39 and an area of car parking, to the east by the Clarks Village retail complex, to the south by industrial/commercial premises, and to the west by housing and a further area of car parking.

5.2 The wider landscape comprises a mix of housing, residential gardens, commercial/industrial buildings, car parking and agricultural fields (see Appendix II). The site has fair to good connectivity with the wider landscape, with mature tree lines providing potential commuting and foraging opportunities for bats. An area of broadleaf woodland is located approximately 330 m northwest of the site, offering good bat foraging and roosting potential.

6 Buildings Description

6.1 The buildings at The Grange comprise a large, conjoined structure encompassing sections of different ages, and three smaller independent structures. The buildings are used variously as office, storage and museum space.

6.2 For the purposes of this report, the buildings surveyed are described in five sections: The Grange, the Link Building, the Barn, Tunnel & Cellar, Hodinott's Cottage and the Bat Roost (see Fig. 2). Two further modern buildings on site, known as the Archive and the Gas Governor Building, fall outside the scope of the proposed works and were not subject to survey.

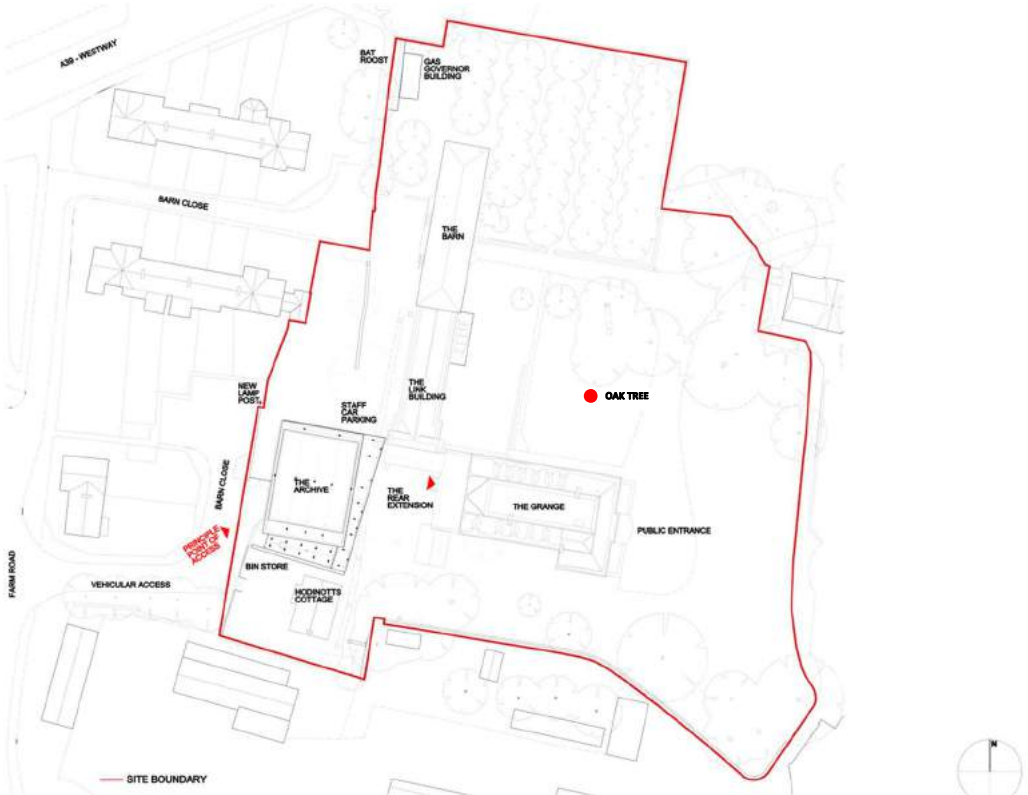

Fig. 2 Plan of buildings and tree surveyed at The Grange

Section One: The Grange

6.3 The Grange is predominantly of solid stone construction and displays features from a variety of architectural eras.

Roof

6.4 The roof is a combination of flat, hipped, pitched and mono-pitched construction. The sections of pitched roof on the north, east and south

elevations comprise slate tiles with lead flashing. There are five brick chimneys (Fig. 3 - see Appendix III for photos).

6.5 A number of glazed dormer windows are present on the northern and southern elevations. These are slated and have ridges of lead flashing.

6.6 A mono-pitched roof is present at the western end of the building constructed from double-roman clay tiles.

North elevation

6.7 The north elevation is constructed from rendered stone, with the exception of a short section of stone wall at the western-most end where The Grange connects to The Link Building (Fig. 3). The elevation displays several glazed windows, one bricked-up window and one timber door.

East elevation

6.8 The east elevation is of rendered stone, with three glazed doors and three glazed windows (Fig. 4). At ground level there are several decorative stone pillars with overlying entablature. There is a small section of roof extending from the entablature to above the main door.

South elevation

6.9 The south elevation is constructed from rendered stone, with several glazed windows and a timber door (Fig. 5).

6.10 A single-storey rear extension is attached to the south elevation (Fig. 6). The extension has a pitched roof with double roman clay tiles and two chimneys with lead flashing. There is a strip of lead flashing between the northern extreme of the roof and the adjoining wall of The Grange. At the south-facing gable end, there are wooden bargeboards with no soffits, leaving the ends of the ridge beam, purlins and wall plates exposed. The western and eastern elevations display wooden fascia boarding with exposed wooden rafters. There is a glazed window and louvred vent on the east elevation, a blocked-up window on the south elevation, and a louvred timber door and two louvred vents on the west elevation.

West elevation

6.11 The west elevation is constructed from rendered stone and has one glazed window and one blocked-up window. There is a single storey lean-to extension of stone and brick which displays two glazed windows and a timber door leading into a covered walkway. The extension has a mono-pitched roof of double roman clay tiles with wooden fascia, exposed wooden rafters and lead flashing (Fig. 7).

Internal inspection

6.12 Internally, The Grange has three floors and a basement. The basement is accessed internally via the ground floor of the building and comprises one long room split into several sections (Figs. 8 and 9). Other access routes to the basement have been closed off.

6.13 The ground floor consists of approximately 17 rooms off a central corridor. These rooms are used predominantly as office space, and include a kitchen, several walk-in cupboards and toilet facilities (Figs. 10 and 11). The walls are plastered and painted.

6.14 The rear extension is used as a boiler room. The roof void is unenclosed and displays an insulated timber frame construction with bitumen felt (Fig. 12).

6.15 The first floor consists of approximately 11 rooms off a central corridor which are used variously for storage and office space. There are also several walk-in cupboards and three staircases. The walls are plastered and painted.

6.16 The second floor comprises approximately 14 unoccupied rooms, all of which are located within the roof void, and two areas of loft space at the eastern and western extremes of the building (Fig. 13).

6.17 The eastern roof void is accessible via a door at the south-east corner. This section of the void is of timber construction, with exposed double purlins and ridge beams (Figs. 14 and 15). Bitumen underfelt is present in most areas, though wooden boarding and a lath and plaster construction are visible in some areas. Holes in the roof are present at the eastern end of the void, where an internal Georgian guttering system enters the roof. There is a bat fly-in on the roof's southern elevation.

6.18 The western roof void is accessed via a door at the western end of the building. It is of timber frame construction, with exposed timber beams and bitumen underfelt (Fig. 16).

6.19 Long sections of roof void are present beneath the dormer windows along the southern and northern edges of the building. One section of panelling had been removed on the day of the survey, revealing a timber frame construction (Fig. 17).

Section Two: The Link Building

6.20 The Link Building comprises sections of differing ages and appears to have a solid wall construction. The northern elevation of the northern section of the building is attached to The Barn and the southeast elevation of the southern section is attached to The Grange.

Roof

6.21 The roof is of pitched and combination construction and comprises double roman clay tiles with clay ridge tiles. Tarpaulin sheeting is present over the ridge of the southern section of the building, obscuring the roof structure in this area (Figs. 18 and 19). Gable ends are present at the east and western ends of the southern section of the building. These have painted timber soffits, fascia boards and bargeboards. A brick chimney and a small section of low-level mono-pitched roof are present at the southeast corner

East elevation

6.22 This elevation is of single storey, stone construction and displays a number of timber windows (Fig. 20).

South elevation

6.23 The south elevation is of stone construction and displays two timber-framed windows. A plastic covered walkway has been erected along the length of this elevation providing access from The Grange to The Archive (Fig. 21).

West elevation

6.24 This elevation is of stone construction with timber-framed windows (Fig. 22).

Internal inspection

6.25 Internally the Link Building comprises a number of small, interconnected rooms, a larger room and a corridor (Figs. 23, 24, 25, 26 and 27). The rooms are used variously for storage, as workrooms and as office space, and display painted plaster and stone walls. The rooms and corridor have suspended ceiling tiles, with the exception of two rooms that are used as a workshop, where the roof void is open and displays exposed timber and insulation panels.

6.26 A roof void is present over the larger room to the north of the building. The void is closed with a false ceiling and was found to be of modern timber construction with bitumen underfelt (Fig. 28).

6.27 The roof void above the southern end of the building was found to be of timber and steel construction, with corrugated PVC roofing sheets visible in some areas (Fig. 29).

Section Three: The Barn, Tunnel & Cellar

6.28 The Barn is a two-storey building of solid stone construction. It is attached to The Link Building at its southern elevation.

Roof

6.29 The roof is hipped and is tiled predominantly with double roman clay tiles and small sections of flat-plane clay tiles (Figs. 30 and 31). Clay ridge tiles are over-lapping in places, creating open vents at frequent intervals along the ridge. There is a brick chimney at the north-eastern corner and a weathervane towards the centre of the roof. Strips of metal flashing are present around the base of the weathervane and at several other features around the roof, particularly on the western aspect.

North elevation

6.30 The north elevation displays a small circular window below the roofline (Fig. 32). No doors are present.

East elevation

6.31 The elevation displays five boarded up windows on the ground floor and six timber-framed glazed windows on the second floor (Fig. 33). A double door with a glazed fanlight window is present towards the centre of the building and a boarded-up door is present at the northern end. Where visible there are wooden fascia boards.

6.32 A reasonably large opening to a basement area is present below ground level on the east elevation. The opening is fenced off at ground level but allows open access to all areas of this section of the basement (Fig. 34).

South elevation

6.33 The ground floor of the south elevation is attached to The Link Building (Fig. 33). No windows or doors are present on the first floor.

West elevation

6.34 The west elevation displays six windows with stone lintels, two of which are boarded-up (Fig. 35). Two timber doors are present towards the centre of the building with a glazed fanlight above. A third timber door is present at the top of an external timber staircase and a fourth timber door is present at the top of an external stone staircase. There is a large louvre vent immediately below the roofline at the centre of the building. Wooden fascia boards are present where visible.

Internal inspection

6.35 The Barn comprises two floors and an underground basement level (the Tunnel & Cellar). The ground floor consists of a lobby extending to roof height and two large rooms, one of which is used for storage and the other to house a fossil collection (Figs. 36 and 37).

6.36 The first floor comprises two rooms off the main staircase, both of which are used for storage (Figs. 38 and 39). The northern room has exposed stone walls

and an open roof void with exposed timber beams. A bricked-up chimney is present in the north-east corner. The shape of the ceiling suggests the presence of a small section of enclosed void situated beneath the ridge beam which could not be accessed on the day of the survey. The southern room displays painted stone and plaster walls and a false ceiling.

6.37 A small, enclosed room is present at the top of the staircase above the southern first floor room. The room lies within the roof void and contains a heating and cooling system (Fig. 40).

6.38 The basement consists of a Cellar, a covered well and a Tunnel entrance, both accessed from outside the building. The Cellar has stone walls and ceiling, supported by metal girders (Figs. 41 and 42). The tunnel is carved out of natural stone (Fig. 43). It's length and purpose is unknown and for health and safety reasons the Tunnel was not accessed along it's whole length during the survey. The first 10m only was surveyed.

Section Four: Hodinott's Cottage

6.39 The cottage is a small, single storey building of stone construction.

Roof

6.40 The roof is pitched, with clay pan tiles and decorative clay ridge tiles. There is a brick chimney at the southern end of the roof with ornate clay chimney pots and lead flashing at its base (Fig. 44).

North elevation

6.41 The north elevation has a gable end and displays two boarded-up windows with brick surrounds. There are wooden bargeboards with no soffit, leaving the ends of the ridge beam, purlins and wall plates exposed (Fig. 44).

East elevation

6.42 The east elevation displays two boarded up windows and a wooden door, all with stone lintels. Wooden fascia boards and plastic guttering are present at the roof line (Fig. 44).

South elevation

6.43 The south elevation has a gable end and one boarded up window with a painted wooden lintel. There are wooden bargeboards with no soffits, meaning the end of the ridge beam, purlins and wall plates are exposed (Fig. 45).

West elevation

6.44 The west elevation displays a boarded-up door and boarded up window, both with painted wooden lintels. Wooden fascia boards and an exposed wooden wall plate are present (Fig. 45).

Internal inspection

6.45 Internally, there is a single room which is used to store part of the Trust's shoe collection (Fig. 46). The roof void is enclosed and is accessed via a small hatch in the ceiling. The roof void is of modern timber construction, with bitumen felt underlay and fibreglass loft insulation (Fig. 47).

Section Five: Bat House

6.46 The building is of single-storey construction, with a timber-framed, ridged roof fitted with slate tiles and a bituminous felt underlay (Fig. 48). The walls are a combination of solid stone and block work. A timber door is present on the south elevation.

6.47 Internally, the building comprises two sections separated by a blockwork and plywood wall (Fig. 49). The southern section is open to the roof void, which displays exposed timbers, bituminous felt and sections of wire mesh. A plywood 'hot box' is present on the roof. The hot box has no floor and the underside of the roof is faced with bituminous felt fixed in place with timber batons.

6.48 The northern section is split into an upper and lower layer and is accessible via a plywood hatch. The lower layer displays a concrete ceiling at a height of approximately 1.8 m and contains a floor-to-ceiling plywood cupboard. The upper layer displays a roof of exposed timbers and bituminous felt.

7 Methodology

Data Search

7.1 A data search for protected sites and protected species records within a 2-km radius of the site was commissioned from the Somerset Environmental Records Centre (SERC). The aim of the data search was to collate and review existing information on the biodiversity status of the site and the surrounding area so as to enhance understanding of the site's ecological value and assess the potential impact of the proposed works on local bat populations.

Bat Search Survey

7.2 Bat search surveys are carried out in accordance with the standard methodology set out in the Bat Conservation Trust's 'Good Practice Guidelines' (2016). Bats may roost in structures such as roofs, voids, cracks, crevices, beams, lintels and other features.

7.3 A bat search survey comprises a detailed visual inspection of the exterior and interior of a structure to look for roosting bats and/or evidence that bats are roosting, or have roosted, in the structure at some time. Buildings are inspected systematically in daylight hours for potential access points, bats, bat droppings, signs of feeding, dead bats, scratch marks and staining. Binoculars, a high-powered torch and a ladder are used where necessary. Observations are recorded and photographs taken as appropriate. Where located, droppings are collected and sent for DNA analysis if appropriate.

7.4 The structure of the buildings and the materials from which they are constructed are recorded, as certain constructions are more likely to support bat roosts than others.

7.5 Based on these findings, buildings are then categorised for their potential suitability to support roosting bats in accordance with BCT guidelines (either negligible, low, medium or high potential, or a confirmed roost - see Appendix IV). This information informs the need for further survey effort.

Preliminary ground level roost assessment

7.6 The preliminary ground level roost assessment on the tree was undertaken in accordance with BCT 'Good Practice Guidelines' (2016). The assessment was completed in daylight hours with the aid of binoculars. The tree was inspected systematically from ground level to assess the presence or absence of Potential Roost Features (PRF). The features searched for included but were not restricted to:

- Woodpecker holes
- Rot holes
- Hazard beams
- Cracks and splits in stems or branches
- Knot holes
- Wounds
- Cankers in which cavities have developed
- Gaps between overlapping stems or branches
- Dense ivy plates
- Partially detached bark

7.7 Where possible, any feature identified was investigated further using binoculars, a high-powered torch and an endoscope to assess its suitability for roosting bats.

7.8 Where possible, features identified were visually inspected for evidence of current or historic use by roosting bats, including:

- Bat droppings in, around or below the potential roost feature
- Urine staining below the potential roost feature
- Scratch marks
- Characteristic staining from fur oils

7.9 Data on species, diameter at breast height (DBH) and any PRFs was recorded.

7.10 The tree was graded as having either Negligible, Low, Moderate or High suitability to support roosting bats, in accordance with the criteria specified in the BCT Guidelines as shown in Table 2.

Suitability	Description of roosting habitat
Negligible	Negligible habitat features on tree likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain potential roost sites but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A tree 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, irrespective of species conservation status of this stage).
High	A tree 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.

Table 2 BCT guidelines for assessing tree roost suitability

8 Results

Data Search

Protected sites

8.1 The Somerset Wetlands National Nature Reserve (a statutory protected area) is located approximately 1.8 km north-west of the survey site.

Seven non-statutory protected sites (six Local Wildlife Sites and one Local Geological Site) are located within a 2-km radius of the site. Of these, only part of one of the Local Wildlife Sites (South Moor - a large complex of ditches) is within 500 m of the site.

Data search for bat records

8.2 The data search for bat records within 2 km of the site yielded 60 results. The 11 species recorded are shown in alphabetical order in Table 3. For most records there is no detail of the nature of the record beyond date and grid reference (see Appendix V for further details).

Common name	Scientific name	Total no. field records	Date range
Barbastelle	*Barbastellus barbastellus*	1	2018
Brown long-eared	*Plecotus auritus*	6	2002-2018
Common pipistrelle	*Pipistrellus pipistrellus*	14	1997-2018
Greater horseshoe	*Rhinolophus ferrumequinum*	1	2018
Leisler's bat	*Nyctalus leisleri*	1	2015
Lesser horseshoe	*Rhinolophus hipposideros*	4	2002-2018
Long-eared sp.	N/A	1	2018
Myotis sp.	N/A	3	2015-2018
Nathusius's pipistrelle	*Pipistrellus nathusii*	1	2018
Noctule	*Nyctalus noctula*	4	2015-2018
Pipistrelle sp.	N/A	2	2011-2015
Serotine	*Eptesicus serotinus*	6	1992-2017
Soprano pipistrelle	*Pipistrellus pygmaeus*	9	2012-2018
Unidentified bat	N/A	7	1992-2010

Table 3 Bat records within 2 km of survey site

Bat Search Survey

Section One: The Grange

8.3 The roof is in good condition, since it was refurbished in 2011 (although some sections were not visible from ground level). Gaps are present in the ridge mortar at regular intervals. These were created deliberately as mitigation during the roofs refurbishment.

8.4 The rear extension roof displays a number of gaps under tiles and lead flashing on its east and west elevations (Figs. 50 and 51). Gaps are also present under tiles on the clay-tiled mono-pitched roof.

8.5 The external walls on the northern, eastern and southern elevations are generally in good condition. The render is intact, and doors and windows are well-sealed. Gaps are present in the wall above the drainpipes on the north and south elevations, offering access to the roof void (Figs. 52 and 53).

8.6 The render and stonework on the western aspect is generally sound, although gaps are present at the join between the rear extension and the main building, and above the drainpipe (Figs. 54 and 55).

8.7 Internally, the eastern roof void displays gaps at the eaves on its northern, eastern and southern elevations (Figs. 56 and 57). A bat fly-in is also present (Fig. 58). Gaps are present in the bitumen felt offering access to the underside of the roof tiles and numerous crevices are present between the roof timbers.

8.8 Bat droppings were found at several locations within the eastern roof void, with the highest concentration (approximately 50 droppings in each location) found under the centre and southern end of the eastern ridge (Figs. 59 and 60). Feeding remains were also located under this ridge (Fig. 61).

8.9 No evidence of bat activity was identified in the basement or on the ground or first floor of The Grange, including the rear extension, the rooms located within the roof void on the second floor or in the western roof void.

Section Two: The Link Building

8.10 The roof of the northern section is in generally good condition, with some gaps under tiles present on the east elevation (Fig. 62). The lower part of the roof of the southern section is in fair condition, with some gaps under tiles visible. The upper section of the roof was concealed by tarpaulin but appears to be in poor condition, with several gaps visible under the tiles and lead flashing, and around the edge of the tarpaulin (Fig. 63).

8.11 Externally, the walls of the northern section were found to be in sound condition with windows and doors well sealed. The southern section displays gaps in the stonework on its western elevation of (Figs. 64 and 65). Gaps are also present under the wooden fascia and bargeboards of the southern section (Fig. 66 and 67). The windows on this section appear generally well sealed.

8.12 Internally, no evidence of bats or bat activity were found within the ground floor of the building.

8.13 Small quantities of bat droppings were found scattered under the ridge beam along the length of the roof void above the northern section (Fig. 68 and 69).

Section Three: The Barn, Tunnel & Cellar

8.14 Externally, the walls appear in good condition and the doors and windows appear well sealed. The roof appears in good condition, although some sections were not visible from ground level. Gaps were visible under roof and hip tiles in various locations, as well as under ridge tiles along the length of the roof (Figs. 70 and 71).

8.15 Internally, no evidence of bats or bat activity was found on the ground floor.

8.16 A small number of bat droppings were found on top of a beam on the second floor of the northern part of The Barn. These were dry in appearance and may date from before the survey conducted by Simecology in August 2010 (Simecology, 2010). It was not possible to inspect the section of the roof void directly below the ridge since it was enclosed by a false ceiling.

8.17 No bats or evidence of bat activity was found in the southern room or in the boiler room found within the roof void.

8.18 The Cellar inspection revealed several groups of droppings consistent with those of a lesser horseshoe bat scattered across the floor, with small concentrations (approximately 15 droppings) located on its southern side adjacent to the well (Figs. 72 and 73). A small number of droppings were also found within the first 10m of the Tunnel.

Section Four: Hodinott's Cottage

8.19 The roof of the cottage was found to be in fair condition, with a number of lifted tiles and gaps on the east and west elevations (Figs. 74 and 75). The external stonework and brickwork was in poor condition, with several gaps, particularly on the west elevation (Fig. 76). A number of gaps were present under the soffits on the east and west elevations, offering access to the roof void (Fig. 77).

8.20 Internally, no evidence of bats or bat activity was found on the ground floor.

8.21 Scattered bat droppings were found under the ridge beam along the length of the roof void, with the greatest concentration (approximately 100-150 droppings) at the northern end (Figs. 78 and 79). Daylight was visible at the eaves and under roof tiles on the east and west elevations (Figs. 80 and 81).

8.22 Gaps in the roofing felt were present in several areas, offering access to the underside of the roof tiles. The chimney was sealed could not be inspected.

Section Five: Bat House

8.23 The bat house displays a number of potential bat access points. Small gaps are present along the ridge and bat access slates are sited on the roof (Figs. 82 and 83). A bat tube and cowled opening are present on the southern gable

end wall, facilitating flying and crawling access into the building. Internally a number of small openings are present, allowing flying access between the various sections.

8.24 A lesser horseshoe bat was found roosting in the upper layer of the second section of the bat house. A collection of bat droppings (approximately 50) were located on the floor of this section (Fig. 84 and 85).

DNA analysis of bat droppings

8.25 Six samples of droppings were collected from across the Site and sent to Swift Ecology for analysis. The results of the DNA analysis of the droppings collected is shown in Table 4 (see Appendix VI for full results).

Origin of sample	Species
Roof void of Hodinott's Cottage	Brown long-eared (*Plecotus auritus*)
Roof void of The Link Building (along ridge)	Brown long-eared (*Plecotus auritus*)
Link Building roof void (around access hatch)	Brown long-eared (*Plecotus auritus*)
Second floor of The Barn	Serotine (*Eptesicus serotinus*)
Basement of The Barn	Lesser horseshoe (*Rhinolophus hipposideros*)
Roof void of The Grange	Brown long-eared (*Plecotus auritus*)

Table 4 Results of DNA analysis of droppings

Preliminary ground level roost assessment of tree

8.26 The tree was found to be a hybrid oak *Quercus x rosacea* with a DBH of 1.4 m.

8.27 No bats or evidence of roosting bats were recorded. The tree was assessed as having Negligible potential to support roosting bats (see Appendix VII for full results).

9 Interpretation of Results

Data search

9.1 Data search records confirm that 11 species of bat are present within a 2-km radius of the Site, including rarer species such as the lesser and greater horseshoe. Although located in a semi-industrial, largely urban area, the Site is in close proximity to areas of favourable bat habitat (woodland, grassland, scrub, hedgerows) and the surrounding landscape provides good connectivity

for bats in the form of tree lines and hedgerows. Residential gardens within the vicinity of the Site also provide foraging opportunities.

Bat search survey

Section One: The Grange

9.2 The survey confirmed that The Grange is a current, active bat roost. Evidence of bat activity was identified within the eastern roof void in the form of droppings and feeding remains. DNA analysis confirmed the presence of brown long-eared bats. The roof void displays a number of suitable access points (gaps along the ridge and at the eaves) and roosting features (timber ridge beams, crevices between timbers, gaps in the bitumen felt). The distribution and number of bat droppings present suggests that more than one bat is using this space.

Section Two: The Link Building

9.3 The survey found that the Link Building is a current, active bat roost. Evidence of bat activity was located within the roof void above the northern section in the form of scattered droppings. DNA analysis confirmed the presence of brown long-eared bats. While no droppings were found in the southern section of the roof void, this part of the roof displays numerous potential access points in the form of gaps under tiles, at the eaves and around the tarpaulin covering the upper section of the roof. This area of the roof void also presents a suitable space for brown long eared bats to fly in on entering the roof.

Section Three: The Barn, Tunnel & Cellar

9.4 The survey confirmed that the Cellar & Tunnel are current, active bat roost. Collections of droppings were found in several locations. DNA analysis confirmed that the droppings are those of a lesser horseshoe bat. The Cellar & Tunnel constitute ideal roosting and hibernacula habitat for the Lesser Horseshoe, which prefers roosts with wide access points, allowing uninterrupted flight. It also offers suitable hibernation habitat for the species, which shows a preference for hibernating in caves, cellars and tunnels.

9.5 While evidence of bat activity was found in the northern part of the second floor of the Barn, there were no signs of recent bat activity. No fresh droppings were found underneath the beam or elsewhere in the room, and it is probable that the droppings which were found along the beam date from before works were carried out to the Barn following the bat search survey conducted by Simecology in 2010.

9.6 It was not possible to inspect the roof void at the apex of the northern second floor room of the Barn , which displays potential bat access points in the form of gaps at the ridge, due to the presence of a false ceiling.

Section Four: Hodinott's Cottage

9.7 The survey confirmed Hodinott's Cottge as a current, active bat roost. Large quantities of droppings were found within the roof void, which DNA analysis confirmed as being those of a brown long-eared bat. The roof void displays multiple external and internal features suitable for use by roosting bats (gaps in the tiles, timber ridge beam, gaps in the bitumen felt).

Section Five: The Bat Roost

9.8 The survey confirmed that the Bat Roost is a current, active roost. A single adult lesser horseshoe bat was found roosting in the upper section of the rear part of the building. The accumulation of droppings within the space indicates that the building has been in use as a roost for some time.

9.9 The tree surveyed was assessed as being of Negligible value for roosting bats. As such, roosting bats are unlikely to be affected by works in the vicinity of the tree.

10 Recommendations

10.1 It is recommended that **at least three bat detector activity surveys be carried out** during the bat survey season (May to September) to investigate the use of the buildings by bats, with the majority of surveys being carried out in the optimal period of May to August. This recommendation is in line with BCT guidelines for structures that have been confirmed as bat roosts.

10.2 In addition, **a hibernacula bat survey of the Cellar and Tunnel** should be carried out between November and February (inclusive). For health and safety reasons this will need to be carried out at the same time as the structural engineer's survey during which a Watching Brief for bats will be provided as well as the bat survey being undertaken.

10.3 All surveys must be undertaken by suitably experienced ecologists using appropriate bat detectors and recording equipment and must be undertaken under appropriate atmospheric conditions. As a minimum, these surveys should include:

- 3 x emergence/re-entry (dusk/dawn) surveys of the Link building, Hodinott's Cottage and the Barn carried out by 8 surveyors / IR cameras (May to September).
- IR Camera surveys x 3 of The Tunnel and Cellar (May to September).
- Hibernacula survey of the Cellar & Tunnel (November to February).

- No further surveying is required at The Grange house (since planned works include only internal refurbishment of the second floor) or at the new bat house which will remain untouched.

NB Should it be necessary for access to be required to the roof space of The Grange for small electrical works / cabling etc, then this work will need to be carried out under the supervision of a licensed bat ecologist. The work would need to be carried out using only hand tools and be lit by headtorches only. It is felt that this level of disturbance would not affect the bat roost or the favourable conservation status of bats at this site.

10.4 The surveys will provide information on access points, roosting locations, timing of use, type of roost and likely number of bats roosting. This information will be required to carry out an impact assessment, provide recommendations for further surveys if necessary, and design a suitable mitigation strategy to ensure the favourable conservation status of local bat populations is not impacted by the proposed works.

10.5 No further survey effort is deemed necessary on the tree.

10.6 All bat species and their roosts are protected by law. Therefore, it will be necessary to obtain a **European Protected Species Mitigation licence from Natural England** prior to commencement of works.

11 Limitations

11.1 Surveys of this type offer only snapshots of the site and take no account of possible seasonal differences or of species that might take up residence at a later date.

11.2 The absence of bats or evidence of bats does not equate to bat absence. It is not always possible to inspect all locations where bats may be present (such as under flashing or inside wall cavities) and potential roosting features may exist that were not visible during a survey. Bats do not always leave visible evidence of their presence and evidence of bats can be weathered away.

11.3 The findings of this study are valid for a period of 18 months from the date of assessment. If works have not commenced within this timeframe, the survey effort must be updated to establish whether there have been changes to the way bats may use the buildings in the interim.

12 References

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Appendix I - Legislative Context

This section provides a brief summary of British wildlife legislation.

The Wildlife and Countryside Act, 1981 (as amended)

The main piece of legislation relating to nature conservation in Great Britain, which transposes into British law the Berne, Bonn and RAMSAR Conventions, and the European "Birds Directive" (drawn up by the European Community (EC) in response to the Berne Convention). This legislation covers protection of wildlife (birds, other animals and plants), Sites of Special Scientific Interest (SSSI's) (with some SSSI's also designated as Special Protection Areas (SPA's)), National Nature Reserves (NNR's) and RAMSAR sites (and also some other designations not strictly relevant to ecology, for example National Parks and Public Rights of Way, which are beyond the scope of this report).

The Conservation of Habitats and Species Regulations 2017 (as amended) & its Amendment (EU Exit) 2019 (The "Habitats Regulations")

The purpose of this legislation is to consolidate and update the original Conservation (Natural Habitats, &c.) Regulations 1994 ("the 1994 Regulations"). The objective of the Habitats Directive is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. The Directive lays down rules for the protection, management and exploitation of such habitats and species. The Habitats Regulations transpose the Habitats Directive in England, Wales and to a limited extent Scotland by ensuring that activities are carried out in accordance with the requirements of the Directive.

The Countryside and Rights of Way (CRoW) Act, 2000

This legislation applies to England and Wales only. It increases protection for SSSI's and strengthens protection for threatened species. It also specifies that it is the duty of Local Authorities to further the conservation of listed habitats and species (listed originally as *UK BAP priority habitats and species* but now covered by the *UK Post-2010 Biodiversity Framework*).

The Natural Environment and Rural Communities (NERC) Act, 2006

This legislation confers a legal duty on every public authority (including County, District and Parish Councils) to conserve biodiversity. Section 40(1) of the Act says, 'Every public authority must, in exercising its functions, have regard so far as it is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.' The duty came into force on 1st October 2006.

Appendix II – Site Location

Aerial view of survey site (indicated by red circle) showing its position in the wider landscape (Google Maps, 2022)

Appendix III - Photos

Fig. 3 North elevation of The Grange

Fig. 4 East elevation of The Grange

Fig. 5 South elevation of The Grange

Fig. 6 Rear extension to The Grange

Fig. 7 West elevation of The Grange


Figs. 8 and 9 Basement of The Grange


Figs. 10 and 11 Ground floor of The Grange

Fig. 12 Interior of rear extension

Fig. 13 Second floor interior of The Grange


Figs. 14 and 15 Eastern roof void of The Grange

Fig. 16 Western roof void

Fig. 17 Roof void visible through missing panelling

Figs. 18 and 19 West and south elevations of The Link Building

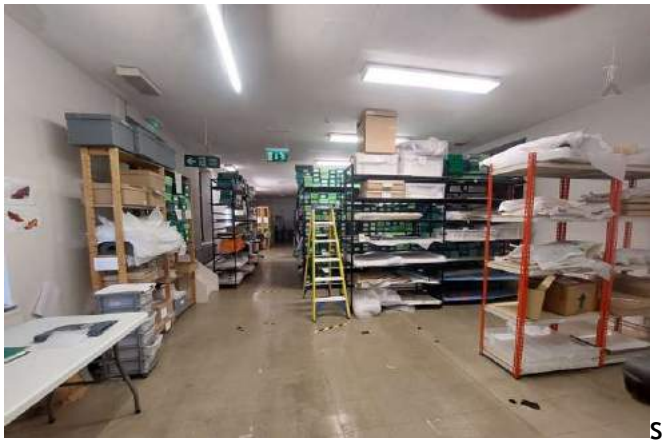
Fig. 20 East elevation of The Link Building

Fig. 21 South elevation of The Link Building

Fig. 22 East elevation of The Link Building







Figs. 23 to 27 Interior of The Link Building


Figs. 28 and 29 Northern and southern roof voids of The Link Building


Figs. 30 and 31 The Barn roof

Fig. 32 North elevation of The Barn

Fig. 33 East and south elevations of The Barn

Fig. 34 Tunnel Entrance

Fig. 35 West elevation of The Barn


Figs. 36 and 37 Ground floor rooms of The Barn


Figs. 38 and 39 First floor rooms of The Barn

Fig. 40 Boiler room above Barn

Fig. 41 Cellar beneath The Barn & Link buildings

Fig. 42 Cellar beneath The Barn & Link buildings

Fig. 43 Tunnel entrance

Fig. 44 North/east elevations of cottage

Fig. 45 South/west elevations of cottage

Fig. 46 Interior of Hodinott's Cottage

Fig. 47 Roof void of Hodinott's Cottage

Figs. 48 and 49 Exterior and interior of The Bat House

Figs 50 and 51 Gaps under tiles on rear extension roof


Figs 52 and 53 Gaps at top of drainpipes at The Grange


Figs. 54 and 55 Gaps to rear extension and at top of drainpipe


Figs 56 and 57 Gaps at the eaves of The Grange roof

Fig. 58 Bat fly-in within The Grange roof

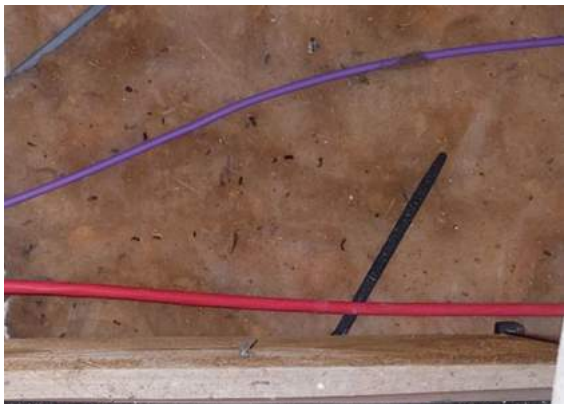
Fig. 60 Bat droppings found in The Barn roof


Figs. 60 & 61 Bat droppings and feeding remains found within The Grange roof void


Figs. 62 & 63 Gaps in northern & southern sections of The Link Building roof


Figs. 64 & 65 Gaps in stonework of western elevation of The Link Building


Figs. 66 & 67 Gaps under fascia and bargeboards of southern section of The Link Building




Figs. 68 & 69 Bat droppings found in roof void of northern section of The Link Building


Figs. 70 and 71 Gaps under roof, hip and ridge tiles of The Barn roof


Figs. 72 and 73 Bat droppings found in basement of The Barn


Figs. 74 and 75 Lifted and broken tiles on roof of Hodinott's Cottage


Figs. 76 and 77 Gaps in stonework and under soffits & fascia boards of Hodinott's Cottage


Figs. 78 and 79 Bat droppings found in roof void of Hodinott's Cottage


Figs. 80 and 81 Gaps in roof of Hodinott's Cottage


Figs. 82 and 83 Gap at ridge, bat access slate and bat tube on The Bat House

Figs. 84 and 85 Lesser horseshoe bat and bat droppings found in The Bat House

Appendix IV - BCT Guidelines, 2016

Guidelines for assessing potential suitability of proposed development sites for bats (BCT, 2016)		
Suitability	**Roosting habitats**	**Commuting and foraging habitats**
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these 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). A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree 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).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree 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.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

Appendix V – Data Search Results

Common name	Scientific name	Grid reference	Date
Barbastelle	*Barbastella barbastellus*	ST487356	09/10/2018
Brown long-eared	*Plecotus auritus*	ST487383	17/07/2015
Brown long-eared	*Plecotus auritus*	ST487383	17/07/2015
Brown long-eared	*Plecotus auritus*	ST470365	30/06/2015
Brown long-eared	*Plecotus auritus*	ST484363	23/09/2002
Brown long-eared	*Plecotus auritus*	ST481371	18/11/2011
Brown long-eared	*Plecotus auritus*	ST479363	01/06/2012
Common pipistrelle	*Pipistrellus pipistrellus*	ST486380	24/08/2004
Common pipistrelle	*Pipistrellus pipistrellus*	ST492358	31/08/2016
Common pipistrelle	*Pipistrellus pipistrellus*	ST487356	12/09/2018
Common pipistrelle	*Pipistrellus pipistrellus*	ST487356	09/10/2018
Common pipistrelle	*Pipistrellus pipistrellus*	ST487385	23/07/2002
Common pipistrelle	*Pipistrellus pipistrellus*	ST470365	01/08/2015
Common pipistrelle	*Pipistrellus pipistrellus*	ST467364	10/07/2006
Common pipistrelle	*Pipistrellus pipistrellus*	ST467364	10/07/2006
Common pipistrelle	*Pipistrellus pipistrellus*	ST483363	18/07/1997
Common pipistrelle	*Pipistrellus pipistrellus*	ST487383	31/07/2015
Common pipistrelle	*Pipistrellus pipistrellus*	ST487383	31/07/2015
Common pipistrelle	*Pipistrellus pipistrellus*	ST480357	17/08/1999
Common pipistrelle	*Pipistrellus pipistrellus*	ST479363	01/06/2012
Common pipistrelle	*Pipistrellus pipistrellus*	ST467364	10/07/2006
Leisler's bat	*Nyctalus leisleri*	ST470365	01/08/2015
Greater horseshoe	*Rhinolophus ferrumequinum*	ST487356	09/10/2018
Lesser horseshoe	*Rhinolophus hipposideros*	ST487383	31/07/2015
Lesser horseshoe	*Rhinolophus hipposideros*	ST487383	31/07/2015
Lesser horseshoe	*Rhinolophus hipposideros*	ST487356	09/10/2018
Lesser horseshoe	*Rhinolophus hipposideros*	ST481371	18/11/2011
Long-eared sp.	N/A	ST487356	09/10/2018
Myotis sp.	N/A	ST487383	31/07/2015
Myotis sp.	N/A	ST487383	31/07/2015
Myotis sp.	N/A	ST487356	09/10/2018
Nathusius's pipistrelle	*Pipistrellus nathusii*	ST487356	09/10/2018
Noctule	*Nyctalus noctula*	ST487383	31/07/2015
Noctule	*Nyctalus noctula*	ST470365	01/08/2015
Noctule	*Nyctalus noctula*	ST487383	31/07/2015
Noctule	*Nyctalus noctula*	ST487356	09/10/2018
Pipistrelle sp.	N/A	ST481371	18/11/2011
Pipistrelle sp.	N/A	ST475352	28/08/2013
Serotine	*Eptesicus serotinus*	ST487383	17/07/2015
Serotine	*Eptesicus serotinus*	ST487383	17/07/2015
Serotine	*Eptesicus serotinus*	ST486380	24/08/2004
Serotine	*Eptesicus serotinus*	ST487356	09/10/2018
Serotine	*Eptesicus serotinus*	ST486369	04/09/1992
Serotine	*Eptesicus serotinus*	ST486369	04/09/1992
Soprano pipistrelle	*Pipistrellus pygmaeus*	ST470365	01/08/2015
Soprano Pipistrelle	*Pipistrellus pygmaeus*	ST487383	31/07/2015
Soprano Pipistrelle	*Pipistrellus pygmaeus*	ST487383	31/07/2015
Soprano Pipistrelle	*Pipistrellus pygmaeus*	ST487356	09/10/2018
Soprano Pipistrelle	*Pipistrellus pygmaeus*	ST487356	12/09/2018

Soprano Pipistrelle	*Pipistrellus pygmaeus*	ST481372	09/07/2015
Soprano Pipistrelle	*Pipistrellus pygmaeus*	ST481372	09/07/2015
Soprano Pipistrelle	*Pipistrellus pygmaeus*	ST481372	07/08/2015
Soprano Pipistrelle	*Pipistrellus pygmaeus*	ST479363	01/06/2012
Unidentified bat	N/A	ST486379	13/12/2010
Unidentified bat	N/A	ST486379	13/12/2010
Unidentified bat	N/A	ST486379	13/12/2010
Unidentified bat	N/A	ST486369	04/09/1992
Unidentified bat	N/A	ST486369	04/09/1992
Unidentified bat	N/A	ST481359	17/08/2000
Unidentified bat	N/A	ST478370	06/06/1996

Table 5 Bat records within 2 km of survey site

Appendix VI – Results of DNA Analysis

Samples submitted

Sample Code	Multi-species?	Sample Type	Date Sample Found	Species Group	Site postcode/ post town /grid ref	Site description / comments (Optional)	Suspected identity of species
SEL-1422-1	No	Faecal	04/07/2022	Bats	BA16 0BQ Cottage Loft		
SEL-1422-2	No	Faecal	04/07/2022	Bats	BA16 0BQ Link bldg along ridge		
SEL-1422-3	No	Faecal	04/07/2022	Bats	BA16 0BQ Ling Bldg by hatch		
SEL-1422-4	No	Faecal	04/07/2022	Bats	BA16 0BQ The Barn		
SEL-1422-5	No	Faecal	04/07/2022	Bats	BA16 0BQ Basement		
SEL-1422-6	No	Faecal	04/07/2022	Bats	BA16 0BQ Grange Loft		

Analysis Results

Sample Code	DNA Extraction Code	Species Identified	ID Method	Ct value	% match
SEL-1422-1	EG-2022-0810	Plecotus auritus (Brown long-eared bat)	qPCR	20	
SEL-1422-2	EG-2022-0811	Plecotus auritus (Brown long-eared bat)	qPCR	22	
SEL-1422-3	EG-2022-0812	Plecotus auritus (Brown long-eared bat)	qPCR	18	
SEL-1422-4	EG-2022-0813	Eptesicus serotinus (Serotine bat)	qPCR	22	
SEL-1422-5	EG-2022-0814	Rhinolophus hipposideros (Lesser horseshoe bat)	qPCR	18	
SEL-1422-6	EG-2022-0815	Plecotus auritus (Brown long-eared bat)	qPCR	17	

Order Number: 1422 simeon@simecology.co.uk

What do my results mean?

DNA extraction code - this identifies the DNA extraction sample within our laboratory so that it can be revisited if necessary. We keep these extractions for a minimum of 3 months.

ID method: *qPCR* - These results are obtained using species specific qPCR tests. A positive result indicates the presence of DNA from the species reported.

ID method*: DNA sequencing* - where qPCR fails or is not possible, standard DNA sequencing will be performed. Sequences are then matched against a database.

Ct value - This is a relative measurement of the amount of species DNA in the sample, derived from the qPCR data. The lower the value the more DNA present in the reaction. This helps to predict the abundance of one species relative to another **in the sample**. Note: this relative abundance is not directly transferable to the site the samples were collected from.

% match - this value is the percentage match of sequences derived from DNA sequencing compared to the database. Due to differences in DNA sequence between individuals within a species this match may not always be exactly 100%.

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Appendix VII – Results of Tree Ground Level Roost Assessment

Potential roost feature	Height (m)	Aspect	Ground level assessment	Photos
Cavity in trunk	1.2	N	Negligible	
Cavity in trunk	1.4	N	Negligible	
Hole in end of branch	2.5	S	Negligible	
Callus roll with tear out	4	S	Negligible	

Table 7 Results of ground level roost assessment of oak tree

Preliminary Roost Assessment of Tunnel & Re-survey of Cellars/Well

The Grange, Street

November 2022

Produced by:

Simecology Ltd.
13 Elmhurst Estate
Batheaston
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BA1 7NU
www.simecology.co.uk

On behalf of:
The Alfred Gillet Trust

Client	The Alfred Gillet Trust
Project Name	The Grange, Street
File Reference	BHSRP-20221203-V001-TheGrange

Contributor	Name	Signature	Position	Date
Author 1	Kathy Morris		Administrator	03/12/22
Reviewer 1	Simeon Smith		Principal Ecologist	03/12/22

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1 Summary

1.1 Simecology Ltd. was commissioned by the Alfred Gillett Trust to undertake a further survey of The Tunnel and Cellars which lie beneath the Link and Barn buildings at The Grange in order to establish their use by hibernating bats prior to proposed development and refurbishment works at the site.

1.2 In addition, there was a need to accompany surveyors from Glanville Geospatial Services who were carrying out an initial 3-D assessment of the Cellars and Tunnel to ensure that no harm to bats was caused by their activities.

1.3 The assessment was carried out on 28th November 2022 in line with Bat Conservation Trust guidelines.

1.4 Previous bat mitigation works have been carried out at the site under an EPSM licence obtained in 2011 (see Background below).

1.5 In addition, a Preliminary Roost Assessment was carried out in July 2022, which focused on The Grange, the Link Building, the Barn, Tunnel & Cellars, Hodinott's Cottage and the Bat Roost. During this PRA evidence of roosting bats in the form of droppings was found in all of the buildings surveyed. A lesser horseshoe bat was found roosting in the Bat House. A**ll buildings / areas surveyed in July 2022 were confirmed as current, active bat roosts**.

1.6 This **PRA & Re-survey of the Cellars and Tunnel** was carried out as a result of the recommendations of the PRA undertaken in July 2022; i.e., that a survey carried out during winter months will provide additional information on the bat species present on site and will inform a suitable mitigation strategy to ensure the favourable conservation status of local bat populations is not affected by proposed works.

1.7 During the PRA and Re-survey of the Cellars and Tunnel 5 torpid Lesser Horseshoe bats were found, 2 within the Well passage and 3 within the Tunnel.

1.8 Not all of the targeted survey area could be surveyed for health & safety reasons. The Tunnel was too unsafe to be surveyed along its entire length, which is unknown

1.9 A further bat hibernacula survey should be carried out in January/February 2023, of the Entrance cellar, Back Cellar and Well area as well as the stretch of the Tunnel that has been surveyed so far.

2 Introduction

Background

Simecology has carried out previous ecological works at The Grange site including surveys carried out in 2010 /11 prior to the development of the new shoe archive which included the refurbishment of The Grange and its roof and the refurbishment of the Link Building, the Barn and Hodinott's Cottage (not including their roofs, which were untouched). This work was carried out under EPSM licence 2011-2932, granted on 25th March 2011. Within the licence a new stand-alone bat roost was created on site next to the Gas House. During the refurbishment of The Grange mitigation was incorporated into the new roof which included a fly-in for Lesser Horseshoe bats and crevice access for other species.

In addition, a Preliminary Roost Assessment was carried out in July 2022, which focused on The Grange, the Link Building, the Barn, Tunnel & Cellar, Hodinott's Cottage and the Bat Roost. During this PRA a brief inspection only of the tunnel was possible from its entrance due to health & safety concerns. Please see Simecology report PRARP- 20220904-V001for details.

2.1 Simecology Ltd. was commissioned by the Alfred Gillett Trust to undertake a further survey of The Tunnel and Cellars which lie beneath the Link and Barn buildings in order to establish their use by hibernating bats, to inform the need for further surveys where required, and to inform the proposed works with regard to any potential negative impacts on bats.

2.2 In addition, there was a need to accompany surveyors from Glanville Geospatial Services who were carrying out an initial 3-D assessment of the Cellars and Tunnel to ensure that there was no harm to bats caused by their activities.

2.3 The assessment was carried out on 28th November 2022 in line with Bat Conservation Trust guidelines.

2.4 For the purposes of the survey, the areas assessed were divided into three sections (The Entrance Cellar, The Back Cellar (including the Well) & the Tunnel). Each section was categorised according to its potential to support roosting bats.

2.5 Samples of bat droppings had been collected from these areas during the previous PRA carried out in July 2022 and were sent for DNA analysis. Bat droppings which had been found in both cellars, the well passage and the tunnel entrance were confirmed by DNA analysis to have come from Lesser Horseshoe bats.

2.6 A data search for protected sites and protected species records within 2 km of the site had also been commissioned from the Somerset Environmental Records Centre (SERC) and the results of this described in the PRA carried out in July 2022. In summary, the data search records confirmed that 11 species of bat are present within a 2-km radius of the site, including rarer species such as the Lesser and Greater Horseshoe bat.

3 Legislation

3.1 All species of bat, their breeding sites and resting places (roosts) are protected under Regulation 41 of The Conservation of Habitats and Species Regulations 2017 (as amended), The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, and Section 9 of the Wildlife and Countryside Act 1981 (as amended).

3.2 It is an offence for anyone to intentionally kill, injure or handle a bat, to possess a bat (whether live or dead), to disturb bats anywhere (roosts, flight lines or foraging areas), or to sell or offer a bat for sale without a licence. It is also an offence to damage, destroy or obstruct access to any place used by bats for shelter, whether they are present or not.

3.3 Development activities that could result in impacts to bats should avoid/minimise the likelihood of impacts occurring. If impacts are unavoidable, the works may need to be carried out under a European Protected Species (EPS) development licence.

Specific details of British wildlife legislation are provided in Appendix I.

4 Survey Details

The assessment was carried out during daylight hours on 28th November 2022 by licensed bat ecologist Simeon Smith (NE Licence number 2017-25128-CLS-CLS). Weather conditions during the survey are shown in Table 1.

Table 1 Survey timing and weather conditions

Date	Timing Start (end)	Outside Temp. (°C) Start (end)	Cloud cover[1] Start (end)	Wind[2] Start (end)	Rainfall[3] Start (end)	RH[4] %
28/11/22	1000 (1300)	10.1 (18.0)	3 (0)	1 (3)	0 (0)	72

[1] Estimated cloud cover of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky has complete cloud cover.
[2] Wind speed score of 0-12 against Beaufort scale where 0 = Calm, 2 = Light breeze, 4 = Moderate breeze, 6 = Strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.
[3] Estimated precipitation intensity on scale of 0-5 where 0 = Dry, 1= Light drizzle, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential Rain.
[4] Relative Humidity

5 Site Location and Description

5.1 The Grange is located to the north of the urban area of Street, Somerset. The site's central Ordnance Survey grid reference is ST 48224 36940 and its postcode is BA16 0BB.

The site comprises a number of buildings of differing ages, areas of amenity grassland and hard standing, a walled orchard and several mature trees (Fig. 1). It is accessed via Farm Road off the A39, which runs to the north of the site.

Fig. 1 Aerial view of survey site, as indicated by red polygon (Google Maps, 2022)

The site is situated in a semi-industrial setting on a relatively flat plane with no appreciable aspect at 15 m above sea level. It is bordered to the north and northeast by the A39 and an area of car parking, to the east by the Clarks Village retail complex, to the south by industrial/commercial premises, and to the west by housing and a further area of car parking.

5.2 The wider landscape comprises a mix of housing, residential gardens, commercial/industrial buildings, car parking and agricultural fields (see Appendix II). The site has fair to good connectivity with the wider landscape, with mature tree lines providing potential commuting and foraging opportunities for bats. An area of broadleaf woodland is located approximately 330 m northwest of the site, offering good bat foraging and roosting potential.

6 Cellars, Well & Tunnel Description

6.1 For the purposes of this report, the areas surveyed are described in three sections: The Entrance Cellar, the Back Cellar (& Well) and the Tunnel.

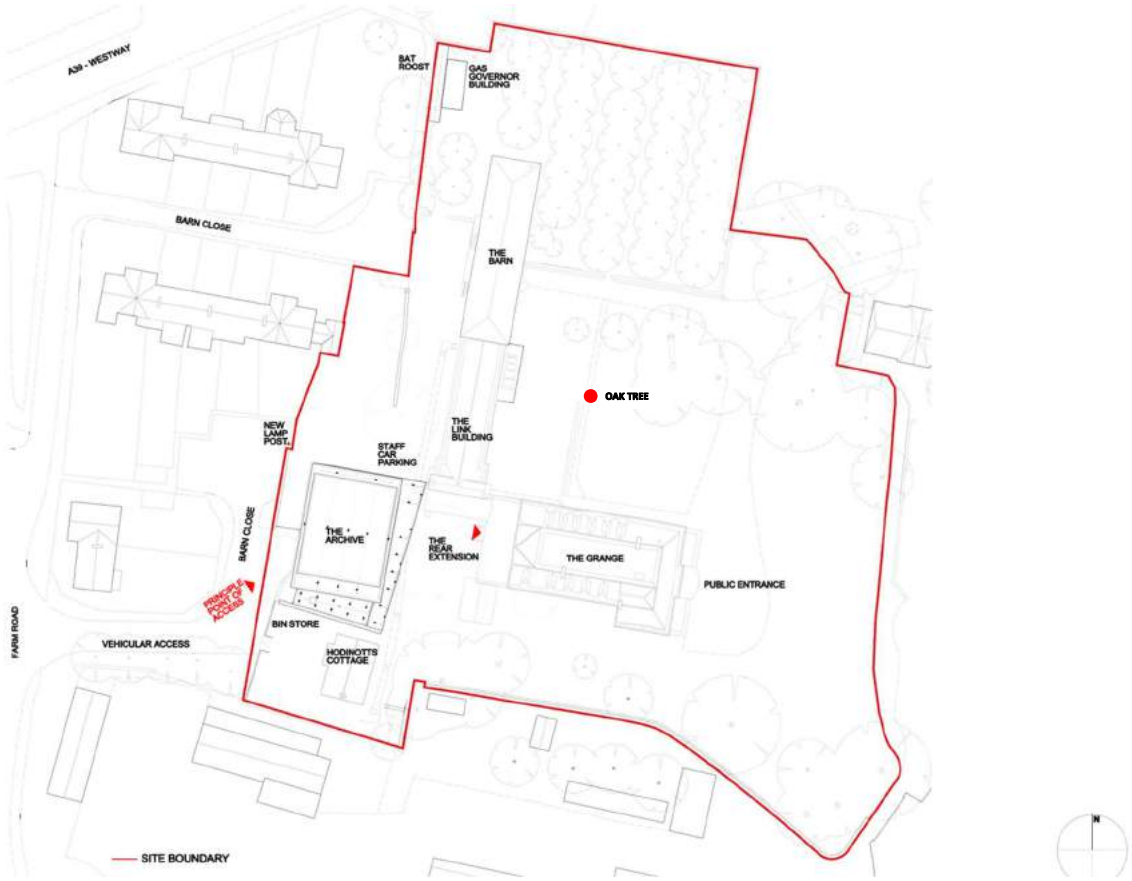

Fig. 2 Plan of buildings at The Grange

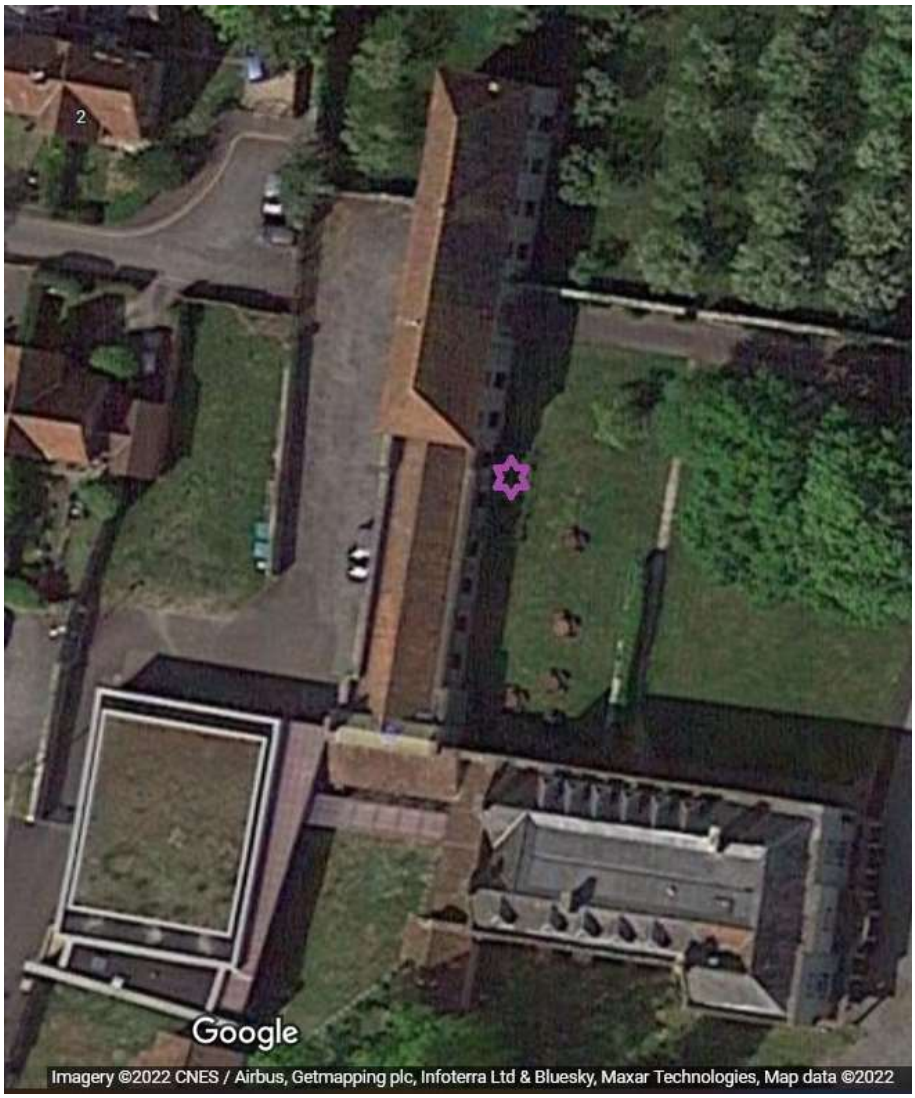

Fig.3 Site of Cellar & Tunnel entrance (Indicated by purple star)

6.2 The Cellars and Tunnel are accessed through an opening situated outside the Link Building on its eastern side at the point at which the Link Building adjoins The Barn (see Fig.3 above)

6.3 The basement consists of an Entrance Cellar, a covered Well area and passage, a Back Cellar and a Tunnel entrance. The Entrance Cellar has stone walls and ceiling with shelved stone pantry sections. The Back Cellar has stone walls and ceiling and is supported by metal girders (Figs. 9 and 10). Within this area there is a small passage containing a well which has been filled in with rubble. The Tunnel is carved out of natural stone. Its height is approximately 1.5m high x 1m wide at its entrance. The height of the tunnel decreases along its length. Internally there are small areas where the stone has collapsed. Rainwater ingress has caused some areas to become very muddy and damp The Tunnels length and purpose is unknown.

7 Methodology

Preliminary Roost Assessment of Tunnel & re-survey of Cellars

7.1 Bat search surveys are carried out in accordance with the standard methodology set out in the Bat Conservation Trust's 'Good Practice Guidelines' (2016). Bats may roost in structures such as roofs, voids, cracks, crevices, beams, lintels and other features.

7.2 A bat search survey comprises a detailed visual inspection of the exterior and interior of a structure to look for roosting bats and/or evidence that bats are roosting, or have roosted, in the structure at some time. Buildings are inspected systematically in daylight hours for potential access points, bats, bat droppings, signs of feeding, dead bats, scratch marks and staining. Binoculars, a high-powered torch and a ladder are used where necessary. Observations are recorded and photographs taken as appropriate. Where located, droppings are collected and sent for DNA analysis if appropriate.

7.3 The structure of the buildings and the materials from which they are constructed are recorded, as certain constructions are more likely to support bat roosts than others.

7.4 Based on these findings, buildings are then categorised for their potential suitability to support roosting bats in accordance with BCT guidelines (either negligible, low, medium or high potential, or a confirmed roost - see Appendix IV). This information informs the need for further survey effort.

7.5 The survey was conducted alongside the presence of confined space operatives from Glanville Geospatial Services.

8 Results

Preliminary Roost Assessment of Tunnel & re-survey of Cellars

Area	**Temperature** °C	**Relative Humidity** %
Entrance Cellar	10.8	88.1
Back Cellar	13.3	88.8
Tunnel Entrance	14.9	79.1

Area	Temperature °C	Relative Humidity %	No. of Bats	Bat Species
Well Passage	14.1	88.2	2	LHS
Tunnel@approx 3m	14.9	79.1	1	LHS
Tunnel@approx 13m	17.4	89.2	1	LHS
Tunnel@approx 23m	19.8	83.9	1	LHS

Section One: The Entrance Cellar

8.1 The Entrance Cellar is light and airy.

8.2 The entrance to the cellar is open and the stonework surrounding the entrance in bad repair.

8.3 No bats were found within this area on 28th November 2022 although a few bat droppings remain within this area (DNA sampled previously).

Section Two: The Back Cellar & Well Passage

8.4 Scattered bat droppings remain throughout the Back Cellar with a more concentrated area of droppings (approx. 100) above the Well.

8.5 These areas are warmer and darker than the Entrance Cellar, with a similar humidity, but less air flow.

8.6 Two torpid Lesser Horseshoe bats were found in this area; one above the Well and another in the short passage leading to the Well.

Section Three: The Tunnel

8.7 It was possible only to survey approximately the first 40m to 50m of the tunnel until conditions became too unsafe to proceed. The survey was stopped due to the presence of collapsed stone and obvious signs of weakness in its walls.

8.8 The temperature within the tunnel increases along its length. It is warm and dark. There is no airflow.

8.9 Three torpid Lesser Horseshoe bats were found along the surveyed length of the tunnel at approximately 3m, 13m and 23m.

9 Interpretation of Results

Please see the results of the Simecology Preliminary Roost Assessment report (PRARP- 20220904-V00)1 for details and interpretation.

The findings from the PRA of the Tunnel and re-survey of the Cellars are important and significant since the site has now been found to be both a summer roost and winter hibernacula roost for LHS bats.

The survey confirmed that the Back Cellar & Well passage and Tunnel are current, active bat hibernacula roosts for Lesser Horseshoe bats. As well as the presence of bats, droppings remain in several locations. The Back Cellar, Well passage & Tunnel constitute ideal roosting and hibernacula habitat for the Lesser Horseshoe bat, which prefers roosts with wide access points, allowing uninterrupted flight.

There appears to be no airflow in the tunnel, but as the temperature gets warmer along its length this would seem to imply that there is no opening at the far end of the tunnel, wherever this may be. This is, however, just speculation.

There is a relatively stable humidity within the Back Cellar, Well passage and Tunnel, which contributes towards creating ideal hibernacula conditions for bats.

The temperature, though, is high in places, particularly at approximately 23m into the Tunnel, where the temperature was 19.8°C (where the last bat was found, and the last measure of temperature taken). Even though LHS bats will hibernate in higher temperatures than other bat species, in my experience this is an unusually high temperature for a hibernating LHS bat.

This survey was carried out at the start of the hibernation period for bats. It is unknown therefore whether the numbers of hibernating LHS bats will increase or decrease throughout the winter. It is also unknown as to whether bats were hibernating beyond the point at which the tunnel could be surveyed.

The results of the bat detector emergence survey carried out during the Summer of 2022 indicated that 15 Lesser Horseshoe bats emerged from the Cellar entrance during one of the surveys undertaken. However, at no point have large concentrations of bat droppings been found in any particular location within the Cellars or Tunnel; scattered droppings only have been found or small concentrations (likely to be from individual bats only). This would seem to suggest that a maternity roost for LHS bats is not present in those areas surveyed. It is, however, possible that a maternity roost could

exist within the Tunnel beyond the point at which the survey could be safely undertaken.

10 Recommendations

10.1 A further bat hibernacula survey should be carried out in January/February 2023 of the Entrance Cellar, Back Cellar and Well area as well as the stretch of the Tunnel that has been surveyed so far. This will give a better indication of the numbers of bats using these spaces in which to hibernate during the optimal period of hibernation. Although it would be interesting to survey beyond this point this cannot be done as it is simply too unsafe to do so.

10.2 The Entrance Cellar, Back Cellar, Well passage and Tunnel need to be maintained as they represent an important roosting site for LHS bats in the local area.

10.3 Since all bat species and their roosts are protected by law, it will be necessary to obtain a **European Protected Species Mitigation licence from Natural England** prior to the commencement of any planned works which will have any impact upon these areas.

11 Limitations

11.1 Surveys of this type offer only snapshots of the site and take no account of possible seasonal differences or of species that might take up residence at a later date.

11.2 The findings of this study are valid for a period of 18 months from the date of assessment. If works have not commenced within this timeframe, the survey effort must be updated to establish whether there have been changes to the way bats utilise the roosts in the interim.

11.3 Not all of the targeted survey area could be surveyed for health & safety reasons.

12 References

Bat Conservation Trust (2016). *Bat Surveys – Good Practice Guidelines 3rd Edition*. London: Bat Conservation Trust.

Google Maps (2022). *Untitled* [Online] Available at: https://earth.google.com/web/search/street/@51.12959905,-2.74096644,17.20584033a,2169.28664495d,35y,0h,0t,0r/data=CigiJgokCaFVZj2V90lAET8E-jpT9klAGbJ65b9vmQXAIUzxYKEC1QXA

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Appendix I - Legislative Context

This section provides a brief summary of British wildlife legislation.

The Wildlife and Countryside Act, 1981 (as amended)

The main piece of legislation relating to nature conservation in Great Britain, which transposes into British law the Berne, Bonn and RAMSAR Conventions, and the European "Birds Directive" (drawn up by the European Community (EC) in response to the Berne Convention). This legislation covers protection of wildlife (birds, other animals and plants), Sites of Special Scientific Interest (SSSI's) (with some SSSI's also designated as Special Protection Areas (SPA's)), National Nature Reserves (NNR's) and RAMSAR sites (and also some other designations not strictly relevant to ecology, for example National Parks and Public Rights of Way, which are beyond the scope of this report).

The Conservation of Habitats and Species Regulations 2017 (as amended) & its Amendment (EU Exit) 2019 (The "Habitats Regulations")

The purpose of this legislation is to consolidate and update the original Conservation (Natural Habitats, &c.) Regulations 1994 ("the 1994 Regulations"). The objective of the Habitats Directive is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. The Directive lays down rules for the protection, management and exploitation of such habitats and species. The Habitats Regulations transpose the Habitats Directive in England, Wales and to a limited extent Scotland by ensuring that activities are carried out in accordance with the requirements of the Directive.

The Countryside and Rights of Way (CRoW) Act, 2000

This legislation applies to England and Wales only. It increases protection for SSSI's and strengthens protection for threatened species. It also specifies that it is the duty of Local Authorities to further the conservation of listed habitats and species (listed originally as *UK BAP priority habitats and species* but now covered by the *UK Post-2010 Biodiversity Framework*).

The Natural Environment and Rural Communities (NERC) Act, 2006

This legislation confers a legal duty on every public authority (including County, District and Parish Councils) to conserve biodiversity. Section 40(1) of the Act says, 'Every public authority must, in exercising its functions, have regard so far as it is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.' The duty came into force on 1st October 2006.

Appendix II – Site Location

Aerial view of survey site (indicated by red circle) showing its position in the wider landscape (Google Maps, 2022)

Appendix III - Photos

Fig. 4 Site of tunnel entrance behind railings

Fig. 5 Tunnel Entrance

Fig. 6 Entrance Cellar showing entry to Back cellar (middle) & Tunnel (lower right)

Fig.7 Entrance Cellar with pantry shelving

Fig. 8 Tunnel Entrance

Figs. 9 & 10 Back cellars

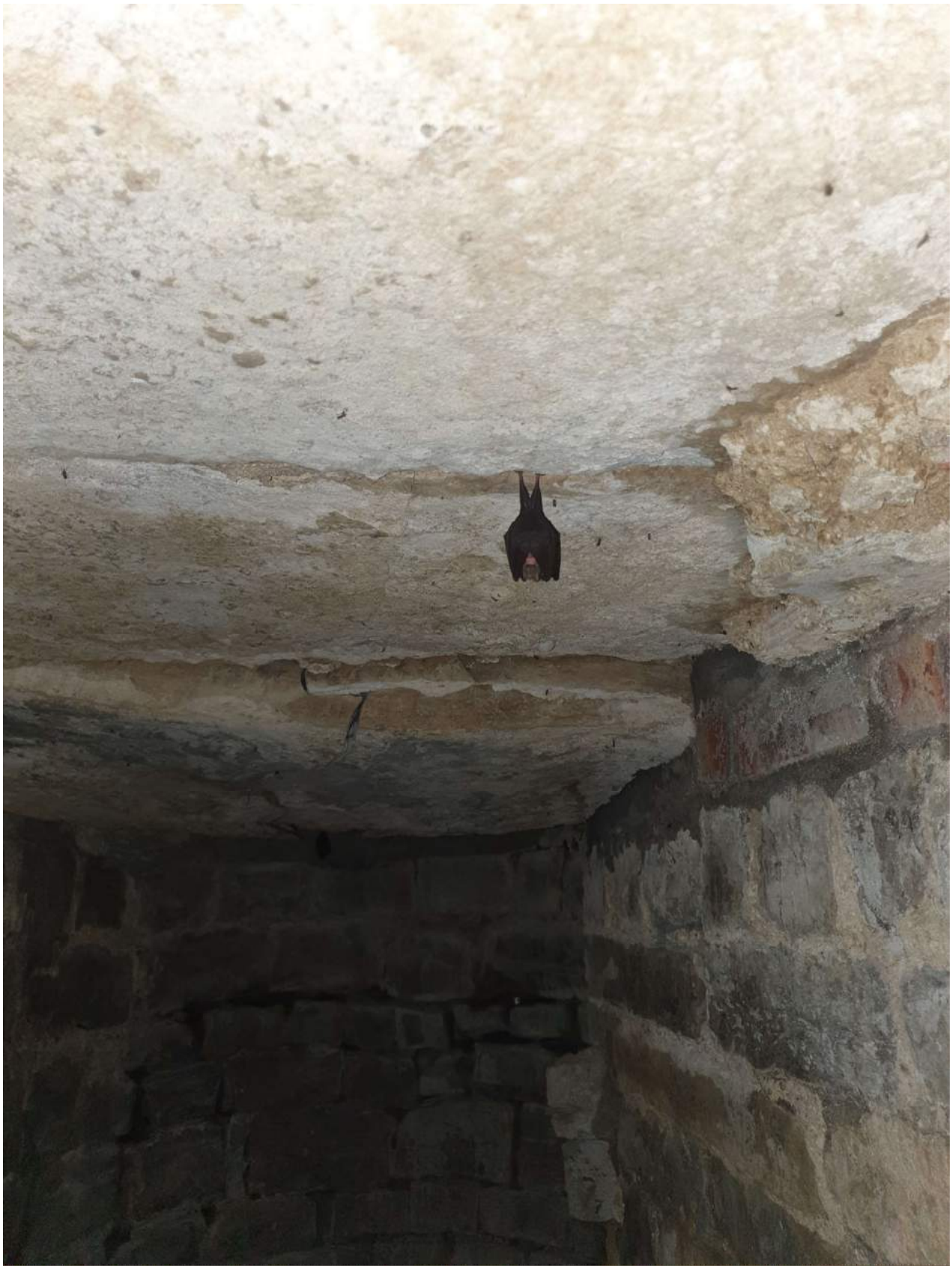

Fig.11 Well & Passage with two Lesser Horseshoe bats

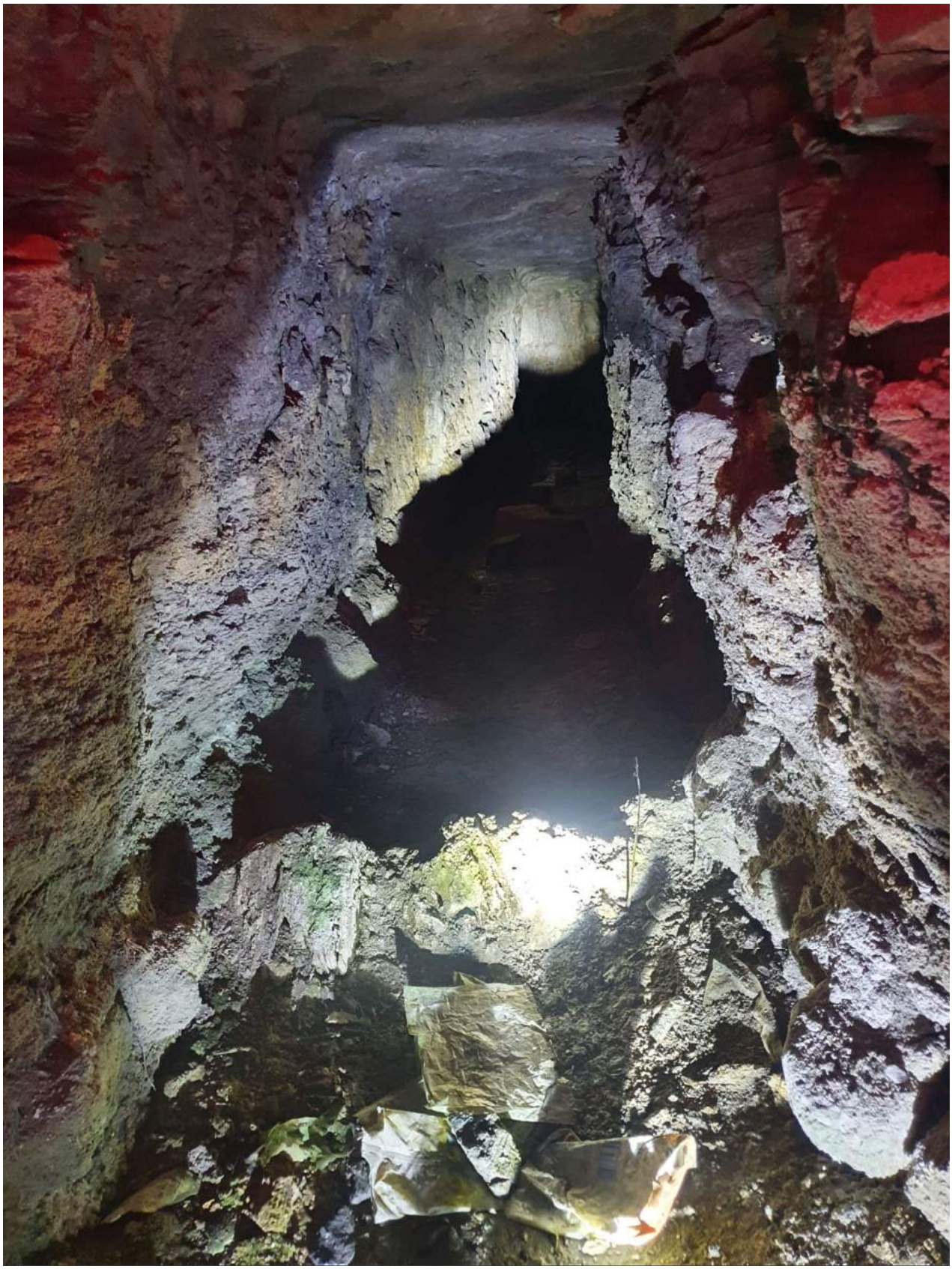

Fig.12 Lesser Horseshoe bat low on wall of tunnel 3m inside (lower left)

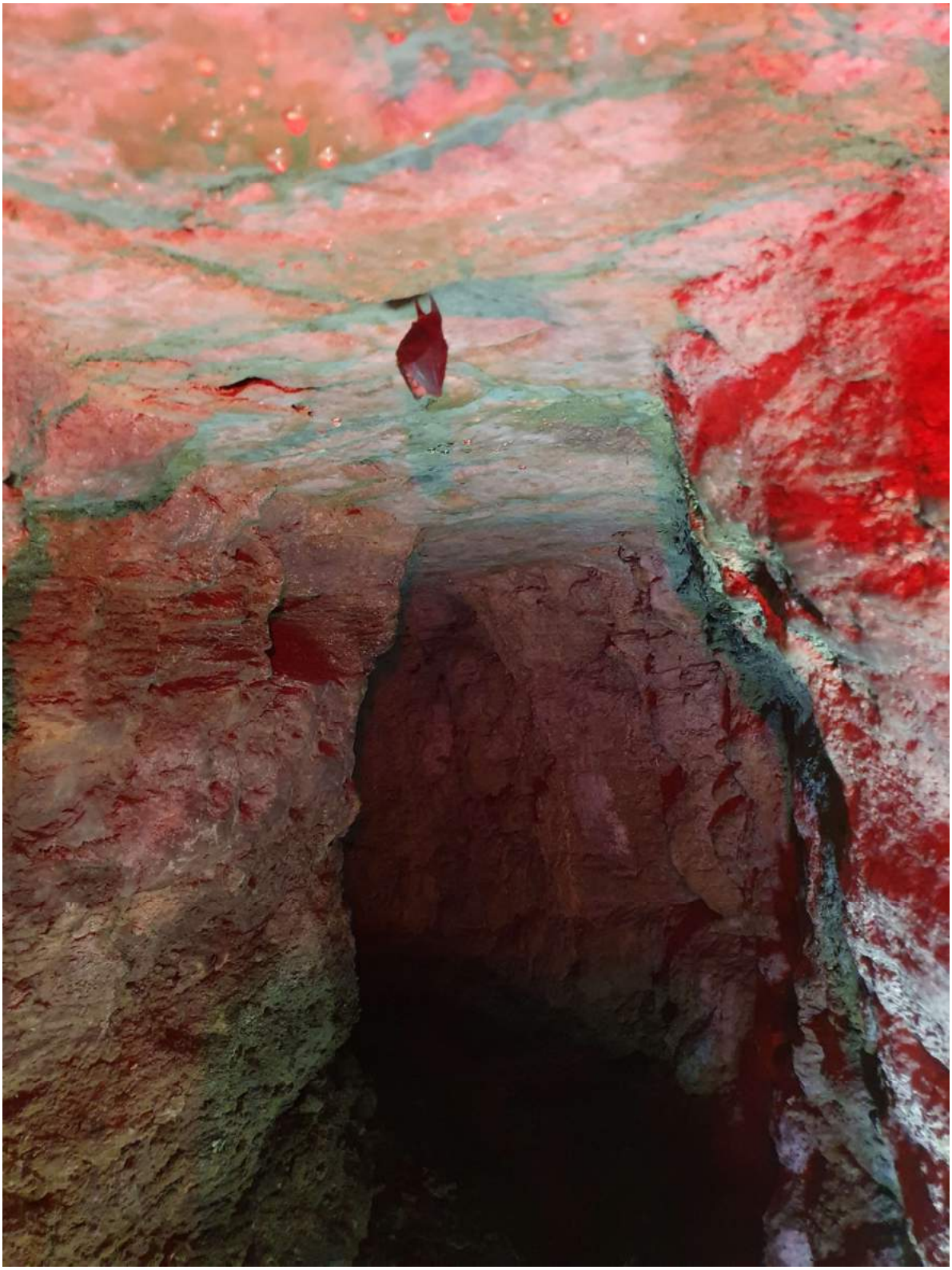

Fig. 13 Lesser Horseshoe bat 13m inside Tunnel

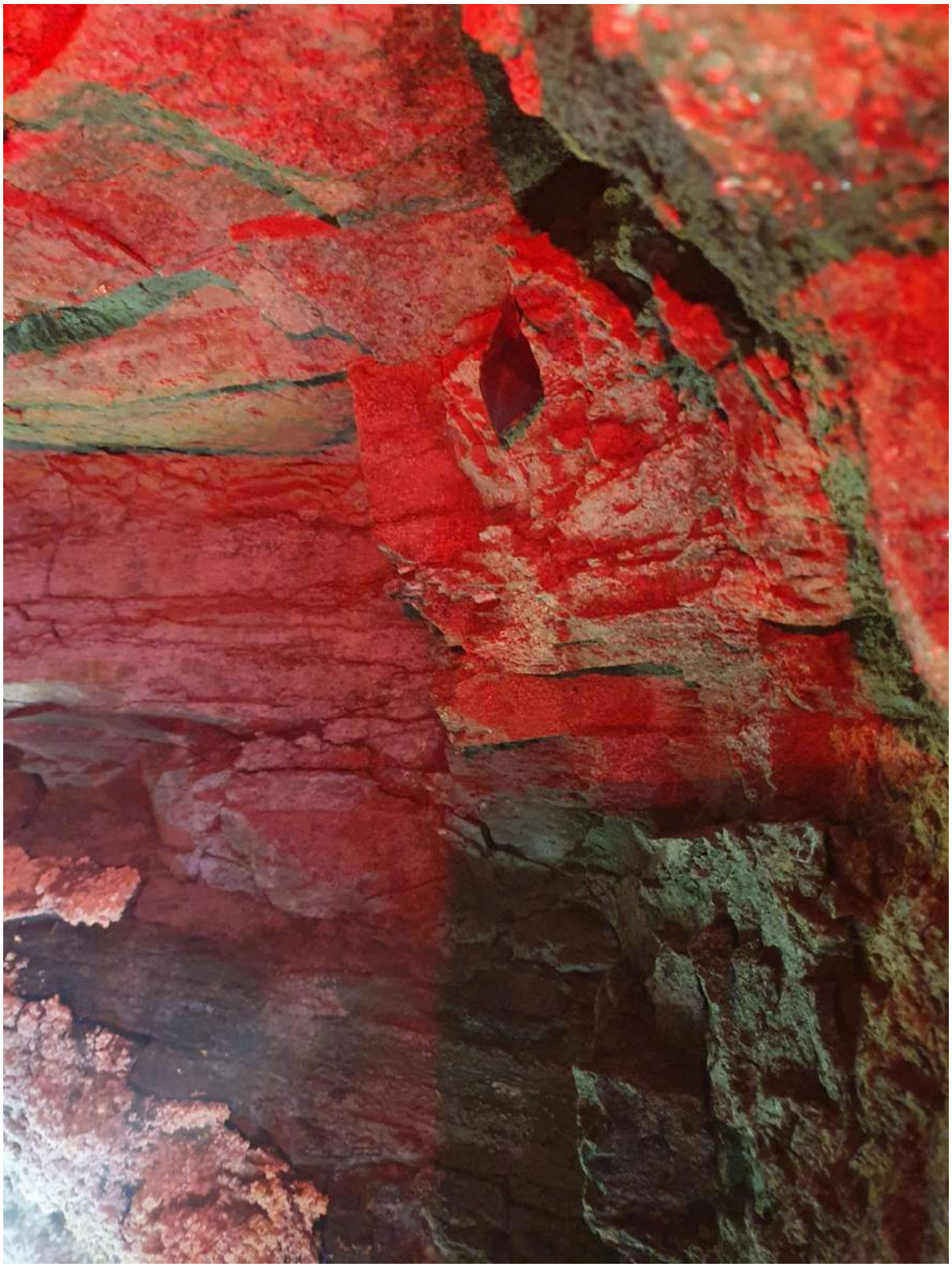

Fig.14 Lesser Horseshoe bat 23m inside Tunnel

Hibernacula bat survey of Tunnel, Cellars/Well, Link building roof voids, The Grange roof void and bat house

The Grange, Street

February 2023

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On behalf of:

The Alfred Gillet Trust

Client	The Alfred Gillet Trust
Project Name	The Grange, Street
File Reference	BHSRP-20230208-V001-TheGrange

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1 Summary

1.1 Simecology Ltd. was commissioned by the Alfred Gillett Trust to undertake a hibernacula bat survey of The Tunnel and Cellars which lie beneath the Link and Barn buildings at The Grange, as well as hibernacula surveys of the bat house and the roof voids of the Link Building and the Grange in order to establish their use by hibernating bats. The Barn and Hodinott's Cottage were not surveyed as neither will be subject to further development.

1.2 The assessment was carried out on 6th February 2023 in line with Bat Conservation Trust guidelines.

1.3 Previous bat mitigation works have been carried out at the site under an EPSM licence obtained in 2011 (see Background below).

1.4 In addition, a Preliminary Roost Assessment was carried out in July 2022, which focused on The Grange, the Link Building, the Barn, Tunnel & Cellars, Hodinott's Cottage and the Bat Roost. During this PRA evidence of roosting bats in the form of droppings was found in all of the buildings surveyed. A lesser horseshoe bat was found roosting in the Bat House. A**ll buildings / areas surveyed in July 2022 were confirmed as current, active bat roosts**.

1.5 **A Re-survey of the Cellars and Tunnel** was carried out in November 2022 as a result of the recommendations of the PRA undertaken in July 2022; i.e., that a survey carried out during winter months will provide additional information on the bat species present on site and will inform a suitable mitigation strategy to ensure the favourable conservation status of local bat populations is not affected by proposed works. During the PRA and Re-survey of the Cellars and Tunnel 5 torpid Lesser Horseshoe bats were found, 2 within the Well passage and 3 within the Tunnel.

1.6 Not all of the targeted survey area could be surveyed for health & safety reasons. The Tunnel was too unsafe to be surveyed along its entire length, which is unknown.

2 Introduction

Background

Simecology has carried out previous ecological works at The Grange site including surveys carried out in 2010 /11 prior to the development of the new shoe archive which included the refurbishment of The Grange and its roof and the refurbishment of the Link Building, the Barn and Hodinott's Cottage (not including their roofs, which were untouched). This work was carried out under EPSM licence 2011-2932, granted on 25th March 2011. Within the licence a new stand-alone bat roost was created on site next to the Gas House. During the refurbishment of The Grange mitigation was incorporated into the new roof which included a fly-in for Lesser Horseshoe bats and crevice access for other species.

A Preliminary Roost Assessment was carried out in July 2022, which focused on The Grange, the Link Building, the Barn, Tunnel & Cellar, Hodinott's Cottage and the Bat Roost. During this PRA a brief inspection only of the tunnel was possible from its entrance due to health & safety concerns. Please see Simecology report PRARP- 20220904-V001for details.

A Re-survey of the Cellars and Tunnel was carried out in November 2022 as a result of the recommendations of the PRA undertaken in July 2022; i.e., that a survey carried out during winter months will provide additional information on the bat species present on site and will inform a suitable mitigation strategy to ensure the favourable conservation status of local bat populations is not affected by proposed works. During the PRA and Re-survey of the Cellars and Tunnel 5 torpid Lesser Horseshoe bats were found, 2 within the Well passage and 3 within the Tunnel.

2.1 Simecology Ltd. was commissioned by the Alfred Gillett Trust to undertake a bat hibernacula survey of The Tunnel and Cellars which lie beneath the Link and Barn buildings at The Grange, as well as hibernacula surveys of the bat house and the roof voids of the Link Building and the Grange in order to establish their use by hibernating bats, to inform the need for further surveys where required, and to inform the proposed works with regard to any potential negative impacts on bats. The Barn and Hodinott's Cottage were not surveyed as neither will be subject to further development.

2.2 The assessment was carried out on 6th February 2023 in line with Bat Conservation Trust guidelines.

2.3 For the purposes of the survey, the areas beneath the Link and Barn were divided into three sections (The Entrance Cellar, The Back Cellar (including the Well) & the Tunnel).

2.4 Samples of bat droppings had been collected from these areas during the previous PRA carried out in July 2022 and were sent for DNA analysis. Bat droppings which had been found in both cellars, the well passage and the tunnel entrance were confirmed by DNA analysis to have come from Lesser Horseshoe bats.

2.5 A data search for protected sites and protected species records within 2 km of the site had also been commissioned from the Somerset Environmental Records Centre (SERC) and the results of this described in the PRA carried out in July 2022. In summary, the data search records confirmed that 11 species of bat are present within a 2-km radius of the site, including rarer species such as the Lesser and Greater Horseshoe bat.

3 Legislation

3.1 All species of bat, their breeding sites and resting places (roosts) are protected under Regulation 41 of The Conservation of Habitats and Species Regulations 2017 (as amended), The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, and Section 9 of the Wildlife and Countryside Act 1981 (as amended).

3.2 It is an offence for anyone to intentionally kill, injure or handle a bat, to possess a bat (whether live or dead), to disturb bats anywhere (roosts, flight lines or foraging areas), or to sell or offer a bat for sale without a licence. It is also an offence to damage, destroy or obstruct access to any place used by bats for shelter, whether they are present or not.

3.3 Development activities that could result in impacts to bats should avoid/minimise the likelihood of impacts occurring. If impacts are unavoidable, the works may need to be carried out under a European Protected Species (EPS) development licence.

Specific details of British wildlife legislation are provided in Appendix I.

4 Survey Details

The assessment was carried out during daylight hours on 6th February 2023 by licensed bat ecologist Simeon Smith (NE Licence number 2017-25128-CLS-CLS). Weather conditions during the survey are shown in Table 1.

Table 1 Survey timing and weather conditions

Date	Timing Start (end)	Outside Temp. (°C) Start (end)	Cloud cover[1] Start (end)	Wind[2] Start (end)	Rainfall[3] Start (end)	RH[4] %
06/02/23	09.40 (12.30)	5.2 (8.6)	2 (0)	1 (1)	0 (0)	53.7

[1] Estimated cloud cover of 0-8 where 0 = Sky completely clear, 4 = Sky half cloudy, 8 = Sky has complete cloud cover.
[2] Wind speed score of 0-12 against Beaufort scale where 0 = Calm, 2 = Light breeze, 4 = Moderate breeze, 6 = Strong breeze, 7 = High wind, 9 = Strong gale, 12 = Hurricane.
[3] Estimated precipitation intensity on scale of 0-5 where 0 = Dry, 1= Light drizzle, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential Rain.
[4] Relative Humidity

5 Site Location and Description

5.1 The Grange is located to the north of the urban area of Street, Somerset. The site's central Ordnance Survey grid reference is ST 48224 36940 and its postcode is BA16 0BB.

The site comprises a number of buildings of differing ages, areas of amenity grassland and hard standing, a walled orchard and several mature trees (Fig. 1). It is accessed via Farm Road off the A39, which runs to the north of the site.

Fig. 1 Aerial view of survey site, as indicated by red polygon (Google Maps, 2022)

The site is situated in a semi-industrial setting on a relatively flat plane with no appreciable aspect at 15 m above sea level. It is bordered to the north and northeast by the A39 and an area of car parking, to the east by the Clarks

Village retail complex, to the south by industrial/commercial premises, and to the west by housing and a further area of car parking.

5.2 The wider landscape comprises a mix of housing, residential gardens, commercial/industrial buildings, car parking and agricultural fields (see Appendix II). The site has fair to good connectivity with the wider landscape, with mature tree lines providing potential commuting and foraging opportunities for bats. An area of broadleaf woodland is located approximately 330 m northwest of the site, offering good bat foraging and roosting potential.

6 Building Descriptions

Please see previous Simecology reports for full building descriptions. The information here relates only to those parts of buildings surveyed on 6th February 2023

The Tunnel and Cellars

6.1 For the purposes of this report, the areas surveyed are described in three sections: The Entrance Cellar, the Back Cellar (& Well) and the Tunnel.

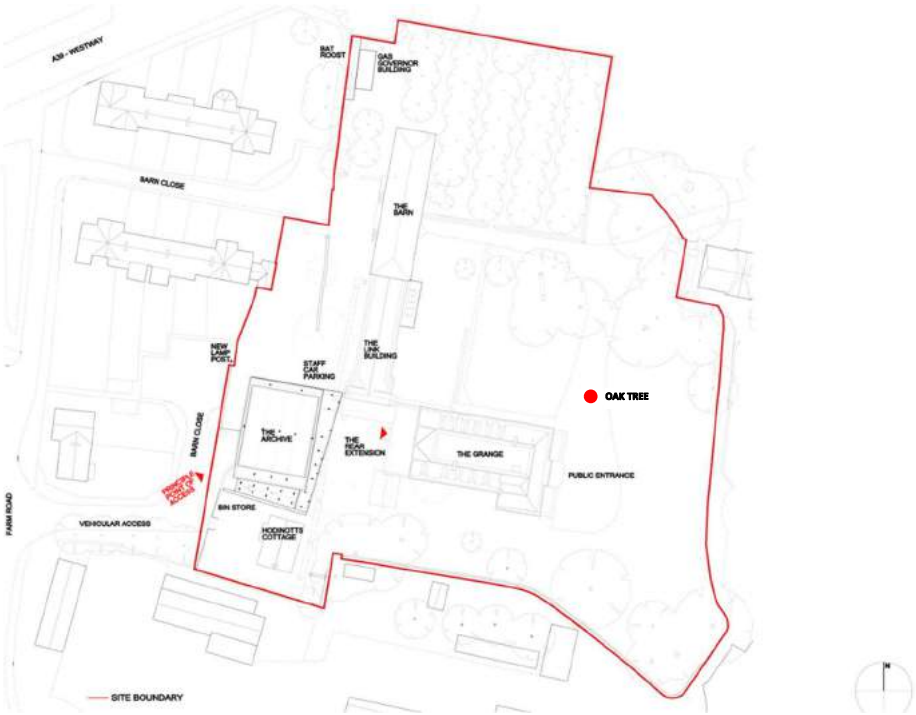

Fig. 2 Plan of buildings at The Grange

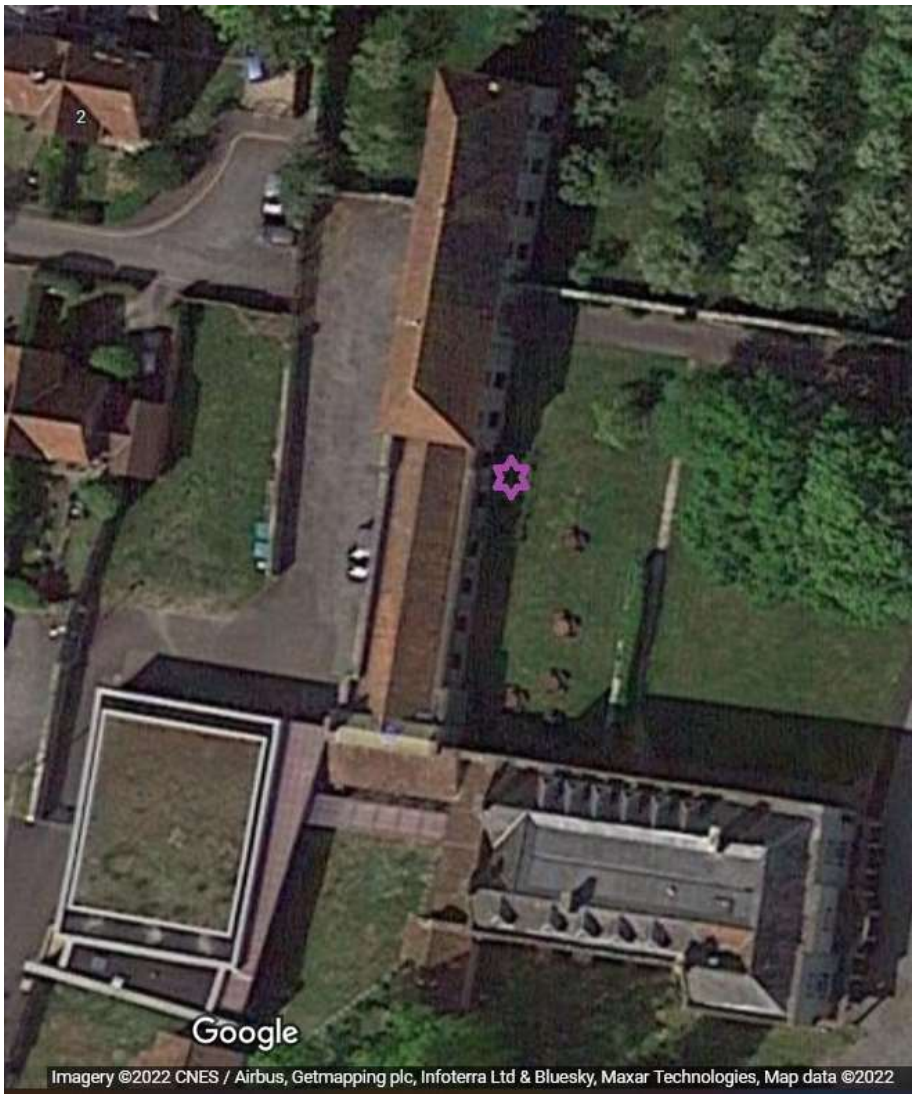

Fig.3 Site of Cellar & Tunnel entrance (Indicated by purple star)

6.2 The Cellars and Tunnel are accessed through an opening situated outside the Link Building on its eastern side at the point at which the Link Building adjoins The Barn (see Fig.3 above)

6.3 The basement consists of an Entrance Cellar (Figs 6 & 7), a covered Well area and passage (Fig. 8), a Back Cellar and a Tunnel entrance (Figs. 4 & 5). The Entrance Cellar has stone walls and ceiling with shelved stone pantry sections. The Back Cellar has stone walls and ceiling and is supported by metal girders (Figs. 9 and 10). Within this area there is a small passage containing a well which has been filled in with rubble. The Tunnel is carved out of natural stone. Its height is approximately 1.5m high x 1m wide at its entrance. The height of the tunnel decreases along its length. Internally there are small areas where the stone has collapsed. Rainwater ingress has caused some areas to become very muddy and damp The Tunnels length and purpose is unknown.

The Link Building

Internal inspection

6.4 Internally the Link Building comprises a number of small, interconnected rooms, a larger room and a corridor. The rooms are used variously for storage, as workrooms and as office space, and display painted plaster and stone walls. The rooms and corridor have suspended ceiling tiles, with the exception of two rooms that are used as a workshop, where the roof void is open and displays exposed timber and insulation panels.

6.5 A roof void is present over the larger room to the north of the building. The void is closed with a false ceiling and was found to be of modern timber construction with bitumen underfelt (Fig. 21).

6.6 The roof void above the southern end of the building was found to be of timber and steel construction, with corrugated PVC roofing sheets visible in some areas (Fig. 20)

The Grange

6.7 The second floor comprises approximately 14 unoccupied rooms, all of which are located within the roof void, and two areas of loft space at the eastern and western extremes of the building (Fig.22).

6.8 The eastern roof void is accessible via a door at the south-east corner. This section of the void is of timber construction, with exposed double purlins and ridge beams Bitumen underfelt is present in most areas, though wooden boarding and a lath and plaster construction are visible in some areas. Holes in the roof are present at the eastern end of the void, where an internal Georgian guttering system enters the roof. There is a bat fly-in on the roof's southern elevation.

6.9 The western roof void is accessed via a door at the western end of the building. It is of timber frame construction, with exposed timber beams and bitumen underfelt.

6.10 Long sections of roof void are present beneath the dormer windows along the southern and northern edges of the building. One section of panelling had been removed on the day of the survey, revealing a timber frame construction.

The Bat House

6.11 The building is of single-storey construction, with a timber-framed, ridged roof fitted with slate tiles and a bituminous felt underlay. The walls are a combination of solid stone and block work. A timber door is present on the south elevation.

6.12 Internally, the building comprises two sections separated by a blockwork and plywood wall. The southern section is open to the roof void, which displays exposed timbers, bituminous felt and sections of wire mesh. A plywood 'hot box' is present on the roof. The hot box has no floor and the underside of the roof is faced with bituminous felt fixed in place with timber batons.

6.13 The northern section is split into an upper and lower layer and is accessible via a plywood hatch. The lower layer displays a concrete ceiling at a height of approximately 1.8 m and contains a floor-to-ceiling plywood cupboard. The upper layer displays a roof of exposed timbers and bituminous felt.

7 Methodology

Hibernacula Surveys

7.1 Hibernacula surveys are carried out in accordance with the standard methodology set out in the Bat Conservation Trust's 'Good Practice Guidelines' (2016). Bats may hibernate in features such as roofs, voids, cracks, crevices, beams, lintels, trees and other features including underground structures such as caves, tunnels and quarries.

7.2 A hibernacula survey comprises a detailed visual inspection of the exterior and interior of a structure to look for torpid bats and/or evidence that bats are hibernating within the structure. Buildings are inspected systematically in daylight hours for features which might support hibernating bats. When necessary, a high-powered torch, endoscope and a ladder are used to access and explore these features. Observations are recorded and photographs taken as appropriate.

7.3 Air temperature and humidity measurements are recorded when bats are found to be hibernating.

8 Results

Hibernacula survey

Area	**Temperature** °C	**Relative Humidity** %
Entrance Cellar	10.1	79.6
Back Cellar	10.3	70.8
Tunnel Entrance	8.2	63.5
Link Bldg. void north	14.6	61.1

Link Bldg. void south	15.2	70.3
The Grange roof void	17.1	53.9
Bat House	10.7	69.6

Area	**Temperature °C**	**Relative Humidity %**	**No. of Bats**	**Bat Species**
Tunnel@approx 15m	13.4	62.3	1	LHS
Tunnel@approx 22m	12.2	74.0	1	LHS
Well area	11.3	71.5	2	LHS
Back Cellar (bottom of wall)	10.4	77.2	1	LHS
Back Cellar (hole in wall)	12.5	77.6	1	LHS
Bat House (rafters)	10.7	69.6	1	LHS

The Tunnel & Cellars

The Entrance Cellar

8.1 The Entrance Cellar is light and airy.

8.2 The entrance to the cellar is open and the stonework surrounding the entrance in bad repair.

8.3 No bats were found within this area on 6th February 2023 although a few bat droppings remain within this area (DNA sampled previously).

The Back Cellar & Well Passage

8.4 Scattered bat droppings remain throughout the Back Cellar with a more concentrated area of droppings (approx. 100) above the Well.

8.5 During this survey these areas were only very slightly warmer than the Entrance Cellar, with a higher humidity, but were much darker and with less air flow.

8.6 Four torpid Lesser Horseshoe bats were found in this area; two above the Well and two in the back cellar. One of these LHS bats was found near the base of a wall at approx. 30cm above ground level and the other in a small hole in the wall at approx. 2m. (Figs. 11-15)

The Tunnel

8.7 It was possible only to survey approximately the first 25m of the tunnel until conditions became too unsafe to proceed (confined space operatives would be needed beyond this point).

8.8 On this occasion the temperature within the tunnel decreased along its length. It is cool and dark. There is no airflow.

8.9 Two torpid Lesser Horseshoe bats were found along the surveyed length of the tunnel at approximately 15m (Fig.16) and 22m (Fig. 17).

The Bat House

8.10 One hibernating LHS bat was found within the bat house confirming that this structure is an active bat hibernation roost (Figs. 18 & 19).

The Link building and Grange roof voids

8.11 No hibernating bats were found in either the northern or southern Link building roof voids or the roof void of the Grange.

9 Interpretation of Results

This report should be read in conjunction with the Simecology Preliminary Roost Assessment report (PRARP- 20220904-V001) and the PRA of the Tunnel & Re-survey of the Cellar and Well report (BHSRP-20221203-V001)

The hibernacula survey carried out on 6th February 2023 confirmed that the Back Cellar & Well passage and Tunnel remain current, active bat hibernacula roosts for Lesser Horseshoe bats. The bat house is also an active LHS bat hibernacula roost.

Although no hibernating bats were found within the roof voids of the Link Building or the Grange it cannot be ruled out that these roof voids could support hibernating bats, which can secrete themselves in to features and be hard to detect e.g. within deep crevices, underneath roof tiles, roofing felt, membranes or beneath lead flashing etc.

There appears to be no airflow in the tunnel, however, unlike when surveyed previously, the temperature became cooler along its length, and it was less

humid. This is likely to be due to outside weather conditions (which were drier and colder than when surveyed previously).

There is a relatively stable humidity within the Back Cellar, Well passage and Tunnel, which contributes towards creating ideal hibernacula conditions for bats.

It is unknown as to whether bats were hibernating beyond the point at which the tunnel could be safely surveyed.

The results of the bat detector emergence survey carried out during the Summer of 2022 indicated that 15 Lesser Horseshoe bats emerged from the Cellar entrance during one of the surveys undertaken. However, at no point have large concentrations of bat droppings been found in any particular location within the Cellars or Tunnel; scattered droppings only have been found or small concentrations (likely to be from individual bats only). This would seem to suggest that a maternity roost for LHS bats is not present in those areas surveyed. It is, however, possible that a maternity roost could exist within the Tunnel beyond the point at which the survey could be safely undertaken.

10 Recommendations

10.1 The Entrance Cellar, Back Cellar, Well passage and Tunnel need to be maintained as they represent an important roosting site for LHS bats in the local area.

10.2 Since all bat species and their roosts are protected by law, it will be necessary to obtain a **European Protected Species Mitigation licence from Natural England** prior to the commencement of any planned works which will have any impact upon these areas.

11 Limitations

11.1 Surveys of this type offer only snapshots of the site and take no account of possible seasonal differences or of species that might take up residence at a later date.

11.2 The findings of this study are valid for a period of 18 months from the date of assessment. If works have not commenced within this timeframe, the survey effort must be updated to establish whether there have been changes to the way bats utilise the roosts in the interim.

11.3 Not all of the targeted survey area could be surveyed for health & safety reasons.

12 References

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Appendix I - Legislative Context

This section provides a brief summary of British wildlife legislation.

The Wildlife and Countryside Act, 1981 (as amended)

The main piece of legislation relating to nature conservation in Great Britain, which transposes into British law the Berne, Bonn and RAMSAR Conventions, and the European "Birds Directive" (drawn up by the European Community (EC) in response to the Berne Convention). This legislation covers protection of wildlife (birds, other animals and plants), Sites of Special Scientific Interest (SSSI's) (with some SSSI's also designated as Special Protection Areas (SPA's)), National Nature Reserves (NNR's) and RAMSAR sites (and also some other designations not strictly relevant to ecology, for example National Parks and Public Rights of Way, which are beyond the scope of this report).

The Conservation of Habitats and Species Regulations 2017 (as amended) & its Amendment (EU Exit) 2019 (The "Habitats Regulations")

The purpose of this legislation is to consolidate and update the original Conservation (Natural Habitats, &c.) Regulations 1994 ("the 1994 Regulations"). The objective of the Habitats Directive is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. The Directive lays down rules for the protection, management and exploitation of such habitats and species. The Habitats Regulations transpose the Habitats Directive in England, Wales and to a limited extent Scotland by ensuring that activities are carried out in accordance with the requirements of the Directive.

The Countryside and Rights of Way (CRoW) Act, 2000

This legislation applies to England and Wales only. It increases protection for SSSI's and strengthens protection for threatened species. It also specifies that it is the duty of Local Authorities to further the conservation of listed habitats and species (listed originally as *UK BAP priority habitats and species* but now covered by the *UK Post-2010 Biodiversity Framework*).

The Natural Environment and Rural Communities (NERC) Act, 2006

This legislation confers a legal duty on every public authority (including County, District and Parish Councils) to conserve biodiversity. Section 40(1) of the Act says, 'Every public authority must, in exercising its functions, have regard so far as it is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.' The duty came into force on 1st October 2006.

Appendix II – Site Location

Aerial view of survey site (indicated by red circle) showing its position in the wider landscape (Google Maps, 2022)

Appendix III - Photos

Fig. 4 Site of tunnel entrance behind railings

Fig. 5 Tunnel Entrance

Fig. 6 Entrance Cellar showing entry to Back cellar (middle) & Tunnel (lower right)

Fig.7 Entrance Cellar with pantry shelving

Fig. 8 Tunnel Entrance

Figs. 9 & 10 Back cellars

Fig.11 Well area with two Lesser Horseshoe bats

Fig.12 Back cellar (southern wall area; location of LHS bat in hole in wall; see below for detail)

Fig.13 Lesser Horseshoe bat in hole in the wall of Back Cellar

Fig.14 Back Cellar (southern end) indicating wall behind which LHS bat was found (see detail below)

Fig.15 LHS bat in Back Cellar approx. 30cm from base of wall

Fig.16 LHS bat in tunnel at approx. 15m

Fig.17 LHS bat in tunnel at approx. 22m

Fig.18 LHS in bat house

Fig.19 Detail of LHS bat in bat house

Fig.20 Link building southern roof void

Fig.21 Link building northern roof void

Fig.22 The Grange roof void

Bat Survey Report

Alfred Gillet Trust, Street

April 2023

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On behalf of:
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File Reference	BDSRP-20230410-V001-TheGrange

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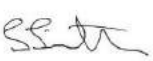
Reviewer 2	Simeon Smith		Principal Ecologist	10/04/23

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1 Summary

1.1 Simecology Ltd was commissioned by the Alfred Gillet Trust to undertake a suite of bat emergence and re-entry surveys of the Barn, Link Building, Tunnel, and Hodinotts Cottage at the Alfred Gillett Trust located off Barn Close, Street, Somerset, in support of a planning application relating to the proposed renovation and extension of the Link Building and Tunnel. The *Preliminary Roost Assessment: The Grange, Street* (Simecology, 2022) (PRARP-20220904-V001) report confirmed that all buildings were bat roosts via the presence of bat droppings.

1.2 The data search identified that the Somerset Wetlands National Nature Reserve (NNR) is located 1.4km to the north-west of the site. In addition, there were 60 records of 11 species of bat within a 2km radius of the site.

1.3 **A total of nine bat roosts used by five species were identified during the bat emergence and re-entry surveys.** This included one roost within the Tunnel, four roosts within the Barn, three roosts within the Link Building and one roost within Hodinotts Cottage. Species included brown long-eared bat, common pipistrelle, soprano pipistrelle, lesser horseshoe bat, and serotine. The most significant bat roost was a lesser horseshoe bat satellite maternity roost located within the Tunnel. All other roosts were used by low numbers of bats.

1.4 To undertake the works lawfully, a Natural England Bat Mitigation Licence will be required prior to any licensable works commencing. A comprehensive mitigation and compensation plan is provided, which includes the installation of a new bat loft over a new plant room; numerous bat boxes; soffit boxes; access gaps within the soffits; and two new entrances to the Tunnel.

1.5 New external lighting should be avoided if possible. If new external lighting is required, it should be designed such that it is sensitive to bats, and the proposed light specification should be reviewed by a suitably experienced ecologist prior to installation.

1.6 The findings of this study are valid for a period of 18 months from the date of assessment. If works have not commenced within this timeframe, the survey effort must be updated to establish whether there have been changes to the way bats may use the buildings in the interim.

2 Introduction

2.1 Simecology Ltd was commissioned by the Alfred Gillet Trust to undertake a suite of bat emergence and re-entry surveys of the Barn, Link Building, Tunnel, and Hodinotts Cottage at the Alfred Gillett Trust located off Barn Close, Street, Somerset, in support of a planning application relating to the proposed renovation and extension of the Link Building and Tunnel, future renovation of the Barn, and future renovation of Hodinotts Cottage.

2.2 The site comprises the Barn, Link Building, Tunnel, and Hodinotts Cottage. Other buildings situated within the ownership boundary include the Grange and the Archive. The current planning application is for the renovation and extension of the Link Building in order to create a new shoe museum.

2.3 A preliminary roost assessment, undertaken by Simecology in July 2022, confirmed that the Barn, Link Building, Tunnel, and Hodinotts Cottage support bat roosts through the presence of bat droppings (Simecology, 2022). DNA analysis of several samples of the bat droppings was undertaken and identified that the following bat species were present:

- The Barn: Serotine (*Eptesicus serotinus*);
- The Link Building: Brown long-eared bat (*Plecotus auritus*);
- The Tunnel: Lesser horseshoe bat (*Rhinolophus hipposideros*); and
- Hodinotts Cottage: Brown long-eared bat.

2.4 As such, a total of three bat emergence and re-entry surveys of the Barn, Link Building, Tunnel, and Hodinotts Cottage were undertaken to characterise the bat roosts. This survey report should be read in conjunction with the *Preliminary Roost Assessment: The Grange, Street* (Simecology, 2022) report.

3 Legislation

3.1 All species of bat, their breeding sites and resting places (roosts) are protected under Regulation 41 of The Conservation of Habitats and Species Regulations 2017 (as amended), The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, and Section 9 of the Wildlife and Countryside Act 1981 (as amended).

3.2 It is an offence for anyone to intentionally kill, injure or handle a bat, to possess a bat (whether live or dead), to disturb bats anywhere (roosts, flight lines or foraging areas), or to sell or offer a bat for sale without a licence. It is also an offence to damage, destroy or obstruct access to any place used by bats for shelter, whether they are present or not.

3.3 Development activities that could result in impacts to bats should avoid/minimise the likelihood of impacts occurring. If impacts are unavoidable, the works may need to be carried out under a European Protected Species (EPS) development licence.

3.4 Specific details of British wildlife legislation are provided in Appendix II.

4 Survey Details

4.1 Simecology Ltd undertook emergence and re-entry surveys during July, August, and September 2022. All surveys were undertaken by licensed bat ecologist Lewis Hillier, BSc (Hons), ACIEEM; with an appropriate number of suitably experienced ecologists; and infrared cameras. The surveys were undertaken on the following dates:

- 25th July 2022: Tunnel and Hodinotts Cottage
- 26th July 2022: Barn and Link Building
- 17th August 2022: Hodinotts Cottage
- 18th August 2022: Barn, Link Building, and Tunnel
- 31st August 2022: Hodinotts Cottage
- 1st September 2022: Barn, Link Building, and Tunnel

4.2 Survey timing and weather details can be found within Appendix III along with the survey results.

5 Site Description

5.1 The Alfred Gillet Trust is located within the northern portion of Street in central Somerset. The site's central Ordnance Survey grid reference is ST 48225 36968 and its postcode is BA16 0BQ.

5.2 The site comprises the Barn, Link Building, Tunnel, and Hodinotts Cottage situated within the ownership boundary of the Alfred Gillet Trust (Figure 1). Elsewhere within the curtilage of the property are

other buildings, most notably the Grange and Archive. The property supports a mature orchard, several mature scattered trees, and amenity grassland. In addition, there is a bat mitigation and compensation roost located within the northern portion of the site which was constructed as part of a Natural England Bat Mitigation Licence for previous works to the Grange. The site is accessed via Barn Close, a no-through road which runs east to west from Farm Road.

5.3 The wider curtilage of the property lies between the A39 public highway to the north, Clark's Village retail hub to the east and south, and private dwellings with their curtilages to the west. The site is situated within relatively flat terrain that is slightly raised from the surrounding Somerset Levels.

5.4 The nature of the wider landscape is predominantly rural, comprising agricultural fields, interspersed with hedgerows and pockets of broadleaf woodland. A large portion of the surrounding landscape is located within the floodplain of the Somerset Levels which supports an extensive network of ditches and wetland habitats. The town of Glastonbury lies approximately 1.5km to the north-east of the site. A large wetland within Sharpham, Ashcott Corner, and Shapwick is located approximately 1.5km to the north-west of the site. A large area of semi-natural broadleaf woodland is situated approximately 3.5km south-east of the site.

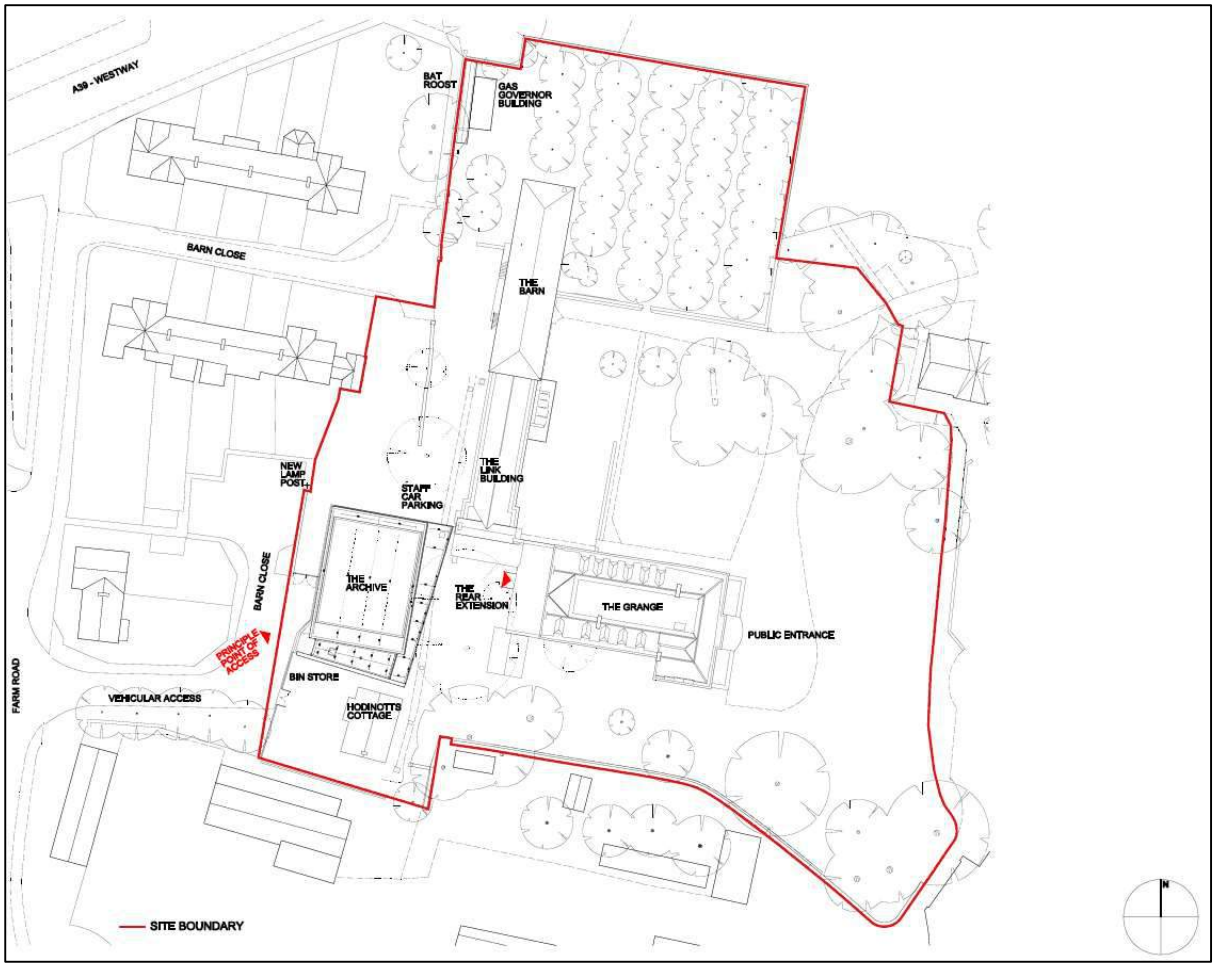


Figure 1 *Ownership boundary of the wider site.*

6 Building Description

The Barn

6.1 The Barn is a two-storey building constructed with stone and mortar walls supporting a hipped roof covered with a mixture of clay double Roman tiles, pantiles, plain tiles, vented sealed ridge tiles, and sealed hip tiles (Figures 2-3). There is a large red brick chimney present on the northern pitch of the roof, and timber fascias present across all elevations. The Barn adjoins the Link Building at the southern elevation.

Figure 2 *The north and west elevations of the Barn*

Figure 3 *The east and south elevations of the Barn*

The Link Building

6.2 The Link Building is a single storey building constructed with stone and mortar walls supporting a double pitched roof with a cross gable and monopitched extension at the southern extent of the building. The roof is covered with clay double Roman tiles and sealed ridge tiles (Figures 4-5). There is a red brick chimney present at the southern extent of the roof, and timber bargeboards and fascias are present across the eastern, western and southern elevations. There are parapets capped with stone located on the eastern and western elevations. The Link Building adjoins the Barn at the southern elevation, the Tunnel at the eastern elevation, and the Grange at the south-western corner of the building.

Figure 4 *The west elevation of the Link Building*

Figure 5 *The south elevation of the Link Building*

The Tunnel

6.3 The Tunnel is an underground structure located to the east of the Link Building and extending underneath it. The entrance is south facing and fenced-off from the grounds (Figure 6). A 3D scan of the Tunnel shows that internally, there is a square-shaped room, a well, and a tunnel which extends northwards for an unknown length (Figure 7). It is unknown how far the Tunnel extends or if there are any other access points. It is considered to be unsafe to access the Tunnel.

Figure 6 *The entrance of the Tunnel*

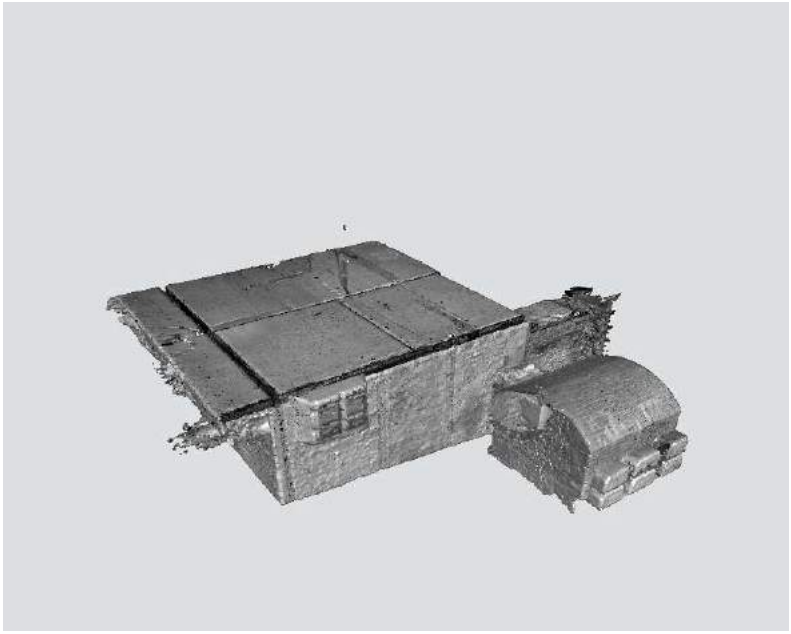


Figure 7 *A 3D scan of the Tunnel*

Hodinotts Cottage

6.4 Hodinotts Cottage is a single storey building constructed with stone and mortar walls supporting a double pitched roof covered with clay double Roman tiles and decorative sealed ridge tiles (Figures 8-9). There is a red brick chimney present at the southern extent of the roof, and timber bargeboards, fascias, and soffits are present across the eastern, western and southern elevations.

Figure 8 *The north and east elevations of Hodinotts Cottage*

Figure 9 *The south and west elevations of Hodinotts Cottage*

6.5 For detailed building descriptions of the buildings, refer to the *Preliminary Roost Assessment: The Grange, Street* (Simecology, 2022) report. The report identified numerous potential roost features suitable for bats, including lifted tiles, cracked tiles, lifted flashing, lifted ridge and hip tiles, gaps at the eaves, gaps between timber louvres, gaps around doors, and gaps behind fascia boards.

7 Methodology

Data search

7.1 A data search was undertaken during the preliminary roost assessment (Simecology, 2022). The data search included information from the Somerset Environmental Records Centre (SERC) comprising bat records within a 2-km radius of the centre of the survey site. The aim of the data search was to collate and review existing information on the biodiversity status of the site and the surrounding area to enhance understanding of the site's ecological value, and assess the potential impact of the proposed works.

Bat Emergence and Re-entry Surveys

7.2 Bat emergence and re-entry surveys comprise a team of surveyors and/or infrared cameras observing all elevations of the building with the objective of recording any bat roosting behaviour observed. For emergence surveys, the surveys commenced 15 minutes before sunset and continued for a minimum of 90 minutes after sunset. For re-entry surveys, the surveys commenced 90 minutes before sunrise and continued until 15 minutes after sunrise. The surveys were undertaken in suitable weather conditions and in accordance with the standard methodology (Bat Conservation Trust, 2016).

7.3 Surveyors and infrared cameras were equipped with either a Pettersson M500-384u, Peersonic RPA3, or Echo Meter Touch 2 Pro bat detector. In addition, surveyors were in radio contact with each other throughout the survey. The infrared cameras were deployed with infrared flood lights and Nightfox XB5 infrared torches. Footage was played back using VLC media player and analysed after the surveys. Recordings of bats were analysed using Kaleidoscope Pro and species were identified with the aid of the most recent literature (Middleton et al. 2014, Russ 2021, Russ 2012).

8 Results

Data Search

8.1 The Somerset Wetlands National Nature Reserve (NNR) is located 1.4km to the north-west of the site. This site is designated for its wetland habitats, bird populations, and invertebrate diversity. No other statutory designated sites are located within the 2km search radius.

8.2 The site is located within a Site of Special Scientific Interest (SSSI) Impact Risk Zone (IRZ). However, the proposal doesn't fall within any of the planning proposals which require consultation between the Local Planning Authority and Natural England.

8.3 Priority habitats recorded within a 2km radius of the site include:

- Coastal and floodplain grazing marsh
- Deciduous woodland
- Traditional orchard

8.4 A search of the MAGIC database identified three records of granted Natural England Bat Mitigation Licences within 2km of the site. One licence is located within the site and already known, details of which are provided below. The other licences are located approximately 0.7km and 1.6km to the south-west. The licenced bat species included brown long-eared bat (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), and lesser horseshoe bat (*Rhinolophus hipposideros*).

8.5 There was a Natural England Bat Mitigation Licence for the site which was active between the years 2011 and 2013. The licence was for works to the Grange located within the wider curtilage of the site. The licence was for the destruction of a resting place of common pipistrelle, soprano pipistrelle, brown long-eared bat, and lesser horseshoe bat (Natural England reference: EPSM2011-2932). A bespoke bat mitigation and compensation roost associated with this licence is located within the northern portion of the wider site (Figure 1).

8.6 The data search in the preliminary roost assessment returned 60 records of bats within 2km of the site. Records of a minimum of 11 species were returned with some species not identified to species level.

8.7 Detailed data search results can be found in the *Preliminary Roost Assessment: The Grange, Street* (Simecology, 2022) report.

Bat Emergence and Re-entry Surveys

8.8 **A total of nine bat roosts used by five species were identified during the bat emergence and re-entry surveys.** This included one roost within the Tunnel, four roosts within the Barn, three roosts within the Link Building and one roost within Hodinotts Cottage (Table 1, Figure 17). Species included brown long-eared bat, common pipistrelle, soprano pipistrelle, lesser horseshoe bat, and serotine (*Eptesicus serotinus*).

8.9 The Tunnel supported a likely satellite maternity roost of lesser horseshoe bat. This assessment is based on a higher number of bats being present during August and September surveys, which is after the main maternity period during June and July. In addition, a high proportion of re-entry flights during the August survey may indicate mothers returning to the roost to feed young and suggests the presence of a satellite maternity roost.

8.10 All other bat roosts were used by individual/low numbers of bats. See Table 1, Figures 10 – 17, and Appendix III for further details of all bat roosts identified within the site.

8.11 No brown long-eared bat roosting behaviour associated with the Link Building was identified during the surveys, however the *Preliminary Roost Assessment: The Grange, Street* (Simecology, 2022) report identified brown long-eared bat droppings within the roof void. As such, it was considered likely that Link Building supports an occasional transitional roost for brown long-eared bat based on the presence of bat droppings, and lack of evidence during the emergence and re-entry surveys.

8.12 No evidence of roosting bat was recorded during the emergence and re-entry surveys of Hodinotts Cottage (Figure 18, Appendix III). However, the *Preliminary Roost Assessment: The Grange, Street* (Simecology, 2022) report identified brown long-eared bat droppings within the roof void. As such, it was considered likely that Hodinotts Cottage supports an occasional transitional roost for brown long-eared bat based on the presence of bat droppings, and lack of evidence during the emergence and re-entry surveys.

8.13 On average, moderate levels of general commuting and foraging bat activity was recorded during the surveys. A total of six species were recorded within the vicinity of the site during the surveys including brown long-eared bat, common pipistrelle, soprano pipistrelle, noctule (*Nyctalus noctula*), serotine, and lesser horseshoe bat.

8.14 During the surveys, it was noted that motion activated LED security lights were located on the west elevation of the Barn, Link Building, and on the eastern elevation of the Archive near Hodinotts Cottage. The timers were short (less than one minute) and had a negligible impact on the surveys.

***Table 1** Bat roosts identified (Table continues)*

Building	Species	Max count of bats	Roost type	Location of roost	Location of access point
Tunnel	Lesser horseshoe bat	15	Satellite Maternity	Unknown - likely perched within tunnel roof	Tunnel entrance (Figure 10)
Barn	Brown long-eared bat	1	Day	Likely within the exposed timber truss system of the roof void	Beneath a lifted tile on the southern pitch (Figure 11)
	Soprano pipistrelle	1	Day	Likely between the roof tiles and roof lining	Gap at the eaves of the eastern elevation (Figure 12), and a gap below the end hip tile on the south-west corner (Figure 13)
	Common pipistrelle	1	Day	Likely between the roof tiles and roof lining	A gap below the end hip tile on the south-west corner (Figure 13)
	Serotine	1	Day	Likely between the roof tiles and roof lining	Emerged from a gap underneath a fascia located on the western elevation (Figure 14)
Link Building	Soprano pipistrelle	2	Day	Likely between the roof tiles and roof lining	Likely from beneath a lifted tile on the eastern pitch (Figure 15)
	Common pipistrelle	1	Day	Likely between the roof tiles and roof lining	Underneath a lifted tile on the western pitch of the Rear Extension (Figure 16)
	Brown Long-eared bat	1	Occasional transitional	Likely within the exposed timber truss system	Likely accessed via gaps in the lifted roof tiles
Hodinotts Cottage	Brown long-eared bat	1	Occasional transitional	Likely within the exposed timber truss system	Likely accessed via gaps in the lifted roof tiles

Figure 10 *The lesser horseshoe bat day roost access point at the Tunnel entrance*

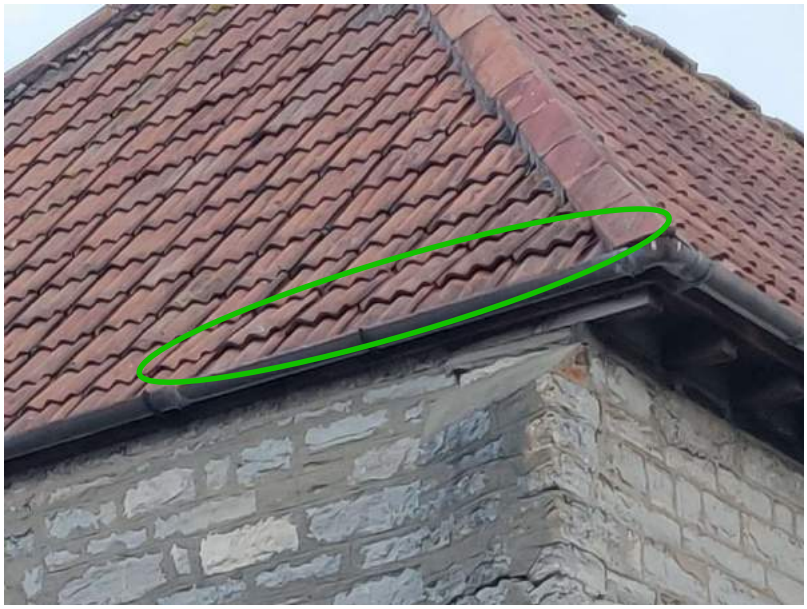


Figure 11 *The brown long-eared bat day roost access point on the southern pitch of the Barn beneath a lifted tile*

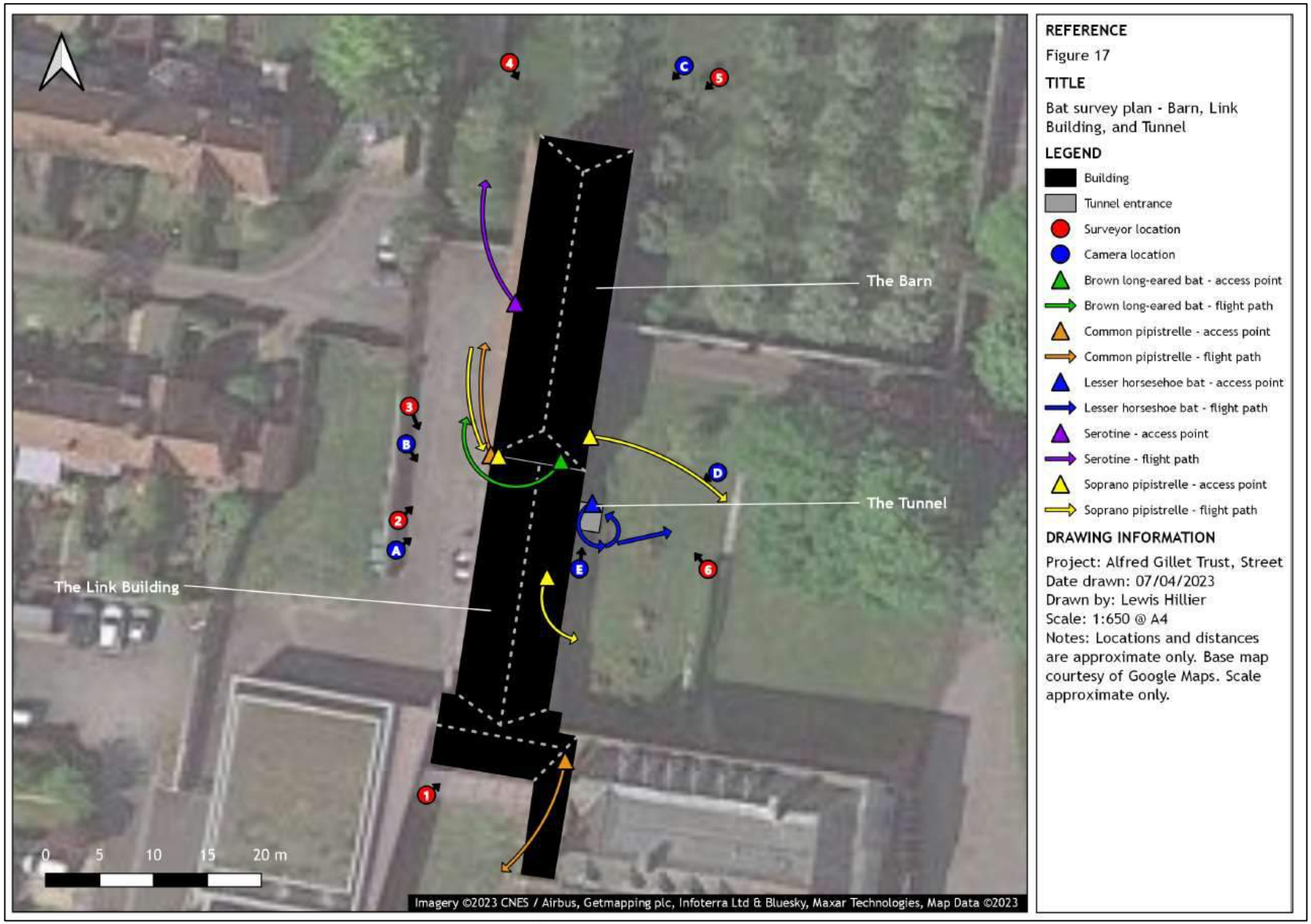
Figure 12 *The location of the soprano pipistrelle day roost access point at the eaves on the eastern elevation of the Barn*

Figure 13 *The location of the common pipistrelle, and soprano pipistrelle day roost access point located below the end hip tile on the south-west corner of the roof of the Barn.*

Figure 14 *The location of the serotine day roost access point located behind a fascia on the western elevation of the Barn*

Figure 15 *The location of the soprano pipistrelle day roost access point located on the eastern pitch of the Link Building (precise location unknown)*

Figure 16 *The location of the common pipistrelle day roost access point located below a lifted tile on the western pitch of the roof of the Rear Extension*


The Barn
The Tunnel
The Link Building
0 5 10 15 20 m
Imagery ©2023 CNES / Airbus, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies, Map Data ©2023
REFERENCE
Figure 17
TITLE
Bat survey plan - Barn, Link Building, and Tunnel
LEGEND
Building
Tunnel entrance
Surveyor location
Camera location
Brown long-eared bat - access point
Brown long-eared bat - flight path
Common pipistrelle - access point
Common pipistrelle - flight path
Lesser horsesehoe bat - access point
Lesser horseshoe bat - flight path
Serotine - access point
Serotine - flight path
Soprano pipistrelle - access point
Soprano pipistrelle - flight path
DRAWING INFORMATION
Project: Alfred Gillet Trust, Street
Date drawn: 07/04/2023
Drawn by: Lewis Hillier
Scale: 1:650 @ A4
Notes: Locations and distances are approximate only. Base map courtesy of Google Maps. Scale approximate only.


8
7
Hodinotts Cottage
0 2 4 6 8 m
Imagery ©2023 CNES / Airbus, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies, Map Data ©2023
REFERENCE
Figure 18
TITLE
Bat survey plan - Hodinotts Cottage
LEGEND
Building
Surveyor location
DRAWING INFORMATION
Project: Alfred Gillet Trust, Street
Date drawn: 07/04/2023
Drawn by: Lewis Hillier
Scale: 1:250 @ A4
Notes: Locations and distances are approximate only. Base map courtesy of Google Maps. Scale approximate only.

9 Interpretation of Results

Bats

9.1 The bat surveys indicate that the Barn, Link Building, Tunnel, and Hodinotts Cottage support a total of nine bat roosts used by five bat species. This report relates to the proposed works impacting the Link Building and Tunnel. Future proposed works to the Barn and Hodinotts Cottage are unknown. As such, further assessment of impacts to the bat roosts within the Barn and Hodinotts Cottage are not included within this report.

9.2 The Link Building supports a common pipistrelle day roost, soprano pipistrelle day roost, and brown long-eared bat occasional transitional roost, all used by low numbers of bats. The Tunnel supports a lesser horseshoe bat satellite maternity roost used by up to 15 bats. In the absence of suitable mitigation, the proposed works have the potential to destroy all bat roosts within the Link Building and Tunnel and injure/kill bats during the proposed works (Table 5). As such, a Natural England bat mitigation licence will be required along with a suitable mitigation and compensation plan in order to undertake the proposed works.

Table 5 *Potential impacts to identified bat roosts within the Link Building and Tunnel*

Building	Species	Max count of bats	Roost type (roost reference)	Potential impacts to roost
Link Building	Soprano pipistrelle	2	Day	Roost loss owing to removal of the roof structure
	Common pipistrelle	1	Day	Roost loss owing to removal of the roof structure
	Brown Long-eared bat	1	Occasional transitional	Roost loss owing to removal of the roof structure
Tunnel	Lesser horseshoe bat	15	Satellite maternity	Roost loss if Tunnel entrance is not maintained.

9.3 Overall, the site is considered to have a moderate conservation significance in relation to bats, owing to the presence of a satellite maternity roost of a rarer species (lesser horseshoe bat). Therefore, the bat roosts are considered to be important at the regional level. Provided that suitable mitigation and compensation is included within the design, it is considered to be unlikely that the works will have a negative impact on bats at the regional level.

9.4 General bat activity within close proximity to the buildings was considered to be moderate on average throughout the surveys. The proposed works will not directly impact any commuting or foraging habitat. However, it is unknown whether there will be any additional external lighting of the site associated with the proposed development. Any new external lighting will require careful consideration to ensure there will be no negative impacts on bat activity within the vicinity of the site, and to ensure that no bat roost entrances are subject to new light spill. Providing any new external lighting is sensitive to bats and appropriately designed, no impacts to foraging and commuting bat activity is predicted.

10 Recommendations

Bats

10.1 To undertake the works lawfully, a Natural England Bat Mitigation Licence will be required prior to any licensable works commencing. The licence must include provisions for a common pipistrelle day roost, soprano pipistrelle day roost, a brown long-eared bat occasional transitional roost, and lesser horseshoe bat satellite maternity roost. All bat roosts within the Link Building will be destroyed. The lesser horseshoe bat satellite maternity roost within the Tunnel will be retained but modified.

10.2 An application for a Mitigation Licence will only be considered by Natural England if all consents necessary for the proposed works are in place and any conditions relating to wildlife have been discharged.

10.3 Natural England usually have a 30 working day turnaround time for licence applications, and some licence applications are charged according to Natural England's fees.

10.4 The proposed works will be undertaken as follows as a minimum:

- The licensable works will be undertaken between the dates of the 1st October – 30th November, or the 1st March – 30th April to avoid sensitive periods for bats. Works must be undertaken during suitable weather conditions for bats to be active;
- Prior to any works affecting the bat roosts, a pre-works inspection will be undertaken by the supervising ecologist. Torch light and an endoscope will be used to search for any bats present in suitable features;

- A temporary exclusion of the lesser horseshoe bat roost in the Tunnel may be required prior to the proposed works as advised by the Named Ecologist;
- A toolbox talk will be provided by the ecologist to all workers involved with the licensable works before any works commence. The toolbox talk will detail where bats are likely to be found within the site, the legislation relevant to bats, the method statement that must be followed in order to protect bats, and the procedure to follow in the event that a bat is found. A record of the attendees will be kept by the ecologist;
- Soft demolition techniques will be used to dismantle sections of the buildings where bats may be found (as advised by the ecologist). The ecologist will search for the presence of bats as works proceed. Roof tiles will be removed with a lifting motion rather than sliding to avoid injuring any bats beneath them. Tiles will be carefully inspected for the presence of bats prior to discarding them. Roof battens, roof lining, fascias, bargeboards, and soffits will all be removed carefully with the potential for bats to be present in mind;
- Alternative bat roosts will be provided including: Two crevice-style bat boxes (or similar) located on a nearby tree in the event that soprano pipistrelle, or common pipistrelle are discovered; and one cavity-style bat box (or similar) placed on suitable tree in the event that brown long-eared bat is discovered; and
- In the event that a bat is discovered, the ecologist will capture the bat. The bat will be assessed for its condition, if it is healthy, it will be placed inside an alternative roost. If the bat is assessed as in a poor condition or is injured, the bat will be promptly taken into care by a qualified bat carer and later released when it is healthy.

10.5 A new roof void (the “bat loft”) suitable for brown long-eared bat and lesser horseshoe bat will be constructed to provide compensation for the loss of roof void roosting opportunities (see Appendix I). The bat loft will be installed above a new plant room which will be constructed at the western elevation of the Link Building. The dimensions of the bat loft will measure approximately 6.8m long, 5.1m wide, and 2.7m high with an internal volume of approximately 43.7m^3 (existing roof voids total 142.3m^3). The bat loft will be constructed with an exposed timber truss system and lined with either bitumen 1F roofing felt or TLX Batsafe Breather Membrane. The roof will be monopitched and covered with suitable roof tiles. A fly-through entrance measuring a minimum of 300mm wide by 300mm high will be installed on the western pitch which faces suitable habitat for commuting bats to reach the wider landscape and will remain dark. Internally, there will be a baffle around the entrance to block light and deter birds from entering the bat loft. Two hot boxes constructed with plywood measuring a

minimum of 1000mm long with an entrance at the base measuring 300mm wide and 300mm long will be installed in the bat loft to provide a variety of microclimates. Four suitable Schwegler 1FF bat boxes (or similar) will be installed internally at the gable ends to provide a variety of microclimates and features suitable for vespertilionid bat species. A suitable access hatch will be installed to allow surveyor access for future monitoring by bat licenced ecologists.

10.6 To provide compensation and enhancement features for common pipistrelle and soprano pipistrelle, four Vivara Pro build-in woodstone bat tubes (or similar) will be installed externally on the southern gable end of the new bat loft as high as possible. Two will be placed adjacent together such that the roosting spaces connect to each other (Appendix I). A hole 5cm wide by 2cm high will be created in the back of each of the bat boxes allowing access into the bat loft. To provide further external roosting opportunities, three Wildcare Soffit Bat Boxes will be installed within the eaves at the western elevation of the new bat loft. Other crevice features will be created in the soffits by creating three holes 5cm wide by 2cm high against the wall which will allow bat crawling access into the roof void.

10.7 The Tunnel lesser horseshoe bat satellite maternity roost will be retained, however the access point and entrance to the tunnel will be destroyed by the proposed works. The proposed mitigation and compensation is to provide two new access points to the Tunnel (Appendix I). The main entrance will be created on the western elevation of the link building. It will comprise a continuous vertical chute contructed with stone or blockwork from the Tunnel to the surface extending a minimum of 1.5m above ground level. The chute must be a minimum of 500mm wide by 500mm in depth. At the top of the chute will be a grille with horizontal bars suitable for bat access. The overall area of the entrance point should be a minimum of 300mm wide by 300mm high. Underneath the bat access grille will be a lockable door for surveyor access. In addition, another access point will be created on the eastern elevation of the Link Building in a similar location to the existing access point. This will be similar in construction to the other new access point, but the chute will be narrower (300mm wide by 300mm in depth) and there will be no surveyor access. The primary function of this access point is to provide ventilation to the Tunnel.

10.8 New external lighting should be avoided if possible. If any new external lighting is necessary, it should follow the advice set out by

the Institution of Lighting Professionals (ILP) (ILP, 2018). If the lighting is shown to be minimal, utilises LEDs with a warm-white spectrum, is downward facing, pointing away from any bat roost entrances (in particular the new bat loft and tunnel entrance located on the western elevation of the Link Building), and controlled by short timers triggered by motion sensors, then impacts will be reduced. Prior to the installation of new external lighting, the proposed light specification should be reviewed by a suitably experienced ecologist to ensure there will be no negative impacts to bats.

11 Limitations

11.1 Surveys of this type offer only 'snapshots' of the site and the roosting bat activity associated with the dates of the surveys. It is not an exhaustive investigation of the use of the site by bats.

11.2 With regard to the acoustic detection of bats during bat surveys, it should be noted that the wide ranges of echolocation intensity exhibited between individual bat species makes it probable that echolocation sampling will favour those species with high intensity echolocation calls. Furthermore, some bat species cannot be identified with absolute certainty from their ultrasonic calls. Therefore, bat sonogram recordings are identified to the most accurate level appropriate based on the information available.

11.3 Observations of long-eared bat species (*Plecotus* sp.) were all treated as brown long-eared bat given the results of the DNA results from the preliminary roost assessment, and that there were no records of grey long-eared bat (*Plecotus austriacus*) within 2km of the site (Simecology, 2022).

11.4 The findings of this study are valid for a period of 18 months from the date of assessment. If works have not commenced within this timeframe, the survey effort must be updated to establish whether there have been changes to the way bats may use the buildings in the interim.

12 References

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12.6 Middleton, N., Froud, A. and French, K. (2014). *Social Calls of the Bats of Britain and Ireland*. Exeter: Pelagic Publishing.

12.7 Russ, J. (2021). *Bat Calls of Britain and Europe: A Guide to Species Identification*. Exeter: Pelagic Publishing.

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12.9 Simecology (2022). *Preliminary Roost Assessment: The Grange, Street*. Bath: Simecology.

Appendix I – Site Plans and Bat

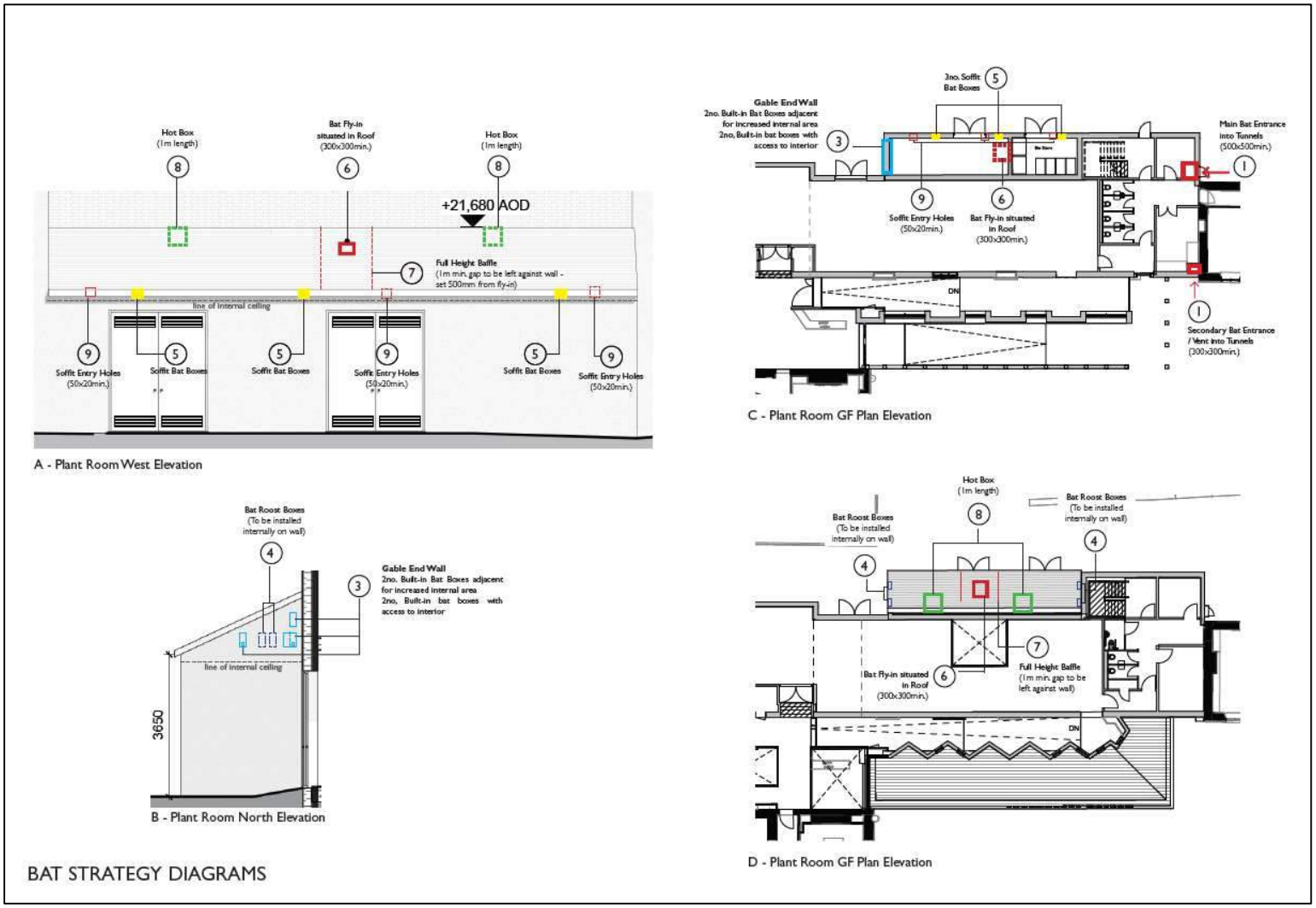

***Figure 19**. Bat mitigation and compensation plan.*

Appendix II – Legislative Context

This section provides a brief summary of British wildlife legislation.

The Wildlife and Countryside Act, 1981 (as amended).

The main piece of legislation relating to nature conservation in Great Britain, which transposes into British law the Berne, Bonn and RAMSAR Conventions, and the European "Birds Directive" (drawn up by the European Community (EC) in response to the Berne Convention). This legislation covers protection of wildlife (birds, other animals and plants), Sites of Special Scientific Interest (SSSI's) (with some SSSI's also designated as Special Protection Areas (SPA's)), National Nature Reserves (NNR's) and RAMSAR sites (and also some other designations not strictly relevant to ecology, for example National Parks and Public Rights of Way, which are beyond the scope of this report).

The Conservation of Habitats and Species Regulations 2010 (The "Habitats Regulations").

The purpose of this legislation is to consolidate and update the original Conservation (Natural Habitats, &c.) Regulations 1994 ("the 1994 Regulations"). The objective of the Habitats Directive is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. The Directive lays down rules for the protection, management and exploitation of such habitats and species. The Habitats Regulations transpose the Habitats Directive in England, Wales and to a limited extent Scotland by ensuring that activities are carried out in accordance with the requirements of the Directive.

The Countryside and Rights of Way (CRoW) Act, 2000.

This legislation applies to England and Wales only. It increases protection for SSSI's and strengthens protection for threatened species. It also specifies that it is the duty of Local Authorities to further the conservation of listed habitats and species (listed originally as *UK BAP priority habitats and species* but now covered by the *UK Post-2010 Biodiversity Framework*).

The Natural Environment and Rural Communities (NERC) Act, 2006.

This legislation confers a legal duty on every public authority (including County, District and Parish Councils) to conserve biodiversity. Section 40(1) of the Act says, 'Every public authority must, in exercising its functions, have regard so far as it is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.' The duty came into force on 1st October 2006.

Appendix III – Bat Emergence and Re-entry Survey Results

The Barn and Link Building

Table 3. Bat emergence survey results on the 26th July 2022.

SURVEY DETAILS					
Date	26/07/2022	**Temperature range (°C)**	17-16	**Precipitation description**	None
Sunset time	21:07	**Wind range (mph)**	8-10		
Survey duration	20:52-22:37	**Cloud cover range (%)**	0		

OBSERVATIONS OF INTEREST			
Time	**Species**	**No. of bats**	**Description of observations**
21:37-21:56	Lesser horseshoe bat	1	Light sampling was recorded at the Tunnel entrance followed by the emergence of one bat (Figures 10 and 17).
21:45	Brown long-eared bat	1	Emerged from underneath a lifted tile located on the southern pitch of the Barn and commuted north (Figures 11 and 17).
21:48	Soprano pipistrelle	1	Emerged from a gap at the eaves located on the eastern elevation of the Barn and commuted east (Figures 12 and 17).
22:00	Serotine	1	Emerged from a gap underneath a fascia located on the western elevation of the Barn and commuted east (Figures 14 and 17).

SUMMARY

- **The survey identified one brown long-eared bat day roost; one soprano pipistrelle day roost; and one serotine day roost within the Barn. The survey incidentally identified one lesser horseshoe bat day roost in the Tunnel.**
- The survey recorded the following species active within the vicinity of the site: common pipistrelle, soprano pipistrelle, noctule, serotine, and lesser horseshoe bat. Overall, activity levels were considered to be moderate. Common pipistrelle and soprano pipistrelle foraging activity was recorded to the north and east of the Barn and Link buildings.
- Surveyors were positioned in surveyor locations 1, 2, 5, and 6; and infrared cameras were positioned in camera locations B and D (Figure 17).

Table 4. Bat emergence survey results on the 18th August 2022.

SURVEY DETAILS						
Date	18/08/2022	**Temperature range (°C)**	20-17	**Precipitation description**	None	
Sunset time	20:27	**Wind range (mph)**	8			
Survey duration	20:12-21:57	**Cloud cover range (%)**	100			
OBSERVATIONS OF INTEREST						
Time	**Species**	**No. of bats**	**Description of observations**			
20:45	Soprano pipistrelle	2	Emerged from eastern pitch of the Link Building, likely from beneath a lifted tile and commuted east (Figures 15 and 17).			
20:54	Common pipistrelle	1	Emerged from underneath a lifted tile on the western pitch of the Rear Extension and commuted east (Figures 16 and 17).			
20:59	Common pipistrelle	1	Emerged from underneath the end hip tile located at the south-western corner of the roof of the Barn and commuted north (Figure 13 and 15).			
SUMMARY						
• **The survey identified one soprano pipistrelle day roost within the Link Building and one common pipistrelle day roost within the Barn. The survey incidentally identified one common pipistrelle day roost in the Rear Extension.** • The survey recorded the following species active within the vicinity of the site: common pipistrelle, soprano pipistrelle, noctule, serotine, long-eared bat species, and lesser horseshoe bat. Overall, activity levels were considered to be moderate. Common pipistrelle and soprano pipistrelle foraging activity was recorded to the north and east of the Barn and Link buildings. • Surveyors were positioned in surveyor locations 1, 3, and 6; and infrared cameras were positioned in camera locations A, C, and D (Figure 17).						

Table 5. Bat re-entry survey results on the 1st September 2022.

SURVEY DETAILS						
Date	01/09/2022	**Temperature range (°C)**	15	**Precipitation description**	None	
Sunrise time	06:24	**Wind range (mph)**	7-8			
Survey duration	04:54-06:39	**Cloud cover range (%)**	50-90			
OBSERVATIONS OF INTEREST						
Time	**Species**	**No. of bats**	**Description of observations**			
06:05	Soprano pipistrelle	1	Several mock landing attempts were made before the bat re-entered the roof of the Barn underneath the end hip tile located at the south-western corner (Figures 13 and 17).			
SUMMARY						
• **The survey identified one soprano pipistrelle day roost within the Link Building.** • The survey recorded the following species active within the vicinity of the site: common pipistrelle, soprano pipistrelle, noctule, long-eared bat species, and lesser horseshoe bat. Overall, activity levels were considered to be low. • Surveyors were positioned in surveyor locations 1, 2, 4, and 6; and infrared cameras were positioned in camera locations B, and D (Figure 17).						

The Tunnel

Table 6. Bat emergence survey results on the 25th July 2022.

SURVEY DETAILS					
Date	25/07/2022	**Temperature range (°C)**	17-16	**Precipitation description**	None
Sunset time	21:08	**Wind range (mph)**	10-9		
Survey duration	20:53-22:38	**Cloud cover range (%)**	90-100		

OBSERVATIONS OF INTEREST			
Time	**Species**	**No. of bats**	**Description of observations**
21:15	Lesser horseshoe bat	1	Light sampling at the Tunnel entrance (Figure 14 and 17).
21:22			
21:25			
21:28			
21:30 - 21:34		2	
21:35		2	Emerged from the Tunnel entrance (Figure 14 and 17).
21:37			
21:39		1	Light sampling at the Tunnel entrance (Figure 14 and 17).
21:43		1	Re-entered the Tunnel (Figure 14 and 17).
21:44		2	Emerged from the Tunnel entrance (Figure 14 and 17).
21:45		1	Re-entered and shortly after emerged from the Tunnel (Figure 14 and 17).

SUMMARY

- **The survey identified one lesser horseshoe bat day roost used by three bats in the Tunnel.**
- The survey recorded the following species active within the vicinity of the Tunnel: common pipistrelle, soprano pipistrelle, and lesser horseshoe bat. Overall, activity levels were considered to be moderate. Common pipistrelle and soprano pipistrelle activity was dominant.
- One infrared camera was positioned in camera location E (Figure 17).

Table 7. Bat emergence survey results on the 18th August 2022.

SURVEY DETAILS					
Date	18/08/2022	**Temperature range (°C)**	20-17	**Precipitation description**	None
Sunset time	20:27	**Wind range (mph)**	8		
Survey duration	20:12-21:57	**Cloud cover range (%)**	100		

OBSERVATIONS OF INTEREST			
Time	**Species**	**No. of bats**	**Description of observations**
20:23	Lesser horseshoe bat	1	Light sampling at the Tunnel entrance (Figure 14 and 17).
20:27			
20:41			
20:44			
20:47			
20:48 – 20:49		2	Emerged from the Tunnel entrance (Figure 14 and 17).
20:50 - 20:53		3	Light sampling at the Tunnel entrance (Figure 14 and 17).
20:53 – 21:08		13	Emerged from the Tunnel entrance (Figure 14 and 17).
21:09		1	Re-entered the Tunnel (Figure 14 and 17).
21:09		1	Emerged from the Tunnel entrance (Figure 14 and 17).
21:10		1	Re-entered the Tunnel (Figure 14 and 17).
21:11		1	Emerged from the Tunnel entrance (Figure 14 and 17).
21:20		1	Re-entered the Tunnel (Figure 14 and 17).
21:41		1	
21:44		1	
21:51		1	Emerged from the Tunnel entrance (Figure 14 and 17).
21:52		1	Re-entered the Tunnel (Figure 14 and 17).
21:58		1	Emerged from the Tunnel entrance (Figure 14 and 17).

SUMMARY

- **The survey identified one lesser horseshoe bat maternity roost used by 15 bats in the Tunnel.**
- The survey recorded the following species active within the vicinity of the Tunnel: common pipistrelle, soprano pipistrelle, noctule, and lesser horseshoe bat. Overall, activity levels were considered to be moderate. Common pipistrelle and soprano pipistrelle activity was dominant.
- One infrared camera was positioned in camera location E (Figure 17).

Table 8. Bat re-entry survey results on the 1st September 2022.

SURVEY DETAILS					
Date	01/09/2022	**Temperature range (°C)**	15	**Precipitation description**	None
Sunrise time	06:24	**Wind range (mph)**	7-8		
Survey duration	04:30-06:39	**Cloud cover range (%)**	50-90		

OBSERVATIONS OF INTEREST			
Time	**Species**	**No. of bats**	**Description of observations**
04:39	Lesser horseshoe bat	1	Emerged from the Tunnel entrance (Figure 14 and 17).
05:01		1	Re-entered the Tunnel (Figure 14 and 17).
05:02		1	
05:03		1	
05:19		2	
05:22		1	
05:24		1	
05:28		1	
05:39		2	
05:47		1	
05:55		1	
05:55		3	Light sampling at the Tunnel entrance (Figure 14 and 17).
06:00-06:05		3	
06:26		1	

SUMMARY

- **The survey identified one lesser horseshoe bat maternity roost used by 12 bats in the Tunnel.**
- The survey recorded the following species active within the vicinity of the Tunnel: common pipistrelle, soprano pipistrelle, noctule, and lesser horseshoe bat. Overall, activity levels were considered to be low. Common pipistrelle and soprano pipistrelle activity was dominant.
- One infrared camera was positioned in camera location E (Figure 17).

Hodinotts Cottage

Table 9. Bat emergence survey results on the 25th July 2022.

SURVEY DETAILS					
Date	25/07/2022	**Temperature range (°C)**	17-16	**Precipitation description**	None
Sunset time	20:53	**Wind range (mph)**	10-9		
Survey duration	20:53-22:38	**Cloud cover range (%)**	90-100		

OBSERVATIONS OF INTEREST			
Time	**Species**	**No. of bats**	**Description of observations**
N/A	N/A	N/A	N/A

SUMMARY

- **The survey identified no roosting bat activity within Hodinotts Cottage.**
- The survey recorded the following species active within the vicinity of the site: common pipistrelle, soprano pipistrelle, and noctule. Overall, activity levels were considered to be low-moderate.
- Surveyors were positioned in surveyor locations 7 and 8 (Figure 18).

Table 10. Bat emergence survey results on the 17th August 2022.

SURVEY DETAILS					
Date	17/08/2022	**Temperature range (°C)**	18-16	**Precipitation description**	None
Sunset time	20:29	**Wind range (mph)**	6-5		
Survey duration	20:14-21:59	**Cloud cover range (%)**	0		

OBSERVATIONS OF INTEREST			
Time	**Species**	**No. of bats**	**Description of observations**
N/A	N/A	N/A	N/A

SUMMARY

- **The survey identified no roosting bat activity within Hodinotts Cottage.**
- The survey recorded the following species active within the vicinity of the site: common pipistrelle, soprano pipistrelle, lesser horseshoe bat, serotine, and noctule. Overall, activity levels were considered to be low.
- Surveyors were positioned in surveyor locations 7 and 8 (Figure 18).

Table 11. Bat re-entry survey results on the 31st August 2022.

SURVEY DETAILS					
Date	31/08/2022	**Temperature range (°C)**	15 - 14	**Precipitation description**	None
Sunrise time	06:24	**Wind range (mph)**	7		
Survey duration	04:53-06:38	**Cloud cover range (%)**	0-20		

OBSERVATIONS OF INTEREST			
Time	**Species**	**No. of bats**	**Description of observations**
N/A	N/A	N/A	N/A

SUMMARY

- **The survey identified no roosting bat activity within Hodinotts Cottage.**
- The survey recorded the following species active within the vicinity of the site: common pipistrelle, soprano pipistrelle, and noctule. Overall, activity levels were considered to be low.
- Surveyors were positioned in surveyor locations 7 and 8 (Figure 18).

Badger Search Survey Report

The Grange, Street

August 2022

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On behalf of:
The Alfred Gillet Trust

Client	The Alfred Gillet Trust
Project Name	The Grange, Street
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1 Summary

1.1 Simecology Ltd. was commissioned by the Alfred Gillet Trust to carry out a badger survey at The Grange, Street, in August 2022 ahead of proposed development works at the site.

1.2 A walkover survey and subsequent monitoring survey confirmed the presence of one active sett within the site that is currently being used by two badgers.

1.3 As the proposed works will result in the loss of the sett, a development licence in respect to badgers will be required from Natural England to enable badgers to be excluded from the sett prior to works commencing. This can only be applied for once full planning permission is in place.

1.4 The client has requested that a four-chamber artificial sett should be built on site to compensate for the loss of the natural sett. This will be created at a suitable location within the site.

1.5 The development design should ensure continued connectivity for badgers across the site, particularly to foraging areas recorded in the north and south of the site.

1.6 Badger foraging habitat present on site should be retained and enhanced as part of proposed works.

1.7 During the construction phase, working methods should be adopted to minimise the risk of disturbance, injury or mortality of badgers within development areas.

2 Introduction

2.1 Simecology Ltd. was commissioned by the Alfred Gillet Trust to carry out a badger survey at The Grange, Street, in support of a planning application relating to proposed development works at the site.

2.2 The aim of the survey was to determine the presence of badger onsite and inform any mitigation that may be required.

2.3 A walkover survey was carried out on 15th August 2022 in line with best practice guidelines to inspect the site and surrounding area for evidence of badger activity.

2.4 Camera traps were deployed for 21 days at the entrance of any badger setts identified during the walkover survey that showed signs of recent use.

2.5 A stick survey was carried out on one entrance to a badger sett which showed no signs of recent use.

3 Legislation

3.1 Badgers and badger setts are protected in England and Wales under the Protection of Badgers Act 1992. Under the Act it is an offence to:

- wilfully kill, injure, take or attempt to kill, injure or take a badger;
- possess a dead badger or any part of a badger;
- cruelly ill-treat a badger;
- use badger tongs in the course of killing, taking or attempting to kill a badger;
- dig for a badger;
- sell, or offer for sale, or control any live badger;
- mark, tag or ring a badger; and
- interfere with a badger sett by:
- damaging a sett or any part thereof;
- destroying a sett;
- obstructing access to a sett;
- causing a dog to enter a sett; or
- disturbing a badger while occupying a sett.

3.2 The 1992 Act defines a badger sett as “any structure or place which displays signs indicating current use by a badger”.

3.3 Badgers are also protected under the Wildlife and Countryside Act 1981 (as amended) and have some protection under the Natural Environment and Rural Communities Act 2006.

3.4 Any works that may lead to the disturbance of badgers is illegal without licence from Natural England. Offences against badgers can carry a prison sentence of up to six months and an unlimited fine.

4 Survey Details

4.1 The survey was carried out during daylight hours on 15th August 2022 by experienced ecologist Simeon Smith and assistant ecologist Clare Fiennes. Weather conditions were calm and dry.

4.2 The survey area included all habitat within the site redline boundary plus 100 metres outside the redline boundary where access allowed (Fig. 1).

Fig. 1 Aerial view of survey site, as indicated by red polygon (Google Maps, 2022)

5 Site Description

5.1 The Grange is located to the north of the urban area of Street, Somerset. The site's central Ordnance Survey grid reference is ST 48224 36940 and its postcode is BA16 0BB.

5.2 The site is approximately 0.8ha in size and comprises buildings of differing ages, areas of amenity grassland, areas of hard standing, a walled orchard and several mature trees. It is accessed via Farm Road off the A39, which runs to the north of the site.

5.3 The site is situated in a semi-industrial setting on a relatively flat plane with no appreciable aspect at 15m above sea level. It is bordered to the north and northeast by the A39 and an area of car parking, to the east by the Clarks Village retail complex, to the south by industrial/commercial premises, and to the west by housing and a further area of car parking.

5.4 The wider landscape comprises a mix of housing, residential gardens, commercial/industrial buildings, car parking and agricultural fields (see Appendix I).

6 Methodology

6.1 The survey consisted of two elements: a walkover survey and a monitoring survey.

Walkover survey

6.2 The walkover survey was based on standard survey methodology described in the Mammal Society publication 'Surveying Badgers' (1998).

6.3 The survey area was searched methodically by two ecologists for evidence of badger activity. Any evidence found was recorded and was logged using a Global Positioning System.

6.4 Evidence of badger activity includes:

Setts: Normally found in well-drained features such as banks, setts are large and distinctive underground galleries dug by badgers. The number of active entrances is variable: a single isolated sett may be used irregularly by an individual badger, whereas some setts have multiple entrances which may indicate more frequent use by larger groups. Larger setts are more conspicuous, often with heaps of recently excavated spoil in mounds outside active entrances. Bedding vegetation is often found at sett entrances.

Badger runs: Badgers create distinctive, well-worn narrow pathways of flattened vegetation between setts and foraging areas. These runs can form tunnels in tall, dense vegetation such as brambles or rank grass. Where a run crosses a fence, tufts of distinctive, coarse black and white badger hair can often be found snagged on the wire.

Latrines: Latrines/badger droppings are often found near setts and are also used as territorial markers, marking the edge of a social group's territory. Badgers create a latrine by digging a small hole and depositing droppings within.

Snuffle holes: These are small round holes created by foraging badgers to excavate food such as leatherjackets. They are often found along the edges of paths/tracks, under dense leaf litter or around the bases of trees.

Monitoring survey

6.5 Camera traps were set up at any entrance holes identified as being potentially active during the walkover survey (see Appendix II). The cameras were left in place for 21 days and footage subsequently checked for evidence of badger activity.

6.6 A stick survey was carried out at one entrance to a badger sett which showed no signs of recent use. Thin sticks were placed across the entrance and were checked the following day and after 21 days to see if they had been dislodged.

Sett classification

6.7 Setts identified during the survey were classified using the criteria used in Harris et al. (1989):

Main sett: Large setts usually with a number of active holes with conspicuous spoil heaps. There will generally be well used paths to and from the sett and between sett entrances. A main sett is most likely to be where cubs are born and there is only one main sett per badger clan. It is possible to find a main sett that has become disused and should be recorded as such.

Annexe sett: These setts are often close to main setts and are usually linked to main setts through well-worn paths in vegetation. There are usually several entrance holes to an annexe sett, but these may not be in use all the time.

Subsidiary sett: These are smaller setts and usually comprise three to five entrance holes. They are often at least 50 metres from a main sett and do not have an obvious path connecting to another sett.

Outlier sett: These usually have one or two holes, often with little spoil outside the hole. They are often used sporadically and have no obvious connectivity with other setts. When not in use by badgers, they may be taken over by other ground-dwelling mammals.

6.8 An assessment of the habitat quality within the survey area was used to determine 'foraging potential' for badgers. This assessment was based on the number of available food sources and included:

- 'Good' foraging potential: where habitat was considered to provide badgers with a variety of foraging opportunity throughout the year;
- 'Moderate' foraging potential: where foraging opportunities are seasonal and limited; and
- 'Poor' foraging potential: areas with no food value for badgers.

7 Results

Walkover survey

7.1 Three entrance holes were identified during the walkover survey. All three holes were located within a small area of amenity grassland between three buildings to the southwest of the site (see Appendix II for specific locations of entrance holes).

7.2 Two of the holes showed signs of recent use, while one hole showed no signs of recent use (see Table 1 and Figs. 2-4).

Entrance hole	Fig. ref.	Notes	GPS coordinates
A	2	Badger hole. Well established. Large pile of recently excavated spoil at entrance. Entrance clear of leaves. No obvious paths in immediate vicinity.	51.12925412, -2.74138874
B	3	Badger hole. Well established. Entrance clear of leaves. No obvious spoil at entrance. No obvious paths in immediate vicinity.	51.12916274, -2.74147547
C	4	Badger hole. Leaves blocking entrance. No obvious paths in immediate vicinity. No signs of recent activity.	51.12930544, -2.74127901

Table 1. Description of entrance holes identified within survey area

Fig. 2 Entrance hole A

Fig. 3 Entrance hole B

Fig. 4 Entrance hole C

7.3 Further evidence of badger activity recorded during the survey is given in Table 2 and shown in Figs. 5-7 (see Appendix II for the specific locations of badger activity recorded).

Map ref.	Fig. ref.	Feature	Notes	GPS coordinates
D	5	Latrine	Located by wall within dense vegetation approximately 15m from sett entrances. Recently used. Obvious path heading west from edge of vegetation towards sett entrances.	51.12911434, -2.741180428
E	6	Latrine	Located by wall within orchard, approximately 75m northeast of sett entrances. Recently used.	51.12972747, -2.74078614
F	7 & 8	Snuffle holes	Several areas of recently created snuffle holes recorded within 10m of sett entrances.	51.12917115, -2.74122334
G	9	Run	Obvious path leading from vegetation towards sett entrances.	51.12912781, -2.74120725

Table 2. Evidence of badger activity recorded within survey area

Fig. 5 Latrine near sett entrances

Fig. 6 Latrine within orchard

Fig. 7 Snuffle holes

Fig. 8 Snuffle holes

Fig. 9 Badger run

7.4 No evidence of badger activity was recorded outside the redline boundary within 100m, where access had allowed surveying .

Monitoring survey

7.5 A total of two badgers were recorded by the camera traps deployed at the site.

7.6 One male badger was recorded on numerous occasions entering and exiting Entrance hole A and Entrance hole B. The badger was recognisable as the same individual as it had a pronounced limp. The badger was also recorded displaying digging and grooming activity and bringing bedding material into the sett (Figs 10-12).

7.7 A second badger was recorded on two occasions entering Entrance hole A at the same time as the male badger was recorded on site (Fig. 13).

7.8 The sticks placed at Entrance hole C had not been moved and dead leaves were found to have accumulated within the entrance.

Fig. 10 Badger recorded bringing bedding material into Entrance hole A

Fig. 11 Badger recorded exiting Entrance hole B

Fig. 12 Badger recorded grooming outside Entrance hole B

Fig. 13 Two badgers recorded at Entrance hole A

Foraging potential

7.9 The site provides good foraging potential for badger. The areas of amenity grassland and bordering scrub offer a source of earthworms and other invertebrates, and the orchard offers a plentiful source of fruit when in season.

8 Interpretation of Results

8.1 The results indicate that one active badger sett is present within the survey area and that two badgers are currently active on site. The sett has two active entrance holes. A third entrance hole is inactive.

8.2 Given the limited number of entrance holes, the level of badger activity recorded and the lack of connectivity with other setts, the sett could be classified as an outlier sett. However, the sett lies within an urban area and badgers are known to sometimes behave differently within an urban setting. Territories can be less well defined. This could represent the permanent sett of a solitary male badger with occasional interactions from badgers outside his territory.

8.3 The presence of snuffle holes in the vicinity of the sett indicates that badgers are actively using this area of the site as a foraging resource.

8.4 The presence of a recently-used latrine within the orchard suggests that badgers are actively foraging within the orchard.

9 Recommendations

9.1 As the proposed works will result in the loss of an active sett, a development licence will be required from Natural England before works can commence.

9.2 Working under licence, badgers must be excluded from the sett a minimum of 21 days prior to the commencement of groundworks on site. This should be done by means of one-way badger gates and chain link fencing. The gates will be positioned over all entrance holes and set to 'one way', allowing badgers to leave but not re-enter the sett. Without impeding the gates from opening, chain link fencing will then be attached to each gate and laid over the entire sett area to deter badgers from digging.

9.3 The gates will remain in position for a period of at least 21 days after the last sign of badger activity at the sett. When it can be reasonably assumed that there are no badgers in the sett, the sett must be completely destroyed. Should badgers regain access to the sett, the exclusion period will commence again from day one.

9.4 The licensee will be in attendance during the destruction of the sett. Immediately prior to its destruction, personnel will be briefed on the protected status of the badger and the procedure for destroying the sett.

9.5 Once exclusion has taken place, deterrence measures will be necessary to deter badgers from re-entering the sett.

9.6 It should be noted that the closure of a badger sett can only take place between 1 July and 30 November, when there is no possibility of finding dependent young inside the sett.

9.7 To compensate for the loss of the natural sett, the client has requested that an artificial four-chamber sett be created elsewhere on site. It is recommended that this is done six months in advance of the exclusion of badgers from the natural sett (see Appendix IV for an example of an artificial sett).

9.8 The development design should ensure continued connectivity for badgers across the site, particularly to foraging areas recorded in the north and south of the site.

9.9 The development design should ensure the retention and enhancement of good quality badger foraging habitat on the site should be retained and enhanced.

9.10 The site should periodically be inspected post development for evidence of badger activity.

10 Precautionary measures during works

10.1 The following precautionary measures must be implemented to ensure badgers are not disturbed, killed or injured during the proposed works:

- An exclusion zone must be created around all setts present on site;
- All personnel working on the site must be made aware of the location of setts and of legislation relating to badgers;
- Sett areas must not be used as access routes. There must be no human or vehicle movement over setts;
- All trenches and other excavations on the site during development must have a gradient at one end to allow an escape route to badgers or other animals that might fall in;
- All fuels and chemicals are to be stored in such a way that badgers cannot come into contact with them;
- Food, food containers and wrappers must not be left where badgers can come into contact with them;
- All waste bins should be sealed or closed, thus preventing scavenging by badgers;
- Portable toilets must not be sited near badger setts;
- Generators must not be operated over or near badger setts;
- Lighting systems must not be directed onto or into badger setts;
- Woodchippers must not be discharged onto or into badger setts;
- Exhaust fumes from vehicles or plant must not be allowed to enter badger setts; and
- Smoke from fires must not be allowed to enter a badger sett.

11 Limitations

11.1 It was not possible to access all areas to the west of the site due to the presence of private gardens. This is not considered a limiting factor with regard to the findings of the survey.

11.2 Surveys of this type offer only ‘snapshots’ of the site and take no account of possible seasonal differences, nor of any species that might take up residence at a later date.

12 References

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Appendix I – Site Location

Fig. 14 Aerial view of survey site (indicated by red circle) showing its position in the wider landscape (Google Earth, 2022)

Appendix II – Location of Evidence of Badger Activity

Fig. 15 Locations of entrance holes and evidence of badger activity recorded within survey area (Google Earth, 2022)

Appendix III – Camera Trap Locations

Fig. 16 Camera trap outside Entrance hole A

Fig. 17 Camera trap outside Entrance hole B

Fig.18 Sticks placed at Entrance hole C

Appendix IV – Artificial Badger Sett

Figs. 19 and 20 Examples of artificial badger setts (T. Timbrell)