

PURE ECOLOGY

Manor Farm

Rodbourn, Malmesbury, Wiltshire

SN16 0EU

Protected Species Report



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1 Introduction

1.1 Background

The client is seeking planning permission from Wiltshire Council to convert six agricultural buildings to residential dwelling space, demolish another three utilitarian buildings and construct a further two associated buildings at Manor Farm, Rodbourne, Malmesbury, Wiltshire, SN16 0EU.

The six buildings scheduled for conversion are:

- **Building 1:** single-storey store (former cow byre) located along the northwest boundary of the site;
- **Building 2:** single-storey storeroom located at the northeast end of Building 1;
- **Building 3:** single-storey former milking parlour (now dilapidated) located between the northeastern end of Building 2 and the northwestern gable end of Building 4;
- **Building 4:** double-height stone barn (former grain store) located in between Building 3 and Building 5;
- **Building 5:** single-storey stable (bull pen) located at the southeastern end of Building 4; and
- **Building 6:** double-storey former cattle barn and hay loft, which is detached and located to the east of Building 5.

The three buildings scheduled for removal are:

- **Building 7:** modern single-storey building used as a workshop / storage located to the immediate southwest of Buildings 4 and 5;
- **Building 8:** open Dutch-style barn located to the northeast of Building 3; and
- **Building 9:** open Dutch-style barn located to the northeast of Buildings 4 and 5.

The Project Area for the planning application is the nine buildings as described above and surrounding land, which is shown on **Figure 1** (in Section 1.2). conversely

1.2 Site Description

Manor Farm is located approximately 1km southeast of Corston and 3km south of Malmesbury. It comprises a grouping of agricultural buildings centered around two open yards. The National Grid Reference (NGR) for the Project Area is ST 93516 83352.

The Project Area for the ecological study encompasses all nine buildings and immediate surrounding area as shown on **Figure 1** and photographs of the buildings are presented in **Appendix A**.

Building B1. A single-storey structure approximately 12m long by 5m wide. It is constructed from stone, which is rendered inside and outside, and has a pitched roof comprising ridged clay tiles and ridge capping. The building abuts the western end wall of Building 2 but is not directly connected to it. The clay roof tiles sit on wooden battens, which attach directly to close-fitting roof timbers. Sections of the roof tiles are now missing. There is a single ridge beam. There is no roof insulation or liner (e.g. bituminous roofing felt). Roof timbers sit into recesses in the stone walls. The building is completely open along the southern wall. The building is very light, draughty and there is ingress of rainwater in places. The building is shrouded by adjacent trees and much of the roof is covered in ivy, which is also growing through the roof into the building interior.

There are no gaps/recesses associated with the roof timbers as they are very close-fitting, and there are no holes/recesses associated with the stone walls which are all well sealed with mortar. There are no enclosed or hidden voids.

Building B2. A single-storey structure approximately 5m long by 5m wide, which is a storeroom (formerly used as a workshop). It is constructed from stone and concrete blockwork, which is rendered/painted inside and outside, and has a pitched roof comprising securely inter-locking clay tiles and ridge capping that is now beginning to collapse inwards. The building abuts the northeastern end of Building 1 but is not connected to it, and the southwestern end of Building 3, which are connected via an open doorway. Inside the roof is lined with boarding, which seals the interior. The building has windows, which are all secure or have grills covering them, making the interior very light. The building is shrouded by adjacent trees and much of the roof is covered in ivy.

There are no gaps/recesses associated with the roof or the walls which are sealed. There are no enclosed or hidden voids.

Building B3. A dilapidated, single-storey structure approximately 8m long by 5m wide. It has mortared concrete blockwork walls. The building abuts the northeastern end of Building 2 and the northwestern end of Building 4, which are connected through open doorways. This building now has no roof, making this building completely open, with no bat roost potential.

Building B4. A double-height building which is approximately 16m long by 8m wide, which forms the main barn in the complex. It is constructed mainly from stone with brick and concrete blockwork, which is sealed with mortar. It has a pitched roof comprising flat slate tiles and ridge capping. The building abuts the south-eastern end of Building 3, which it is connected to via an open doorway, and abuts the north-western end wall of Building 5. The slate roof tiles sit on wooden battens, which attach directly to close-fitting roof timbers. There is single ridge beam, onto which the roof tiles are securely fixed. There are small gaps at the roof apex but these are open, light and draughty. There is no roof insulation or liner (e.g. bituminous roofing felt). Roof timbers sit into recesses in the stone walls. At the south-eastern end of the barn is a mezzanine platform and a small timber enclosure (pulley house) located at the roof apex.

The building has full height wooden slatted doors on the south-western wall, while the north-eastern wall is completely open. The building contains two large grain hoppers and is also used to house fuel/oil tanks and storage of other chemicals. The building is light, draughty and there has been ingress of rainwater in places. Part of the building is covered in a loose growth of ivy, which is also growing through the roof into the building interior.

There are a few gaps/recesses associated with the roof apex and walls, but the roof timbers are generally close-fitting and walls are well-sealed with mortar. Building 4 is a confirmed bat roost based on previous surveys conducted in 2016 (see Section 3.4.1).

Associated with the barn was a lean-to on the south-western side (at the north-western end) but this has now been removed, leaving just some extant mortared stone walls making this part of the barn completely open with no bat roost potential.

Building B5. A single-storey structure approximately 6m long by 4m wide. It is constructed from stone and concrete blockwork, which is mortared inside and outside, and has a pitched roof comprising ridged clay tiles and ridge capping (there are no holes in the roof). At the southern end the top part of the wall comprises single-layer, over-lapping timber ship-lap some of which is missing. The building abuts the south-eastern end wall of Building 4. The clay roof tiles sit on wooden battens, which attach directly to close-fitting roof timbers, with bituminous roofing felt in between the tiles and timbers (small sections of roofing felt missing). There is a single low ridge beam. The building is completely open along the south-eastern end wall. The building is light and draughty, and there is some ingress of rainwater.

There are few gaps/recesses associated with the roof timbers or walls as they are generally very close-fitting or well-sealed with mortar.

Building B6. A free-standing double-storey building approximately 10m long by 6m wide. It is constructed from stone, which is mortared inside and outside, and has a pitched roof comprising ridged clay tiles and ridge capping. The north-eastern aspect of the roof slope has now had almost all roof tiles removed. The remaining clay roof tiles sit on wooden battens, which attach directly to close-fitting roof timbers, and there is generally no water-proofing or insulation in the roof. The ground and first floors are divided by cross-timbers and wooden floorboards, all of which are close-fitting - most of this is now covered by plastic tarpaulin sheet as temporary water-proofing and to collect rainwater. The building is accessed through a door and there are two window openings. The building is very light and draughty, and there is significant ingress of rainwater leading to rotting timbers.

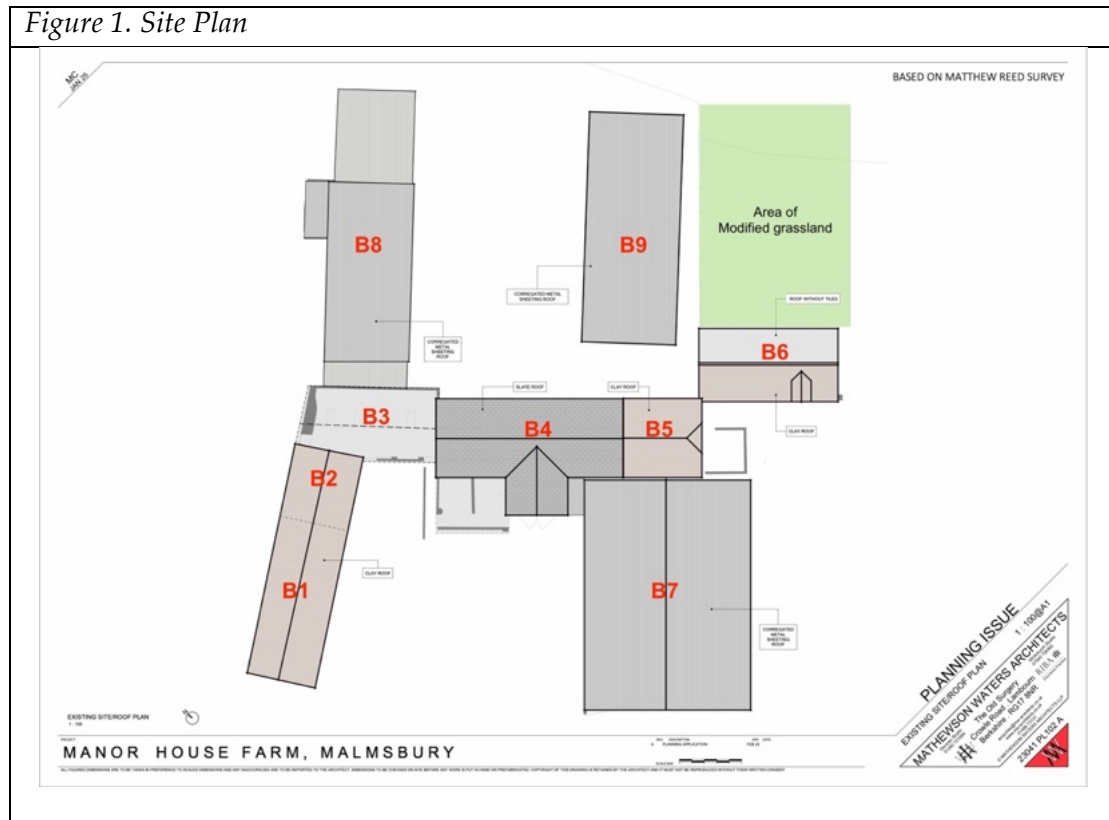
There are no gaps/recesses or hidden voids associated with the building interior, while there are external gaps associated with the south-western aspect and south-eastern gable end wall.

Building B7. A single-storey utilitarian building used as a workshop and storage, which is approximately 18m long by 12m wide and located in front of Building 4 and 5. It is constructed with a concrete frame with a very shallow pitched roof, with walls and roof clad in corrugated metal. there are windows, large opening and the north-eastern and south-eastern walls are completely open.

Buildings B8 and B9. Two Dutch-style barns, measuring 24m long by 6m wide and 18m long by 7m wide, which are located behind Buildings 3, 4 and 5. They are utilitarian structures comprising metal frame with curved roofs clad with corrugated metal. The barns are completely open on all sides.

The majority of land surrounding the buildings at Manor Farm is artificial comprising both sealed and unsealed hard-standing, with a small area of grassland, which is bordered by trees / shrubs on some boundaries. The farm is located within Rodbourne, which is surrounded by farmland comprising mainly pasture with boundary hedgerows, tree-lines and small blocks of woodland. The Project Area therefore is surrounded by and connects to habitats that are valuable for commuting/foraging bats. A pond is located 160m northwest of the farm, which is the only pond within 250m of the farm.

Figure 1. Site Plan



1.3 Proposed Scheme

The proposal is to create a single residential dwelling with extensive landscaped grounds. Buildings B1 - B6 will be converted and a link extension will connect buildings B4, B5 and B6. Buildings B7 – B9 will be demolished to create gardens and a pool room (connected to the main residence). The proposed site layout is shown in **Appendix B**.

The building work will include repairs to the external and internal walls, replacement / renovation of roofs and installation of insulation to ensure the buildings are suitable for residential use.

1.4 Scope of the Study

Pure Ecology has been commissioned to prepare a protected species survey report, which includes a bat roost assessment of the Project Area buildings and mitigation strategy to support a planning application for conversion / demolition of the agricultural buildings for residential use at Manor Farm (as described in Section 1.3).

The ecological assessment has been informed by:

- Existing baseline data obtained from 1) a previous protected species report (dated 2016) and 2) the Wiltshire & Swindon Biological Records Centre;

- Field surveys in 2024 including visual inspections and nocturnal surveys of buildings for bats and eDNA water quality sampling of one pond within 250m of the Project Area. The building assessment also included survey for other protected species such as barn owl (*Tyto alba*) and other nesting birds.

The ecology report has been prepared by Anton Kattan and Stephen Dangerfield, consultant ecologists and Natural England licensed bat workers with a combined 50+ years' professional experience who are both full members of the Chartered Institute of Ecology and Environmental Management (CIEEM).

This report discusses the predicted impacts of the Proposed Scheme on protected species and establishes appropriate mitigation requirements to prevent the loss of bat roosting opportunities at Manor Farm. Advice is given on the legal protection for bats and licensing requirements under The Conservation of Habitats and Species Regulations 2017.

2 Planning Context

2.1 National

The National Planning Policy Framework (NPPF), December 2024, requires that the planning system should conserve and enhance the natural environment (Section 15) by, *protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils* (para 187).

Scheme plans should 'promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species' and 'identify and pursue opportunities for securing measurable net gains for biodiversity' (para 192).

Local planning authorities should aim to protect and enhance biodiversity by applying the following principles (para 193):

- a) If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- b) Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any border impacts on the national network of Sites of Special Scientific Interest;

- c) Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland or ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- d) Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

2.2 Wiltshire

The Wiltshire Core Strategy (Adopted January 2015) sets out the relevant policies relevant to biodiversity, as follows:

Core Policy 50: Biodiversity and geodiversity

Protection

Development proposals must demonstrate how they protect features of nature conservation and geological value as part of the design rationale. There is an expectation that such features shall be retained, buffered, and managed favourably in order to maintain their ecological value, connectivity and functionality in the long-term. Where it has been demonstrated that such features cannot be retained, removal or damage shall only be acceptable in circumstances where the anticipated ecological impacts have been mitigated as far as possible and appropriate compensatory measures can be secured to ensure no net loss of the local biodiversity resource, and secure the integrity of local ecological networks and provision of ecosystem services.

All development proposals shall incorporate appropriate measures to avoid and reduce disturbance of sensitive wildlife species and habitats throughout the lifetime of the development.

Any development potentially affecting a Natura 2000 site must provide avoidance measures in accordance with the strategic plans or guidance set out above where possible, otherwise bespoke measures must be provided to demonstrate that the proposals would have no adverse effect upon the Natura 2000 network. Any development that would have an adverse effect on the integrity of a European nature conservation site will not be in accordance with the Core Strategy.

Biodiversity enhancement

All development should seek opportunities to enhance biodiversity. Major development in particular must include measures to deliver biodiversity gains through opportunities to restore, enhance and create valuable habitats, ecological networks and ecosystem services. Such enhancement measures will contribute to the objectives and targets of the Biodiversity Action Plan (BAP) or River Basin/Catchment Management Plan, particularly through landscape scale projects, and be relevant to the local landscape character.

Local sites

Sustainable development will avoid direct and indirect impacts upon local sites through sensitive site location and layout, and by maintaining sufficient buffers and ecological connectivity with the wider environment. Damage or disturbance to local sites will generally be unacceptable, other than in exceptional circumstances where it has been demonstrated that such impacts:

- Cannot reasonably be avoided
- Are reduced as far as possible
- Are outweighed by other planning considerations in the public interest and
- Where appropriate compensation measures can be secured through planning obligations or agreements.

Development proposals affecting local sites must make a reasonable contribution to their favourable management in the long-term.

3 Methodology

3.1 Desk Study

A review was undertaken of a protected species survey report for the buildings at Manor Farm by AD Ecology Ltd (dated 2016). The relevant ecological information from 2016 has been referenced in the appropriate sections of this report.

Records of designated sites and protected/notable species within 1km of the Project Area and records of bats within 4km of the Project Area were obtained from the Wiltshire and Swindon Biological Records Centre (WSBRC) on the 5th July 2024. This allows notable and relevant habitats and species, to be identified and taken into consideration through the ecological appraisal process.

The DEFRA Multi-Agency Geographical Information for the Countryside (MAGiC) website was reviewed on 24th April 2025 for: (1) UK priority habitats within 1km of Manor Farm; (2) granted European Protected Species (Bat) licences within 4km of Manor Farm; and (3) granted European Protected Species (GCN) licences within 1km of Manor Farm. Online mapping and aerial photographic resources were also consulted for contextual information.

Natural England's Great Crested Newt Risk Zones (Swindon and Wiltshire)¹ was consulted to determine the potential importance of the development site for great crested newts.

¹<https://naturalengland-defra.opendata.arcgis.com/datasets/Defra::gcn-risk-zones-swindon-and-wiltshire/explore>

3.2 Field Survey

3.2.1 Building Visual Inspections

An initial bat roost inspection and protected species survey of the nine Project Area buildings and the immediate surrounding land was undertaken on 20th June 2024. The weather was dry, 20°C, sunny (30% cloud) and calm (Beaufort Scale 1).

The bat roost inspection was undertaken by licensed bat surveyors in accordance with Bat Conservation Trust guidelines (Collins, J (ed.), 2023) and included an internal and external inspection of Project Area buildings B1 - B9 looking for signs of, or the potential for the buildings to support, roosting bats. A ladder, high-powered torch, endoscope and binoculars were all available and were used where necessary to examine spaces, crevices and other small spaces suitable for roosting bats to occupy.

Evidence of bat presence/occupation includes:

- Droppings.
- Urine staining.
- Feeding remains (such as moth wings).
- Smudge marks and scratches around potential bat roost holes.
- Live roosting bats, bat skeletal remains or dead bats.

Conditions indicating an absence of bats can include the presence of spider webs, bird nesting material, wasp nests (especially blocking potential entrances), live sheltering/hibernating butterflies/moths and other insects in crevice features.

The suitability of the building to support roosting bats was assessed according to the following categories:

1. Negligible potential/not a roost: no suitable features
2. Low potential: one or more suitable features that could be used by individual, or very low numbers of bats opportunistically
3. Moderate potential: one or more suitable features that could be regularly used by bats, but sub-optimal conditions may limit the potential for breeding or hibernating bats
4. High potential: one or more roost features that are suitable for use by a colony of bats on a regular basis and may support a maternity or hibernation site
5. Confirmed roost: evidence of current/recent bat occupation.

A further two visual inspections of the Project Area buildings to look for new field signs of bat roosting activity were also undertaken on 16th July and 22nd August 2024.

The survey checked the buildings for the presence of nesting birds, while also assessing the buildings and immediate surrounding land for other protected species, e.g. badger, reptiles, amphibians etc.

3.2.2 Nocturnal Bat Surveys

Three dusk bat activity surveys of Project Area buildings B1, B2, B4, B5 and B6 were undertaken on the 20th June, 16th July and 22nd August 2024 in accordance with guidance for professional survey standards (Collins J (ed.), 2023).

Each survey was covered by two surveyors and two remote camera positions, as shown on **Figure 2**. The dusk surveys were scheduled between June and August 2024 to determine the presence of bats during the breeding season, covering the period when maternity roosts are formed. The timings and weather conditions for the bat surveys are shown in **Table 1**.

The surveyor position S1 and the camera vantage points shown on **Figure 2** provided coverage of building elevations. The surveyors and cameras were positioned to monitor potential bat access points identified during the daytime inspections.

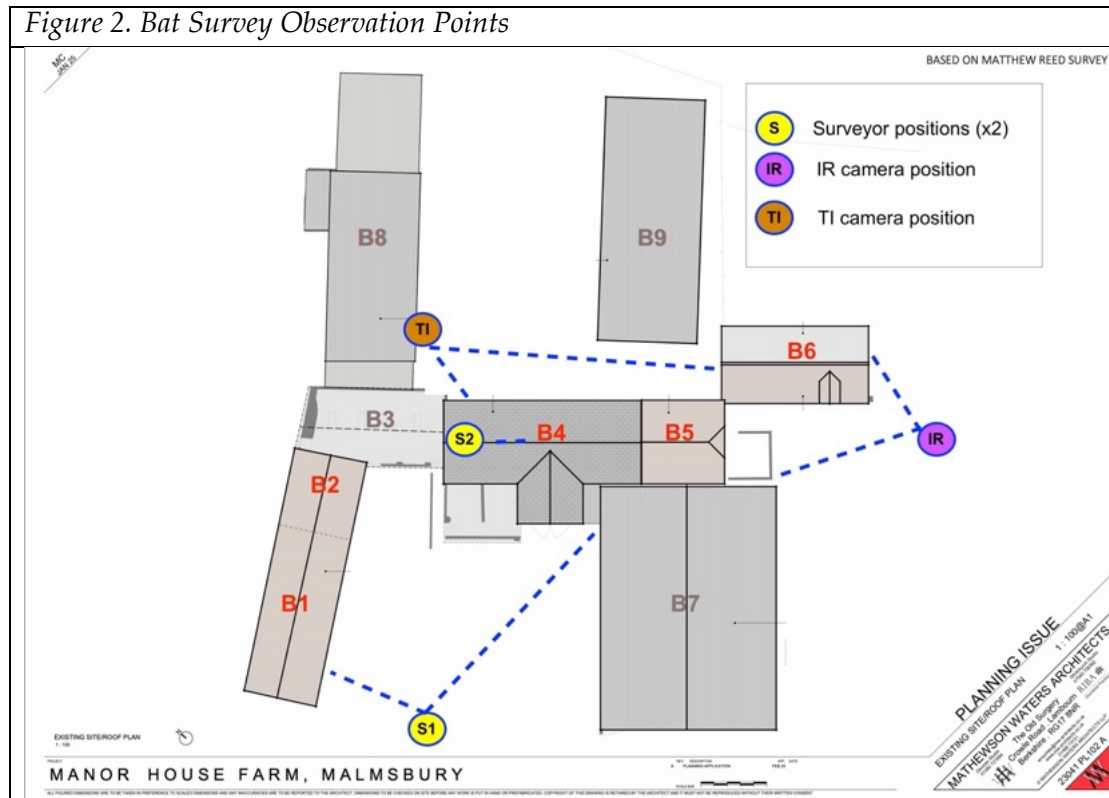
- Each surveyor was equipped with a full-spectrum bat detector that could record bat calls for subsequent species identification using Wildlife Acoustic's Kaleidoscope computer software (version 5.4).
- Each surveyor was also equipped with a recordable Night Vision Aid, with either an Infra-Red (IR) camera or Nightfox Whisker Night Vision Binoculars (NVB), which were used as a static, fixed location observation point. Surveyor S1 was also able to move around their vantage point to monitor buildings B1 and B2, as well as having a fixed camera on B3. Surveyor S2 took up an internal position inside B3 to monitor for bats emerging from the roof structure.
- Canon XA cameras (XA11 and XA50 with IR lamps that "illuminated" the cameras' field of view) and Pixfra A613 thermal scope were used as remote cameras. The IR/TI camera recordings were analysed post-survey by reviewing the footage in real-time.
- Each camera position was set-up with a recordable full-spectrum bat detector, using Elekon BatloggerM and Wildlife Acoustic EM Touch Pro bat detectors that record bat echolocation calls on time-stamped files that can be linked to the roost emergence time of bats recorded on the cameras.

The field of view of the camera and night vision aid equipment is shown in **Appendix 3**.

Table 1. Timings and Weather Conditions for Bat Activity Surveys at Manor Farm

Date (2024)	Survey Period (hrs)	Sunset (hrs)	Weather*
20 June	21:00 - 23:00	21:29	20% cloud, 17-19°C, BF1, Dry
16 July	20:50 - 22:40	21:18	30% cloud, 15-18°C, BF2, Dry
22 August	19:45 - 22:00	20:15	100% cloud, 15-17°C, BF3, Dry
*BF – Beaufort Scale			

Figure 2. Bat Survey Observation Points



3.2.3 Habitat and Protected Species Survey

A habitat and ecological survey of the land surrounding the Project Area buildings at Manor Farm was undertaken on 20th June 2024. The survey focused on:

- A habitat survey to determine type, quality and extent of habitats present. Indicative botanical lists of each habitat type were recorded. Rare/scarce and invasive plants were highlighted if found.
- A survey to determine the presence of, or the potential for Project Area to support, protected and rare/scarce animals, which included looking for the following:
 - Potential/actual badger (*Meles meles*) setts, as well as latrines, tracks and other signs (foraging holes, hairs, etc);
 - Potential reptile habitat and terrestrial habitat for amphibians, particularly great crested newt (*Triturus cristatus*);
 - Waterbodies that had the potential to support great crested newt;
 - Potential habitat to support or signs of dormouse (*Muscardinus avellanarius*); and
 - Potential for nesting birds to use the site.

The aim is to identify the actual or likelihood of protected species inhabiting or frequenting the Project Area based on field signs or habitat quality/structure etc. and

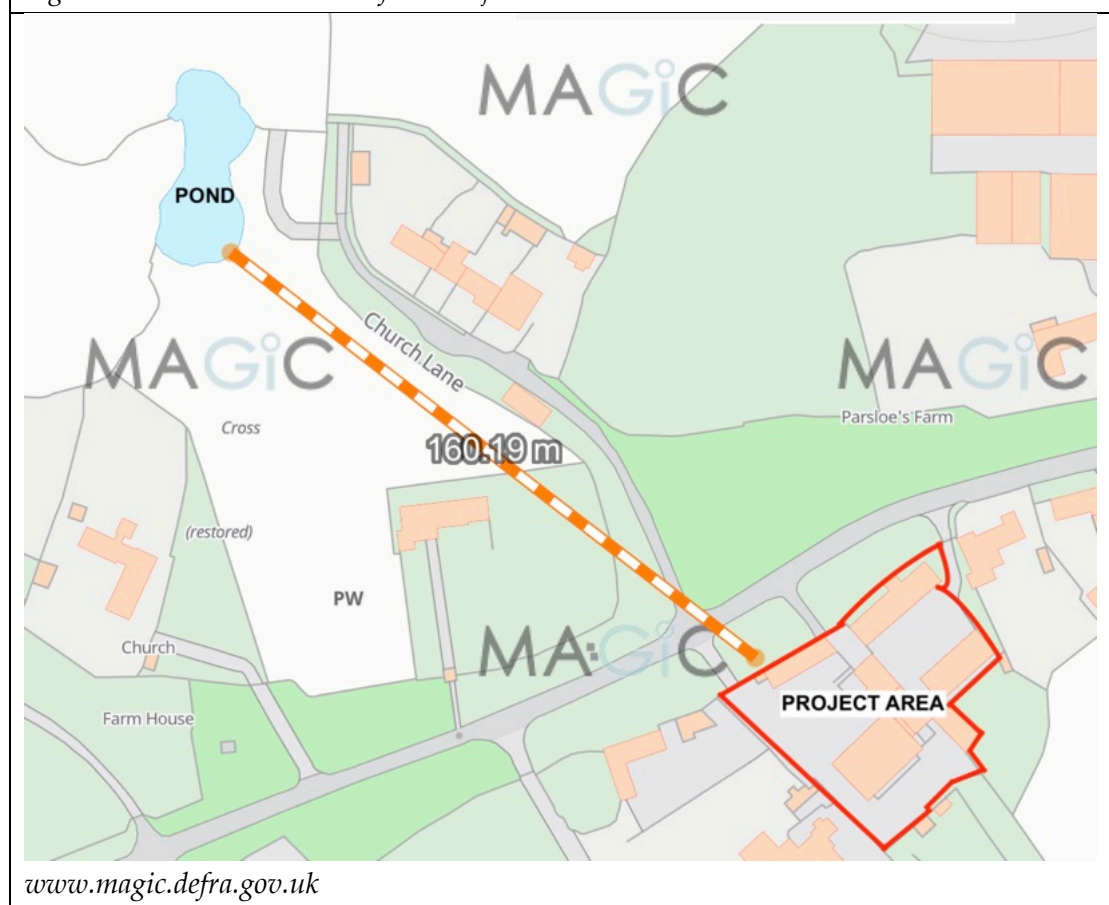
to determine their relevance to nature conservation, based on species assemblage and habitat quality.

3.2.4 GCN eDNA Survey

A pond located at NGR ST 93358 83489 is 160m northwest of the Project Area at Manor Farm (Figure 3). It was surveyed for great crested newt using industry standard eDNA survey and analysis methodology to determine presence/absence of great crested newt. A pond water sample from the pond was collected on 20th June 2024, which is within the optimum time for detecting great crested newt eDNA.

Analysis was undertaken by SureScreen Scientifics and the results of this study are included within this appraisal.

Figure 3. Pond within 250m of the Project Area



3.3 Personnel

Habitat survey, building inspections, bat dusk emergent surveys and GCN eDNA pond survey were undertaken by:

- Mr. Anton Kattan: Natural England licenced bat worker (NE Class Licence Level 2 WLM-CL18, Licence No. 2015-12201-CLS-CLS) and full member of the CIEEM;

- Dr. Stephen Dangerfield: Natural England licensed bat worker (NE Class Licence Level 1 WLM-CL17, Licence No. 2015-11600-CLS-CLS) and full member of CIEEM; and
- Mr. Rob Spencer: Natural England licenced bat worker (NE Class Licence Level 2 WLM-CL18, Licence No. 2015-14778-CLS-CLS).

3.4 Evaluation

The importance of the ecological features identified by the desk study and field survey have been evaluated with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) Ecological Impact Assessment guidance (CIEEM, 2018). This guidance recommends that an ecological feature's importance is determined with reference to a valuation of the ecological feature within a geographical framework. This may relate to:

- the quality or extent of a designated site or habitat;
- habitat/ species rarity;
- the extent to which rare habitats/species are threatened throughout their range; or
- their rate of decline.

The evaluation helps to determine the important ecological features which are subject to further consideration in the identification of the likely ecological effects (positive or negative) associated with the development of the site.

Where possible, formal criteria are used to set features of conservation importance within this geographical context. For example, the Guidelines for the Selection of Biological SSSIs (Nature Conservancy Council, 1989) can be used as a basis for the assessment of features at a National level. Similarly, published guidelines for the selection of SINCs (Sites of Importance for Nature Conservation) can be used as the basis for assessing features of county level importance (DEFRA, 2006). The value of an ecological feature is determined within a defined geographical context using the following criteria:

- International/ European;
- National (England);
- Regional (West England);
- County (Somerset)/ District (North Somerset)/ and
- Local.

To evaluate importance of an ecological feature for bats, consideration has been given to species distribution and rarity at different geographical levels. For this assessment, reference has been made to:

- The UK Post 2010 Biodiversity Framework (published 2012)
- UK Biodiversity Action Plan

- Distribution Atlas of Bats in Britain and Ireland 1980-1999 (Richardson, 2000)
- *Mammals of the British Isles Handbook* (Harris and Yalden, 2008)
- Natural England, 2018. *A Review of the Population and Conservation Status of British Mammals* (JP025). [Online] publications.naturalengland.org.uk/publication
- BCT and JNCC, 2017. *The state of the UK's bats 2017: National Bat Monitoring Programme Population Trends*. London: Bat Conservation Trust (BCT)
- Bat Conservation Trust, 2020. *The National Bat Monitoring Programme Annual Report 2019*. London: Bat Conservation Trust.

3.5 Deviations, Constraints and Limitations

The bat surveys undertaken to underpin this ecological appraisal were concluded to comply with bat survey standards published when the study commenced (Collins, 2023) and the data on roosting bats is up to date. The existing ecological baseline provides sufficient information for the planning submission.

The survey data should be updated within 12 months of applying for a Natural England Bat Mitigation Licence. Survey standards for licensing require information from the current, or most recent bat activity season (May to August).

4 Results

4.1 Desk Study

4.1.1 Statutory Designated Wildlife Sites

There are no statutory designated sites within the zone of influence of the Proposed Scheme:

- There are no European, national or local designations covering the Project Area buildings or Manor Farm wider environs.
- There are no European designations within 10km of the Project Area.
- The Project Area is not within a European designated Special Area of Conservation (SAC) Bat Consultation Zone.
- The Project Area is not within a [Site of Special Scientific Interest] SSSI 'Impact Risk Zone' [defined by Natural England] for residential development proposals.

The nearest Site of Special Scientific Interest (SSSI) is Harries Ground Rodbourne SSSI, which is located 1km south, and designated for species-rich neutral grassland and marsh fritillary butterfly.

There are three non-statutory locally designated sites located within 1km of the Project Area as follows:

- Brickyard Scrub Local Wildlife Site (Ref. ST98.019). A 3.96ha species-rich neutral grassland with a pond and scrub woodland. Located 360m west.
- Rodbourne Plantation Local Wildlife Site (Ref. ST98.037). A 2.66ha broadleaved woodland of oak and poplar. Located 780m southwest.
- Gauzebrook Meadows Local Wildlife Site (Ref. ST98.007). A 3.53ha banks along the Gauze Brook with unimproved limestone grassland. Located 780m north.

4.1.2 *Priority Habitats*

The Manor Farm Project Area does not support any UK Priority Habitats. Priority Habitats located within 1km of the Project Area include:

- Lowland Meadow. Located 450m west and 930m southwest of Manor Farm.
- Deciduous Woodland. Nearest blocks are located 40-60m west of Manor Farm, with other blocks 400m - 1km away to the west, southwest and south. Nearest ancient and semi-natural woodland is North Bincombe Wood located 860m southwest of Manor Farm.

4.1.3 *Granted EPS (Bat) Mitigation Licences within 4km*

There are two granted EPS (bat) mitigation licences within 4km of Manor Farm:

- 2015-10613-EPS-MIT. Non-breeding roost for common pipistrelle and soprano pipistrelle bats. Located 1.1km southeast.
- 2016-25008-EPS-MIT. Non-breeding roost for common pipistrelle, soprano pipistrelle and serotine bats. Located 2.9km east.

4.1.4 *Existing Species Information: Bats*

WSBRC

Four species of bat have been recorded within 1km of the Manor Farm Project Area including: **brown long-eared (*Plecotus auritus*)**, **soprano pipistrelle (*Pipistrellus pygmaeus*)**, **common pipistrelle (*Pipistrellus pipistrellus*)** and **noctule (*Nyctalus noctula*)**.

In addition to the four species above, another eight/nine species of bat have been recorded within 4km of the Manor Farm Project Area including: Western barbastelle (*Barbastella barbastellus*), greater horseshoe (*Rhinolophus ferrumequinum*), lesser horseshoe (*Rhinolophus hipposideros*), **serotine (*Eptesicus serotinus*)**, Natterer's (*Myotis nattereri*), Daubenton's (*Myotis daubentonii*), whiskered/Brandt's (*Myotis mystacinus* / *M. brandti*) and Leisler's (*Nyctalus leisleri*).

Four species in **bold** have known roosts and three species underlined have been recorded in Rodbourne.

Rodbourne Manor Farm Protected Species Report, 2016 (AD Ecology)

The 2016 protected species report by AD Ecology concluded that Buildings B1, B2, B3, B5 and B6 were not used by bats for roosting or as a place of rest/shelter.

The internal roof structure of Building B4 (main barn) was identified as a known bat roost. It was concluded to be a non-breeding summer roost for a maximum of three brown long-eared bats and one soprano pipistrelle bat. The roost exit/entrance point was via the large barn door openings at the rear of the barn (northeast elevation).

4.1.5 Existing Species Information: Other Mammals

[REDACTED]

4.1.6 Existing Species Information: Birds

A number of nationally notable bird species are on the WSBRC records within the local landscape, with birds typically associated with buildings and barns including swift (*Apus apus*) and barn owl (*Tyto alba*).

4.1.7 Existing Species Information: Reptiles

There is a single WSBRC record of slow worm (*Anguis fragilis*) at The Church of the Holy Rood Churchyard, Rodbourne dating from 2015.

4.1.8 Existing Species Information: Great Crested Newt / Amphibians

The Manor Farm Project Area is located on the edge of an amber impact risk zone for great crested newt, which is defined as an area that 'contains main population centres for great crested newts and comprise important connecting habitat that aids natural dispersal'. The amber impact risk zone appears to be centered on ponds located to the north and west of Manor Farm.

Land to the immediate east of Manor Farm is covered by a green impact risk zone, which is defined as an area that 'contains sparsely distributed great crested newt [populations] and are less likely to contain important pathways of connecting habitat for this species'.

There is no pond or other suitable waterbody for supporting breeding great crested newt within the Manor Farm Project Area. The nearest known great crested newt breeding pond is located 570m west of Manor Farm.

There are no WSBRC records of great crested newt within 1km of the site and no registered Natural England great crested newt EPS Mitigation Licences within 1km of the Project Area.

There are no WSBRC records of other notable or common amphibians within 1km of the application site in the last twenty-five years.

4.2 Off-Site Pond

The pond located 160m northwest of Manor Farm was holding water in June 2024, but appears to occasionally dry out. The pond is set within cattle grazed pasture and sections of the pond are accessible by cattle causing bank poaching. The pond is devoid of aquatic and emergent vegetation, with banks supporting ruderal vegetation such as nettle (*Urtica dioica*), dock (*Rumex* sp), spear thistle (*Cirsium vulgare*) and hairy willowherb (*Epilobium hirsutum*). The pond is enclosed within scrub including ash (*Fraxinus excelsior*), willows (*Salix fragilis*, *S. caprea*, *S. alba*), hawthorn (*Crataegus monogyna*), English elm (*Ulmus procera*) and bramble (*Rubus fruticosus* agg).

The pond appears to have poor water quality as a result of livestock access. This pond was subject to a great crested newt Habitat Suitability Index (HSI) assessment and eDNA analysis (see Section 4.6.1).

Figure 4. Off-Site Pond



4.3 On-Site Habitats (excluding Buildings)

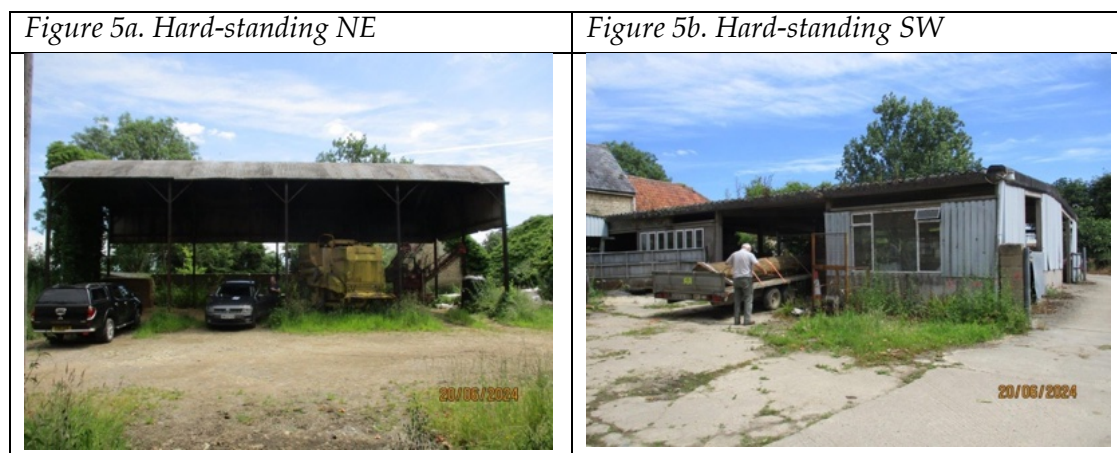
4.3.1 Hard-standing

The buildings within Manor Farm are surrounded by hard-standing that comprises both sealed concrete (southwest yard) and unsealed compacted ground (northeast yard). Small marginal, neglected, less-trafficked or cracked concrete areas now support colonising vegetation that comprises widespread / common grasses, forbs and self-set tree saplings:

- Grasses include meadow grasses (*Poa annua*, *P. trivialis*), barren and soft brome (*Anisantha sterilis*, *Bromus hordeaceus*), false oat grass (*Arrhenatherum elatius*), rye grass (*Lolium perenne*), cock's-foot (*Dactylus glomerata*) and Yorkshire fog (*Holcus lanatus*) and broadleaved plants that may have colonised from adjacent grasslands include black medick (*Medicago lupulina*), common vetch (*Vicia sativa*), dissected-leaved crane's-bill (*Geranium dissectum*), buttercups (*Ranunculus repens*, *R. acris*), plantains (*Plantago lanceolata*, *P. major*), field forget-me-not (*Myosotis arvensis*) and oxeye daisy (*Chrysanthemum leucanthemum*).

- There are shade-tolerant species on the margins that include hedge woundwort (*Stachys sylvatica*), herb Robert (*Geranium robertianum*), ivy (*Hedera helix*), red campion (*Silene dioica*), upright hedge parsley (*Torilis japonica*) and wood avens (*Geum urbanum*).
- Other forbs include a mix of colonising / ruderal species. Coloniser / ruderal species include nettle (*Urtica dioica*), bristly ox-tongue (*Picris echioides*), broad-leaved dock (*Rumex obtusifolius*), cleavers (*Galium aparine*), thistles (*Cirsium arvense*, *C. vulgare*), hogweed (*Heracleum sphondylium*), hairy willowherb (*Epilobium hirsutum*), prickly sow thistle (*Sonchus asper*) and redshank (*Persicaria maculosa*).

Self-set tree saplings and shrubs include ash (*Fraxinus excelsior*), bramble (*Rubus fruticosus* agg), elder (*Sambucus nigra*) and sycamore (*Acer pseudoplatanus*).



4.3.2 Grassland

In the eastern corner of the Manor Farm Project Area is a small area of grassland, which lies to the southeast of Building B9 and northeast of Building B6. The grassland is categorised as poor semi-improved [somewhat nutrient enriched] grassland that appears to have previously been managed with cutting before being neglected in recent years. The grassland sward supports rye grass, rough meadow-grass and Yorkshire fog. Common forbs typical of improved / neglected grassland include broad-leaved dock, cleavers, common vetch, creeping buttercup, field forget-me-not, hogweed, nettle, red campion, spear thistle and white clover.

The grassland is classified as UK Hab: Modified Grassland.

Figure 6. Modified Grassland



4.4 Bats

4.4.1 Initial Building Appraisal

The presence of bats in building **B4 (Main Barn)** was confirmed during the initial building inspection on the 20th June 2024 with a light scattering of medium sized bat droppings recorded in the barn (c.20-30 droppings). There were no significant new field signs of bat activity in B4 during subsequent inspections on the 16th July and 22nd August 2024.

No evidence of bat roost activity was recorded in any of the other project area buildings (B1-B3, B5-B9) during the daytime inspections in 2024.

The initial building appraisal [together with the desk study information] categorized the suitability of the Project Area buildings for bats at Manor Farm as having the following bat roost potential:

- **B1 (Former Cow Byre):** very low potential bat roost (**Category 2**) associated with a few external gaps on roof.
- **B2 (Store Room):** very low potential bat roost (**Category 2**) associated with a few external gaps on roof.

- **B3 (Former Milking Parlour):** no potential as a bat roost (**Category 1/Not a roost**) as now dilapidated / no roof.
- **B4 (Main Barn):** confirmed summer day roost (**Category 5**) for a low numbers of brown long-eared and soprano pipistrelle bats (identified by AD Ecology in 2016).
- **B5 (Former Bull Pen):** very low potential bat roost (**Category 2**) associated with a few external gaps on roof.
- **B6 (Former Cattle Barn & Hay Loft):** low potential bat roost (**Category 2**) associated with external gaps on roof / SE gable end.
- **B7 (Modern Barn / Workshop):** no potential as a bat roost (**Category 1/ Not a bat roost**) as no gaps or voids and completely open.
- **B8 (Dutch Barn):** no potential as a bat roost (**Category 1/ Not a bat roost**) as no gaps or voids and completely open.
- **B9 (Dutch Barn):** no potential as a bat roost (**Category 1/ Not a bat roost**) as no gaps or voids and completely open.

4.4.2 Nocturnal Bat Surveys

4.4.2.1 Survey 20th June 2024

The results of the June dusk emergence survey are summarized in **Table 2** and the roost features are shown on **Figures 7a** and **7b** with Target Notes (TN).

Table 2. Dusk Emergence Survey Results, 20th June 2024

TN (Fig 7)	Building Ref	Roost Feature	Bat Species	Count	Note
1	B4	Small timber enclosure (pulley house) at apex of southeast end	Lesser horseshoe	1	Bat emerged at 22:05 and exited via large opening on northeast wall
2	B4	Ridge board at southeast end of barn	Brown long-eared	1	Bat observed clinging to ridge at 21:38 – bat exits at 22:30 via large opening on northeast wall 1 x brown long-eared bat re-enters and flies within the barn until end of survey

No other bats emerged from the exterior of the main barn (B4) or from any other target building (B1, B2, B5 or B6) within Manor Farm that are covered by this survey.

4.4.2.2 Survey 16th July 2024

The results of the dusk emergence survey are summarized in **Table 3** and the roost features are shown on **Figures 7b** and **7c** with Target Notes (TN).

Table 3. Dusk Emergence Survey Results, 16th July 2023

TN (Fig 7)	Building	Roost Feature	Bat Species	Count	Note
3	B4	Gap in roof structure within southwestern part of main barn	Soprano pipistrelle	2	First bat emerged at 21:12 and second bat emerged at 21:21. Both bats exited via large opening on northeast wall
4	B4	Gap at top of wall on southwest elevation at southeastern end of barn Ridge board at southeast end of barn	Brown long-eared	2	First bat emerged at 21:38 and tucked into ridge board at southeastern end of barn (see TN2) Second bat observed at 21:50 (1 bat tucked on ridge board - see TN2 - and one bat flying along ridge One brown long-eared bat observed tucked on ridge at end of survey

No other bats emerged from the exterior of the main barn (B4) or from any other target building (B1, B2, B5 or B6) within Manor Farm that are covered by this survey.

4.4.2.3 Survey 22nd August 2024

The results of the dusk emergence survey are summarized in **Table 4**. The roost features are shown on **Figures 7a** and **7c-7e** with Target Notes (TN).

Table 4. Dusk Emergence Survey Results, 22nd August 2024

TN (Fig 7)	Building Ref	Roost Feature	Bat Species	Count	Note
1	B4	Small timber enclosure (pulley house) at apex of southeast end	Lesser horseshoe	1	Bat emerged at 20:35, flew around barn and re-entered roost. Stayed there until end of survey
3	B4	Gap in roof structure within southern part of main barn	Soprano pipistrelle	2	First bat emerged at 20:30 and second bat emerged at 20:48. Both bats exited via large opening on northeast wall
5	B4	Hole in stone wall at northwest end of barn	Soprano pipistrelle	1	A single bat entered barn and was observed crawling into a hole on wall at 21:24
6	B4	Unknown (assumed roof structure)	Brown long-eared	1	Bat emerged via large opening on northeast wall at 21:11

No other bats emerged from the exterior of the main barn (B4) or from any other target building (B1, B2, B5 or B6) within Manor Farm that are covered by this survey.

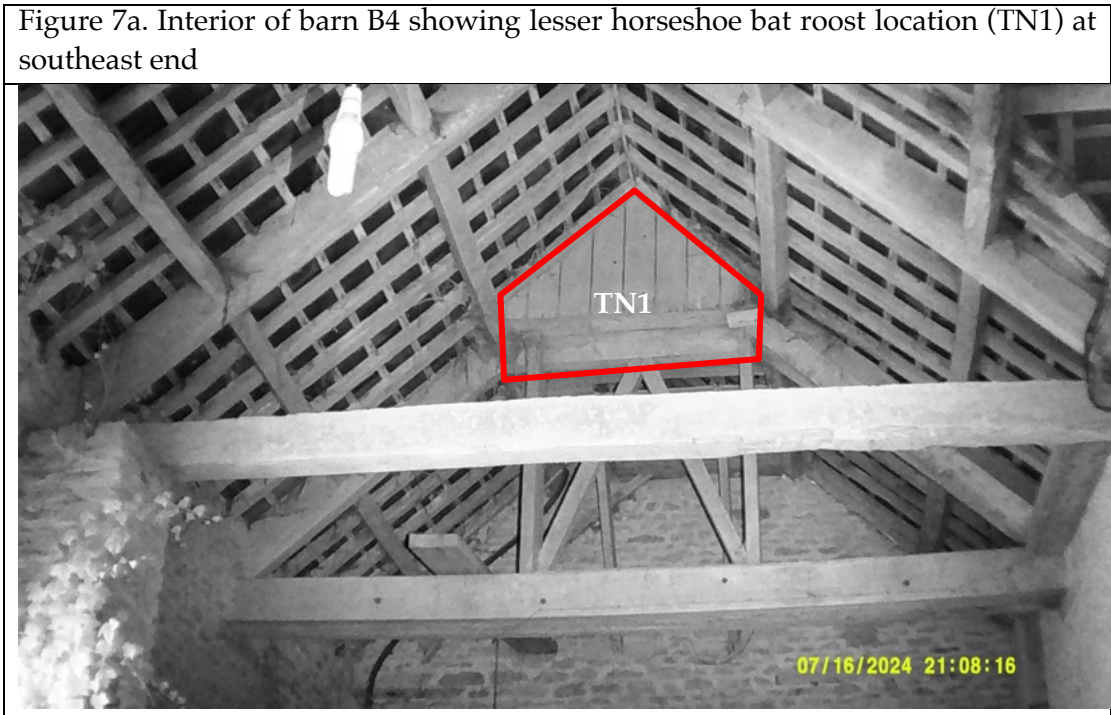


Figure 7b. Interior of B4 showing brown long-eared roost features (TN2 and TN4) at southeast end the barn

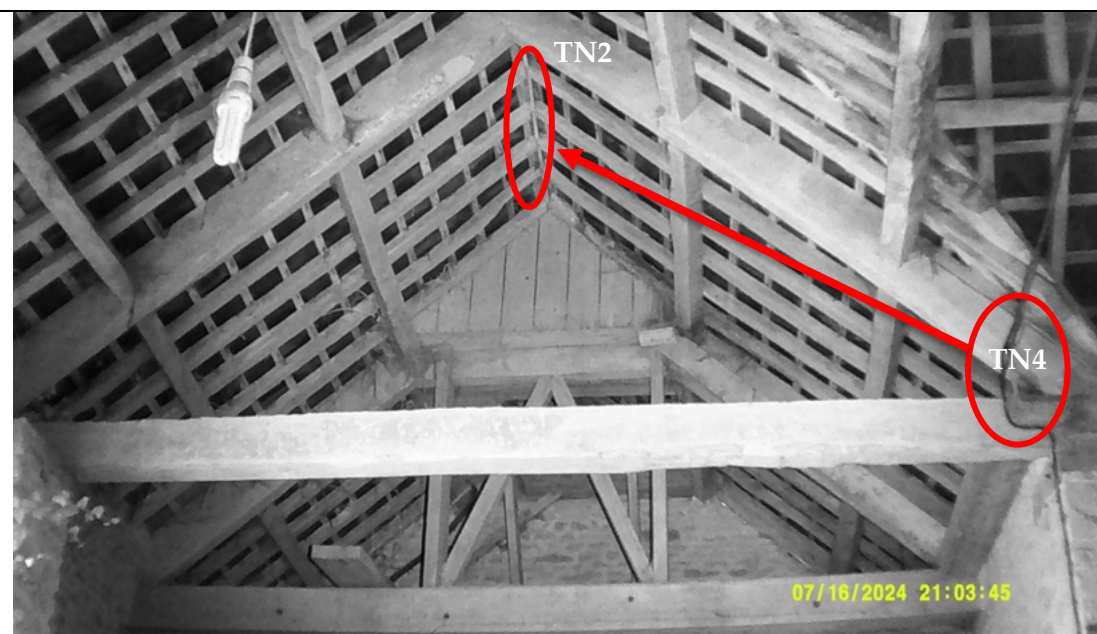


Figure 7c. Interior of barn B4 showing soprano pipistrelle roost feature (TN3) at southwest side



Figure 7d. Interior of barn B4 showing northwest end wall where the soprano pipistrelle bat entered a hole (TN5)



Figure 7e. Exterior of barn B4 showing large opening on northeast side where bats exit / enter the barn



4.4.2.4 Bat Activity

Bat activity around the Project Area buildings was generally consistent across the three dusk surveys, with activity characterised by near continuous noctule (*Nyctalus noctula*) foraging activity, particularly along the tree line on the northwestern boundary of the site, as well as regular common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*) foraging activity across the site.

Other bat activity was limited to occasional and intermittent passes / foraging activity of low numbers of myotis bats, including Natterer's (*Myotis nattereri*) and Daubenton's (*M. daubentonii*), and serotine (*Eptesicus serotinus*).

4.5 Nesting Birds

Evidence of bird nesting within or on the Project Area buildings at Manor Farm is as follows:

- **Building B1 (Barn).** Stock dove (*Columba oenas*) on roof beams.
- **Building B5 (Former bull pen).** House sparrow (*Passer domesticus*) nesting in hole in southeast gable end wall.
- **Building B7 (Modern barn).** Pied wagtail nest in roof insulation.

There is always a possibility for small passerine birds to nest in the future within most of the Project Area buildings - especially on roof beams, tops of walls, tucked under eaves, roof apex or any gaps in walls. Species such as robin (*Erithacus rubecula*), wren (*Troglodytes troglodytes*), blackbird (*Turdus merula*) and blue tit (*Cyanistes caeruleus*) regularly occur in agricultural buildings.

There is no evidence that barn owl (*Tyto alba*) or swallows (*Hirundo rustica*) is nesting or roosting in any of the Project Area buildings, and this species is not a constraint for the proposed development.

The Project Area is unsuitable for supporting ground nesting birds.

4.6 Great Crested Newt

4.6.1 Off-Site Pond

The off-site pond ("Pond 1") located 160m northwest of Manor Farm was initially assessed using an industry standard habitat suitability index (HSI), shown in **Table 5**. The pond has a HSI score of 0.40 (poor suitability for breeding great crested newt).

Further survey of the off-site Pond 1 was however undertaken to determine if great crested newts were present using eDNA water sampling. The eDNA laboratory results returned a 'positive' finding (see Appendix . Therefore, it is concluded that great crested newts are present within the off-site pond, which is classed as a confirmed great crested newt breeding pond.

Table 5. Great crested newt HIS for the Off-site pond

SI Categories		Pond 1	
		Score	SI
1	Location	A	1
2	Pond Area (m ²)	1000	0.95
3	Permanence	Sometimes	0.5
4	Water quality	Bad	0.01
5	Shade	90%	0.4
6	Waterfowl	Minor	0.67
7	Fish	Absent	1
8	Ponds / km ²	2.5	0.85
9	Terrestrial habitat	Poor	0.33
10	Macrophyte cover	0%	0.3
H S I Score		0.40	
H S I Category		Poor	

4.6.2 On-Site Habitat Assessment

The Project Area does not contain a pond. The majority of the habitat within the development plot is totally unsuitable for supporting great crested newt or other amphibians in their terrestrial phase being mainly a combination of buildings and hard-standing, much of which is regularly disturbed / supports vehicle movements.

A small area in the eastern corner of the site supports grassland, which could provide some habitat for amphibians in their terrestrial phase for foraging and sheltering/refugia. However, this grassland appears to have previously been managed with cutting before only recently being neglected. This small area of grassland will be retained within the proposed scheme landscaping design, which will then be planted with fruit trees to create a small orchard.

4.7 Other Protected Species

There are no other protected species associated with the Project Areas buildings or immediate surrounding land, which comprises mainly hard-standing. There is no badger sett, and the buildings and land within the Project Area is unsuitable for supporting dormouse or other protected mammals.

The Project Area supports mainly developed / artificial buildings and hard-standing, which is totally unsuitable for supporting reptiles. Furthermore, the small area of grassland at the site will be retained and planted with fruit trees to create a small orchard - thereby maintaining this habitat for reptiles.

Therefore, reptiles are not a constraint for the proposed development.

5 Assessment

5.1 Designated Wildlife Sites

Under the European Union (Withdrawal) Act 2018, EU-derived domestic legislation, such as existing environmental regulations that implement EU Directives, and Direct EU legislation (such as The Conservation of Habitats and Species Regulations 2017) which were in force immediately prior to the end of the transition period continue to form part of UK domestic law. Special Areas of Conservation (SAC) are designated under The Conservation of Habitats and Species Regulations 2017. The regulations provide for the designation and protection of European Sites, the protection of European protected species and the adaptation of planning and other controls for the protection of European Sites. SSSI are notified and protected under the Wildlife and Countryside Act 1981 (as amended). These sites are notified for nature conservation purposes as they support the best examples of the UK's habitats, flora and/ or fauna.

There are no European designations within 10km and the nearest national designation is 1km from the Project Area. The development is not within a Bat SAC Consultation Zone and not within a SSSI Impact Risk Zone for residential development.

There are three Local Wildlife Sites located between 360m and 780m from the Project Area, which encompass species-rich grassland and broadleaved woodland. The planning application red line boundary is within the curtilage of Manor Farm and the potential effects of the proposed development will be fully contained within the application site and there are no identified impact pathways between the development and the Local Wildlife Sites, such that the proposed scheme will not alter the existing baseline conditions of the locally designated sites in terms of structure/function of habitat, pressures on the sites or associated wildlife.

The Wiltshire Core Policy 50 states '*sustainable development will avoid direct and indirect impacts upon local sites through sensitive site location and layout, and by maintaining sufficient buffers and ecological connectivity with the wider environment*'.

It is concluded that there are no predicted impacts on statutory or non-statutory designated wildlife sites from the proposed development at Manor Farm, which is in compliance with Core Policy 50.

5.2 Bats

5.2.1 *Legal Protection and Licensing*

The key pieces of legislation protecting bats are the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000) and The Conservation of Habitats and Species Regulations 2017.

Bats are legally protected from harm and it is an offence to deliberately or intentionally kill or injure a bat. It is also prohibited to incidentally or deliberately capture, kill, disturb or take bats, or damage or destroy a breeding site or resting place - irrespective of whether it (the roost) is occupied.

Taken together, the Act and Regulations make it illegal to:

- a) Deliberately capture or intentionally take a bat;
- b) Deliberately or intentionally kill or injure a bat;
- c) To be in possession or control of any live or dead bat or any part of, or anything derived from a bat;
- d) Damage or destroy a breeding site or resting place of a bat;
- e) Intentionally or recklessly obstruct access to any place that a bat uses for shelter or protection;
- f) Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection;
- g) Deliberately disturb bats, in particular any disturbance which is likely to (i) impair their ability to survive, breed, reproduce or to rear or nurture their young; or in the case of hibernating or migratory species, to hibernate or migrate; or (ii) to affect significantly the local distribution or abundance of the species to which they belong.

A bat roost may be any structure a bat uses for breeding, resting, shelter or protection. It is important to note that since bats tend to re-use the same roost sites, current legal opinion is that a bat roost is protected whether or not the bats are present at the time.

Although the law provides strict protection to bats, it also allows this protection to be set aside (derogated) under Regulation 53 of the Conservation of Habitats and Species Regulations 2017 through the issuing of licences for the purpose of preserving public health, or public safety, or other imperative reasons of overriding public interest (IROPI) including those of a social or economic nature and beneficial consequences of primary importance for the environment. This is often referred to as a “Bat Mitigation Licence”. Schemes with planning permission usually fulfil the requirements of IROPI. Natural England currently determine these licences in England and an application to Natural England can be made once the necessary planning and building consents have been obtained.

As discussed, where a lawful operation is required to be carried out, but which is likely to result in one of the above offences, a licence may be obtained from Natural England to allow the operation to proceed. However, in accordance with the requirements of the Conservation of Habitats and Species Regulations 2017 a licence can only be issued where the following requirements are satisfied:

- a) that there is no satisfactory alternative; and
- b) that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favorable conservation status in their natural range.

5.2.2 Conservation Status of Target Bat Species

The site, local and national status of bat species roosting in the Project Area **Main Barn B4** at Manor Farm is shown in Table 6.

Table 6. Status of Bat Species in the Project Area at Manor Farm

Species	Site status	County/Regional Status ¹	UK Status ²
Lesser horseshoe	Individual bat regularly using day roosts.	The region is a stronghold for the species in the UK. In Wiltshire, it is widespread but generally considered rare.	Rare, largely confined to SW England and Wales
Soprano pipistrelle	Low numbers of bats regularly using day roosts.	Common and widespread	Common
Brown long-eared	Low numbers of bats regularly using day roosts.	Common and widespread	Common
¹ Informed by published distribution maps, Mammals in Wiltshire Second Edition Version 1 (3rd March 2017). ² Taken from Bat Conservation Trust (2012) <i>The State of the UK's Bats</i> and Battersby, J. (Ed) & Tracking Mammals Partnership (2005).			

5.2.3 Roost Evaluation

One of the Project Area buildings at Manor Farm (Building **B4 Main Barn**) supports three bat species, with brown long-eared, lesser horseshoe and soprano pipistrelle bats using internal features and the barn interior as day roosts. There is no evidence of a maternity roost, winter roost or permeant night roost associated with the Project Area buildings.

The confirmed bat roosts in the **Main Barn (B4)** are as follows:

- Brown long-eared – one roost with maximum of two bats day roosting within the building interior using gaps in the top of wall / roof and ridge board at the south-eastern end of the barn.
- Lesser horseshoe - one roost used by one bat that was observed day roosting within the small timber enclosure at the roof apex in the south-eastern end of the barn.
- Soprano pipistrelle -one roost with a maximum of two bats day roosting within gaps of the roof structure on the southwest side of the barn.

The significance of the bat roosts associated with the **Main Barn (B4)** at Manor Farm has been classified according to the definitions of roost types provided in the Bat Conservation Trust survey guidelines (Collins J (ed.), 2023) and in accordance with criteria for assessing the importance of roosts in the current Bat Mitigation Guidelines (Reason and Wray, 2023).

- Brown long-eared. Summer day roost for a small number of widespread species (not a maternity site), and therefore this roost is classed as being important in a *Site* context.
- Lesser horseshoe. Summer day roost for a single rarer species (not a maternity site), and therefore this roost is classed as being important in a *Site* context.
- Soprano pipistrelle. Summer day roost for a small number of widespread species (not a maternity site), and therefore this roost is classed as being important in a *Site* context.

These types of roost are at the lower end of the conservation significance scale, and collectively the bat assemblage associated with the main barn is classed as being important in a *Local* context.

The presence of bats can largely be attributed to the rural setting of Manor Farm and the proximity to good quality foraging and commuting habitats, such as tree lines, hedgerow and pasture grassland.

5.2.4 Predicted Impacts

The brown long-eared, lesser horseshoe and soprano pipistrelle day roosts will be lost when the **Main Barn (B4)** is converted to residential use and the building is sealed and modifications made to the walls and roof.

There is also a risk that a bat or bats could be injured if they are not excluded from the roosts in the Project Area building (B4) prior to undertaking the proposed building renovations.

The proposed development would have a permanent adverse impact on a roost resource of *Local* conservation significance, with the proposed development at Manor Farm predicted to have an adverse effect at the *Site* scale.

The type and scale of the proposed development is not predicted to have a significant impact beyond the immediate curtilage of the building and immediate surrounding hard-standing, and there are no foreseeable impacts on bat foraging, commuting or roosting habitat or designated wildlife sites in the local area. The impacts on brown long-eared, lesser horseshoe and soprano pipistrelle bat populations are not predicted to affect the species' distributions.

On the basis of the evidence gathered through this study a licence from Natural England must be obtained under the provisions of The Conservation of Habitats and Species Regulations 2017 (see Section 5.2.1) for the proposed development at Manor Farm, Rodbourne because loss of the bat roosts in the Project Area building (B4) would result in an offence under Regulation 43 of the legislation.

5.3 Great Crested Newts

Great crested newts are afforded the same legal protection bats (see Section 5.2.1). They are protected under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000) and The Conservation of Habitats and Species Regulations 2017 and are legally protected from harm and it is an offence to deliberately or intentionally kill or injure a great crested newt. It is also prohibited to incidentally or deliberately capture, kill, disturb or take a great crested newt, or damage or destroy a breeding site or resting place.

There are no great crested newt breeding ponds within, or immediately adjacent to the Project Area at Manor Farm. Terrestrial habitats within the application site have low suitability for the species because they are heavily disturbed. Furthermore, there is limited terrestrial habitat connectivity to ponds in the wider landscape. The following conclusions have been drawn from the results of the eDNA survey of the off-site pond, on-site habitat assessment and desk-based study for the ecological assessment:

- A great crested newt breeding population is associated with ponds located between 160m and 570m northwest and west of the Project Area at Manor Farm. The nearest pond is >200m away from the small area of grassland within the Project Area.
- English Nature research establishes that the maximum routine migratory range for great crested newt is approximately 250m from a breeding pond, while further research determined 'a terrestrial zone of 63m, within which 95% of summer refuges were located' and '64% of newts were found within 20m of the breeding pond edge' (Manor Farm grassland is located away from these core great crested newt terrestrial zones).
- Given the distance from the great crested ponds combined with the Project Area supporting developed / artificial buildings and hard-standing, which is totally unsuitable for supporting amphibians in their terrestrial phase and separates/isolates the small area of grassland, it is concluded that great crested newt is highly likely to be absent from the majority of the Project Area.

- Furthermore, the small area of grassland (that could represent limited terrestrial habitat availability for the species) will be retained and planted with fruit trees to create a small orchard - thereby maintaining this habitat for amphibians.

Great crested newt is therefore not considered a constraint for the proposed development.

It is not considered necessary to apply for a great crested newt development licence from Natural England must be obtained under the provisions of The Conservation of Habitats and Species Regulations 2017 (either EPS site-based mitigation licence or District Level Licence) to facilitate this proposed development.

5.4 Nesting birds

All breeding birds are protected in the UK under the Wildlife and Countryside Act 1981 (as amended) whilst they are actively nesting.

The buildings **B4 (Main Barn)**, **B5 (Former bull pen)** and **B7 (Modern barn)** support very low numbers of nesting passerine birds. There is also potential for other small passerine birds to nest within the buildings in the future, although no evidence of previous / current nesting was found during the survey. There is no evidence of barn owl nesting / roosting with any building within the Project Area.

The bird nesting sites will or very likely be lost when the buildings are converted to residential use (**B1 - B6**) or demolished (**B7 - B9**). There is also a risk that nesting birds could be disturbed or injured if the proposed building renovations are undertaken without appropriate safeguards.

The proposed development could have an adverse impact on nesting birds, which is predicted to be an effect at the *Site* scale. Mitigation to ensure protection of nesting birds is proposed in Section 6.6.1.

Replacement nesting habitat / opportunities have been included within the design of the proposed converted residential dwelling at Manor Farm.

6 Mitigation and Enhancement Strategy

6.1 Bats

6.1.1 Overview

The proposed development at Manor Farm will convert six buildings (B1-B6) to provide residential accommodation and demolish another three buildings (B7-B9). The main barn (Building B4) supports a known roost for three species of bat.

The proposed development is contained within the curtilage of the existing buildings and farmyard at Manor Farm, but it requires mitigation for the loss of bat roosts and possible injury of bats during the construction work.

Mitigation concepts have been defined based upon industry-standard bat mitigation guidelines that establish an appropriate level of mitigation for adverse impacts on a moderate conservation status roost as:

- Loss of a summer roost for low numbers of widespread species (e.g. brown long-eared and soprano pipistrelle bats): Flexibility over provision of bat-boxes, access to new buildings etc. No conditions about timing.
- Loss of a summer roost for low numbers of rarer species (e.g. lesser horseshoe bat): Provision of new roost facilities where possible. Need not be exactly like-for-like, but should be suitable, based on species' requirements. Minimal timing constraints.

Brown long eared bats are a woodland species that naturally have summer roosts in tree holes, but have adapted to using loft spaces of large buildings such as churches, barns and old houses. The species is also found in bat boxes.

Soprano pipistrelle bats summer roosts are usually crevices in buildings especially under roof or hanging tiles, behind boards on a gable or in cavity walls. This species also roosts in tree holes and readily uses bat boxes.

Lesser horseshoe bats were originally a cave dwelling species, but summer colonies are now usually found in agricultural barns and the roofs/ cellars of larger rural properties. In residential properties, maternity colonies usually roost in warm roof spaces and hibernating bats use the cellars. Lesser horseshoe bats prefer access through an opening that allows uninterrupted flight to the roof apex, such as doorways and windows, but they are capable of using more inconspicuous gaps.

To meet the roost requirements of the three bat species using the Project Area buildings at Manor Farm the following features will be included within the proposed development:

- A dedicated bat loft will be constructed within part of the roof space of the converted Building B1 to provide continued roosting opportunities for brown long-eared and lesser horseshoe bats.
- Features for crevice-dwelling species, such as pipistrelle bats, will also be included within the dedicated bat loft including a bat box and squeeze gaps.
- Three external bat boxes will be included in the proposed house design to provide continued roosting opportunities for crevice-dwelling bats such as soprano pipistrelle.

To mitigate and enhance nesting opportunities for breeding wild birds, six integrated swift nesting boxes will be installed in the buildings. Prevention of harm or disturbance to nesting birds within the existing agricultural Project Area buildings can be achieved with reasonable avoidance measures and ecological watching brief, as required.

The bat roost features and bird boxes are shown the Proposed Elevations, drg. PL110 A in **Appendix B**.

The proposed orchard planting within the retained grassland (shown on the Proposed Masterplan drg. PL106 in **Appendix B**) will create new composite habitat for protected species, with the trees providing foraging opportunities for bats and birds. Log piles are also proposed in the orchard as a wildlife feature for ground dwelling animals and saproxylic invertebrates.

6.2 Bat Mitigation Licensing

6.2.1 *Obtaining a Bat Mitigation Licence for this Project*

In 2015, Natural England introduced a class licence (WML-CL21), which provides a streamlined process to the European Protected Species (EPS) Licence described in Section 5.2.1.

The Bat Mitigation Class Licence (BMCL) permits work that has a low impact on certain bat species and certain roost types, but which still needed to be licensed in order to meet legal requirements.

Manor Farm meet the class licence requirements based on the following criteria:

- Bat species -the BMCL can be used for soprano pipistrelle, brown long-eared and lesser horseshoe [certain counties, including Wiltshire]
- Assemblage of bats - sites that support a maximum of three bat species can be registered for the BMCL. [Sites with a more diverse assemblage of bat roosts must apply for an individual EPS licence.]
- Number of bats- sites that support individuals or small numbers (in total) of the bat species listed above can register for the BMCL. Where more than one bat

species is affected, it is the total number of bats which must be considered. The conservation status of bats varies across regions and must be considered by the ecologist when determining what constitutes 'small numbers'.

- Roost type -the BMCL applies to roosts of low conservation significance, including day roosts, as found at Manor Farm.
- Number of roosts -the BMCL is applicable to sites that support no more than three roosts in total (across all structures). The roost count at Manor Farm is three roosts (one brown long-eared roost, one soprano pipistrelle roost and one lesser horseshoe roost) in **Main Barn B4**, as described in Section 5.2.3.

Impacts

Natural England's BMCL permits activities resulting in the disturbance and/or capture of certain bat species (listed above) and/or the damage or destruction of roosts of low conservation significance.

Natural England's BMCL is held by Registered Ecological Consultants and sites must be registered with, and approved by, Natural England before any licensable work can commence. The ecological consultant must apply to Natural England's Sustainable Development Wildlife Licensing to register the site with at least 3 weeks (15 working days) notice and no more than 12 weeks before commencement of any licensable activities.

Natural England advise that survey data for licensing should include data from the most recent survey season. It is therefore advisable to have survey information from within the last 12 months. Survey updates may be needed if the development programme is not scheduled to start within the year planning permission is granted, and it is particularly important to consider seasonal timing constraints associated with updating the bat surveys. Therefore, if the start to development is delayed after receiving planning permission a survey update would need to be undertaken to ensure data is available for the bat season (e.g. May to August) in the preceding year.

6.2.2 Capture and Exclusion of Bats

The proposed building conversion will need to take precautions to avoid disturbing roosting bats and prevent individual bats being injured or killed during the building conservation work. Certain works, including the removal/modifications of the roof and modifications to certain walls, will require the supervision of an appointed ecologist under NE licence.

The ecologist will need to check for the presence of bats to avoid animals being harmed or injured by construction activities. Prior to commencement of the scheme, a construction programme will need to be developed in consultation with the appointed ecologist and appointed contractor. The ecologist will identify operations and building activities that present a foreseeable risk of harm or injury to bats so that they can attend site at the appropriate time for ecological supervision during the construction phase.

6.2.3 *Post-construction Review and Monitoring*

The replacement / new bat roosting features included within the proposed development, including bat loft and bat crevice roosting features, will be inspected and signed-off by the licenced bat worker following completion of the development construction.

The planned work is affecting roosts of three bat species, including the rarer lesser horseshoe bat. As such there is a requirement for post-scheme monitoring of the new bat loft, which will be undertaken in Year 2 following completion of the development construction. This will involve a single daytime inspection of the bat loft and one dusk emergence survey undertaken during July / August in each year following completion of the development.

A monitoring report for the post-construction surveys is a requirement of licensing, and currently a condition for the licence return on most Natural England bat mitigation licences.

6.3 Bat Loft

A new bat loft will be incorporated over the proposed car port at the south-western end of the converted Building **B1** (former cow byre). The bat loft is designed and positioned to ensure continuity of the existing roosts in terms of its location, which is within the curtilage of Manor Farm, close to the main barn (B4) and in close proximity to the adjacent tree-lined lane running alongside the north-western boundary of the site as well as habitats in the surrounding landscape. The location of the bat loft is shown on drg. PL110 A in **Appendix B**.

The loft is designed to provide a suitable roosting space for brown long-eared and lesser horseshoe bats, which both require a sufficiently large space within which they can fly around in prior to leaving the roost.

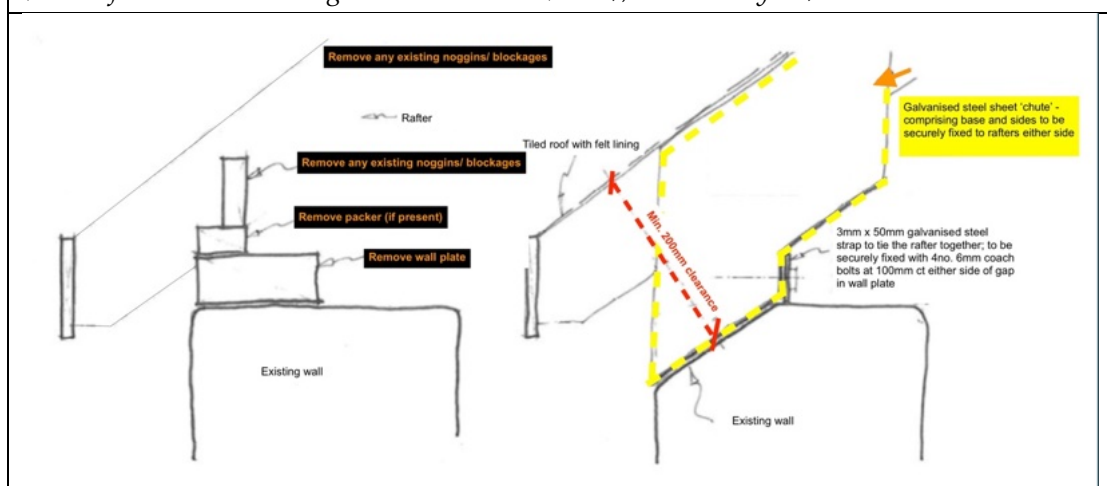
The proposed new bat loft is shown will be ca. 7.1m long by 3.7m long with a 1.9m internal height from floor to ceiling, which will provide an internal volume of ca. 25m³.

The bat loft incorporates the following features specifically designed for roosting bats, particularly a roost for lesser horseshoe bats and brown long-eared bats:

- A bat roost access comprising an entrance under the eaves with an opening with minimum 200mm wide clearance to allow uninterrupted flight for lesser horseshoe (and brown long-eared) bats (see **Figure 8**). The access will be created under the eaves on the north-west aspect of the building (adjacent to the tree-lined lane).

- A clear line of flight to the roost entrance will be maintained at all times, and no external lighting will be used adjacent to or shine directly at the entrances (see shown on drg. PL110 A).
- The roof of the bat loft will be constructed with an open structure and lined with traditional bitumen hessian (Type 1F) roof liner, which will be fixed above the roof timbers with the ridge board left exposed.
- Within the loft two purpose-fitted timber triangular baffles will be installed at the roof apex (see drg PL1110 A) to create divides in the loft that provide more enclosed species for the bats to roost, as follows:
 - Baffle 1: fitted 500mm from the southwest end wall and extending from the ceiling to a depth of 900mm from the ridge to create a dark void at one end of the loft.
 - Baffle 2: fitted 3000mm from the southwest end wall and extending from the ceiling to a depth of 900mm to provide a sheltered area under the roof ridge. This baffle will help reduce air flow in the mid-section of the loft from the roost entrance.
- The baffles will be constructed from OSB with each baffle fitted with a “squeeze board” to provide roosting opportunities for crevice dwelling bats, such as pipistrelle bats. The squeeze board is a panel that attaches to the baffle with small battens leaving a 25mm gap between the two boards (providing a squeeze gap for crevice-dwelling bats to use, as shown in **Figures 9a and 9b**).
- A single prefabricated bat roosting box will also be included within the bat loft to provide additional roosting opportunities for crevice-dwelling bat species (shown on drg. PL1110 A).
- A small (500mm x 500mm) access hatch will be provided in the floor of the bat loft to allow surveyor access for bat monitoring inspections.

*Figure 8. Design Detail for Eaves Access for Lesser Horseshoe Bats to the Bat Loft
(Taken from The Bat Mitigation Guidelines (2023), Case Study 18)*



<i>Figure 8a. Example of a baffle (highlighted yellow) extending down from the ceiling to enclose a sheltered area at the rear of a loft.</i>	<i>Figure 9b. Example of a squeeze board occupied by a brown long-eared bat (circled red)</i>
	

6.4 Crevice-dwelling Bat Roosting Features

To provide external bat roosting features three integrated bat boxes, e.g. Schwegler 1FR bat box or equivalent (often referred to as a bat tube), will be installed on suitable locations on the renovated dwelling as shown on drg PL1110 A in **Appendix B**. The bat roosting boxes will be installed as follows:

- 1 x bat box on southwest gable wall of Building B1
- 1 x bat box on southeast gable wall of Building B4
- 1 x bat box on southeast gable wall of Building B6

The bat boxes will be installed close to the roof apex (so that they are as high as possible) and no external lighting will be used adjacent to or shine directly at the bat box entrance slots. Clear lines of flight to the bat roost box entrances will be maintained at all times.

6.5 Lighting

The integrity of bat roosting features, including flight paths to and from the roosts, within the Project Area as well as foraging/commuting habitat surrounding the development site can be conserved though the sensitive installation of external lights that will form part of the existing residential lighting requirements at Manor Farm.

Additional external lighting should only be used where it is necessary for reasons of security and safety. In particular, new lighting should avoid being located adjacent to or directed at entrances to the new bat loft (on north-west boundary), bat roosting boxes on southwest gables (**B1**) and southeast gable ends (**B4** and **B6**), and along the north-western boundary of the site which comprises a tree-lined verge along the lane.

Where lighting is required, it should be kept at low level and at low intensity, with hoods and baffles used to direct the light to where it is required, thereby minimizing outward light spill and avoiding upward light spill (Institution of Lighting Professionals, 2018). To minimise the impact on bats, the use of low pressured sodium lamps is recommended in preference to mercury or metal halide lamps which have a UV element that can affect the distribution of insects and attract bats to the area, affecting their natural behaviour.

The key principals for choosing a suitable type of lamp are:

- Avoid blue-white short wavelength lights: these have a significant negative impact on the insect prey of bats. Use alternatives such as warm-white (long wavelength) lights as this will reduce the impact on insects and therefore bats.
- Avoid lights with high UV content: (e.g. metal halide or mercury light sources) or reduce/completely remove the UV content of the light. Use UV filters or glass housings on lamps which filter out a lot of the UV content.

Selecting an appropriate lamp unit that is designed to be environmentally friendly will minimise light spill, but further controls can be imposed by installing directional accessories such as baffles, hoods and louvres on lamps to direct light away from ecologically sensitive features, habitats and areas.

LED (Light Emitting Diode) units are an effective way to direct the light into small target areas and are recommended for lighting the proposed parking and turning area. Composite LEDs can be switched off to reduce/direct the light beam to specific areas.

6.6 Nesting birds

6.6.1 Protection of Breeding Birds

To ensure protection of nesting birds in accordance with the Wildlife and Countryside Act, 1981 (as amended) the following action is required:

- Preferably undertake construction work (particularly the sealing-up of buildings, removal of roofs or demolition of buildings) affecting known or potential bird nesting sites outside the bird breeding season (bird breeding season is considered to be from 1st March to 31st August). This option will avoid the need for a pre-works inspection to determine the presence of nesting/breeding birds.

If this option is not feasible and construction work has to be undertaken during the bird breeding season as defined above, then the following action will be taken:

- A nesting bird inspection immediately prior (maximum 2 weeks in advance) to the commencement of construction work affecting known/potential bird

nesting sites will be undertaken. If nesting birds (including birds constructing a nest or nest with eggs or hatchlings) are subsequently identified to be present work in that area must cease until the nest is clear (all birds fledged and vacated the nest).

Regardless of timing or findings of previous surveys, if nesting birds are found within the development site during any part of the construction phase, then work will stop and a qualified ecologist can be consulted for advice on preventing disturbance or damage to breeding birds.

6.6.2 Bird Boxes

Six integrated swift nesting boxes, which fit into the fabric of an external cavity wall, will be incorporated into the scheme design as shown on drg. PL1110 A in **Appendix B**. The swift boxes will be installed in groups of three in two locations on the renovated property.

The provision of swift boxes recognises the fact that swift numbers are in decline and have been recorded locally. Therefore, the proposed scheme aims to provide additional breeding sites for swift, while swift nesting boxes are also readily used by a range of other small passerine birds such as house sparrow (*Passer domesticus*) and are seen as a 'universal bird box' for new development

The boxes will be orientated as close to the highest point of roofs, which provide sufficient height and shelter from direct sunlight.

A range of alternative bird boxes are available and can be incorporated depending on the proposed design and architecture. Boxes can be viewed online, for example www.actionforswifts.com, www.nhbs.com or www.wildcare.co.uk.

6.7 Habitat Features in the New Orchard

As part of the habitat enhancement protected species, two purpose made hibernacula and refuges are recommended in the orchard (see drg PL106, **Appendix B**) to provide shelter for ground dwelling animals.

The log, brash and earthen refugia piles will encourage the wider use of the site by ground dwelling species such as hedgehogs, small mammals and amphibians. The hibernacula should consist of log/ rubble piles up to 0.5m high covered with top-soil and vegetation. Small entrances should be kept open at ground level using angled flagstones or similar. Design details for hibernacula that could be created at the site are provided in **Appendix E**.

These features will include decaying wood piles that provide ideal habitat for saproxylic invertebrates (feed on deadwood), fungi and mosses.

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Appendix A. Photographs

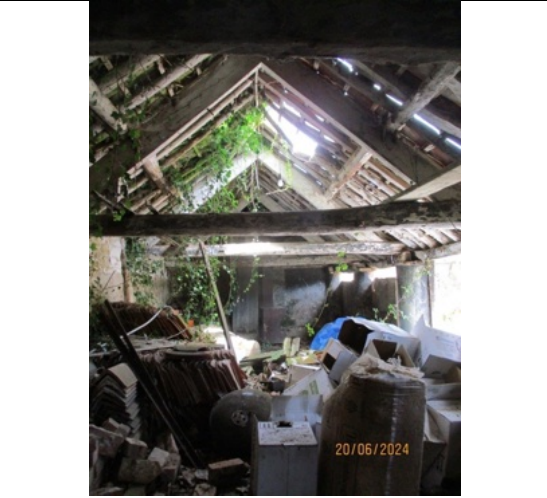
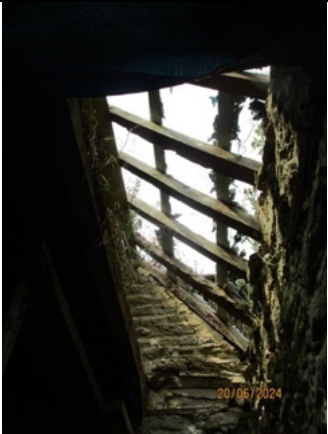
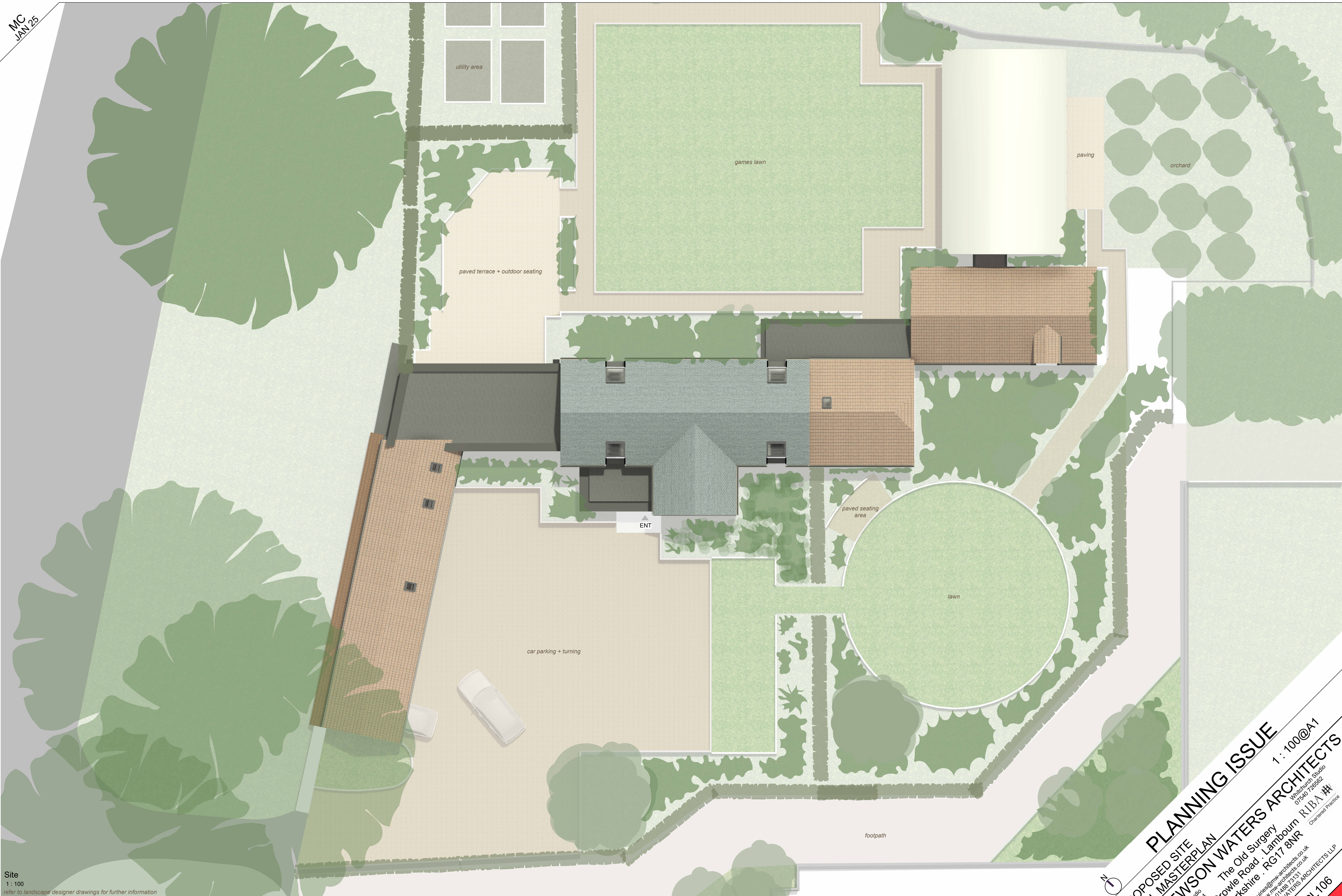
Photo 1. Buildings B1 and B2 exterior 	Photo 2. Building B1 interior 
Photo 3. Building B2 and B3 exterior 	Photo 4. Building B2 interior 
Photo 5. Building B3 interior 	Photo 6. Building B4 - southwest elevation 

Photo 7. Building B4 - northeast elevation	Photo 8. Building B4 - interior looking southwest
	
Photo 9. Building B4 - interior looking southeast	Photo 10. Building B4 - interior southeast roof
	
Photo 11. Building B5 exterior	Photo 12. Building B5 interior
	

Photo 13. Building B6 - southwest elevation 	Photo 14. Building B6 - northeast elevation 
Photo 15. Building B6 - interior 	Photo 16. Building B6 - interior 
Photo 17. Building B7 exterior 	Photo 18. Building B7 interior 
Photo 19. Building B8 	Photo 20. Building B9 

Appendix B. Proposed Scheme

MC
JAN 25



Site
1 : 100
refer to landscape designer drawings for further information

PROJECT

MANOR HOUSE FARM, MALMESBURY

REV. DESCRIPTION APP. DATE

SCALE BAR

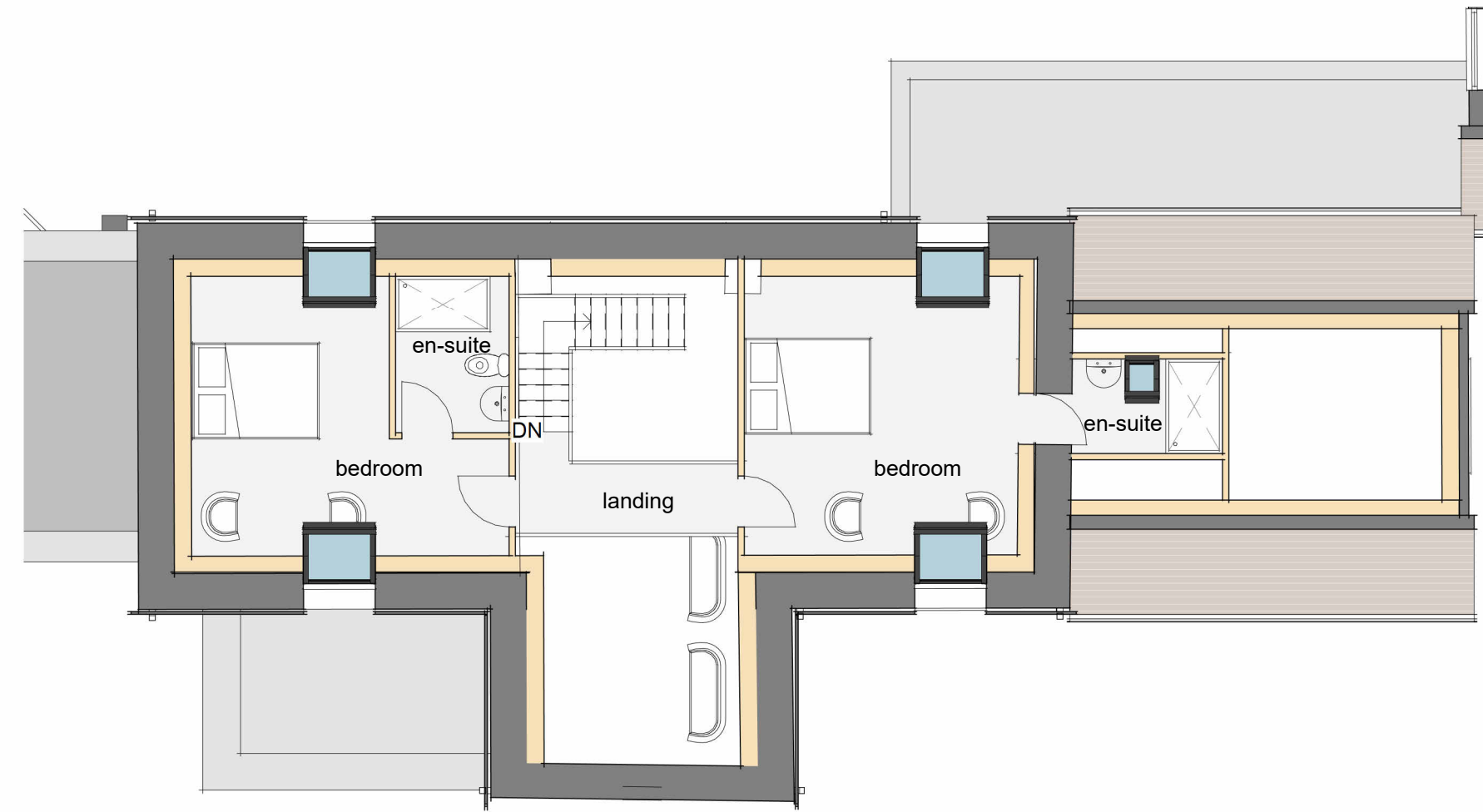


**PROPOSED SITE
PLAN MASTERPLAN**
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23041 PL106
PLANNING ISSUE
1 : 100@A1
Whitehurst Studio
01540 726562
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PROPOSED GROUND FLOORPLAN
1 : 100



PROPOSED FIRST FLOOR PLAN
1 : 100

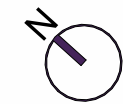
MANOR HOUSE FARM, MALMESBURY

PROJECT

REV.	DESCRIPTION	APP.	DATE
B	SWIMMING POOL AMENDMENTS		MARCH 25
A	PLANNING APPLICATION		FEB 25

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PROPOSED GROUND/ FIRST FLOOR PLAN

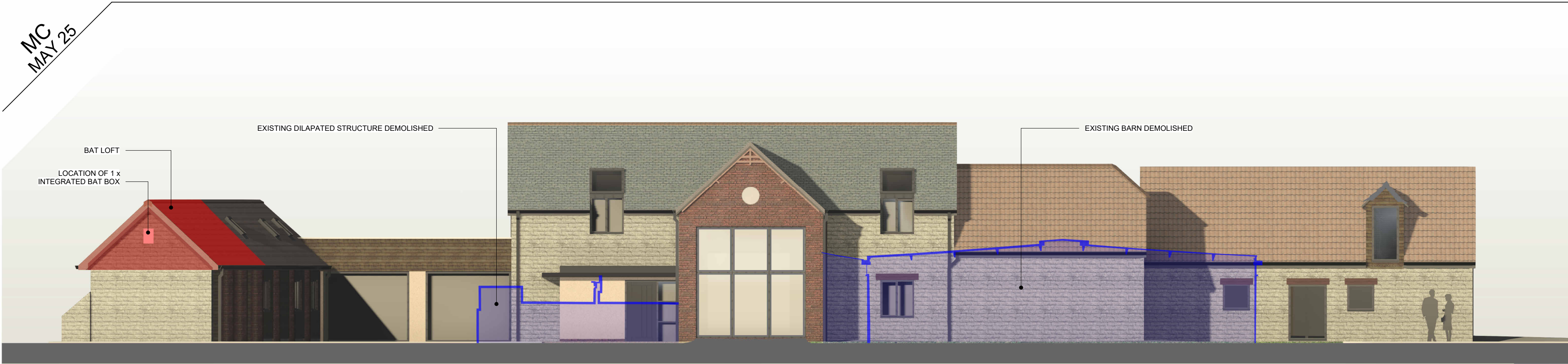
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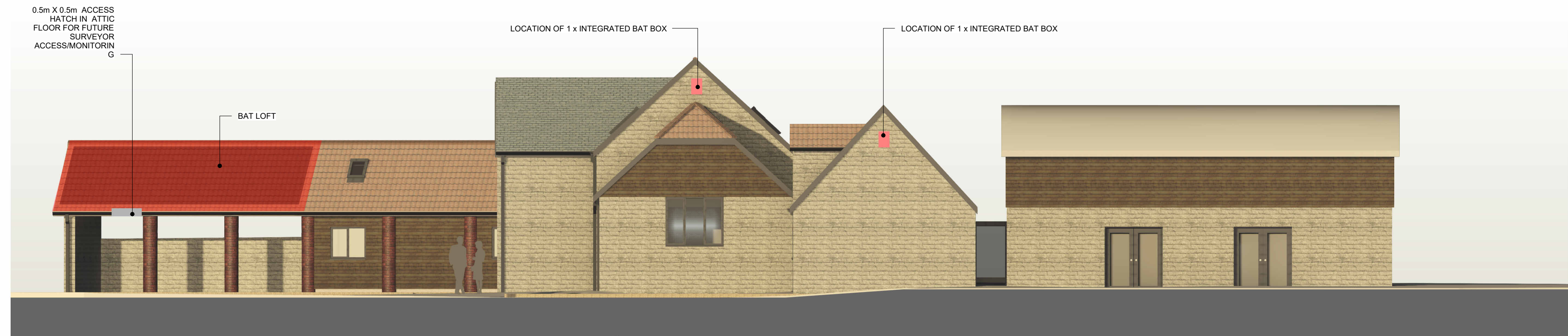
23041 PL108 B



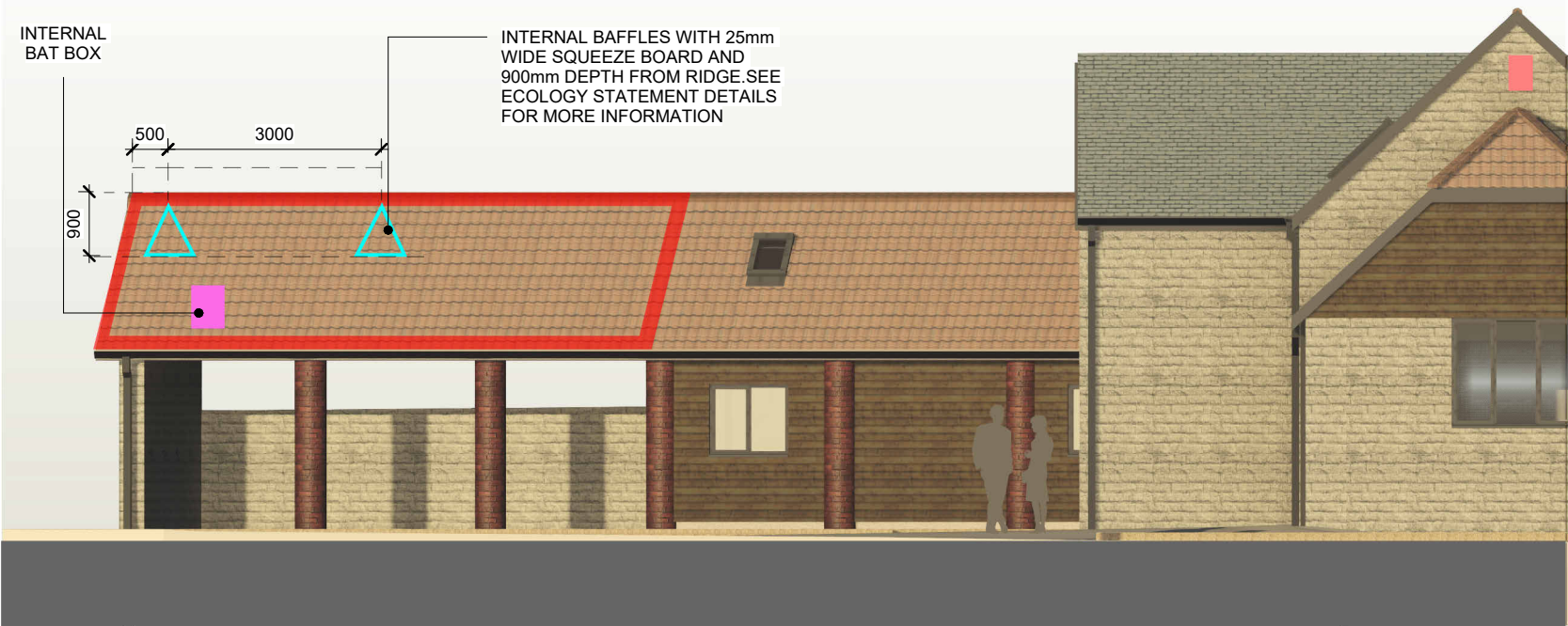
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PROPOSED NORTH-EAST ELEVATION
1 : 100



PROPOSED SOUTH-EAST
1 : 100



PROPOSED SOUTH-EAST_INTERNAL_FURTHER INFORMATION
1 : 100



PROPOSED NORTH-WEST ELEVATIONS 1
1 : 100



PROPOSED NORTH-WEST ELEVATIONS 2
1 : 100

PROJECT

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A ECOLOGY INPUT

MAY 25

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Appendix C. Bat Survey Camera Views

Surveyor and camera positions are shown on Figure 2 in Section 3.2.2.

<i>Surveyor 1 – Night Vision field of view of B3</i>	<i>Surveyor 2 – Night Vision field of view within B3</i>
	
<i>IR field of view (B5 & B6)</i>	<i>TI Camera field of view (B3 & B6)</i>
	

Appendix D. Great crested newt eDNA Laboratory Report

Off-Site Pond eDNA Laboratory Report

Folio No: 2320-2024
Purchase Order: MEC107-AB
Contact: Malford Environmental
Consulting
Issue Date: 04.07.2024
Received Date: 24.06.2024

GCN Report

Technical Report



SureScreen Scientifics

Folio No: 2320-2024
Purchase Order: MEC107-AB
Contact: Malford Environmental Consulting
Issue Date: 04.07.2024
Received Date: 24.06.2024

GCN eDNA Analysis

Summary

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analyzing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

Results

Lab ID	Site Name	OS Reference	Degradation Check	Inhibition Check	Result	Positive Replicates
2756	Manor Farm, Rodbourne	ST9335083475	Pass	Pass	Positive	10/12

Matters affecting result: none

Reported by: Daisy Chambers

Approved by: Christopher Troth

Methodology

The samples detailed above have been analyzed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample tube which then undergoes DNA extraction. The extracted sample is then analyzed using real-time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded. Analysis of eDNA requires attention to detail to prevent the risk of contamination. True positive controls, negative controls, and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added analytical security.

SureScreen Scientifics Ltd is ISO9001 accredited and participates in Natural England's proficiency testing scheme for GCN eDNA testing.

Interpretation of Results

- Sample Integrity Check:** When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results. Any samples which fail this test are rejected and eliminated before analysis.
- Degradation Check:** **Pass/Fail.** Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.
- Inhibition Check:** **Pass/Fail.** The presence of inhibitors within a sample is assessed using a DNA marker. If inhibition is detected, samples are purified and re-analyzed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.
- Result:** **Presence of GCN eDNA (Positive/Negative/Inconclusive)**
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with the WC1067 Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.
Inconclusive: Controls indicate inhibition or degradation of the sample, resulting in the inability to provide conclusive evidence for GCN presence or absence.



Appendix D. Refugia and Hibernaculum Design

Specification 1. Log and Brash Piles

Log/ brash piles should be placed in a sunny location at woodland edges, and within scrub on the embankment.

Brash/log piles can be created from arisings of scrub control and tree clearance. Where required, larger logs can be imported from another site. The log/brash piles will need to be maintained by adding additional material as the pile decomposes (or is disturbed). This can be provided from ongoing woodland and scrub management at the site.

To be useful to reptiles brash/log piles should not be tightly compacted. To provide diverse structure, it is recommended that the central core be composed of the largest logs, while the outer layers are laid more loosely on top. Vegetation growing through the outer edges of the brash pile will provide additional cover.

Log piles should contain a mixture of sizes and shapes, with some small-diameter material present.



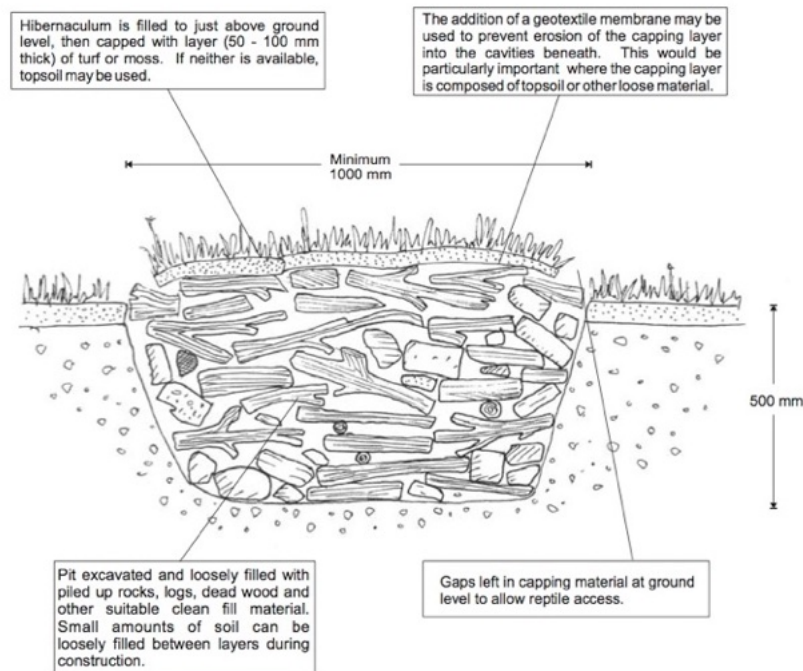
Log and brash pile in grassland

Specification 2: Hibernaculum Design

*Taken from DMRB VOLUME 10 SECTION 4 PART 7 HA 116/05 ENVIRONMENTAL
DESIGN AND MANAGEMENT THE GOOD ROADS GUIDE - NATURE
CONSERVATION NATURE CONSERVATION ADVICE IN RELATION TO REPTILES
AND ROADS*

Hibernaculum on free-draining ground

Where ground conditions allow, the hibernaculum should be incorporated into a shallow pit. This design is more likely to remain frost-free, and will be less obtrusive and thus unlikely to be subject to interference.



Hibernaculum on impermeable ground

Where ground conditions are impermeable, then an 'above-ground' or mounded design should be utilised in order to prevent the hibernaculum from flooding. This design should also be used if it is not possible to excavate a pit for any other reason.

