
**HAWTHORN FARM,
MARDEN, WILTSHIRE**

PROPOSED NEW HOUSE

**PROTECTED SPECIES SURVEY
&
MITIGATION STRATEGY**

On behalf of

MR & MRS PURVES

Final Report

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Prepared by



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1 Introduction

The client is seeking planning permission from Wiltshire Council to demolish the existing farm buildings and construct a new house on land at Hawthorn Farm, The Street, Marden, Wiltshire. The proposed new house and garden will sit on the footprint of the existing buildings. The proposed development plot is surrounded by numerous mature trees and small blocks of woodland that include oak (*Quercus robur*), horse chestnut (*Aesculus hippocastanum*), beech (*Fagus sylvatica*), ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), lime (*Tilia x europaea*), yew (*Taxus baccata*) and pollarded willow (*Salix* sp). However, no trees are required to be removed, and garden landscaping will include new boundary hedge and tree planting.

Malford Environmental Consulting was commissioned to undertake appropriate baseline ecological surveys, which included a Phase 1 (bat roost inspection and protected species) survey of the farm buildings, plus additional Phase 2 bat surveys. The surveys were undertaken by Dr Stephen Dangerfield, Jonathan Adey and Anton Kattan, who are all Natural England licensed bat workers (NE Class Licence Level 1 WLM-CL17 and NE Class Licence Level 2 WLM-CL18), Chartered Environmentalists and full members of the Chartered Institute of Ecology and Environmental Management (CIEEM).

The surveys concentrated on identifying the presence of roosting bats and other protected species (e.g. nesting birds) inhabiting or using the existing farm buildings. This report sets out the findings of the surveys, and where necessary makes recommendations for actions to ensure the proposed development complies with nature conservation legislation and meets the requirements of planning policy.

Section 40 of the Natural Environment and Rural Communities Act 2006 (NERC Act) requires all public bodies to have regard to biodiversity conservation when carrying out their functions. Under the NERC Act the local planning authority should not determine a planning application if there are any surveys outstanding for European protected species. The National Planning Policy Framework (NPPF), revised 24 July 2018, requires the planning system should conserve and enhance the natural environment (Section 15) by, *inter alia*, 'protecting and enhancing sites of biodiversity value' and minimising impacts and providing net gains for biodiversity' (para 170). This is reflected in the Wiltshire Core Strategy (Policy 50).

2 Scope of Work and Methodology

2.1 Phase 1 survey

A Phase 1 bat roost inspection and protected species survey was undertaken on 21st May and 12th June 2018. The survey was undertaken by a licensed bat surveyor in accordance with Bat Conservation Trust guidelines¹. The survey included an internal and external inspection of the buildings looking for signs of, or the potential for the buildings to support, roosting bats. A ladder, high-powered torch and binoculars were all available and were used where necessary to examine roof space, crevices and other small spaces suitable for roosting bats to occupy.

Evidence of bats, considered during the search included:

- ❖ 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 and wasp nest material blocking access holes or possible roosting gaps, or sheltering live butterflies/moths or cluster flies.

Bat roost potential was established using the following scale:

1. *Negligible potential/not a roost*: no suitable features
2. *Low potential*: one or more suitable features that could be used by individual bats opportunistically
3. *Moderate potential*: one or more suitable features that could be used by bats, but unlikely to support a roost of high conservation status
4. *High potential*: one or more suitable features that are suitable for use by larger numbers of bats on a regular basis
5. *Confirmed roost*: evidence of current/recent bat occupation

The survey also assessed the buildings for the presence of nesting birds.

2.2 Phase 2 bat survey

Following the Phase 1 inspection, see Section 3.2, Building 1a/b was classed as having 'high' potential for supporting roosting bats (Category 4).

As such further survey is required to determine presence-absence of bats, and if necessary allow a roost characterisation to be completed. The additional Phase 2 bat survey will answer the following questions:

- ❖ Which parts of the building are used by roosting bats?
- ❖ Which bat species use the building for roosting?

¹ Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. The Bat Conservation Trust, London

❖ How many bats does the building/roost support?

❖ When are bats present?

❖ What type of roost(s) is present?

The Bat Conservation Trust guidelines state that for buildings with a 'high' bat roost potential three dusk emergence and/or dawn re-entry surveys are needed to determine the status of the potential roost or to confirm an absence.

The Bat Conservation Trust bat survey guidelines state that survey effort to establish roost characterisation is site specific, and that dusk (emergence) and/or dawn (re-entry) surveys should be repeated until the information to answer the above questions is reliably collected, although appropriate methods and equipment should be used to minimise the number of repeat visits. The optimum period for Phase 2 bat survey is May-August (potentially September).

The building was subject to the following survey programme:

❖ *Dropping DNA analysis*

Three samples of bat droppings from Building 1b were collected and sent to the ecological forensics team at the School of Life Sciences, University of Warwick for DNA analysis.

❖ *Dusk emergent surveys*

Building 1a/b was subject to five dusk bat roost emergence (and activity) surveys, which were conducted on the evenings of 12th June, 23rd July, 24th July, 2nd August and 6th September 2018. The surveys were conducted during suitable weather conditions (11-22.5°C, clear sky, still or low wind speed, and no rain).

For the first four emergence surveys, one bat surveyor was positioned outside or inside each run of the building covering the roosting locations and roost exit points. The surveys were conducted using appropriate equipment including hand held detectors capable of delivering full spectrum, time expansion and/or heterodyne outputs supported with recording equipment (Wildlife Acoustics Echo Meter Touch 2 Pro). The surveys assessed bat activity to confirm (1) whether and/or how the buildings are being used by bats, and (2) by what species and with what level of activity (numbers of bats). The aim of the fifth emergence survey in September was to conduct a roost exit watch and capture as many bats as possible for formal identification in the hand.

❖ *Dawn re-entry survey*

Building 1a/b was subject to one dawn bat roost re-entry survey, which was conducted on the morning of 28th June 2018. The survey was conducted during suitable weather conditions (11-12°C, clear sky with a full moon, still and no rain).

For the re-entry survey, one bat surveyor was positioned outside the buildings covering the potential roost entry points. The survey was conducted using appropriate equipment including hand held detectors capable of delivering full spectrum, time expansion and/or heterodyne outputs supported with recording equipment (Wildlife Acoustics Echo Meter Touch 2 Pro). The survey assessed bat activity to confirm (1) whether and/or how the buildings are being used by bats, and (2) by what species and with what level of activity (numbers of bats).

❖ *Static bat detector*

A Wildlife Acoustics SM4BAT-ZC bat detector/recorder was installed within Building 1b on:

❖ 2nd July 2018 that recorded for 22 nights until 23rd July 2018 (ca. 1.5 hours after sunset).

The detector uses a SMM-U1 ultrasonic microphone. This detector was set to record from half hour before sunset to half hour after sunrise, and the unit automatically activates when there is a trigger above 16kHz for a period of greater than 0.5 seconds. The unit is triggered by the bat's echolocation call and records continuously over the duration of bat activity. Bat recordings were analysed using Kaleidoscope Pro software. The software has an automated recogniser to classify bat calls into species batches, and once classified, the systems operator manually verifies the bat calls.

This survey strategy, which covers DNA analysis of three dropping samples, nine inspections, five dusk emergent surveys, one dawn re-entry survey and deployment of a data-logger during May to September 2018, is (1) in accordance with the BCT bat survey guidelines, and (2) sufficient to underpin a Natural England EPS (Bats) Mitigation Licence application.

3 Baseline Conditions

A location plan with key target notes is provided in Appendix A, while photographs of the buildings are presented in Appendix B.

3.1 Building descriptions

3.1.1 Building 1a (stable block east-to-west)

A single-storey building constructed with a timber frame and sealed blockwork external walls, and orientated east-to-west. The building is ca. 20m long and 5m wide, and has a pitched roof, which is clad in corrugated tin on the south-facing roof slope and corrugated fibreboard sheets on the north-facing roof slope, with tight-fitting metal ridge capping. There is one skylight in the roof slope. The roofing sheets attach directly to close-fitting softwood trusses and timbers (there is no roof liner or insulation). The building is divided into two parts. Internal walls are constructed from blockwork, timber boards and corrugated tin. There is a single, narrow ridge board in the majority of the building, with a double, wide open ridge in a small separate room at the western end of the building. There are small windows along the top of the south-facing wall (most boarded up) and two doors. There is a small open slatted vent at the top of the west-facing gable end wall. There are flyways and gaps leading into the building associated with a gap over the door, part of missing roof sheet and *via* the open slatted vent. This building is open and light, and there is electric lighting within the building interior.

Based on the Phase 1 visual inspection this building has no external recesses, and very few internal recesses (top of west gable end wall of main building, hole in west gable end wall of main building, and top of internal wall of small adjoining room – walls are constructed from blockwork with small internal cavities) available for crevice-dwelling bats to potentially use. There are exposed roof timbers with flyways into the building interior, but the building interior is light and suffers disturbance.

3.1.2 Building 1b (stable block north-to-south)

A single-storey building constructed with walls constructed from mainly sealed/rendered blockwork with some corrugated metal and timber ship-lap. The building is ca. 15m long and 4m wide, and has a pitched roof, which is clad in corrugated tin with tight-fitting metal ridge capping. There are two skylights. The metal roofing sheets attach directly to close-fitting softwood trusses and timbers (there is no roof liner or insulation). The building is divided into five stable compartments with half height internal dividing walls constructed from sealed blockwork, but the building is open and connected across the roof space. There is a single, narrow ridge board. Four of the five compartments has an intact door, with one missing, on the west-facing wall, and there is a small window above three doors (one open). This building is open, light and draughty. There are two flyways and gaps leading into the building interior associated with a missing door and window, as well as a gap where the tin roof has lifted up on the eastern corner of the south-facing gable end wall.

Based on the Phase 1 visual inspection this building has very few external or internal recesses available for crevice-dwelling bats to use. The building interior is also very open, light and draughty. However, the southern gable end wall is constructed from blockwork with small internal cavities in the wall. There are access points into the cavity space both from the building exterior (lifted roofing sheets) and interior (narrow gap along the top of the internal end wall with flyways into the building interior), which could allow bats to access the cavity

gaps and therefore provide a roosting opportunity. There are also exposed roof timbers, but the building interior is light and draughty, including directly above the ridge board.

3.1.3 Building 2 (modern, double-height barn)

A modern barn constructed from a steel frame. One half of the barn has a shallow pitched roof while the other half has a rounded 'Dutch-style' roof, both of which are clad in corrugated fibreboard sheets that attach directly to the steel frame (there is no roof liner or insulation). There is no ridge beam. There are translucent plastic skylights. Two sides are completely open, while other walls comprise low blockwork walls (with sealed tops) and single-skin corrugated metal sheets that attach directly to the steel frame. This building is very open, light and draughty. The building provides no opportunities for roosting bats.

3.1.4 Building 3 (modern, single height lean-to barn)

A modern lean-to barn constructed from a steel frame with modern timber roof purlins sitting on steel roof bars. The barn has a mono-pitched roof, which is clad in corrugated fibreboard sheets that attach directly to the modern softwood purlins (there is no roof liner or insulation). One end and one side are completely open, while the other walls are constructed from corrugated metal sheets. This building is very open, light and draughty. The building provides no opportunities for roosting bats.

3.1.5 Building 4 (grain silo)

A cylindrical grain silo constructed from corrugated metal walls, with a conical roof constructed of metal sheets. There are no external gaps and this building provides no opportunities for roosting bats or other wildlife.

3.2 Phase 1 bat roost inspection

Building 1a has no external recesses, a few internal recesses associated with the western gable end wall of the main building and internal wall of the western extension that crevice-dwelling bats could potentially use, and exposed roof timbers that free-hanging/clinging bats could exploit. There are flyways into the building interior associated with the slatted vent and a gap over the main door. However, the building interior largely provides sub-optimal conditions for roosting bats being light and suffering disturbance, and the roof structure/timbers are extensively webbed.

During the Phase 1 survey approximately 40-50 scattered bat droppings were found on the floor/surfaces and on the internal western end wall, with most located at the western end of the building. Based on visual diagnostics of the droppings it is considered that these could be from brown long-eared (*Plecotus auritus*) bat. In addition, there were small tortoiseshell butterfly and large yellow underwing moth wings scattered on the floor, again with most located at the western end of the building. This is a common feature of a brown long-eared bat feeding roost.

Building 1b provides no external recesses for bats to potentially exploit, but does have exposed timbers that perching/hanging bats could potentially use and there are available flyways into the building interior. The southern gable end wall is constructed from concrete blockwork (with small internal cavities), which can be accessed from the building interior or exterior, and as such could be used by crevice-dwelling roosting bats. However, the building interior largely provides sub-optimal conditions for roosting bats being light and draughty, the

roof apex is light above the ridge board, and the roof structure and timbers are extensively webbed indicating bats have not accessed these areas.

During the Phase 1 survey approximately 50 scattered bat droppings were found on the internal southern end wall and on surfaces below the wall, with another approximately 100 droppings on the floor and surfaces under the ridge beam in the middle of the building. Urine droplets were also visible on surfaces at the base of the southern end wall. Based on visual diagnostics of the droppings it is considered that these could be from a combination of pipistrelle (*Pipistrellus* sp) bat, brown long-eared (*Plecotus auritus*) bat and Natterer's (*Myotis nattereri*) bat. Three samples: one of larger droppings and one of smaller droppings from southern gable end; and one from central part of building directly under ridge beam, were sent for DNA analysis (see Section 3.7). In addition, there were accumulations of large yellow underwing moth and small tortoiseshell wings on surfaces at the base of the southern gable end wall and within the middle section of the building under the central ridge beam. This is a common feature of brown long-eared or Natterer's bat feeding roost.

Based on the Phase 1 survey it is concluded that Building 1a/b has high potential (Category 4) to support roosting bats.

Buildings 2, 3 and 4 are totally unsuitable for bat roosting being modern open barns or sealed grain silo with no internal/external recesses. No evidence of bat roosting or other bat activity (no live bats, no dead bats, no droppings, no urine staining, scratching or oil staining, and no feeding remains) was found within or outside Buildings 2, 3 and 4, which are classed as Category 1 (not a roost).

3.3 Building inspections

Additional daytime and pre-survey building inspections on 21st June, 28th June, 2nd July, 23rd July, 24th July, 2nd August and 6th September recorded no significant changes from Phase 1 findings including:

- ❖ No live bats were observed clinging to or secreted above any roof timbers within Building 1a/b; and
- ❖ No significant differences in the number or location of droppings/feeding remains in Building 1a/b.

3.4 Bat roost dusk surveys

3.4.1 Survey #1

A dusk emergence and activity survey was conducted on 12th June 2018 between 21:05 and 22:40, with sunset at 21:24. Survey weather conditions were good with the temperature ranging between 11°C and 14°C during the survey. The evening was clear and still, with no rain. The key findings of the survey are as follows:

Emergence

- ❖ Building 1a. Three brown long-eared (*Plecotus auritus*) bats were observed light-sampling within the building at 22:02. All three bats emerged *via* the slatted vent of the west-facing gable end wall at 22:15 (51 minutes after sunset) before foraging/light sampling in courtyard and in Building 2. At 22:25 one brown long-eared bat was observed returning and entering a cavity gap at the top of the internal western gable end wall.

- ❖ Building 1b. One common pipistrelle (*Pipistrellus pipistrellus*) bat emerged at 21:41 (17 minutes after sunset) from the south-east corner of the south-facing exterior gable end wall.
- ❖ Building 1b. One Natterer's (*Myotis nattereri*) bat was observed at 22:05 (41 minutes after sunset) light-sampling within the building, and assumed to have exited from gap at top of the southern gable end wall. The bat had left the building by 22:14 (50 minutes after sunset).

Activity

- ❖ One common pipistrelle (*Pipistrellus pipistrellus*) bat, which emerged from Building 1b, continually foraged within the open modern barns until the end of the survey.
- ❖ A second common pipistrelle (*Pipistrellus pipistrellus*) bat arrived on-site from the north at 21:39 (15 minutes after sunset), and was probably roosting close-by. This bat continually foraged along the western tree-line and buildings until the end of the survey.
- ❖ Single passes of serotine (*Eptesicus serotinus*), noctule (*Nyctalus noctula*) and soprano pipistrelle (*Pipistrellus pygmaeus*) bats were registered between 22:17 and 22:22.
- ❖ Single pass of barbastelle (*Barbastella barbastellus*) at 22:21 arriving on-site from the north.

3.4.2 Survey #2

A dusk emergence and activity survey, focused on Building 1b, was conducted on 23rd July 2018 between 20:39 and 22:30, with sunset at 21:07. Survey weather conditions were excellent with the temperature ranging between 16.5°C and 22.5°C during the survey. The evening was clear (³/₄ moon) with a light breeze and no rain. The key findings of the survey are as follows:

Emergence

- ❖ Building 1a. One Natterer's (*Myotis nattereri*) bat was observed at 21:40 (33 minutes after sunset) light-sampling within the building, and assumed to have exited from gap at top of the western gable end wall. The bat had left the building by 21:55 (48 minutes after sunset).
- ❖ Building 1a. One brown long-eared (*Plecotus auritus*) bat was observed at 21:50 (43 minutes after sunset) light-sampling within the building. Possibly emerged from gap at top of the western gable end wall or arrived from Building 1b. The bat had left the building by 22:10 (63 minutes after sunset).
- ❖ Building 1b. One common pipistrelle (*Pipistrellus pipistrellus*) bat emerged at 21:23 (16 minutes after sunset) from open doorway before flying south-west.
- ❖ Building 1b. Four brown long-eared (*Plecotus auritus*) bats were observed light-sampling within the building from 21:40 (33 minutes after sunset). Bats were observed entering the cavities at the top of the southern gable end wall. Bats emerged *via* the open doorway. Bats emerged between 21:50 and 22:29 (43-82 minutes after sunset), with bats routinely returning to the building interior, and one bat was still in the building at the end of the survey.

Activity

- ❖ One common pipistrelle (*Pipistrellus pipistrellus*) bat continually foraged within the open modern barns and surrounding vegetation until the end of the survey.

- ❖ A few passes of a serotine (*Eptesicus serotinus*) bat were registered between 21:55 and 22:06.
- ❖ A single pass of a noctule (*Nyctalus noctula*) bat was registered at 21:14.

3.4.3 Survey #3

A dusk emergence and activity survey, focused on Building 1a, was conducted on 24th July 2018 between 20:36 and 22:25, with sunset at 21:07. Survey weather conditions were excellent with the temperature ranging between 18°C and 22°C during the survey. The evening was clear (³/₄ moon) with a light breeze and no rain. The key findings of the survey are as follows:

Emergence

- ❖ Building 1a. One brown long-eared (*Plecotus auritus*) bat was observed at 21:38 (31 minutes after sunset) and two brown long-eared (*Plecotus auritus*) bats were observed at 21:58 (51 minutes after sunset) light-sampling within the building. Possibly emerged from gap at top of the western gable end wall or arrived from Building 1b. One bat had left the building by 22:09 (62 minutes after sunset), and one bat was still in the building at the end of the survey.
- ❖ Building 1b. Four brown long-eared (*Plecotus auritus*) bats were observed light-sampling within the building at 21:38 (31 minutes after sunset) and five brown long-eared (*Plecotus auritus*) bats were observed at 21:50 (43 minutes after sunset) light-sampling within the building. Bats were observed entering the cavities at the top of the southern gable end wall. Bats emerged *via* the open doorway. Bats emerged between 21:47 and 22:00 (40-53 minutes after sunset), with bats routinely returning to the building interior, and one bat was still in the building at the end of the survey.

Activity

- ❖ One common pipistrelle (*Pipistrellus pipistrellus*) bat was recorded at 21:35 foraging along the roadside trees, which it continued to do until the end of the survey.
- ❖ A second common pipistrelle (*Pipistrellus pipistrellus*) bat and a soprano pipistrelle (*Pipistrellus pygmaeus*) bat occasionally foraged along the roadside trees between 21:43 and 21:58.
- ❖ A serotine (*Eptesicus serotinus*) bat foraged around the buildings and along the roadside trees from 21:48 until the end of the survey.
- ❖ A single pass of a Natterer's (*Myotis nattereri*) bat at 21:55.

3.4.4 Survey #4

A dusk emergence and activity survey was conducted on 2nd August 2018 between 20:30 and 22:25, with sunset at 20:52. Survey weather conditions were excellent with the temperature ranging between 18°C and 22°C during the survey. The evening was clear and still with no rain. The key findings of the survey are as follows:

Emergence

- ❖ Building 1a. One brown long-eared (*Plecotus auritus*) bat was observed first at 21:18 (26 minutes after sunset) and then intermittently throughout the survey. Possibly emerged from gap at top of the western gable end wall but probably arriving from Building 1b. One bat was still in the building at the end of the survey.

- ❖ Building 1b. Four brown long-eared (*Plecotus auritus*) bats were observed within the building at 21:18 (26 minutes after sunset), with two observed emerging from the southern gable end wall. At least four bats were observed emerging, *via* the open doorway, between 21:30 and 21:37 (38 and 45 minutes after sunset). Bats routinely returned to the building interior after foraging in yard/under trees etc. Between 21:43 and end of the survey between two and four adult bats were observed in the building returning mainly to the ridge beam. At 22:07 five bats were observed on top of the ridge board (under the roof apex) and were seen crawling along the ridge in the location where the adult bats were returning to. It was concluded that there were at least five juvenile brown long-eared bats at the roof apex, which had emerged from the southern gable end wall and crawled along the ridge beam.
- ❖ Building 1b. At 22:21 a single bat was observed clinging to the ridge beam (half tucked under the metal ridge capping), which appeared to be greyer than the other bats observed. Given the colouration it was considered possible, although unlikely, that this bat could be a grey long-eared (*Plecotus austriacus*) bat. As such further investigation was undertaken, which included DNA analysis of a dropping sample taken from directly underneath where the bat was observed and a survey to catch as many bats as possible from Building 1b to allow identification of bats in the hand by viewing and measuring diagnostic features (see Section 3.4.5).

Activity

- ❖ One common pipistrelle (*Pipistrellus pipistrellus*) bat was recorded at 21:30 and again at 21:44 foraging in the courtyard and along the roadside trees, which it continued to do until the end of the survey.
- ❖ A single pass of a soprano pipistrelle (*Pipistrellus pygmaeus*) bat at 22:05.
- ❖ A few passes of a noctule (*Nyctalus noctula*) bat between 21:11 and 22:16.

3.4.5 Survey #5

A dusk exit roost watch and bat capture survey was conducted on 6th September 2018 between 20:30 and 22:25, with sunset at 20:52. Survey weather conditions were excellent with the temperature ranging between 18°C and 22°C during the survey. The evening was clear and still with no rain. The survey focused on trying to determine presence of grey long-eared bat in Building 1b. The key findings of the survey are as follows:

- ❖ Eight long-eared bats were caught from Building 1b. All bats were identified as brown long-eared bats, which included five adult male bats and three adult female bats (one of which had recently bred confirming the nursery roost status).
- ❖ Another six long-eared bats were observed in Building 1a, which returned to a gap in the western end wall, and these were clearly seen to be brown long-eared bats.
- ❖ One female common pipistrelle bat was caught in Building 1b.

The DNA analysis of the dropping sample returned a result of brown long-eared bat with maximum likelihood.

There is no evidence of the presence of grey long-eared bat.

3.5 Bat roost dawn survey

A dawn re-entry survey was conducted on 28th June 2018 between 03:20 and 04:40, with sunrise at 04:52. Survey weather conditions were excellent with the temperature ranging between 11°C and 12°C during the survey. The evening was clear with a full moon), still and no rain. The key findings of the survey are as follows:

- ❖ One Natterer's (*Myotis nattereri*) bat was recorded foraging around and within Building 2 between 03:20 and 03:43 (69 minutes before sunrise), when the bat entered Building 2 via the open doorway at the northern end.
- ❖ Three brown long-eared (*Plecotus auritus*) bats arrived on-site at 03:32, foraged/light-sampled around and within Buildings 1 and 2, before the three bats entered Building 1 at 04:13 and were observed entering the roosting location at the top of the internal western gable end wall.
- ❖ One common pipistrelle (*Pipistrellus pipistrellus*) bat recorded continually foraging around the buildings between 03:25 and 04:14 (38 minutes before sunrise), and was assumed to have accessed the roost location on the south-facing exterior gable end wall of Building 2. A second common pipistrelle was observed foraging and interacting with the first bat at 03:52 before leaving site.
- ❖ One soprano pipistrelle (*Pipistrellus pygmaeus*) bat recorded intermittently foraging around the buildings between 03:25 and 03:46.

3.6 Bat roost static detector

The SM4BAT-ZC static bat detector was in Building 1b for 22 nights, between 2nd and 23rd July 2018. The results of the monitoring are summarised as follows:

Species	No. of nights activity	Possible no. of nights roosting (first contact time after sunset)
Natterer's	22 nights	7 nights (25-64 minutes)
Brown long-eared	22 nights	11 nights (27-63 minutes)
Common pipistrelle	20 nights	0 nights
Soprano pipistrelle	21 nights	8 nights (9-26 minutes)

Noctule and serotine bats were recorded on most evenings, but the data cannot be interpreted as roosting behaviour given the times of contacts, which are generally significantly later than the emergence times for each species. Instead the data indicate migratory passes outside the building or potentially foraging within the building.

Barbastelle was recorded on 2 nights with 7 contacts on 4th July and one contact on 5th July, with earliest contact times being 22:47 (1 hour 22 minutes after sunset) and 22:50 (1 hour 26 minutes after sunset). The data suggest that an individual bat is migrating through or occasionally foraging within the site, and potentially roosting in mature trees in the local landscape. The static box data support the findings from the dusk/dawn surveys, building inspections and dropping DNA analysis.

3.7 Bat dropping DNA analysis

DNA analysis of the two bat dropping samples from the southern gable end wall in Building 1b confirmed presence of Natterer's (*Myotis nattereri*) and brown long-eared (*Plecotus auritus*) bats with maximum likelihood (see Appendix B).

DNA analysis of the bat dropping sample from the middle of Building 1b (directly under the ridge beam) confirmed presence of brown long-eared (*Plecotus auritus*) bats with maximum likelihood (see Appendix B).

3.8 Bat summary

The combined results of the Phase 1 and Phase 2 bat survey results confirm that Building 1a/b is a maternity roost for brown long-eared bats (ca. 14 bats), with bats appearing to be roosting within cavities in the gable end walls before emerging and juveniles using the central ridge beam in Building 1b. Building 1a also appears to have supported a summer day roost for low numbers of brown long-eared bats during the early part of the season, with bats appearing to be roosting within cavities in the western gable end wall.

It appears that the maternity group has arrived later in the season during July as there was no evidence of bats during the two June 2018 surveys. This could potentially be because the maternity colony has been displaced from an alternative (main) roost in the local landscape due to the unseasonably hot weather, seeking out cooler temperatures associated with the deep cavities in the gable end wall of Building 1b.

The results of the Phase 1 and Phase 2 bat survey results confirm that Building 1a/b is also a summer day roost for one Natterer's bat, one common pipistrelle bat and one soprano pipistrelle bat. The Natterer's bat appears to have moved between Building 1a and 1b during the season (potentially being displaced by arriving brown long-eared bats), while the pipistrelle bats appear to have stayed within Building 1b.

Records of other bats during the Phase 2 surveys establish occasional migratory passes or foraging around the buildings and surrounding farmland.

3.9 Other protected species

There is no evidence of current or historic bird nesting associated with Buildings 1a and 4

Building 1b does not support current bird nesting activity, but there are five old swallow (*Hirundo rustica*) nests associated with the roof structure.

There are three passerine bird nests, e.g. blackbird (*Turdus merula*) or other thrush species, associated with the roof structure of Buildings 2 and 3. There was no evidence of owl nesting/roosting in any building.

All wild birds, their nests and eggs are protected under the Wildlife and Countryside Act, 1981 as amended. This act makes it an offence to:

- ❖ Intentionally, or recklessly, kill, injure or take any wild bird
- ❖ Take, damage or destroy the nest of any wild bird while it is in use or being built
- ❖ Take or destroy the egg of any wild bird

There are no other protected species associated with these buildings or the proposed development site.

4 Conclusions

4.1 Bats

4.1.1 Conservation status of target bats

Brown long-eared

The Distribution Atlas of Bats in Britain and Ireland² describes the brown long-eared bat as being widespread throughout Britain, and the Bat Conservation Trust's NBMP (National Bat Monitoring Programme) records the species as common with the population considered to have been stable over the period 1999-2015. The British pre-breeding population was estimated at 200,000 in 1995 (155,000 in England) (Harris et al., 1995).

Natterer's

The natterer's bat is a fairly scarce, but widely distributed species. It is found throughout the British Isles, with the Distribution Atlas of Bats in Britain and Ireland (Richardson, 2000) showing records throughout south-west England and the midlands. The UK population is estimated to be 148,000, of which the population in England is 70,000 (Harris et al., 1995). The Bat Conservation Trust's NBMP (National Bat Monitoring Programme) shows the species population is increasing since 1999, but results must be viewed with caution

Common pipistrelle

The common pipistrelle bat is one of the most common bat species in the UK and is widely distributed throughout Britain (Richardson, 2000). The UK population, excluding Northern Ireland, is estimated to be 2,430,000 (Battersby et al. 2005). Pipistrelle bat populations declined dramatically in the twentieth century, but have shown a positive trend this century. There has been a significant upward trend when measured against the 1999 base year (www.bats.org.uk).

Soprano pipistrelle

Soprano pipistrelle bats are widespread throughout Britain and Ireland (except for the Shetlands and Western Isles of Scotland) with a population estimate of 2 million and a stable population trend in recent years³. Although it remains one of the most abundant and widespread bat species in the UK, the soprano pipistrelle is a UK BAP species because it is thought to have undergone a significant decline in numbers during the last century. There has been a significant upward trend when measured against the 1999 base year (www.bats.org.uk).

4.1.2 Roost evaluation

Building 1a/b is a confirmed bat roost for four species of bat, namely brown long-eared, Natterer's, common pipistrelle and soprano pipistrelle bats.

Both the brown long-eared bats and Natterer's bat are using cavities within both the western and southern gable end walls. The pipistrelles are roosting in cavities within the southern gable end wall. Bats are exiting/entering the roost locations *via* the slatted vent at the apex

² Richardson (2000). *The Distribution Atlas of Bats in Britain and Ireland: 1980-1999*. The Bat Conservation Trust.

³ www.bats.org.uk: *Population Trend Monitoring*

of the western gable end wall, *via* open flyway associated with the missing door on Building 1b (Natterer's), and *via* the lifted tin roof at the south-western corner of Building 1b.

The building is a breeding (maternity) roost for brown long-eared bats, and is a summer day roost for all four species.

Based on the findings from the bat surveys the significance of the bat roosts have been classified in accordance with the site assessment recommended in industry-standard bat survey and mitigation guidelines^{4,5}. The roosts are:

- ❖ 'breeding (maternity) roost' for 'common species', and therefore this roost is considered to be of moderate conservation significance and an ecological resource for bats that is important in a Local (District) context; and
- ❖ 'summer day roosts' for 'small numbers of common and widespread species (not a maternity/mating or hibernation site)', and therefore these roosts are considered to be of low conservation significance and an ecological resource for bats that is important in a Local (Site) context.

4.1.3 Roost impact assessment

Building 1a/b is a confirmed maternity roost for brown long-eared bats, and a summer day roost for small numbers of brown long-eared bats and individual Natterer's, common pipistrelle and soprano pipistrelle bats. The demolition of this building will result in the loss of a roost/place of rest, and could potentially also result in the injury/death/disturbance to bats if undertaken without appropriate safeguards, which would contravene legislation (see Appendix C).

The proposed scheme is predicted to have a 'moderate adverse impact'⁶ as work will affect a roost of moderate conservation status (i.e. breeding [maternity] roost) and will affect four species of bat. For three species of bat (Natterer's, common pipistrelle and soprano pipistrelle) the planned work does not pose a threat to the favourable conservation status nor will it affect the ability of the bats to maintain their current range and distribution in the locality. In terms of brown long-eared bats the planned work would have a detrimental impact on the favourable conservation status of brown long-eared bats in the locality, but is unlikely to affect the ability of bats to maintain their current range and distribution within the District (County), especially due to the fact that the maternity colony appears to have relocated to this site late in the season due to the unseasonably hot weather. The demolition of this building and associated roosts is considered to have a moderate adverse impact in a Local (District) context.

Demolition of Building 1a/b will be covered by a full Natural England licence under the provision of the Conservation of Habitats and Species Regulations 2010 (as amended), see Section 5.1.8.

Mitigation to protect roosting bats and actions to provide an overall enhancement for bats, in accordance with legislation and planning policy, is set-out in Section 5.1.

⁴ English Nature (2004). Bat Mitigation Guidelines

⁵ Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. The Bat Conservation Trust, London

⁶ English Nature (2004). Bat Mitigation Guidelines

4.2 Nesting birds

There is evidence of previous swallow nesting within Building 1b and current passerine nesting in Buildings 2 and 3. Action to ensure protection of nesting birds is discussed in Section 5.2.

5 Mitigation and Enhancement Strategy

5.1 Bats

5.1.1 Introduction

Mitigation concepts have been defined based upon industry-standard bat mitigation guidelines⁷ that establish an appropriate level of mitigation for adverse impacts on a low conservation status roost as:

- ❖ *Loss of a breeding (maternity) roost for common species (e.g. brown long-eared bats):* Timing constraints. More or less like-for-like replacement. Bats not to be left without a roost and must be given time to find the replacement. Monitoring for 2 years preferred.
- ❖ *Loss of a summer day/night roost for small numbers of common species:* 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 or monitoring requirements.

Brown long eared bats are a woodland species that naturally have summer roosts in tree holes, but have adapted to using loft space of large buildings such as churches, barns and old houses. The species is also found in bat boxes⁸, and has been observed using gaps under ridge capping tiles on buildings.

Natterer's bats roost in woodlands and human settlements. Bats commonly associated with old stone buildings with large timber beams, with gaps in beams or between joints frequently used. However, bats will occupy dwelling roof space, wall crevices, directly under ridge tiles and bat boxes^{9,10}

Common and soprano pipistrelle bats summer roosts are usually crevices in building especially under tiles and behind boards on a gable. Both species readily use bat boxes^{11,12}.

5.1.2 Pre-demolition work

Prior to demolition of Building 1a/b, three general purpose bat boxes will be provided within land under the ownership of the client. It is recommended that Schwegler 1FF bat boxes (see www.nhbs.com or www.wildcareshop.co.uk) be used and suitably sited on a mature tree. These bat boxes will provide alternative roosting habitat before the permanent bat roosting features are operational. These boxes will remain in



⁷ English Nature (2004). *Bat Mitigation Guidelines*

⁸ Joint Nature Conservation Committee (2007). *Second report by the UK under Article 17 on the implementation of the Habitats Directive from January 2001 to December 2006. Conservation Status Assessment for Species: S1326 – Plecotus auritus – brown long-eared bat.*

⁹ Joint Nature Conservation Committee (2007). *Second report by the UK under Article 17 on the implementation of the Habitats Directive from January 2001 to December 2006. Conservation Status Assessment for Species: S1322 – Myotis nattereri – Natterer's bat*

¹⁰ www.bats.org.uk: *Species Sheet for Natterer's*

¹¹ Joint Nature Conservation Committee (2007). *Second report by the UK under Article 17 on the implementation of the Habitats Directive from January 2001 to December 2006. Conservation Status Assessment for Species: S1309 – Pipistrellus pipistrellus – common pipistrelle bat.*

¹² Joint Nature Conservation Committee (2007). *Second report by the UK under Article 17 on the implementation of the Habitats Directive from January 2001 to December 2006. Conservation Status Assessment for Species: S5009 – Pipistrellus pygmaeus – soprano pipistrelle bat.*

situ until the car port is constructed, at which point two will be moved into the roof space of this building.

5.1.3 Replacement bat roosting habitat (mitigation)

As part of the proposed new development a timber-framed, double-bay, open-fronted carport will be constructed in the northern part of the new curtilage. The carport will be constructed with a pitched slate roof and gable end walls, and orientated with the open side facing south-west and the other three walls enclosed.

This new timber structure will be design to incorporate secure and long-term roosting habitat for a variety of bat species, including brown long-eared, Natterer's and pipistrelle bats.

Both brown long-eared and Natterer's bats require a sufficiently large covered space within which they can fly around in prior to leaving the roost. The proposed new carport will be 6.35m long by 6.35m wide, and 2.4m to the eaves and 4.4m to the roof apex. An opening 4.8m wide and 2.1m high is located on the south-west side. The roof will have a relatively open structure to create an uncluttered internal flight area for bats. Preservative treatment of roof timbers other than pressure-treatment will be avoided.

The carport incorporates the following features specifically designed for roosting bats, particularly a maternity roost of brown long-eared bats:

- a. A triple ridge board with angled baffles on each side of a central ridge board creating an enclosed 20mm space along each side. Small (30mm x 30mm) access slots will be cut into the side baffles to allow bats to access the gap between each baffle and the ridge board.
- b. If traditional pinned mortise and tenon joints are used, then small gaps will be left at joints.
- c. Two general purpose bat boxes (Schwegler 1FF boxes) will be installed within the car port roof interior on either gable end to provide additional crevices for bats to use.
- d. Approximately two-thirds (4.5m) of the front of the car port will be boarded out at height of eaves, to provide dark conditions in the roof space, but leaving a ca. 1.8m gap at the rear of the structure allowing bats to fly into the car port and then access the roof structure.
- e. One integrated bat brick will be installed at the apex of the external northwest gable end, which faces the roadside tree line. It is recommended that a habibat bat brick be used, which can be faced with timber.
- f. The roof will be clad in flat slate tiles and ridge capping tiles, and two mid-ridge capping tiles will be installed with an enclosed void underneath them on the roof apex. The void will be enclosed leaving a 20mm slot beneath the southwest facing leading edge of each tile.

Roofing felt used within the carport must be chosen with care as many modern felts are smooth and have a slippery surface which bats find hard to grip onto or can shred providing a bat tangle/trap hazard. A traditional hessian reinforced bituminous roofing felt (BS747) with a sand finish on its upper surface will be used. Felt will be placed on the inside of the roofing tiles running up the roof slopes above the timbers to the roof apex, but the roof apex and ridge boards will be left exposed.

External lighting will be avoided adjacent to or directed at the entrances to the bat roosting features.

5.1.4 New bat roosting habitat (enhancement)

To provide an overall enhancement for roosting bats the following features will be incorporated into the scheme design:

- ❖ Four mid-ridge capping tiles installed on the new house so as to have a void underneath. The void will be enclosed leaving a 20mm slot beneath. Two ridge tiles will be located on the north-west roof slope and two raised ridge tiles will be located on the south-west roof slope; and
- ❖ Two bat boxes installed on mature trees within land under the ownership of the applicant. Given the occasional contact with migrating/foraging barbastelle bat during the surveys, the bat boxes will be the Vincent Pro that are specifically designed to target barbastelle bats. The bat boxes will be installed as far above the ground as possible, and orientated either south-east or south-west to receive partial sunlight. The boxes will be installed by the licenced bat ecologist.



External lighting will be avoided adjacent to or directed at the entrances to the bat roosting features.

5.1.5 Timing of building demolition

Building 1a/b will be demolished between 1st October and 15th April.

All work will be undertaken in normal working, daylight, hours, which is in accordance with best working practice¹³ and allows the licenced bat worker to address any issues if bat(s) are found during the demolition work.

Buildings 2-4 can be demolished at any time.

5.1.6 Timing of construction of the car port (replacement bat roost)

The car port will be constructed immediately after Building 1a/b has been demolished. It will be completed to the design set out in Section 5.1.3 by 1st May. This ensures that bats are not left without a roost for any period of time, and maintains the integrity of site for roosting bats.

5.1.7 Supervision of the building demolition

Prior to demolition the NE licenced bat worker will provide a toolbox talk to the demolition contractor that covers aspects such as: bats and the law; evidence of bat and what to look out for; good working practice; and what to do in the event of finding bats.

Immediately prior to demolition the building interiors, especially the cavities associated with the western gable end wall (Building 1a), the southern gable end wall (Building 1b) and the roof apex will be inspected (in the daytime) by the NE licenced bat worker. If bats are found the licensed bat worker will capture and move the bat(s) to the pre-fabricated bat box.

The roof of Building 1a/b, especially the areas covering gable end walls and roof apex, will be carefully removed under the direct supervision of the NE licenced bat worker.

¹³ English Nature (2004). Bat Mitigation Guidelines

The blockwork gable end walls will be carefully dismantled by hand, block by block, under the direct supervision of the NE licenced bat worker.

The NE licensed bat worker will also be available on-call for all other parts of the demolition regardless of timing. If bats are found then work will stop immediately. Work will not proceed again until an assessment has been made by the licenced bat worker and the bats have been moved.

If during the work, when the licenced bat worker is not on-site, and a bat is discovered that appears to be injured or distressed, then the animal should be carefully placed in a small box (e.g. shoe box) by either handling the bat with thick gloved hands or covering the bat with the box and sliding a thin piece of cardboard under to create a floor to the box. A clean piece of cloth loosely crumpled will be placed in one corner of the box (to allow the bat to crawl under and hide), a few small air holes will be put into the lid of the box, and a very shallow container (e.g. foil milk bottle top) of water will be placed in one corner of the box.

5.1.8 Post-construction review and monitoring

The replacement and new bat roosting features included within new development will be inspected and signed-off by a licenced bat worker.

The proposed demolition of Building 1a/b is affecting a roost of moderate conservation value. As such two years of post-scheme monitoring of the new bat roost will be undertaken. This will involve two internal inspections and two dusk emergence and/or dawn re-entry surveys covering the car port, and at the same time two inspections of all bat boxes installed on trees. The surveys will be undertaken in late June/early July and August for each year following completion of the development. A short report setting out the findings should be produced, and will be available to Wiltshire Council on request.

5.1.9 Natural England licence.

The demolition of Building 1a/b must be undertaken under a Natural England licence, under the provisions of the Conservation of Habitats and Species Regulations 2010 (as amended). A licence from Natural England can only be applied for once full planning permission has been granted and there are no outstanding planning conditions relating to bats.

However, the project can only progress where the licence application is considered to meet the requirements of the following three tests:

1. The consented works must be for preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;
2. There must be no satisfactory alternative; and
3. The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range

Although Natural England are the licensing authority, recent case law (*R (on the application of Simon Woolley) v Cheshire East Borough Council, June 2009*) has established that planning authorities now need to consider all three tests before planning permission affecting bats can be granted.

As part of the Natural England licensing process the appointed bat worker will review the bat mitigation and enhancement strategy, and there may be a need for additional bat inspection/survey to be undertaken to verify or supplement the original survey findings. This

is especially true if there is a delay between receiving planning permission and implementing the scheme.

5.2 Nesting birds

5.2.1 Protecting nesting birds

To ensure compliance with the Wildlife and Countryside Act, 1981 (as amended) the following actions must be undertaken:

- ❖ Demolition of the buildings during the bird breeding season, which is generally considered to be from 1st March to 31st August, requires an inspection for nesting birds be undertaken immediately prior to work commencing (maximum 2 weeks in advance). The presence of nesting birds and/or fledglings may result in some work being delayed to allow birds to vacate the nest site.
- ❖ Demolition of the buildings or work to seal the buildings undertaken outside the bird breeding and fledgling season will not require an ecological inspection immediately prior to work commencing.

Regardless of the timing of work, if nesting birds are found on-site during work to the building or vegetation then work should stop and an ecologist consulted.

5.2.2 Replacement nesting habitat

As part of the proposed new development a timber-framed, double-bay, open-fronted carport will be constructed in the northern part of the new curtilage. The carport will be constructed with a pitched roof and gable end walls, and orientated with the open side facing south-west and the other three walls enclosed.

This structure with exposed roof timbers will provide nesting opportunities for swallow (*Hirundo rustica*).

5.3 New planting

The proposed development will incorporate new hedge and tree planting to delineate the north-east, south-east and south-west boundaries (see WHL Landscape Strategy, Figure 1 18.759). Species for new hedge and tree planting will be native specimens and sourced from a reputable nursery preferably using stock derived from a local provenance. Species that are fruit or berry producing to maximise benefits for birds are also favoured.

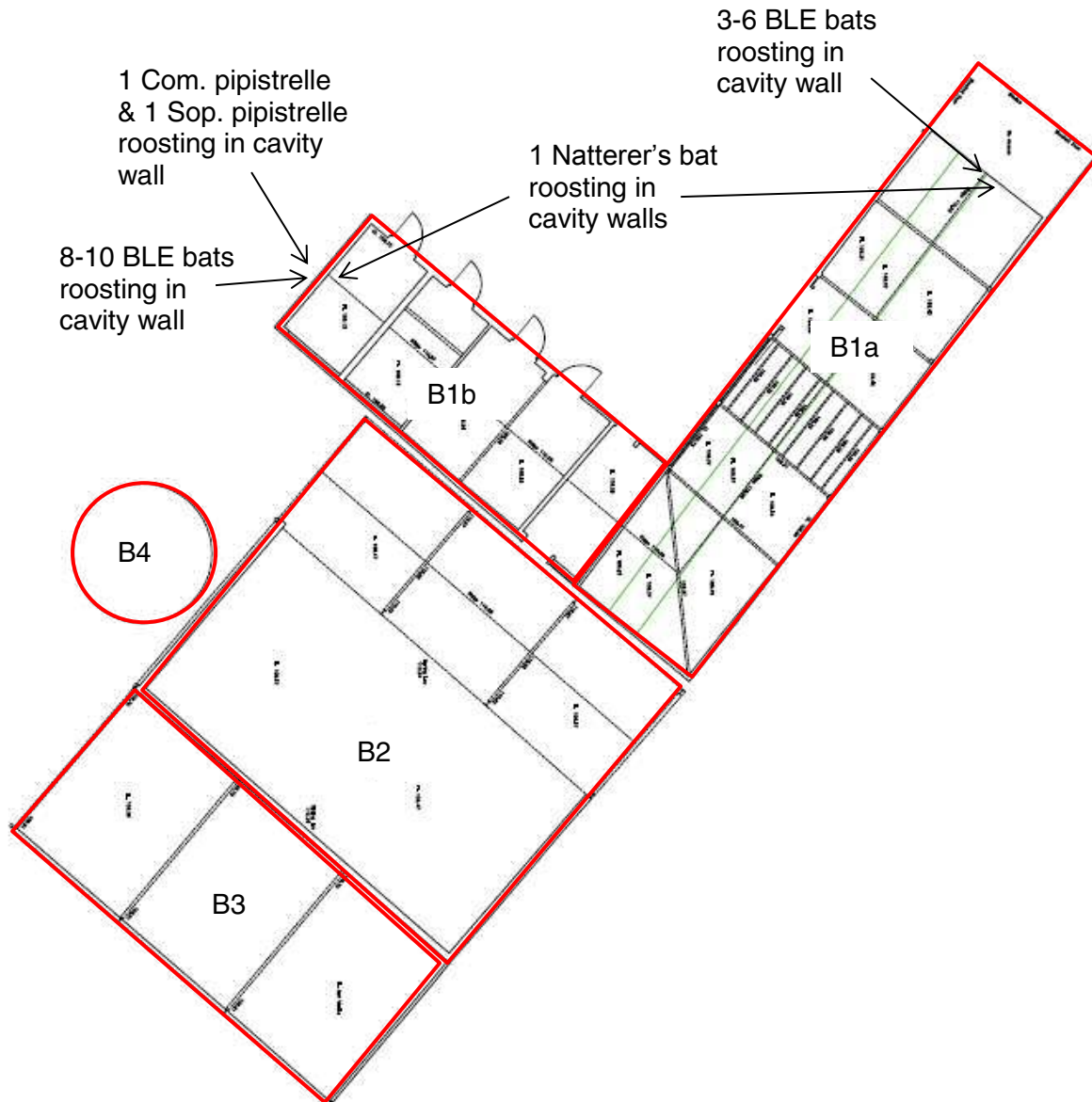
Boundary hedges will be established as a mixed native hedge using hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), field maple (*Acer campestre*), hazel (*Corylus avellana*), spindle (*Euonymus europaeus*), dogwood (*Cornus sanguinea*) and wayfaring-tree (*Viburnum lantana*). In addition, standard trees will be included within the hedges including field maple (*Acer campestre*), hornbeam (*Carpinus betulus*) and wild cherry (*Prunus avium*).

Boundary hedges should be planted as a double-belt hedge, and small groups (4-6 specimens) of single species should be planted along the line of the hedge to ensure good heterogeneity. Each plant should be staked, mulched and protected using tree guards/fencing.

A shade-tolerant seed mix (Emorsgate EW1 woodland mix) will be sown under the trees.

Planting and maintenance is as specified in the Landscape Strategy (WHL, Figure 1 18.759).

Appendix A Site Plan and Target Notes



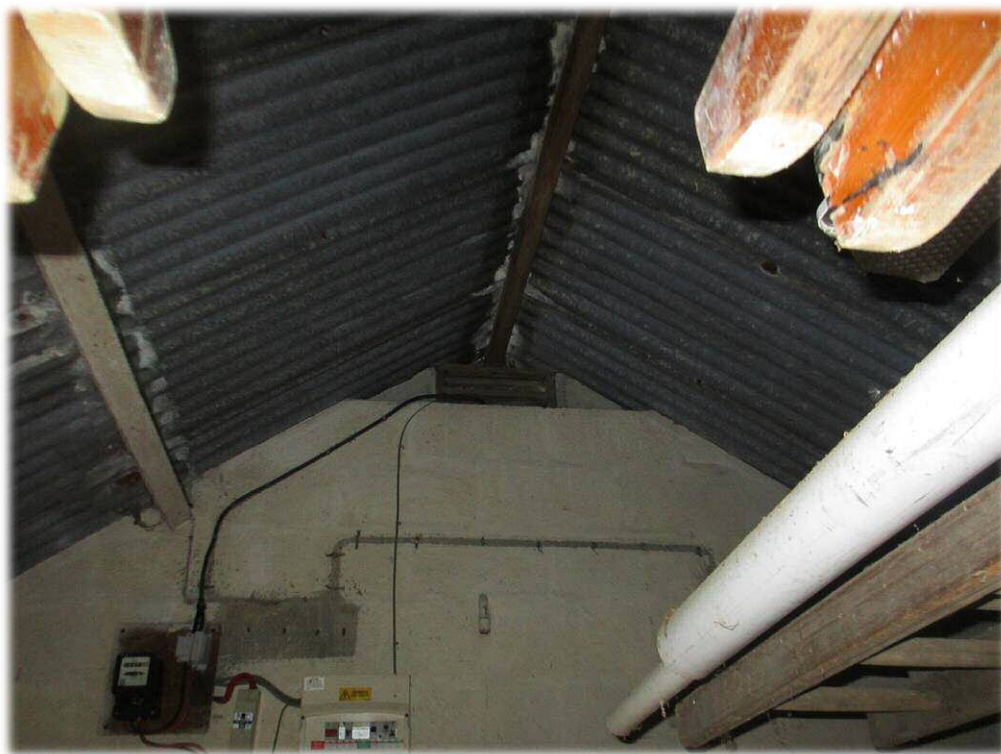
Appendix B Site photographs



Building 1a exterior



Building 1a roof structure



Building 1a western gable end blockwork wall



Building 1b exterior



Building 1b roof structure



Building 1b southern gable end blockwork wall



Buildings 2-4



Roadside trees to immediate west of the buildings

Appendix C Bat Dropping DNA Analysis



19 June 18

Re: Identification Results for Stephen Dangerfield, Malford Environmental Consulting Limited

Job number 11890, received 04 June 2018

Sample labelled: MEC-Grange Fram

PCR amplification successful. DNA sequence:

ATGACCAACATTTCGAAAATCCCACCCCCTAATGAAAATTATCAATAACTCCTTTATTGA
CCTACCCGCTCCATCAAATATCTCTTCCTGATGGAATAT

Phylogenetic analysis identification: *Myotis nattereri*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

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18 July 18

Re: Identification Results for Stephen Dangerfield, Malford Environmental Consulting Limited

Job number 12156, received 04 July 2018

Sample labelled: MEC-Grange_2

PCR amplification successful. DNA sequence:

ATGACCAACATTTCGAAAGTCCCACCCTCTCATAAAAATTATCAATGACTCATTATTG
ACTTACCTGCTCCCTCAAATATTTTCATCGTGATGAACTTTGGATCTCTTCTAGGCAT
TGC

Phylogenetic analysis identification: *Plecotus auritus*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

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23 August 18

Re: Identification Results for Stephen Dangerfield, Malford Environmental Consulting Limited

Job number 12464, received 08 August 2018

Sample labelled: MEC-Hawthorn

PCR amplification successful. DNA sequence:

ATGACCAACATTTCGAAAGTCCCACCCTCTCATAAAAATTATCAATGACTCATTTCATTG
ACTTACCTGCTCCCTCAAATATTTTCATCATGATGAACTTTTGGATCTCTTCTAGGCA

Phylogenetic analysis identification: *Plecotus auritus*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

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Appendix D Bat Legislative Framework

Bats (Chiroptera) are afforded protection through their inclusion in Schedule 5 of 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 2010 (SI 2010/490). Section 41 of SI 2010/490 makes it an offence to:

- ❖ Deliberately capture, injure or kill a bat [S41(a)];
- ❖ Deliberately disturb a bat [S41(b)]; or
- ❖ Damage or destroy a breeding site or resting place of a bat [S41(d)].

Disturbance includes any action which is likely to:

- ❖ Impair their ability:
 - To survive, to breed or reproduce, or to rear or nurture their young; or
 - To hibernate or migrate
- ❖ Affect significantly their local distribution or abundance

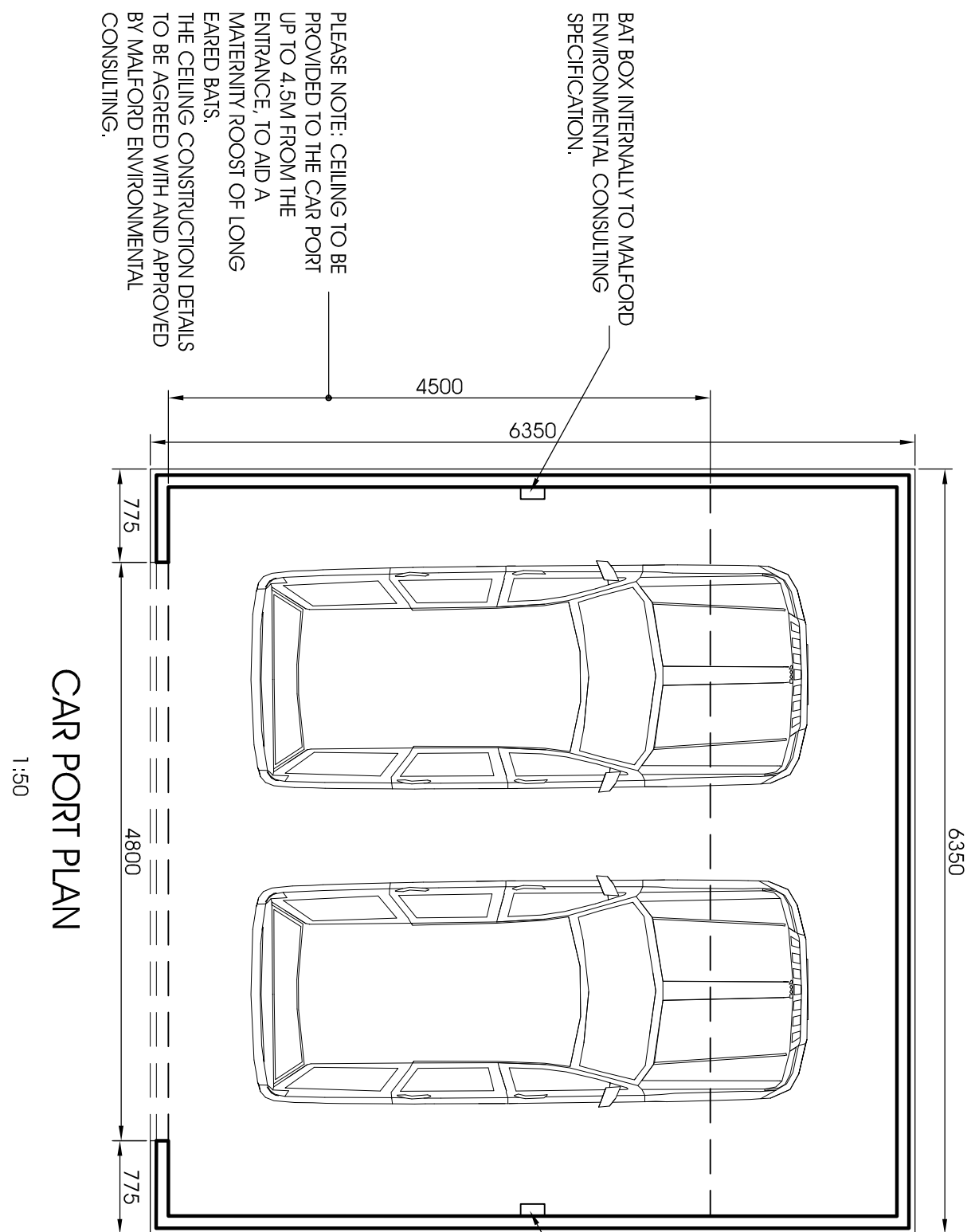
In relation to S41(d) an offence has been committed if the person could reasonably have avoided the damage to or destruction of the breeding site or resting place concerned.

The UK BAP lists all bat species as being of Conservation Concern, and lists six species of bat (Bechstein's, noctule, soprano pipistrelle, brown long-eared, lesser horseshoe and greater horseshoe) as priority species. The Wiltshire BAP has a Species Action Plan covering all bats.

Developments that compromise the protection afforded to bats under the provisions of the Conservation of Habitats and Species Regulations 2010 will require a licence to do so lawfully from Natural England (NE). As part of the licensing process the results of an appropriate level of bat survey and subsequent mitigation strategy must be submitted to Natural England.

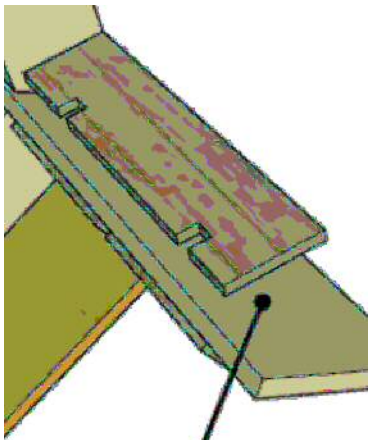
Appendix E Scheme Drawings with Bat Roost Features

mak lovell DESIGN ENGINEERS 6 WARD STREET, DORSET POWELL COURT, BATH BA1 1RN, AVON TEL: 01223 274 723 FAX: 01223 274 724 WEB: WWW.MLV.CO.UK	client: MR & MRS J PARNES	project: MANICORN FARM, THE STREET, MAGDORL, WILTSHIRE, SN10 3 RO	org. title: PROPOSED CAR PORT	scale: 1:50 @ A1	checked: ML	notes:	16.08.2018 - P1 - ISSUED PRELIMINARY FOR COMMENT	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	P41	P42	P43	P44	P45	P46	P47	P48	P49	P50	P51	P52	P53	P54	P55	P56	P57	P58	P59	P60	P61	P62	P63	P64	P65	P66	P67	P68	P69	P70	P71	P72	P73	P74	P75	P76	P77	P78	P79	P80	P81	P82	P83	P84	P85	P86	P87	P88	P89	P90	P91	P92	P93	P94	P95	P96	P97	P98	P99	P100	P101	P102	P103	P104	P105	P106	P107	P108	P109	P110	P111	P112	P113	P114	P115	P116	P117	P118	P119	P120	P121	P122	P123	P124	P125	P126	P127	P128	P129	P130	P131	P132	P133	P134	P135	P136	P137	P138	P139	P140	P141	P142	P143	P144	P145	P146	P147	P148	P149	P150	P151	P152	P153	P154	P155	P156	P157	P158	P159	P160	P161	P162	P163	P164	P165	P166	P167	P168	P169	P170	P171	P172	P173	P174	P175	P176	P177	P178	P179	P180	P181	P182	P183	P184	P185	P186	P187	P188	P189	P190	P191	P192	P193	P194	P195	P196	P197	P198	P199	P200	P201	P202	P203	P204	P205	P206	P207	P208	P209	P210	P211	P212	P213	P214	P215	P216	P217	P218	P219	P220	P221	P222	P223	P224	P225	P226	P227	P228	P229	P230	P231	P232	P233	P234	P235	P236	P237	P238	P239	P240	P241	P242	P243	P244	P245	P246	P247	P248	P249	P250	P251	P252	P253	P254	P255	P256	P257	P258	P259	P260	P261	P262	P263	P264	P265	P266	P267	P268	P269	P270	P271	P272	P273	P274	P275	P276	P277	P278	P279	P280	P281	P282	P283	P284	P285	P286	P287	P288	P289	P290	P291	P292	P293	P294	P295	P296	P297	P298	P299	P300	P301	P302	P303	P304	P305	P306	P307	P308	P309	P310	P311	P312	P313	P314	P315	P316	P317	P318	P319	P320	P321	P322	P323	P324	P325	P326	P327	P328	P329	P330	P331	P332	P333	P334	P335	P336	P337	P338	P339	P340	P341	P342	P343	P344	P345	P346	P347	P348	P349	P350	P351	P352	P353	P354	P355	P356	P357	P358	P359	P360	P361	P362	P363	P364	P365	P366	P367	P368	P369	P370	P371	P372	P373	P374	P375	P376	P377	P378	P379	P380	P381	P382	P383	P384	P385	P386	P387	P388	P389	P390	P391	P392	P393	P394	P395	P396	P397	P398	P399	P400	P401	P402	P403	P404	P405	P406	P407	P408	P409	P410	P411	P412	P413	P414	P415	P416	P417	P418	P419	P420	P421	P422	P423	P424	P425	P426	P427	P428	P429	P430	P431	P432	P433	P434	P435	P436	P437	P438	P439	P440	P441	P442	P443	P444	P445	P446	P447	P448	P449	P450	P451	P452	P453	P454	P455	P456	P457	P458	P459	P460	P461	P462	P463	P464	P465	P466	P467	P468	P469	P470	P471	P472	P473	P474	P475	P476	P477	P478	P479	P480	P481	P482	P483	P484	P485	P486	P487	P488	P489	P490	P491	P492	P493	P494	P495	P496	P497	P498	P499	P500	P501	P502	P503	P504	P505	P506	P507	P508	P509	P510	P511	P512	P513	P514	P515	P516	P517	P518	P519	P520	P521	P522	P523	P524	P525	P526	P527	P528	P529	P530	P531	P532	P533	P534	P535	P536	P537	P538	P539	P540	P541	P542	P543	P544	P545	P546	P547	P548	P549	P550	P551	P552	P553	P554	P555	P556	P557	P558	P559	P560	P561	P562	P563	P564	P565	P566	P567	P568	P569	P570	P571	P572	P573	P574	P575	P576	P577	P578	P579	P580	P581	P582	P583	P584	P585	P586	P587	P588	P589	P590	P591	P592	P593	P594	P595	P596	P597	P598	P599	P600	P601	P602	P603	P604	P605	P606	P607	P608	P609	P610	P611	P612	P613	P614	P615	P616	P617	P618	P619	P620	P621	P622	P623	P624	P625	P626	P627	P628	P629	P630	P631	P632	P633	P634	P635	P636	P637	P638	P639	P640	P641	P642	P643	P644	P645	P646	P647	P648	P649	P650	P651	P652	P653	P654	P655	P656	P657	P658	P659	P660	P661	P662	P663	P664	P665	P666	P667	P668	P669	P670	P671	P672	P673	P674	P675	P676	P677	P678	P679	P680	P681	P682	P683	P684	P685	P686	P687	P688	P689	P690	P691	P692	P693	P694	P695	P696	P697	P698	P699	P700	P701	P702	P703	P704	P705	P706	P707	P708	P709	P710	P711	P712	P713	P714	P715	P716	P717	P718	P719	P720	P721	P722	P723	P724	P725	P726	P727	P728	P729	P730	P731	P732	P733	P734	P735	P736	P737	P738	P739	P740	P741	P742	P743	P744	P745	P746	P747	P748	P749	P750	P751	P752	P753	P754	P755	P756	P757	P758	P759	P760	P761	P762	P763	P764	P765	P766	P767	P768	P769	P770	P771	P772	P773	P774	P775	P776	P777	P778	P779	P780	P781	P782	P783	P784	P785	P786	P787	P788	P789	P790	P791	P792	P793	P794	P795	P796	P797	P798	P799	P800	P801	P802	P803	P804	P805	P806	P807	P808	P809	P810	P811	P812	P813	P814	P815	P816	P817	P818	P819	P820	P821	P822	P823	P824	P825	P826	P827	P828	P829	P830	P831	P832	P833	P834	P835	P836	P837	P838	P839	P840	P841	P842	P843	P844	P845	P846	P847	P848	P849	P850	P851	P852	P853	P854	P855	P856	P857	P858	P859	P860	P861	P862	P863	P864	P865	P866	P867	P868	P869	P870	P871	P872	P873	P874	P875	P876	P877	P878	P879	P880	P881	P882	P883	P884	P885	P886	P887	P888	P889	P890	P891	P892	P893	P894	P895	P896	P897	P898	P899	P900	P901	P902	P903	P904	P905	P906	P907	P908	P909	P910	P911	P912	P913	P914	P915	P916	P917	P918	P919	P920	P921	P922	P923	P924	P925	P926	P927	P928	P929	P930	P931	P932	P933	P934	P935	P936	P937	P938	P939	P940	P941	P942	P943	P944	P945	P946	P947	P948	P949	P950	P951	P952	P953	P954	P955	P956	P957	P958	P959	P960	P961	P962	P963	P964	P965	P966	P967	P968	P969	P970	P971	P972	P973	P974	P975	P976	P977	P978	P979	P980	P981	P982	P983	P984	P985	P986	P987	P988	P989	P990	P991	P992	P993	P994	P995	P996	P997	P998	P999	P1000	P1001	P1002	P1003	P1004	P1005	P1006	P1007	P1008	P1009	P1010	P1011	P1012	P1013	P1014	P1015	P1016	P1017	P1018	P1019	P1020	P1021	P1022	P1023	P1024	P1025	P1026	P1027	P1028	P1029	P1030	P1031	P1032	P1033	P1034	P1035	P1036	P1037	P1038	P1039	P1040	P1041	P1042	P1043	P1044	P1045	P1046	P1047	P1048	P1049	P1050	P1051	P1052	P1053	P1054	P1055	P1056	P1057	P1058	P1059	P1060	P1061	P1062	P1063	P1064	P1065	P1066	P1067	P1068	P1069	P1070	P1071	P1072	P1073	P1074	P1075	P1076	P1077	P1078	P1079	P1080	P1081	P1082	P1083	P1084	P1085	P1086	P1087	P1088	P1089	P1090	P1091	P1092	P1093	P1094	P1095	P1096	P1097	P1098	P1099	P1100	P1101	P1102	P1103	P1104	P1105	P1106	P1107	P1108	P1109	P1110	P1111	P1112	P1113	P1114	P1115	P1116	P1117	P1118	P1119	P1120	P1121	P1122	P1123	P1124	P1125	P1126	P1127	P1128	P1129	P1130	P1131	P1132	P1133	P1134	P1135	P1136	P1137	P1138	P1139	P1140	P1141	P1142	P1143	P1144	P1145	P1146	P1147	P1148	P1149	P1150	P1151	P1152	P1153	P1154	P1155	P1156	P1157	P1158	P1159	P1160	P1161	P1162	P1163	P1164	P1165	P1166	P1167	P1168	P1169	P1170	P1171	P1172	P1173	P1174	P1175	P1176	P1177	P1178	P1179	P1180	P1181	P1182	P1183	P1184	P1185	P1186	P1187	P1188	P1189	P1190	P1191	P1192	P1193	P1194	P1195	P1196	P1197	P1198	P1199	P1200	P1201	P1202	P1203	P1204	P1205	P1206	P1207	P1208	P1209	P1210	P1211	P1212	P1213	P1214	P1215	P1216	P1217	P1218	P1219	P1220	P1221	P1222	P1223	P1224	P1225	P1226	P1227	P1228	P1229	P1230	P1231	P1232	P1233	P1234	P1235	P1236	P1237	P1238	P1239	P1240	P1241	P1242	P1243	P1244	P1245	P1246	P1247	P1248	P1249	P1250	P1251	P1252	P1253	P1254	P1255	P1256	P1257	P1258	P1259	P1260	P1261	P1262	P1263	P1264	P1265	P1266	P1267	P1268	P1269	P1270	P1271	P1272	P1273	P1274	P1275	P1276	P1277	P1278	P1279	P1280	P1281	P1282	P1283	P1284	P1285	P1286	P1287	P1288	P1289	P1290	P1291	P1292	P1293	P1294	P1295	P1296	P1297	P1298	P1299	P1300	P1301	P1302	P1303	P1304	P1305	P1306	P1307	P1308	P1309	P1310	P1311	P1312	P1313	P1314	P1315	P1316	P1317	P1318	P1319	P1320	P1321	P1322	P1323	P1324	P1325	P1326	P1327	P1328	P1329	P1330	P1331	P1332	P1333	P1334	P1335	P1336	P1337	P1338	P1339	P1340	P1341	P1342	P1343	P1344	P1345	P1346	P1347	P1348	P1349	P1350	P1351	P1352	P1353	P1354	P1355	P1356	P1357	P1358	P1359	P1360	P1361	P1362	P1363	P1364	P1365	P1366	P1367	P1368	P1369	P1370	P1371	P1372	P1373	P1374	P1375	P1376	P1377	P1378	P1379	P1380	P1381	P1382	P1383	P1384	P1385	P1386	P1387	P1388	P1389	P1390	P1391	P1392	P1393	P1394	P1395	P1396	P1397	P1398	P1399	P1400	P1401	P1402	P1403	P1404	P1405	P1406	P1407	P1408	P1409	P1410	P1411	P1412	P1413	P1414	P1415	P1416	P1417	P1418	P1419	P1420	P1421	P1422	P1423	P1424	P1425	P1426	P1427	P1428	P1429	P1430	P1431	P1432	P1433	P1434	P1435	P1436	P1437	P1438	P1439	P1440	P1441	P1442	P1443	P1444	P1445	P1446	P1447	P1448	P1449	P1450	P1451	P1452	P1453	P1454	P1455	P1456	P1457	P1458	P1459	P1460	P1461	P1462	P1463	P1464	P1465	P1466	P146
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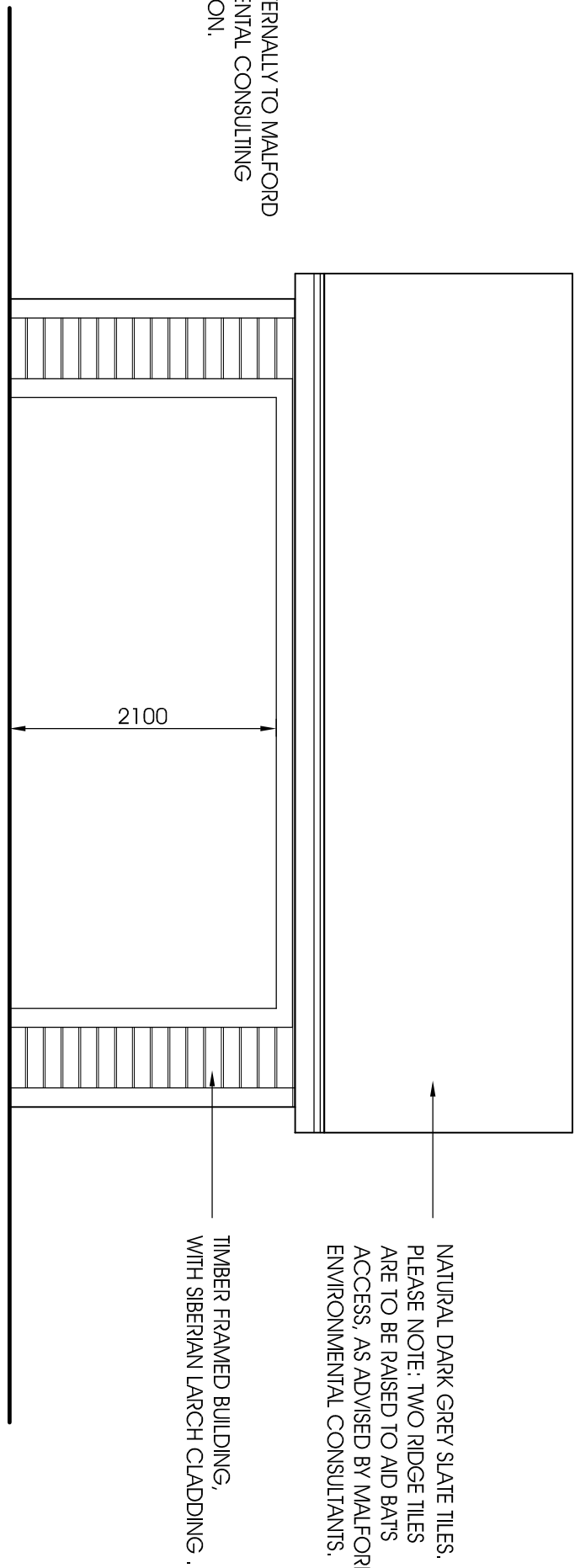


NOTES:

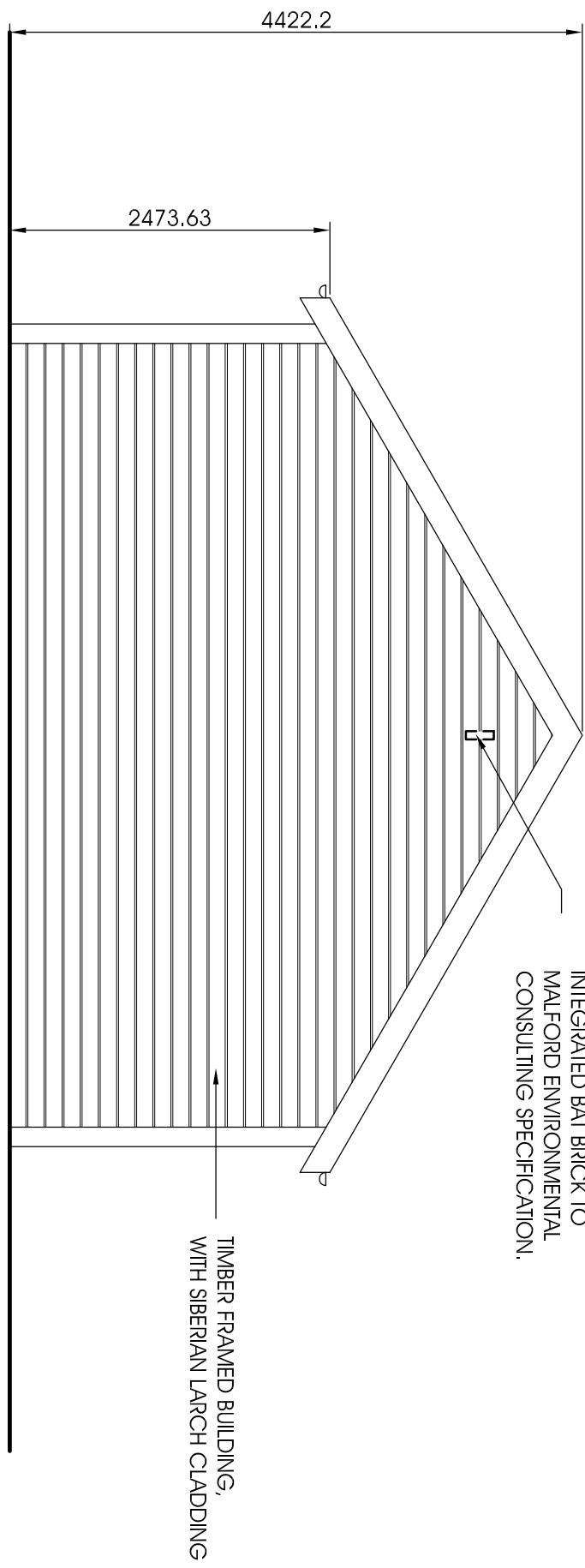
1. ONLY TRADITIONAL, HESSIAN REINFORCED BITUMINOUS ROOFING FELT SHALL BE USED AS ROOF LINER TO THE CAR PORT, TO PREVENT POTENTIAL INJURY TO THE BATS.
2. THE RIDGE DETAIL WILL BE CONSTRUCTED AS PER INDICATIVE SKETCH BELOW TO PROVIDE ROOSTING AREAS FOR BATS.



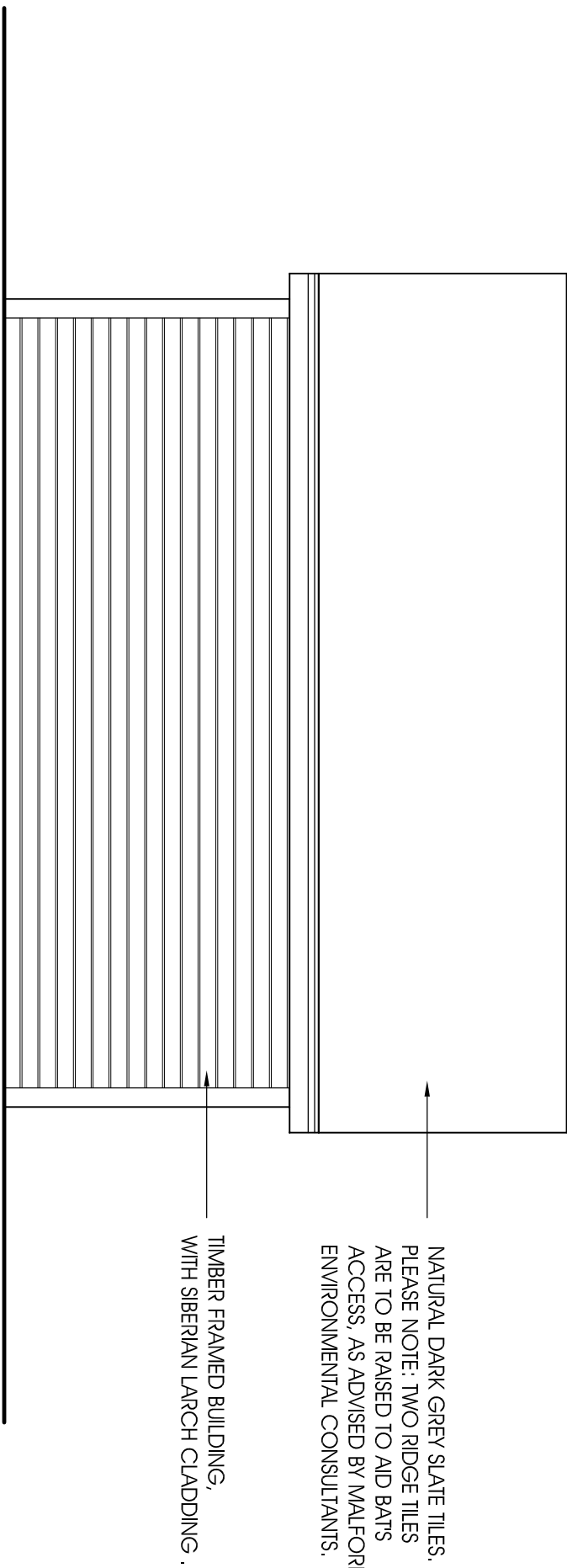
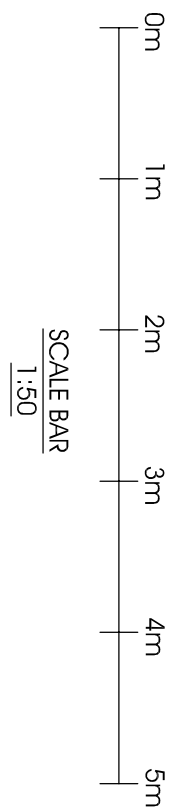
RIDGE CONSTRUCTION DETAIL N.T.S.



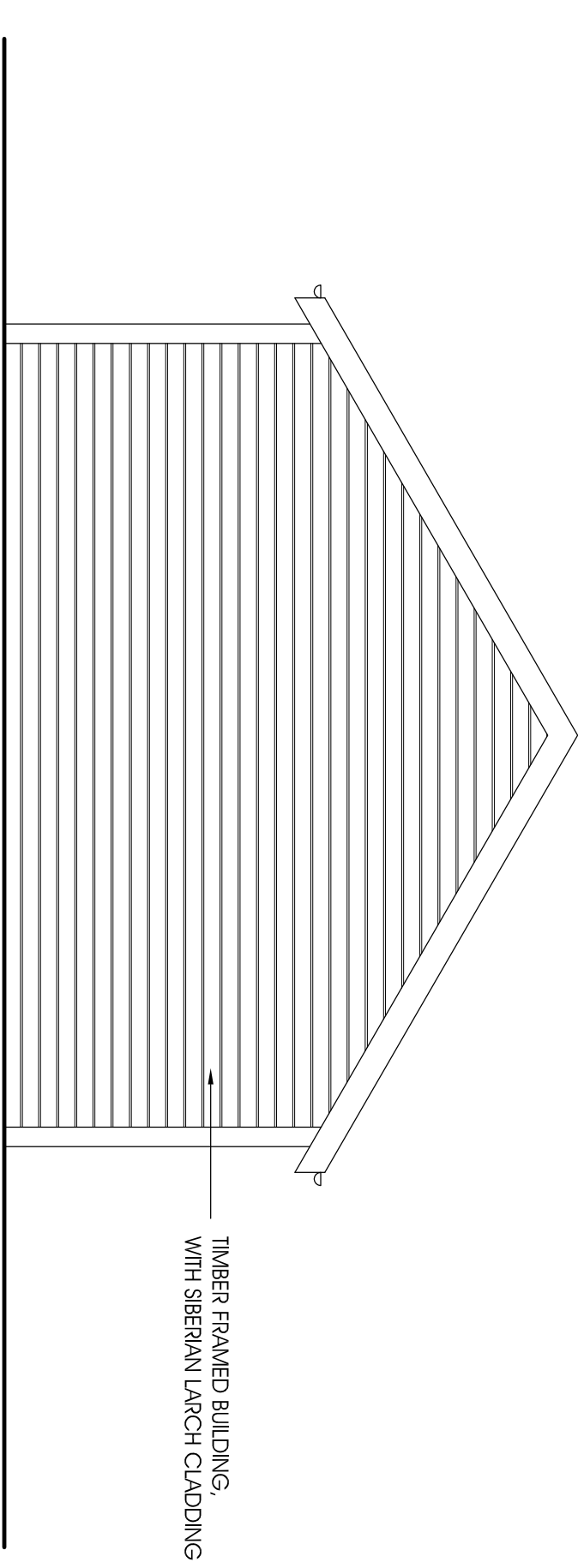
PROPOSED SOUTH-WEST ELEVATION OF CAR PORT



PROPOSED NORTH-WEST ELEVATION OF CAR PORT



PROPOSED NORTH-EAST ELEVATION OF CAR PORT



PROPOSED SOUTH-EAST ELEVATION OF CAR PORT

[illegible]