

Middlewood Farm, Threapwood Ecological Appraisal

Prepared for Sam Andrews

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SURVEY AND REPORT VALIDITY

It is important that planning decisions are based on up-to-date ecological reports and survey data. However, it is difficult to set a specific timeframe over which reports or survey data should be considered valid, as this will vary in different circumstances. In some cases there will be specific guidance on this (such as for the age of data which may be used to support an EPS licence application) but in circumstances where such advice does not already exist, the Chartered Institute of Ecology and Environmental Management (CIEEM) has provided the general advice set out below.

<i>Age of Data / Survey / Report</i>	<i>Validity</i>
Less than 12 months	Likely to be valid in most cases.
12-18 months	Likely to be valid in most cases with the following exceptions: • Where a site may offer existing or new features which could be utilised by a mobile species within a short timeframe; • Where a mobile species is present on site or in the wider area, and can create new features of relevance to the assessment; • Where country-specific or species-specific guidance dictates otherwise.
18 months to 3 years	A professional ecologist will need to undertake a site visit and then review the validity of the report. Some or all of the other ecological surveys updated.
Protected Species Licensing	Licence applications usually only possible using data less than 2 years old

The likelihood of surveys needing to be updated increases with time and is greater for mobile species or in circumstances where the habitat or its management has changed significantly since the surveys were undertaken. Factors to be considered include (but are not limited to):

- Whether the site supports, or may support, a mobile species which could have moved on to site, or changed its distribution within a site;
- Whether there have been significant changes to the habitats present (and/or the ecological conditions/functions/ecosystem functioning upon which they are dependent) since the surveys were undertaken, including through changes to site management;
- Whether the local distribution of a species in the wider area around a site has changed (or knowledge of it increased), increasing the likelihood of its presence.

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1 INTRODUCTION

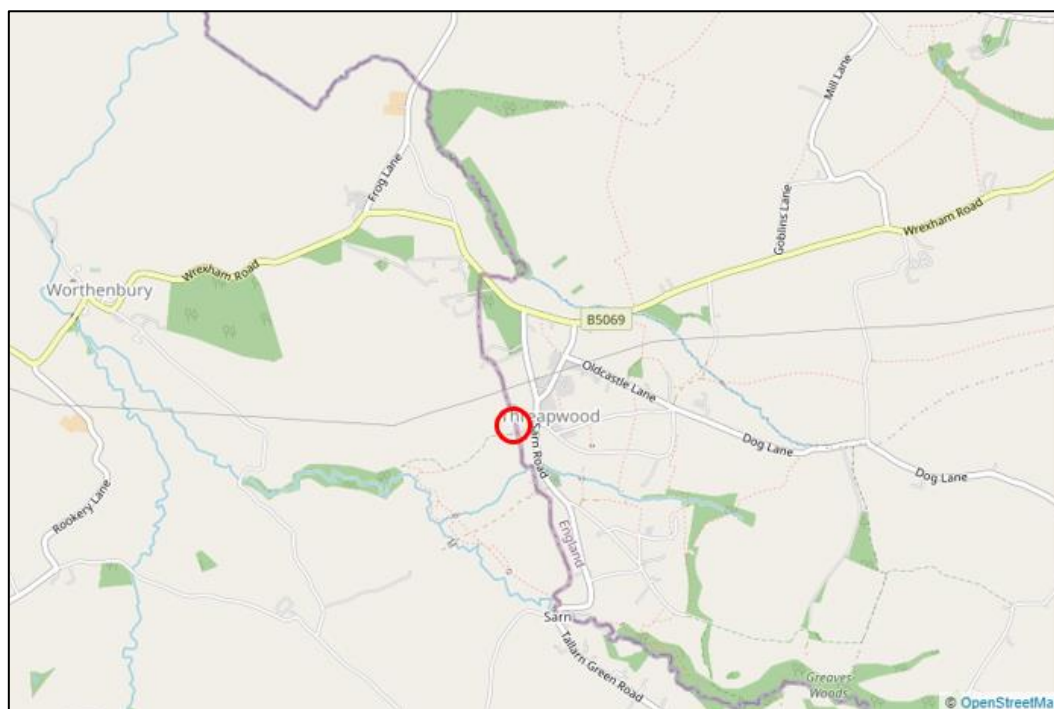
1.1 Purpose of Report

This Ecological Appraisal has been completed in connection with a proposed residential development at Middlewood Farm, Threapwood, Wrexham (OS Grid Reference SJ 438 455). The location of the proposed development site is shown in *Figure 1* and the proposed development plans are fully detailed in *Section 4*.

The initial survey was carried out on 10th September 2020 by Turnstone Ecology Ltd and consisted of a Phase 1 Habitat Survey and a Protected Fauna Survey and Habitat Suitability Assessment. Further surveys in relation to Great Crested Newts and bats were undertaken between September 2020 and June 2021 and a site walkover was completed in September 2021.

This report details survey and assessment methodology and the results of a desk-based study and on-site surveys. It also provides an assessment of potential ecological impacts and appropriate mitigation to offset any ecological impacts associated with the proposal and to satisfy national and local planning policies.

Figure 1. Location of proposed development



1.2 Ecological Context

The proposed development site is located in the centre of the village of Threapwood, which is approximately 6 km south-east of Wrexham. The proposed development consists of the conversion of

a traditional Barn into four residential dwellings and demolition of the Agricultural Building, Workshop and two lean-to extensions adjoining the northern end of the Barn. Associated gardens will be created within the footprint of the demolished agricultural outbuildings. Site access will utilise the existing access off Sarn Road to the east of site (*Figure 2*).

The proposed development site is located within the grounds of a working farm, with a detached farmhouse and detached garage situated to the south of the development site's red line boundary. At the time of survey, the habitats present on and immediately adjacent to the site comprised of hardstanding yards, agricultural buildings and amenity grassland. The northern site boundary is formed by a hardstanding track, the southern and western site boundaries are formed by hardstanding yards and the western site boundary is formed by agricultural buildings. Beyond the existing agricultural buildings and farmhouse, grass fields grazed by sheep and horses are located to the north, south and west and a detached bungalow and associated garden is located to the east. A pond is located within the ownership boundary approximately 65m north of the development footprint and the Wych Brook is located approximately 420m south-west of site.

The wider landscape consists of a mix of residential dwellings associated with the village of Threapwood to the north, south and east, agricultural fields to the west. Numerous ponds and scattered woodland pockets are located within the wider landscape.

Figure 2. Proposed development site



2 METHODS

2.1 Desk-based Study

Information relating to designated sites, and historic records of protected species within 2 km of the proposed development site were obtained from Magic (www.magic.gov.uk) and other freely available information on the internet, such as planning portals.

Any species-specific historic records are detailed within the relevant species accounts in the Results section.

2.2 Habitats

2.2.1 General

The survey methods were based on the Phase 1 Habitat Survey approach (Joint Nature Conservation Committee 2010), which is a standardised method to survey main habitat types. Plant nomenclature in this report follows Rose (Revised Edition 2006) for native, naturalised and garden varieties of vascular plant. Introduced species and garden varieties are not always identified.

2.3 Bats

2.3.1 Preliminary Roost Assessment

The buildings were assessed for potential to support bat roosts. The assessment involves a consideration of various factors including;

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

Based on these factors, an assessment was made of whether the buildings affected by the proposals might support bats and the type and number of roosts that might be present.

A detailed inspection was made of the exterior and interior of the buildings within the proposed development boundary for any evidence of bat use, such as live or dead bats, droppings, scratch marks, staining and prey remains, and in some cases the absence of cobwebs. Large quantities of cobwebs in roof voids or at access points tend to be suggestive of no bat use, although this evidence is not conclusive.

Features identified as possible bat access points or potential roosting locations were thoroughly searched where possible, using powerful torches and binoculars to facilitate the process. An endoscope and ladders were also used to enable more detailed inspection of cracks and crevices as far as access allowed. The survey was undertaken in good light conditions and access to all areas of the building was possible. This type of survey can be completed at any time of year though the optimal time period for completion is at times when bats are most likely to be present in buildings (April-October). That said evidence of bats, if present in sheltered locations, is likely to persist well beyond this time period.

Buildings and trees are categorised according to their suitability for roosting bats as follows (taken from Bat Survey Guidelines, 3rd Edition):

Negligible – Negligible habitat features on site likely to be used by roosting bats

Low – A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). Or a tree of sufficient size and age to contain potential roost features but with none seen from the ground, or features seen with only very limited roosting potential.

Moderate – A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only).

High – A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. They could be suitable for maternity roosts or hibernation sites.

Confirmed – Roosting bats confirmed as being present, either by the discovery of live or dead bats, droppings, prey remains, scratching or fur-staining.

Habitats were also assessed for their suitability for use by foraging or commuting bats. Areas of particular interest vary between species, but generally include sheltered areas and those habitats with good numbers of insects, such as woodland, scrub, hedges, watercourses, ponds, lakes and more species-rich or rough grassland.

2.4 Bat Activity Surveys

Evening emergence and dawn re-entry surveys are the primary methods for locating roosts in trees, buildings or built structures, as bats are not always found by internal and external inspection surveys

(e.g. if the bats roost in areas that cannot be searched and/or leave little or no visible trace). These surveys can also give a reasonable estimate of the number of bats present.

The surveys were carried out by four ecologists from Turnstone Ecology, who are suitably experienced at completing bat surveys. The surveyors used Echo Meter Touch 2 Pro, Echo Meter EM3+, Batbox Duet or Batbox Baton XD Bat Detectors and noted information on time, species and behaviour on to survey forms. Bat calls were continually recorded for the duration of the survey to ensure all bat activity was saved. Audio tracks were downloaded and assessed using the appropriate software to confirm the identity of bats noted during the survey.

Four surveyors were considered sufficient to ensure that suitable roosting features across the entire site were fully covered during each visit. An infrared camera was also used to aid the recording of any bat activity within the Barn and around site. Surveyors were able to position themselves so any activity could be clearly observed (*Figure 3*) and general activity around the site could also be recorded from the surveyor's locations.

Figure 3. Surveyor Positions (yellow stars), infrared camera locations (blue stars) and affected buildings outlined in yellow

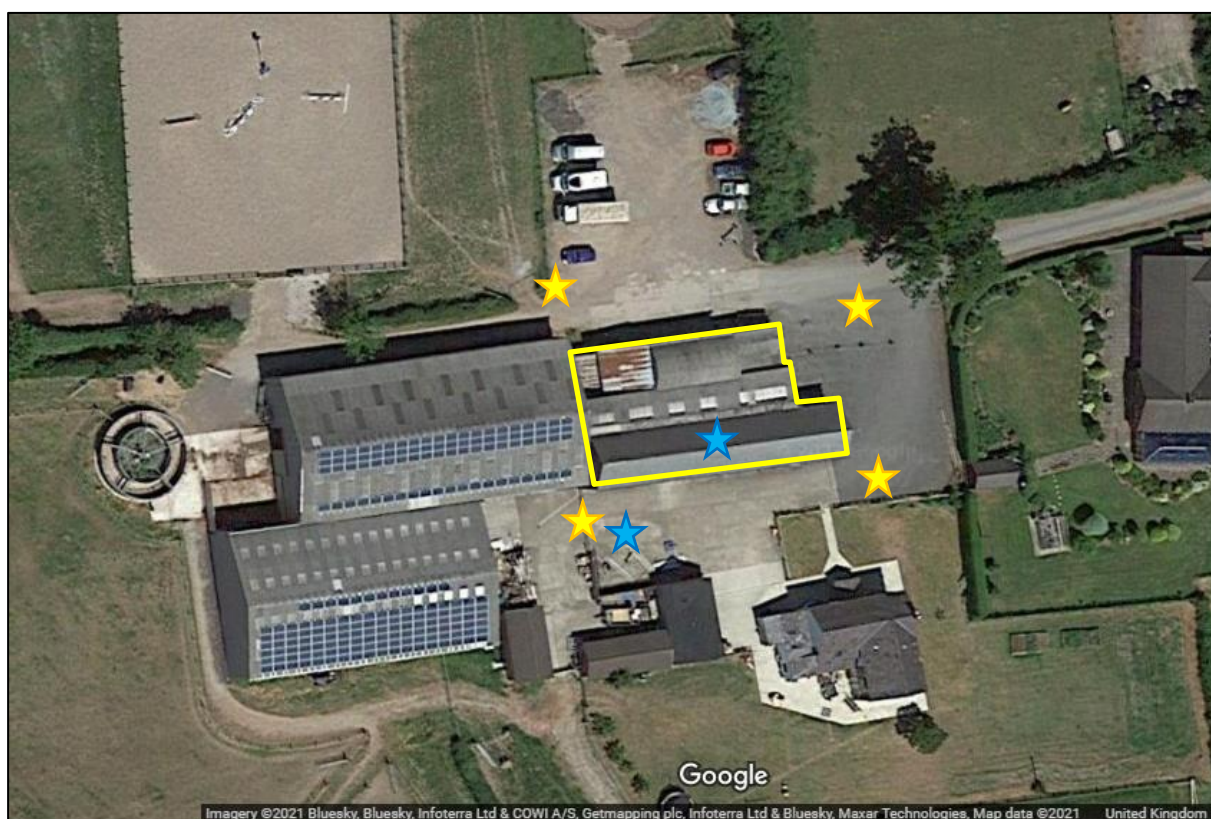


Table 1. Survey timings and conditions

	Dawn Survey 16/09/2020		Dusk Survey 10/05/2021		Dusk Survey 23/06/2021	
Time	Start	End	Start	End	Start	End
	05:18	07:03	20:40	22:25	21:22	23:15
Sunset/rise	06:48		20:55		21:43	
Temp (°C)	14	14	11	10	17	15
Wind (Beaufort)	1	1	2	2	1	2
Cloud (Octas)	3	3	1	1	8	8
Precipitation	None		None		Rain shower during survey	

An updated site walkover was undertaken on 16th September 2021 which included a check of the Barn for any additional evidence of roosting bats.

2.4.1 Great Crested Newt

The suitability of any aquatic and terrestrial habitat on the site, and in the immediate vicinity, was assessed for suitability for use by Great Crested Newts (*Triturus cristatus*). Great Crested Newts are known to travel up to 500m between breeding ponds and suitable terrestrial habitat, however, are only likely to travel up to 250m away from a breeding pond if there is suitable terrestrial habitat within that distance. Therefore, a desk-based search was undertaken for any ponds up to 250m from the site using OS maps and aerial imagery. The terrestrial habitat between the site and these ponds, and therefore connectivity to the site, was also considered.

Habitat Suitability Index

Where access allowed, ponds were assessed using the Habitat Suitability Index (HSI) developed by Oldham *et al.* (2000), which is derived from systems developed by the US Fish and Wildlife Service. It is a numerical index, between 0 and 1, where 0 indicates unsuitable habitat and 1 represents optimal habitat. The HSI for the Great Crested Newt uses ten factors (suitability indices (SI) 1 to 10), which are thought to affect Great Crested Newts:

- geographic location (SI 1)
- surface area (SI 2)
- hydrology (drying) (SI 3)
- water quality (SI 4)
- shade (SI 5)
- presence of water-fowl (SI 6)
- presence of fish (SI 7)
- number of adjacent water features (SI 8)
- terrestrial habitat (SI 9) and

- macrophyte cover (SI 10).

Each factor is scored using field and desk-based survey. These ten scores are then converted to SI scores using a scale from 0.01 to 1 from graphs given in Oldham et al. (2000) and a HSI result is calculated using the following formula:

$$\text{HSI} = (\text{SI1} \times \text{SI2} \times \text{SI3} \times \text{SI4} \times \text{SI5} \times \text{SI6} \times \text{SI7} \times \text{SI8} \times \text{SI9} \times \text{SI10})^{1/10}$$

Further research by Brady (unpublished) has developed a system for using HSI scores to define pond suitability for Great Crested Newts according to the following categories.

- HSI < 0.5 = poor
- HSI 0.5 – 0.59 = below average
- HSI 0.6 – 0.69 = average
- HSI 0.7 – 0.79 = good
- HSI > 0.8 = excellent

HSI cannot guarantee the presence or absence of Great Crested Newts however, there is a positive correlation between HSI scores and presence and abundance. Generally, ponds with high HSI scores are likely to support larger populations. The relationship is however not sufficiently precise to conclude that any pond with a high HSI will support newts in high populations, or that any pond with a low score will support low numbers of newts or no newts at all.

Presence/Absence Surveys

Surveys to record presence or likely absence of Great Crested Newts were carried out in accordance with English Nature survey guidelines (English Nature 2001) which are outlined below:

- four survey visits between mid-March and mid-June;
- surveys in suitable weather conditions;
- two of the four survey visits between mid-April and mid-May; and
- surveys using at least three of four methods:
 - Egg searching - involves searching both live and dead submerged vegetation for Great Crested Newt eggs. The eggs are characteristically laid in a folded leaf, and the large size and yellowish/white coloration readily distinguishes the eggs of Great Crested Newts from those of smaller species. Eggs are unwrapped from folded leaves to confirm identification, and the developmental stage of eggs is noted. Once a Great Crested Newt egg is reliably identified, the search is terminated because this method does not give any meaningful quantitative information on population size and can harm the eggs.
 - Torching - technique carried out at night, when newts are most active, and negative results are only meaningful when survey is carried out under suitable weather conditions. Ideal weather conditions are: a night-time air temperature of more than 5°C; little or no wind; and no rain. The margin of the pond is walked slowly checking for Great Crested Newts with a torch (Clu-lite, 1,000,000 candle power) where access and safety permit. Great Crested Newts can be easily identified and counted in clear water. The technique is less successful

in thick weed or turbid water, but can still be used. Bright light may cause newts to seek cover where they will be undetected, but the technique is appropriate to establish presence and for estimating populations. The highest number of male and female newts recorded during a single walk around the pond is taken as that night's peak count for each pond.

- Bottle trapping - this method is reliable for detecting the presence of Great Crested Newt, and is especially useful in weedy or turbid water where water visibility is poor or the vegetation is too dense to give good results from torch surveys. However, it holds inherent risks as there is the potential for newts to suffocate even when care is taken.
- Netting - can be undertaken both day and night. This method is less effective than torching or bottle trapping for determining the presence of Great Crested Newt, but it is a useful technique when searching for larvae. Netting is undertaken from the shoreline of the pond using a long-handled dip-net with a mesh of 2-4 mm. Every 50 m of pond perimeter is netted for 15 minutes.

Details of survey visits including dates and weather conditions are given in *Table 2*. Survey 2 is split over two days to allow a night-time trap setting and torching and the following morning checking and removing the traps.

Table 2. Details of survey visits and weather conditions.

Survey	Date	Weather	Survey Methods Used
Survey 1	22/03/21	9°C, dry	Egg search, torching and netting
Survey 2	29/03/21	12°C, dry	Egg search, torching and bottle trapping
Survey 2	30/03/2021	8°C, dry	
Survey 3	22/04/21	8°C, dry	Egg search and torching
Survey 4	10/05/21	12°C, dry	Egg search and torching

2.5 Constraints

Due to the presence of a dense layer of invasive Water Fern (*Azolla filiculoides*) covering the entire surface of Pond 2 the decision was made not to survey this pond to avoid the risk of cross contamination between ponds. Due to the presence of a large population of Great Crested Newts in the surveyed ponds, the omission of this pond is not considered to have impacted on the results of the population assessment.

Access to Pond 3 was only granted for Survey 1 and 2 following which surveys of the pond had to be discontinued. Due to the small size of the pond, low water levels and presence of horses within the field with access to the pond, bottle trap surveys were also not completed on this pond.

Due to the presence of dense New Zealand Pigmyweed (*Crassula helmsii*) in Pond 9, small size of the pond and the HSI assessment showing *Below Average* suitability for Great Crested Newts surveys of the pond were not considered necessary. The pond was however subject to a torch survey during the first survey visit with no amphibians, or invertebrates, observed in the pond.

2.6 Criteria for Assessment

The scientific value of habitats for nature conservation is assessed according to widely accepted criteria of which the most important are naturalness, extent, rarity, and diversity.

The assessment of impacts is based on the principles within Chartered Institute of Ecology and Environmental Management (CIEEM) Environmental Impact Assessment (EIA) Guidance (2016) which assesses the impacts of the proposal on ecological receptors taking in to consideration extent, duration, reversibility, timing, frequency and certainty.

Mitigation and enhancement are designed to reduce the level of impact upon receptors and provide ecological enhancement in order to meet current legislation and planning policy. The information below has therefore been considered during assessment.

- Criteria that have been developed to assist in the identification of statutory Sites of Special Scientific Interest (SSSIs) (JNCC 2013)
- Habitats and species of Principal Importance included under Section 41 (England) and Section 42 (Wales) of the Natural Environment and Rural Communities (NERC) Act 2006
- The legal status of habitats and species according to the EU ‘Habitats’ Directive 1992
- CIEEM Guidelines (2018) for assessing the value of ecological receptors within a defined geographical context using the following categories: international (*i.e.* Europe); UK and national (England); regional; county; Unitary Authority; local or parish; and zone of influence. Receptors are identified as ‘important’ at these levels, or as ‘not important’
- Species protected by European directives
- Species protected by the *Wildlife and Countryside Act 1981* (as amended)
- Other species listed as scarce or notable in literature issued by conservation organisations or learned societies *e.g.* vascular plant species listed in Stewart *et al.* (1994) and Red and Amber List Birds of Conservation Concern (Eaton *et al.* 2015)
- Local Wildlife Site selection criteria
- National Policy Planning Framework (NPPF), 2018
- BS42020:2013 – Biodiversity Code of practice for planning and development
- Protected species handbooks and best practice guidelines
- Section 9 of the Environment (Wales) Act 2016 details species and habitats of primary importance to Wales; these habitats and species have been taken into account for this assessment.

3 RESULTS

3.1 Desk Study

3.1.1 Protected Species Licences

Two protected species mitigation licences have been issued within 2 km of the proposed development sites since 2009:

- 2016-26373-EPS-BDX – for the destruction of a maternity roost of Soprano Pipistrelle (*Pipistrellus pygmaeus*) at a site 200m north-east from site in 2016.
- EPSM2011-3332 – for the destruction of a resting place of Brown Long-eared Bat (*Plecotus auritus*) at a site approximately 520m east of site for the period 2011-2012.

3.1.2 Designated Sites

There is one statutory designated site within 2 km of the proposed development site.

Well Rough and Long Plantation Site of Special Scientific Interest (SSSI) is located approximately 1.75 km south-east from the proposed development site. The site is one of the best examples of wet Ash (*Fraxinus excelsior*) and Field Maple (*Acer campestre*) woodland in Cheshire and is designated for its botanical interest.

3.2 Preliminary Roost Assessment

3.2.1 General

The proposed development consists of the conversion of a two-storey Barn, which has an Agricultural Building and Workshop attached to the northern elevation that will be demolished as part of the proposals (Figures 4 to 7).

Figure 4. Aerial image of proposed development site (development area = red line boundary)



Figure 5. Existing elevations of Barn to be converted

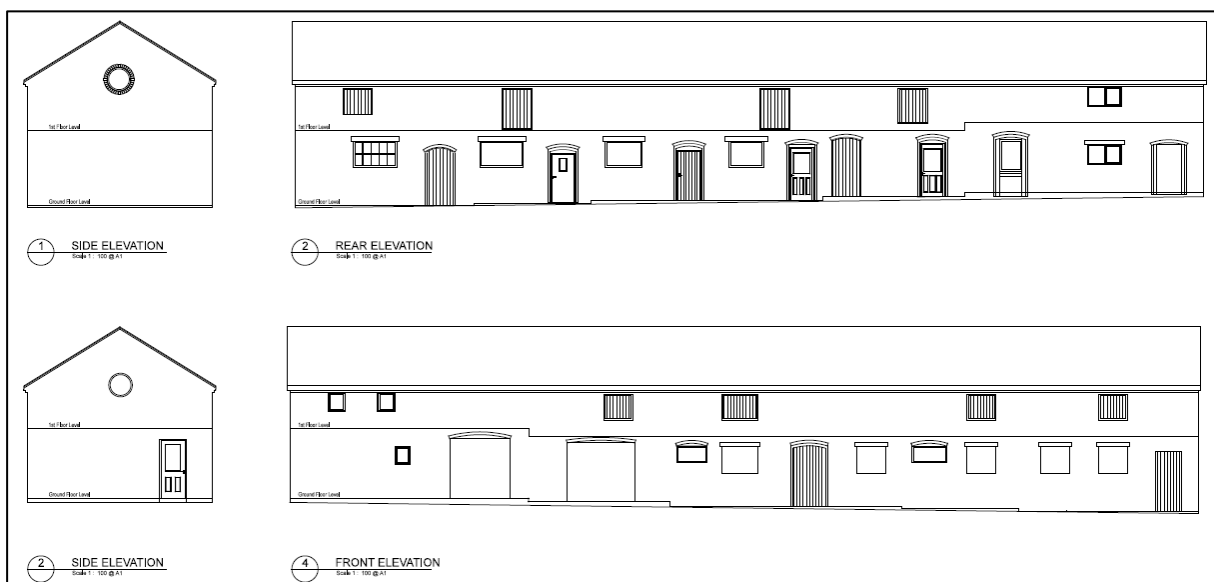


Figure 6. Existing ground floor layout of Barn to be converted

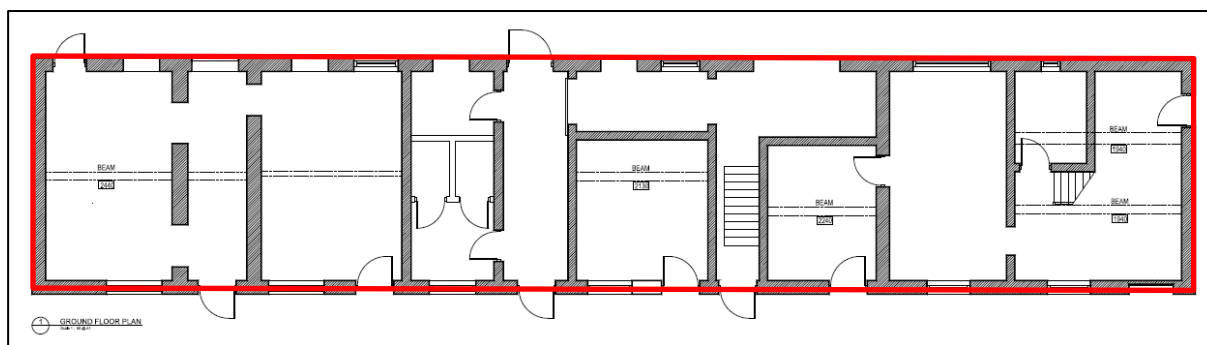
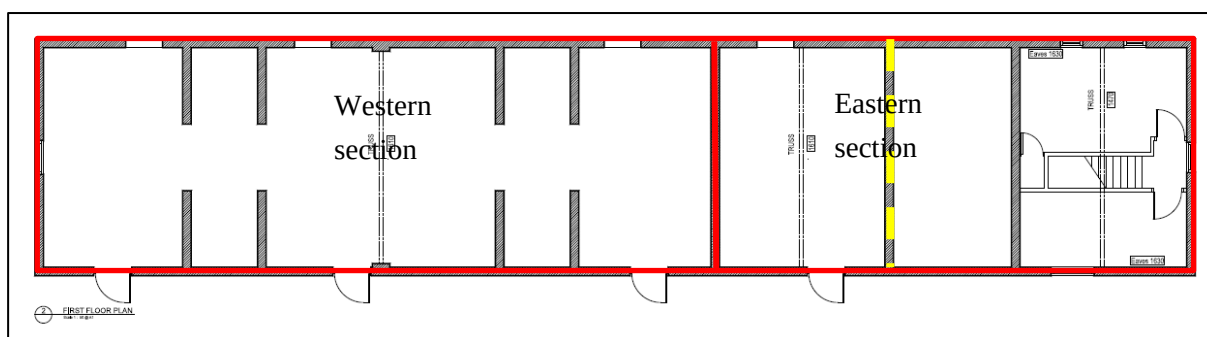


Figure 7. Existing first floor layout of Barn to be converted (dashed yellow line indicates partially dividing wall)



3.2.2 External building descriptions

The two-storey Barn affected by the proposals is a traditional brick Barn, the eastern end of which retains a character for domestic use in conjunction with Middlewood Farmhouse. The roof is pitched with a timber roof frame and concrete roof and ridge tiles. A variety of uPVC, timber-framed and metal-framed windows and doors, some of which are boarded over or bricked up, are located along each elevation (Plates 1 to 3).

Plate 1. Eastern gable end and southern elevation of the Barn (looking north-west)



Plate 2. Southern elevation of the Barn (looking north-east)



Plate 3. Eastern end of Barn (looking south-west)



Plate 4. Western gable end of Barn (looking north-east)



3.2.3 Internal building description

Internally, the ground-floor of the Barn comprises a tack room, two washrooms, dog kennels, corridor and timber staircase. The first floor is divided into two sections, the eastern end is accessed via the timber staircase and comprises a small room used for storage with exposed timber floorboards and brick walls. The timber roof frame is exposed and timber boarding lines the roof. A high brick wall sections off the eastern end of the room with thick fibre-glass insulation lining the floor. Access to the section beyond the wall was restricted to viewing over the wall top (*Plate 5*). The eastern end of the Barn retains a character for domestic use in conjunction with Middlewood Farmhouse and has a small loft space

above. The loft space measures approximately 6m by 4m with floor to ridge height of approximately 1.2m and has an exposed timber roof frame and bitumastic roof lining.

Plate 5. Eastern end of first floor of Barn showing sectioning wall and timber roof frame



The western end of the barn comprises a large room with brick walls partially dividing the space into five sections accessed via a central loft hatch opening which opens into the ground floor corridor. The timber roof frame is exposed with timber board lining the roof and the floor is formed by exposed timber floorboards (*Plate 6*). The first floor of the Barn is dark with boarded windows or hay loft style doors.

Plate 6. First floor of western end of Barn



3.2.4 Suitable roosting features and evidence

During the Preliminary Roost Assessment, an individual Brown Long-eared Bat was recorded roosting in a hole above a washroom doorway on the ground floor of the Barn (*Plate 7*) and an individual Soprano Pipistrelle was recorded roosting in the same feature on the 22nd March 2021.

Small numbers of droppings (approximately 15) characteristic of a Pipistrelle species were noted on a windowsill and within a gap into the window lintel above on the southern elevation of the Barn (*Plate 8*). Small numbers of fresh droppings were noted under this feature during each survey and an individual Common Pipistrelle was recorded roosting within this feature during a site visit on 16th September 2021. Droppings characteristic of Brown Long-eared Bat (approximately 100) were recorded within the first floor of the western section of the Barn associated with gaps at the wall tops and scattered on the floor below the ridgeline (*Plate 9*).

Scattered bat droppings characteristic of Brown Long-eared Bat (~20) and Pipistrelle species (~20) were also noted in the first floor of the eastern end of the Barn with numerous droppings visible on the insulation below the ridgeline in the eastern section beyond the brick partition wall (*Plate 10*).

Small numbers (<10) of old droppings characteristic of a Pipistrelle species were recorded within the loft space of the converted dwelling at the eastern end of the Barn.

There are openings via gaps around hayloft style doors and gaps at wall tops that provide access for bats into and out of the two-storey Barn. Potential roosting features include gaps under lifted or by missing ridge tiles (*Plate 12*), gaps at wall tops, gaps into window lintels (*Plate 8*) and gaps around doorframes (*Plate 7*), and the first floor spaces and associated exposed timber roof frame (*Plates 5 and 6*) which are all suitable for roosting bats.

Due to the presence of droppings characteristic of Brown Long-eared Bat within both the eastern and western sections of the first floor of the Barn, additional checks for roosting bats were undertaken whilst on site for the Great Crested Newt surveys and during the site walkover in September 2021. During these checks, an individual Brown Long-eared Bat was recorded within the western end of the first floor of the Barn on 22nd March 2021 and an individual Brown Long-eared Bat was recorded within the eastern end of the first floor of the Barn on 29th March 2021.

Plate 7. Brown Long-eared bat roosting in a hole above the washroom doorframe within corridor on ground floor of barn



Plate 8. Gap into window lintel (outlined in red) with droppings characteristic of a Pipistrelle species within the gap and on windowsill below (green circle)



Plate 9. Bat droppings within first floor of western section of Barn



Plate 10. Droppings under ridgeline at eastern end of Barn



Plate 11. Gaps at wall tops providing suitable roosting locations with scattered droppings characteristic of Brown Long-eared Bat below

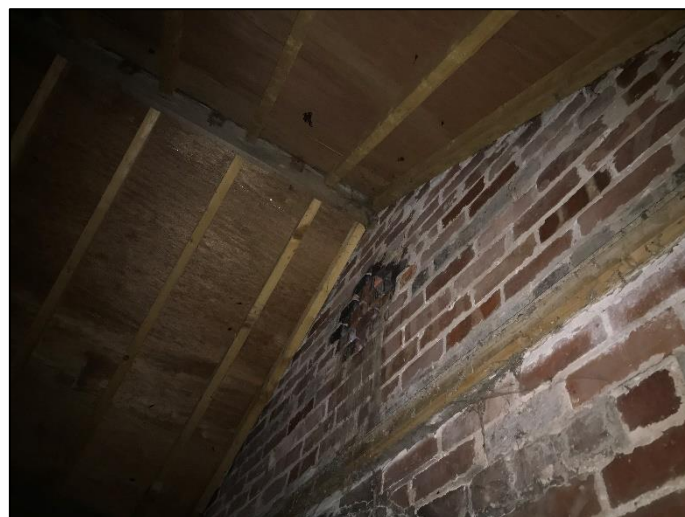


Plate 12. Missing and lifted ridge tiles at western end of Barn



Agricultural Building, Workshop and Lean-to

The interior of the Agricultural Building adjoining the northern end of the Barn has a concrete floor and is light and open due to large Perspex roof lights set into the sloping asbestos-type roof sheets (*Plate 13*). The walls are formed by low-level concrete blocks and tin sheets above along the northern, eastern and western elevations and the brick barn forms the southern elevation.

The Workshop, which adjoins the northern elevation of the Agricultural Building, comprises a Dutch barn with domed corrugated asbestos-type roof and simple steel frame (*Plate 14*). The walls are formed by a combination of metal sheets or single-skin vertical timbers. Lean-to extensions are located on the eastern and western ends of the Workshop.

The eastern lean-to has concrete block walls and a sloping corrugated metal roof (*Plate 15*). The western lean-to is open-fronted along the northern elevation with low-level concrete block walls with the upper walls formed by corrugated metal sheet walls on the southern and western elevations and timber boards on the eastern elevation. The roof is formed by sloping corrugated metal roof sheets on a simple timber roof frame (*Plate 16*).

Plate 13. Interior of Agricultural Building adjoining northern elevation of brick barn (looking east)



Plate 14. Northern elevation of Workshop and adjoining lean-to extensions (looking south-east)



Plate 15. Interior of western lean-to extension



Plate 16. Interior of lean-to adjoining western end of Workshop



Two droppings characteristic of a *Pipistrelle* species were recorded on the floor of the Agricultural Building and Workshop adjoining the northern elevation of the brick barn but were not associated with a roosting feature and indicative of foraging.

Suitable roosting features within the Agricultural Outbuilding, Workshop and adjoining lean-to extensions are limited to a small number of gaps between the frame and walls/roof. The buildings were assessed as being of *Low* suitability for roosting bats.

3.3 Bat Activity Surveys

Due to the results of the Preliminary Roost Assessment, evening emergence and dawn re-entry surveys were completed in an attempt to confirm if bats are using the buildings for roosting and if so the species and numbers present, and roosting features being used.

Dusk emergence surveys were completed on the 10th May and 23rd June 2021 and a dawn re-entry survey was completed on the 16th September 2020 during suitable weather conditions.

A summary of bat roosting activity is shown below with emergence / re-entry locations and confirmed roosting locations shown in *Plates 17-19*.

Dawn return survey – 16th September 2020, sunrise at 06:48

- No bats recorded returning to roost in the buildings

Dusk emergence survey – 10th May 2021, sunset at 20:55

- **1 Silent bat** (probable Common or Soprano Pipistrelle based on timing and presence of Common and Soprano Pipistrelle on site following emergence) emerged from bottom of stable door on first floor of southern elevation of Barn at 21:34 (*Plate 17*)
- **1 Silent bat** (probable Common or Soprano Pipistrelle based on timing and presence of Common and Soprano Pipistrelle on site following emergence) emerged from lifted roof tile on at centre of barn roof along northern elevation at 21:34 (*Figure 8*)
- **1 Soprano Pipistrelle** emerged from lifted roof tile on southern elevation of the Barn at 21:42 (*Plate 17*)

Dusk emergence survey – 23rd June 2021, sunset at 21:43

- 1 Common Pipistrelle emerged from machinery shed immediately to the west of the Barn at 21:38
- **1 Common Pipistrelle** emerged from a gap in the brickwork at the western gable end of the Barn at 21:43 (*Plate 18*)
- **1 Common Pipistrelle** re-entered the Barn via gap under first floor stable door at eastern end of the Barn at 21:48 during rain shower and emerged from same location at 22:06 (*Plate 17*)
- **1 Soprano Pipistrelle** emerged from a lifted roof tile on the southern elevation of the Barn at 22:00 (*Plate 17*)
- **1 Silent bat** (probable Common Pipistrelle based on timing and presence of Common Pipistrelle on site following emergence) emerged from open doorway of western Lean-to extension adjoining the Workshop at 22:04 (*Plate 19*)
- **1 Silent bat** (probable Brown Long-eared Bat based on timing and presence of Brown Long-eared on site following emergence) emerged from open doorway of western Lean-to extension adjoining the Workshop at 22:26 (*Plate 19*)
- **1 Common Pipistrelle** emerged from gable end at eastern end of the Barn at 22:32 (*Plate 17*).

Plate 17. Location of emerging silent bat (probable Soprano Pipistrelle) and re-entering and emerging Common Pipistrelle from first floor stable door along southern elevation (red circle), location of emerging Soprano Pipistrelle from under lifted tile (yellow circles) and location of emerging Common Pipistrelle from eastern gable end of the Barn



Figure 8. Location of emerging silent bat (probable Soprano Pipistrelle) from lifted roof tile on northern elevation of brick Barn (green circle)



Plate 18. Location of emerging Common Pipistrelle on western gable end of the Barn (red circle), eastern end of adjacent machinery shed on left side of photo



Plate 19. Location of two emerging silent bats (probable Common Pipistrelle and Brown Long-eared Bat) from open doorway on northern elevation of western Lean-to extension



During each survey regular foraging and commuting Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared Bat were recorded around site and within the machinery shed immediately west of the Barn. High passes by Noctule (*Nyctalus noctula*) and occasional foraging and commuting Daubenton's Bat (*Myotis daubentonii*) and Whiskered/Brandt's (*Myotis mystacinus/brandtii*) were also recorded.

No bats were recorded emerging or re-entering the Agricultural Building, Workshop or eastern Lean-to extension or foraging within these buildings during the surveys.

A static detector was used to record bat activity within the first floor of the eastern section of the Barn between 11th and 23rd May 2021. A total of 18 bat calls were picked up on five nights during the monitoring period all of which were from Common Pipistrelle. Four of these calls were from the 15th May between 00:56-01:27 which were considered to be from a night roosting Common Pipistrelle, the timings of the remaining thirteen calls were considered to be from individual/small numbers of emerging bats on 16th, 20th, 21st and 22nd May 2021.

3.4 Nesting Birds

Old Swallow (*Hirundo rustica*) nests were noted within the western Lean-to adjoining the Workshop. No evidence of Barn Owl (*Tyto alba*) was recorded in any of the affected buildings and there is no suitable access for Barn Owl into the buildings with the exception of the western Lean-to extension which is unsuitable for Barn Owl.

3.5 Great Crested Newt

3.5.1 General

The buildings and hardstanding within the development boundary are not suitable for foraging or hibernating Great Crested Newt due to lack of cover and refuges however the hardstanding could be crossed during dispersal.

3.5.2 Ponds

Due to the size of the development (single Barn conversion and less than 0.5 ha) and area of suitable habitat affected, ponds up to 250m from site were considered for assessment.

There are nine ponds within 250m of the proposed development site (*Figure 9*), which were subject to an initial assessment in 2020 by Turnstone Ecology Ltd (*Table 3*) and summarised below:

- Pond 1 is a field pond, located approximately 65m north of the proposed development footprint (*Plate 20*) and had a HSI score of 0.89, confirming *Excellent* suitability for Great Crested Newt. Great Crested Newt eggs were confirmed as present within Pond 1 during the initial assessment.

- Pond 2 is a large, ornamental garden pond, located approximately 200m north of site (*Plate 21*), and had a HSI score of 0.79 confirming *Good* suitability for GCN. The entirety of the pond surface was covered in invasive Water Fern (*Azolla filiculoides*).
- Pond 3 is a small field pond in a pony paddock, located approximately 245m north-north-east of site (*Plate 22*) and had a HSI score of 0.67 confirming *Average* suitability for GCN. Great Crested Newt eggs were confirmed as present within Pond 3 during the initial assessment.
- Pond 4 is a field pond, located approximately 245m north-east of site (*Plate 23*) and had a HSI score of 0.87, confirming *Excellent* suitability for GCN. Great Crested Newt eggs were confirmed as present within Pond 4 during the initial assessment.
- Pond 5 is a small field pond located approximately 230m north-east of site (*Plate 24*) and had a HSI score of 0.84, confirming *Good* suitability for GCN.
- Pond 6 is a large field pond with a field drain running through it, entering at the south-eastern end and flowing out at the north-western end, flowing into the Wych Brook approximately 500m to the south-east. Pond 6 is located approximately 155m south-east of site (*Plate 25*) and had a HSI score of 0.71, confirming *Good* suitability for GCN. Fish were noted in the pond during the initial assessment.
- Pond 7 is a field pond located approximately 140m south-east of the site (*Plate 26*) and had a HSI score of 0.93 confirming *Excellent* suitability for GCN. Great Crested Newt eggs were confirmed as present within Pond 7 during the initial assessment.
- Pond 8 is a small field pond located approximately 175m south of the site and had a HSI score of 0.68 confirming *Average* suitability for GCN.
- Pond 9 is a small field pond located approximately 230m north-east of the site. The pond had a HSI score of 0.59 confirming *Below Average* suitability for GCN and was covered in a dense, invasive New Zealand Pigmyweed.

Figure 9. Pond locations within 250m of the proposed development site

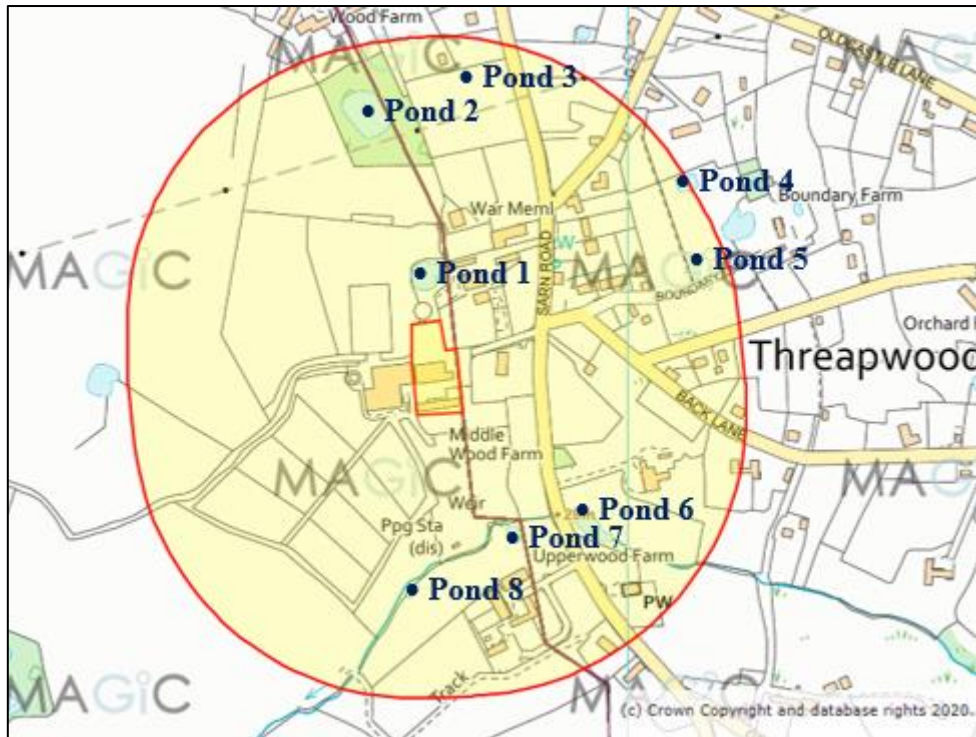


Plate 20. Pond 1 located approximately 65m north of the proposed development footprint



Plate 21. Large ornamental pond (Pond 2) located approximately 200m north-north-west of the proposed development site



Plate 22. Pond 3 at edge of pony paddock approximately 245m north-north-east of site



Plate 23. Field pond (Pond 4) located approximately 245m north-east of proposed development site



Plate 24. Field pond (Pond 5) located within same field as Pond 4, approximately 230m north-east of proposed development site



Plate 25. Field pond with connecting field drain (Pond 6) located approximately 155m south-east of site



Plate 26. Field pond (Pond 7) located approximately 140m south-east of site



Plate 26. Field pond (Pond 8) at edge of sheep-grazed field, located approximately 175m south of site



Table 3. HSI Assessment of Ponds within 250m of Proposed Development Site

Suitability Index	Factor	Pond 1	Pond 2	Pond 3	Pond 4	Pond 5	Pond 6	Pond 7	Pond 8	Pond 9
1	Location	1	1	1	1	1	1	1	1	1
2	Pond Area	1	0.9	0.4	0.6	0.4	0.8	0.8	0.2	0.2
3	Pond Drying	0.9	0.9	0.1	0.9	0.9	0.9	1	0.5	0.1
4	Water Quality	1	0.33	0.67	1	0.67	0.33	1	0.67	0.33
5	Shade	1	1	1	0.9	1	1	1	0.6	1
6	Fowl	0.67	0.67	1	0.67	1	0.67	0.67	1	1
7	Fish	1	1	1	1	1	0.33	1	1	1
8	Ponds	1	1	1	1	1	1	1	1	1
9	Terrestrial habitat	1	0.67	0.67	1	1	1	1	1	1
10	Macrophytes	0.9	0.8	1	0.8	0.7	0.6	0.9	0.5	0.8
HSI score		Excellent 0.94	Good 0.79	Average 0.67	Excellent 0.87	Excellent 0.84	Good 0.71	Excellent 0.93	Average 0.68	Below Average 0.59

3.6 Presence / Absence Surveys

3.6.1 General

Due to the presence Great Crested Newt breeding ponds within 250m of the proposed development site, presence / absence surveys were completed. Due to the consistently high number of Great Crested Newt recorded during the surveys, confirmed presence of a *Large* population of GCN in the surrounding ponds during the second survey visit and extent of the habitats affected by the proposals (hardstanding only suitable for crossing during dispersal), it was considered appropriate to limit the number of surveys to

four to avoid unnecessary disturbance to large numbers of GCN. Following completion of the first trapping survey and considering that a *Large* population of GCN had been established with breeding confirmed in Ponds 1, 3, 4, 5 and 7 via presence of GCN eggs and observations of egg-laying females, it was considered appropriate to limit survey methodology to torchlight surveys of the ponds to avoid unnecessary disturbance. These surveys were all led by Clare Knight, who holds a Natural England licence to survey for Great Crested Newt (*Licence Reference 2015-17027-CLS-CLS*). Surveys were carried out in spring 2021 and the details and results of the visits are provided in *Tables 4a–g*.

3.6.2 Results - Pond 1

A peak count of 23 male and 6 female Great Crested Newt was recorded in Pond 1 during Visit 2. The population in the pond is assessed as being *Medium* sized and breeding was confirmed due to the presence of Great Crested Newt eggs. A peak count of 38 Smooth Newts and 5 Palmate Newts was recorded during Visit 2 along with egg-laying female Smooth Newt and Palmate Newt noted during the surveys. Common Toad (*Bufo bufo*), Common Frog (*Rana temporaria*) and tadpoles were noted within Pond 1 during each visit with approximately 45 Common Toad noted during Visit 1.

Table 4a. Pond 1 Survey Results (peak counts shown in bold)

Survey No.	Method	Great Crested Newt Male	Great Crested Newt Female	Smooth Newt Male	Smooth Newt Female	Palmate Newt Male	Palmate Newt Female
1	Torch	14	6	3	1	2	1
	Egg	Present		Present			
2	Torch	23	6	21	17	1	4
	Egg	Present		Present			
	Bottle	0	0	1	0	0	0
3	Torch	3	1	8	6	1	2
	Egg	Present		Present			
4	Torch	21	4	0	22	1	2
	Egg	Present		Present			

(0) – Method used (no result), (-) – Method not used.

3.6.3 Results – Pond 3

Pond 3 is a small, shallow pond within a horse-grazed field so was not suitable for standard bottle trapping, in addition access to Pond 3 was only possible during surveys 1 and 2. A peak count of 2 male and 1 female Great Crested Newt was recorded in Pond 3 during Visit 2. The population in the pond is assessed as being *Small* sized with breeding confirmed due to the presence of Great Crested Newt eggs in the pond. A peak count of 15 Smooth Newts and 5 Palmate Newts was also recorded in Pond 3 during Visit 2 with egg-laying females of both species observed during Visit 2 and frogspawn was noted.

Table 4b. Pond 3 Survey Results (peak counts shown in bold)

Survey No.	Method	Great Crested Newt Male	Great Crested Newt Female	Smooth Newt Male	Smooth Newt Female	Palmate Newt Male	Palmate Newt Female
1	Torch	1	1	1	4	0	2
	Egg	Present		Present			
2	Torch	2	1	10	5	2	3
	Egg	Present		Present			

(0) – Method used (no result), (-) – Method not used.

3.6.4 Results - Pond 4

A peak count of 41 male and 8 female Great Crested Newt was recorded in Pond 1 during Visit 2. The population in the pond is assessed as being *Medium* sized and breeding was confirmed due to the presence of Great Crested Newt eggs. A peak count of 1 Smooth Newt and 3 Palmate Newts was recorded during Visits 1 and 3 along with an individual egg-laying female Palmate Newt noted during surveys 2 and 3.

Table 4c. Pond 4 Survey Results (peak counts shown in bold)

Survey No.	Method	Great Crested Newt Male	Great Crested Newt Female	Smooth Newt Male	Smooth Newt Female	Palmate Newt Male	Palmate Newt Female
1	Torch	12	5	0	0	1	0
	Egg	Present		None		None	
2	Torch	41	8	0	0	0	2
	Egg	Present		None		Present	
	Bottle	3	1	0	0	0	0
3	Torch	4	7	1	0	1	2
	Egg	Present		None		Present	
4	Torch	6	2	0	0	0	0
	Egg	Present		None		Present	

(0) – Method used (no result), (-) – Method not used.

3.6.5 Results – Pond 5

A peak count of 5 male and 3 female Great Crested Newt was recorded in Pond 3 during Visit 1. The population in the pond is assessed as being *Small* sized with breeding confirmed due to the presence of Great Crested Newt eggs and observations of egg-laying females during the surveys. A peak count of 3 Smooth Newts and 2 Palmate Newts was also recorded in Pond 3 during Visits 1, 2 and 3 although breeding was not confirmed within Pond 5.

Table 4d. Pond 5 Survey Results (peak counts shown in bold)

Survey No.	Method	Great Crested Newt Male	Great Crested Newt Female	Smooth Newt Male	Smooth Newt Female	Palmate Newt Male	Palmate Newt Female
1	Torch	5	3	0	3	0	2
	Egg	None		None			
2	Torch	4	1	2	0	0	0
	Egg	Present		None			
	Bottle	0	1	1	0	0	0
3	Torch	1	3	0	0	1	0
	Egg	Present		None			
4	Torch	4	0	0	0	0	0
	Egg	Present		None			

(0) – Method used (no result), (-) – Method not used.

3.6.6 Results – Pond 6

Pond 6 is a large pond with a field drain running through the pond and fish were noted during each survey. No Great Crested Newts, Smooth Newts or Palmate Newts were recorded in Pond 6 during the surveys. Approximately 50 breeding Common Toad were noted within the pond during Survey 1 with Common Toad noted in the pond during the remaining surveys.

Table 4e. Pond 6 Survey Results (peak counts shown in bold)

Survey No.	Method	Great Crested Newt Male	Great Crested Newt Female	Smooth Newt Male	Smooth Newt Female	Palmate Newt Male	Palmate Newt Female
1	Torch	0	0	0	0	0	0
	Egg	None		None			
2	Torch	0	0	0	0	0	0
	Egg	None		None			
	Bottle	0	0	0	0	0	0
3	Torch	0	0	0	0	0	0
	Egg	None		None			
4	Torch	0	0	0	0	0	0
	Egg	None		None			

(0) – Method used (no result), (-) – Method not used.

3.6.7 Results – Pond 7

A peak count of 51 male and 36 female Great Crested Newt was recorded in Pond 3 during Visit 4. The population in the pond is assessed as being a high-end *Medium* sized with breeding confirmed in this pond due to the presence of Great Crested Newt eggs as well as observations of egg-laying females during the surveys. A peak count of 8 Smooth Newts and 5 Palmate Newts was also recorded in Pond

3 during Visits 2, 3 and 4 with egg-laying females of both species observed during Visit 3. Common Toad, Common Frog and tadpoles were also noted in the pond.

Table 4f. Pond 7 Survey Results (peak counts shown in bold)

Survey No.	Method	Great Crested Newt Male	Great Crested Newt Female	Smooth Newt Male	Smooth Newt Female	Palmate Newt Male	Palmate Newt Female
1	Torch	8	8	2	0	0	0
	Egg	Present		Present			
2	Torch	14	18	0	0	0	2
	Egg	Present		Present			
	Bottle	0	0	0	0	0	0
3	Torch	19	13	5	3	1	2
	Egg	Present		Present			
4	Torch	51	36	0	0	4	1
	Egg	Present		Present			

(0) – Method used (no result), (-) – Method not used.

3.6.8 Results – Pond 8

A peak count of 1 male and 2 female Great Crested Newt was recorded in Pond 8 during Visits 1 and 2. The population in the pond is assessed as being *Small* sized however breeding in this pond was not confirmed. A peak count of 1 male Palmate Newt was also recorded in Pond 8 during Visit 4 however no Smooth Newts were recorded in the pond.

Table 4g. Pond 8 Survey Results (peak counts shown in bold)

Survey No.	Method	Great Crested Newt Male	Great Crested Newt Female	Smooth Newt Male	Smooth Newt Female	Palmate Newt Male	Palmate Newt Female
1	Torch	1	2	0	0	0	0
	Egg	None		None			
2	Torch	0	0	0	0	0	0
	Egg	None		None			
	Bottle	1	2	0	0	0	0
3	Torch	0	0	0	0	0	0
	Egg	None		None			
4	Torch	0	0	0	0	1	0
	Egg	None		None			

(0) – Method used (no result), (-) – Method not used.

A peak count of 124 Great Crested Newts was recorded across the surveyed ponds during any one visit confirming a *Large* meta-population in the ponds surrounding site. Individual Great Crested Newts were also recorded crossing the development site during the survey visits.

3.6.9 Other Species

Suitable habitat for Priority Species such as Common Toad and European Hedgehog (*Erinaceus europaeus*) is present adjacent to site with the grassland and hedgerows to the north of site and gardens to the east and south of site suitable for foraging and commuting individuals.

Large numbers of breeding Common Toads were recorded in the surrounding ponds and an individual Hedgehog was recorded on site during the Bat Activity Surveys.

4 EVALUATION

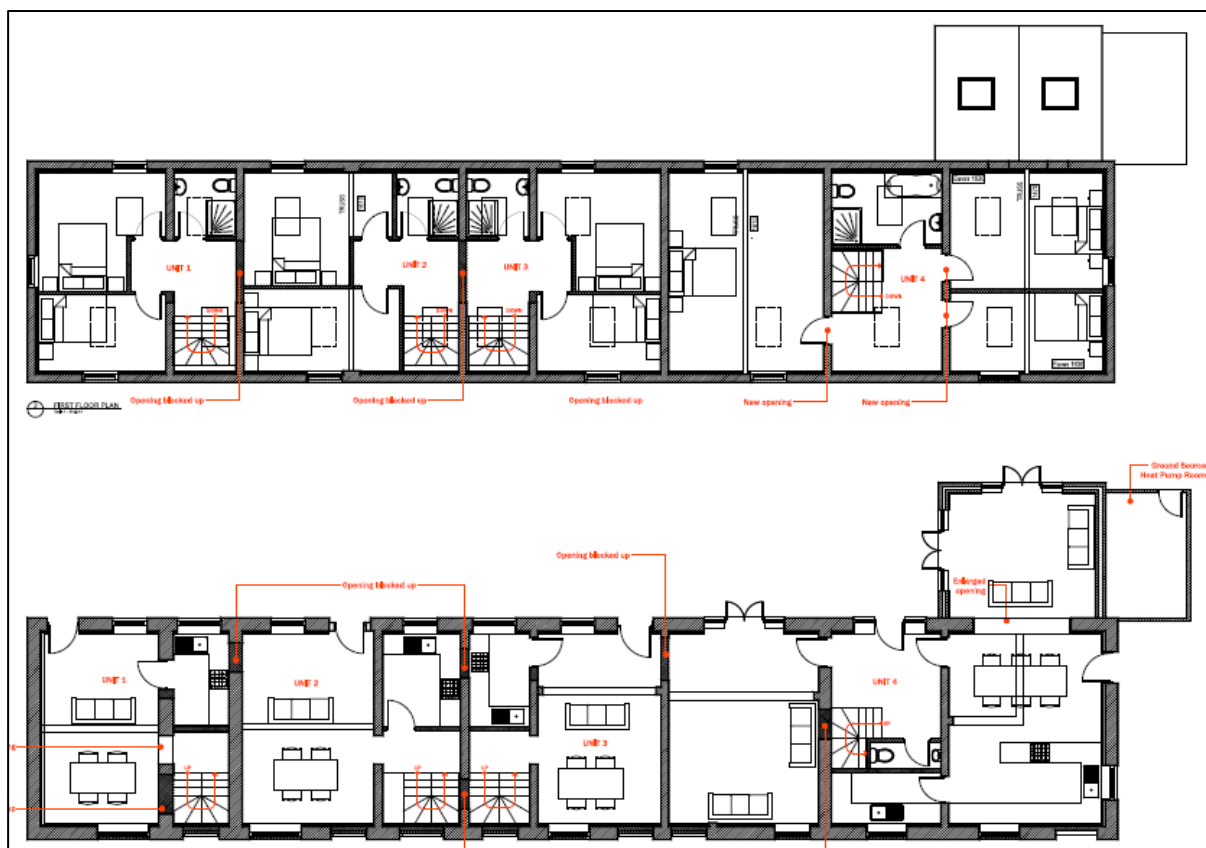
4.1 Summary of Works

The proposed development consists of the conversion of a traditional Barn into four residential dwellings and demolition of the Agricultural Building, Workshop and two lean-to extensions adjoining the northern end of the Barn (*Figures 10 and 11*). The barn conversion involves re-roofing, installation of additional windows along the northern and southern elevations and within the roof, installation of patio doors and solar panels along the southern elevation as well as internal renovations and alterations. Day roosts of small numbers of Soprano Pipistrelle, Common Pipistrelle and Brown Long-eared Bat are using features both internally and externally on the Barn and these features will be affected by the proposals.

Figure 10. Proposed elevations



Figure 11. Proposed floorplan



4.2 Designated Sites

Well Rough and Long Plantation Site of Special Scientific Interest is located approximately 1.75 km south-east from the proposed development site. Given that the proposals are for a small-scale development, and the area affected is less than 0.2 hectares of a ubiquitous habitat that is unrelated to the designated site, the development is not predicted to have any impacts on the habitats and species associated with this designated site. Therefore, no specific mitigation measures are considered necessary in relation to the designated site.

4.3 Bats

4.3.1 Summary of Bat Survey Results

During the 2020 PRA, evidence of bats in the form of an individual Brown Long-eared Bat roosting within a gap in a door frame within the Barn and scattered droppings characteristic of Brown Long-eared Bat and a Pipistrelle species found on the first floor of the affected Barn. Features suitable for roosting bats included gaps under ridge tiles, gaps between the timber frame and walls/roof, gap into an internal door frame, gaps into window lintels, gaps at wall tops and the first-floor spaces and associated exposed roof frames and ridgeline. It was therefore concluded that the Barn was of *High* suitability for

roosting bats with a *Confirmed* Brown Long-eared Bat roost present. The modern Agricultural Building, Workshop and two Lean-to extensions adjoining the norther end of the Barn were considered to be of *Low* suitability for roosting bats with suitable roosting features limited to a small number of gaps between the frame and walls/roof.

Due to the results of the PRA, Bat Activity Surveys were completed on the Barn and adjoining Agricultural Building, Workshop and two Lean-to extensions by Turnstone Ecology Ltd between September 2020 and June 2021. These surveys confirmed the following:

- A day roost of an individual Brown Long-eared Bat and a day roost of an individual Soprano Pipistrelle in a gap in a doorframe within the corridor on the ground floor of the Barn;
- A day roost of an individual Brown Long-eared Bat in the first floor of the eastern section of the Barn and a day roost of an individual Brown Long-eared Bat in the first floor of the western section of the Barn;
- A day roost of a Common Pipistrelle within a window lintel at the western end of the southern elevation of the Barn;
- Two day roosts of individual Common Pipistrelles at the apex of the eastern and western gable ends of the Barn;
- Two day roosts of individual Soprano Pipistrelles under lifted roof tiles on the southern elevation of the Barn;
- Two day roosts of individual silent bats, considered to be a Pipistrelle species, under a lifted roof tile on the northern elevation of the Barn and under a lifted ridge tile at the western end of the Barn;
- A day roost of an individual/small numbers of Common Pipistrelle in the first floor of the eastern section of the Barn;
- A day roost of an individual silent bat, considered to be a Common or Soprano Pipistrelle, in the first floor of the eastern section of the Barn;
- A day roost of two silent bats, considered to be a Pipistrelle species and a Brown Long-eared Bat, within the western Lean-to extension; and
- A night roost of an individual Common Pipistrelle within the first floor of the eastern section of the Barn.

Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared Bat were recorded foraging and/or commuting across site during the surveys and high passes by Noctule and occasional foraging and commuting Daubenton's Bat and Whiskered/Brandt's (*Myotis mystacinus/brandtii*) were also recorded.

4.3.2 Evaluation and Impacts

The proposed conversion of the traditional Barn into residential accommodation and demolition of the adjoining Agricultural Outbuilding, Workshop and two Lean-to extensions would cause:

- the possible injuring/killing of individual roosting Soprano Pipistrelle and the loss of three day roosts of this species.

- the possible injuring/killing of small numbers of roosting Common Pipistrelle (up to 3) and the loss of four day roosts and one night roost of this species.
- the possible injuring/killing of individual/small numbers of roosting Brown Long-eared Bat and the loss of four day roosts of this species.
- the possible injuring/killing of small numbers of roosting Pipistrelle species (up to 2) and the loss of four day roosts of this species.

The Bat Activity Surveys in 2021 were completed during the maternity period and when maternity roosts would be evident if present. Bat surveys included a PRA, 2020 dawn survey, repeat internal inspections prior to completing surveys for Great Crested Newt, 2021 dusk emergence surveys (including camera), 2021 static detector surveys and a repeat walkover in September 2021. Bat species and numbers were consistent throughout the completed surveys and it is considered that this is an appropriate level of data against which to assess the impacts of the proposed scheme

Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared Bat are all common bat species in the United Kingdom with approximately 2,430,000, 1,500,000 and 245,000 individuals estimated to be present¹ respectively. For the purpose of this project these species are considered to be common on a regional scale (with the scale stretching through common, rarer to rarest species). In accordance with the Bat Mitigation Guidelines the requirement for mitigation for roosts of individual and low numbers of Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared Bat includes;

- Flexibility over provision of bat boxes, access to new buildings *etc.*; and
- No conditions about timing or monitoring.

4.3.3 Mitigation and Enhancement

Destruction of bat roosts can only occur under a Protected Species Licence obtained from Natural Resources Wales (NRW), which will need to include an agreed safe working methods and mitigation plan. All agreed methods will be included in the licence application and appropriate mitigation and safe working methods can only be confirmed upon agreement of the licence. The methods (which may be updated upon confirmation of an accepted Licence application) are likely to include;

- Works to commence following receipt of a Protected Species Licence from NRW.
- Prior to the start of works a suitably qualified ecologist will deliver a toolbox talk to contractors and staff on site, informing them of the likelihood of encountering bats, what to do if they find bats and give a brief overview of the licence documents.
- Provision of roosting locations for the duration of works with one Causa bat box, or equivalent, and two Schwegler 2F bat boxes, or equivalent, erected on mature trees within the same land ownership and/or on unaffected buildings to the west of site (*Figure 12*).
- Wooden bird box to be placed adjacent to the bat boxes to try to ensure the bat boxes remain open for use by bats.
- Checking by a licenced ecologist of all known and potential roosting locations. If the entirety of a feature can be searched and found to be empty these will be blocked. If the feature cannot be fully searched it will be excluded using folded acetate or similar to allow bats to leave the

feature but not re-enter. If exclusions are used, they will be left in place for a minimum of 5 nights in suitable weather conditions. Following this they will be permanently filled using the same methods as above (newspaper or expanding foam).

- The roof stripping will be completed under the watching brief of a licenced ecologist during suitable weather (dry, minimum temperatures of 9°C) with roof tiles being removed carefully by hand.
- If bats are found during works they will be caught by a licensed ecologist who will be wearing suitable gloves. The bat will be placed into a cloth bag and carefully placed into a previously erected bat box.
- A minimum of five gaps suitable for roosting Pipistrelles will be created under the ridge tiles on the converted Barn (*Figure 13*).
- One Beaumaris bat box and one Large Multi-chamber bat box (or equivalents) to be erected on the southern and western aspects of the converted Barn (*Figures 13 and 14*). The boxes/feature will be suitable for species of bats such as pipistrelles.
- Breathable roofing membranes (BRM) must **not be used** where bat roosting features will/could be created with 1F bitumastic felt used instead. This is due to issues with bat entanglement and reduced membrane performance if used in areas of bat use. Dry ridge systems **must not be used**, a traditional mortar ridge should be used instead due to issues with bat entanglement.

No lighting will be directed on known, potential or newly erected bat roost access points and roosting features and only movement activated timed security lighting will be used outside of potential roosting locations. This includes no lighting directed at the house to the south of the converted Barn where roosting bats are likely to occur or towards the machinery shed to the west where roosting bats are known to occur.

Bat loft

- A dedicated bat loft will be created within the existing garage to the south of the Barn which has an existing pitched slate roof, timber clad gable walls and an untrussed roof frame allowing for an uncluttered flight space (*Figure 12*). The existing roof tiles, timber cladding and wall tops on the garage are tight fitting with no current access for roosting bats. The garage has been subject to an internal and external inspection with no evidence of roosting bats recorded within or around the building and no bat activity was noted around the garage during the activity surveys.
- The loft will be sectioned off by the erection of a stud wall creating a bat loft measuring approximately 2.5m in height floor to ridge and 4m wide x 5m long. The existing window on the western elevation will be boarded over (or removed) to prevent light entering the loft space.
- The existing loft space is lined with Breathable Roof Membrane which will be securely covered with Netlon® Mesh Type XN1455-8002 fixed in place by batons with no gaps left where bats could access the BRM.

- Suitable roosting locations within the roof void will include a single “hot-box” (*Figure 15*) to accommodate species such as Brown Long-eared Bat. This will be constructed at the apex of the roof at the southern end of the bat loft and will be approximately 1.5m long by 1m wide and approximately 60cm high. There will be an open flyway into this box which will be 30cm square, and the box will be constructed using 1cm thick ply-board to ensure it is adequately insulated.
- Further internal roosting locations (suitable for Pipistrelle species and Brown Long-eared Bats) will also be provided by fitting shaped wooden baffles at the apex of the gable wall. These will be triangular in shape and be roughly 450mm high by 450mm wide and be fitted to the wall using 28mm batten so that a narrow but tall gap is created. A minimum of four false mortise joints will be created in the loft space and a Causa Maternity Bat Box, or box constructed to the same specifications, will also be installed within the loft space.
- Entrance points via gaps at wall tops and through the timber cladding will be created, these features will be battened and secured to prevent bat access to the existing BRM.

Due to the cumulative impacts on the bat roosts present within the affected buildings, one monitoring survey of the Barn to be completed between June and August annually for two years following completion of the conversion works. The monitoring surveys will comprise a dusk emergence survey covering all suitable roosting features and a box and bat loft check by a licensed ecologist.

Figure 12. Location of bat loft in Garage (yellow outline), location of Causa bat box and adjacent wooden hole fronted nest box (orange circle), location of Schwegler 2F bat boxes (or equivalent) and adjacent bird box (blue circle) and two Swallow nest cups (green star) within stable.



Figure 13. Locations of Beaumaris bat box, or equivalent, (red pentagon) and lifted ridge tiles (red rectangles) on converted Barn. South facing windows will have vertical wooden slats reducing light spill along this elevation.



Figure 14. Location of Large Multi-chamber bat box, or equivalent, on western gable end of converted Barn

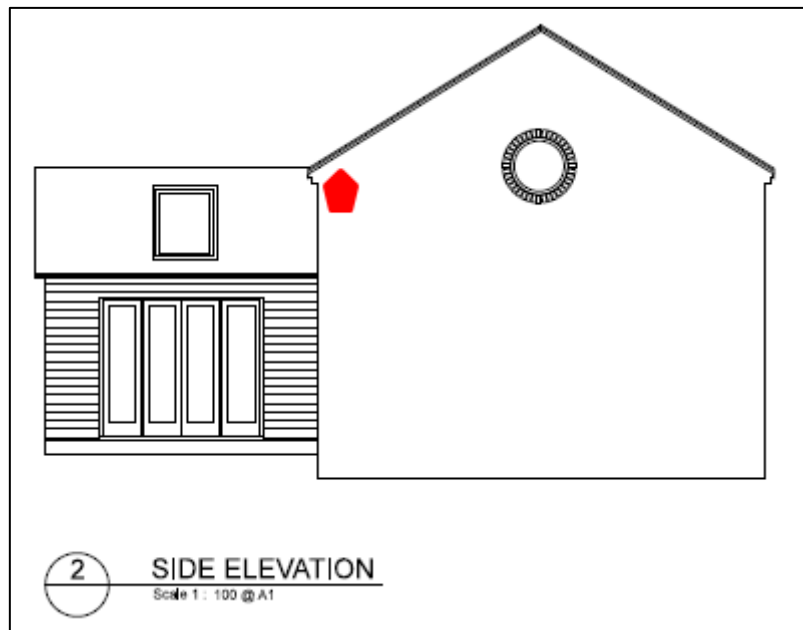
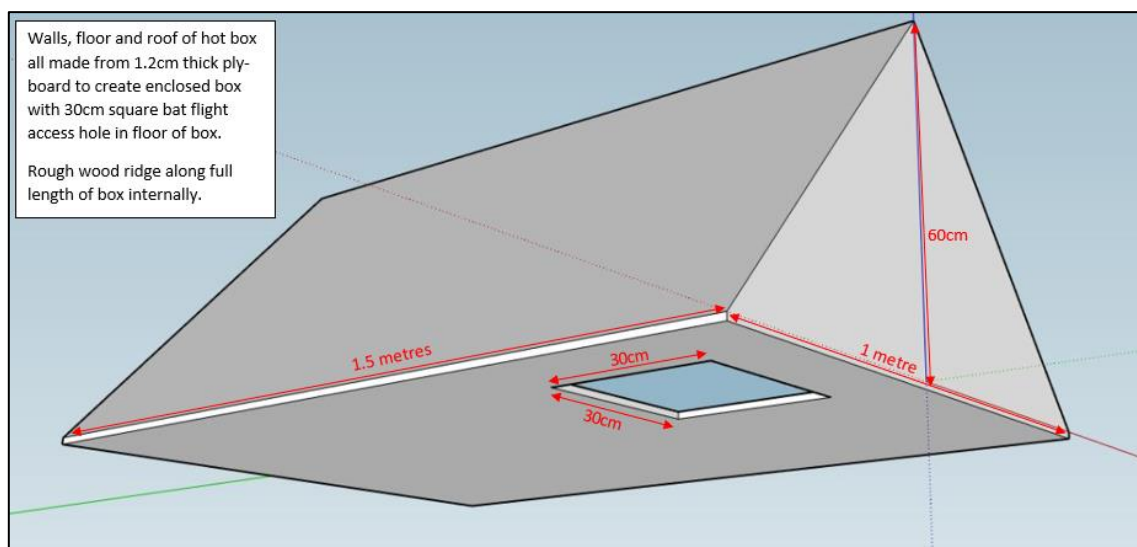


Figure 15. Example Hot-box design



4.4 Nesting birds

Evidence of nesting birds was recorded in the western lean-to adjoining the Workshop. Features suitable for nesting birds are present within the buildings although there is no suitable access in to the buildings for Barn Owl. Works affecting suitable bird nesting habitat should ideally be completed outside the breeding bird season (March – August inclusive). If this is not possible then a pre-construction bird survey will need to be completed by a suitably qualified ecologist and depending on the presence and location of nesting birds, breeding effort may have to be allowed to finish before works commence.

Replacement nesting features should be created as part of the proposals and include two Sparrow terrace boxes and a mix of open-fronted and hole nest boxes and/or features erected on/in the converted Barn. Replacement features should also include two artificial Swallow nests erected in the existing stable to the south (*Figure 12*).

4.5 Great Crested Newt

4.5.1 Summary of Results

During the surveys a peak count of 29 Great Crested Newt was recorded in Pond 1, a peak count of 3 Great Crested Newt was recorded in Pond 3, a peak count of 49 Great Crested Newt was recorded in Pond 4, a peak count of 8 Great Crested Newt was recorded in Pond 5, a peak count of 87 Great Crested Newt was recorded in Pond 7 and a peak count of 3 Great Crested Newt was recorded in Pond 8 with Ponds 1, 3, 4, 5 and 7 confirmed as breeding ponds. A peak count of 124 Great Crested Newt was recorded across Ponds 1, 3, 4, 5, 7 and 8 confirming the presence of a *Large* meta-population. No Great Crested Newt were recorded in Pond 6.

Smooth Newt and Palmate Newt were recorded in Ponds 1, 3, 4, 5 and 7 and an individual Palmate Newt was recorded in Pond 8 (peak count of 55 Smooth Newts across Ponds 1, 3, 4, 5 and 7 and 14 Palmate Newts across Ponds 1, 3, 4, 5, 7 and 8). Breeding populations of both species were confirmed in Ponds 1, 3 and 7 and a breeding population of Palmate Newt were confirmed in Pond 4. Breeding populations of Common Toad were recorded in Ponds 1, 6 and 7 and breeding populations of Common Frog and tadpoles were noted in Ponds 1, 3 and 7.

Given the size of the development footprint (0.2 ha), the suitability of habitats affected by the proposals and that a *Large* meta-population of Great Crested Newt had been established by Survey 2 it was considered that sufficient information had been obtained from the four Presence/Absence surveys to inform the proposals.

4.5.2 Impacts

The hardstanding within the proposed development footprint is only of limited suitability for dispersing newts with individual Great Crested Newts recorded crossing the development site during two of the survey visits.

Using the distances between the construction area and nearest Great Crested Newt breeding pond a Natural England Rapid Risk Assessment showed *Amber: Offence Likely* however the buildings and hardstanding affected by the proposals, are not suitable habitats for foraging or hibernating Great Crested Newt due to the lack of cover and refuges, however it is known that Great Crested Newts disperse through the application site.

4.5.3 Mitigation

Due to the distance between works and five ponds with confirmed populations of breeding Great Crested Newt and the extent of the suitable Great Crested Newt habitat affected by the proposals, Reasonable Avoidance Measures (RAMs) will be followed for the duration of works and will include the following measures:

- Prior to the start of works a suitably qualified ecologist will deliver a tool box talk to contractors and staff on site, informing them of the likelihood of encountering Great Crested Newt and what to do if they find Great Crested Newt.
- Any excavations will be completed during daylight and backfilled (and suitably compacted) before nightfall or if this is not possible a ramp (or similar structure) will be provided to allow animals an opportunity to escape. Checks of any excavations for animals will also be undertaken prior to backfilling.
- During construction, any storage of piles of materials and excavated earth on the site should be kept to a minimum and stored on hardstanding away from the boundaries and raised (*e.g.* on pallets) to deter Great Crested Newt from using them for temporary cover. Any excavated earth should be compacted on the day it is excavated and stored on site for a maximum of three nights.

If a Great Crested Newt or reptile is found during any stage of the above works all works must cease and a licensed Ecologist called to provide advice and/or attend site. In the event of a Great Crested Newt being found Natural Resources Wales will need to be contacted to discuss an acceptable course of action.

4.5.4 Other Species

The RAMS for Great Crested Newt will ensure no suitable habitat for European Hedgehog, common species of reptile and Common Toad is created on site and no negative impacts on these species are predicted as a result of the proposals. In order to enhance the site for European Hedgehog a Hedgehog house such as a Vivara Pro Woodstone Hedgehog House could be installed along the hedgeline to the north of site.

5 LEGAL PROTECTION

This section briefly describes the legal protection afforded to the protected species referred to in this report. It is for information only and is not intended to be comprehensive or to replace specialised legal advice. It is not intended to replace the text of the legislation, but summarises the salient points.

5.1 Bats

All species of British bat are protected by *The Wildlife and Countryside Act 1981* (as amended) extended by the *Countryside and Rights of Way Act 2000*. This legislation makes it an offence to:

- intentionally kill, injure or take a bat;
- possess or control a bat;
- intentionally or recklessly damage, destroy or obstruct access to a bat roost; and
- intentionally or recklessly disturb a bat whilst it occupies a bat roost.

Bats are also listed on *Schedule 2 of the Conservation of Habitats and Species Regulations 2017* (as amended). This legislation makes it an offence to:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats in such a way as to be likely to (a) impair their ability to: (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or b), to affect significantly the local distribution or abundance of the species to which they belong; and
- damage or destroy a breeding site or resting place of a bat; and
- possess, control, transport, sell, exchange a bat, or offer a bat for sale or exchange.

All bat roosting sites receive legal protection even when bats are not present.

Where it is necessary to carry out an action that could result in an offence under the regulations protecting bats and their roosts it is possible to apply for Mitigation Licence from Natural England (NE) or Natural Resources Wales (NRW). Three tests must be satisfied before this licence (to permit otherwise prohibited acts) can be issued:

- Regulation 55(1)(a) states that licences may be granted to “preserve public health or public safety or 55(6)(a) other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment.”
- Regulation 55(2) and 55(7)(a) states that a licence may not be granted unless “there is no satisfactory alternative”.
- Regulation 55(7)(b) states that a licence, in respect of imperative reasons of overriding public interest (IROPI), cannot be issued unless the action proposed “will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range”.

5.2 Nesting Birds

All species of bird are protected under *Section 1* of the *Wildlife and Countryside Act 1981* (as amended). The protection was extended by the CRow Act.

The legislation makes it an offence to intentionally:

- kill, injure or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- take or destroy an egg of any wild bird.

Certain species of bird are listed on *Schedule 1* of the *Wildlife and Countryside Act 1981* (as amended) and receive protection under *Sections 1(4)* and *1(5)* of the Act. The protection was extended by the CRow Act. The legislation confers special penalties where the above-mentioned offences are committed for any such bird and also make it an offence to intentionally or recklessly:

- disturb any such bird, whilst building its nest or it is in or near a nest containing dependant young; or
- disturb the dependant young of such a bird.

5.3 Great Crested Newt

Great Crested Newt is listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), and receive full protection under *Section 9*. This species is also listed on *Schedule 2* of the *Conservation of Habitats and Species Regulations 2017 (as amended)*. Protection was extended by the *Countryside and Rights of Way Act 2000* (the CRow Act).

Under the above legislation it is an offence to:

- kill, injure or take an individual of such a species;
- possess any part of such species either alive or dead;
- intentionally or recklessly damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection or breeding;
- intentionally or recklessly disturb such a species whilst using any place of shelter or protection; or
- sell or attempt to sell any such species.

The Great Crested Newt is included as a Priority Species in the UK Biodiversity Action Plan (UKBAP) and also as a species of principal importance for the conservation of biological diversity in England under *Section 74* of the CRow Act.