Charnia Ecology

Protected species and habitat surveys

Revised Preliminary Roost Assessment

&

Bat and Bird Activity Survey Report

Lodgedale Farm,

Main Road, Hollington, Staffordshire.

ST10 4HT [Grid Ref: SK 046395]

June 2015

Notice to readers

This report has been prepared by Charnia Ecology with all reasonable skill, care and diligence, within the terms of the contract with the client. The actions of the surveyor on site and during the production of the report were undertaken in accordance with the Code of Professional Conduct for the Chartered Institute of Ecology and Environmental Management (www.ieem.org.uk).

Client: Mr. Rob Dale, Lodgedale Farm, Main Road, Hollington, Staffordshire.ST10 4HS
Architect: Michael Bamford BA MPLAN, Planning Design Practice Ltd, Derby - 4 Woburn House, Vernon Gate, Derby, DE1 1UL

Site Postcode/ OS Grid Ref: ST10 4HT [Grid Ref: SK 046395]

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Non-technical summary

Report rationale

1. Charnia Ecology was commissioned to undertake Stage 2 Bat and Bird Activity surveys at Lodgedale Farm, Main Road, Hollington, Staffordshire. ST10 4HT [Grid Ref: SK 046395]. The site was surveyed for bats and birds during July and August 2011 by Absolute Ecology, whereby no roosting bats were recorded. As the validity of the previous report has now expired, a revised ecological assessment of bats and birds has been requested by the Local Planning Authority.

Site description

2. The application area is situated ca. 6km south-east of the market town of Cheadle, and the surrounding environment comprises of a diverse range of habitats including agricultural farmland, ancient woodland and patches of moorland. The surrounding habitats provide ample opportunities for foraging and roosting bats and birds, with excellent connectivity considered overall.

Proposed works

3. It is understood that the proposed works will entail the demolition of existing buildings and creation of a new-brick built building on the original footprint of the existing stone-built barn building. A number of pre-fabricated buildings have already been removed onsite.

Desk top study

4. Pre-survey data search identifies a number of Priority Habitats within a 2km radius with 11 of the 17 resident UK bat species occurring in the Local County. Six of these species are recorded within a 2km radius of the application area.

Presence/absence activity surveys

5. Presence/absence surveys recorded low to moderate levels of bat activity. Two different species of bat were recorded; Brown Long-eared bat and Common pipistrelle, with the former species recorded as roosting *in-situ* within the building subject to removal.

Ecology of bat species onsite

6. The following bat roost was identified in the building subject to removal:

   Male Summer roost for a small population of Brown Long-eared bat (N = 4)

Ecological value of building unit(s)

7. The building is considered as having **HIGH** ecological value for a male summer roost of Brown Long-eared bat (N4). The building also provides excellent potential for individual crevice-dwelling bat species, although no roosts was confirmed in the building, but should be considered due to proposed demolition of the structure.

Impact assessment

8. Based on destruction rating of the building(s), short-term disturbance is deemed as being **HIGH** with regard to what is considered a **LOW IMPACT ROOST ONLY** (i.e. not maternity roosts or hibernacula), for a small population (N4) of male Brown long-eared bat in summer roost:

BROWN LONG-EARED MALE SUMMER ROOST (Population size (N) = 4)		
SHORT-TERM: DISTURBANCE	LONG-TERM: ROOST MODIFICATION	LONG-TERM: ROOST LOSS
HIGH ON A LOW IMPACT ROOST	HIGH ON A LOW IMPACT ROOST	HIGH ON A LOW IMPACT ROOST

9. The development is considered as having impact on a breeding population of 30+ Barn Swallow. **NO IMPACT** regarding Barn Owl is considered.

Foraging and commuting habitat

10. Due to the nature of the proposed development, **NO** long-term impact on foraging and commuting habitat is predicted**.** However, the proposed works should be sensitive to potential short-term disturbance from any additional noise/light-spill onto adjacent habitats during pre and post development (see recommendations).

Mitigation Licence

11. Without appropriate mitigation, it is highly likely that the proposed application will result in an offence under Regulation 41 or 4, whereby destruction of a bat roost(s) is predicted resulting in a high-negative impact on a LOW IMPACT male summer roost for a small population of Brown Long-eared bat. Under current legislation, a **European Protected Species Licence WILL need to be obtained from Natural England before ANY proposed works can commence.**

Preliminary recommendations

Bats

12. A method statement should detail appropriate and proportionate mitigation for subsequent EPS licence application to Natural England, and should predominantly regard the roosting ecology of void-dwelling, pre-emergent flight bats, whilst considering the potential of individual crevice-dwelling species (due to demolition of the building). Where necessary, timing of the works or changing the design or layout of the scheme to remove the impacts is critical, and should be considered at an early stage. Mitigation should consider providing roost compensation / enhancement for bats, that may be inadvertently displaced or impacted upon during pre and post development.

13. Typically for a Brown Long-eared bat roost, Natural England has minimum height requirements with regards to the measurements of a suitable flight space which need to be retained. However, as the roost is regarded as a Low impact roost for only a small population of BLE, a reduced height may be considered during the licensing process, with potential of increased length. Further preliminary recommendations regarding bat mitigation are made within this report.

Birds

14. Mitigation will predominantly need to consider the breeding ecology of European Swallow, which may require installation of additional pre-formed “cup-shaped nests” onsite to compensate for loss of habitat. Ideally works should be programmed outside of the bird breeding season, which runs from March to October inclusive. If this is not possible, a check for active nests should be incorporated into site supervision when regarding bat mitigation, and be undertaken by an experienced ecologist.

15. **NO** evidence of Barn Owl was recorded onsite, or within the buildings subject to demolition, thus **NO** further actions are considered.

CONTENTS

1. INTRODUCTION

Background

1.0.1 Charnia Ecology was commissioned to undertake Stage 2 Bat and Bird Activity surveys at Lodgedale Farm, Main Road, Hollington, Staffordshire. ST10 4HT [Grid Ref: SK 046395]. The site was surveyed for bats and birds during July and August 2011 by Absolute Ecology, whereby no roosting bats were recorded. As the validity of the previous report has now expired, a revised ecological assessment of bats and birds has been requested by the Local Planning Authority.

1.1 Site description

1.1.1 The site is currently being used as an equestrian centre, and comprises of a number of 20th-century stone built farm-house, barn and prefabricated curtilage buildings, with areas of hard standing. The site is located in a predominantly rural landscape, with rolling agricultural fields, woodland and hedgerows. It is situated just west of the hamlet of Hollington in Staffordshire.

Figure 1. Location of Lodgedale Farm (red star) in context to the surrounding landscape (source:www.gridref.org.uk).

1.2 Proposed works

1.2.1 It is understood that the proposed works will entail the demolition of existing buildings and creation of a block-stone built building on the original footprint of the existing stone-built barn building. A number of pre-fabricated buildings have already been removed onsite.

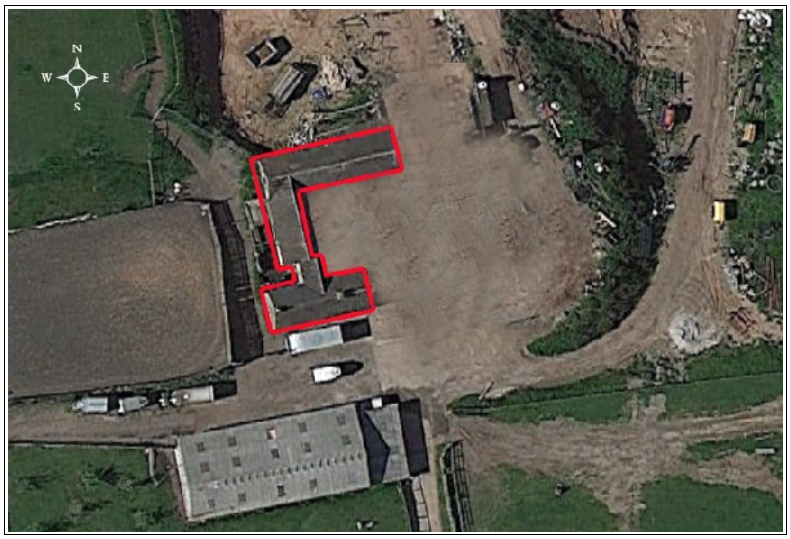

Figure 2. Boundary (red outline) of building(s) proposed for demolition.

1.3 Aims of survey

1.3.1 The aims of the Preliminary Roost Assessment and bat and bird activity surveys was to provide an ecological evaluation of the following species within the proposed application area, in order to establish:

Bats
• Probability of bats and their roost sites being present at the proposed redevelopment site i.e. buildings and trees
• To assess the roost status should bats be present.
• To assess commuting and foraging habitat that may be subject to impact from proposed development.
• To provide an overall impact assessment.

Table 1. Aims of survey in relation to bats.

Birds
• Establish if birds are using the site.
• Locate nest sites, if present.
• Assess what types of activities were shown within the redevelopment site.
• Assess suitable food resources and habitat requirements.
• Provide an impact assessment, if nests are found.

Table 2. Aims of survey in relation to birds.

Barn Owl (*Tyto alba)*
• Establish presence onsite.
• Establish potential nest sites (PNS).
• Locate any active roost sites (ARS).
• Locate any temporary roost sites (TRS)
• Assess potential feeding and dispersal habitats (PFH)
• Provide an impact assessment, should barn owl(s) be present

Table 3. Aims of survey in relation to Barn Owl.

1.3.2 Assessment also considers potential effects on **Valued Ecological Receptors (VERs)** and **zones of influence (Zol)** during pre and post development, both onsite and off- site. The term Zone of Influence is used to describe the geographic extent of potential impacts of a proposed development. Should a likely significance of negative impacts be identified, further surveys, mitigation and enhancement measures will then be determined accordingly; to prevent, offset or reduce the degree of impact that may occur should development commence.

1.3.3 Should bats be present onsite, then a European Protected Species (EPS) development license issued by Natural England (NE) may be required prior to any works taking place. If required, further presence/absence survey should be undertaken and a mitigation strategy be implemented with Natural England and the Local Planning Authority. Should no further surveying effort be considered, then the PEA report will include full justification and evaluation.

2.0 SURVEY METHODOLOGY

2.0.1 The aims of this activity survey report is to provide an ecological evaluation of the site in relation to protected bats and birds and considered appropriate to achieve the aims and objectives discussed in this report. All surveys were conducted in accordance with BCT 2nd edition (2012) guidelines, and used to determine the following:

- What impact is the development likely to have on any protected species found at the site.
- The need for any Natural England development licence application to be made in respect of activities concerning protected species.
- Recommendations for any mitigation measure requirements.

2.1 Summary of survey methods

2.1.1 Two dusk emergence bat and bird activity surveys were undertaken during June 2015, to provide an ecological evaluation of the site in relation to it's suitability for protected bat and bird species. The surveys provide a revised assessment of the site following Stage 2 presence/absence surveys undertaken in July and August 2011 by Absolute Ecology, whereby no roosting bats were confirmed at the time. Activity surveys were carried out in full accordance to BCT 2nd edition (2012) guidelines for bat and bird activity surveys of buildings and built structures. No constraints were encountered during the survey period. The following survey methodology is considered appropriate to achieve the required aims and objectives:

2.2 Pre-survey data search

2.2.1 Data sourced from Staffordshire Ecological Record Centre (SERC) provided any historic records of protected bat and bird species found within a 2km radius of the application area. Additional ecological data has been sourced to understand any constraints that the proposed planning application may have on species and habitat in the wider landscape. A number of electronic sources sites were consulted including; www.magic.gov.uk; www.naturalengland.org.uk; Google Earth and www.ordinancesurvey.co.uk.

2.3 Surveyor Information

2.3.1 Ecological assessment on-site was conducted by a Natural England licensed bat ecologist (CLS00836 – Level 2) and member of the Chartered Institute of Ecology and Environmental Management (CIEEM). The principle ecologist onsite has specialized in bat ecology for over six years and is actively involved in scoping, presence/absence surveys, and method statement preparation with regard to planning and the law. He has a First Class Honours degree in Conservation of Biology and awarded the Vice-Chancellor prize for academic excellence. He is also an associate lecturer in ecological sciences at the University of Derby, and has undertaken a number of BCT training courses and conferences concerning bat ecology, bats and the law, mitigation and echolocation sound analysis. He is a member of the Bat Conservation Trust (BCT) and Derbyshire Bat Conservation Group (DBCG).

- Senior ecologist: **Mark Weston** BSC (Hons), MCIEEM, AMSB

  (Natural England Class Licence Level 2 [Reg. No. 2015-10722-CLS];
- Assistant ecologist(s): Amy Dowers BSc (Hons) / Melissa Loughran BSc (Hons)

2.4 Field Surveys

Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Inspection of Hibernation roosts- semi optimal survey			Limited activity-sub optimal	Summer roost emergence & re-entry surveys -Optimal survey period					Limited activity -sub optimal	Hibernation roosts - semi optimal survey	
Internal roost surveys are possible / Trees are best surveyed during Winter											

Table 4. Annual survey optimality for bats.

2.4.0 All field surveys were conducted during an optimal period of the bat surveying season and with sufficient intervals between surveys to allow for any stochastic events over space and time. Weather conditions were optimal throughout all survey periods (Temp: >8°C / dry conditions). Assessment incorporated the use of binoculars, torch, endoscope and ladders where necessary. There were no constraints encountered during the survey period

2.4.1 Habitat survey

2.4.1.1 A walkover survey assessed habitat both onsite and in the wider landscape with regard to suitable resources for any protected bat and bird species in the immediate area, giving consideration to roosting bats and/or any important bat commuting/foraging areas that may be affected by the proposed development..

2.4.2 Roost surveys

2.4.2.1 Any potential roost structures (i.e. buildings) onsite or within the Zone of Influence (ZoI) of the proposed development were assessed both externally and internally, based on standard methodologies set out by Natural England, the Bat Conservation Trust (BCT) and the Joint Nature Conservation Committee (JNCC). The survey criteria considered the following:

- Type and age of building
- Type and condition of construction
- Potential roost features (e.g. missing roof tiles, raised tiles, roof voids)
- Potential ingression points in-and-around the building(s) (e.g. broken windows, missing windows and doors / ridges and apex of the buildings)
- Evidence of bats (e.g presence of live or dead bats, droppings, grease marks, urine stains, feeding remains, characteristic odour
- Evidence of nesting birds (including Barn Owl).

Bat Roost Categories

2.4.2.2 A bat roost is interpreted as 'any structure or place, which any wild bat uses for shelter or protection' (i.e. buildings, trees, bridges, tunnels etc.). Bats tend to show a high fidelity to roosts. Subsequently, legal opinion regards a roost to be protected whether or not the bats are present at the time. There are many types of roost used by temperate bats during their annual cycle: Any structures found having evidence of bats will be further evaluated to assess which of the following roost categories may be present onsite (if any):

Status	Description
Maternity / Nursery Roost	*used by breeding bats, where pups are born and raised to independence (Anecdotal evidence may support this prospect despite sub-optimal survey period).*
Hibernation Site	*where bats may be found during the winter. (This is assessed within the context of this report).*
Satellite Summer Roost	*used by males and/or non-breeding females (Seasonal limitations prevent robust analysis of this).*
Night Roost	*where bats rest between feeding bouts during the night but are rarely present during the day.*
Feeding Roost	*where bats temporarily utilize feeding perches and stations to eat an item of prey.*
Transitional (or Swarming) Site	*where bats may be present during the spring or autumn (This can not be assessed within the context of this report).*

Table 5. Bat roost status definitions

Building Rating

2.4.2.3 In the absence of any evidence, trees and structures were assigned a rating of suitability from negligible to high potential for supporting bats. The rating is based on the number and type of features suitable for use by bats (such as rot holes, cavities and raised bark), location of the structure in the surrounding landscape and surveyor's experience. (For example; a structure with a high level of regular disturbance with few opportunities for access by bats, that is in a highly urbanised area with few or no mature trees, parkland, woodland or wetland would generally equate to having negligible potential. Conversely, a pre 20th century or early 20th century building with many features suitable for use by bats close to good foraging habitat would have high potential).

2.4.3 Activity surveys

2.4.3.1 Based on no bat roost being confirmed during the 2011 presence/absence survey, two dusk emergence were considered adequate to provide a revised assessment of the site.All surveys were carried out during optimal survey conditions. Activity surveys combined an overall assessment of any *in-situ* roost onsite, and any other VERs considered to be within the ZoI of the development. All activity surveys were undertaken in accordance with the guidelines published by the BCT (2007) 2nd edition 2012 to ascertain the following:

- Determine the presence/absence of bat species onsite
- Determine the intensity of bat activity both spatially and temporally
- Determine the type of activity i.e. foraging (by feeding buzzes); commuting (by high directional pass rates); mating (by mating social calls)
- Find roosts by tracking back bat flight paths or observing commuting range.

Dusk emergence bat survey

2.4.3.2 The object of this survey is to detect active bats leaving possible roost sites identified in the external and internal surveys. This was achieved by:

- Being at the site 1 hour before sunset.
- Listening for social calls at potential roost sites.
- Standing at different transect points around the buildings, to record any emerging bats and egress points.
- Standing at different transect points to assess foraging/commuting areas.
- Carrying out survey up to 1.5 - 2 hours after sunset to holistically consider interspecific differences between different bat species

Dawn re-entry bat survey

- Being at the site 2 hours before sunrise.
- Listening for social calls at potential roost sites.
- Standing at different transect points around the buildings, to record any swarming behaviour around potential re-entry points.
- Standing at different transect points to assess foraging/commuting areas.

2.4.3.3 Evidence will be used to determine whether a European Protected Species (EPS) licence will be required to ensure legal compliance during development. This will also include identifying which mitigation measures [if any] would be most appropriate.

Weather conditions and timing

2.4.3.4 All surveys were carried out during optimal survey conditions:

Survey 1: Dusk emergence			Date: 30.05.2015
Temp Start	13.6°C	**Cloud Cover Start**	45%
Temp Finish	11.1 °C	**Cloud Cover Finish**	45%
Humidity Start	58.7%	**Wind Speed Average**	Nil <1
Humidity Finish	59.2%	**Precipitation**	Nil
Survey 2: Dusk emergence			**Date: 06.06.2015**
Temp Start	14.8°C	**Cloud Cover Start**	25%
Temp Finish	12.5°C	**Cloud Cover Finish**	30%
Humidity Start	63.5%	**Wind Speed Average**	Nil <1
Humidity Finish	66.9%	**Precipitation**	Nil

Table 6. Abiotic variables during survey periods.

Surveyor location

2.4.3.5 Due to an elevated aspect to the rear (north-west) of the building(s), two surveyors were considered sufficient to assess the roosting potential of bats onsite, with tw0-way walkie-talkies used to relay activity around front and rear elevations. Bat ultrasound data was gathered using a number of heterodyne units (Batbox Duet and SSF Bat2) and real-time recording devices (*EcoObs* Batcorder). Real time recordings were subsequently analyzed using BatSound v4.03 and statistical algorithm analysis was carried out using EcoObs BcAdmi, BatIdent and BcAnalyze software to provide an unbiased discrimination of species onsite.

Figure 3: Location of bat detectors/surveyors (yellow) around structures proposed for redevelopment (red).

3. RESULTS

3.1 Pre-survey data search

3.1.1 *Designated sites*

3.1.1.1 SER identifies a number of Priority Habitats within a 2km radius of the application area that are outlined in UK Habitat Action Plans (HAPs), and Local Biodiversity Action Plans (LBAPs) in order to conserve them.

SK041382	Broadgatehall Drumble	Local Wildlife Site
SK056387	Birchendale road verge	Retained BAS
SK052397	Broadmoor Wood and Quarry	Retained BAS
SK061388	Yardhouse Farm Meadow	Biodiversity Alert Site
SK062389	Hollington (north-east of)	Biodiversity Alert Site
SK065387	The Long Chase (east of)	Local Wildlife Site
SK072391	Croxden (south-east of)	Local Wildlife Site (SBI)
SK038402	Ferneyhill	Retained BAS
SK076405	Jeffreymeadow (south of)	Local Wildlife Site

Table 7. Designated conservation site.

3.1.1.2 SER shows the nearest designated site to be ca. 400M east at Broadmoor Wood and Quarry Biodiversity Alert Site. Broadmoor wood is ca. 8.25ha and classified as Ancient and Deciduous Woodland BAP Priority Habitat (England).

3.1.2 *Protected species*

3.1.2.1 Seven British bat species are currently given UK BAP (2007) Priority Species Status. National Biodiversity Network and Staffordshire Wildlife Trust (SWT) records show that 11 of the 17 resident UK bat species occur in the county with four species of bat recorded within a 2km radius. Three of these species are considered UK BAP species (highlighted in grey):

UKBAP	Common name	Species	Recorded in within 2km
☑	Brown long-eared bat [2010]	*Plecotus auritus*	☑
☑	Barbastelle bat	*Barbastella barbastellus*	☒
☑	Bechstein's bat	*Myotis bechsteinii*	☒
☑	Noctule [2008,2010]	*Nyctalus noctula*	☑
☑	Greater horseshoe bat	*Rhinolophus ferrumequinum*	☒
☑	Lesser horseshoe bat	*Rhinolophus hipposideros*	☒
☑	Soprano pipistrelle [2009]	*Pipistrellus pygmaeus*	☑

Table 8. UKBAP Bat species recorded with 2km radius of site.

3.1.2.2 One bat species that is not currently given UK BAP consideration is also recorded within a 2km radius, with one unconfirmed *Myotis bat* tentatively considered – species unknown:

UKBAP	Common name	Species	Recorded within 2km
☒	Natterer's bat	*Myotis Nattereri*	☒
☒	Daubenton's bat	*Myotis daubentonii*	☒
☒	Whiskered/ brandt bat	*Myotis mystacinus/brandtii*	☒
☒	Common pipistrelle [2007]	*Pipistrellus pipistrellus*	☑

Table 9. Non UKBAP Bat species recorded in Staffordshire.

3.1.2.3 Pre-survey data show Barn Owl persistent within a 2km radius of the application area, with seven records dating back to 1981-2012.

3.2 Field surveys

3.2.1 Habitat Description

3.2.1.1 The application area is situated ca. 6km south-east of the market town of Cheadle, and the surrounding environment comprises of a diverse range of habitats including agricultural farmland, ancient woodland and patches of moorland. Access to site can be gained via Lockers Lane or from the main road side towards Hollington. These habitats provide ample opportunities for foraging and roosting bats and birds, with excellent connectivity considered overall.

Figure 4: Broadmoor Wood ca. 500M east (Ancient and Deciduous Woodland BAP Priority Habitat (England).

3.2.2 Roost survey

EXTERNAL INSPECTION

Figure 5. Farm-house block section to south

The building comprises of three integrated stone block buildings with tiled roofing. A gable ended farm building (13.6 x 5m) is located along the south elevation, with wooden sliding door and main entrance door. The building has missing windows providing ingression points for both bats and birds to the interior. The roofing is made up of roofing tiles, ridge tiles and three chimneys. A number of crack and holes were recorded in the masonry work around most elevations. The roofing showed dislodged and raised tiles providing further ingress potential.

Figure 6. South elevation of northern block section

A further gable-end block stone building is linked via a north-south connecting section. The building along the north facing elevation, runs east to west. This building also has tiled roofing, and open hatch on the east gable-end. On the west elevation the stone walling also showed some crevices for bat to inhabit.

Figure 7. North-east gable-end.

No evidence of bats was recorded during the external inspection. Evidence of a Swallow *H.rustica* was abundant onsite. No evidence of Barn Owl was recorded externally.

INTERNAL INSPECTION

Figure 8. North block roof void compartment

Ground floor inspection recorded numerous active swallow nest in alternate room compartments. Access into the the first floor section was made via a doorway on the north-west corner elevation (ca 18 x 5.5.x 3m). Internal inspection found a continuous and voluminous, interconnecting roof void between the northern block section and link section (ca. 9.2 x 5.3 x 3m). The area was found to be dry, with good standing height and exposed timber frame joist work. There is no underlay to any of the roof sections, with partially disseminated torching present.

Figure 9. Link-block roof void compartment

The northern section was found to be semi-illuminated by a sky-light on the north facing roof pitch. The darkest section of roof void was found to be in the link section, which terminates into the farmhouse section, which was found to be highly exposed to the elements and partially lit. A number of crevices are present around pinning points between roof and gable-end brick-work. The internal area is considered as providing (ca. 2.2m high x 9m x 8m) and found to be well ventilated, dry, with a degree of light ingress from sealed-over glass windows at gable-ends.

Evidence of bats was noted in the link block section whereby a scattering of about 20+ droppings were recorded below the southern gable-end in the link section. Evidence of nesting Swallow *H.rustica* was recorded throughout the internal first-floor area. No evidence of Barn Owl was recorded internally.

ROOST RATING = BATS: MODERATE TO HIGH / BIRDS: HIGH

3.2.3 Activity surveys

3.2.3.1 Activity surveys combined an overall assessment of any *in-situ* roost onsite, and any other VERs considered to be within the ZoI of the proposed development. Particular focus was given to the building(s) subject to demolition, whilst considering any important commuting and foraging routes used by bats.

Survey 1 – Dusk emergence

Survey 1 – Dusk emergence				Date: 30.05.2015
Species	**Species discrimination Confidence**	**Bat passes recorded**	**Notes**	**Roost**
Common Pipistrelle (*Pipistrellus pipistrellus*)	σ = 100%	*n* = 36	observed foraging around the eastern boundary near to residential dwellings.	NO
Brown Long-eared (*Plecotus auritus*)	Visually identified	N/A	2 X Adult BLE seen emerging from the upper apex area on the south facing gable-end link section around 21.38hrs	YES
Number of species recorded	2	**Level of Commuting / foraging** (based on level of 'feeding buzzes')		MODERATE / TRANSIENT
Total number of bat passes recorded	N = 36	**Peak activity time**		21:48 –22.20hrs

Table 10. Survey 1 bat activity results.

3.2.3.2 The first dusk transect survey was conducted half and hour before sunset and two hours thereafter. Low levels of individual bat foraging activity was recorded intermittently onsite. Peak activity occurred between 21:48 –22:20hrs, with Common pipistrelle (*Pipistrellus pipistrellus*) recorded as the dominant species overall.

3.2.3.3 internal inspection during the survey period physically identified two Brown long-eared bats (*Plecotus auritus*) emerging from the upper apex area on the south facing gable-end link section. These bats were seen to emerge from a crevice area around roof convergence. Both bats were recorded undertaking pre-emergent flight before vacating the building through a missing window area on the south-east corner elevation, adjacent to farm-house.

Figure 8. Brown long-eared bat and Swallow in Link-block roof void compartment

3.2.3.4 All other bat activity was recorded as commuting and temporarily foraging in-and-around the application area but was not sustained. A number (<10) Swallows were recorded roosting internally. **No** evidence of Barn Owl was recorded.

Survey 2 – Dusk emergence

3.2.3.5 The second dusk emergence transect survey was conducted half and hour before sunset and two hours thereafter. Once again, only moderate low levels of commuting and foraging Common pipistrelle were recorded onsite. Analysis of night-vision camera data installed during the previous survey period, recorded four (N4) Brown Long-eared bat on the gable-end of the link block section. Three BLE were visually recorded utilizing the roof void of both the northern block and link block section between 21:41- 22:11hrs before vacating out of the main entrance door and south-east window section adjoining onto the Farm house block. Once again, a number of roosting Swallows were recorded. **NO** evidence of Barn Owl was recorded.

Survey 2 – Dusk emergence				Date: 06.06.2015
Species	**Species discrimination Confidence**	**Bat passes recorded**	**Notes**	**Roost**
Common Pipistrelle (*Pipistrellus pipistrellus*)	σ = 100%	*n* = 38	observed foraging around the eastern boundary near to residential dwellings.	NO
Brown Long-eared (*Plecotus auritus*)	Visually identified	N/A	3 X Adult BLE seen emerging from the upper apex area on the south facing gable-end link section around 21.38hrs	YES
Number of species recorded	2	**Level of Commuting / foraging** (based on level of 'feeding buzzes')		MODERATE / TRANSIENT
Total number of bat passes recorded	N = 38	**Peak activity time**		21:41 –22.11hrs

Table 11. Survey 2 bat activity results

Figure 7. Night-vision camera recording 4 x BLE on gable end of Link-block section

Foraging and commuting habitat

3.2.3.6 The surrounding area is considered as providing good foraging and commuting habitat for local bat populations, although no major commuting routes were recorded onsite, with moderate levels of foraging recorded intermittently .

4. IMPACT ASSESSMENT

4.1 Constraints on survey information

4.1.1 The activity surveys were conducted during May/June 2015 which is considered an an optimal surveying period for bats in summer roost (i.e. when females are in maternity roost and males can be found generally in smaller bachelor roosts). There were no constraints regarding assessment of the proposed application area, and the contents of this report are considered to be robust overall.

4.2 Constraints on equipment used

4.2.1 No constraints were present with regards to the equipment used during the scoping effort (i.e. bat detectors, endoscope, ladders and high powered binoculars).

4.3 Potential Impacts of development

4.3.1 *Designated sites*

4.3.1.1 As the proposed application is considered as being a small-scale development, **NO IMPACT** to designated sites in the surrounding landscape is predicted. However, the application area is located in predominantly rural area, thus the proposed works should be sensitive to VERs in the immediate landscape (see recommendations).

4.3.2 *Roosts - Bats*

4.3.2.1 Overall assessment considers that the building is currently being utilized as a male summer roost for a small colony of Brown Long-eared bat (N4). The building also provides excellent prospects for crevice-dwelling bats, such as Common pipistrelle, although no other bat species were confirmed as roosting within the building at the time.

4.3.2.2 Structures have been assigned the following rating of suitability from negligible to high potential for supporting bats:

• BROWN LONG-EARED MALE SUMMER ROOST (Population size (N) = 4)		
SHORT-TERM: DISTURBANCE	**LONG-TERM: ROOST MODIFICATION**	**LONG-TERM: ROOST LOSS**
HIGH ON A LOW IMPACT ROOST	**HIGH ON A LOW IMPACT ROOST**	**HIGH ON A LOW IMPACT ROOST**

Table 13. BATS : SUMMARY OF IMPACTS (Based on destruction of buildings)

Short-term impacts: Disturbance

4.3.2.3 Based on destruction rating of the building(s), short-term disturbance is deemed as being **HIGH** on what is regarded as a **LOW IMPACT ROOST ONLY** (i.e. not maternity roosts or hibernacula), and small population (N4) of male Brown long-eared bat in summer roost..

Long-term impacts: Roost modification

4.3.2.4 Roost modification deemed as being **HIGH** on what is regarded as a **LOW IMPACT ROOST ONLY**.

Long-term impacts: Roost loss

4.3.2.5 The impact of loss of roosts on bat populations is poorly understood and difficult to study. There is variation in the impacts depending on the particular species of bat with some being more sensitive to disturbance than others. Synanthropic species (those which benefit from conditions created or modified by human activity) such as Pipistrelle bats for example are crevice roosters, and are known to move between roost sites (such as maternity roosts). These bats may find it easier to locate suitable new roosts as their requirements are not as specific as other species.

4.3.2.6 Long-term Roost loss deemed as being **HIGH** on what is regarded as a **LOW IMPACT ROOST ONLY** and recently established male summer roost for a small colony of Brown Long-eared bat.

4.3.3 ***Foraging and commuting habitat***

4.3.3.1 Due to the scale of the proposed development with retention of existing footprint, overall impact on foraging and commuting is considered as being **LOW**, although proposed works should be sensitive to potential disturbance of adjacent habitats (see recommendations).

Birds

• BREEDING COLONY OF BARN SWALLOW (N>30)		
SHORT-TERM: DISTURBANCE	**LONG-TERM: ROOST MODIFICATION**	**LONG-TERM: ROOST LOSS**
HIGH	**HIGH**	**HIGH**

Table 14. BIRDS: SUMMARY OF IMPACTS.

4.3.3.2 The building(s) is utilized by a breeding population of 30+ Barn Swallow (*Hirundo rustica*) resulting in **HIGH IMPACT** and loss of breeding habitat.

4.3.3.3 **NO** evidence of Barn Owl *Tyto alba* was recorded onsite, or within the buildings subject to demolition, thus **NO** further actions are considered.

4.4 Legislation and Policy Guidance

4.4.1 Unlike many smaller mammals, bats have low fecundity with a long and complex life cycle, which is played out over a large spatial landscape. Bats show a strong fidelity to different types of roosts throughout their annual cycle i.e. hibernacula, maternity, bachelor, satellite roosts and feeding perches. Linear features within the landscape such as hedgerows and tree lines are often used by bats for commuting, predator avoidance and foraging. Bats are highly social animals and loss of a single habitat alone can have a serious impact on populations. The status of many bat populations is tentative, being based on relatively few records and are highly susceptible to habitat loss and fragmentation. As such bats are given protected consideration within the following legislation and policy guidelines:

PAS 2010	The published 'PAS 2010' 'Planning to halt the loss of biodiversity' which is the government's new policy aimed at all authorities and developers involved in the planning process in the UK to halt biodiversity decline by 2010 and deliver net biodiversity gains as part of the green infrastructure provisions.
National Planning Policy Framework, Section 11:	The recently published framework in 2012, replaces the previous Planning Policy Statement 9. Section 11: Conserving and enhancing the natural environment, reaffirms the Governments commitment to maintaining green belt protections and preventing urban sprawl, retains the protection of designated sites and preserves wildlife, aims to improve the quality of the natural environment, and halt declines in species and habitats, protects and enhances biodiversity and promotes wildlife corridors.
Article 10 of the EC Habitats Directive:	The published Article requires government to develop features such as 'stepping stones' on the landscape, such as clusters of ponds, tracts of rough grassland or scrubland and vegetated railway line embankments.
Wildlife and Countryside Act 1981:	All species of bat are fully protected under the Wildlife and Countryside Act 1981, the European Conservation (Natural Habitats etc.) Regulations 1994, and the Countryside and Rights of Way Act 2000. This legislation makes it illegal to possess or control any live or dead specimens, to damage, destroy or obstruct access to any structure or place used for shelter, protection or breeding, and to intentionally disturb a bat while it is occupying a structure or place which it uses for that purpose.
Conservation of Habitats and Species Regulations (2010)	The Conservation of Habitats and Species Regulations 2010 consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994, in respect of England and Wales. It is an offence to possess, sell or offer, or transport for sale any European species of bat or any part derived from such a species. These Regulations also remove the 'incidental result defence'. In other words, it is no longer a defence to show that the killing, capture or disturbance of a species covered by the Regulations or the destruction or damage of their breeding sites or resting places was the incidental and unavoidable result of a lawful activity. Natural England can grant European Protected Species (EPS) licences in respect of development to permit activities that would otherwise be unlawful.
Natural Environment and Rural Communities Act (2006)	Under Section 40 of the Natural Environment and Rural Communities Act (2006), public bodies, including Local and Regional Planning Authorities, have a duty to 'have regard' to the conservation of biodiversity in England when carrying out their normal functions, which includes consideration of planning applications. In compliance with Section 41 of the Act, the Secretary of State has published a list of species considered to be of principal importance for conserving biodiversity in England. This is known as The England Biodiversity List, all of which make up the UK BAP Priority Species. Regional Planning Bodies and Local Planning Authorities will use it to identify the species that should be afforded priority to maintain, restore and enhance species and habitats.
Bird legislation	Most resident nesting birds are protected under the Wildlife and Countryside Act 1981, which protects birds, nests, eggs and nestling's. Some rarer species, such as barn owls, are afforded extra protection.

Table 15. Policy guidelines

PLEASE NOTE: If bat species are present at the site, the purpose of this report will only summarize the preliminary requirements for a bat mitigation package or project. A separate mitigation report and EPS licence should detail the necessary compensation measures to maintain the conservation status of the European Protected Species onsite.

5. RECOMMENDATIONS AND MITIGATION

5.1 Further survey

5.1.1 During the Preliminary Roost Assessment and bat activity surveys, which conform to the BCT guidelines 2nd edition (2012), all effort was made to establish the status of any bat and bird roost(s) onsite.

5.1.2 Assessment onsite was undertaken during an optimal survey period, and the report findings are considered to be robust overall, and representative of protected species currently onsite. **NO** further survey recommendations for bats are considered, at this moment in time, although it may be necessary to survey the building for potential over-wintering potential for bats (due to the synanthropic nature of species), in-order to support the EPS licence application, dependent upon timing of works.

5.1.3 **NO** further survey recommendations are also considered for protected bird species (including Barn Owl). However, due to a breeding colony of European Swallow in the building, works should be be programmed outside of the bird breeding season (when chicks have fledged), which runs from March to October inclusive. If this is not possible, a check for active nests should be incorporated into site supervision during demolition, and be undertaken by an experienced ecologist.

5.2 Mitigation measures

5.2.1 Proposed mitigation for roost sites

5.2.1.1 Mitigation should be proportionate, justifiable and avoid or minimize any harm to species found during works.

- Type and scale of works and predicted impacts on bats
- Size, nature and complexity of the development site
- Likelihood of bats being present or affected
- Species and numbers of individuals concerned

5.2.1.2 Where necessary, timing of the works or changing the design or layout of the scheme to remove the impacts e.g. re-roofing of a summer nursery roost in the autumn/winter months, when the bats will not be using the building and providing the access points and environmental conditions are not altered (BCT 2011). Mitigation may also involve capture and removal or exclusion from a resting place or surrounding habitat. The second is to ensure that the project does not result in any long-term detrimental effect on any local population.

5.2.2 Proposed mitigation for foraging and commuting habitat.

5.2.2.1 It is considered that the small-scale development will have **NO** long-term impact on potential foraging and commuting habitat for bats, as **NO** land uptake (loss of habitat) is considered, with retention of existing footprint maintained. However proposed works **MUST** give careful consideration to excessive light-spill and disturbance (i.e. noise pollution) onto the habitats during pre and post development (see recommendations)

5.3 Mitigation Licences

5.3.1 Without appropriate mitigation, it is highly likely that the proposed application will result in an offence under Regulation 41 or 4, whereby destruction of a **LOW IMPACT ROOST** is considered.

5.3.2 Under current legislation, a European Protected Species Licence would need to be obtained from Natural England before any development works can take place. Without appropriate and proportionate mitigation, the development would result in a high-negative impact on a:

- **Small Male Summer roost for Brown Long-eared bat** (Population size N = 4)

5.3.3 Please note an EPSL can only be applied for once the planning application has been granted, and takes approximately six weeks to process from time of submission.

6. SUMMARY

6.1 Bat presence/absence

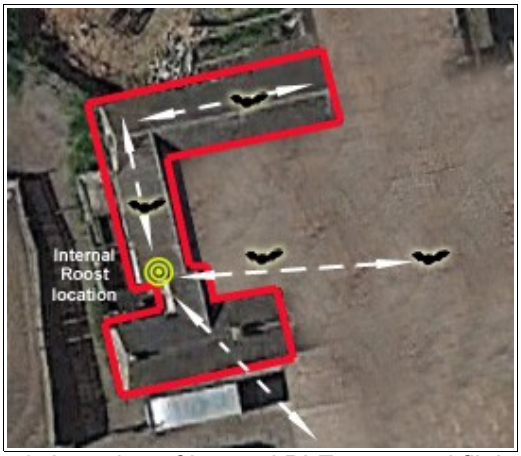

Figure 8. Location of internal BLE roost and flight paths

6.1.1 Overall assessment finds that building is currently utilized as a male summer roost for a small colony of Brown Long-eared bat (N4). The building also provides excellent prospects for crevice-dwelling bats, such as Common pipistrelle, although no other bat species were confirmed as roosting within the building at the time.

6.1.2 Based on destruction rating of the building(s), short-term disturbance is deemed as being **HIGH** with regard to what is considered a **LOW IMPACT ROOST ONLY** (i.e. not maternity roosts or hibernacula), for a small population (N4) of male Brown long-eared bat in summer roost.

6.2 Roost ecology of species recorded

Brown Long-eared bat Roost (Population size N = 4)

6.2.1 Brown Long-eared bat *Plecotus auritus* is considered the third most common species in the UK (Population Estimate: UK 245,000, Batters by *et al.* 2005), and was seen as being the dominant species residing onsite. This species is deemed as having the highest roost status overall onsite (i.e. a maternity roost for a small population of less than eight bats). This species is considered common and widespread at local, county and regional levels.

6.2.2 Conversely, this species is known to have declined in Britain over the years due to changing land use, including the **conversion of barns** and is currently given UK BAP Priority Species Status. This synanthropic species tends to show a high-fidelity to roosts.

6.2.3 Brown Long-eared bat is also known to form mixed sex colonies should a range of suitable, thermal gradients be available to both sexes. Daily food digestion and assimilation, in association with annual embryonic gestation, parturition and lactation (females) are all factors that determine appropriate roost selection. Male bats tend not to have as many constraints as that of females and can sometimes remain in less optimal conditions during the summer in torpor (Glover 2006).

Common pipistrelle

6.2.4 The primary “crevice-dwelling” species recorded transiently onsite was that of Common pipistrelle (*P. pipistrellus*), although **NO** notable roost(s) was recorded in the structure proposed for demolition.

6.2.5 Common pipistrelle *P. pipistrellus* is considered common and widespread across local, county and regional levels (Population Estimate: UK 2,430,000, Battersby *et al*. 2005). This species tends to have less roost fidelity overall and are known to switch between roost sites. This species may be regarded as being a generalist in behaviour and capable of enduring a greater spectrum of temperature regimes, compared to other crevice-dwelling species.

6.2.6 Common pipistrelle is generally sedentary in its nature and summer maternity colonies generally number 25-50 individuals (although colonies of as many as 200 have been recorded). Pipistrelle bats are less loyal to roosts than other synanthropic species and are known to alternate (Dietz *et al.* 2009).

6.3 Ecological value of building unit(s)

6.3.1 The building is considered as having **HIGH ecological value for a LOW IMPACT ROOST** i.e**.** male summer roost for a small colony of Brown Long-eared bat (N4).

6.3.2 The building also provides excellent potential for individual crevice-dwelling species, such as Common pipistrelle, although no roosts was confirmed in the building, but should be considered during demolition works (see recommendations).

6.4 Preliminary Recommendations

6.4.1 Due to utilization of the building by a small population of Brown Long-eared bat, an inevitable degree of disturbance, exclusion and/or potential harm to bats and *in situ* roosts is predicted through demolition. EPS Licence application and mitigation method statement should predominantly regard the roosting ecology of void-dwelling, pre-emergent flight bats, whilst considering the potential of individual crevice-dwelling species due to demolition of the building.

Bats

Timing of works

6.4.2 Where necessary, timing of the works or changing the design or layout of the scheme to remove the impacts is critical, and should be considered at an early stage e.g. re-roofing of a summer nursery roost in the autumn/winter months when the bats will not be using the building and providing the access points and environmental conditions are not altered (BCT 2011). The second is to ensure that the project does not result in any long-term detrimental effect on any local bat population.

6.2.3 Bat mitigation measures are carried out between October – April, ideally when the bats are not using their summer roost/s. This timetable of works will need to be considered for any proposed demolition works.

Onsite supervision

6.4.4 Any demolition works should be carried out under the supervision of suitably qualified bat ecologist, in the event that bats may be present during the work period. All building contractors should be made aware of the possible presence of bats, their legal protection and of working practices to avoid harming bats, before any work commences.

Roost compensation

6.2.5 Mitigation should consider providing roost compensation / enhancement for bats, that may be inadvertently displaced or impacted upon during pre and post development.

6.2.6 Typically for a Brown Long-eared bat roost, Natural England has minimum requirements with regards to the measurements of a suitable flight space which needs to be retained within a re-development: 5 x 4.8 x 2.8m high. However, as the roost is regarded as a Low impact roost for only a small population of BLE, a reduced height of 1.4m may be considered during the licensing process, with potential of increased length.

6.2.7 To compensate for any inadvertent loss of habitat for crevice-dwelling bats, it is recommended that minimum 2 external bat boxes are erected onsite. These should be located around north-east and south-east elevations, being sited ca. 4-6m in elevation. Recommended commercially available woodcrete Bat boxes, such as schwegler 1FFH and the improved treble crevice bat box (The Nest Box company) for example, are considered to be suitable receptors for crevice-dwelling bats.

Timber treatments

6.2.8 It is important to note that some wood treatments use pesticides that are harmful to bats. Vapours from treatments used on lower floors and joists, however, may also affect bats roosting at roof level. Treatments, which use petroleum products to spread the pesticide and aid its penetration, are especially likely to release vapours that could harm or disturb bats. Thus any treatment of wooden timbering should be done using chemicals approved by Natural England for use in bat roosts. Natural England will provide advice upon which chemical is most suitable and the time of year in which it can be applied. Pesticides containing the synthetic pyrethroids (permethrin, cypermethrin etc.) and boron compounds (Borester 7, disodium octoborate etc.) are considered as being relatively harmless to bats.

Lighting

6.2.9 Any lighting design around the new development should consider potential light-spill, which can affect the foraging and commuting strategy of local bat species, and should be avoided onto nearby trees and hedges/shrubs. Lighting should be faced down to prevent such spillage, and height of any lighting columns should not exceed eight metres. Low-pressure sodium lamps (SOX) fitted with hoods are recommended to direct light below the horizontal plane to minimize upward light spill. Any security lighting should be on a timer setting, and all lighting should not exceed 200 lumens (150 watts).

Scaffolding

6.2.10 Consideration should be given to any scaffolding erected onsite. it would be recommended that no plastic sheeting or mesh be used on any such structures during the development, in order to prevent potential snaring and entanglement of volant bats in the immediate landscape.

Birds

6.2.11 Ideally works should be programmed outside of the bird breeding season, which runs from March to October inclusive. If this is not possible, a check for active nests should be incorporated into site supervision when regarding bat mitigation, and be undertaken by an experienced ecologist. Mitigation will predominantly need to consider the ecology of European Swallow, which may require installation of additional pre-formed "cup-shaped nests" onsite to compensate for loss of habitat. These should be placed high up, preferably on beams, in other curtilage buildings, at least 1m apart.

Further information can be found on the RSPB website:www..rspb.org.uk/swallow-nest.html

6.4.12 Should any active bird nests be found, then these should be left undisturbed until offspring have fully fledged. It may be necessary to enforce an exclusion work zone of 5m to reduce disturbance and minimize potential displacement.

6.4.13 It is also recommended where possible, that three/four wooden nesting boxes suitable for different bird species are placed at elevation within trees suitably mature to accommodate them. These may be ca. 2-4m above ground level.

Further information can be found on the RSPB website http://www.rspb.org.uk/advice/helpingbirds/nestboxes/smallbirds/siting.aspx

Biodiversity enhancement

6.2.14 Any landscaping relating to the proposed development should also provide sustainability for local wildlife, and it is recommended that only native tree and shrub species are planted. In particular, no plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 should be planted during any landscaping around the conversions. For further details visit the Defra website: www.defra.gov.uk/wildlife-pets/non-native.

7.0 REFERENCES

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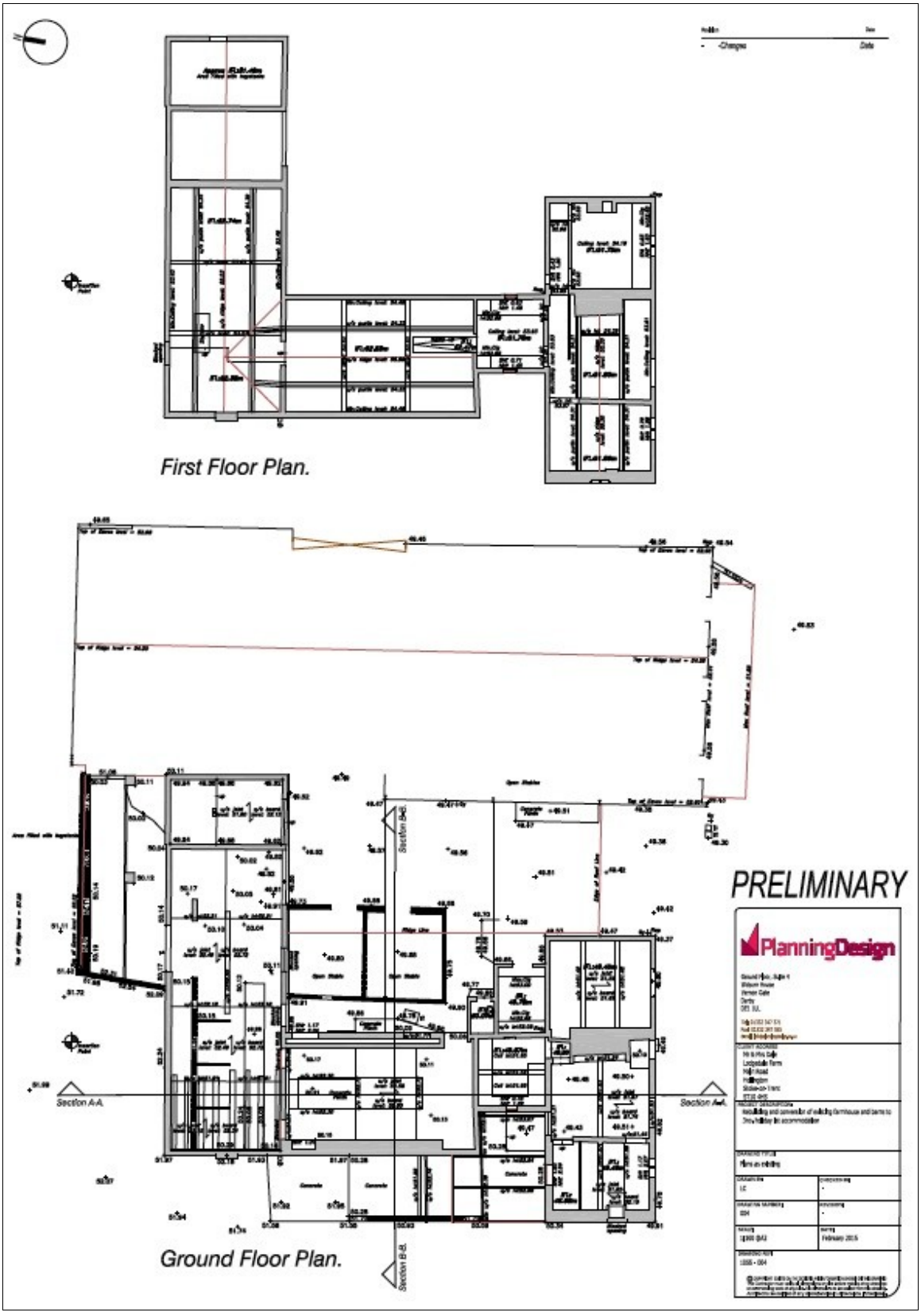
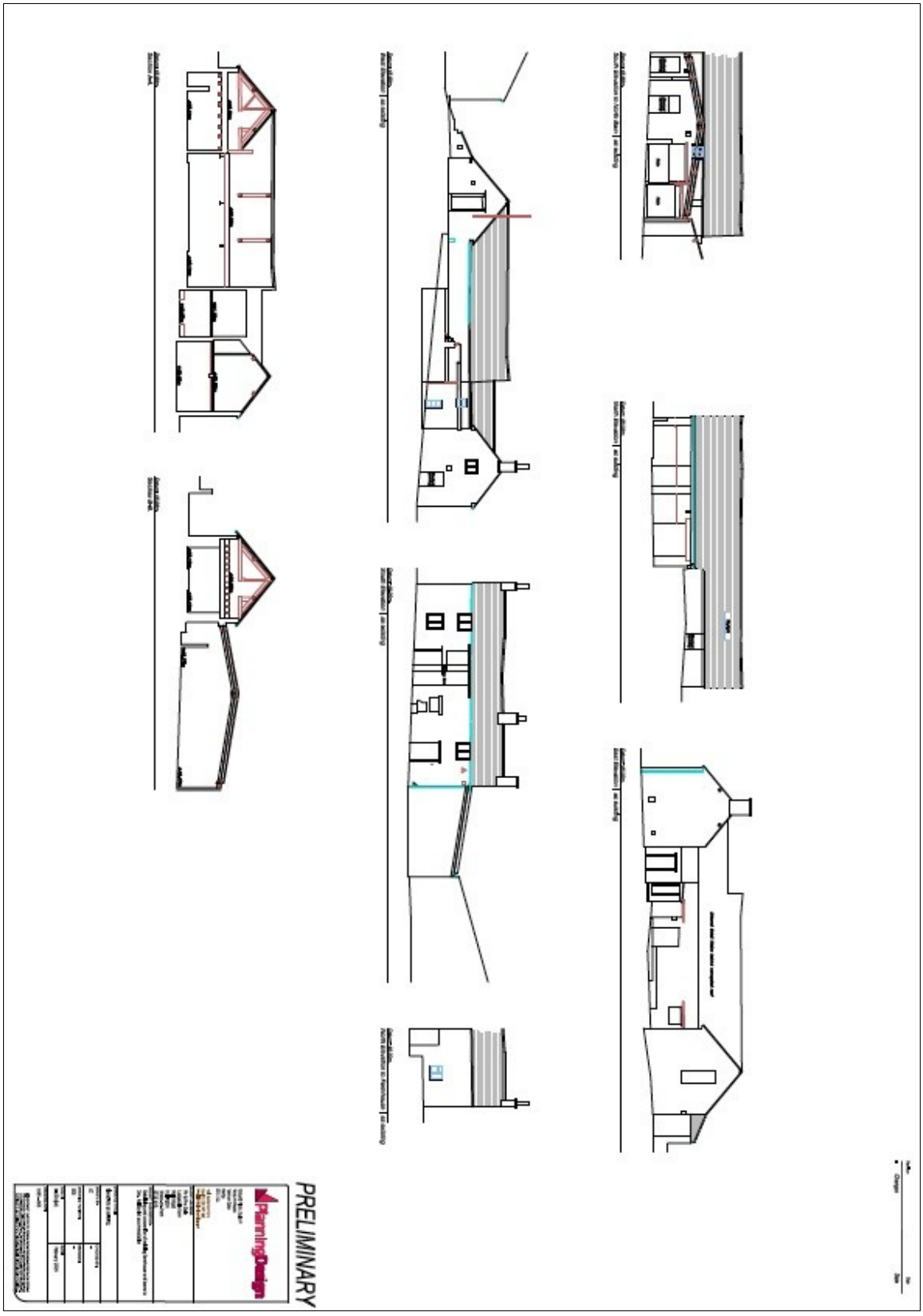
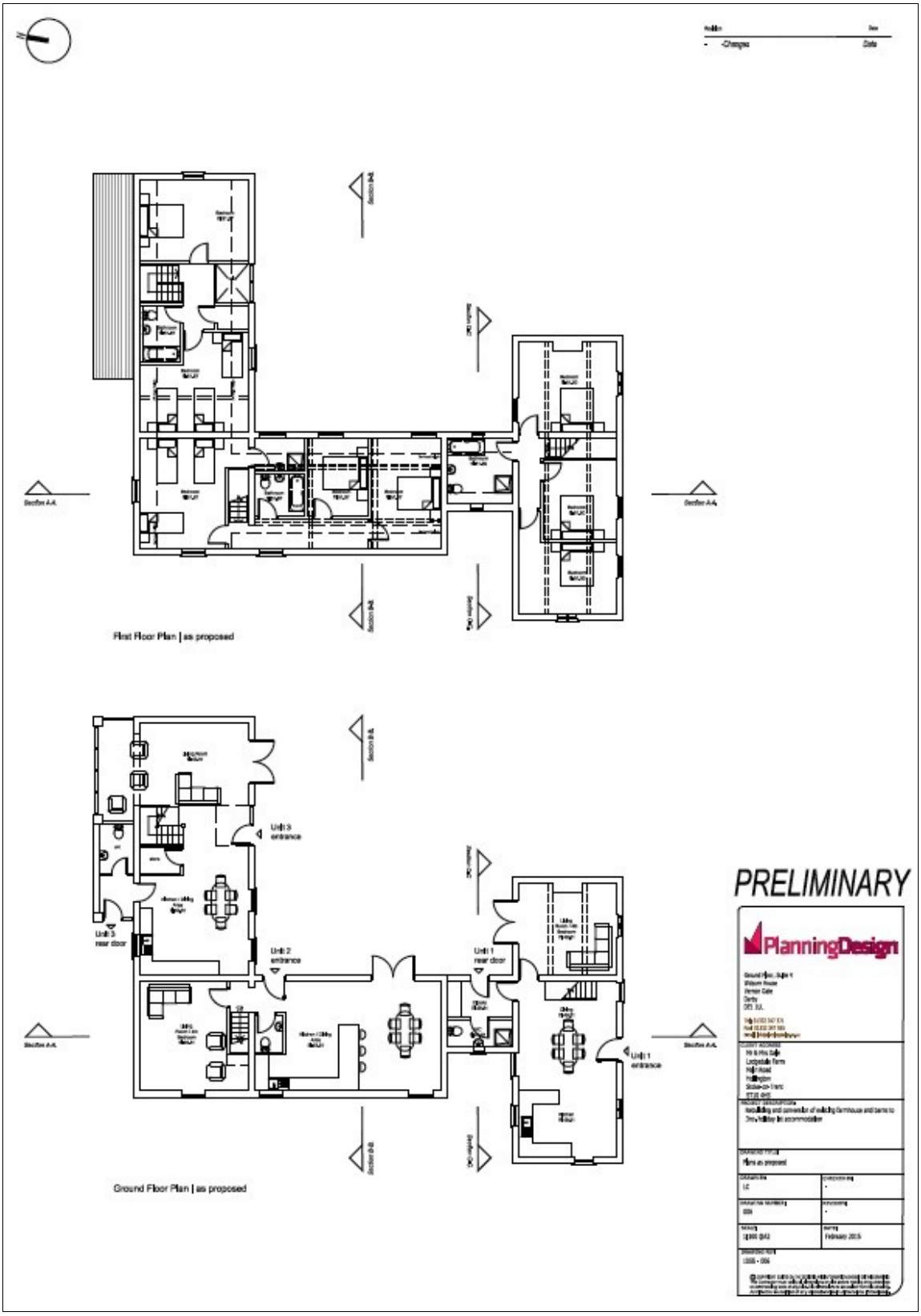
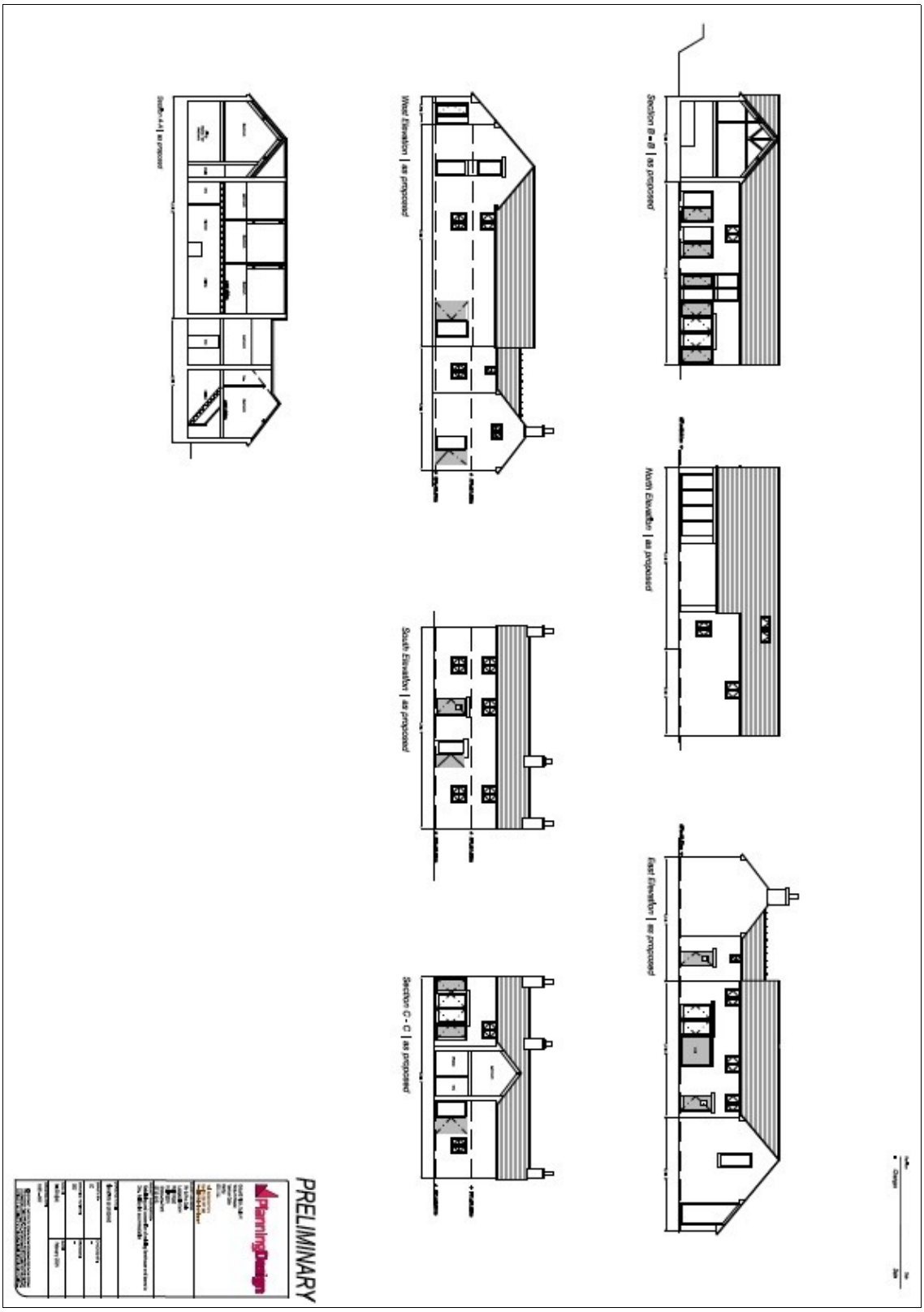
8. APPENDICES

Maps and Plans




PRELIMINARY


First Floor Plan | as proposed
Ground Floor Plan | as proposed
PRELIMINARY
PlanningDesign


PRELIMINARY

Photographic plates

A.corner link onto northern block section

B. First floor room in Farm-house block

C. Ingression points on north-east gable-end

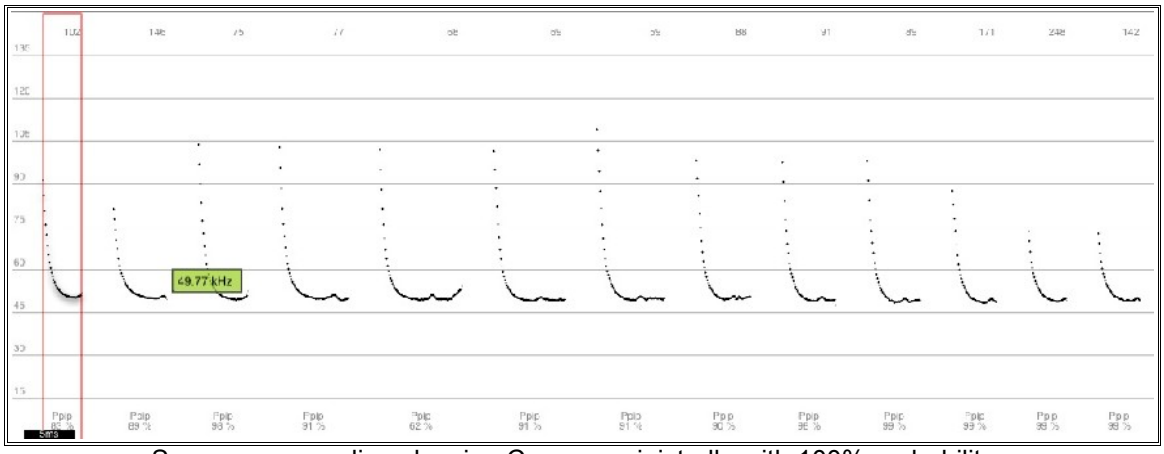
D. BLE below roost area in link-block.

E. South elevation of northern block section

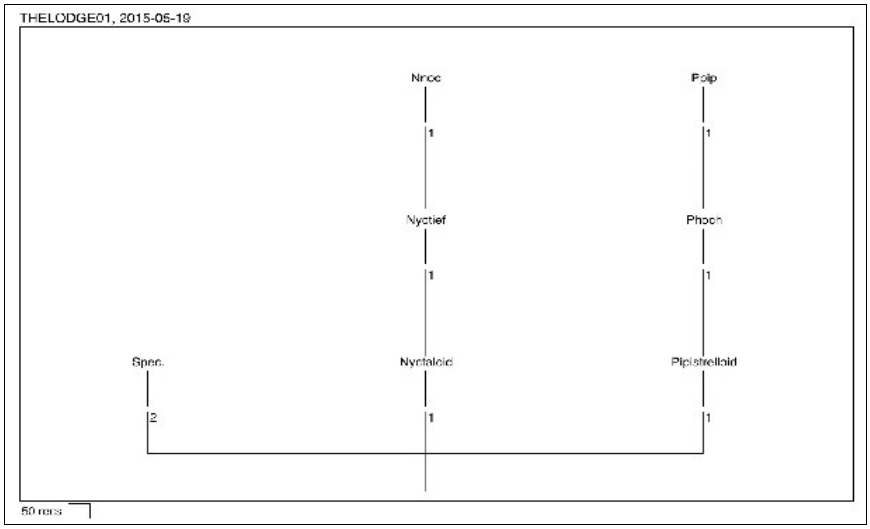
F. BLE Perching in Link-block section

Data analysis

Species Discrimination table



Sonogram recording showing Common pipistrelle with 100% probability



Schwegler 1FQ **Schwegler 2F-DFP.** **Treble crevice bat box**

Further information of these products can be be downloaded at:
www.bats.org.uk/publications...php /.../BCT_BatBoxProductList_v5.pdf

Annual life cycle of a temperate bat

January **February** **March**

Jan: Bats spend most of the winter hibernating, a state of inactivity characterised by lower body temperature, slower breathing, and lower metabolic rate. **Feb:** Bats are still hibernating. They have little fat left to live off of now. They may leave the roost on warmer nights to find food and a drink of water. **March:** Bats may begin to emerge and signs of limited activity can be seen. There are small numbers feeding as it gets warmer. In bad weather, they may become torpid.

April **May** **June**

April: Bats have mainly come out of hibernation and are hungry and active, feeding on most nights. They may be moving between several roost sites. They may become torpid (cool and inactive) again when cold. **May:** Bats are fully active and feeding. Females start forming maternity colonies and looking for suitable nursery sites, such as buildings or trees. Males will roost on their own or in small groups. **June:** Female bats usually give birth to a single pup, which they feed on their milk. Young bats are very small (less than an inch) with thin, slightly grey fur. Adult bats will catch thousands of insects each in a night.

July **August** **September**

July: Mothers continue to suckle young. Some young are growing fast and almost full-size; others are still very small. At around three weeks old, young bats are sometimes found on the ground as they learn to fly. **Aug:** At six weeks old, the young bats begin to catch insects for themselves and no longer need their mothers' milk. The summer maternity colonies begin to disperse and bats may move to mating roosts. **Sept:** Mating season begins, with males of most species using special mating calls to attract females, which can include purrs, clicks, and buzzing. Bats are also concentrating on building up fat stores for the coming months.

Oct: More mating is taking place, and building up fat reserves is becoming crucial to survive the winter season. Bats are seeking suitable hibernation sites, and beginning periods of torpor. **Nov:** Periods of torpor are lasting longer. Some begin hibernation, to save energy over the colder months, when insects are harder to find. They are using stored fat as fuel. **Dec:** Bats are hibernating. They may roost on their own or in small groups, often in cool, quiet places like disused buildings, old trees or caves, where they hopefully won't be disturbed. **(Source: Bat Conservation Trust).**

9. CONDITIONS & DISCLAIMERS

Services

9.1 This statement has been prepared with all reasonable skill, care and diligence, within the terms of the contract with the client. The actions of the surveyor on site and during the production of the report were undertaken in accordance with the Code of Professional Conduct of the Chartered Institute of Ecology and Environmental Management (www.cieem.org.uk). No part of this document may be reproduced without the prior written approval of:

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9.6 The author remains impartial to any decision making and attempts only to make recommendations in the interests of conserving protected species and biodiversity, whilst acknowledging sustainable development.

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