Proposed Building Works at The Wain House in Stapleton, Presteigne Herefordshire

Bat Surveys

A report to:

Mr. and Mrs Saunders

By:

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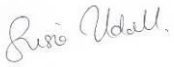
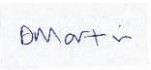
CONTRACT DETAILS	
Contract Title	**The Wain House, Stapleton: Bats**
Contract No.	**500/18**
Client	**Mr and Mrs Saunders**
Survey Dates	**22nd May, 15th June and 29th June 2018**
Report Date	**24th July 2018**
Report Title	**Proposed Building Works at The Wain House in Stapleton, Presteigne, Herefordshire: Bat Surveys**

REPORT REVIEW/QUALITY ASSURANCE				
Personnel	**Name**	**Signature**	**Position**	**Date**
Prepared by	**Susie Udall MSc MCIEEM CEnv**		**Consultancy Manager**	**24/07/18**
Reviewed by	**Dwayne Martin**		**Principal Ecologist**	**24/07/18**

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EXECUTIVE SUMMARY

Proposed Works
The proposed works involve the conversion of an existing building The Wain House to its original form and demolition of an adjacent barn. Also, a new dwelling house is to be constructed to the rear of the existing buildings and in the location of the demolished barn.

Method of Study
The brief was to carry out a bat scoping survey and three bat dusk emergence surveys of the buildings, to identify potential impacts to roosting bats and make recommendations for general mitigation, compensation, enhancement and further surveys, as appropriate.

Survey Results
During the bat scoping survey approximately 10 old bat droppings characteristic of those produced by brown long-eared bats and pipistrelle bats were found in the roof void of The Wain House. No bat evidence was found in the barn. Both buildings contain several features providing high potential bat roosting habitat. Low numbers of common pipistrelle bats, *myotis* bat species, soprano pipistrelle bats and unidentified bat(s) were recorded emerging from The Wain House and *myotis* bat species were recorded emerging from the barn. House sparrow, blackbird, wren, blue tit and robin were recorded nesting in the buildings on the site.

Evaluation
Evidence has shown that at least four species of bat, common pipistrelle bat, *myotis* bat species, soprano pipistrelle bat and unidentified bat(s) are currently using the buildings as roost sites. Therefore, a EPS mitigation licence for bats is required for the conversion and demolition works to proceed. Mitigation for birds is required.

Mitigation Recommendations
- A European Protected Species mitigation licence from Natural England will be required for the development works.
- For The Wain House the development works affecting roosting bats should be timed for April TO October, during the bat active season but outside the bat hibernation period.
- For the barn the demolition should be timed for October TO March, to avoid the bat maternity period,
- A destructive search of the bat roosts and potential bat roosting features under the direct supervision of a bat ecologist will be carried out. An endoscope search and exclusion may be required.
- One-way bat excluders fitted on openings on the buildings, as required.
- Bats to be placed in bat boxes on trees, as required.
- IF modern breathable membrane is used in the new build it has to be ensured that bats cannot access the roof of the new building (otherwise there is a risk of bats becoming entangled in the roofing membrane and leading to death of the animal(s).
- A precautionary procedure is included in Appendix 3 to cover the risk of a bat being discovered during development works when the bat ecologist is not on site
- Exterior lighting for the development should be sympathetic to roosting, foraging and commuting bats.
- Building conversion and demolition should be carried out outside the bird breeding season.

Compensation Recommendations
- A purpose built bat loft will be constructed in The Wain House. This will be split into two separate loft spaces providing roosting opportunities for all bat species recorded on the site.
- Ridge tunnels and bat tiles for roosting bats in The Wain House.
- Only bituminous liner permitted in The Wain House roof (the entire roof).
- Any timber treatments in the roof of The Wain House to be bat friendly/approved products.
- Install artificial bird nest boxes including for house sparrow in The Wain House and general bird boxes in trees on the site.
- To compensate the loss of trees and shrubs on the site, we recommend the planting of native trees and shrubs to equal or preferably exceed those lost
- Sowing of native flower-rich lawn.

Enhancement Recommendation

- No enhancement measures for bats are recommended.
- Install artificial bird nest boxes for swallow, swift and house martin on The Wain House.
- Insect boxes in the hedgerow on the site boundary.
- Hedgehog box in the base of the hedgerow on the site boundary.

Further Survey Recommendations

- No further bat surveys are recommended. However, if works are delayed beyond 2019; further bat surveys should be carried out to update the results.
- If the conversion and demolition works are carried out during the nesting bird season, a nesting bird check will firstly need to be carried out by a suitably experienced ecologist.

1. INTRODUCTION

1.1 General

1.1.1 This report has been prepared by Udall-Martin Associates Ltd. for Mr. and Mrs Saunders. It provides the details of bat surveys of two buildings, where development works are proposed.

1.1.2 The site is situated at The Wain House in Stapleton, Presteigne, Herefordshire, LD8 2LS (National Grid Reference SO 325655).

1.1.3 The proposed works involve a building development (see Figures 1 to 4), the architect has provided the following details:

- The Wain House building will be converted/stripped back to its original form as an open structure, with porch removal, window removal and blocking up and the southern side being open, apart from two end bays which will have garage doors and a wall will be built to enclose the bays (see Figure 2, Appendix 1). It will be used for storage, e.g. lawnmowers, cars etc. It is not known at this stage whether it will require complete or partial re-roofing.
- Demolition of an adjacent barn, with the construction of a new dwelling house in the location of the barn and to the north east of the barn (see Figure 3, Appendix 1).

1.1.4 Prior to the site visit the area to the rear of the buildings contained trees and shrubs (see photographs 1 to 4, Appendix 2). At the time of the initial bat scoping survey on 22nd May 2018 it was noted that the proposed development site had been cleared of all vegetation, including scrub and trees, and the ground levelled leaving bare earth ground (see photographs 5 to 8, Appendix 2).

1.1.5 The brief was to carry out an initial bat scoping survey and three bat dusk emergence surveys of the buildings, to identify potential impacts to roosting bats and make recommendations for general mitigation, compensation, enhancement and further surveys, as appropriate.

1.1.6 To meet the requirements of the brief, an initial bat scoping survey and three bat dusk emergence surveys were carried out of the buildings by suitably qualified, experienced and/or licensed ecologists.

1.1.7 Every effort has been made to provide a bat appraisal for the site; however, the site visits have provided an assessment of the site at limited points in time and that the natural environment is unpredictable and changeable. Therefore, limited site visit investigations cannot ensure complete assessment and prediction of the natural environment.

1.2 Bat Legislation

1.2.1 All species of British bat and their roosts are protected under British law by the Wildlife and Countryside Act 1981 (as amended), and bats are classified as European Protected Species under The Conservation of Habitats and Species Regulations 2010 (as amended). This makes it an offence to kill, injure or disturb a bat and to destroy any place used for rest or shelter by a bat.

1.2.2 Under this legislation development work that could affect a bat or bat roost can only be permitted under a licence from Natural England.

1.2.3 Licences in respect of European Protected Species affected by development can be granted under granted under Section 53(3) (e) of The Conservation of Habitats and Species Regulations 2010 (as amended), for the purpose of preserving public health or public safety or other imperative reasons of overriding public interest including those of social or economic nature and beneficial consequences of primary importance for the environment.

1.2.4 Under this legislation licences can only be issued if Natural England are satisfied that:

- There is no satisfactory alternative and
- The action authorised will not be detrimental to the maintenance of the population of the species at a favourable conservation status in their natural range.

1.2.5 Natural England aim to process licence applications within 30 working days of receipt.

2. SITE DESCRIPTION

2.1 Building Description

2.1.1 The buildings surveyed comprise The Wain House and adjacent barn (see Figure 4, Appendix 1).

2.1.2 The Wain House is a detached, single-storey building of stone and timber clad construction, with a red brick chimney, timber framed glazed windows and doors, timber barge boarding and plastic guttering (see photographs 4, 5, 7, 8 and 9 to 15, Appendix 2). It has a pitched tiled roof, half of which contains a roof void beneath which has no liner and is extremely cobwebbed (see photographs 14 and 15, Appendix 2). There is also a timber porch area on the south western side.

2.1.3 The adjacent barn is a detached, two-storey, timber clad building, with concrete floor and insulated side and plaster boarded walls (see photographs 1 to 5, 7, 8, 16 and 17, Appendix 2). It has a pitched tiled roof, which is boarded and insulated.

There is no roof void, although there is a small insulated gap between the roof tiles and internal boarding.

2.2 Habitat Description

2.2.1 The site is situated within a rural setting with mature gardens in the close vicinity and open countryside beyond. However, the ground to the rear of the buildings had been recently cleared of vegetation and levelled (see photographs 5 to 8, Appendix 2).

3. METHODOLOGY

3.1 Desk Study

3.1.2 A limited desk study was carried out involving reviewing the National Biodiversity Network website (www.nbn.org.uk) for bat distribution/records for the site and 1km study area.

3.2 Bat Scoping Survey

3.2.1 The bat scoping survey involved searching the interiors of the buildings by an experienced, licensed bat ecologist to locate evidence of current or past bat roosts, in the form of bats, droppings, feeding remains, urine and fur staining, scratch marks, absence of cobwebs, surfaces worn smooth by the presence of bats, sounds emitted by bats audible to the human ear or sounds produced by their movement and smell of bats.

3.2.2 The external areas of the buildings were assessed for features which may provide potential bat roosting habitat, such as holes in walls, missing mortar and raised roof tiles and lead flashing.

3.2.3 Equipment utilised to assist in this survey included a powerful torch (1,000,000 candlepower), ladders, a camera and binoculars.

3.2.4 A survey for bat evidence in buildings can be carried out at any time of year.

3.2.5 Landscape features such as trees, shrubs and hedgerows were assessed for their potential suitability for bat foraging and commuting.

3.3 Bat Dusk Emergence Surveys

3.3.1 Three bat dusk emergence/activity surveys were carried out at the buildings. This involved three surveyors (experienced licensed bat ecologists and ecologist) using bat detectors at dusk to determine whether any roosting bats emerged from or

returned into features identified during the initial bat scoping survey as well as recording general bat passes within the site.

3.3.2 The bat dusk emergence surveys were carried out in May and June 2018, during the optimal survey period (i.e. May to August, inclusive) (see Section 3.4 below).

3.3.3 Equipment used was Pettersson Ultrasound D240X bat detector with an Edirol R-09 wav recorder, Pettersson D240 bat detector, Batlogger M bat detector and Anabat Express bat detector. In addition, a night-vision video camera with infra-red flood lighting was also used on the barn.

3.3.4 The survey climatic conditions for the bat dusk emergence surveys are shown in Table 1 below. The weather conditions were conducive to bat activity with the surveys validated by the presence of active bats.

Table 1: Survey Climatic Conditions

Dusk Emergence Survey	Start time	Finish time	Temperature	Wind: Beaufort	Weather	Cloud cover
First dusk survey						
Start of survey	20:45		21°C	0	Dry, hot and still	0%
Finish of survey		22:30	20°C	0		0%
Second dusk survey						
Start of survey	21:15		18°C	0	Dry, mild, still and	100%
Finish of survey		23:00	17°C	0	overcast	100%
Third dusk survey						
Start of survey	21:15		23°C	0	Dry, hot, still and	0%
Finish of survey		23:00	21°C	0	clear	0%

3.4 Survey Details

3.4.1 The bat scoping survey was carried out by Natural England licensed bat ecologist Dwayne Martin (licence no. 2017-27670-CLS-CLS) on 22nd May 2018.

3.4.2 The bat dusk emergence surveys were carried out by Natural England licensed bat ecologists Dwayne Martin and Dave Smith and ecologist Yasmin Ashcroft on 22nd May, 15th June and 29th June 2018.

3.5 Survey Limitations

3.5.1 There were no survey limitations

4. RESULTS

4.1 Desk Study

4.1.1 *NBN*

a) There are no previous records for bats for the site or the 1km study area from the National Biodiversity Network website.

4.2 Bat Scoping Survey

4.2.1 Bat survey results are shown in Figure 4, Appendix 1.

4.2.2 Approximately ten very old bat droppings characteristic of those produced by brown long-eared bats (*Plecotus auritus*) and pipistrelle bats (*Pipistrellus* sp.) were found in the roof void of The Wain House (see Figure 4, Appendix 2 and photographs 18 and 19, Appendix 2). No bat evidence was found in the barn.

4.2.3 Numerous features were identified on The Wain House and barn which provide high bat roosting potential habitat. These are listed below and shown in Figure 4, Appendix 1 and by photographs 20 to 29, Appendix 2.

The Wain House

1. Gaps under ridge tiles.
2. Gaps under roof tiles.
3. Gaps at eaves into void.
4. Gaps at roof ends.
5. Gaps under timber of porch area.

Barn

1. Gaps under timber cladding.
2. Gaps at eaves of barn.
3. Gaps under ridge tiles.
4. Gaps under ridge end.

4.3 Bat Dusk Emergence Surveys

4.3.1 Raw survey data can be provided upon request. The bat dusk emergence locations are shown in Figure 4, Appendix 1.

4.3.2 In summary, common pipistrelle bats (*Pipistrellus pipistrellus*), *myotis* bat (*Myotis* sp.) species, soprano pipistrelle bats (*Pipistrellus pygmaeus*) and unidentified bats were recorded emerging in low numbers from The Wain House and *myotis* bat species were recorded emerging in low numbers from the barn.

4.3.3 Also, approximately five bat droppings characteristic of those produced by pipistrelle bats were found on the exterior wall of The Wain House during the second bat dusk emergence survey (see Figure 4, Appendix 1).

4.3.4 Details of the bat emergences from both buildings are provided below.

22nd May 2018

Front (South West Side) of The Wain House Area

21:38 Bat	Emerged from porch area, no echolocation.
21:42 Common pipistrelle	Emerged from left hand side of porch area.
21:50 Bat	Emerged from porch area, no echolocation.
21:58 *Myotis*	Emerged from porch area.

Eastern Corner of The Wain House Area

21:38 Common pipistrelle	Emerged from eastern gable end of the building.

15th June 2018

Front (South West) of The Wain House Area

21:43 Bat	Emerged from porch area, no echolocation.
21:50 Bat	Emerged from porch area, no echolocation.
21:53 Bat	Emerged from under eaves, no echolocation.
21:56 Common pipistrelle	Emerged from left hand side of porch area.
21:59 Soprano pipistrelle	Emerged from under eaves.
22:08 *Myotis*	Emerged from porch area.

Front (South West Side) of Detached Barn Area Camera

21:59 *Myotis*	Emerged from under timbers.
22:06 *Myotis*	Emerged from under timbers.

Rear (North East Side) of Detached Barn Area Camera

22:04 *Myotis*	Emerged from under ridge tile.

29th June 2018

Front (South West Side) of The Wain House Area

21:44 Bat	Emerged from porch area, no echolocation.
22:03 Bat	Emerged from porch area, no echolocation.
22:18 Common pipistrelle	Emerged form porch.

Front (South West Side) of Detached Barn Area Camera

21:59 *Myotis*	Emerged from under timbers.
22:06 *Myotis*	Emerged from under timbers.
22:08 *Myotis*	Emerged from under timbers.
22:11 *Myotis*	Emerged from under timbers.

Rear (North East Side) of Detached Barn Area Camera

22:04 *Myotis*	Emerged from under ridge tile.
22:06 *Myotis*	Emerged from under ridge tile.
22:09 *Myotis*	Emerged from under ridge tile.

4.3.5 Noctule bats (*Nyctalus noctula*) were also recorded foraging and commuting in the vicinity of the buildings during the emergence survey.

4.4 Landscape Features

4.4.1 The surrounding habitat was considered to offer good foraging and commuting opportunities for bats as it included mature trees, hedgerows and open countryside in the vicinity. However, due to the clearance of shrubs and trees in the rear grounds, this will have reduced bat foraging opportunities in the immediate vicinity of the buildings.

4.5 Nesting Birds

4.5.1 Several active and old house sparrow (*Passer domesticus*) nests were recorded under the eaves of The Wain House and barn, blue tits (*Cyanistes caeruleus*) were recording roosting under the eaves of The Wain House and blackbird (*Turdus merula*), wren (*Troglodytes troglodyes*) and robin (*Erithacus rubecula*) nests were found on the barn (see photographs 30 and 31, Appendix 2).

4.5.2 Swallow (*Hirundo rustica*), swift (*Apus apus*) and house martins (*Delichon urbicum*) were recorded flying above the site.

4.6 Other Species

4.6.1 A hedgehog (*Erinaceus europaeus*) was recorded near the buildings on the second bat dusk survey.

5. EVALUATION AND POTENTIAL IMPACTS

5.1 Bats

5.1.1 From the numbers of bats observed emerging from The Wain House and barn, it is evident that there are small day-time bat roosts within the buildings. Seven *myotis* bats were recorded emerging from the barn on the third survey visit and therefore it is possible this indicates the presence of a small bat maternity roost. Maternity roosts are where females gather and give birth and raise their young and are of high conservation value. Both buildings also provide some potential hibernation opportunities (particularly the stone building) and it is considered the bats recorded in The Wain House may continue to hibernate in the building this season.

5.1.2 At least four bat species were recorded at the site. Common pipistrelle bat and soprano pipistrelle bat are common bat species. It is not known with certainty which *myotis* bat species is present and there is an unidentified bat/bats on the site also, as the bat droppings would be accumulated in locations which are inaccessible to surveyors and therefore could not be sent for DNA analysis.

5.1.3 Brown long-eared bat droppings were found in The Wain House; however, these were very old and no brown long-eared bats were recorded emerging from either buildings. Therefore, it is considered brown long-eared bats are not currently roosting in the buildings.

5.1.4 The proposed development works have the potential to kill, injure and disturb individual bats and to destroy bat roosts. Therefore, roosting bats would constrain development proposals and specific mitigation will be required (see Section 6.1.1 below).

5.1.5 All species of British bat and their roosts are protected under British law by the Wildlife and Countryside Act (WCA) 1981 (as amended), and bats are classified as European Protected Species under The Conservation of Habitats and Species Regulations 2010. This makes it an offence to kill, injure or disturb a bat and/or to damage or destroy a breeding site or resting place for a bat.

5.1.6 It is also an offence to disturb the animals such that it impairs their ability to survive, to reproduce, to nurture their young, or such that it impairs their ability to hibernate or migrate. It is an offence to disturb the bat(s) in such a way as it affects significantly the local distribution or abundance of the species to which they belong.

5.1.7 Under this legislation any development works that could affect a bat or bat roost as described by the legislation can only be permitted under a licence from Natural England.

5.1.8 Licences in respect of European Protected Species affected by development can be granted under Section 53(3) (e) of The Conservation of Habitats and Species Regulations 2010.

5.1.9 Under Section 53(9) of the Regulations licences can only be issued if Natural England are satisfied that:

(i) There is no satisfactory alternative to the work specification and
(ii) The action authorised will not be detrimental to the maintenance of the population of the species at a favourable conservation status in their natural range.

5.1.10 Natural England aim to process licence applications within 30 working days of receipt.

5.1.11 A European Protected Species (EPS) mitigation licence from Natural England will be required for conversion and demolition works affecting the bat roosts in The Wain House and the barn. Detailed mitigation would need to be designed by an experienced bat ecologist and provided in a Mitigation Method Statement attached to the licence application which would be a condition of the licence.

5.1.12 The Bat Survey Guidelines (BCT 2016) state that up to two to three surveys are required to satisfactorily address the survey need of a building. A bat scoping survey and three bat dusk emergence surveys were carried out during the optimal survey period in 2018, to meet the guidelines.

5.2 Nesting Birds

5.2.1 Due to the nature of the habitats present on the site and in the vicinity, it is considered unlikely that any nesting birds on the site are specially protected, i.e. Schedule 1 species.

5.2.2 However, all birds with the exception of certain pest species are protected under the Wildlife and Countryside Act (1981) (as amended) whilst breeding. This legislation protects nests, eggs and unfledged young from damage or destruction. The bird breeding season generally lasts from March to September for most species.

5.2.3 Both buildings provide bird nesting habitat. Therefore, mitigation should be carried out as part of the conversion and demolition works (see Section 6.1.2 below). Also, compensation and enhancement measures are recommended (see Sections 6.2.4 and 6.3.2 below).

5.3 Hedgehog

5.3.1 Hedgehog is listed as a Priority Species on the Natural Environment and Rural Communities Act 2006 and National Biodiversity Action Plan. Enhancement measures are recommended (see Section 6.3.4 below).

6. RECOMMENDATIONS

6.1 Mitigation Recommendations

6.1.1 *Bats*

a) As small day-time bat roosts of common pipistrelle bat, *myotis* bat species, soprano pipistrelle bat and unidentified bat species have been found in the buildings to be affected by the development works, and the roost areas will be impacted, development works can only proceed under a EPS mitigation licence from Natural England in accordance with The Conservation of Habitats and Species Regulations 2010.

b) A detailed Method Statement will be required in support of this application, providing details of the timing of works, safe working practices to minimise the chances of bats being present during the works and measures for the replacement of roosting habitat for bats in the long-term.

c) For The Wain House as there are day roosts in the building and potential hibernation roosts were recorded in the building, the best time to carry out the development works affecting bat roosts in the building would be during the bat active season, i.e. April TO October, inclusive (i.e. outside the bat hibernation period, which runs from November to March, inclusive), as any bats present at this time will be active and able to relocate to alternative roost sites.

d) For the barn as there are day-time bat roosts in the building and a possibly small bat maternity roost, with possibly less potential for hibernation roosts in the building, the best time to carry out the demolition works affecting bat roosts in the barn would be October TO April, thus avoiding the bat maternity season.

e) It will be essential that harm and injury to individual bats is minimised by using best practice methods to exclude bats from the areas of the proposed conversion and demolition works prior to works commencing. This will involve certain works being carried out by hand under the direct supervision of a licensed bat ecologist. This will include carrying out a destructive search of the bat roosting features to be affected and exposure of all potential bat roost areas to be affected by the proposed conversion and demolition works. This will comprise the removal of all ridge tiles and three rows of tiles either side of the ridge board and exposure of all potential bat roost areas to be affected by the proposed conversion works, as described in section 4.2.3 above and shown in Figure 4, Appendix 1.

f) All bat access into buildings will be blocked off using a one way hatch/excluder fitted to allow bats present within the buildings to be able to exit but not return into the buildings (as required). All features such as cracks in the stonework in The Wain House will be searched with an endoscope prior to blocking with one-way bat tubes. These tubes/one way hatches will be fitted for 5 nights of suitable weather above 8 degrees Celsius before removal and in filling of gaps. The buildings will be kept bat

proof during the night to prevent bats from re-entering the buildings during the works.

g) Bat roosting boxes will be installed on nearby mature trees close to the buildings to house any bats displaced by the destructive searches, if required. Bat box details are provided in Appendix 4. Access for the bats within the new bat boxes will be blocked until dusk to prevent bats from flying out during the day.

h) IF modern breathable membrane is used in the new build it has to be ensured that bats cannot access the roof of the new building (otherwise there is a risk of bats becoming entangled in the roofing membrane and leading to death of the animal(s).

i) Replacement roosting habitat for common pipistrelle bat, *myotis* bat species, soprano pipistrelle bat and unidentified bat(s) suitable to comply with the bat mitigation guidelines will be required (see Section 6.2.1 below).

j) There is also a risk that conversion and demolition works could impact on breeding birds (see Section 6.1.2 below) and so the timing of work must be considered alongside that for bats so as to avoid conflicting with the bat mitigation plan.

k) Also, as a precaution, there is a procedure to follow should bats be found during conversion and demolition works when the bat ecologist is not present on the site (see Appendix 3). It is important that all personnel working on the conversion and demolition works project should be fully briefed on this procedure.

l) Any outside lighting should conform to Bat Conservation Trust (BCT) guidelines. The lighting for the new proposed development should be sympathetic to the needs of roosting, foraging and commuting bats. The lighting scheme needs to be sensitive to bats.

m) If lighting is required for security only shrouded down lighters should be used or lights should be positioned close to the ground and directed downwards. The lights should be activated by a time sensor with a low movement sensitivity, so as not to be triggered by wildlife.

6.1.2 *Nesting Birds*

a) As both buildings provide bird nesting habitat works ideally should be carried out outside the bird breeding season (which runs from March to September, inclusive). If works were to be carried out during the bird breeding season, a nesting bird check would firstly need to be carried out (see Section 6.4.2 below).

6.2 Compensation Recommendations

6.2.1 *Bats - General*

a) To compensate for the loss of common pipistrelle bat, *myotis* bat species, soprano pipistrelle bat and unidentified bat(s) roosting habitat in The Wain House and barn, a purpose bat loft will be constructed in The Wain House and further new roosting features will be created within The Wain House.

b) These measures will provide long-term replacement bat roosting habitat for common pipistrelle bats, *myotis* bat species, soprano pipistrelle bats and unidentified bat(s).

6.2.2 *Bats – Bat Loft*

a) The bat loft will be constructed prior to building conversion and barn demolition works commencing (the remaining works to The Wain House will be carried out towards the end of the development project). The bat loft will be built within The Wain House above the proposed open fronted area (which will be used to house equipment such as lawn mowers as well as vehicles).

b) The new bat loft will follow best practice specifications as stated in the Bat Mitigation Guidelines (Mitchell-Jones 2004). The following minimum specification is required.

- The bat loft is to be created within the existing roof void in The Wain House. Trees and shrubs will be planted adjacent to the new bat loft using large specimens, to provide foraging habitat and flight lines with immediate cover at dusk emergence and dawn re-entry.

- The bat loft will be 4.685m wide, 8m long and 2.232m high (from insulated and boarded loft space floor to ridge top), situated 2.170m above ground level. There will be two separate loft spaces, which will be separated by a timber wall with a door. The loft spaces will be of equal size. The interior of the bat loft will firstly be cleaned.

- There will be two separate loft spaces for different species. There will be a wall separating the two loft spaces which will be insulated. There will be a door in the dividing wall, so only one access loft inspection hatch is required.

- The two loft spaces created will be purely for the use by roosting bats, with the inspection hatch being kept securely locked at all times.

- The existing pitched roof which may be entirely or partially re-tiled is set on a timber frame. In the roof there will be double ridge boards, both consisting of rough-sawn and untreated timber, set 20mm apart which will offer bats enhanced roosting opportunities in the gap between the boards.

- The roof will be underlined with bituminous felt and/or untreated sarking board.

- Eight bat access points into the loft spaces will be created, comprising four access tiles/points for each loft space. Four access tiles will be installed on both sides of the roof. The tiles will be made of Code 6 lead, will be fabricated by the roofing workers under the direct guidance of the licensed bat ecologist. The raised apertures of the bat tiles will be of suitable dimensions to allow for the passage of bats but deny access to birds prospecting for nesting sites. The bat tiles will be fitted by the site workers under the direction of the licensed bat ecologist. During the process of fitting the bat tiles, small elongated sections of the waterproof roof membrane will be removed by the site workers under the direction of the licensed bat ecologist immediately in line with, and the same dimensions as, the raised aperture of the bat tiles, to allow bats continuous passage (by crawling) to the underside of the ridge and also access into the interiors of the loft spaces.

- There will be one small loft access hatch installed in the floor of the bat loft of approximately 0.45m by 0.45m, allowing access for a bat ecologist to inspect, but preventing access to store items. The loft hatch will be closed and locked with a combination padlock to prevent unauthorised access.

- The floor, walls and ceilings of the bat lofts will be insulated and boarded.

- It will be ensured that trees and shrubs in the vicinity of the bat lofts are left in darkness and will not be illuminated by any new lighting as part of the new development at the site. This will help to ensure good foraging and commuting habitat from the bat lofts to the nearby trees and shrubs.

- As the lower half of the building is to be used for storage of items including cars some level of lighting is likely to be required for safety and security purposes. The lights will be shrouded down lights and will be positioned below any bat access points. Motion sensitive lighting will be used. It will be essential that the lights do not illuminate any bat access points.

- No climbing plants will be planted at the base of the bat lofts to ensure the bat access points are not subsequently obscured by growth.

- **It is essential that only type F1 bituminous roofing felt will be used in the roof of the new bat lofts and throughout The Wain House roof. Natural England will no longer permit the use of modern breathable roofing membranes within known bat roosts and new roost creations due to bats getting caught in the fibres of the membrane. More information can be found at www.batsandbrms.co.uk.**

- **For any treatment of timbers to be used in the construction of the bat lofts and throughout The Wain House, it will be ensured that only 'bat friendly' products approved by Natural England will be used. Information provided at:**

http://www.npt.gov.uk/PDF/Bat_Friendly_Timber_Treatment.pdf

6.2.3 *Bats – Ridge Tunnel and Bat Tiles*

a) The Wain House will provide further bat roosting opportunities for crevice dwelling species such as common pipistrelle bat and soprano pipistrelle bats and other small crevice-roosting bat species by the creation of a tunnel under the ridge tiles running the entire length of the roof of the buildings, with 20mm x 20mm bat access gaps at each end of the ridge to allow bat access under the ride tiles.

b) Also, ten bat tiles (five each side of the roof) will be fitted on The Wain House, to allow crevice dwelling bat species access between tiles and bituminous felt.

c) It is essential that only type F1 bituminous roofing felt will be used in the roof of The Wain House (the entire roof). Natural England will no longer permit the use of modern breathable roofing membranes within known bat roosts and new roost creations due to bats getting caught in the fibres of the membrane. More information can be found at www.batsandbrms.co.uk.

d) For any treatment of timbers of the The Wain House, it will be ensured that only 'bat friendly' products approved by Natural England will be used. Information provided at:
http://www.npt.gov.uk/PDF/Bat_Friendly_Timber_Treatment.pdf

6.2.4 *Birds*

a) To compensate for the loss of bird nests in the buildings and also from the tree and scrub removal already carried out in the grounds, we recommend further artificial bird nesting boxes are installed on The Wain House and retained trees on the site boundary.

b) Artificial nesting boxes suitable for house sparrow should be installed on The Wain House and a variety of general bird boxes should be installed on trees on the site boundary. Bird boxes specifications and details are provided in Appendix 4. The house sparrow nest boxes should be positioned high under the eaves and the general bird boxes should be positioned at least 3m above the ground, on the north, north east or east sides of the building/trees, to avoid direct sunlight.

6.2.5 *Landscaping*

a) As trees and shrubs have already been removed to make way for the proposed development, we recommend, further native planting should be carried out on the proposed development site to equal or preferably exceed those lost. A list of suitable native species is provided in Appendix 5.

b) Any new lawn areas should be sown/laid with a more species-rich lawn mixture rather than a monoculture. We recommend a native wildflower grassland mixture is

sown in the new gardens such as an Emorsgate lawn mixture (EL1 – Flowering Lawn Mixture) which includes a greater a variety of broadleaved herbaceous species and grasses than the usual monocultures or species-poor mixtures generally used. This lawn mixture is also tolerant of more frequent mowing.

6.3 Enhancement Recommendations

6.3.1 *Bats*

a) No further enhancements for bats are recommended.

6.3.2 *Birds*

a) We recommend artificial nesting boxes suitable for swallow, swift and house martin are installed within The Wain Barn (once it is open fronted). Bird boxes specifications and details are provided in Appendix 4. The nest boxes should be positioned high under the eaves, on the north, north east or east sides of the building, to avoid direct sunlight.

6.3.3 *Insects*

a) We recommend insect boxes are installed in the existing hedgerow on the north eastern boundary. Box specifications and details are provided in Appendix 4.

6.3.4 *Hedgehog*

a) We recommend a hedgehog box is installed in the base of the existing hedgerow on the north eastern boundary. Box specifications and details are provided in Appendix 4.

6.4 Further Survey Recommendations

6.4.1 *Bats*

a) No further bat surveys are recommended unless development works are delayed beyond 2019, if this is the case then a further bat scoping and emergence survey will be required to ascertain/update the status of the bat usage in The Wain House and barn.

6.4.2 *Birds*

a) If conversion and demolition works are carried out during the bird breeding season (i.e. March to September, inclusive), then a nesting bird survey must firstly be carried out by a qualified ecologist prior to works commencing. This will ensure that no active nests will be affected. If active nests are found then work will have to be delayed in that area until all young have fledged and vacated the nest.

REFERENCES

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

Battersby, J 2005 *UK Mammals: Species Status and Population Trends*. JNCC/ Tracking Mammals Partnership. Available at: www.jncc.gov.uk/page-3311.

Mitchell-Jones A.J. 2004 *Bat Mitigation Guidelines, Jan 2004*. English Nature, Peterborough.

Mitchell-Jones A J & McLeish A P 2004 *The Bat Worker's Manual, 3rd Edition*, English Nature, Peterborough

UK BAP website www.ukbap.org.uk.

Appendix 1: Figures

Figure 1: Proposed Development Works

Figure 2: Proposed Development Works – The Wain House

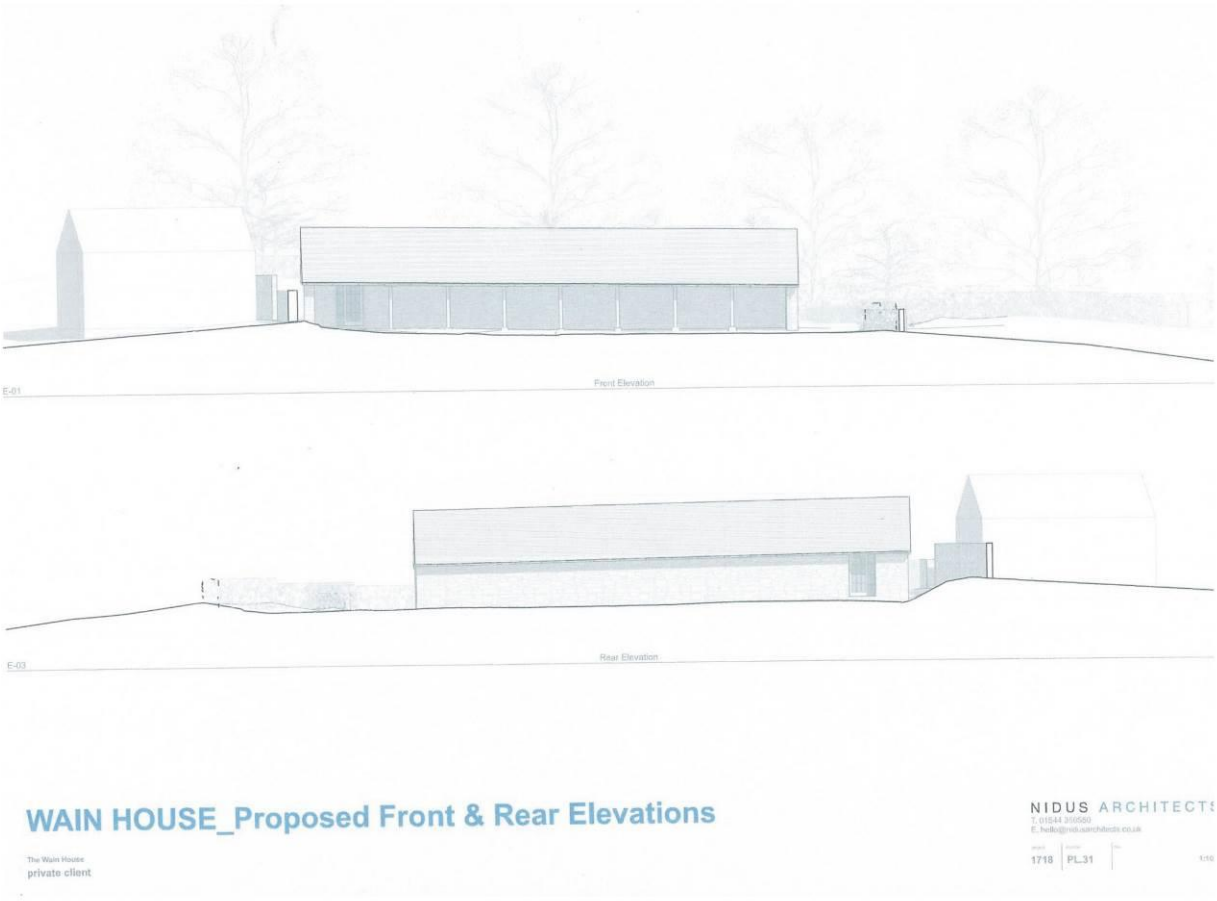


Figure 3: Proposed Development Works – New Build

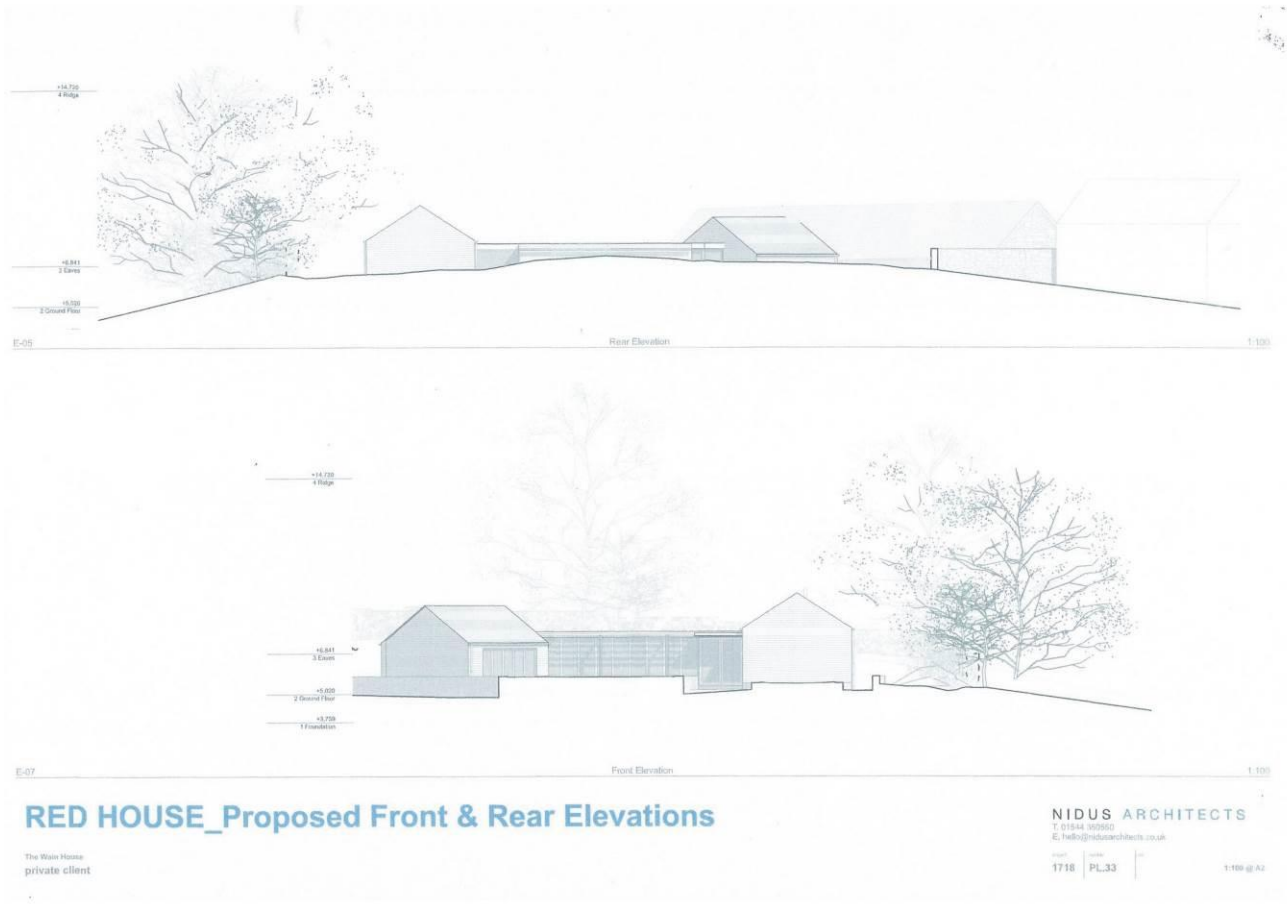


Figure 4: Proposed Development Works – Ground Floor

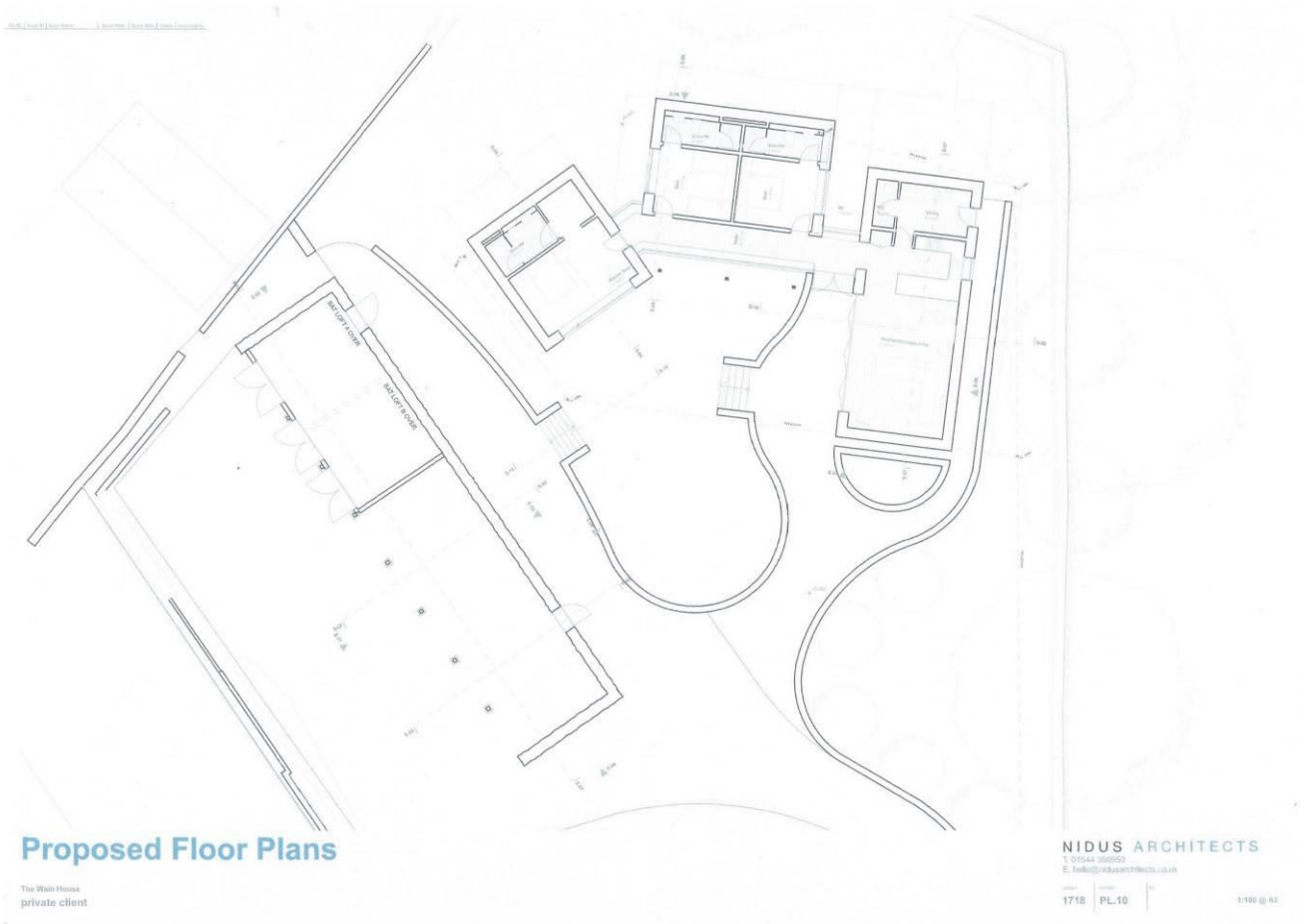
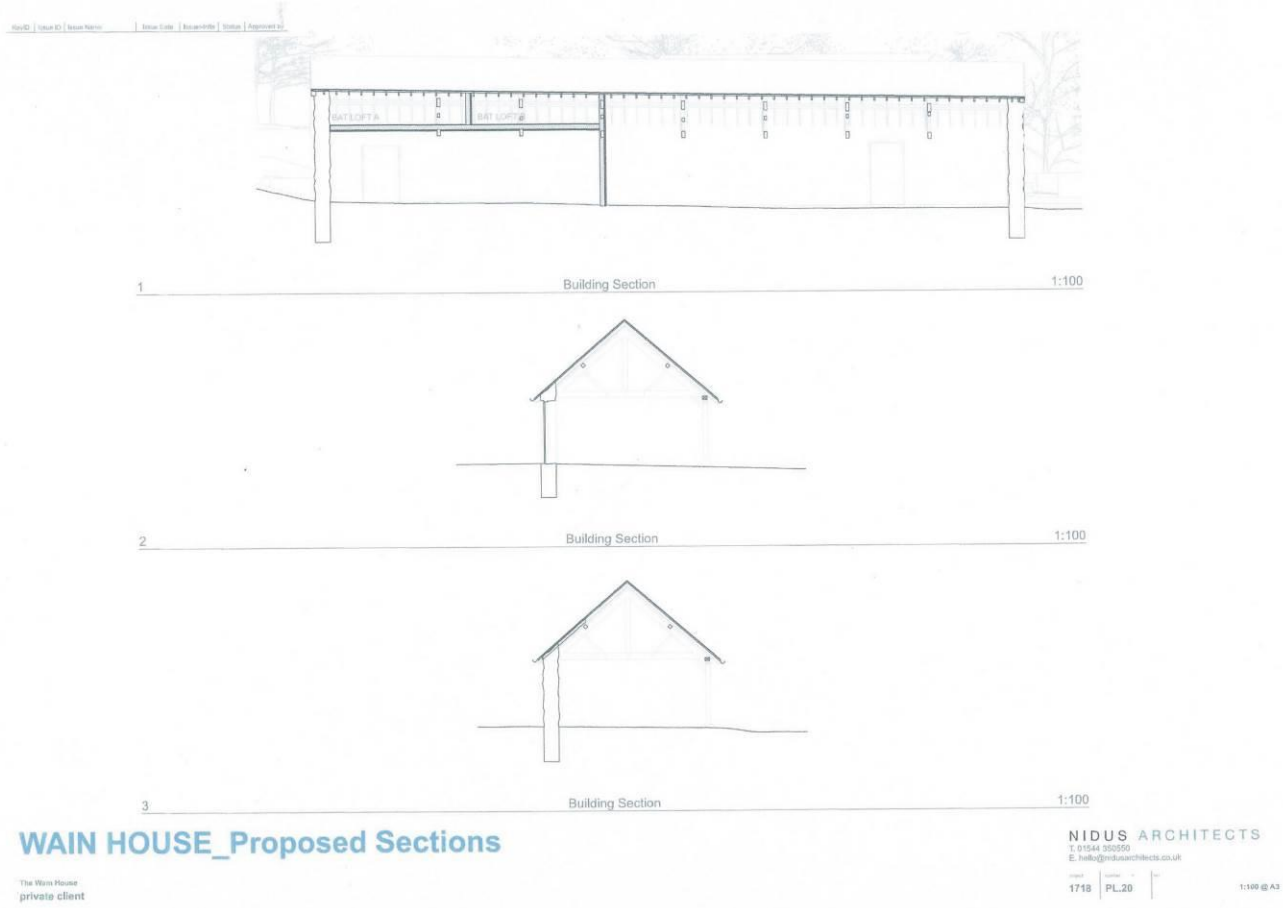


Figure 5: Bat Survey Results

Figure 6: Proposed New Bat Loft in The Wain House



Appendix 2: Photographs

Photographs taken in January 2018 by James Lingard (Architect)

1. Barn and land to the rear

2. Barn and land to the rear

3. Barn and land to the rear

4. Barn, The Wain House and land to the rear

Photographs taken in May 2018 by Udall-Martin Associates

5. Barn, The Wain House and land to the rear

6. Land to the rear

7. Barn, The Wain House and land to the rear

8. Barn, The Wain House and land to the rear

9. The Wain House (south western side), showing porch area

10. The Wain House (south western side), showing porch area

11. The Wain House (north eastern side), also showing barn

12. The Wain House interior

13. The Wain House interior

14. The Wain House roof void

15. The Wain House roof void

16. Barn, showing south eastern and south western aspects

17. Barn interior

18. Bat dropping in The Wain House

19. Bat dropping in The Wain House

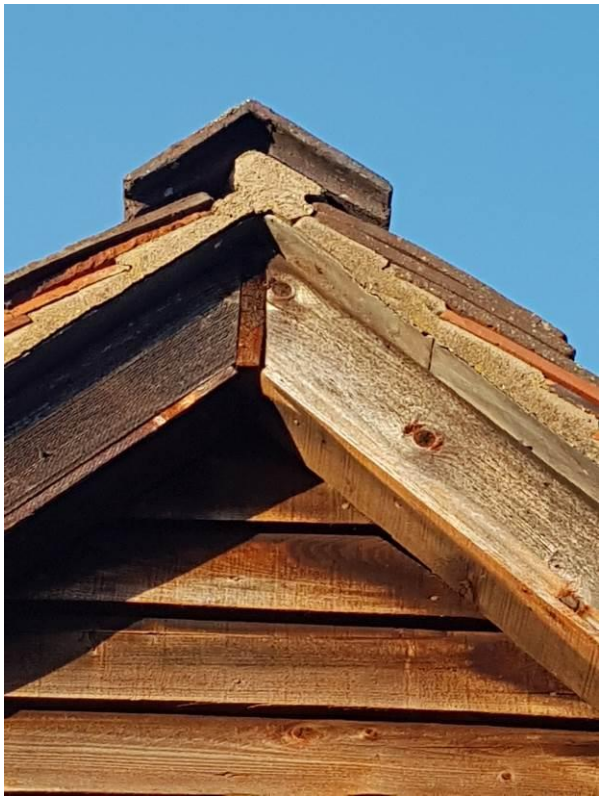
20. Gaps under raised tiles on The Wain House

21. Gaps under raised ridge tiles on the Wain House

22. Gaps under ridge tiles on The Wain House

23. Gaps behind barge board on The Wain House

24. Gaps behind wood on the porch of The Wain House



25. Gaps under ridge tile on the porch of The Wain House

26. Gaps behind raised lead flashing on The Wain House

27. Gaps beneath the roof at the eaves on The Wain House

28. Gaps beneath the roof at the eaves on The Wain House

29. Gaps behind timber on the barn

30. Bird nest on The Wain House

31. Bird nest on The Wain House

Appendix 3: Procedure to Follow if Bats are Discovered during Development Works

- If at any point in the building development works bats are discovered then contractors must stop work immediately and telephone Udall-Martin Associates Ltd. on **01684 540695/07954 160468/07968 030448.**

- Udall-Martin Associates Ltd. will either provide an appropriately licensed bat worker to the site or provide a member of staff who will liaise directly with Natural England. Actions will then be taken following advice given. This may include removal of bats, but only where direct written or verbal permission is gained from Natural England.

- Bats are a protected species and there should be no attempt to handle a bat if discovered. The bat should be covered with a light material (cloth) and the bat ecologist called out to carry out the rescue.

- Only when Natural England is satisfied that the risk to bats is ceased will works recommence.

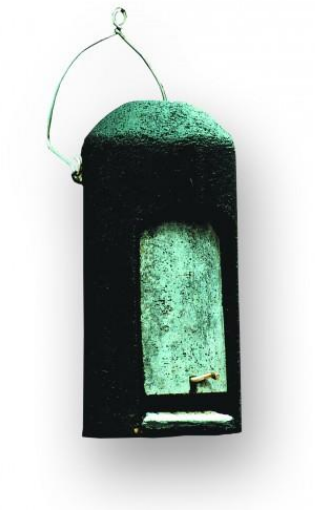
- Should it transpire that the operation being carried out is of more risk to bats than was originally thought, then works will be stopped until they can be supervised by an appropriately licensed bat worker.

- If a bat is found under roofing material or within any other niche to the building fabric, works will stop immediately (as above). If the bat does not voluntarily fly out, then the aperture will be carefully covered over to protect the bat(s) from the elements, leaving a small gap for the bat to escape voluntarily. Any covering should be free from grease or other contaminants, and should not be a fibreglass-based material.

Appendix 4: Faunal Boxes Specifications

Images from Wildcare website: www.wildcareshop.com

1. Bat Boxes Suitable for Installation on Mature Trees



Schwegler 2FN Bat Box 55

Schwegler Bat Box 45 - 2F

2. Bird Boxes Suitable for Installation on Trees or on the Exterior Walls of the Buildings

Schwegler 2H Open Fronted

Schwegler 1B (32mm hole)

Schwegler 1B (26mm hole)

3. Bird Boxes Suitable for Installation on the Buildings on the Site

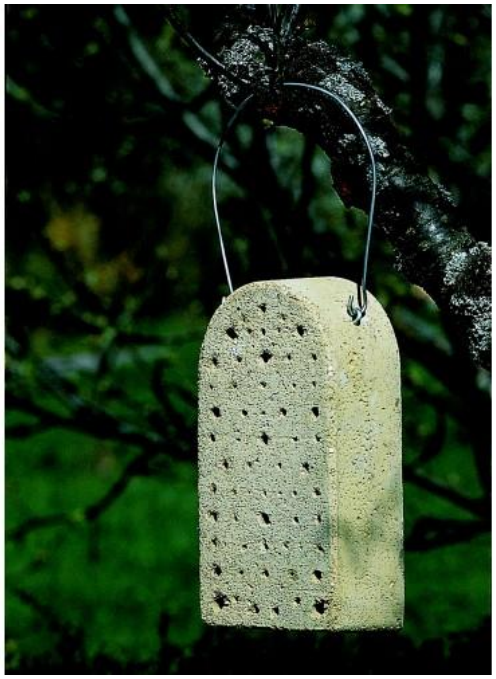
Schwegler 17 swift box

Schwegler 1SP Sparrow Terrace

Schwegler 10 swallow nest

Schwegler house martin eaves nest

4. Insect Box to be installed in the Hedgerow on the Site



Schwegler Insect Box

5. Hedgehog Box to be installed in the base of the Hedgerow on the Site

Original Wooden Hedgehog Box

Prepared by Udall-Martin Associates
Tel: 01684 540695

Appendix 5: Native Species Suitable for Planting

The plants should be obtained from specialist nurseries and preferably be of local genetic stock.

1. Native Shrub, Tree and Climbing Species for Planting

Shrubs	
Blackthorn	*Prunus spinosa*
Buckthorn	*Rhamnus catharticus*
Crab apple	*Malus sylvestris*
Dog rose	*Rosa canina*
Dog wood	*Cornus sanguine*
Elder	*Sambucus nigra*
Field maple	*Acer campestre*
Guelder rose	*Viburnum opulus*
Hawthorn	*Crataegus monogyna*
Hazel	*Corylus avellana*
Holly	*Ilex aquifolium*
Trees	
Crab apple	*Malus sylvestris*
Rowan	*Sorbus aucuparia*
Wild cherry	*Prunus avium*
Climbers	
Field rose	*Rosa arvensis*
Honeysuckle	*Lonicera periclymenum*
Traveller's-joy	*Clematis vitalba*

2. Native Shrub Species for Planting in Landscaped Areas

Shrubs	
Bell heather	*Erica cinerea*
Box	*Buxus sempervirons*
Broom	*Cytisus scoparius*
Heather	*Calluna vulgaris*
Lavender *	*Lavendula angustifolium*
Rosemary *	*Rosemarimus officinalis*

* Non-native plant species

3. Herbaceous Species for Landscaped Areas and Tree and Shrub Planting

Herbs	
Garlic mustard	*Alliaria petiolata*
Primrose	*Primula veris*
Snowdrop	*Galanthus nivalis*
Wood anemone	*Anemone nemorosa*