Whitcher Wildlife Ltd.
Ecological Consultants.

STONE BAR FARM, BIRDWELL.

OS REF: SE 348 003.

ECOLOGICAL IMPACT ASSESSMENT.

Ref No: **180266/EcIA.**

Date: **4th September 2018.**

Cliff Edge, Cliff Road, Darfield, Barnsley, S73 9HR.
Tel. 01226 753271. Fax. 01226 270993.
info@whitcher-wildlife.co.uk www.whitcher-wildlife.co.uk
Company No. 4401613.

TABLE OF CONTENTS.

	Page Number
1. INTRODUCTION.	**3**
2. SURVEY METHODOLOGY.	**4**
3. SURVEY RESULTS.	**7**
4. IMPACT ASSESSMENT, MITIGATION AND RESIDUAL EFFECTS.	**41**
5. BIODIVERSITY ENHANCEMENTS.	**50**
6. REFERENCES.	**52**
Appendix I. BAT INFORMATION.	**53**
Appendix II. NESTING BIRD INFORMATION.	**55**
Appendix III. REPTILE INFORMATION.	**56**
Appendix IV. ANNOTATED MAP OF THE SURVEY AREA.	**58**
Appendix V. TARGET NOTES.	**59**
Appendix VII. DEVELOPMENT PLAN.	**60**
Appendix VIII. REPTILES TOOLBOX TALK DOCUMENT.	**61**

1. INTRODUCTION.

1.1. Plans have been drawn up for the conversion of some existing farm buildings that are part of Stone Bar Farm, Birdwell, into residential properties, and the construction of two new residential properties on the site.

1.2. Whitcher Wildlife Ltd was commissioned to carry out a Preliminary Ecological Appraisal (PEA) of the site to establish whether there are any issues that may affect the proposed works.

1.3. The initial PEA was carried out on 19th February 2018. During that survey potential for roosting bats was identified in some of the buildings on the site, two of which were assessed as providing high potential, therefore three additional bat surveys were recommended of the buildings with bat roosting potential.

1.4. Two bat dusk emergence surveys were carried out on 2nd July and 13th August 2018 and a bat dawn swarming survey was carried out on 31st July 2018.

1.5. This document converts the initial PEA into an Ecological Impact Assessment (EcIA) that addresses the impact of all ecological issues identified as being present on the site and how they will be mitigated for and any biodiversity enhancement measures that will be implemented.

1.4. Appendices I to III of this report provide additional information on specific species and are designed to assist the reader in understanding the contents of this report.

****

2. SURVEY METHODOLOGY.

2.1. Prior to visiting the site, the survey area was cross referenced to maps and aerial photographs to give a general idea of the habitats and potential issues within the area and to identify potential access and walking routes.

2.2. The survey area was walked where access was agreed and public rights of way were used where no access was agreed. All habitats within and immediately around the survey area were documented and the dominant species within that habitat listed in line with the JNCC Handbook for Phase 1 Habitat surveys.

2.3. The survey area and immediate surrounding area was thoroughly searched for evidence of badger (*Meles meles*) activity by looking for the following signs in line with Harris S, Cresswell P and Jefferies D (1989). *Surveying Badgers*. Mammal Society: -

* Badger setts.
* Badger latrines or dung pits.
* Badger snuffle holes and evidence of foraging.
* Badger paths.
* Badger prints in areas of soft mud.
* Badger hairs caught on fencing.

2.4. The survey area was searched for watercourses and where found all watercourses within the survey area and for approximately 50m in each direction were thoroughly searched for evidence of water vole (*Arvicola amphibius*) activity by looking for the following signs, in line with Rob Strachan, Tom Moorhouse and Merryl Gelling (2011). *Water Vole Handbook: Third Edition*: -

* Water vole burrows.
* Water vole faeces and latrines.
* Water vole feeding stations.
* Water vole runs.
* Water vole prints in areas of soft mud.
* Water vole lawns.
* Predator field signs.

2.5. The survey area was searched for watercourses and where found all watercourses within the survey area and for approximately 50m in each direction were thoroughly searched for evidence of otter (*Lutra lutra*) activity by looking for the following signs in line with the P Chanin (2003). *Monitoring the Otter* and *Conserving Natura 2000 Rivers: Monitoring Series No10 Guidelines: -*

* Otter prints in soft mud.
* Otter spraints.
* Otter Holts.

2.6. The survey area was searched for watercourses and waterbodies. Where found, and where safe to enter the water, all were thoroughly searched for the presence of crayfish, for approximately 50m in each direction of the site, by searching under rocks and logs. Where stated, crayfish traps were also deployed into the watercourse. All survey work was carried out in accordance with the *Conserving Natural 2000 Rivers Monitoring Series No 1, Protocol for Monitoring the White Clawed Crayfish*.

2.7. The survey area was searched for mature trees and derelict buildings and where found these were checked for potential bat roosting sites in line with Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition)* by looking for the following signs: -

* Holes, cracks or crevices.
* Bat Droppings.

2.8. The subsequent dusk emergence and dawn swarming surveys were also conducted in accordance with Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition).* They were conducted by a sufficient number of surveyors to cover all areas of roosting potential, in suitable weather conditions from fifteen minutes before sunset to at least an hour and half after.

2.9. All surveyors were equipped with Batbox Duet bat detectors, or similar. The use of static recording devices such as Anabat SD2's and video cameras with infrared lights were also utilised were appropriate.

2.10. The land immediately adjacent to the survey area was assessed for bat roosting potential and bat foraging potential. Connective routes and flight lines were also assessed whilst on site and using maps of the area.

2.11. The area within 500m of the survey site was cross referenced to maps to highlight all ponds close to the site. Where possible, all ponds identified were accessed using agreed access or public rights of way to assess the potential for great crested newts (*Triturus cristatus*) to be present.

2.12. The survey area was assessed for the potential for reptiles and suitable reptile habitats. Where applicable the area was also searched for the presence of reptiles.

2.13. Where appropriate, the habitat within and surrounding the survey area was searched for species such as hazel, oak, honeysuckle, bramble and other species which may provide potential habitat for hazel dormice (*Muscardinus avellanarius*). Field signs such as feeding remains and nests were also searched for where possible, in line with P Bright, P Morris and T Mitchell-Jones *The Dormouse Conservation Handbook 2nd Edition*.

2.14. Where appropriate, the area within and surrounding the survey area was assessed for its potential to house habitat for red squirrels. Field signs of red squirrels were searched for at least every 50m, looking for any dreys, feeding signs or sightings of red squirrels.

2.15. All surveys were carried out in line with the Chartered Institute of Ecological and Environmental Management (CIEEM) survey standards and advice.

2.16. This document is prepared in line with The National Planning Policy Framework (NPPF). This sets out the government policy on biodiversity and nature conservation and places a duty on Planning Authorities to give material consideration to the effect of a development on legally protected species when considering planning applications. The NPPF and the Planning Practice Guidance on "Natural Environment" also promote sustainable development by ensuring that developments take account of the role and value of biodiversity and that it is conserved and enhanced within the development.

2.17. This report is prepared in line with the Natural Environment and Rural Communities (NERC) Act that came into force on 1st Oct 2006. Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England.

2.18. The initial PEA survey was carried out by Ruth Georgiou BSc MCIEEM. The subsequent bat surveys were carried out by a team of Whitcher Wildlife Ltd employees led by Ruth Georgiou BSc MCIEEM. Since 2004 Ruth has had experience in a professional capacity as a Wildlife Consultant carrying out ecology surveys and phase I habitat surveys. As a full member of CIEEM Ruth is subject to peer review on an annual basis. Ruth holds Natural England survey licences in respect of bats, great crested newts, white clawed crayfish and barn owls and has held her own or has been named ecologist on site specific licences for badgers, great crested newts and bats. She also holds a degree in Environmental Science (BSc) and has successfully completed a number of courses run by CIEEM, BCT and FSC in the relative protected species, carrying out phase I habitat surveys and BREEAM assessments.

****

3. SURVEY RESULTS.

3.1. Data Search Results.

3.1.1. Barnsley Biological Record Centre was contacted for records of protected species and designated sites within or adjacent to the survey area.

3.1.2. The most relevant species records are records of great crested newts, the closest of which is 583m from the site. There is a record of brown long eared bats at Glebe Farm, which is located approximately 500m from the site. There are no other species records relevant to the survey area.

3.1.3. The results show that Potter Holes Local Nature Reserve (LNR) and Local Wildlife Site (LWS) lies 540m from the survey area. This is designated due to the habitat present, a lowland mixed deciduous woodland. There are also four other LWS's that lie between 1km and 2km of the site. These are all designated due to the habitats present in them.

3.1.4. The South Yorkshire Bat Group were also contacted for records of bats within 2km of the survey area. A number of records were provided, including roosts, foraging bats, grounded bats and casualties. The closest roost records are located 283m, 509m and 539m from the site. The connectivity between these records and the survey area is fragmented.

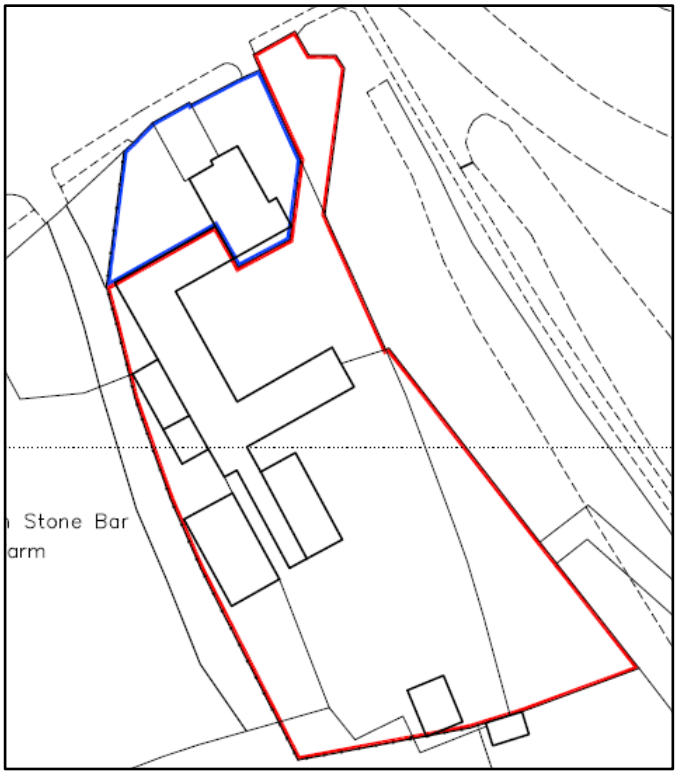
3.2. The Surveyed Area.

3.2.1. The survey area is located on the southern edge of Birdwell. It is in a semi-rural area, surrounded by busy main roads on three sides, including a motorway. On the other side is residential housing. Interspersed between and beyond the roads are paddocks, small pockets of woodland, tree lines and gardens. There are some larger woodland areas in the wider surrounding area.

3.2.2. Aerial map to show the location of the survey area, circled in red, and its surrounding area.



3.2.3. The survey area includes a number of buildings that are part of Stone Bar Farm, excluding the old farm house building, and some of the surrounding land. The plan below shows the limits of the survey area in red.



3.3. Description of Habitats.

3.3.1. Appendix IV of this report contains annotated maps marked up with the varying habitats that are cross referenced to target notes in Appendix V of this report. The habitats on and adjacent to the site are: -

- Bare Ground.
- Buildings.
- Other Habitat.
- Improved Grassland.
- Species Poor Intact Hedgerow.
- Scattered Scrub.
- Scattered Trees.
- Fence.
- Wall.

3.3.2. Bare Ground.



This habitat is a result of high levels of disturbance and now comprises bare muddy ground as shown in the photograph above. There is also a small earth mound, T4, along one side.

3.3.3. Buildings.



There are a number of buildings on the site, and these are dealt with separately in Section 3.4.4. of this report.

3.3.4. Other Habitat (T6).




This habitat refers to the areas of hard standing on the site. This includes the hard-standing courtyard in the middle of Buildings A to E and some hardcore that has been laid along the new access to the site.

3.3.5. Improved Grassland.



There are some areas of improved grassland around the buildings. These are areas of poor quality disturbed grassland, with common grass and herb species including Yorkshire fog *(Holcus lanatus)*, false oat grass *(Arrhenatherum elatius)*, cocksfoot *(Dactylis glomerata)*, perennial ryegrass *(Lolium perenne)*, fescue *(Festuca sp)*, cow parsley *(Anthriscus sylvestris)*, dead nettle *(Lameum purpureum)*, common hogweed *(Heracleum sphondylium)*, goosegrass *(Galium aparine)*, bramble *(Rubus fruticosus)*,

dock *(Rumex sp)*, buttercup *(Ranunculus sp)*, thistle *(Cirsium sp)*, ribwort plantain *(Plantago lanceolata)* and dandelion *(Taraxacum officinale)*.

3.3.6. Species Poor Intact Hedgerow.



There is a hedgerow along the most part of the southern boundary of the site. This is a thin hawthorn *(Crataegus monogyna)* hedgerow that is of very poor value. There is very little ground flora.

3.3.7. Scattered Scrub.





There is some scattered scrub around the site, comprising hawthorn *(Crataegus monogyna)*, blackthorn *(Prunus spinosa)*, elder *(Sambucus nigra)* and bramble *(Rubus fruticosus)*.

3.3.8. Scattered Trees.





3.3.8.1. There are some scattered trees throughout the southern part of the survey area. These are all small in size and include hawthorn *(Crataegus monogyna)*, willow *(Salix sp)* and fruit trees.

3.3.8.2. There are also some larger scattered sycamore *(Acer pseudoplatanus)* trees adjacent to the new entrance to the site.

3.3.9. Fence.



There are wooden fences around some of the boundaries of the site.

3.3.10. Wall.



There is a stone wall along the eastern boundary of the site.

3.4. Description of Fauna Survey Results – 19th February 2018.

3.4.1. No badger setts or badger field signs were identified within the survey area.

3.4.2. There are no watercourses within the survey area therefore there was no requirement for any water vole, otter or crayfish surveys to be carried out. There is a small outfall pipe in the south eastern corner of the site that had some water trickling out, but this dispersed quickly and does not constitute a watercourse.

3.4.3. There are no ponds shown on maps within 500m of the survey area. The data search provides records of great crested newts 583m from the site, but these records are on the opposite side of the M1 motorway, a significant barrier to movement. There was therefore no requirement for any great crested newt assessments to be carried out as part of this survey.

3.4.4. The buildings on the site were assessed for their potential for roosting bats. For the purpose of this report the buildings on site are referred to as ten separate buildings, referenced as Buildings A to J. These are shown on the map below.



3.3.4.1. Building A.





3.3.4.1.1. Building A is a two-storey barn. Some works have been carried out on the barn over the past seven months and these are ongoing.

3.3.4.1.2. The walls are rubble filled stone walls. The external walls have been recently pointed. The internal walls seem to have also had some pointing works carried out, but some occasional gaps between the stonework remain. The windows and doors have been removed, leaving open gaps into the wall cavity in the window openings.

3.3.4.1.3. The roof is a pitched tiled roof in fairly good condition, with just the occasional gap in the ridge and some occasional gaps under lifted tiles on the rear elevation.

3.3.4.1.4. Internally the underside of the roof tiles is lined with a breathable membrane. It is in good condition with just the occasional hole and some holes along the ridge.

3.3.4.1.5. The first floor is open to the roof space. The roof beams are of a queen post design and are in good condition with no visible cracks or gaps.

3.3.4.1.6. An internal wall is currently under construction on the first floor, therefore there has been a lot of disturbance and activity on the first floor.

3.3.4.1.7. Photographs to show the internal of the first floor of Building A.





3.3.4.1.8. The current state Building A offers moderate potential for roosting bats in the low number of gaps between the internal stonework and potential along the ridge. However, it needs to be taken into consideration that a lot of pointing works have been carried out over the seven months previous to the date of this survey, and it is possible that prior to that the walls provided numerous additional potential roosting opportunities for bats. Until such time that additional surveys have been carried out to

prove otherwise, this building is assessed as **high** potential for roosting bats. No bat field signs were identified in or around this building during this survey although any previous internal field signs may have been lost as a result of recent activity inside the building.

3.3.4.2. Building B.




3.3.4.2.1. Building B is a two-storey barn. Some works have been carried out on the barn over the past seven months and these are ongoing.

3.3.4.2.2. The walls are rubble filled stone walls. The external walls have numerous gaps between the stonework. Some of the internal walls have been replaced with concrete block. The remainder of the walls display numerous gaps between leading into the cavity. There are open doorways leading into the barn and some open window slits. The windows and doorways on the rear elevation are blocked with wooden doors with gaps around.

3.3.4.2.3. The roof is a pitched roof. The front elevation (eastern elevation) comprises large stone tiles with numerous gaps under the tiles where they are lifted and uneven, and the rear elevation (western elevation) comprises corrugated sheets.

3.3.4.2.4. Internally, the underside of the stone roof tiles on the front elevation are lined with bitumen felt that is generally in good condition. The roof beams are of a collar beam roof design. Some of the roof beams are large in size, and one in particular displayed a hole in the underside of the beam.

3.3.4.2.5. The internal of the barn is completely open to the roof space, with a mezzanine floor at the southern end.

3.3.4.2.6. There has been a lot of disturbance and activity inside Building B, due to works on the internal walls and it appears that some roof beams have been removed or replaced.

3.3.4.2.7. Photographs to show the internal of Building B.




3.3.4.2.8. Building B is assessed as **high** potential for roosting bats due to the numerous gaps between the stonework on the internal and external walls, as well as gaps under the front elevation roof tiles, along the ridge and a hole in a roof beam; all of which provide potential for roosting bats. No bat field signs were identified in or around this building during this survey although any previous internal field signs may have been lost as a result of recent activity inside the building.

3.3.4.3. Building C.




3.3.4.3.1. Building C is a two-storey barn. No works have been carried out on this building.

3.3.4.3.2. The walls are rubble filled stone walls with numerous gaps between externally and internally. The windows all remain and are generally well sealed. Doors also remain on the building but appear to be permanently left in an open position.

3.3.4.3.3. The roof is a pitched tiled roof with numerous gaps under the tiles on the front elevation where they are lifted. The underside of the roof tiles is lined with a bitumen felt that is in good condition. The roof beams are of a queen post design.

3.3.4.3.4. The first floor is split into two rooms, both of which are open to the roof space.

3.3.4.3.5. Photographs to show the internal of the first floor of Building C.



3.3.4.3.6. Building C is assessed as having moderate potential for roosting bats as it displays numerous gaps between the stonework and gaps under front elevation roof tiles that are suitable for roosting bats. There is potential for roosting bats inside the building, although no bat field signs were found to suggest this. As this building has remained undisturbed it is likely that any bat field signs inside the building would have been evident during this survey. No bat field signs were identified in or around this building during this survey.

3.3.4.4. Building D.



3.3.4.4.1. Building D is a single storey lean-to on the back of Buildings B and C. No works have been carried out on this building.

3.3.4.4.2. The walls are rubble filled stone walls that are generally in good condition. Internally there are some gaps between the stonework of what forms the external walls of Buildings B and C. The windows and doors all remain although are not properly closed. There is a fascia board along the front of the building.

3.3.4.4.3. The roof is a sloping roof that is a continuation of the roof of Building C. There are no obvious gaps under the roof tiles. The underside of the roof tiles is lined with a bitumen felt that is in good condition.

3.3.4.4.4. Internally the building is one large room that is open to the roof space.

3.3.4.4.5. Building D is assessed as having **low** potential for roosting bats as it is generally in very good condition, with potential for roosting bats limited to some gaps in the internal walls and gaps behind the fascia, although access to these features for bats is not ideal. No bat field signs were identified in or around this building during this survey.

3.3.4.5. Building E.





3.3.4.5.1. Building E is a single storey barn that is currently well used for storage of materials to facilitate works that are being carried out elsewhere on the site. There has therefore been a lot of disturbance inside the building.

3.3.4.5.2. The walls are cavity walls with the outer skin comprising stone and the inner skin comprising brick on the front and side elevations. The rear elevation external and gable end wall has some cracks and gaps between the stonework. The front elevation wall is in very good condition, with the exception of some holes in the wall to allow wires through. The internal walls are in good condition with no obvious cracks or gaps. The windows are all in place and well-sealed. The door was open at the time of this survey, it is unknown if it is closed each night.

3.3.4.5.3. The roof is a pitched tiled roof that is in very good condition with no obvious gaps under the tiles. There are fascia boards along the front and rear elevations with numerous gaps behind.

3.3.4.5.4. Internally, the underside of the roof tiles is lined with a bitumen felt lining that is in good condition. The roof is of a queen post design. The most part is open to the roof space, with the exception of a small enclosed loft space at the western end of the building that has no access inside it.

3.3.4.5.5. Photograph to show the internal of Building E.



3.3.4.5.6. Building E is assessed as having **moderate** potential for roosting bats as it provides some potential for roosting bats behind the fascia boards, in gaps between the stonework on the rear elevation and potentially inside the building although access is difficult for bats inside the building. No bat field signs were identified in or around this building during this survey.

3.3.4.6. Building F.



Building F is an open fronted, single storey, dilapidated animal shed that is constructed from corrugated sheets and wood. This does not provide any features

suitable for roosting bats and therefore provides **no** potential for roosting bats. No bat field signs were identified in or around any of these buildings during this survey.

3.3.4.7. Building G.



Building G is a small, dilapidated, wooden hut on the end of Building F with some corrugated panels. This does not provide any features suitable for roosting bats and therefore provides **no** potential for roosting bats. No bat field signs were identified in or around any of these buildings during this survey.

3.3.4.8. Building H.



3.3.4.8.1. Building H is an elongated corrugated shed along the rear of Building F. Access around the exterior and interior of this building was very limited due to its close proximity to other buildings and scrub growing against the building.

3.3.4.8.2. This building does not provide any features suitable for roosting bats and therefore provides **no** potential for roosting bats. No bat field signs were identified in or around any of these buildings during this survey.

3.3.4.9. Building I.



Building I is the remains of an old wooden outbuilding that appears to have suffered some fire damage. The roof and some of the walls are collapsed and no longer intact. This does not provide any features suitable for roosting bats and therefore provides **no** potential for roosting bats. No bat field signs were identified in or around any of these buildings during this survey.

3.3.4.10. Building J.



Building J is an outbuilding and stable block constructed from corrugated sheets, wood and brick. It is generally in a poor state of repair. This does not provide any features suitable for roosting bats and therefore provides **no** potential for roosting bats. No bat field signs were identified in or around any of these buildings during this survey.

3.4.5. The trees to be removed from site are all small and do not display any features suitable for roosting bats. No evidence of roosting bats was found in or on any of the trees.

3.4.6. As it stands the survey area offers very limited potential for foraging bats as it comprises mainly buildings, hard standing and bare ground, although aerial maps from June 2017 suggest that a hedgerow or tree line, or even band of dense scrub has been removed from across the middle of the southern part of the site in the past seven months. There is also very little bare ground shown in the aerial image at that time. At that point the site will have been of higher value for foraging bats.

3.4.7. Some potential does remain for low numbers of foraging bats along the southern and eastern boundaries. These boundaries connect into adjacent habitat, such as dense scrub and tree habitat to the east. The southern boundary comprises a hedgerow with some scattered scrub and trees connects into tree lines that extends north and south along the boundary of the M1 motorway, which in turn connect to other parcels of potential foraging habitat.

3.4.8. Any bats that do forage and commute in this area will be used to some level of light and noise disturbance due to the proximity of the site to a motorway and another busy road. Taking this into consideration the small size of the site and the availability of an abundance of other bat foraging habitats in the area, the site is assessed as **low** suitability habitat for low numbers of bat species that are not sensitive to light or noise disturbance.

3.4.9. The vegetation and buildings on the site provide potential for nesting birds. This survey was carried out outside the nesting bird season and therefore no active bird nests were found during this survey, but old nests were seen in some of the trees on the site as well as in the walls of Building B and inside the ground floor of Building C. One nest in Building C was confirmed as a swallow nest.

3.4.10. The site provides some potential for reptiles with some basking opportunities and refuges under piles of rubble, wood and brick. Three features in particular were identified as being of good potential refugia for reptiles. These are target noted as T1, T2, T4 and T6 in Appendix IV of this report and are shown in the photographs below.









3.4.11. Aerial maps from June 2017 suggest that the southern part of the site was more heavily vegetated at that time, which suggests that until recently the site had limited potential for reptiles and some of the features described above are recent. There is also a lot of disturbance on the site including a dog that is allowed to roam free on a regular basis. Overall the potential for reptiles is assessed to be **low** and limited to common reptile species. No reptiles were seen during this survey, but it was carried out at a time when reptiles are in hibernation.

3.4.12. There is no habitat on the site suitable for hazel dormouse and red squirrel and no field signs of these species were found. Additionally, the site lies outside the natural ranges of these species.

3.4.17. No invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act (1981) were found within the survey area.

3.5. Bat Dusk Emergence Survey – 2nd July 2018.

3.5.1. A bat dusk emergence survey was carried out on the evening of 2nd July 2018. Sunset on that day was at 21:37. The weather during the survey was fine and dry with no wind. A temperature of 20°C was recorded at 21:30.

3.5.2. Five surveyors who all hold Natural England bat survey class licences were positioned around Buildings A, B, C, D and E so that all external areas of the buildings could be observed during the survey. An Anabat detector was placed nest to each surveyor, as well as one Anabat detector inside each of Buildings A, B, C and E.

3.5.3. The map below shows the location of each surveyor (S) and Anabat detector (AB) during the survey.



3.5.4. The following bat activity was recorded by each surveyor:

3.5.5. Surveyor 1:

22:11 – A Common Pipistrelle bat was faintly heard passing over.
22:13 – A Common Pipistrelle bat flew over west to east.

22:30 – A Common Pipistrelle bat was seen foraging around the northern and western sides of the buildings.
22:32 – A Common Pipistrelle bat was seen foraging around the northern and western sides of the buildings.
22:35 – A Common Pipistrelle bat was seen foraging around the northern and western sides of the buildings.
22:38 – A Common Pipistrelle bat was seen foraging to the west, then it flew south along the track that extends along the western side of the buildings.
22:49 – A Common Pipistrelle bat flew over the buildings from the west.
22:51 – A Common Pipistrelle bat flew over the buildings from the east and continued to forage over the garden area to the north of Building A.
22:55 – A Common Pipistrelle bat flew south to north along the western side of the buildings.
23:00 – A Common Pipistrelle flew over the buildings from the west.

3.5.6. Surveyor 2:

22:08 – A Common Pipistrelle bat flew over from south west to north east.
22:10 – A Common Pipistrelle was heard but not seen flying over.
22:14 – A Common Pipistrelle bat was faintly heard foraging to the west of the site.
22:15 – A Common Pipistrelle bat was faintly heard foraging to the west of the site.
22:18 – A Common Pipistrelle bat was faintly heard foraging to the west of the site.
22:22 – A Common Pipistrelle bat was faintly heard foraging to the west of the site.
22:24 – A Common Pipistrelle bat was faintly heard foraging to the west of the site.
22:28 – A Common Pipistrelle bat was heard foraging to the west of the site.
22:30 – A Common Pipistrelle bat flew over from west to east.
22:31 – A Common Pipistrelle bat was heard foraging to the west of the site.
22:32 – A Common Pipistrelle bat was heard foraging to the west of the site.
22:33 – A Common Pipistrelle bat was seen foraging along the western side of the buildings.
22:35 – A Common Pipistrelle bat flew from the north along the western side of the buildings and back again.
22:37 – A Common Pipistrelle bat was seen foraging over and around Surveyor 2.
22:38 – A Common Pipistrelle bat was seen flying over the buildings from north west to south east.
22:41 – A Common Pipistrelle bat was seen foraging over and around Surveyor 2.
22:43 – A Common Pipistrelle bat was seen foraging over and around Surveyor 2.

3.5.7. Surveyor 3:

22:07 – A Common Pipistrelle bat flew from the east and flew inside Building B briefly and flew back out again.
22:09 – A Common Pipistrelle bat was seen to fly over Building E and flew to the east.
22:11 – A Common Pipistrelle bat was heard but not seen.
22:13 – A Common Pipistrelle bat flew over from north west to south east.
22:14 – A Common Pipistrelle bat flew from the east, foraged briefly in the yard in the middle of the buildings and then flew inside Building B to forage.
22:20 – A Common Pipistrelle bat flew from the east, briefly foraged in the yard in the middle of the buildings and flew away.
22:33 – A Common Pipistrelle bat flew from the east and foraged over the yard in the middle of the buildings.
22:38 – A Common Pipistrelle bat flew from the east and foraged over the yard in the middle of the buildings.
22:41 – A Common Pipistrelle bat was heard but not seen passing over.
22:50 – A Common Pipistrelle bat flew over from west to east.
22:51 – A Common Pipistrelle bat flew from the east, foraged over the yard in the middle of the buildings and flew away to the north.
22:52 – A Common Pipistrelle bat flew from the east, foraged over the yard in the middle of the buildings briefly, and flew back to the east.
22:53 – A Common Pipistrelle bat flew from the east and foraged over the yard in the middle of the buildings.
22:57 – A Common Pipistrelle bat flew from the east and foraged over the yard in the middle of the buildings.
23:00 – A Common Pipistrelle bat was heard but not seen flying over.

3.5.8. Surveyor 4:

22:07 – A Common Pipistrelle bat flew from the east and flew inside Building B briefly and flew back out again.
22:13 – A Common Pipistrelle bat flew over from north west to south east.
22:14 – A Common Pipistrelle bat flew from the east, foraged briefly in the yard in the middle of the buildings and then flew inside Building B to forage.
22:20 – A Common Pipistrelle bat flew from the east, briefly foraged in the yard in the middle of the buildings and flew away.

22:33 – A Common Pipistrelle bat flew from the east and foraged over the yard in the middle of the buildings.
22:38 – A Common Pipistrelle bat flew from the east and foraged over the yard in the middle of the buildings.
22:50 – A Common Pipistrelle bat flew over from west to east.
22:51 – A Common Pipistrelle bat flew from the east, foraged over the yard in the middle of the buildings and flew away to the north.
22:52 – A Common Pipistrelle bat flew from the east, foraged over the yard in the middle of the buildings briefly, and flew back to the east.
22:53 – A Common Pipistrelle bat flew from the east and foraged over the yard in the middle of the buildings.
22:57 – A Common Pipistrelle bat flew from the east and foraged over the yard in the middle of the buildings.

3.5.9. Surveyor 5:

22:08 – A Common Pipistrelle bat was heard but not seen.
22:09 – A Common Pipistrelle bat flew from the south west and continued to forage to the east of the site until 22:13.
22:19 – A Common Pipistrelle bat was briefly heard but not seen.
22:30 – A Common Pipistrelle bat flew over from south west to north east.
22:32 – Two Common Pipistrelle bats flew from the north. One proceeded to fly back to the north and the other flew south west.
22:33 – A Common Pipistrelle bat flew from north east to south west and back again.
22:33 – A bat flew over from south west to north east.
22:36 – A Common Pipistrelle bat foraged briefly around the eastern end of Building E.
22:38 – A Common Pipistrelle bat flew over from south west to north east.
22:41 – A Common Pipistrelle bat flew over from north east to south west.
22:43 – A Common Pipistrelle bat flew over from south west to north east.
22:51 – A Common Pipistrelle bat was heard but not seen.
22:52 – A Common Pipistrelle bat was heard but not seen.
22:55 – A Common Pipistrelle bat flew from the north west then flew away to the south west.
22:57 – A Common Pipistrelle bat was heard but not seen.

3.5.10. The bat recordings on the Anabat detectors placed next to each surveyor reflected the results outlined above. All bat calls recorded were Common Pipistrelle.

3.5.11. The Anabat placed inside Building A recorded twenty-four Common Pipistrelle bat calls between 22:30 and 23:00.

3.5.12. The Anabat placed inside Building B recorded thirty-four Common Pipistrelle bat calls between 22:07 and 23:00 throughout the survey.

3.5.13. Sixteen Common Pipistrelle bat calls were recorded on the Anabat inside Building C between 22:08 and 22:56. Only one of these was a clear call the remainder were very brief. The timings of these suggest that this Anabat recorded bats foraging inside Building B.

3.5.14. No bat calls were recorded on the Anabat placed inside Building E.

3.5.15. To summarise, no bats were seen to emerge from the buildings during this survey. The majority of the bats that flew onto the site flew from the east. Very occasional individual bats access inside Building B to forage, but this activity was short lived. All bats recorded flying over or near to the site were confirmed to be Common Pipistrelle bats.

3.6. Bat Dawn Swarming Survey – 31st July 2018.

3.6.1. A dawn swarming survey was carried out on the morning of 31st July 2018. Sunrise on that day was at 05:19. The weather during the survey was fine and dry with no wind. A temperature of 14°C was recorded at 04:30.

3.6.2. This survey was carried out by five surveyors, four surveyors hold Natural England class bat survey licences, and one surveyor was an experienced surveyor working as agent under other survey licences. The surveyors were positioned around Buildings A, B, C, D and E so that all external areas of the buildings could be observed during the survey. An Anabat detector was placed next to each surveyor, as well as one Anabat detectors inside each of Buildings A, B, C and E.

3.6.3. The map below shows the location of each surveyor (S) and Anabat detector (AB) during the survey.



3.6.4. The following bat activity was recorded by each surveyor:

3.6.5. Surveyor 1:

03:55 – Bats flew from the south and continued to forage around the north side of the buildings.
03:38 – A Common Pipistrelle bat was seen to occasionally fly back and forth over the roof of Building B foraging.
04:01 – A Common Pipistrelle bat was heard but not seen.
04:08 – A Common Pipistrelle bat flew over from west to east.
04:11 – A Common Pipistrelle bat flew over east to west.
04:26 – A bat flew from the south, briefly foraged around the northern side of the buildings and proceeded to fly east.
04:30 – Bats were faintly heard but not seen foraging.

3.6.6. Surveyor 2:

04:12 – A Common Pipistrelle bat flew over from west to east.
04:42 – A Common Pipistrelle was faintly heard but not seen.
04:53 – A bat flew from the south east and proceeded to fly west.

3.6.7. Surveyor 3:

03:59 – A Common Pipistrelle bat was faintly heard but not seen.
04:29 – A Common Pipistrelle bat was heard but not seen.
04:45 – A Common Pipistrelle bat was heard but not seen.
05:02 – A Common Pipistrelle bat flew from the south east and flew inside Building B.
05:02 - A bat flew over west to east.
05:03 – A Common Pipistrelle bat flew out of Building C and entered a roost between the stonework in the small section of gable visible on the southern end of Building B, where the roof drops down to Building C.

3.6.8. Surveyor 4:

03:58 – A Common Pipistrelle bat was heard but not seen foraging.
04:28 – A Common Pipistrelle bat was seen foraging inside Building B. The bat flew out of the open doorway to the east at 04:29.

04:44 – A Common Pipistrelle bat was seen foraging over the courtyard in front of the buildings.
05:02 – A Common Pipistrelle bat flew into Building A and proceeded to forage inside for one minute before flying out again through the open doorway.

3.6.9. Surveyor 5:

04:00 – A Common Pipistrelle bat was heard but not seen passing along the tree line to the east of the site.
04:01 – A Common Pipistrelle bat was heard but not seen passing along the tree line to the east of the site.
04:10 – A Common Pipistrelle bat flew over the buildings west to east.
04:15 – A Common Pipistrelle bat was heard but not seen passing along the tree line to the east of the site.
04:23 – A Common Pipistrelle bat was heard but not seen passing along the tree line to the east of the site.
04:25 – A Common Pipistrelle bat flew over north to south.
04:26 – A Common Pipistrelle bat was heard but not seen passing along the tree line to the east of the site.
04:43 – A Common Pipistrelle bat was heard but not seen passing along the tree line to the east of the site.
04:46 – A Common Pipistrelle bat was heard but not seen passing along the tree line to the east of the site.
04:47 – A Common Pipistrelle bat was heard but not seen passing along the tree line to the east of the site.
04:49 – A Common Pipistrelle bat flew over east to west.
04:58 – A Common Pipistrelle bat was heard but not seen passing along the tree line to the east of the site.
05:00 – A Common Pipistrelle bat was heard but not seen passing along the tree line to the east of the site.

3.6.10. The bat recordings on the Anabat detectors placed next to each surveyor reflected the results outlined above. All bat calls recorded were Common Pipistrelle, as well as some Soprano Pipistrelle bat calls that were recorded at 03:56 and 03:57 on Anabat 10 that was placed next to Surveyor 1.

3.6.11. The Anabat placed inside Building A recorded eight Common Pipistrelle bat calls between 04:01 and 04:30.

3.6.12. The Anabat placed inside Building B recorded thirteen Common Pipistrelle bat calls between 03:58 and 05:03 throughout the survey.

3.6.13. Four Common Pipistrelle bat call was recorded on the Anabat placed inside Building C.

3.6.14. One very faint Common Pipistrelle bat call was recorded on the Anabat placed inside Building E.

3.6.15. To summarise, one Common Pipistrelle bat was seen to enter a bat roost between the stone work on a small section of gable at the southern end of Buildings B, as shown in the photograph below.



3.6.16. No other bat roosts were identified during this survey. A lot of Common Pipistrelle activity was heard along a tree line to the east of the site and some Common Pipistrelle bats occasionally passed over the site.

3.7. Bat Dusk Emergence Survey – 13th August 2018.

3.7.1. A bat dusk emergence survey was carried out on the evening of 13th August 2018. Sunset on that day was at 20:39. The weather during the survey was fine at the time of the survey, although there had been a slight shower late afternoon prior to the survey being carried out. A wind speed of 7mph, Beaufort wind scale 2 and a temperature of 16°C was recorded at 20:30.

3.7.2. This survey was carried out by three surveyors, two surveyors hold Natural England class bat survey licences, and one surveyor was an experienced surveyor working as agent under other survey licences. The surveyors were positioned around Buildings A, B and C so that all external areas of the buildings could be observed during the survey. An Anabat detector was placed next to each surveyor, as well as one Anabat detector inside each of Buildings A, B and C.

3.7.3. The map below shows the location of each surveyor (S) and Anabat detector (AB) during the survey.



3.7.4. The following bat activity was recorded by each surveyor:

3.7.5. Surveyor 1:

20:59 – A Common Pipistrelle bat was heard but not seen passing over.
21:08 – A Common Pipistrelle bat flew over north west to south east.
21:26 – A Common Pipistrelle bat was heard but not seen foraging close by.

3.7.6. Surveyor 2:

21:02 – A Common Pipistrelle bat flew from the north west, briefly foraged around the buildings and then flew away to the north east.
21:21 – A Common Pipistrelle bat was seen foraging to the north east of the site.

3.7.7. Surveyor 3:

20:38 – A Common Pipistrelle bat emerged from a gap between the stonework on the small gable at the southern end of Building B. The bat flew straight inside Building B via the large open doorway and continued to forage inside.
20:40 – The bat briefly flew out of Building B and back inside again.
20:55 – Again, the bar briefly flew out of Building B and back inside again.
20:56 – The bat flew out of the barn and continued to forage over the courtyard on the eastern side of the buildings for the duration of the survey.

3.7.8. The bat recordings on the Anabat detectors placed next to each surveyor reflected the results outlined above. All bat calls recorded were Common Pipistrelle.

3.7.9. The Anabat placed inside Building A, was placed on a window ledge pointing inside the building but will have inevitably recorded bat calls from outside also. This Anabat recorded one hundred and seven Common Pipistrelle bat calls between 20:38 and 21:24.

3.7.10. The Anabat placed inside Building B recorded one hundred and twenty-nine Common Pipistrelle bat calls between 20:38 and 21:26.

3.7.11. Nothing was recorded on the Anabat inside Building C.

3.7.12. To summarise, one Common Pipistrelle bat was seen to emerge from the same roost previously identified during the previous dawn swarming survey. This bat continued to forage inside Building B and over the adjacent courtyard for the duration of the survey. Very little other bat activity was recorded during this survey.

****

4. IMPACT ASSESSMENT, MITIGATION AND RESIDUAL EFFECTS.

4.1. Designated Sites.

4.1.1. Impact Assessment.

4.1.1.1. The data search results show that Potter Holes Local Nature Reserve (LNR) and Local Wildlife Site (LWS) lies 540m from the survey area. This is designated due to the habitat present, a lowland mixed deciduous woodland. The proposed development will have **no impact** on the habitats on the site.

4.1.1.2. There are also four other LWS's that lie between 1km and 2km of the site, again, designated due to the habitats present in them. There will be **no impacts** on the habitats present on these sites.

4.2. Habitats.

4.2.1. Impact Assessment.

4.2.1.1. The dominant habitats on the site are currently bare ground, hard standing and buildings. The bare ground and hard standing are of negligible ecological value. The loss of these habitats will be of **no ecological impact at a site level**. The buildings provide no flora species but are of some ecological value for bats and birds, which will be addressed separately.

4.2.1.2. The remaining habitats on the site contain species that are common and are of low ecological value. The loss of these habitats is therefore of **low impact** at a site level.

4.2.1.3. All hedgerows are classed as priority habitats under the NERC Act. There is a short length of hedgerow habitat across the southern boundary of the site. This hedgerow will be retained therefore there will be **no impact** on the hedgerow habitat.

4.6. Aerial maps of the site show that several months prior to the initial survey being carried out there was more vegetation on the site, therefore it is assumed that the site in general was previously of higher ecological value.

4.2.2. Mitigation.

4.2.2.1. Although there will be very little negative impact on the habitats on the site, it is noted that there is less vegetation on the site than is shown on aerial images dated several months previous and therefore was likely to have previously been of higher ecological value.

4.2.2.2. Bearing this in mind, the planting schedule for the site will include the planting of a good proportion of native species or species that are of value for wildlife.

4.2.2.3. The hedgerow along the southern boundary of the site will be improved by planting some additional species to fill the gaps. The species will match the existing species present.

4.2.3. Residual Effects.

The overall residual effects on the site are assessed to be a **moderate positive impact at a site level**.

4.3. Species – Roosting Bats.

4.3.1. Impact Assessment.

4.3.1.1. Potential for roosting bats was identified in Buildings A, B, C and D. Three bat activity surveys of the site confirmed that there is an individual male daytime summer roost in the southern gable end of Building B.

4.3.1.2. The proposed works will involve the replacement of the roofs on both Buildings B and C and the pointing up of the wall on the southern gable end of Building B. In the absence of mitigation these works would result in the loss of the bat roost and there would be a **high negative impact on roosting bats at a site level**.

4.3.1.3. None of the trees on site that will be affected by the work provide any potential for roosting bats. There will therefore be **no impact on roosting bats in trees at a site level**.

4.3.2. Mitigation.

4.3.2.1. Prior to any works being carried out that will have any impact on the bat roost, a Natural England licence will be applied for to ensure that the favourable conservation status of the species will be maintained throughout.

4.3.2.2. Full details of the mitigation proposals will be included in the licence application, which are summarised below.

4.3.2.3. Upon receipt of the licence, the bat will be excluded from the roost by fixing a one-way exclusion flap over the roost access. This will be installed during late September/October or late March/April when bats are least likely to be present in the roost.

4.3.2.4. The exclusion flap will be left in place for a minimum of seven days, before any works on the building commences.

4.3.2.5. When the time comes to carry out re-roofing works on Building B within the vicinity of the bat roost, or re-pointing of the wall in the vicinity of the bat roost, the roost will first be inspected by a licenced ecologist using a bright torch and an endoscope.

4.3.2.6. Once the ecologist is satisfied that no bats remain in the roost, the works can commence.

4.3.2.7. Replacement bat roosts will be incorporated in the walls of the new builds on the site in the form of integrated bat bricks. These will be the Habibat Bat Box – Custom Stone Facing, as shown below. Two of these boxes will be provided in total, one will be southern facing and the other will be east or west facing.



4.3.3. Residual Effects.

4.3.3.1. With the mitigation in place the overall favourable conservation status of roosting bats at the site will be maintained, therefore there would be no **residual impacts on roosting bats at a site level**.

4.4. Species – Foraging and Commuting Bats.

4.4.1. Impact Assessment.

4.4.1.1. The site provides low potential habitat for low numbers of foraging and commuting bat species that are not sensitive to light or noise disturbance. This is limited to the eastern boundary, which forms the edge of adjacent scrub and trees habitat. This will remain unaffected. The southern boundary comprises a hedgerow with some scattered scrub and trees adjacent and will also be retained.

4.4.1.2. There will inevitably be some level of long term light disturbance from the proposed development in the form of car headlights along the access track on the eastern side of the site and from the houses to be built at the southern end of the site. Due to the location of the site it is anticipated that light sensitive bat species do not use the site anyway, therefore the impact of any proposed lighting on the site will be low.

4.4.1.3. Overall it is assessed that there will be **no impact on foraging or commuting bats at a site level.**

4.4.2. Mitigation.

A sensitive lighting scheme will be installed on the site, which will ensure that there will be no external lighting aimed directly towards the eastern and southern boundaries of the site.

4.4.3. Residual Effects.

With a sensitive lighting scheme in place, it is assessed that there will be **no residual impact on foraging and commuting bats at a site level.**

4.5. Species – Nesting Birds.

4.5.1. Impact Assessment.

4.5.1.1. The vegetation and buildings on the site provide potential for nesting birds with old nests identified present during this survey. Any site clearance or works carried out to the buildings during the nesting bird season would potentially impact on nesting birds.

4.5.1.2. The proposed works will result in some loss of bird nesting habitat, although there is minimal vegetation loss. The main impact will be the loss of building habitat for birds to nest in, in particular swallows.

4.5.1.3. The proposed season could potentially have a **high impact on nesting birds at a site level.** The nesting bird season extends from March to September each year.

4.5.2. Mitigation.

4.5.2.1. No site or vegetation clearance will be carried out within the nesting bird season. Where it is necessary to carry out these works within the nesting season it will need to be immediately preceded by a nesting bird survey carried out by a competent person. Any active nests found, plus a suitable buffer zone around them will be left undisturbed until the young have fledged.

4.5.2.2. Where possible, no works will commence on the buildings during the nesting bird season. Where it is necessary to commence works on any of the buildings during the nesting season it will be immediately preceded by a nesting bird survey. Any active nests found, plus a suitable buffer zone around them will be left undisturbed until the young have fledged.

4.5.2.3. Any works that proceed throughout the nesting season will be monitored as birds can start nesting at any time, and some birds are not deterred by people working. If birds are identified starting to nest at any time, measures will be put in place to ensure that the nest is protected and remains undisturbed until the young have fledged. These measures will be dependant on the location of the nest and nature of works in that area.

4.5.2.4. To mitigate for loss of nesting sites in the buildings, nest boxes will be provided on the site. This will include three of the Eco Small Bird nest boxes, three of the Eco Robin (Open Fronted) nest boxes, and also small canopies will be installed on the two gable ends of the new block of garages, and an Eco Swallow nest box will be provided under each canopy.

4.5.2.5. The designs of these nest boxes are shown below.

Eco Small Bird nest box:



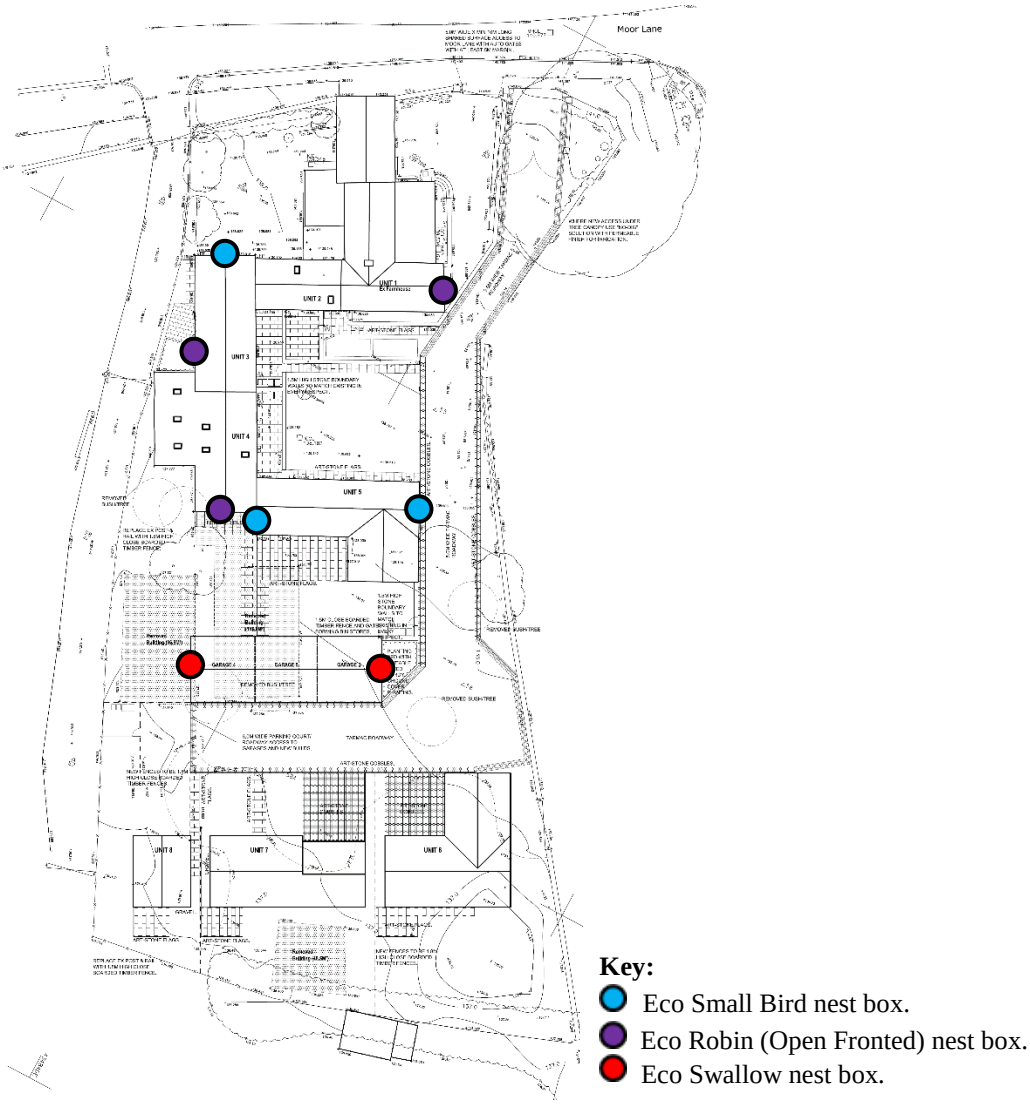
Eco Robin (Open Fronted) nest box:



Eco Swallow nest box:



4.5.2.6. The nest boxes will be positioned in the locations shown in the diagram below:



4.5.3. Residual Effects.

With the above mitigation measures in place there will be a **no negative residual impact on nesting birds at a site level**.

4.6. Species – Reptiles.

4.6.1. Impact Assessment.

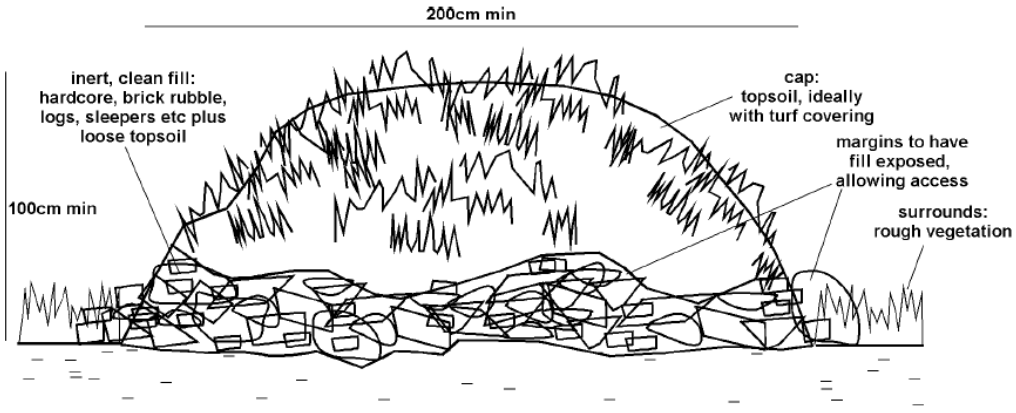
The site is assessed to provide a low potential for common reptile species. The proposed works could therefore potentially have a **low negative impact on low numbers of common reptile species.**

4.6.2. Mitigation.

4.6.2.1. Precautionary measures will be put in place to ensure that there will be no impact on reptiles during the works. These will include:

- All personnel working on site will be briefed on the identification of reptiles in accordance with Appendix VIII of this report.
- The features identified, and target noted as T1, T2, T4 and T5 will be removed during the spring/summer months when reptiles are not in hibernation.
- All personnel will be instructed that in the event that a reptile is found during the work it should be allowed to escape the area unharmed prior to works proceeding.
- All vegetation will be cut down to a minimum of 150mm prior to site clearance to allow chance for any reptiles present to escape the area prior to site clearance.

4.6.2.2. In order to mitigate for loss of potential reptile habitat, a new reptile refugia will be created on the edge of the site for reptiles to continue to use. This will be similar to the design shown below.



4.6.3. Residual Effects.

With the above mitigation in place the overall residual effects are assessed to be a **low positive impact on reptiles**.

****

5. BIODIVERSITY ENHANCEMENTS.

5.1. Additional biodiversity enhancements will be incorporated onto the site. Two 2F Schwegler Bat Boxes (General Purpose) as shown below will be fixed onto the trees in the north east corner of the site.



5.2. Some log piles will be constructed around the edges of the site for invertebrates and small mammals to use. These will be in areas that are not immediately accessible to people or household dogs.

5.3. Four Schwegler Insect Houses for Solitary Insects will be erected on trees and fences around the site. The design of these is shown below.



5.4. 13cm x 13cm holes will be provided at the base of the new fence lines every 20m, to maintain connectivity for hedgehogs or any other small mammals across the site.

****

Prepared by:	
Ruth Georgiou. BSc, MCIEEM.	Date: 4th September 2018.

Checked by:	
Derek Whitcher. BSc, MCIEEM, MCMI	Date: 5th September 2018.

6. REFERENCES.

Chartered Institute of Ecology and Environmental Management. 2017. ***Guidelines for Preliminary Ecological Appraisal, Second Edition.*** CIEEM, Hampshire.

Chartered Institute of Ecology and Environmental Management. 2017. ***Guidelines for Ecological Report Writing, Second Edition.*** CIEEM, Hampshire.

1981. ***Wildlife and Countryside Act.*** *http://www.legislation.gov.uk/ukpga/1981/69* (accessed 18/02/16)

2000. ***Countryside and Rights of Way Act.*** *http://www.legislation.gov.uk/ukpga/2000/37/contents*.

2017. ***The Conservation of Habitats and Species Regulations.*** *http://www.legislation.gov.uk/uksi/2010/490/contents/made*.

2012. ***National Planning Policy Statement.*** *https://www.gov.uk/government/publications/national-planning-policy-framework--2*

Anon. 1995. ***Biodiversity: the UK Steering Group report. Vol 2: Action Plans.*** HMSO, London.

Joint Nature Conservation Committee. 2004 (ed.). ***Handbook for Phase 1 habitat survey: A technique for environmental audit.*** JNCC, Peterborough.

1982. ***Protection of Badgers Act.*** *https://www.legislation.gov.uk/ukpga/1992/51/contents*.

Harris S, Cresswell P and Jefferies D. 1989. ***Surveying Badgers.*** Mammal Society. London.

Strachan R, Moorhouse T, Gelling M. 2011. ***Water Vole Handbook***. 3rd edition. WILDCRU (Wildlife Conservation Research Unit), Oxford.

Chanin P. 2003(a). ***Ecology of the European Otter.*** Conserving Natura 2000, Ecology Series No.10. English Nature, Peterborough.

Chanin P. 2003(b) ***Monitoring the Otter Lutra lutra.*** Conserving Natura 2000 Rivers Monitoring Series No. 10. English Nature, Peterborough.

Peay S. 2003. ***Monitoring the White-Clawed Crayfish Austropotamobius pallipes.*** Conserving Natura 2000 Rivers Monitoring Series No. 1. English Nature, Peterborough.

English Nature. 2001. ***Great Crested Newt Mitigation Guidelines.***

Langton T, Beckett C, Foster J. 2001. ***Great Crested Newt: Conservation Handbook.*** Froglife, Suffolk.

Oldham et al. 2000. ***Great Crested Newt Habitat Suitability Assessment. ARG UK Advice Note 5, May 2010.***

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

English Nature. 2004. ***Bat Mitigation Guidelines.*** English Nature, Peterborough, UK.

RSPB et al. 2002. ***The Population Status of Bird's in the UK. Birds of Conservation Concern: 2002-2007.***

Joint Nature Conservation Committee. 2004. ***Common Standards Monitoring Guidance for Birds.*** 2004 ed. JNCC, Peterborough.

Froglife. 1999. ***Froglife Advice Sheet 10: Reptile Survey.*** Froglife, London.

Bright P, Morris P, Mitchell-Jones T. 2006. ***The Dormouse Conservation Handbook*** 2nd edition. English Nature, Peterborough.

Joint Nature Conservation Committee. 2004 (ed.). ***Common Standards Monitoring Guidance for: Reptiles and Amphibians.*** JNCC, Peterborough.

Joint Nature Conservation Committee. 1996. ***UK Strategy for Red Squirrel Conservation.*** JNCC, Peterborough.

Appendix I. BAT INFORMATION.

Ecology

There are currently 18 species of bat residing in Britain, 17 of which of which are known to breed here. They are extremely difficult to identify in the hand and even more so in flight.

All appear to be diminishing in numbers, probably due to habitat change and shortage of food, caused by pesticides, as insects are their sole diet.

As their diet consists solely of insects, bats hibernate during the winter when their food source is at its most scarce. They will spend the winter in hollow trees, caves, mines and the roofs of buildings.

Certain species, particularly the pipistrelle (the commonest and most widespread British bat) can quickly adapt to man-made structures and will readily use these to roost and to rear their young.

Surveys

During walkover surveys, bat roosts can be identified by looking for:

- Suitable holes, cracks and crevices within any building, tree or other structure.
- Bat droppings along walls, window cills, or on the ground.
- Prey remains, such as insect wings.

Further investigations can be made using endoscopes, by carrying out aerial inspections of trees or by conducting bat activity surveys during dusk and dawn over summer months.

Legislation

Bats are protected under Appendix II and III of the Bern Convention (1982), Schedule 5 and 6 of the Wildlife and Countryside Act (1981), Annex IV of the Habitats Directive (some species under Annex II), Annex II of the Conservation of Habitats and Species Regulations (2010) and EUROBATS agreement. Numerous species are also listed under section 41 of the Natural Environment and Rural Communities Act (2006) making them species of principal importance.

All bats and their roosts are therefore protected in the UK. This makes it an offence to kill, injure or take any bat, to interfere with any place used for shelter or protection, or to intentionally disturb any animal occupying such a place.

The UK has designated maternity and hibernacula areas as Special Areas of Conservation (SAC's) under the Habitats Directive. Implementation of the UK Biodiversity Action Plan also includes action for a number bat species and the habitats which support them.

Where development proposals are likely to affect a bat roost site, a licence is required from Natural England.

Appendix II. NESTING BIRD INFORMATION.

Ecology

The nesting season will vary according to the weather each year but generally commences in March, peaks during May and June and continues until September. It is also worth remembering that some birds nest in trees and scrub, but others are ground nesting or prefer man- made structures or buildings.

Surveys

Nesting bird surveys search for potential nest sites in vegetation, buildings etc. Potential nesting sites are observed over a suitable period of time for bird movements or calling male birds that would indicate the presence of a nest. The presence of a nest can be identified from the field signs without the necessity to see the nest itself, thereby avoiding any disturbance of the nests. The best way to avoid this issue is to plan for vegetation clearance to be carried out outside the bird-nesting season.

Legislation

Nesting birds are protected under The Wildlife and Countryside Act 1981.

Part 1. -(1) Of the Act states that: - If any person intentionally: - kills, injures or takes any wild bird; takes, damages or destroys the nest of any wild bird while that nest is in use or being built; or takes or destroys an egg of any wild bird, he shall be guilty of an offence.

Part 1. -(5) of the Act states that: - If any person intentionally: - disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on, or near a nest containing eggs or young; or disturbs young of such a bird, he shall be guilty of an offence and liable to a special penalty.

The Countryside and Rights of Way Act 2000 amends the above by inserting after “intentionally” the words “or recklessly”.

Appendix III. REPTILE INFORMATION.

Ecology

There are five main species of reptile that reside in the UK; Common or Viviparous Lizard (*Lacerta vivipara*); Sand Lizard (*Lacerta agilis*); Slow Worm *(Anguis fragilis*); Grass Snake (*Natrix natrix*) and Adder (*Vipera berus*). The Adder is the only native species that is venomous although this is rarely harmful to humans.

Reptiles occupy a wide range of habitats including woodland, marshes, heathland, moors, sand dunes, hedgerows and bogs. Sand Lizards are confined to moorland and coastal sand dunes where they lay their eggs in the warm sand. The range of the Sand Lizard in the UK is therefore very limited. Slow Worms can be found in a wide variety of habitats throughout Britain and is the most likely reptile to be found in urban and suburban environments.

Maintaining the right body temperature is vital to reptiles' survival. In the morning, they find a warm basking site to heat up their bodies, then later they may move back into the shade because they do not sweat and have to be careful not to overheat. During hot summers, Adders will try to move to damper, cooler sites.

Over winter reptiles will hibernate in burrows or under longs where they are protected from the cold and predators, emerging from February onwards as the weather warms up.

Reptiles generally begin to mate April to May with young born in late July to September. The Common Lizard gives birth to live young, hence the term viviparous, meaning live bearing.

Surveys

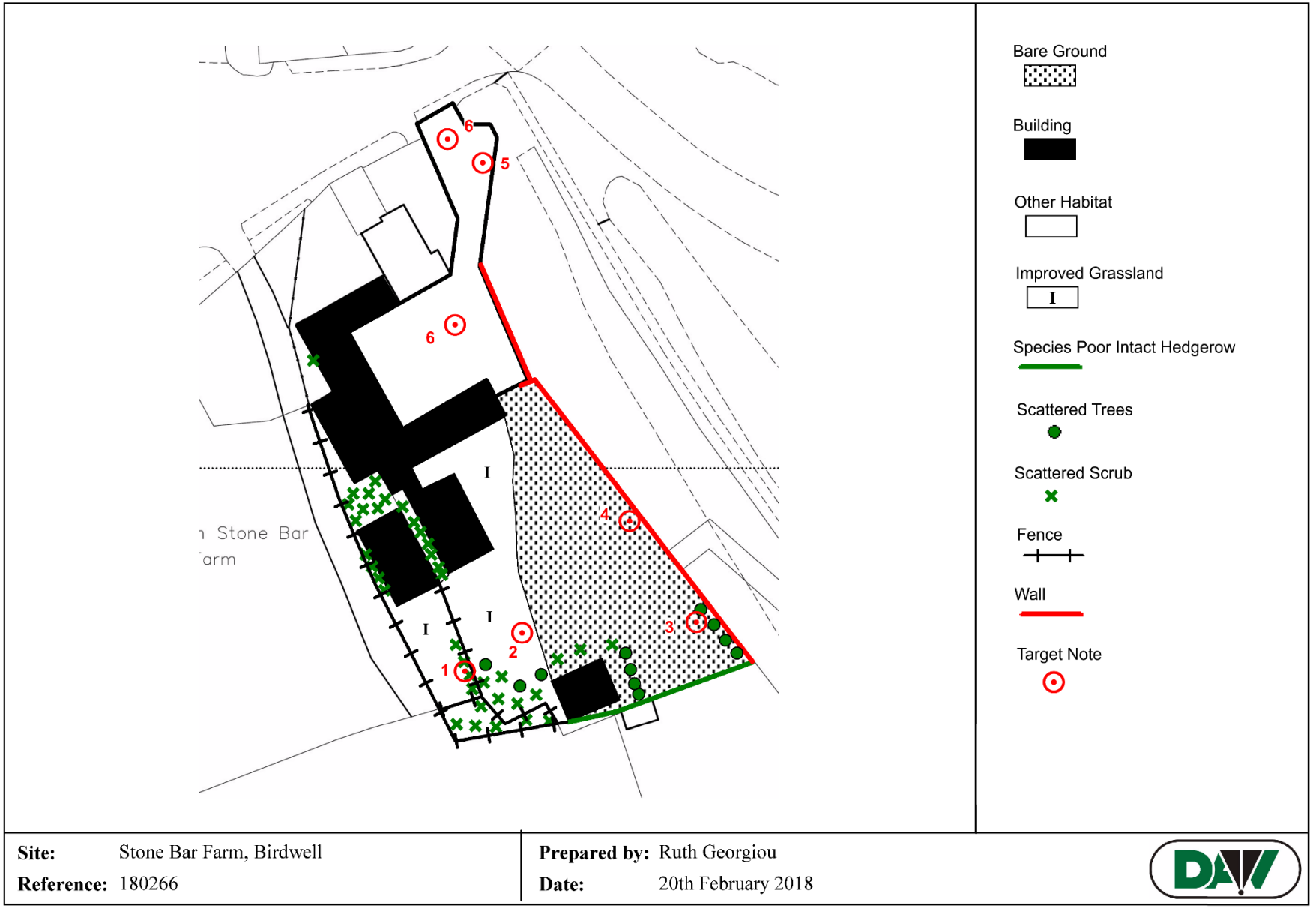
Reptile surveys involve the searching of refuge such as logs and stones for any animal sheltering below. Artificial refuge may be laid out on site for the purpose of reptile surveys.

Legislation

Reptiles are protected under Appendix II (sand lizards) and Appendix III (common lizard, slow worms, smooth snake, grass snake and adders) of the BERN Convention (1982), partially protected under Schedule 5 of the Wildlife and Countryside Act (1981), Annex IV of the Habitats Directive and are all listed under section 41 of the Natural Environment and Communities Act (2006) making them a species of principal importance.

This makes it an offence to disturb any reptile while it is occupying a structure or place it uses for shelter or protection or to obstruct access to such a place.

Appendix IV. ANNOTATED MAP OF THE SURVEY AREA.

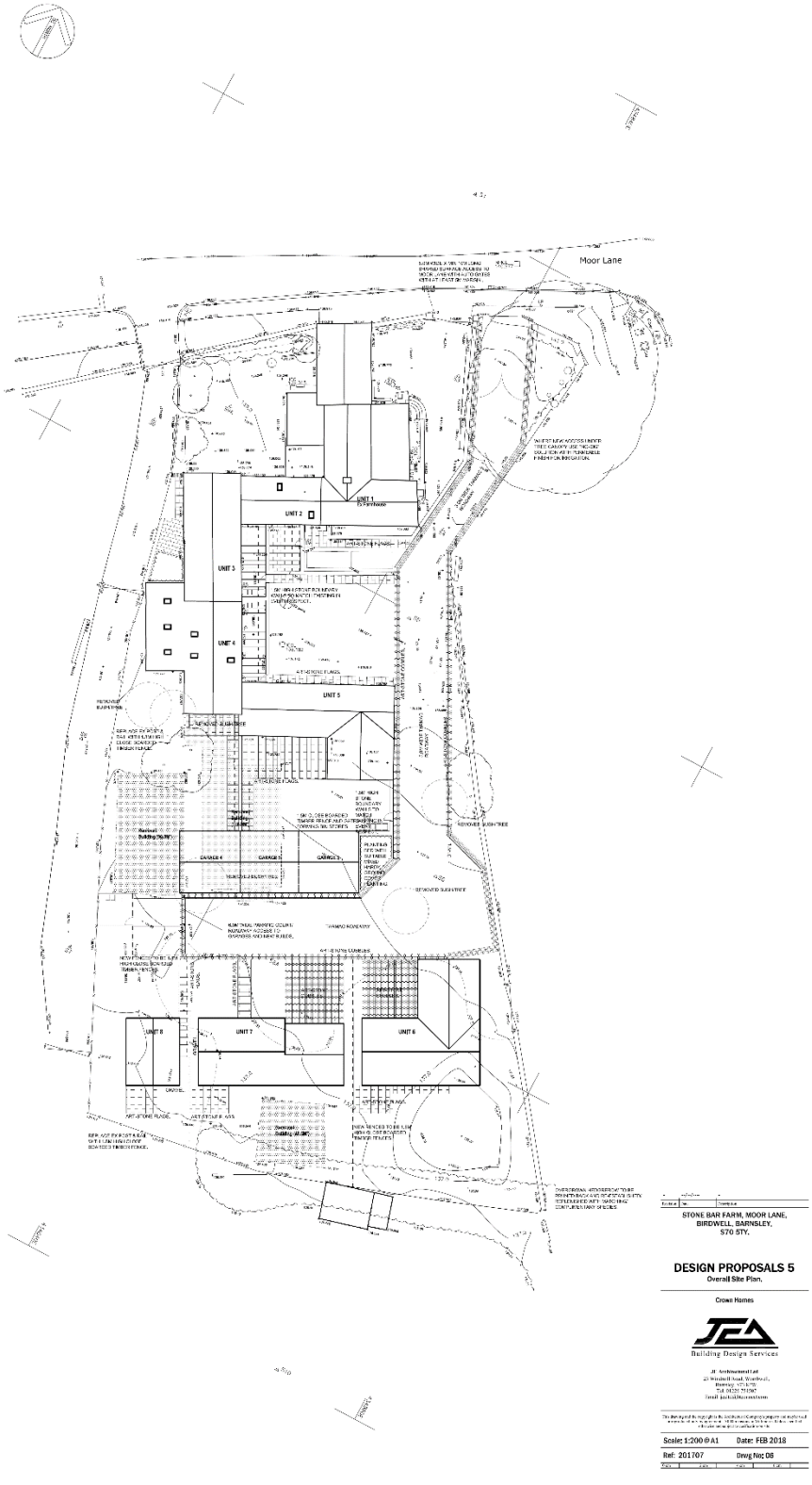


Site: Stone Bar Farm, Birdwell	**Prepared by:** Ruth Georgiou
Reference: 180266	**Date:** 20th February 2018

Appendix V. TARGET NOTES.

Target Note Reference:	Description:
1	Potential reptile refugia.
2	Potential reptile refugia.
3	Small outfall pipe.
4	Potential reptile refugia.
5	Potential reptile refugia.
6	‘Other Habitat’ as described in section 3.3.4. of this report.

Appendix VI. DEVELOPMENT PLAN.



Toolbox Talk: Reptiles

Whitcher Wildlife Ltd

Ecological Consultants

Identification: Grass Snakes.

The grass snake can be up to 120cm long. It is generally dark green in colour but may occasionally appear grey with vertical black bars and spots that run along its sides. There is usually a yellow marking around the neck.



Identification: Adders.

The adder is the only native species that is venomous, but it is rarely harmful to humans. Adult adders are generally up to 66cm long. Back ground colouration is a light shade of grey or brown with a back zig-zag marking along the length of the back. As with all reptiles, colouration varies and becomes duller as sloughing (skin shedding) approaches.



Identification: Slow Worms.

Slow worms grow to around 45cm in length. The males and females display a marked difference in colour when fully grown. In general the species displays colouring that varies from light brown, dark brown, grey, bronze or brick red with the females often displaying a dark vertebral stripe and both males and females displaying occasional markings on the flanks.



Identification: Common Lizards.

Common lizards grow to around 16cm. They are grey brown to dark brown, often with a darker streak that may run the entire length of the spine. A continuous dark band bordered by light yellow or white spots is often seen on either side of the body. The underside of the males is egg yolk yellow to orange spotted with black. Females are yellowish grey.



Other Reptiles.

In addition to the reptiles outlined on this document there are also two other reptile species in Great Britain, the smooth snakes and the sand lizard. These reptiles are a lot less common then the four species covered with the smooth snake being predominantly found on heathland in southern England and the sand lizard found throughout Great Britain in coastal dune areas.

These species are also afforded a higher level of protection because they are European Protected Species.

Habitat.

Maintaining the right body temperature is vital to reptiles' survival. In the morning they find a warm basking site to heat up their bodies and then later they may move back into the shade so as not to overheat. Hence, reptiles require a habitat that provides a range of suitable refugia for shelter such as dense vegetation, rubble or log piles, or crevices and open areas for basking such as bare ground, rocks or railway ballast shoulders. During hot summers reptiles may be found in damper, cooler sites. Reptiles hibernate, spending the winter in burrows or under logs protected from the cold and predators.





When disturbed in their natural habitat reptiles will usually move away quickly.

Legislation.

Reptiles are protected under Schedule 5 of the Wildlife and Countryside Act 1981. They received greater protection following reviews of the schedules published in 1988 and 1991. This means they are protected against intentional or recklessly killing and injuring and against sale or transporting for sale.

If reptiles are identified during works, stop all works and contact Whitcher Wildlife Ltd directly on 01226 753271 or at info@whitcher-wildlife.co.uk