



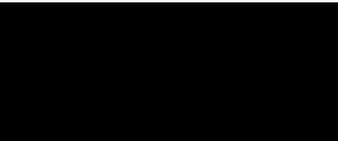
BAT SURVEY REPORT

Dunshiel Farm House, Elsdon, NE19 1AQ



July 2020

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Disclaimer:

Ecological surveys are carried out in good faith, to the relevant professional guidelines. Where variation from these guidelines is necessary, this is outlined in the report. Any comments regarding condition of the building is in relation to the use of the building by bats and birds and should not be considered as an opinion on the building fabric.

Bats are highly mobile mammals which can access small gaps in buildings. This report presents a robust assessment of potential roosting opportunities. Residual risk for other species is always present and as such the working method statement should be followed during all site works.

The client(s) should be aware that the mitigation recommendations in ecology reports are often translated directly into planning conditions, and as such these should be studied closely and agreed with any contractors in advance of site works commencing.

Mitigation recommendations should be clearly marked on the Architect's Plans submitted with any planning or other consent. These should be studied closely and agreed with any contractors in advance of site works commencing.

Unless the client specifically requests it all records will be shared with local wildlife groups and the local Biodiversity Records Centre, for the benefit of conservation.

IT IS THE CLIENTS' RESPONSIBILITY TO COMMISSION ANY MITIGATION MEASURES OR RECOMMENDATIONS DETAILED WITHIN THIS REPORT.

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BAT SURVEY REPORT DUNSHIEL FARM HOUSE, ELSDON, NE19 1AQ

Summary

RH Ecological Services were commissioned by Michael Rathbone to carry out a Preliminary Ecological Appraisal and subsequent bat surveys at Dunshiel Farm House, Elsdon, NE19 1AQ (NY 92947 94222). Buildings on the site are proposed for conversion and restoration.

The buildings are deemed to have moderate likelihood of being used by roosting bats, due to several potential roost features (PRFs) being present. The adjoined farm buildings (the cottage, farmhouse, granary and cart shed) are deemed to be suitable for roosting bats. **Droppings were found on a windowsill within the granary indicating a bat roost.** A single dropping consistent with that from a bat was noted by loft hatch within the farmhouse.

Suitable bat roosting features include:

- Slipped and/or misaligned tiles.
- Crevices into the walls.
- Gaps around window frames.
- Access into the loft voids of both the cottage and the farmhouse.
- Gaps present at the wall tops.

Overall suitability for bats	Habitat and settings	High
	Building	Medium-high
	External	High
Potential suitability of the development site for bats	Commuting and foraging habitats	High
	Roosting habitats	High

Bat surveys were carried out between May and August 2020 to get a better understanding of the use of the building by bats in accordance with the Bat Conservation Trust Bat Survey guidelines (2016).

Bat dusk and dawn surveys showed that bats used the farmhouse and the granary as summer day roosts. There was continuous bat activity throughout the surveys.

DNA analysis of the droppings from near the granary window came back as belonging to common pipistrelle¹. This roost no longer appears active with the bats using an area near the wall tops above the farmhouse porch and into a gap between the granary and the farmhouse on the same elevation as the window.

A hibernation roost cannot be ruled out.

Renovation plans are not yet finalised. **A Natural England licence (EPSL) will be needed for work to both the farmhouse and the granary. No work to the walls or roofing area of these buildings should take place until after this licence is granted.**

¹ https://warwick.ac.uk/fac/sci/lifesci/research/archaeobotany/ecological_forensics/bats/

Work should take place between September and April (inclusive) to avoid any risk to the small roosts.

Integrated features suitable for bats will be required to be incorporated. Full details will be provided with the Natural England Mitigation Licence application.

External lighting should be discussed with the project ecologist and follow the ILP/BCT guidance (2018). In particular the south eastern elevation should remain as dark as possible, with only low-level directional lighting PIR if essential. This is to reduce disturbance to foraging and roosting bats².

Non-Bitumen (Breathable) Roofing Membranes should not be used within the new dwellings³ as these are known to cause death/injury to bats by entanglement.

Supervision work by the project ecologist will be required during the construction phase of the development. Areas of the roof such as fascia boards, roof sheeting, flashing and guttering should be removed by hand, with the project ecologist checking that no bats are present.

The buildings on site are used by **nesting birds**. If construction works take place between the bird breeding season (March to August inclusive) then the project ecologist should confirm that no further nesting birds are present in/on the building within 48 hours of works commencing.

To the east of the site is an area of grassland where several small watercourses meet (Elsdon Burn, Folly Sike and Mill Dene). These are in close proximity to the site (approximately 15-30 metres). For the purposes of this assessment, due to the presence of burrows and the suitability of the nearby watercourses for **water vole, this species is assumed present**. A Pollution Prevention Plan should be put in place along the northern and eastern boundaries of the site to prevent construction site run-off polluting the nearby watercourses and the **Lowland Meadow Priority Habitat**.

The site is located to the west of the lowland meadow. Negligible impact on Designated Sites or Priority Habitats is predicted with Precautionary Working Methods in place. The Local Planning Authority will require details on foul drainage.

There is a copse of trees to the west of the site. Appropriate construction design can facilitate the sustainable retention of significant trees alongside development. Refer to '*British Standard 5837:2012 Trees in relation to design, demolition and construction*' and '*BS 3998:2010: Tree work – Recommendations*'.

A Precautionary Working Method Statement (**appendix 1**) has been provided for the development work regarding all other aspect except bats, which will be covered within the Natural England licence. This should be conditioned as part of the planning decision

This report is valid for 12 months

An updated assessment will be required should work not commence by July 2021.

² Institution of Lighting Professionals (2018) Advice note 08/18

³ www.bats.org.uk/our-work/buildings-planning-and-development

2. Relevant legislation

The following protected species were considered in this report:

- Amphibians
- Badger
- Bats
- Birds
- Ground flora
- Reptiles
- Water vole

The applicable legislations and policies are:

- Conservation of Habitats and Species Regulations (2017)
- Countryside and Rights of Way Act (2000)
- Directive 79/409/EEC on the Conservation of Wild Birds – ‘The Birds Directive’
- Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora – ‘The Habitats Directive’
- National Planning Policy Framework (NPPF)
- Natura 2000
- Natural Environment and Rural Communities Act (2006)
- The Protection of Badgers Act (1992)
- Wildlife and Countryside Act (2010)

Full details on legislation and policy can be found in **appendix 2**.

3. Methodology

3.1 Desktop survey

Natural England's 'MAGiC on the Map'⁵ website was accessed for details of any Designated [wildlife] Sites within 2km. Google Earth Pro was used to assess the distance to habitat features close to the site such as ponds, woodlands and waterways.

Records from Northumberland Bat Group have been received.

The NBN Atlas⁶ is a free online tool that provides a platform to engage, educate and inform people about the natural world. It aims to help improve biodiversity knowledge, open up research possibilities and change the way environmental management is carried out in the UK. This data is not available on a suitable scale for commercial purposes, as protected and sensitive species are only viewable on large scale maps; however, it was checked to ascertain if species such as water vole were present in the wider area. This decision was made based on guidance produced by CIEEM in 2016 *Guidelines to Accessing and Using Biodiversity Data*. This is quoted from below:

"If a data search is not undertaken, a statement must be provided that clearly explains why it is not required. This statement should ideally be agreed with the LPA prior to preparing the survey report."

Based on the CIEEM guidance this reason is:

- *Low impact or small-scale development (e.g. by size, extent, duration of works, magnitude or locality).*

3.2 Site walkover

This Preliminary Ecological Appraisal (carried out 15th April 2020) was conducted according the Chartered Institute of Ecology and Environmental Management's Guidelines for Preliminary Ecological Appraisal (CIEEM, 2012).

The weather was 16°C, sunny, with a slight breeze with no cloud cover.

The surveyor assessed the site for signs of protected species, such as mammals, bats and birds. Access was available to the whole site and building. Signs of protected species included live or dead creatures, droppings, feeding remains, clawing, footprints, or scuff/grease/urine marks at roost entrances used by bats. The surveyor used a powerful torch, binoculars, a Canon camera with x20 optical zoom an inspection camera (endoscope) with photographic functionality.

The watercourse to the east of the site was walked approximately 200 metres in each direction from the development site.

⁵ magic.defra.gov.uk

⁶ nbnatlas.org

3.3 Watercourse assessment, in particular water vole

Field surveys for water voles in the context of a development have two key elements:

- Assessment of the (relative) suitability of the habitat for water voles.
- A search for field signs indicating presence, or possible presence, of water voles.

The optimum period for undertaking water vole surveys is during the water vole's breeding season, when field signs are more evident; for most of the UK this is considered to be mid-April to the end of September.

The assessment was undertaken by a suitably experienced surveyor walking the banks of the watercourses to determine whether or not the feature supports the habitat preferences of water voles. The area surveyed was along the watercourse and extending out to at least 1 metre up each bankside and 200 metres both upstream and downstream of the site. The following was noted with regard to the habitat:

- Dry areas above water level for nesting, either in burrows or above-ground woven nests. Burrow entrances do not need to be above water level.
- Bank profile.
- Bank substrate.
- Water depth.
- Daily fluctuations in water level.
- Shade.
- Availability of suitable above-ground nest sites, where there are no banks, or banks with a shallow profile, such as in extensive reed/sedge bed habitats or in tussocks within ponds.
- Vegetation to provide food and cover.
- Recent management.

Field signs include feeding remains, burrows and footprints of water voles and other species. Any field signs identified are described and mapped. The presence of droppings and footprints of key predators such as mink (but also cats and foxes) are recorded.

The methodology is expanded in **section 7.5** alongside the impact assessment and proposed mitigation.

3.4 Bat activity surveys

Bat dusk activity surveys started ~20 minutes before sunset and end 2 hours after in optimal weather conditions and at a suitable time of year. The bat (re-entry) dawn survey started 2 hours before sunrise and ended shortly after sunrise. The surveys were carried out in optimal weather conditions and at a suitable time of year. Surveys are conducted in accordance with the Bat Conservation Trust's *Bat Surveys for Professional Ecologists, Good Practice Guidelines* (3rd edition, 2016) except where indicated.

Surveyors are placed around the site to ensure that all sides and features of the buildings are visible. On site, the time bats were first encountered, the species of bat where possible and information on direction of flight and behaviour are recorded. Where bats are seen entering or exiting the building the exact location is logged onto the site plan. The data is recorded by surveyors in the field on data sheets and plans of the site, or *via* voice recordings.

The aim is to build a picture of general bat activity whilst focusing on the building in question, and as such every individual bat is not recorded where it does not add to the understanding of bats' use of the building in question. Bat calls are recorded for later analysis on all surveys. Surveyors used a variety of bat detectors including a Bat Box Duet, Pettersson D230, Anabat SD2/Express or Scout and Echo Meter Touch.

An Anabat SD2 bat detector was left within the granary for a week, as well as during the bat activity to record bat activity (if any) inside this building.

4. Surveyors

Rachel Hepburn is an experienced ecologist and an associate member of the Chartered Institute of Ecology and Environmental Management since 2013 with over 13 years' experience in ecological surveying. She holds Natural England Licences for bat surveys (2015-12969-CLS-CLS) and great crested newt surveys (2016-19907-CLS-CLS).

Surveyors present on the bat activity surveys:

- Ann Deary Francis (licence number 2015-15103-CLS-CLS).
- Rachel Galler.
- Chris Schroeter.
- Matthew Hepburn.
- Tim Sexton (licence number 2020-44753-CLS-CLS).

5. The site

Dunshiel House Farm (NY 92947 94222) lies approximately 950 metres north west of the small village of Elsdon. The location is very rural, surrounded by grassland agricultural fields.

A meeting of waters lies close to the eastern boundary of the site, where Folly Sike, Mill Dean and Elsdon Burn meet. The watercourses flow approximately 15-30 metres from the site's north eastern boundary.

The farm complex is surrounded by strips of woodland and scattered trees, providing good connectivity to the wider countryside.



Figure 3. Approximately 2km surrounding the development site⁷.

⁷ Reproduced with permission from Google Earth (2020).

5.1 Designated Sites

A search for Designated [wildlife] Sites within 2km was carried out *via* MAGiC on the Map⁸.

Northumberland National Park lies approximately 400 metres south west.

Billsmoor Park and Grasslees Wood Site of Special Scientific Interest (SSSI) lies approximately 2km north east.

These woodlands occupy the lower slopes within the walled enclosure of the Billsmoor deer park and a terrace adjacent to the Grasslees Burn respectively. The alder woodland in Billsmoor Park is one of the most extensive remnants of this type of woodland, now restricted in distribution owing to clear-felling and lack of regeneration resulting from uncontrolled grazing. Oak and birch woodland which are represented within the site are rather scarce habitats in the locality for similar reasons.

The site also includes grassland and extensive areas of bracken. Within the wooded areas are small areas of mire vegetation and wet springs. The ground flora within Grasslees Wood is characteristic of dry acid soils.

SSSI designations underpin the European and international designations of protected sites in the UK. The site falls within SSSI Impact Risk Zones. **No impacts are expected.** Potential impacts are discussed in the table below:

Category	Impact	Description
Infrastructure	N/A	Airports, helipads and other aviation proposals.
Minerals, oil and gas	N/A	Planning applications for quarries.
Air pollution	N/A	Any industrial/agricultural development that could cause air pollution.
Combustion	N/A	General combustion processes >50MW energy input.

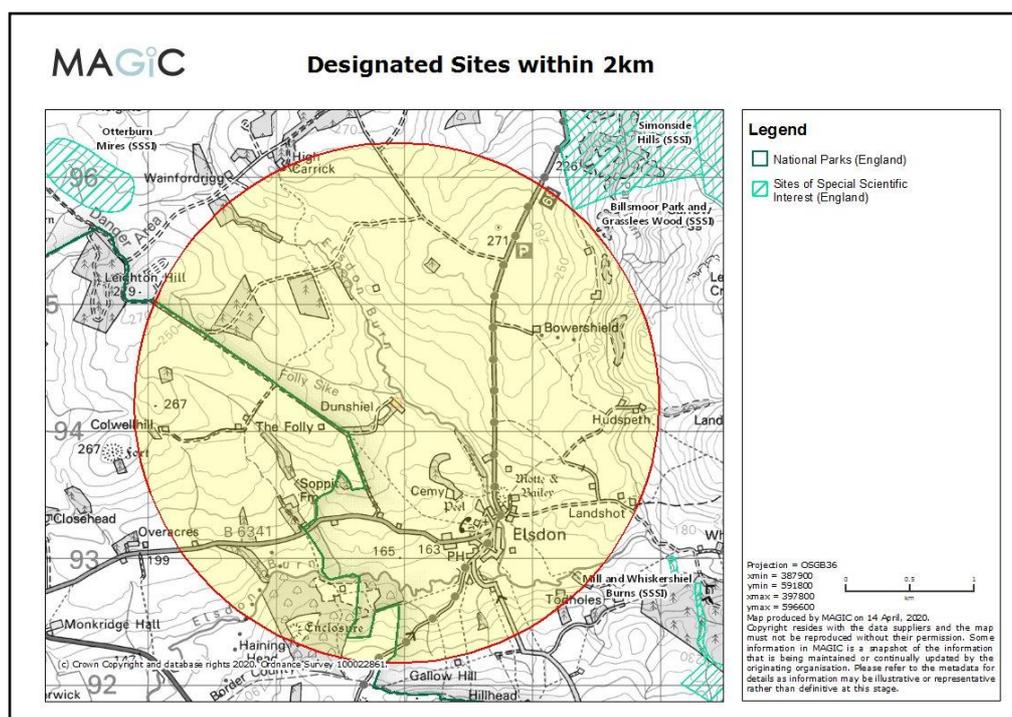


Figure 4. Designated Sites within 2km.

⁸ magic.defra.gov.uk

5.2 Priority Habitats

Priority Habitats⁸ are listed in the table below.

Protection of Lowland Meadow Priority Habitat can be suitably dealt with via a Precautionary Working Method Statement and Pollution Prevention Plan.

Habitat	Proximity
Lowland meadows	Along north eastern site boundary
Upland flushes, fens and swamps	~160 metres north
Deciduous woodland	~450 metres south east
Open Mosaic Habitats on Previously Developed Land ⁹	~850 metres east
Traditional orchard	~870 metres south east
Fragmented heath	~990 metres north
Purple moor grass and rush pastures	~1.4km north east
Upland heathland	~1.4km north east
Blanket bog	~1.5km north west
Lowland calcareous grassland	~1.6km south
Ancient & semi-natural woodland: <i>Mingridge Wood</i>	~1.7km north east
Good quality semi-improved grassland	~1.8km south west
Grass moorland	~1.8km north east
Upland hay meadow	~1.9km south east
No main habitat but additional habitats present. Habitats include a mixture of: - Wet woodland - Deciduous woodland - Species-rich grassland - Coastal & Floodplain grazing marsh - Upland flushes, fens and swamps - Lowland meadows and pastures - Purple Moor-grass and rush pastures - Upland calcareous grassland	~1.1km south

⁹ Draft mapping.

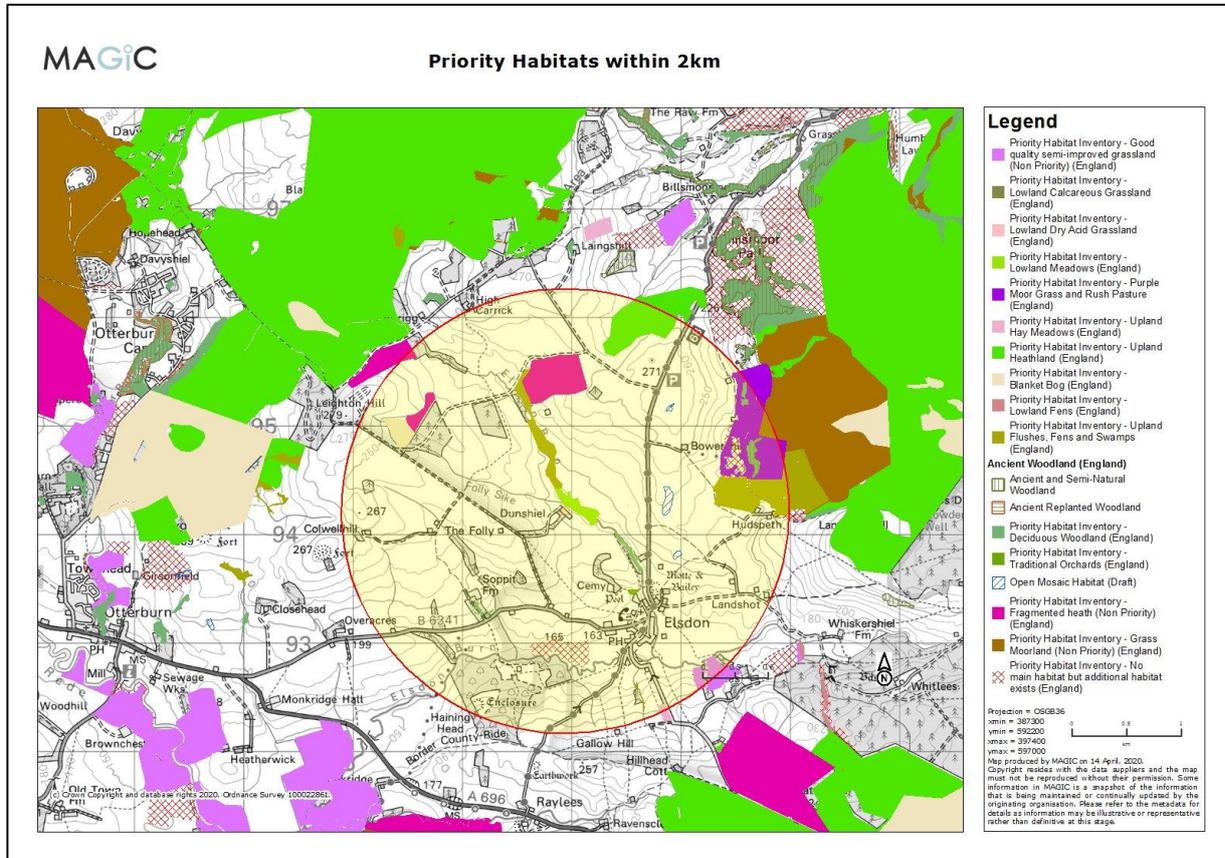


Figure 5. Priority Habitats within 2km.

5.3 Bats and EPSLs

'MAGiC on the Map' shows granted Endangered and Protected Species Licences (EPSLs). A search was carried out for granted EPSLs within 2km. This brought back one result, located ~1.7km south east of Dunshiel House Farm.

Licence reference	2016-19386-EPS-MIT
Species	Brandt's Common pipistrelle
Licence dates	10/03/2016 - 31/05/2016
Impact	Damage of a resting place. Destruction of a resting place.

Records from Northumberland Bat Group have been received. There are no bat records at or near Dunshiel Farm. All records are from near the village of Elsdon to the south east. A map is available in **appendix 5**.

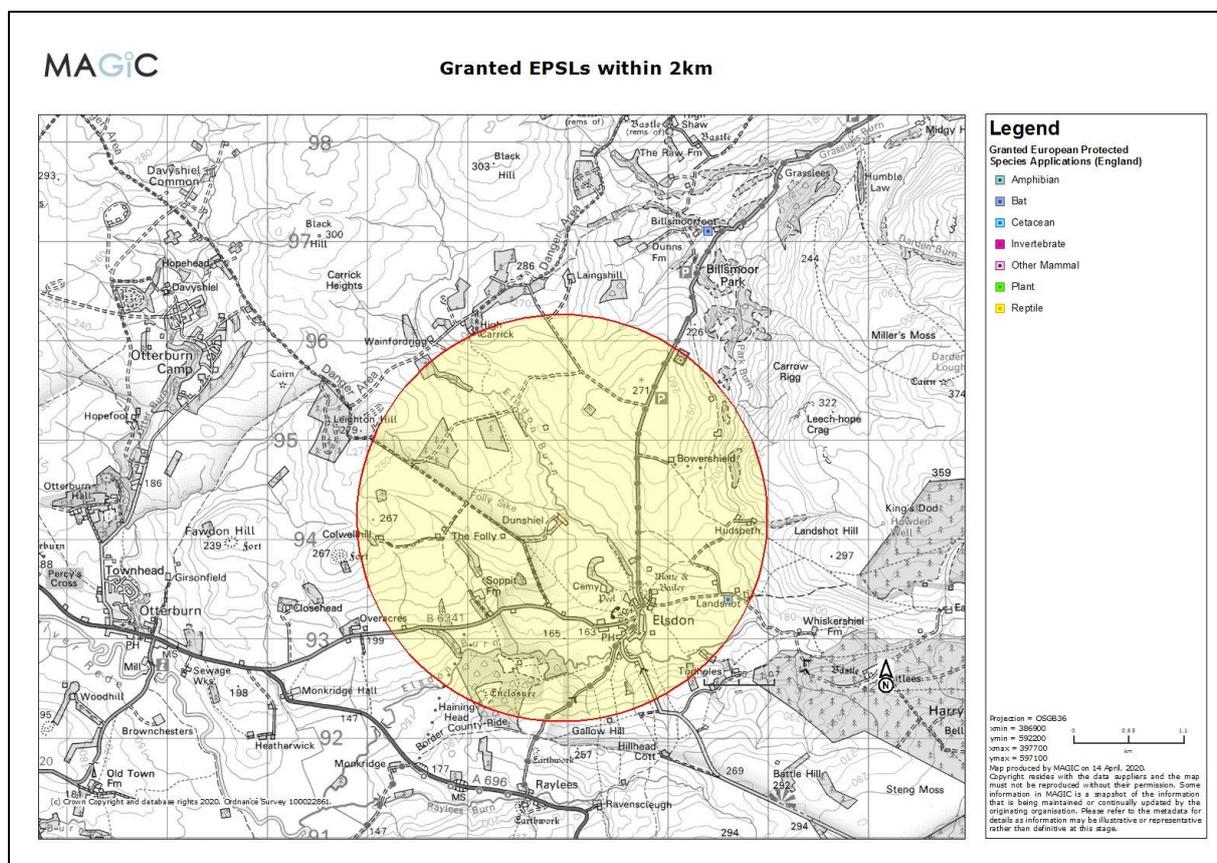


Figure 6. Granted EPSPs within 2km

5.4 Other species

The NBN Atlas¹⁰ was checked for the following species. It should be noted that this data is not available on a suitable scale for commercial purposes, as protected and sensitive species are only viewable on large scale maps.

Water vole (*Arvicola amphibius*) are recorded in the wider area, however the NBN Atlas does not show any specific records from the watercourses in close proximity to the site.

Lack of records does not necessarily mean absence of the species within the local area.

5.5 Northumberland Council Planning Portal

There are no previous planning applications since 2000 for Dunshiel House Farm.

Nearby planning applications in the locality with the last 10 years were also checked for references to ecological assessments. There were none to note within the public domain.

¹⁰ nbnatlas.org

6. Site walkover (April 2020)

Note. Target Notes from the annotated map in figure 8 are noted as 'TN' within the site descriptions below.

6.1 Site overall

Dunshiel Farm is currently a vacant farm complex. Four of the buildings (**figures 9 and 11**) included within the assessment (the cottage, farmhouse, granary and cart shed) are all attached to each other, located to the north of the farm complex. This cluster of buildings has potential for roosting bats, with the granary having evidence of a bat roost.

The cattle shed is located to the south of the complex, beyond a large agricultural storage building (**figure 12 and TN7**). No further assessment of the cattle shed is deemed necessary.

6.2 Cottage

The cottage (**figures 13-18**) is the end building at the south west of the adjoined farm buildings - **TN2**. It is a stone-built cottage with a slate roof and a single chimney. Lead flashing and cast-iron guttering is attached directly to the wall; no fascia boards are present. The roof appears to be in a good state of repair with roof features tight and no gaps noted.

A crack is present on the gable end wall (south east elevation). The wall tops could not be assessed due to the positioning of the guttering.

Internally there is a small loft hatch accessed from the upper floor. Insulation is laid down within the void. The surveyor did not enter the void for reasons of Health and Safety due to large amount of rat droppings and rodent runs throughout the insulation. The void appeared very dusty with insulation laid down and underfelt present beneath the tiles. The stonework between the cottage and the farmhouse is in a poor state of repair, with at least one cavity noted.

6.3 Farmhouse

The farmhouse (**TN3**), the central building in the adjoined farm complex, is a stone-built, with ivy-covered (*Hedera helix*) walls on the south eastern (front) elevation (**figure 19**). A small garden laid to lawn with species of no particular note is located to the south west. The building has uPVC double-glazed windows and cast-iron guttering. The south eastern roof line has some slipped tiles (**figures 21 and 22**), creating potential roosting opportunities for bats. Also along the south east elevation gaps could be seen at the wall tops, particularly in the area above the porch (**figure 20**).

The loft (**figures 23 and 24**) was assessed internally by the hatch only due to a large accumulation of rat droppings and very dusty. There is no underfelt present beneath the slate tiles, insulation is laid down, obscuring the view of the wall tops. The site will require dusk/dawn bat surveys therefore a surveyor within the loft void was deemed unnecessary at this stage. Insulation is laid down across the floor. From the loft hatch light ingress could be seen at the wall tops at both the external (north west and south east) elevations. Several slipped tiles were noted. A single dropping consistent with that from a bat was noted by the loft hatch.

6.4 Granary

The granary (**figures 25 and 30**) is located at the northern end of the adjoined farm buildings (**TN5**). It is a two-storey building, constructed of stone and mortar. It is currently vacant, with the exception of the storage of a few small items. The building has a slate roof, sat on wooden beams and trusses. Cast-iron guttering is present, although no fascia boards or soffit boxes. The building has wooden doors and window frames, no glass is present in any of the windows, some are boarded up. The gable end wall has several gaps present where mortar is missing between the stonework. Gaps along the roofline were noted externally (**figures 26, 27 and 31**).

The upper floor (**figure 32**) is accessed *via* an external set of steps, beneath which lies an open void/storage area (**figure 28**). Within the single upper floor room a couple of butterflies' wings were noted across the wooden floor (**figure 42**). These are consistent with the feeding remains of bats such as brown-long eared (*Plecotus auritus*) and Natterer's (*Myotis nattereri*). Alternatively they could be remains of over-wintering butterflies. The roof structure consists of slate tiles on wooden beams and trusses (**figure 33**). No underfelt is present.

Bat droppings were noted present on the windowsill of a window (**figures 34, 35, 36 and 43**) on the south western elevation (**TN6**). Closer inspection showed a gap present in the wooden window frame leading into a small cavity. External access for this bat roost was unclear. The cavity was inspected with an endoscope with photographic functionality (**figures 37 and 38**), however no further signs of bats were noted. The upper floor has 4 such windows, however the others either had no gaps in the upper wooden frame, or were heavily cobwebbed, suggesting they are not used by bats. The wall tops are sealed (**figures 39 and 41**).

The lower floor (**figures 44 and 45**) has numerous wall cavities internally (**figure 49**), including gaps leading to the upper floor. These could potentially be used by bats. The single lower room has numerous cobwebs. Butterflies: both their remains and ones still alive and bird droppings were present. A splatter of droppings (**figure 47**) on the north western wall is consistent with that of a bird of prey, possibly an owl but no other signs were noted. A bird's nest (**figure 48**) was also present internally.

To the front of the farmhouse and granary are a couple of small outbuildings (**figures 50 and 51**). These are very little potential for supporting roosting bats.

6.5 Cart shed

The cart shed (**figures 52, 55, 60 and 61**) is a 3-sided building attached to the rear of the granary and open along the north western elevation. This single storey building (**TN4**) constructed of stone and mortar has a sloped slate roof with lead flashing (**figure 53**) present, several slipped tiles were noted. The tiles sit across wooden beams. Guttering is present along the open elevation. The wall tops along the front elevation are sealed (**figure 63**).

The floor is covered in cattle manure and the stone walls have numerous gaps (**figures 57 and 58**) in the walls leading to small cavities within the stonework. These cavities appear to be stand-a-lone and not connected to each other. Several of these were inspected *via* an endoscope. No signs of bats were noted, but they are considered a potential roosting feature (PRF), although they are located quite low down on the walls. Evidence of rat poison is evident, the owner reports this as recent as he is aware he has rats using the buildings.

Wooden trusses run along the front elevation, supporting the 3 openings. These were inspected for signs of bats, there was no evidence of bat droppings, scuff marks or staining. Similar to the granary a few butterflies' wings were noted.

A grey squirrel trap was present within the cart shed. This was provided by 'Red Squirrels Northern England'¹¹ (**figure 54**) as part of their conservation efforts to protect and enhance native red squirrel populations. A few birds' nests were noted, including at least one in active use, a pigeon nest with two eggs present (**figure 62**).

A security light (**figure 59**) is present within the shed. Whether it is working and/or in active use is unknown.

6.6 Cattle shed

This structure (**TN8**) is of breeze block and wooden slate construction (**figures 64 and 65**). It has an asbestos roof and security lights are present. It is unknown if they are working and/or in active use. The open-sided cattle shed is heavily use by pigeons, with droppings scattered throughout and a deceased pigeon noted.

There are no suitable features for roosting bats and no further assessment of this structure is deemed necessary.

¹¹ www.rsne.org.uk/

6.7 Adjacent habitat

The complex of buildings and their immediate surroundings are those of a typical farm complex, with nothing additional to note.

To the west of the site is a copse of trees (**TN9**). These link up other copses and tree lines in the wider area. The proposed development is confined to the farm buildings and no further assessment of the nearby trees is deemed necessary.

To the east of the site is an area of grassland (Lowland Meadow Priority Habitat) where several small watercourses (Elsdon Burn, Folly Sike and Mill Dene) meet (**figures 66, 67 and 69**). These are in close proximity to the site (~15-30 metres). The ground slopes steeply down from Dunshiel Farm to these watercourses (**figure 71**). The watercourses were walked within 200 metres of the development site boundary. The watercourses and grassland are separated from the development site by stone walls and fencing. The proximity of the watercourse is shown in **figure 29**.

The watercourses are deemed suitable for water vole, and this species appears to be present. The watercourses have stony bases, mud bank sides and grassland surrounds. Numerous burrows (**figures 68 and 70**) are present along the bank sides, both at water vole and higher up within the grassland. The water levels were running quite low at the time of the survey and some burrows are likely to sometimes be located below water level.

Some of the burrows within the grassland have 'lawned' edges, characteristic of water vole. No latrines were noted. Mammal runs consistent with a variety of rodent species are present. It should be noted that other mammal holes were noted nearby, consistent with rodents smaller than water vole.

A used farm track can be seen running through the watercourse. In this area brooklime (*Veronica beccabunga*) was recorded.

6.8 Annotated map and site layout

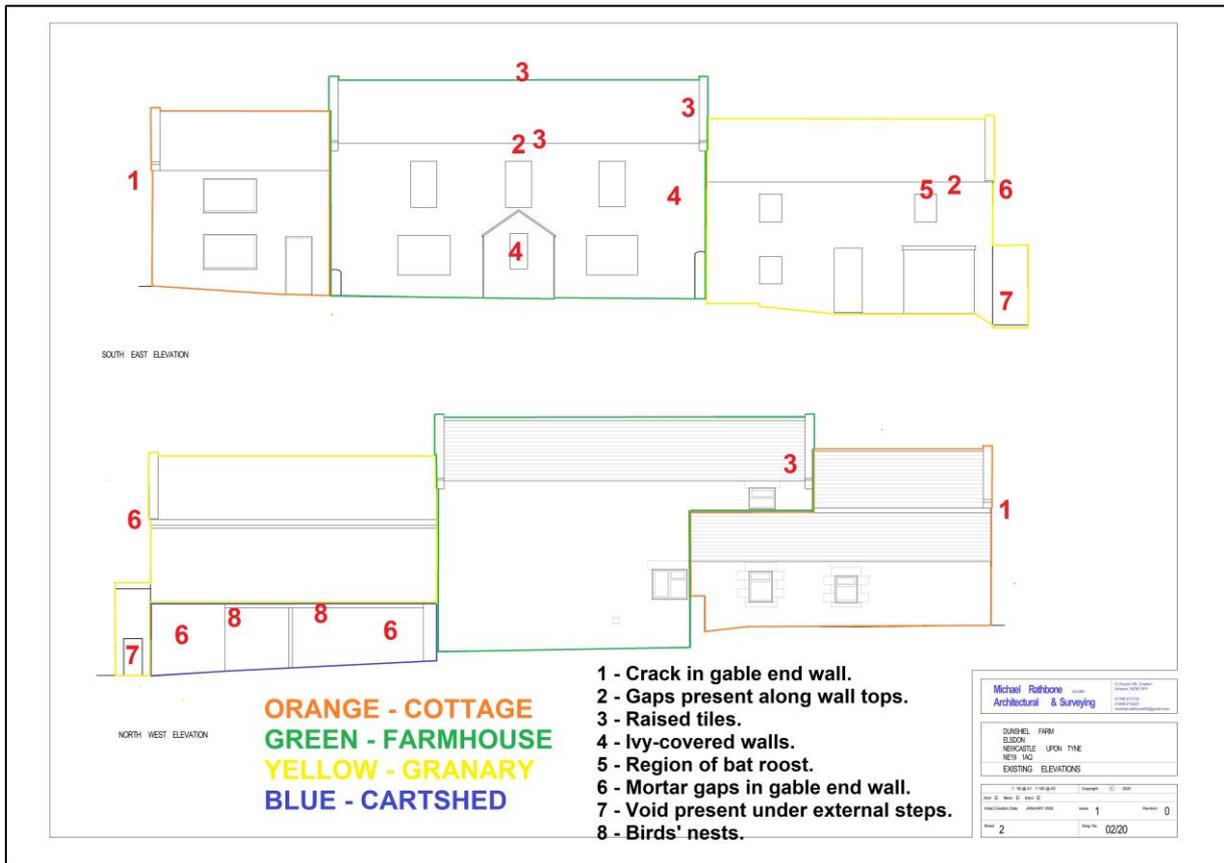


Figure 7. Annotated map from architect's drawings.



Figure 8. Annotated map using aerial imagery.

6.9 Photos



Figure 9. North eastern elevations of adjoined farm buildings.



Figure 10. Farm track – site entrance.



Figure 11. Adjoined farm buildings south west elevations.

Figure 12. Agricultural storage building not included in assessment. No suitability for bats.



Figure 13. Cottage – north east and north west elevations.



Figure 14. Cottage – gable end wall crack present.



Figure 15. Cottage – south west elevation.



Figure 16. Roofline of cottage.



Figure 17. Adjoining walls – cottage and farmhouse.



Figure 18. Loft void of the cottage.



Figure 19. Farmhouse front (south western) elevation showed ivy-covered walls.



Figure 20. Farmhouse roofline in regions where gaps were seen at wall tops.



Figure 21. Misaligned tiles on farmhouse roof.



Figure 22. Gaps present under tiles on farmhouse roof. Confirmed roost location.



Figure 23. Farmhouse loft void.



Figure 24. Farmhouse loft void.



Figure 25. Front (south western) elevation of the granary. Location of bat droppings (found internally) marked.



Figure 26. Granary – gable end wall with gaps present.



Figure 27. Close of up gaps present on the gable end wall of the granary.

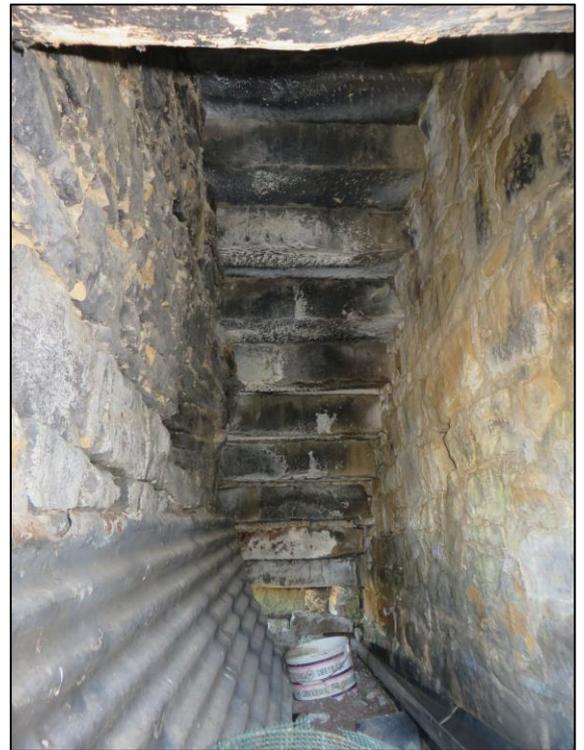


Figure 28. Area beneath external steps to upper floor of the granary.



Figure 29. View from the granary looking north east towards watercourses.



Figure 30. The granary.



Figure 31. Gaps present at wall tops above the window where bat droppings were found internally.



Figure 32. The granary upper floor.



Figure 33. The granary roof structure.



Figure 34. Window where bat droppings were found.



Figure 35. Location of bat roost above window internally.



Figure 36. Location of bat roost above window internally.



Figure 37. Endoscope image from granary bat roost.



Figure 38. Endoscope image from granary bat roost.



Figure 39. Upper floor wall tops sealed.

Figure 40. Internal crevices present within upper floor walls.

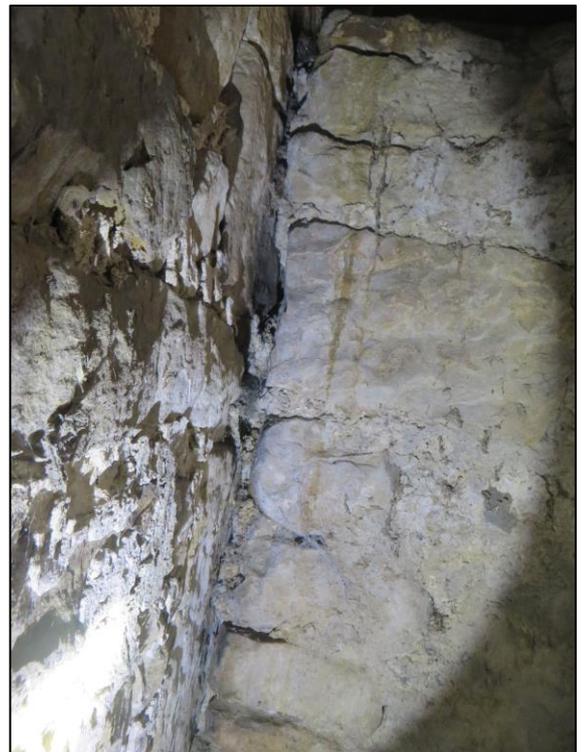


Figure 41. Sealed wall tops.



Figure 42. Butterfly wings were noted within the granary.



Figure 43. Close up image of the window near bat roost.



Figure 44. The granary – lower floor.



Figure 45. The granary – lower floor.



Figure 46. The granary lower floor ceiling structure.



Figure 47. Bird droppings splatter, unconfirmed but possibly raptor.



Figure 48. Bird's nest present within the granary.



Figure 49. Numerous gaps and crevices within ground floor walls.



Figure 50. Front elevations of the granary and the cottage.



Figure 51. Outbuilding to the front of the cottage.



Figure 52. The cart shed.



Figure 53. Lifted lead flashing on cart shed roof.



Figure 54. Red squirrel project.



Figure 55. Cart shed internally.



Figure 56. Bird's nest within cart shed.



Figure 57. Example of wall crevice within cart shed.



Figure 58. Endoscope image of a cavity within the stone walls of the cart shed.



Figure 59. Security light within cart shed.



Figure 60. Cart shed.



Figure 61. Cart shed.



Figure 62. Active pigeon nest.



Figure 63. Wall tops sealed on front elevation of cart shed.



Figure 64. Cattle shed (TN8).



Figure 65. Cattle shed internally.



Figure 66. Nearby watercourse.



Figure 67. Nearby watercourse.



Figure 68. Watercourse with bankside burrows.



Figure 69. Watercourse.



Figure 70. Burrows.



Figure 71. Dunshiel Farm viewed from watercourse.

7. Bat activity surveys

Bat dusk and dawn surveys confirmed that bats used the farmhouse and the granary as summer day roosts. There was continuous bat activity throughout the surveys with primarily common pipistrelle bats recorded.

DNA analysis from the University of Warwick determined the droppings in the granary belonged to common pipistrelle (*Pipistrellus pipistrellus*). The results form is available in **appendix 3**.

Surveys are discussed below. The full datasets can be made available upon request.

Information on timings and weather conditions are provided in the table below:

Date	15 th May 2020	16 th June 2020	28 th July 2020
Type	Dusk	Dawn	Dawn
Sunrise/sunset	21:12	04:27	05:09
Start time	20:50	02:25	03:00
End time	23:15	04:40	05:20
Temperature	12°C	12°C (start) – 13°C (end).	10°C
Weather	10% cloud cover, still, dry.	Wind east-south-east / 2mph. 20% cloud cover.	Dry, slight westerly wind.
Surveyors	CS, MH, RH, TS	ADF, CS, RG, TS	CS, MH, RH, TS

General notes

Myotis bats can be difficult to identify to species level without good clear sound recordings and especially when there are numerous bats of different species also present at the same time.

Anabat detectors only pick up the loudest noise and brown long-eared (BLE) bats are known to have a quiet call, therefore identification cannot be confirmed. This species has a distinctive flight pattern and the records below were noted by a licensed and experienced surveyor.

7.1 15th May 2020

An Anabat was left statically recording on the upper floor of the granary for over a week following this survey. It recorded no bat activity from within the building.

The first bat, a **common pipistrelle**, was seen arriving on site from the north at 21:30 (18 minutes after sunset). This suggests a roost is located nearby. From this point in the survey low numbers of common pipistrelle bats were recorded foraging around the farm buildings for the duration of the survey, with the focus of activity being around the trees to the west and south of the buildings. A lot of social calling was recorded.

At 21:35 a common pipistrelle was seen emerging from near the wall tops/lower tiles above on the front (south eastern) elevation of the farmhouse. This is marked in blue on figure 72 below.

At 21:44 a noctule bat was heard in the distance. From 21:56 the occasional *Myotis* bat was seen foraging around the site.

No bats emerged from the granary building.

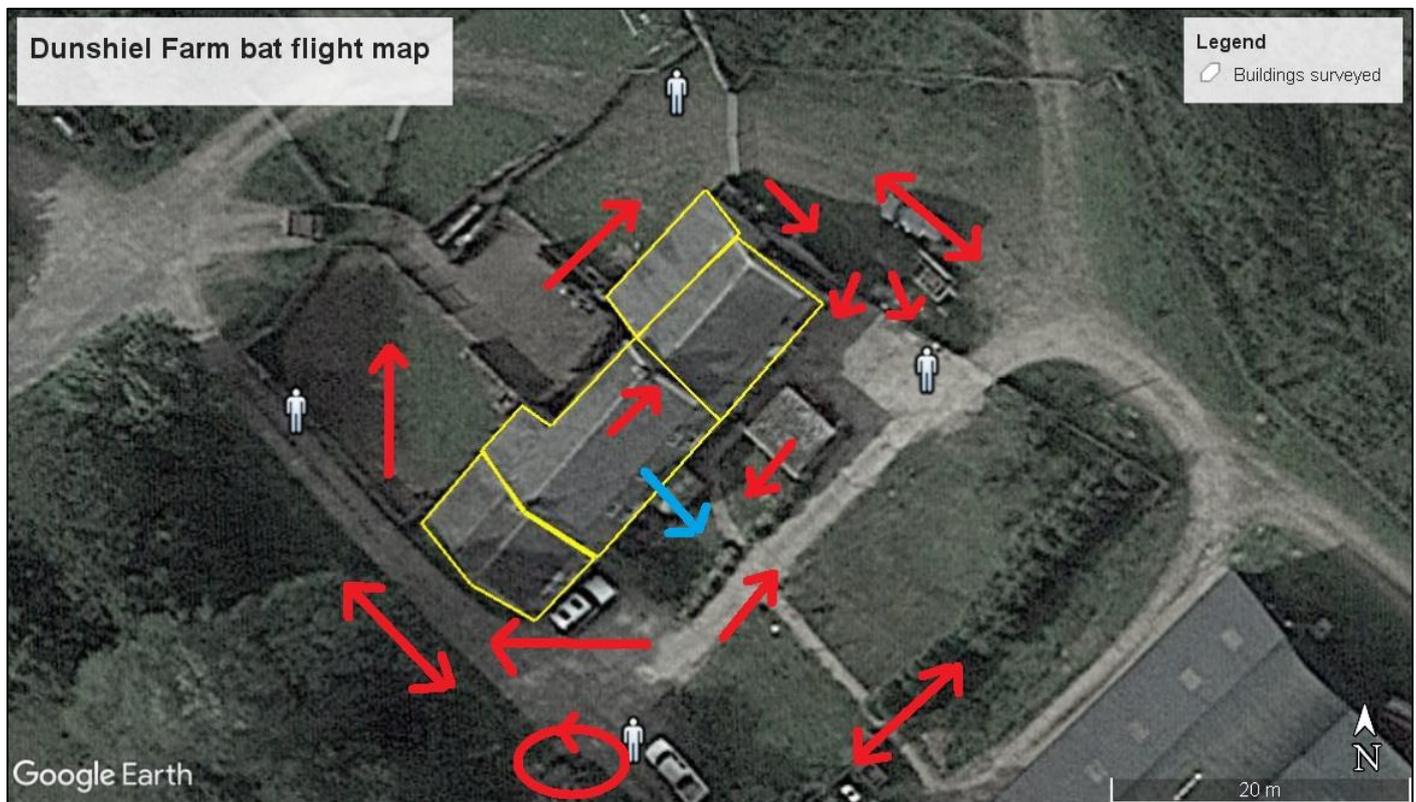


Figure 72. Bat flight map from 15th May dusk survey. Flight lines are in red, with the roost emergence in blue¹².

¹² Reproduced with permission from Google Earth (2020).



Figure 73. Bat roost location within farmhouse.

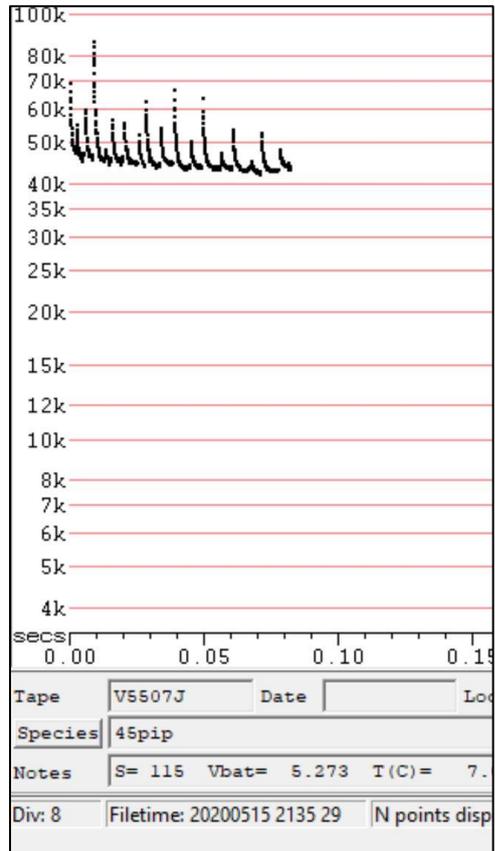


Figure 74. Bat call of common pipistrelle emerging at 21:35.

7.2 16th June 2020

The survey commenced at 02:25, with the first bats heard from 02:31. These were primarily common pipistrelles, with the occasional *Myotis* bat, foraging around the buildings and tree lines.

At 03:51 a common pipistrelle entered the farmhouse underneath the eaves above the left-hand window on the front (south eastern) elevation. At 03:55 another common pipistrelle was seen to enter the building just to the right of the middle window.

The last bat was recorded at 04:01, 39 minutes before sunrise.

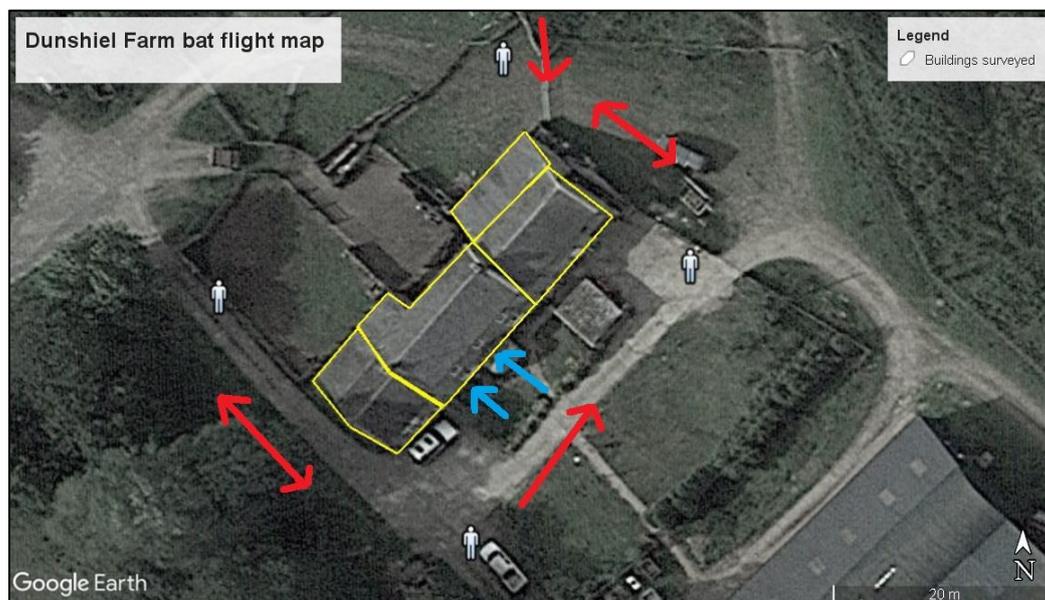


Figure 75. Bat flight map from 26th June dawn survey. Flight lines are in red, with the roost emergence in blue¹³.



Figure 76. Bat roost locations within the farmhouse.

¹³ Reproduced with permission from Google Earth (2020).

7.3 28th July 2020

Changes to the building

It was noted before the dusk survey that the internal areas of the farmhouse, cottage and lower granary had been completely removed. This included internal walls and floors and surveyors could view the roof tiles internally from ground floor level, with the farmhouse being as one complete void. It is likely this may cause a change in the roost location of bats within the building.

The windows in the cottage and farmhouse were all left open, making the building cooler and draughtier than it has previously been.

No fresh bat droppings were noted around the upper floor of the granary.



Figure 77. Upper floor of the cottage.



Figure 78. Farmhouse has been now gutted internally.

Survey summary

An Anabat SD2 was left on the upper floor of the granary for the duration of the survey. This recorded no bat activity.

The survey commenced at 03:00 with the first bats noted by surveyors as they were getting kit set up; at 02:57 pipistrelle bats were heard, but not seen – mostly common pipistrelle bats with the occasional soprano pipistrelle.

A potential brown long-eared bat call was recorded at 02:59 and 03:46. These bats are very quiet when they echolocate and with other bats present at the time of the recording it could not be said where the bat was flying.

Bat foraging activity focused around the trees with bats foraging around the building in low numbers.

Two *Myotis* bat calls were recorded (at 03:10 and 03:15). Noctule bats were recorded flying high over the site at 03:52 and 03:46.

At 04:17 the surveyor located on the southern tip of the cottage queried whether a pipistrelle bat had entered the building near the wall top on the corner. Inspection post-survey could not ascertain a roost location and with both common and soprano pipistrelle present at the time specific species identification could not be made.

Between 04:24 and 04:36 common pipistrelle bats were noted swarming (making 'false returns') to the previously recorded roost location along the wall tops of the farmhouse. The bats did not enter the building.

A not-previously recorded common pipistrelle roost was recorded where the granary and the farmhouse are adjoined was recorded at 04:39-04:40 with at least 5 bats entering the roost cavity.

Common pipistrelle bats were still swarming in front of the farmhouse above the porch area between 04:42 and 04:46. It was not clear if the bats entered the farmhouse but at least one flew off in the direction of the roost location between the farmhouse and the granary.

It was noted that both common and soprano pipistrelle bats were swarming around the whole roof area of the cottage, although no bats were seen entering the building.

The previous two bat surveys had not recorded soprano pipistrelle but these were recorded throughout the survey, but not as regularly as common pipistrelle. Less pipistrelle social calling was recorded during the survey than previous surveys.

Bat activity was constant for most of the survey, with up to 4 bats seen by an individual surveyor at any one time. The last bat recorded at 05:02, 7 minutes before sunrise.

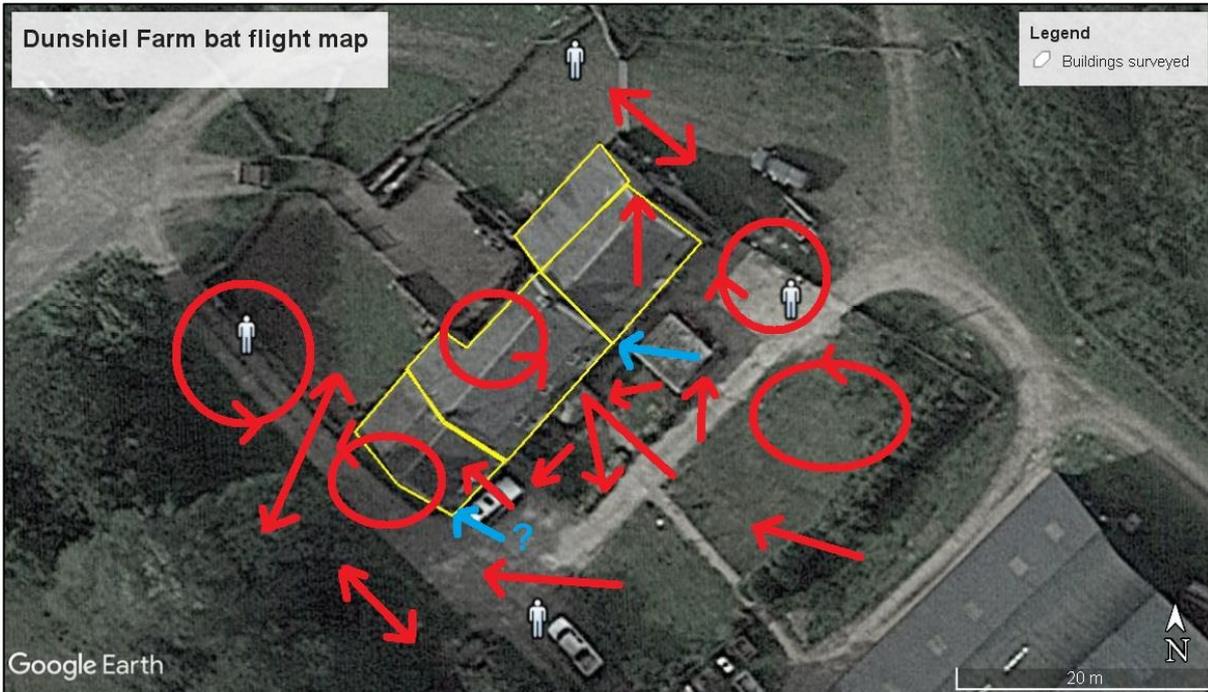


Figure 79. Bat flight map from 28th July dawn survey. Flight lines are in red, with the roost emergence in blue¹⁴.

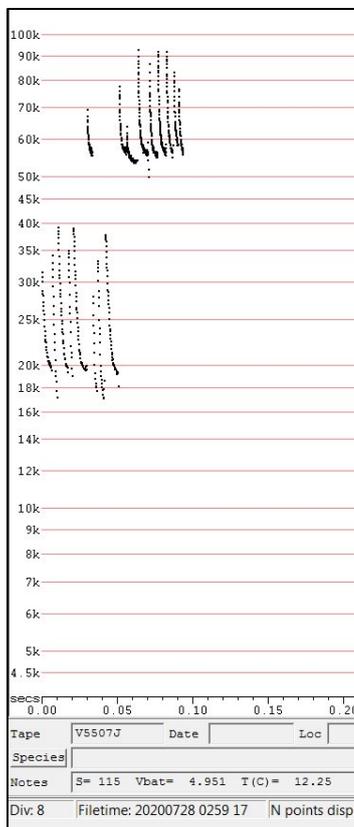


Figure 80. Common pipistrelle and brown long-eared at 02:59.

¹⁴ Reproduced with permission from Google Earth (2020).



Figure 81. Common pipistrelle roost location between the farmhouse and the granary.

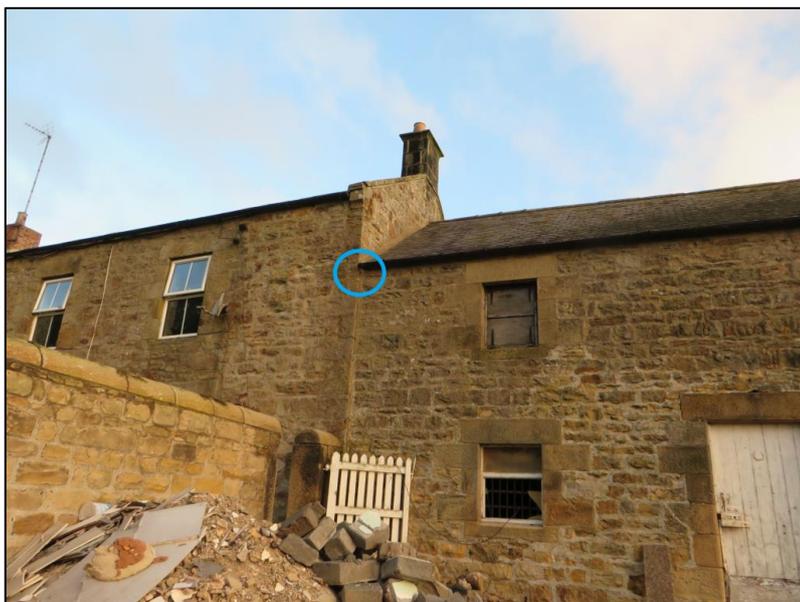


Figure 82. Common pipistrelle roost location between the farmhouse and the granary.



Figure 83. Potential pipistrelle roost location in the corner of the cottage.

8. Impact Assessment and Mitigation

A Natural England Mitigation Licence for bats will be required for the proposed renovation works as destruction and disturbance of bat roosts is likely to occur. No work to the walls or roofing area of these buildings should take place until after this licence is granted.

Bat surveys were carried out between May and August 2020 and found no current use of the granary window roost where bat droppings were found. The building complex is used by a low number of common pipistrelle bats, with 5 locations recorded. The wider site was used by foraging bats throughout all the surveys undertaken.

No further assessment is proposed for the cattle shed (TN8), which is deemed to have negligible potential for roosting bats. Work should take place between September and April (inclusive) to avoid any risk to the small roosts.

The buildings are used by nesting birds, primarily pigeons, but with potential for other bird species. Integral bat and bird boxes¹⁵ are recommended to be installed during the renovation works. A splatter of droppings on the southern wall internally is consistent with that of a raptor, no other signs were noted.

A Pollution Prevention Plan should be put in place along the northern and eastern boundaries of the site to prevent construction site run-off polluting the nearby watercourses and Lowland Meadow Priority Habitat. For the purposes of the assessment, due to the presence of burrows and the suitability of the nearby watercourses for water vole, this species is assumed present.

Negligible impact on Designated Sites or Priority Habitats is predicted with Precautionary Working Methods in place. Additional site planting should be with species of a native and local provenance. The LPA will require details on foul drainage.

The Precautionary Working Method statement (**appendix 1**) should be adhered to during the construction phase. This should be translated into conditions placed on any planning consent. They are intended to reduce the impact of this development on nearby habitats and wildlife. A toolbox talk should be given to site contractors on the law surrounding protected species prior to works commencing.

Renovation plans are not yet finalised. Factors supporting the recommendations are discussed below:

8.1 Limitations

The site visit was undertaken just before the start of the optimal season for ecological/botanical assessment. This means species/signs of species could be missed.

The NBN Atlas¹⁶ is a free online tool that provides a platform to engage, educate and inform people about the natural world. It aims to help improve biodiversity knowledge, open up research possibilities and change the way environmental management is carried out in the UK. This data is not available on a suitable scale for commercial purposes, as protected and sensitive species are only viewable on large scale maps. No other ecological records have been sought at this stage.

Rat droppings were noted in large volume in the loft voids of the cottage and farmhouse. Due to this and heavy dust the loft voids was not entered.

¹⁵ Gunnell, K. *et al* (2013). Designing for Biodiversity: A technical guide for new and existing buildings. BCT.

¹⁶ www.nbnatlas.org

8.2 Bats

8.2.1 Summary

A Natural England Mitigation Licence for bats will be required for the proposed renovation works as destruction and disturbance of bat roosts is likely to occur. No work to the walls or roofing area of these buildings should take place until after this licence is granted.

Bat surveys were carried out between May and August 2020 found no current use of the granary window roost where bat droppings were found. The building complex is used by a low number of common pipistrelle bats, with 5 locations recorded. Not all roosts were recorded within the same survey, suggesting the bats are moving locations around the building. The wider site was used by foraging bats throughout all the surveys undertaken.

The buildings are deemed to have moderate likelihood of being used by roosting bats, due to several potential roost features (PRFs). Droppings were found on a windowsill within the granary indicating an existing bat roost. A single dropping consistent with that from a bat was noted by the loft hatch within the farmhouse.

Scatterings of butterflies' wings were noted within the granary. These could indicate that bats may have used the building as a feeding roost (aggregation of wings). DNA analysis of the droppings from near the granary window came back as belonging to common pipistrelle¹⁷. This roost no longer appears active with the bats using an area near the wall tops above the farmhouse porch and into a gap between the granary and the farmhouse on the same elevation as the window.

A hibernation roost cannot be ruled out.

Suitable features include:

- Slipped and/or misaligned tiles.
- Crevices into the walls.
- Gaps around window frames.
- Access into the loft voids of both the cottage and the farmhouse.
- Gaps present at the wall tops.

Records from Northumberland Bat Group have been received. There are no bat records at or near Dunshiel Farm. All records are from near the village of Elsdon to the south east. A map is available in **appendix 5**.

No further assessment is proposed for the cattle shed (**TN8**), which is deemed to have negligible potential for roosting bats.

Assessment was made based on the Bat Conservation Trust (2016) '*Bat Surveys Good Practice Guidelines*'. The full assessment tables can be found in **appendix 4**.

Overall suitability for bats	Habitat and settings	High
	Building	Medium-high
	External	High
Potential suitability of the development site for bats	Commuting and foraging habitats	High
	Roosting habitats	High

¹⁷ https://warwick.ac.uk/fac/sci/lifesci/research/archaeobotany/ecological_forensics/bats/

8.2.2 Roost locations and characterisation

Figures 84-87 below show the locations of bat roosts within the building. Not all roosts were recorded within the same survey, suggesting the bats are moving locations around the building. Refer to figures 81 and 83 for more detail regarding the farmhouse-granary roost.

All roosts are common pipistrelle summer day roosts.



Figure 84. Previous roost location within the granary.



Figure 85. Potential roost location within the cottage.



Figure 86. Roost locations within the farmhouse.

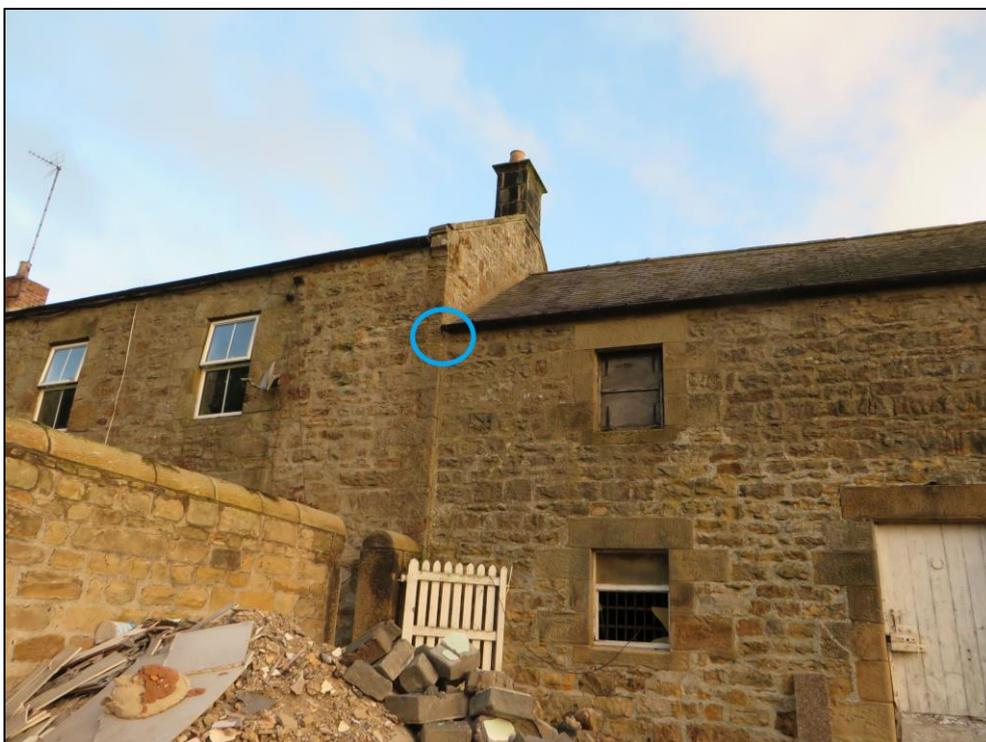


Figure 87. Roost location between the farmhouse and the granary.

8.2.4 Potential impacts

- Loss of bat roosts used by a small number of common pipistrelle bats.
- Disturbance, killing or injury to bats which may use the buildings as a roost.
- Disruption of foraging/commuting routes for nocturnal animals, in particular bats.
- Increased lighting levels may affect foraging and commuting routes for nocturnal animals.

8.2.5 Proposed mitigation measures

- All contractors working on site should be made aware of the law surrounding protected species, in particular bats. If protected species are discovered all work in the area will immediately cease, and a licensed ecologist should be called to the site. Animals must be left *in situ* if this is safe until the project ecologist arrives.
- Integrated features suitable for bats will be required to be incorporated to replace roosts lost. Full details will be provided with the Natural England Mitigation Licence application. These will be discussed with the client when plans are complete. Examples can be found at www.nhbs.com
- A Schwegler 2F general purpose bat box should be added along the woodland edge close to the farmhouse prior to works commencing. This will act as a roost location to relocate any bats found during the works. *Those handling bats should always wear gloves.*



Figure 88. Schwegler 2F bat box.

- External lighting should be discussed with the project ecologist and follow the ILP/BCT guidance (2018). In particular the south eastern elevation should remain as dark as possible, with only low-level directional lighting PIR if essential. This is to reduce disturbance to foraging and roosting bats¹⁸.

¹⁸ Institution of Lighting Professionals (2018) Advice note 08/18

- Non-Bitumen (Breathable) Roofing Membranes should not be used within the new dwellings¹⁹ as these are known to cause death/injury to bats by entanglement. Currently the only 'bat safe' roofing membrane is bitumen 1F felt that is a non-woven short-fibred construction.
- Supervision work by the project ecologist will be required during the construction phase of the development. Areas of the roof such as fascia boards, roof sheeting, flashing and guttering should be removed by hand, with the project ecologist checking that no bats are present.
- The roosts in the farmhouse and cottage can be retained and the client has agreed to do no repointing wall in the regions of the roosts. The roost between the granary and the farmhouse can be retained fully. **Figure 89** below detailed the mitigation measures.
 - Roost A – to be lost and replaced with a 'bat tube'.
 - Roosts B, C and D to be retained.
- In order to ensure No Net Loss of Biodiversity, in this case roosting provision two 'bat tiles' are proposed in area on the south western elevation of the farmhouse where there are currently raised tiles. No bats were recorded using these features, but they will be lost during roof repairs and the 'bat tiles' are proposed as compensation.

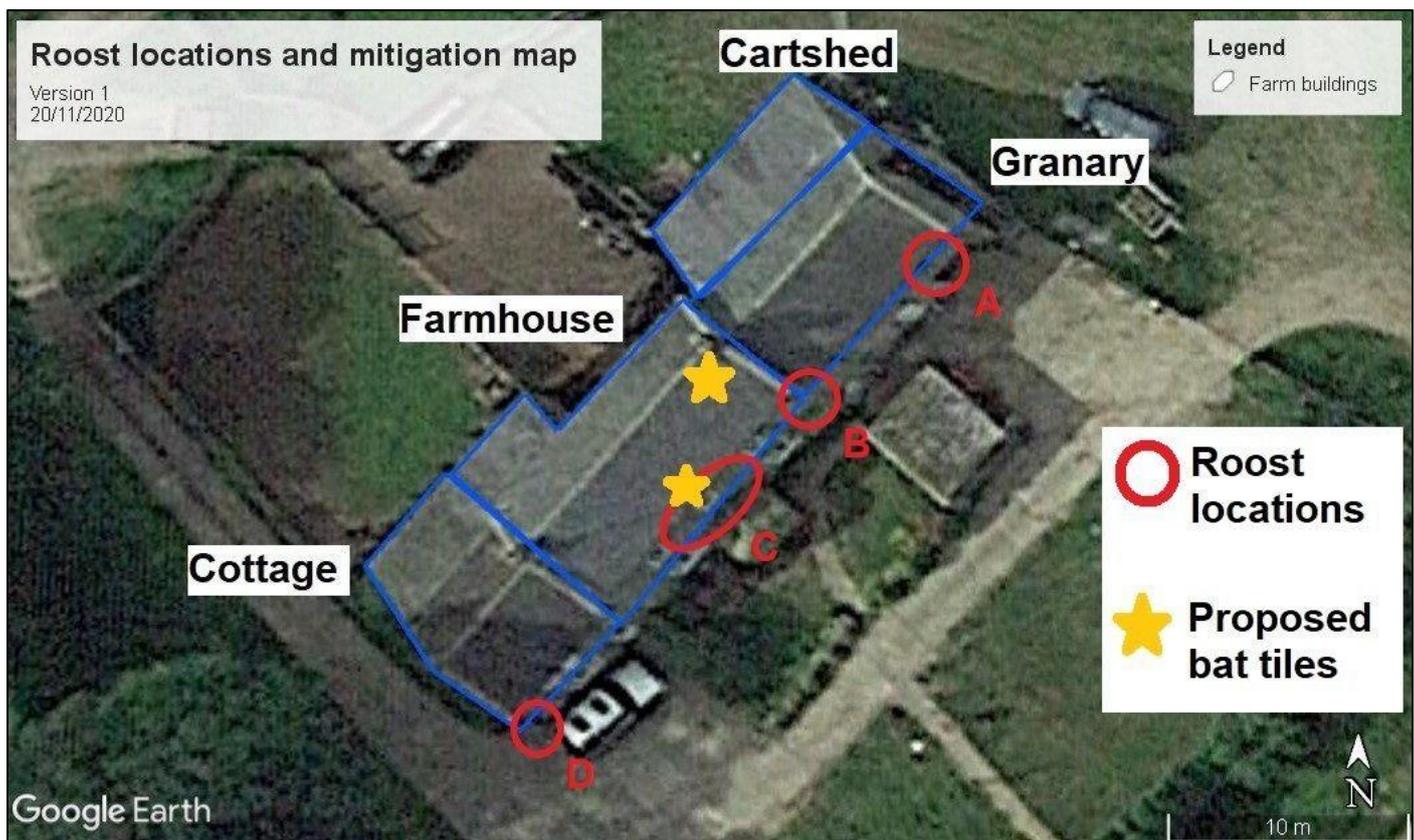


Figure 89. Bat mitigation and compensation plan.

¹⁹ www.bats.org.uk/our-work/buildings-planning-and-development

8.3 Birds

The buildings on site are used by nesting birds.

Potential impacts

- Disturbance to breeding birds.
- Destruction of active nests, causing death or injury to fledging birds during the construction phase.
- Loss of potential nesting areas.

Proposed mitigation measures

- Site contractors must be made aware of the law around the bird nesting season (March-August inclusive).
- If construction work takes place during the bird nesting season (March to August inclusive) a suitably qualified ecologist should confirm that no nesting birds are present in close proximity to the works.
- Integral bird nesting features are recommended to be installed.

8.4 Designated Sites

Northumberland National Park lies approximately 400 metres south west and Billsmoor Park and Grasslees Wood Site of Special Scientific Interest (SSSI) lies approximately 2km north east.

The farm complex lies within the SSSI Impact Risk Zone (see **section 5.1 – Designated Sites**). No impact is expected.

The Local Planning Authority will require details on foul drainage. The client should ensure that any discharges follow the current guidelines if the buildings are not connected up to mains sewage.

8.5 Water vole

The watercourse was walked ~200 metres in each direction from the development site. The table below is adapted from the survey design table (page 9 – box 1) in *Water Vole Mitigation Handbook*²⁰.

The watercourse is not directly affected by the proposals, being located outside the development area, therefore the assessment has been based on the length of the watercourse passing within 20 metres of the development site boundary (where water vole may have terrestrial burrows and foraging areas). This is approximately 105 metres.

No direct/permanent efforts are expected with Precautionary Working Methods in place. Indirect effects can be controlled by a suitable Pollution Prevention Plan.

Additional information on the watercourses can be found in **section 6.7** above. A summary is below:

The watercourses are deemed suitable for water vole, and this species appears to be present. They have stony bases, mud bank sides and grassland surrounds. Numerous burrows are present along the bank sides, both at water level and higher up within the grassland. Habitat adjacent to the watercourse is deemed optimal for water vole. Some of the burrows within the grassland have 'lawned' edges, characteristic of water vole. No latrines were noted. Mammal runs consistent with a variety of rodent species are present.

Type of works	To confirm presence or likely absence	Additional information (if water voles present)	Dunshiel Farm Survey effort
Works temporarily affecting more than 50m of the watercourse.	Field survey; footprint of the works, including temporary work areas plus 200m upstream and downstream of the works. A comprehensive desk study exercise is will not necessarily be required but would be advisable for works affecting >250m of watercourse.	Desk study – site and up to 2-5km around it (or a habitat assessment combined with 'spot checks' for water voles) to inform the approach to mitigation and the assessment of fragmentation effects. The study area should be proportionate to the length of habitat affected.	Single water vole survey undertaken 200m upstream and downstream, including a habitat assessment. The NBN Atlas ²¹ was checked for local water vole records. <u>No additional survey work recommended.</u>

Potential impacts

- Construction run-off polluting nearby watercourses.
- Increased site traffic/site use causing pollution run-off.
- Indirect impacts – fragmentation of habitat connectivity and/or temporary habitat loss/disturbance.

²⁰ Dean, M. *et al.* (2016). *The Water Vole Mitigation Handbook*. The Mammal Society

²¹ nbnatlas.org

Proposed mitigation measures

- Standard good working practices to avoid damage to the banks of watercourses or wetland habitat during construction, or pollution events, should always be employed.
- A pollution prevention plan should be put into place both during any construction phases and in view of the longer-term use of the site.
- Protecting a buffer zone around the watercourses to ensure that burrows are not affected (the size of the buffer zone will be dependent on the nature of the works and the likely extent of burrows, but is likely to be in the region of 3–5m from toe²² of bank) is recommended. This zone is already outside the development boundary and for simplicity the stone walls and fencing which delineate the eastern boundary of the site should be used. The watercourses are at least 15 metres from the development site boundary.

8.6 Other species and Priority Habitats

The site is located to the west of **Lowland Meadow (Priority Habitat)**. Measures should be put in place to reduce impact on this habitat. The meadows are outside of the development boundary and delineated by stone walls and fencing. This land does not belong to the client. The meadow should not be used for any access for plant machinery or storage of materials.

Indirect effects can be controlled by a suitable Pollution Prevention Plan.

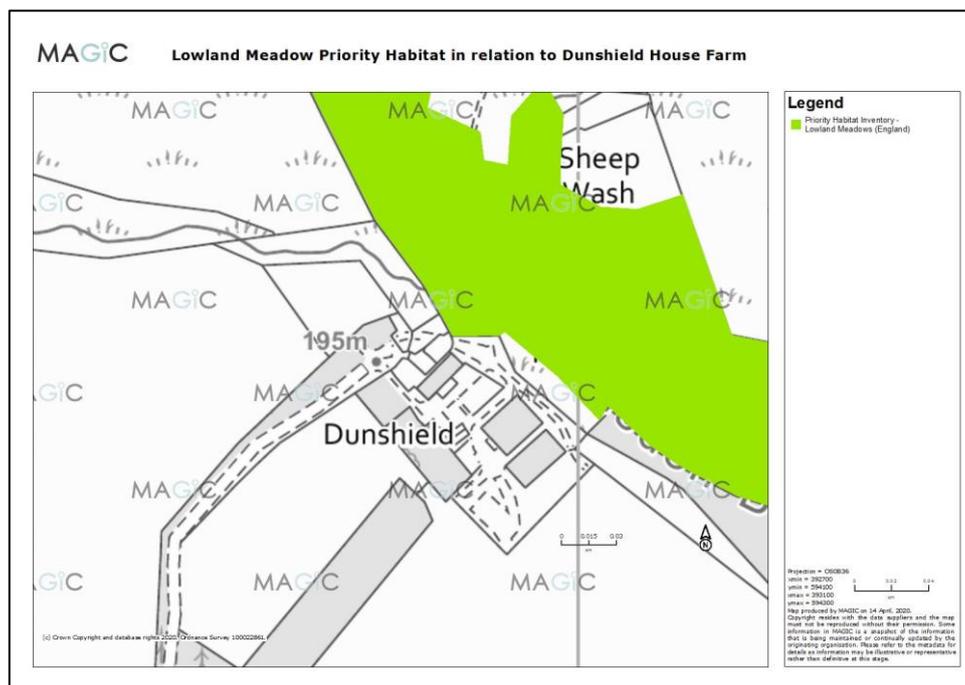


Figure 72. Lowland meadow Priority Habitat in relation to Dunshiel Farm.

²² The toe of the bank is defined here as the area of the bank at, and immediately above, water level

Potential impacts

- Potential impact on foraging and/or hibernating animals.
- Pollution *via* site run-off , increased site traffic and/or materials/chemicals stored on site.
- Loss of potential hibernation / refugia areas for wildlife.
- Loss or damage to the nearby lowland meadows (Priority Habitat).
- Disturbance and/or injury to wildlife during the construction phase.
- Activities such as mixing cement, refuelling or storage of materials/equipment may cause significant damage to those features such as compaction or contamination.
- Damage to tree root systems along the western boundary of the site.

Proposed mitigation measures

- Areas of Lowland Meadow (Priority Habitat) should be checked prior to construction and fenced off from construction traffic to minimise any negative impacts.
- Appropriate construction design can facilitate the sustainable retention of significant trees alongside development. Refer to '*British Standard 5837:2012 Trees in relation to design, demolition and construction*' and '*BS 3998:2010: Tree work – Recommendations*'.
- Utilities should be installed along areas of hardstanding/paving and outside of any tree's Root Protection Area (RPA) where practical to minimise damage to roots and disturbance of soils.
- Vehicles and machinery will be restricted from operating/parking on unprotected soil within the RPAs in order to minimise damage to the trees *via* compaction or contamination of the soil.
- Any storage of materials on site is likely to create suitable refugia for several species and therefore should only be moved by hand.
- Any pits or holes dug during construction phase must be covered up overnight or fitted with exit ramps (scaffolding planks) for mammals to be placed at an angle of 30° from base to top.
- Check any areas of ground thoroughly before work starts.
- Remaining vegetation to be gradually reduced in site, checking for wildlife, such as small mammals and reptiles.
- Any small mammals/reptiles give them chance to move away of their own accord to a place of safety or carefully remove them to a safe area nearby, preferably in vegetation, away from the working area.
- All materials, fuel and equipment, if left on site, to be stored securely in a position away from the tree canopies.
- No fires should be lit on site.
- A Pollution Prevention Plan should be put in place. The Local Planning Authority will require details on foul drainage.
- No storage of materials or refuelling should occur within 20 metres of the watercourse. The construction of a temporary bund may be beneficial .

9. References

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APPENDIX 1. Precautionary Working Method Statement

METHOD STATEMENT FOR CONTRACTORS DUNSHIEL HOUSE FARM, ELSDON, NE19 1AQ

The proposed renovation of buildings at Dunshiel House Farm may bring contractors into contact with a range of protected species including bats, reptiles and breeding birds. The following recommendations should be translated into conditions placed on any planning consent. They are intended to reduce the impact of this development on protected species.

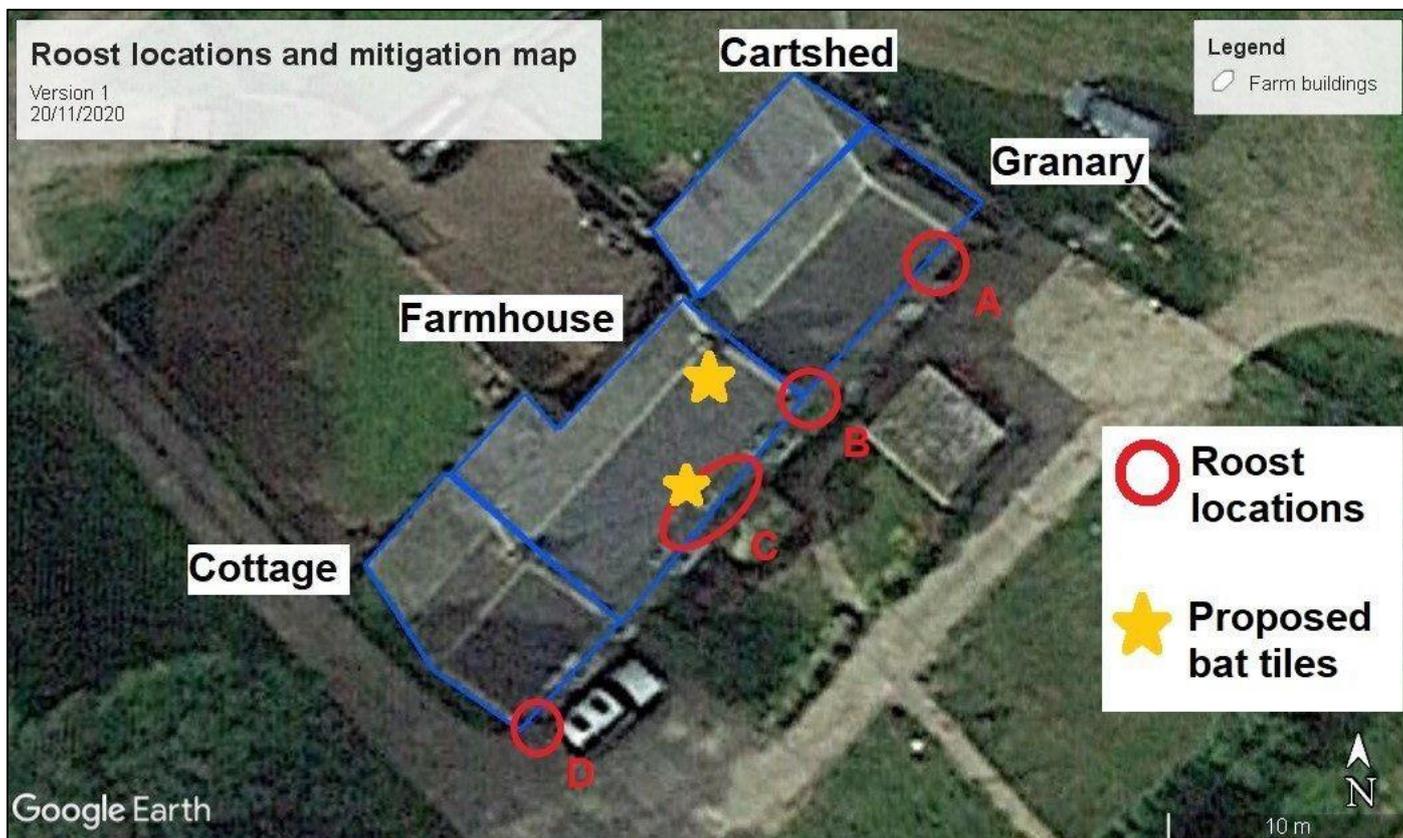
All contractors working on site should be made aware of the law surrounding protected species, including bats and breeding birds. An induction should be given to all contractors working on site by a suitably qualified ecologist including a brief on working in environments likely to support protected species.

A Natural England Mitigation Licence for bats will be required for the proposed renovation works as destruction and disturbance of bat roosts is likely to occur. No work to the walls or roofing area of these buildings should take place until after this licence is granted.

The site is located near to **Lowland Meadow (Priority Habitat)**. This should be checked before construction by the project ecologist and fenced off from construction traffic to minimise any negative impacts during construction.

Method statement for bats:

- All contractors working on site should be made aware of the law surrounding protected species, in particular bats. If protected species are discovered all work in the area will immediately cease, and a licensed ecologist should be called to the site. Animals must be left *in situ* if this is safe until the project ecologist arrives.
- Integrated features suitable for bats will be required to be incorporated to replace roosts lost. The roosts in the farmhouse and cottage can be retained and the client has agreed to do no repointing wall in the regions of the roosts. The roost between the granary and the farmhouse can be retained fully. **Figure 89** below detailed the mitigation measures.
 - Roost A – to be lost and replaced with a ‘bat tube’.
 - Roosts B, C and D to be retained.
- In order to ensure No Net Loss of Biodiversity, in this case roosting provision two ‘bat tiles’ are proposed in area on the south western elevation of the farmhouse where there are currently raised tiles. No bats were recorded using these features, but they will be lost during roof repairs and the ‘bat tiles’ are proposed as compensation.



Bat mitigation and compensation plan.

- A Schwegler 2F general purpose bat box should be added along the woodland edge close to the farmhouse prior to works commencing. This will act as a roost location to relocate any bats found during the works. *Those handling bats should always wear gloves.*



- External lighting should be discussed with the project ecologist and follow the ILP/BCT guidance (2018). In particular the south eastern elevation should remain as dark as possible, with only low-level directional lighting PIR if essential. This is to reduce disturbance to foraging and roosting bats²³.
- Non-Bitumen (Breathable) Roofing Membranes should not be used within the new dwellings²⁴ as these are known to cause death/injury to bats by entanglement. Currently the only 'bat safe' roofing membrane is bitumen 1F felt that is a non-woven short-fibred construction.
- Supervision work by the project ecologist will be required during the construction phase of the development. Areas of the roof such as fascia boards, roof sheeting, flashing and guttering should be removed by hand, with the project ecologist checking that no bats are present.
- All contractors working on site should be made aware of the law surrounding bats. If bats are discovered all work in the area will immediately cease, and a licensed ecologist should be called to the site. Any bats must be left *in situ* if this is safe until the project ecologist arrives.

Method statement for birds:

- Site contractors must be made aware of the law around the bird nesting season (March-August inclusive).
- Not more than 48 hours prior to works commencing on site a nesting bird check will be undertaken by a suitably qualified ecologist (if works are to take place during March to August inclusive). Any active nests must be left undisturbed (2 metre buffer) until the chicks have fledged.
- Integral bird nesting features are recommended to be installed.

Method statement for working near a watercourse, with potential water vole presence

- Due to the proximity of the waterways a Pollution Prevention Plan should be drawn up before construction work begins. This should be based on 'Works in, near or over watercourses; PPG5: prevent pollution' (now withdrawn)²⁵.
- No storage of materials or refuelling should occur within 20 metres of the watercourse. The construction of a temporary bund may be beneficial .
- Herbicides should not be used, if possible.

²³ Institution of Lighting Professionals (2018) Advice note 08/18

²⁴ www.bats.org.uk/our-work/buildings-planning-and-development

²⁵ Environment Agency, 2007

General method statement for other species and habitats:

- Appropriate construction design can facilitate the sustainable retention of significant trees alongside development. Refer to '*British Standard 5837:2012 Trees in relation to design, demolition and construction*' and '*BS 3998:2010: Tree work – Recommendations*'.
- Before any construction plant is brought onto the site (other than onto existing hardstanding) any areas likely to support amphibians or reptiles will be carefully dismantled and removed by hand under supervision of the ecologist. This includes any undergrowth, planting and piles of rubble/rubbish/stones/log piles.
- Appropriate construction design can facilitate the sustainable retention of significant trees alongside development. Refer to '*British Standard 5837:2012 Trees in relation to design, demolition and construction*' and '*BS 3998:2010: Tree work – Recommendations*'.
- Utilities should be installed along areas of hardstanding/paving and outside of any tree's Root Protection Area (RPA) where practical to minimise damage to roots and disturbance of soils.
- Vehicles and machinery will be restricted from operating/parking on unprotected soil within the RPAs in order to minimise damage to the trees *via* compaction or contamination of the soil.
- Check any areas of ground thoroughly before starting work. If any animals are found, seek advice from the project ecologist before continuing work.
- Check under piles of stone/loose material (where there are gaps within the piles) carefully by hand before excavating. Avoid creating an 'island' of suitable habitat anywhere within the working area where piles of stones/tree stumps/root balls/vegetation are left on site while the remainder is worked.
- Wear gloves when contacting the ground to protect staff and wildlife.
- All building materials should be stored raised off the ground on wooden pallets or similar.
- Vegetation and debris clearance will encompass a finger-tip search in a careful and controlled manner, with constant vigilance for any sheltering wildlife and/or any other potential species.
- Any storage of materials on site is likely to create suitable refugia for several species and therefore should only be moved by hand.
- Any construction pits, trenches or foundations will be fitted with exit ramps (such as scaffolding planks) for mammals to be placed at an angle of 30° from base to top. These must be covered up overnight or a ramp put into them to prevent wildlife from becoming trapped. Any trenches or holes should be checked in the morning prior to work restarting.
- Vegetation to be gradually reduced in size, carefully checking for wildlife.
- Any small mammals/reptiles should be given a chance to move away of their own accord to a place of safety or carefully removed to a safe area nearby, preferably in vegetation, away from the working area.
- All materials, fuel and equipment, if left on site, to be stored securely in a position away from the tree canopies and meadows areas.
- No fires should be lit on site.

Signed by Client

Name

Signature.....

Date.....

Signed by Contractors

Name	Signature	Job title Company	Date

APPENDIX 2. Relevant legislation

Under Section 25 (1) of the Wildlife & Countryside Act (1981) local authorities have a duty to take such steps as they consider expedient to bring to the attention of the public the provisions of Part I of the Wildlife & Countryside Act, which includes measures to conserve protected species.

The Natural Environment and Rural Communities Act (2006) places a Statutory Biodiversity Duty on public authorities to take such measures as they consider expedient for the purposes of conserving biodiversity, including restoring or enhancing a population or habitat.

Paragraph 109 of the National Planning Policy Framework (NPPF) requires that the planning system minimizes impacts on biodiversity and provides net gains where possible.

Bats

In Britain all bat species and their roosts are legally protected, principally under the Conservation of Habitats and Species Regulations (2010), with additional protection under the Wildlife and Countryside Act (1981) (as amended), including under Schedule 12 of the Countryside and Rights of Way Act, 2000, which created a new offence of reckless disturbance.

The combined effect of these is that a person is guilty of an offence if he:

- Deliberately captures, injures or kills a bat.
- Intentionally or recklessly disturbs a bat in its roost or deliberately disturbs a group of bats.

In particular where this may:

- Impair their ability to survive, to breed or reproduce, or rear or nurture their young.
- Affect significantly the local distribution or abundance of the species.
- Damages or destroys a bat roosting place (even if bats are not occupying the roost at the time).
- Intentionally or recklessly obstructs access to a bat roost.

Birds

All birds, their nests and eggs are protected by law and it is an offence, with certain exceptions, to:

- Intentionally kill, injure or take any wild bird.
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built.
- Intentionally take or destroy the egg of any wild bird.
- Intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building or is in, on or near a nest with eggs or young; or disturb the dependent young of such a bird. Barn owls are named in Schedule 1 of this Act.

Badger

The Protection of Badgers Act 1992 protects badgers and their setts, and makes it illegal to:

- Wilfully capture, injure or kill a wild badger.
- Be in possession of a live or dead badger.
- Destroy or obstruct access to an active badger sett.

Reptiles

All reptiles are protected under the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill or injure a reptile.

Otter

Otters are a European Protected Species under The Conservation of Habitats and Species Regulations 2010 (as amended), making it an offence to:

- Deliberately capture, injure or kill an otter.
- Deliberately disturb an otter.
- Damage or destroy a breeding site or resting place of an otter.
- Disturbance is defined as that which is likely to impair their ability:
 - To survive, to breed or reproduce, or to rear or nurture their young.
 - Or in the case of animals of a hibernating or migratory species, to hibernate or migrate.
- To affect significantly the local distribution or abundance of the species to which they belong.

Under the Wildlife and Countryside Act 1981 (as amended) it is illegal to:

- Intentionally or recklessly disturb any otter while it is occupying a structure or place which it uses for shelter or protection.
- Intentionally or recklessly obstructs access to any structure or place used by an otter for shelter or protection.
- Sell, offer or expose for sale any otter.

Water vole

The water vole is listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), for which the following are offences:

- Intentional killing, injuring or taking.
- Intentionally or recklessly damaging / destroying a place of shelter / protection.
- Intentionally or recklessly disturbing and/or obstructing an animal in its place of shelter / protection.
- Intentionally or recklessly obstructing access to its place of shelter / protection.
- Possession (live or dead, including derivatives), sale and offering for sale.

APPENDIX 3 Bat dropping DNA analysis



18 June 20

Re: Identification Results for Rachel Hepburn, RH Ecological Services

Job number 15369, received 04 June 2020

Sample labelled: Dunshiel Farm- The Granary, 15/40/20

PCR amplification successful. DNA sequence:

ATGACAAACATTTCGAAAATCCCACCCCTGATCAAATCATCAATAACTCATTTCATTG
ATCTACCAGCTCCATCAAACATTTTCAGCATGATGAAATTT

Phylogenetic analysis identification: *Pipistrellus pipistrellus*

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

Best regards,

Professor Robin Allaby

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

Professor Robin Allaby

School of Life Sciences,
Gibbet Hill Campus,
University of Warwick,
Coventry CV4 7AL

APPENDIX 4. Bat suitability tables

FROM 'BAT CONSERVATION TRUST (2016). *BAT SURVEYS GOOD PRACTICE GUIDELINES*'.

Overview of site suitability for bats.				
Habitats and settings				
	Negligible	Low	Moderate	High
Habitats and cover within 200 metres.	City centre.	Open, exposed arable, amenity grass or pasture.	Hedges and trees linking site to wider countryside.	Excellent cover with mature trees and/or good hedges.
Habitats within 1km.	City centre.	Little tree cover, few hedges, arable dominated.	Semi-natural habitats e.g. trees, hedgerows.	Good network of woods, wetland and hedges.
Alternative roosts within 1km.	City centre.	Numerous alternative roost sites of a similar nature.	A number of similar buildings in the local area.	Few alternative buildings and site of good quality for roosts.
Setting.	Inner city.	Urban with little green space.	Built development with green-space, wetland, trees.	Rural Lowland with woodland and trees.
Distance to water/marsh.	>1km	500m-1000m	200m-500m	<200m
Distance to woodland/scrub.	>1km	500m-1000m	200m-500m	<200m
Distance to species-rich grassland.	>1km	500m-1000m	200m-500m	<200m
Commuting routes.	Isolated by development, major roads, large scale agriculture.	No potential flyways linking site to wider countryside.	Some potential commuting routes to and from site.	Site is well connected to surrounding area with multiple flyways.

Overview of site suitability for bats.				
Buildings				
	Minimal	Low	Medium	High
Age (approximate)	Modern.	Post 1940s.	1900-1940.	Pre 20th Century.
Building/complex type	Industrial complex of modern design.	Single, small building.	Several buildings, large old single structure.	Traditional farm buildings, country house, hospital.
Building - storeys	N/A	Single storey.	Multiple storeys.	Multiple storeys with large roof voids.
Stone/brick work	No detectable crevices.	Well pointed.	Some cracks and crevices.	Poor condition, many crevices, thick walls.
Framework – timbers/steel	Modern metal frame with sheet cladding.	Timber purlins, sheet asbestos.	Timbers kingpost or similar.	Large timbers traditional joints.
Roof void	Fully sealed roof.	Small, cluttered void.	Medium, relatively open.	Large, open, interconnected.
Roof covering	Modern sheet materials and tightly sealed.	Good condition or very open not weatherproof modern sheet materials.	Some potential access routes, slates, tiles.	Uneven with gaps, not too open, stone slates.
Additional features	Very well maintained and tightly sealed.	No features with potential access.	Some features with potential access.	Hanging tiles, cladding, barge boards, soffits with access gaps.
External				
Lighting	Extensive security. Lights covering much of the site.	Widespread areas above 2 lux at night.	Intermittent lights of low intensity	Minimal
Building use	Very noisy, dusty	Regular use	Intermittent use	Disused.

Guidelines for assessing the potential suitability of proposed development sites for bats, based on presence of habitat features within the landscape.

Suitability	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	<p>Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat.</p> <p>Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.</p>
Moderate	<p>Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.</p> <p>Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.</p>
High	<p>Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.</p> <p>High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland tree lined watercourses and grazed parkland.</p> <p>Site is close to and connected to known roosts.</p>

Suitability	Roosting Habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used by larger numbers of bats (<i>i.e.</i> unlikely to be suitable for maternity or hibernation).
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

APPENDIX 5. Northumberland Bat Group



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The information provided here is believed to be correct. However, no responsibility can be accepted by the Northumberland Bat Group for any consequences of errors or omissions, nor responsibility for loss occasioned to any person acting or refraining from action as a result of this information and no claims for compensation for damage or negligence will be accepted.

The records held by the Northumberland Bat Group are not the result of systematic survey, so the absence of data for any particular site or area cannot be taken to indicate that bats are not present or use it as a place of shelter. The Northumberland Bat Group advises that before any work starts a competent surveyor should check any site, building or tree on which any work is planned, to reduce the risk of harming bats or committing offences against the legal protection afforded to bats.

There were **no roost records** within 2km. Flight records are shown in the table below:

Species	Location	Year	Grid reference
Common pipistrelle	Billsmoor Park	2017	NY9420196221
	Elsdon	2017	NY9369193587
	Elsdon	2017	NY9373193333
	Elsdon	2017	NY9337893151
	Elsdon	2017	NY9323693153
	Soppit Farm	2017	NY9267193336
	Gallow Hill	2015	NY9351192909
	Overacres	2015	NY9155893136
	Elsdon	2015	NY9350593168
Soprano pipistrelle	Elsdon	2015	NY9370793406
	Gallow Hill	2017	NY9331992612
	Elsdon	2017	NY9369193855