

# **Bat Scoping Survey**

## **Cherry Trees House, The Green**

**4<sup>th</sup> November 2021**

**Report No. 1121/2**

Report commissioned by;

Mr & Mrs Cook  
Cherry Trees House  
The Green  
Millom  
LA18 5HQ

Report prepared by;



Tamsin Douglas MSc MCIEEM  
13 Rydal Road  
Ulverston LA12 9BU

## Executive Summary

'Cherry Trees House' is a detached property in The Green, near Millom. The owners wish to construct a single storey extension to the front (west) of the property, which involves demolition of the porch and flat roof extension and affects a small section of the main roof to tie-in the new build.

This report was commissioned to accompany a planning application, and involved an inspection of the property and desktop search to assess whether bats are using, or have used it for roosting purposes. An assessment is also made of the potential the building has to host bats, and whether this proposed development will have any negative impacts on individual bats, or the local bat population.

The building was inspected inside and outside for evidence of bat activity. There were no constraints on access.

The property is a split-level construction due to its position on the hill above the Duddon Estuary. It is single storey to the front (west) and two storey at the rear. The walls are rendered brick, and main roof is pitched slate. A small section of flat roof is present at the front of the property.

Roosting potential was identified under lifted roof slates and under ridge slates. Loft areas were mostly well sealed, as were all soffits and verges at the wall tops and roof edge.

Surrounding habitat includes pockets of woodland, several other residences, agricultural land (especially pasture and silage) and estuarine wetland habitats along the Duddon Estuary. Most areas are quite sheltered, though some areas of the property are fairly exposed to prevailing winds.

The property is assessed as having low potential to host bats, and surrounding property is of moderate quality for foraging and commuting bats. There are no records of bats from the property or the immediate surroundings.

No roost survey was carried out for this application. The property has low potential for bats, but the proposals only affect a small section of the main roof, and as such risk of impacts on individual bats or the local bat population are slight.

Bats are very mobile animals and change roosting location as environmental conditions change. As the property has some potential to host bats there is always a small risk of encountering them during the works. Precautionary methods of work have been included to ensure that if any itinerant bats are present at the time of building works, risk of harm to them is minimised.

As best practice standard, some suggestions have also been included to provide additional wildlife habitat following completion of these works. It is recommended that at least 2 bat boxes are installed on the south or west elevations of the property or on mature trees in the garden.

## Contents

1	Introduction	4
1.1	Site Description	
1.2	Proposed Work	
1.3	Aims of survey	
2	Methods	6
2.1	Desktop data search	
2.2	Surveyor information	
2.3	Field survey	
2.3.1	Inspection	
2.3.2	Emergence surveys	
3	Results	8
3.1	Pre-survey data search	
3.1.1	Designated sites	
3.1.2	Protected species	
3.2	Field survey	
3.2.1	Habitat assessment	
3.2.2	Inspection	
3.2.3	Emergence surveys	
3.2.4	Other species	
4	Assessment	12
4.1	Constraints on survey information	
4.2	Constraints on equipment used	
4.3	Potential impacts of development	
4.3.1	Designated sites	
4.3.2	Roosts	
4.3.3	Foraging and commuting habitat	
4.4	Legislation and policy guidance	
4.5	Other species	
5	Recommendations and mitigation	14
5.1	Further survey	
5.2	Mitigation measures	
5.3	Mitigation licenses	
5.4	Other species	
5.5	Enhancement measures	
6	Summary	15
7	References	
	Appendices	17
i)	Photographs	

# **1 Introduction**

## **1.1 *Site description***

'Cherry Trees House' is a detached property at the edge of The Green, near Millom. It is located at SD179 840, at approximately 40m AOD.

It is a split level house due to the lie of the land, with single storey and porch to the front and two storeys plus a veranda to the rear (east). The property has rendered and painted walls and a pitched slate roof. It is currently occupied and is in a good general state of repair.

The house is surrounded by mature trees, scattered residential properties and agricultural land (primarily pasture).

Figure 1 shows the location of 'Cherry Trees House'. Satellite imagery of the surrounding habitat and the area immediately surrounding the property is presented in figure 2. Photographs of the building are included in the appendices to this report.

## **1.2 *Proposed works***

The owners wish to build a small single storey extension on the front (west) elevation of the property, which involves removal of the front porch and will affect a small section of the slate roof as the newbuild is tied in. Internal renovations are also proposed.

There is no set timescale for these proposals.

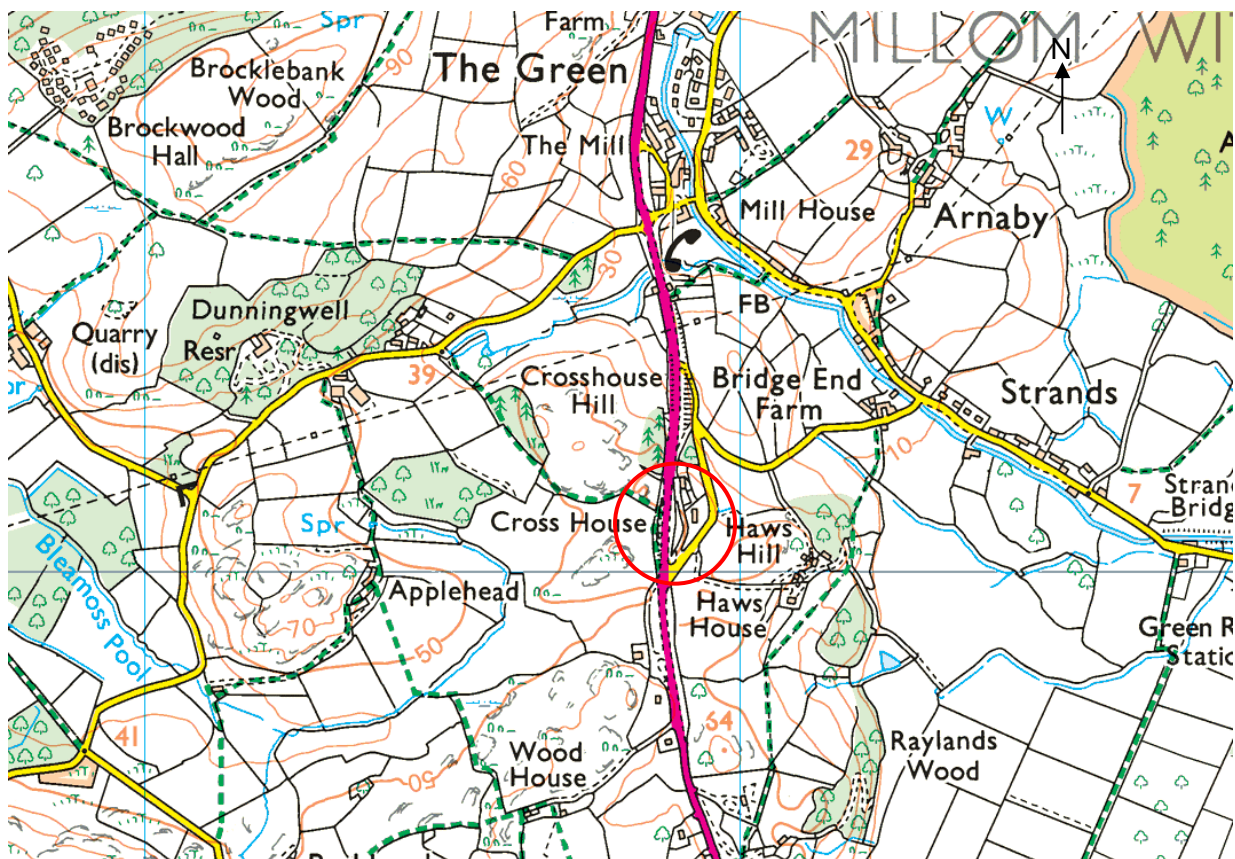
## **1.3 *Aims of survey***

This survey was commissioned to accompany a planning application to Copeland Borough Council.

The aim of the survey is to assess whether bats use, or have used, 'Cherry Trees House'; and if so how it has been used. From this data an assessment will be made as to whether any particular roost and/or the surrounding bat population would be affected by the proposed development. If they are likely to be affected then appropriate mitigation proposals will be included in this report.

The inspection survey and ensuing report follow guidance and structure provided by Bat Conservation Trust (Bat Surveys Good Practice Guidelines, 3<sup>rd</sup> edition, 2016).

**Figure 1. Location Map**



Contains Ordnance Survey data © Crown copyright and database right copied under licence (No. 100055725)

**Figure 2. Aerial photograph showing surrounding habitat**



Red circle indicates location.

(Imagery date 2018)

## **2 Methods**

### **2.1 Desktop data search**

A search of current literature (including the Bat Conservation Trust publication 'The Distribution Atlas of Bats in Britain and Ireland', Cumbria Biodiversity Data Centre's Mammal Atlas and 'Mammals of the British Isles') was done, looking for bat records in the 10km gird square in which the property is situated.

An internet search was also carried out, noting any land with statutory designations within 5km of 'Cherry Trees House'. Reasons for any relevant land designations were researched to check whether bats were important features. A search was also carried out for local EPS (European Protected Species) licenses for disturbance to bats (this will give further indication of species present in the area). Searches for statutory designations, and relevant citations were done on a DEFRA website [www.magic.defra.gov.uk](http://www.magic.defra.gov.uk).

A detailed search was commissioned from Cumbria Biodiversity Data Centre, providing records of bats and their roosts within 2km of the property.

### **2.2 Surveyor information**

The inspection was undertaken by Tamsin Douglas MCIEEM, experienced ecologist (holds Natural England Bat Class Licence – registration number 2015-10308-CLS-CLS).

### **2.3 Field survey**

#### **2.3.1 Daytime inspection**

A daylight inspection of the building to identify possible roosting and nesting locations and access routes to these locations was carried out on 2<sup>nd</sup> November 2021 between 10.30 and 11.15 by Tamsin Douglas.

The external and internal inspection was carried out, where necessary, using ladders, 10 x 42 binoculars, endoscope (Vscope VOxx-10WW) and a 1 million candlepower torch. The weather was dry, cool and calm.

The building inspection involves a detailed internal and external daylight search for evidence of current or past use of the building by bats. Outside, particular attention is paid to the ground and ledges under any potential access points, weather boarding, hanging tiles, eaves, cracks and crevices in walls, and under tiles/slates. Internal inspections focus on areas around and below any potential roosting spots, ledges and lintels, behind crumbling render, and on and around roof timbers.

Evidence from a search which would indicate presence of bats includes-

- Roosting bats
- Corpses
- Droppings and urine staining on and around potential roosting areas (further evidence derived from amount and freshness of droppings)
- Droppings, staining and/or scratch marks at potential roost entrances
- Cleaner areas of woodwork, areas free of cobwebs suggesting bat activity such as crawling or flying
- Feeding detritus- such as moth wings

- Chattering or squeaking noise from roosting bats.

A general assessment is also made of the suitability of the surrounding habitat for bats, and connectivity to other areas of good quality foraging and commuting habitat.

Direct evidence of bats can be hard to detect and, as such, during the preliminary roost assessment the building is also appraised for its potential to host roosting bats. This potential is based on several factors:

- Presence of suitable internal or external features for roosting bats, and good access routes to these features
- Number of bats that these features could support
- Suitable conditions for roosting either in active season or for hibernation (humidity, temperature, exposure)
- Surrounding foraging and commuting habitat, connectivity to good habitat features
- Proximity to known roosts (especially for hibernation of species such as pipistrelles)

The need to undertake a roost emergence/ re-entry survey or hibernation survey (to provide further evidence as to whether bats use the building affected by these proposals) was determined by the results of this inspection.

### **2.3.2 Roost surveys**

During a dusk or dawn roost survey, all suitable elevations of the property are observed for a standard period before and after sunrise or sunset. Surveys are carried out between May and September, when bats are most active. Surveyors watch all potential roosting locations to see if any bats emerge. Bat detectors (personal and static), digital recording devices and night-vision monoculars are used to aid detection and identification of any emerging bats.

A hibernation survey typically involves a detailed inspection of possible roosting sites using torch, mirror and endoscope, and can involve deploying static bat detectors. The survey is carried out in mid-winter, typically in January and February. The exact parameters of the survey depend on the nature of the site.

This inspection survey was carried out in November, when bat activity is reduced and dusk surveys are not viable. If the inspection results determine that a roost survey is needed, these can't be carried out until May 2022.



## 3 Results

### 3.1 Desktop search

#### 3.1.1 Designated sites

There is a large amount of designated land within 5km of 'Cherry Trees House', and also within 2km of the property. The property is located 1.5km east of the Lake District National Park boundary.

A total of three SSSIs, one NNR (National Nature Reserve), one LNR (Local Nature Reserve), one SPA (Special Protection Area) and two SAC (Special Areas of Conservation) are found within 5km of the property. Most of these protected sites have been designated for the marine and intertidal habitats and bird assemblages. Although these sites may support bat populations, none of them detail bats in the supporting citations.

#### 3.1.2 Protected species

Eight species of bat are currently known to breed in Cumbria, with a further two species that have been recorded within the county. All species of bat in the UK are fully protected under UK and European law.

**Table 1. Status of bats in Cumbria**

Species	Status in Cumbria
Whiskered bat <i>Myotis mystacinus</i>	Widespread, but uncommon. Maternity and hibernation roosts recorded.
Brandt's bat <i>M.brandtii</i>	Widespread, but uncommon. Maternity and hibernation roosts recorded.
Natterer's bat <i>M.nattereri</i>	Widespread. Maternity and hibernation roosts recorded.
Daubenton's bat <i>M.daubentonii</i>	Widespread. Strongly associated with still or slow moving water. Maternity and hibernation roosts recorded.
Noctule <i>Nyctalus noctule</i>	Widespread, but uncommon. Rarely associated with buildings. Breeding roosts recorded.
Leisler's bat <i>N.leisleri</i>	Rare. Only a confirmed bat detector record in Cumbria.
Common pipistrelle <i>Pipistrellus pipistrellus</i>	Widespread. Roosts often associated with modern buildings, forages in a variety of habitats. Maternity and hibernation roosts recorded.
Soprano pipistrelle <i>P.pygmaeus</i>	Widespread. Only recently separated as a species from common pipistrelle, often associated with waterbodies, though forages in wide range of habitats. Maternity and hibernation roosts recorded.
Nathusius' pipistrelle <i>P.nathusii</i>	Rare. Recently added to Cumbria's list of bats. No confirmed breeding roosts recorded yet.
Brown long-eared bat <i>Plecotus auritus</i>	Widespread, but uncommon. Often associated with older buildings with good roof space. Maternity and hibernation roosts recorded.

The literature search provided records of summer roosts for 4 species of bats within the hectad SD18 (10km square) in which 'Cherry Trees House' is located. These are whiskered/brandt's bat (very difficult to tell apart), natterer's bat, pipistrelle bat and brown long-eared bat. The CBDC Mammal Atlas had recent (post-2000) confirmed records in SD18 for the species above, as well as; Daubenton's bat and noctule.

The internet search looking at nearby granted EPS (European Protected Species) licenses for bats produced no records within 5km of the property.



The detailed site search carried out by Cumbria Biodiversity Data Centre gave 48 records of 6 species of bats within 2km of 'Cherry Trees House'. These were brown long-eared bat, soprano pipistrelle, common pipistrelle, noctule, whiskered bat and brandt's bat. Seven of the records were of roosts, and records dated from 1998 to 2016 (with the vast majority of records being post 2013). The closest record to the property is a large maternity roost of soprano pipistrelles 500m away.

Bats are generally an under-recorded group, and as such biological records such as those above can only be used as a guide to illustrate potential distributions in the area, and are not definitive.

## 3.2 Field survey

### 3.2.1 Habitat assessment

'Cherry Trees House' is surrounded by gardens and mature trees. It has a location high above the Duddon Estuary, with a commanding view to the north and east. There are other residential properties nearby, and land beyond these is primarily agricultural (especially pasture and silage fields). There are patches of woodland to the south and west. To the east the land is more open and exposed to the prevailing winds, especially near to the Duddon Estuary. There are large areas of wetland and mosses along Black Beck and the Duddon Estuary which can provide good foraging habitat in suitable weather conditions.

Bats can fly several kilometres to their feeding grounds, often following linear features such as hedgerows. Sheltered areas, particularly around water, tend to have greater amounts of invertebrate prey, and as such are sought out by foraging bats.

The habitat around the property is of moderate quality – with good sheltered areas around woodland and mature trees, and wetland areas providing plenty of invertebrate prey. The location of the house above the estuary means that it is exposed to prevailing winds and weather.

### 3.2.2 Roosting assessment

**Table 2: Factors affecting the probability of a building being used by bats in summer**

Factors increasing probability	Disused or little used; largely undisturbed Large roof void with unobstructed flying spaces Large dimension roof timbers with cracks, joints and holes Uneven roof covering with gaps, though not too draughty Entrances that bats can fly in through Hanging tiles or wood cladding, especially on south-facing walls Rural setting Close to woodland and/or water Pre-20th century or early 20th century construction Roof warmed by the sun
Factors decreasing probability	Urban setting or highly urbanised area with few feeding places Small or cluttered roof void (esp. for <i>Plecotus</i> ) Heavily disturbed Modern construction with few gaps around soffits or eaves (but be aware these may be used by pipistrelles in particular) Prefabricated with steel and sheet materials Active industrial premises Roof shaded from the sun

(Taken from A. Mitchell-Jones, 2004)

### Building construction

The property is constructed from brick walls which have been rendered and painted on the exterior. The house is split level, single storey to the front (west) and two-storey to the rear (east) where the land drops away.

There is a small porch and flat roofed extension on the front elevation, and a concrete veranda on the rear elevation.

All external render and walls are in very good condition, with no significant cracks or gaps noted. The main roof is asymmetrically pitched with a natural slate covering, and a hipped roof extension to the east. The roof is in good general condition, but there are some gaps under lifted slates and some gaps under ridge slates.

No significant gaps were noted behind fascia boards or soffits on the flat roof or slate roofs. No gaps or cracks were observed around windows and doors.

Most of the internal roof voids were connected, with a roof light over the central area. All other sections were dark, and well sealed with floor insulation. All areas had parging/ mortar under the slates, which was in very good condition. All internal ridges and timbers were heavily cobwebbed, indicating little disturbance in the lofts. Several wasp nests were present, and evidence of rats. A small separate roof void was present above the converted garage (to the south of the front door).

### Suitability for bats

There is roosting potential for small numbers of crevice roosting bats between some roof slates and under ridge slates. Access to these roosts is through small gaps under some of the slates which have lifted slightly.

These potential roost sites could be used at any time of the year by individuals or small numbers of bats. These potential roosts are not especially suited for hibernation.

### Evidence of bats

No evidence of bats was found inside any of the roof voids, and no external evidence was seen.

### ***3.2.3 Summary of suitability of site for bats***

Based on the evidence above, and using published guidance (summarised below) 'Cherry Trees House' is assessed as having low potential for roosting bats, and surrounding habitat has moderate suitability for commuting and foraging bats.

The property was assessed as having very low potential to host hibernating bats, based on type and exposure of roosting features present, connectivity of habitat and proximity of known roosts.

Bat Survey Guidelines recommend that properties with low roost potential should have a dusk roost survey carried out to determine whether bats are present. The proposed works on the property will only affect a small section of the front roof, and combined with the classification of low potential to host bats, it is considered that the risk posed to individual bats or the local bat population is slight. As such no further survey work is required, unless the plans change such that a significant part of the building is re-roofed.

**Table 3: Summary of site suitability for bats.**

Suitability	Roosting habitat-summer	Commuting/ foraging habitat
<b>Negligible</b>	No features found that are likely to be used	No features found that are likely to be used
<b>Low</b>	A structure with one or more potential roost sites, suitable for opportunistic use. Unlikely to be used by large numbers of bats or on a regular basis.	Habitat that could be used by small numbers of commuting or foraging bats, but isolated and not well connected to other suitable features.
<b>Moderate</b>	Structure with one or more potential roost sites, that could be used by bats – but unlikely to support roost of high conservation status.	Continuous habitat connected to wider landscape that could be used by bats for foraging and/ or commuting.
<b>High</b>	Structure with one or more roost sites that are obviously suitable for larger numbers of bats on a more regular basis or for a longer period of time.	Continuous high-quality habitat that is well connected to the wider landscape and likely to be used regularly by foraging and/or commuting bats. Site near to and well connected to known bat roosts.

*Table based on Table 4.1 of 'Bat Surveys for Professional Ecologists', BCT 2016*

### **3.3 Roost surveys**

No roost surveys were required for this application.

### **3.4 Other species**

No evidence of other protected species, such as nesting birds, was seen.

## **4 Assessment**

### **4.1 *Constraints on survey information***

This assessment was carried out outside the main bat survey season, and as such direct evidence of bats was less likely to be seen (such as droppings in external areas).

Close access was possible to the all the lower external walls and eaves. The roof and upper walls and eaves could only be inspected using high power torch and binoculars.

There were no restrictions on access into the roof voids.

These constraints are not considered to affect the results of the inspection survey, but have been used to guide the need for any additional survey work at the building.

### **4.2 *Constraints on equipment used***

The conditions during the surveys were suitable for survey purposes and for the equipment used.

### **4.3 *Potential impacts of the development***

#### **4.3.1 *Designated sites***

The proposed development will not have any negative impacts on nearby designated sites.

#### **4.3.2 *Roosts***

No confirmed current or historic bat roost will be lost or damaged by the proposed development.

The proposed development is unlikely to directly affect any of the identified potential roost sites (such as those under ridge slates). There is however a small risk of encountering bats under some of the roof slates, and affecting other areas through vibration and noise disturbance. It is considered that the likelihood of any impacts on individual bats or the local bat population is slight.

Bats are highly mobile animals, especially males and non-breeding individuals, and can frequently change roosting location as conditions change. As the emergence surveys indicated reasonable levels of bat activity in the vicinity of the building and the building has moderate potential to host small numbers of bats at any time of the year (including a low risk of over-wintering use), there is a possibility that bats may be present at the time building works take place, and as such would be vulnerable to harm or disturbance.

#### **4.3.3 *Commuting and foraging habitat***

The area surrounding 'Cherry Trees House' is a good foraging location for bats with good connections to adjacent areas of high quality habitat. The proposed development is highly unlikely to have a detrimental impact on the quality of the foraging habitat for bats.

#### **4.4 *Legislation and Policy guidance***

Bats have declined in numbers dramatically across the UK and Western Europe in recent decades. Key factors linked to their decline are loss of roosting places due to building works and woodland destruction. Other factors implicated in their decline are changes in the countryside resulting in habitat loss and greater fragmentation of foraging habitats, and severing of commuting flightlines due to transport developments and hedgerow destruction.

As a consequence of these significant declines, bats and their roosts are protected under British and European law.

All bats are listed under Annexe IV of the EU Habitats Directive, and some under Annexe II. This law is transposed into English law into the Conservation of Habitats and Species Regulations (2010).

Bats are also protected in the UK under the Wildlife and Countryside Act 1981 (as amended).

As a result of the above legislation it is an offence to;

- Deliberately capture, injure or kill a bat,
- Disturb a bat such that their survival, reproductive capacity, or the well being of the local population is affected
- Intentionally or recklessly disturb a roosting bat, or block access to its roost.

If the proposed works were assessed as likely to commit an offence under the above legislation, then a European Protected Species (EPS) mitigation licence would need to be sought.

Based on the evidence gathered from the inspection and desktop search, and the experience of the surveyor, it is unlikely that an offence will be committed by the proposed development under the above legislation, and as such no EPS licence will need to be obtained.

## **5 Recommendations and mitigation**

### **5.1 Further survey**

Due to the low risk of encountering bats, and the small section of roof affected, not further survey work is required. If the project changes, however, to affect more of the roof, or if the building requires re-roofing then a dusk survey is recommended to establish whether bats use any of the potential roost site in the roof.

The findings of this inspection report are valid provided that work commences within 12 months of the date of this report.

### **5.2 Avoidance and mitigation measures**

#### **5.2.1 Proposals for roost sites and potential roost sites**

To minimise the risk of any harm to individual bats and maintain the favourable status of bats in the locality, the following avoidance and mitigation procedures are recommended:

1. All slates removed from the roof should be lifted carefully and checked underneath before they are slid down the roof for stacking. This is in case there are any itinerant bats roosting under the slates – bats often just cling to the underside when the slate is lifted and would be vulnerable to injury as the slates are stacked.
2. If a bat is discovered during building works, all work must cease immediately. Contact must be made with South Lakes Ecology (or if unavailable, the Bat Conservation Trust helpline on 0345 1300 228) to ensure that no harm comes to the bat(s) and to provide advice such that that work can proceed without further risk to bats.

#### **5.2.2 Proposals for foraging and commuting habitat**

No mitigation for foraging and commuting habitat is required for this development.

### **5.3 Mitigation licenses**

As stated in section 4.4, based on the evidence gained from the surveys, it is considered that the proposed building works at 'Cherry Trees House', as described in section 1.2, do not require an EPS licence.

### **5.4 Other species**

No other potential for protected species was noted during the inspection.

### **5.5 Enhancement measures**

Following local planning guidance, measures to encourage a net gain of biodiversity should be included for all new developments. There are many bird boxes around the garden, but no bat boxes – so it is recommended that some artificial bat roost boxes are erected. These can be bought or made (instructions emailed to the client). Bat boxes should be erected at height (over 3m is best) on south or west elevations of the house or mature trees. A minimum of two boxes should be installed.

## 6 Summary

A desktop search and thorough daylight inspection were carried out to assess whether bats use, or have recently used 'Cherry Trees House', The Green. An assessment was also made regarding the potential of this building to host bats, and whether the proposed development was likely to harm bats, or have an adverse impact on the local bat population.

The property is a detached house with rendered walls and pitched slate roof. The building is split level, being on a steep hillside over the Duddon Estuary. 'Cherry Trees House' is currently occupied, and in a good general state of repair. Surrounding habitat is rural – with several small woodlands, agricultural land (primarily pasture and silage fields), scattered houses and wetlands.

Roosting potential was identified under some lifted slates and under ridge slates. These potential roosts could be used at any time of the year, and are most suited to use by individuals or small numbers of crevice roosting species. The roosts are not typical of hibernation roosts.

No evidence of bat activity was found, and there are no records of bats from the property or its immediate vicinity.

The property is assessed as having low potential to host roosting bats, and surrounding habitat is of moderate quality for feeding and commuting bats. Bat survey guidelines recommend a precautionary summer roost survey for properties with low roost potential, but as the proposed works only affect a small section of the roof it is considered that this is not required for this application.

There were no constraints on the survey conditions or equipment used that are considered to compromise the validity of the findings of this report.

The surrounding habitat and gardens provide moderate quality foraging habitat for bats, and these will not be impacted by the proposed development.

No evidence of bats currently using these buildings was found, and as such it is considered that this development would not require an EPS licence.

Bats are very mobile animals, and change roosting locations through the season as environmental conditions change (especially males and non-breeding females). The presence of some potential roost sites, moderate quality surrounding foraging habitat, and some local records of bats means that there is always a possibility of bats being present at the time building works are being carried out. As such, cautionary measures have been recommended in section 5.2 of this report, minimising the risk of harm to any itinerant bats present.

No other protected species were noted during the inspection survey.



## 7 References

Altringham, J.D. (2003) *British Bats* HarperCollins New Naturalist, London.

Bat Conservation Trust (2000) *Bat Atlas 2000- Distribution Atlas of Bats in Britain and Ireland*. Bat Conservation Trust, London.

Bat Conservation Trust (2016) *Bat Surveys - Good Practice Guidelines* 3<sup>rd</sup> edition. Bat Conservation Trust, London

Gunnell K., Murphy B. and Williams C. (2013) *Designing for Biodiversity: A technical guide for new and existing buildings*. RIBA Publishing, London

Korsten E. et al (2018) *Swarm and switch: on the trail of the hibernating common pipistrelle*. Bat News. No. 110 (Summer 2016). p. 8-10. Bat Conservation Trust. London

Middleton N (2019) *Assessing Sites for Hibernation Potential. A Practical Approach, including a Proposed Method & Supporting Notes*. Unpublished course notes.

Mitchell-Jones, A.J. & McLeish, A.P. (2004) *The Bat Workers' Manual* 3<sup>rd</sup> edition JNCC, Peterborough.

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

Russ, J (2012) *British Bat Calls* Pelagic Publishing, Exeter

Bat Conservation Trust [www.bats.org.uk](http://www.bats.org.uk)

JNCC, Bat habitat management pages <http://jncc.defra.gov.uk/page-2465>

Details on the work done regarding issues with bats and non-bitumen roofing membranes [www.batsandbrms.co.uk](http://www.batsandbrms.co.uk)

Details on status of bats in Cumbria <http://www.cumberlandbatgroup.org.uk>

Cumbria Biodiversity Data Centre, Cumbria Mammal Atlas <http://www.cbdc.org.uk/wildlife-in-cumbria/cumbria-mammal-atlas/>

## Appendices

### i) Photographs



**Image 1.** Front (west) elevation of property, showing small porch and flat roofed area affected by the proposals.

Note the general good condition of render and slates. No significant gaps were seen under the slates in this area.



**Image 2.** Side (north) elevation of the property showing hipped roof extension. This area is not directly impacted by the proposals.



**Image 3.** North-east corner of the property. The mortar is in good condition along the verges and no significant gaps were seen.





**Image 4.**  
Rear (east)  
elevation showing  
the existing  
veranda.

Note the good  
general condition of  
the roof.



**Image 5.**  
Rear (east)  
elevation of the  
property, showing  
the hipped roof  
extension at the  
northern end of the  
property.



**Image 6.**  
Showing the area  
under the soffits  
of the flat roof  
section on the  
west elevation of  
the property. No  
significant gaps  
were seen  
anywhere along  
the eaves.



**Image 7.**  
Interior of roof void.  
Note good condition  
of mortar under the  
slates.  
No droppings seen  
anywhere in any of  
the roof voids.



**Image 8.**  
Showing the dense  
cobwebs along the  
ridges typical of all  
the roof voids  
inspected in the  
property. This  
indicates a lack of  
disturbance in the  
loft by animals such  
as bats.