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Arboricultural & Ecological Consultancy
Chartered Arboriculturalists & Environmentalists

Bat Activity Survey

Of

Thompson's Walls, Kilham

For

Sadler Brown

Consulting Arborist Society.com
PROFESSIONAL MEMBER

CERTIFIED ISA ARBORIST

Institute of Chartered Foresters
Registered Consultant

Document Verification

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Original Bat Activity Survey	
Issued 31st August 2010	Authorised - A Watson
Revision	
-	
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-	-

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Part 1 - Background & Supporting Information
A. Executive Summary.

1.1 We are instructed by Sadler Brown to provide a Bat Activity Survey at Thompson's Walls, Kilham This included a dusk and dawn survey (within a 24hr period) and a separate dusk survey. This survey methodology concurs with the earlier bat scoping survey for the site produced by the Landscape Agency dated April 2010. The client is proposing to demolish the existing bungalows and replace them with a larger dwelling and convert the stone built double height traditional barn into a bunk barn.

1.2 Thompson's Walls is a farmstead situated in an upland location within the Northumberland National Park. The farmstead comprises of two semi-detached bungalows, a series of stone built barns and two modern steel framed buildings. There are no well defined bat corridors as such but the area contains three small areas of woodland along with scattered trees and sparse hedging.

1.3 Bat emergence and field survey were undertaken on the evening of Tuesday 17th August, the dawn of Wednesday 18th August and the evening of Wednesday 25th August by Tricia Snaith, Andrew Watson and Tim Archment. The surveys were carried out during the summer bat survey season.

1.4 Northumberland Bat Group and the NBN gateway have been consulted for existing bat records in a previous report.

1.5 Although only a small roost was found at Thompsons Wall's the site is considered as having a medium potential to support bats. As bats are a Northumberland Biodiversity Action Plan (NBAP) species, roost enhancements should be included during any future development or refurbishment.

1.6 It is advised that a protected species licence is obtained for the work proposed on the barn as bats are likely to be affected by the development. An Ecologist should be available during any work around the identified roost area. Planning permission will be required before a protected species licence will be issued by Natural England.

1.7 Considering the scale of the development we do not anticipate any significant increases in noise, disturbance and lighting, therefore any post development interference impacts are unlikely to be significant particularly if roost enhancements are included.

1.8 It is considered that the habitat has moderate potential to support the common pipistrelle bat, but the absence of significant tree or shrub cover decreases the potential for the presence of Brown long eared, Soprano pipistrelle and *Myotis* species of bats. There is a high roosting potential within the existing buildings.

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B Introduction

B.1 Background To Activity/Development

2.1 We are instructed by Sadler Brown to provide a Bat Activity Survey at Thompson's Walls, Kilham. The client is proposing to demolish the existing bungalows and replace them with a larger dwelling and convert the stone built double height traditional barn into a bunk barn. The remaining buildings will remain essentially unaltered.

2.2 A Bat scoping survey was carried out by The Landscape Agency in March 2010, bat activity surveys were recommended for three buildings which were identified as having a high potential for roosting bats. These were the bungalow complex, the double storey stone barn and the traditional open fronted buildings.

2.3 Bats have suffered from severe decline historically. To help combat this all UK bat species are protected by law, under the Conservation of Habitats and Species Regulations 2010 (see appendix I) and under certain circumstances planners need to consider the presence or otherwise of protected species and the extent to which they may be effected should be established, see PPS9 (see Appendix II).

B.2 Full Details Of Proposed Works On Site That Are To Be Covered By The Licence

2.4 The development options for the site are detailed in the planning application. The basic proposals are:-

1. Demolition of the existing bungalows and erection of a new property near to the position of the bungalows
2. Conversion of the two storey barn and stone buildings into bunk accommodation and/or self catering accommodation

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C Survey & Site Assessment

C.1 Pre-existing Information On The Bat Species At The Survey Site.

3.1 The Landscape Agency prepared a bat scoping survey in April 2010, including information obtained from the following sources

a) Northumberland Bat Group

b) A search of the NBN gateway site.

3.2 A detailed buildings survey was also carried out in March 2010 by the above.

C.2 Status Of Species

3.3 There are 18 species of bat in the UK (17 of which are known to be breeding in the UK), all of which are protected by law due to a dramatic decrease in population.

Bats are widespread throughout the UK, with the greatest species diversity in the south-west in both urban and rural areas.

An analysis of data from "The state of the UK's bats" a product of the NBMP, gives evidence showing that three of the UK bats species have shown statistically significant positive trends while the Common and Soprano Pipistrelles have shown negative trends from colony counts and the other species have no statistically significant changes.

3.4 Local status

There are eleven species of bat known to occur in Northumberland (the Alcathoe bat has recently been recorded in Kielder Forest), of which eight are known to breed.
There are three species of pipistrelle found in the county; Common pipistrelle, Soprano pipistrelle and Nathusius' pipistrelle. The latter is a very rare bat, there is little known about it. Unfortunately the other two bat species were only recently separated and until the early 1980's all pipistrelles were noted as Common pipistrelles.

All pipistrelles are usually happy to live in bat boxes and modern houses and eat vast quantities of midges. They come out around dusk or up to about 30 minutes after. All three species have an erratic fluttery flight pattern, which help distinguish them from smaller *Myotis* bats, which are a similar size. These are the bats most people will come across.

The *Myotis* bats are a genus of similar looking and sounding bat species with varying preferences and characteristics. There are five species in Northumberland; Daubenton's Bat, Natterer's bats, Whiskered bats, Brandt's bat and the recently found Alcathoe bat.

Noctule bats are localised in the areas mature woodland, in rural areas.

Brown long-eared bats are reasonably widespread, but localised.

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Northumberland Bat Group is currently going through old records and visiting sites to gather more information on known bat roosts, to determine which bats are in residence, as part of Northumberland's Biodiversity Action Plan.

C.3 Objectives Of The Survey.

3.5 The aims of the surveys are to:

a) determine presence/absence of bats within the survey area;
b) determine the intensity of bat activity both spatially and temporally (to help estimate bat populations);
c) determine the type of activity, most usually:
   - foraging (by feeding buzzes);
   - commuting (by high directional pass rates);
   - mating (by mating social calls);
d) find roosts by tracking back bat flight paths or observing dawn flight activity at roosts; and/or find emergence of bats from a building or built structure.
e) It should be noted that absence is near impossible to prove, as there is always a chance of finding a bat. Their high mobility means that it is virtually impossible to rule out bats using any type of structure for roosting or habitat for foraging or as a flight path. When there is no conclusive evidence of bats, a potential for bat presence should be given.

C.4 Scaled Plan/Map Of The Survey Area

Thompson's Walls, Kilham, Northumberland. TD12
Grid Ref: NT 866 304

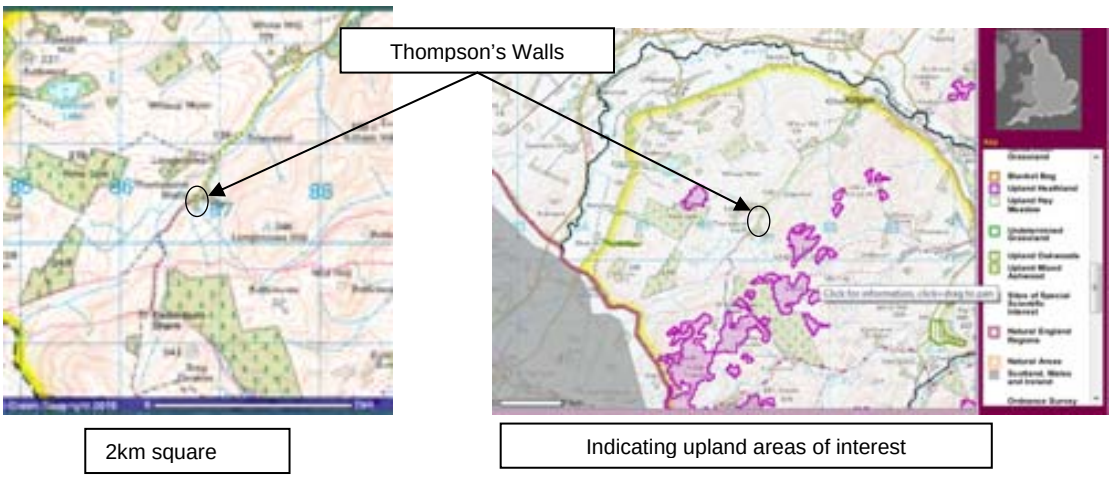

Figure 1 – Location maps of Thompson's Walls

C.5 Site/Habitat Description

3.6 Thompson's Walls is situated in the border uplands of Northumberland, within the Northumberland National Park, 2km from the Scottish Border. The daytime walkover survey (scoping survey) can be carried out at any time of the year during daylight hours to identify the potential value of the site for bats.

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Figure 2 – Aerial images showing position of the survey site and the surrounding habitat.

3.7 Potential roosting sites were identified throughout the farmstead; these were in the bungalow complex, the double storey stone barn and the traditional open fronted buildings. Areas of heightened potential in the buildings include the roof spaces and walls, where access points were available through loose and slipped tiles. Missing pointing and loose stonework within the traditional barn also increases potential for bat roosts. The bungalow complex has several potential bat access points at the eaves of the building while the open fronted buildings have potential for crevice roosting bats and as warm-up areas.

3.8 The remaining steel framed buildings were considered to have a low potential for bat roosting.

3.9 The walkover survey and habitat information provided by various bodies indicate that the likelihood of bats being present is low to medium with some potential roost sites in the buildings. The surrounding area is increasing in its suitability for foraging habitat for bats as the nearby woodlands establish and mature. The 2004 Google Earth maps (figure 2 above) indicate that the surrounding areas of woodland were sparse and provided limited habitat at the time which has improved over the intervening years.

C.6 Field Surveys.

Evaluation of the site by ourselves and the Landscape Agency as part of their bat scoping survey concurred that bat activity survey consisting of a dusk and dawn survey (within a 24hr period) and a separate dusk survey should be undertaken within the bat survey season.

3.10 Buildings Survey

A full buildings survey was carried out by The Landscape Agency (see bat scoping survey April 2010).

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3.11 Dusk/ Dawn Survey

3.11.1 Dusk emergence and dawn re-entry surveys are undertaken during the period that bats are most active (usually April through to the end of September) and are used to locate roosts in trees, buildings or built structures, as bats are not always found by internal and external inspection surveys.

An emergence survey can also give a reasonable estimate of the number of bats present. The structure has been surveyed in daylight to assess the features and potential exit locations and the number of surveyors required.

Sufficient surveyors are used so that all aspects of the structure (and as such any potential entry or exit holes) can be viewed at one time from a single position. Surveyors are positioned so their line-of-sight will not exceed 50m.

3.11.2 Activity surveys are carried out using the following timeframes:

- Emergence survey commence ½ hour before sunset until 2 hours after sunset
- Re-entry survey commence 2 hours before dawn until ½ hour after dawn

3.11.3 Bat detectors which pick up the echolocation calls are used to assist in detecting bats.

Equipment used:-

- Ladders telescoping and extending
- High power & close focussing binoculars
- Cluson high power torches & petzl head torches
- SeeSnake endoscope with a number of 1m extensions
- Batbox duet bat detector and recording device
- Ciel advanced stereo heterodyne bat detectors

3.12 Personnel

Tricia Snaith - Ecological Consultant – five years experience of carrying out bat surveys and holder of Natural England science & education licence no 20094169. Member of Durham Bat Group.

Andrew Watson – Chartered Biologist & Environmentalist, bat worker with five years of previous bat work experience. Member of Durham Bat Group.

Tim Archment – Member of Durham Bat Group with two years experience

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C.7 Survey Results.

The raw data is presented in - Annex G.2 Raw survey data.

3.13 Building survey

An additional building scoping survey was carried out on Tuesday 17th August to clarify and update the findings from the previous bat scoping survey undertaken by the Landscape Agency.

At the time of the survey the southern bungalow was occupied by the farmer's family whilst the northern end remaining unoccupied and was used for general storage. The remaining farm buildings were not occupied except for the storage of various machinery and trailers.

There was evidence of bats using the site, small amounts of bat droppings were found on two of the bungalow window sills (eastern & western sides) whilst bat droppings were also found on the southern & northern walls of the two storey barn. There was no evidence to suggest that a large number of bats have been present previously.

A

B

Figure 3 – Positioning of buildings
A – l to r, Bungalow, large modern building and open sided buildings B – traditional double storey barn

Figure 4 – Internal view of southern upper storey of the barn

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3.14 Dusk/ Dawn Survey

Raw data can be found in the appendix (G2.1 Field Survey)

3.14.1 Surveys were undertaken on the evening of Tuesday 17th August, the dawn of Wednesday 18th August and the evening of Wednesday 25th August by Tricia Snaith, Andrew Watson and Tim Archment. The weather was warm and dry with no visibility constraints on all occasions.

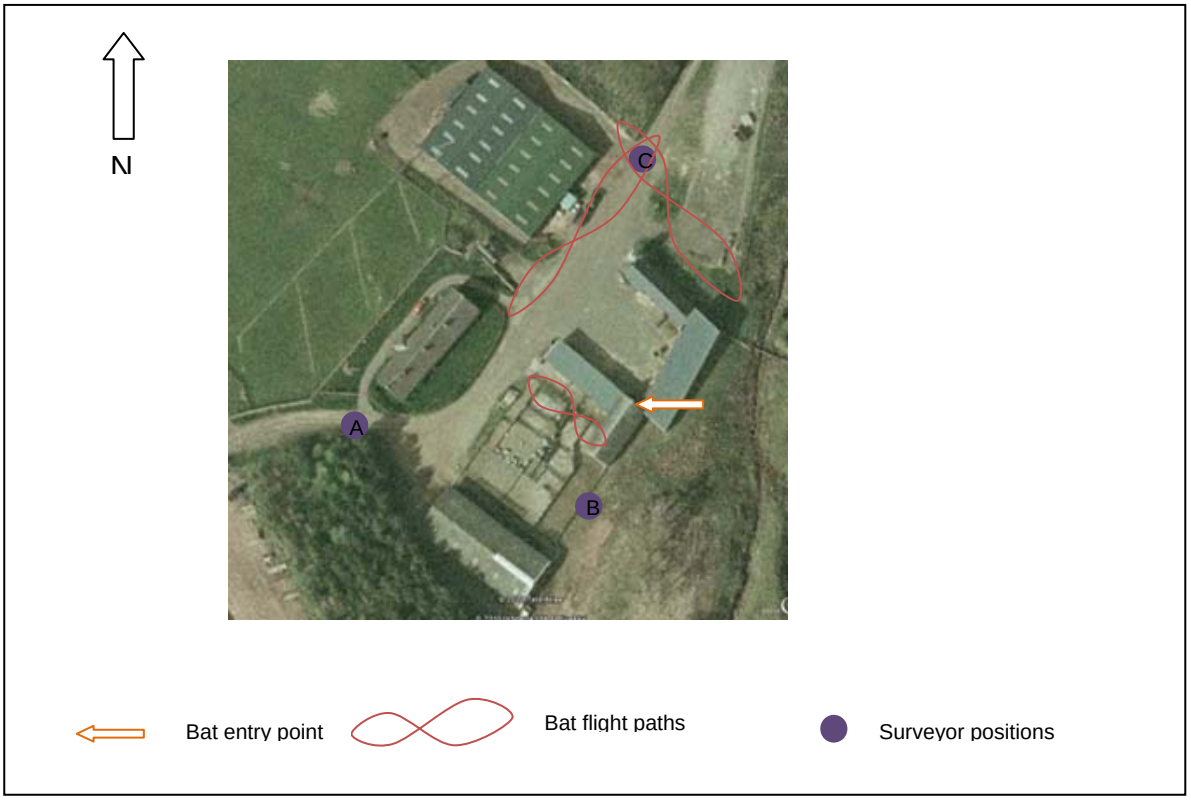

Figure 5 – Diagram of buildings (not to scale)

3.14.2 Tuesday 17th August 2010, surveyors arrived on site at 18:00 in order to carry out a building scoping survey and clarify the layout of the site. Surveyors were in position by 20:10, with sunset at 20:40.

3.14.3 The first bat, a common pipistrelle, was observed at 21:04 around the feed hopper tower, to the east of the buildings. This bat continued to feed around the area. Surveyor B also monitored the interior of the barn for any internal activity; non was seen apart from a single pipistrelle flying in and out occasionally (the barn had been used for clipping sheep and there was a large number of midges present). Surveyor C also monitored the open fronted buildings for bat activity, none were observed. Single pipistrelle bats were observed feeding during the survey period. Surveying finished at 23:00 hours.

3.14.4 A dawn survey was carried out the following morning Wednesday 18th August, surveying started at 3.30am, with dawn at 5:41. A single pipistrelle was observed feeding at 4:10 around the central yards. During the session three pipistrelles were observed feeding, by 5:13 the swallows emerged to feed. Around 5:30 the bats were observed circling around the northern end of the double storey barn, after which no

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more bats were seen or heard. Both surveyor B & C thought they saw a bat fly into the upper storey of the northern section of the two storey barn. No bats were seen to forage or fly near to the bungalows.

3.14.5 On the return dusk survey of 25th August 2010, the survey began at 20:10. Surveyor B started the survey within the hayloft space at the northern end of the two storey barn, during this time a bat was observed in the roof space at the apex of the pitched roof. The bat did not emerge into the barn but exited via a hole between the wall and the roof where tile loss had occurred to commence feeding around the yard. A maximum of two bats were observed in this roost. The surveyor then continued the reminder of the survey period outside the building.

Throughout the evening single pipistrelles were observed feeding around the yard areas, occasionally foraging along the woodland edge. The bats were monitored until 23:00 when the surveyors left the area.

North gable end of two-storey traditional barn

Figure 6 – position of roost

3.14.6 During all the surveys attention was paid to the bungalow but no bats were seen or heard in this vicinity.

During all three surveys the area was monitored using bat detectors, but the bats were also clearly visible against the night sky.

C.8 Interpretation/Evaluation Of Survey Results

Species of bat recorded - Common pipistrelle *Pipistrellus pipistrellus*
Count/estimate of bat numbers- One to five
Status of site – Roost for a few pipistrelle bats
Roost significance- Low to medium
Constraints on survey – late in the maternity roosting season

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D Impact Assessment In Absence Of Mitigation.

D.1 Short-term Impacts: Disturbance

4.1 Without mitigation, disturbance would result in noise, vibration, lighting and possible access obstruction to roost sites. Even with mitigation, disturbance will occur but delaying works until a less sensitive time of year will avoid disturbing breeding and hibernating bats.

Disturbance may already have occurred in the past, due to the building possessing internal high powered spot lights, these could have been used by the previous owner to work the livestock in the building, this could have clashed with the time bats would be investigating buildings for suitable roost sites during the spring time. These buildings were previously used for cattle and contain a cattle crush. At present the building has only been used for clipping sheep.

D.2 Long-term Impacts: Roost Modification

Without mitigation, the impact on bat population is indicated in the table below.

Species	Impact on population at a local level	Impact on population at a regional level	Impact on population at a national level
Pipistrelle	Low	Negligible	Negligible

The addition of an internal ceiling could improve the roost by reducing the influx of light to the roost area thereby increasing the amount of roof space available to use.

D.3 Long-term Impacts: Roost Loss.

Without mitigation, the impact on bat population is indicated in the table below.

Species	Impact on population at a local level	Impact on population at a regional level	Impact on population at a national level
Pipistrelle	Low	Negligible	Negligible

D.4 Long-term Impacts: Fragmentation and Isolation.

Without mitigation, there is unlikely to be a significant impact on fragmentation and isolation since the development is not likely to adversely affect any trees, shrubs or hedgerows in the vicinity. Pipistrelles tend to fly close to linear features and close to a tree canopy so the presence of protected flight routes around roosts is important. The loss of linear features, leaving roosts isolated in the landscape can thus be damaging.

D.5 Post-development Interference Impacts.

Without mitigation, post development interference impacts could include additional external lighting but compared to the present internal lighting this could be considered an improvement to the bat habitat.

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D.6 Predicted Scale Of Impact

Species	Predicated scale of impact on population at site level	Predicated scale of impact on population at county level	Predicated scale of impact on population at regional level
Pipistrelle	Low to medium	Negligible	Negligible

A few pipistrelle bats are present on site. Pipistrelles are known to move roosts regularly, without mitigation the roost could be destroyed.

E Land Ownership

The site is currently managed by the client. Bat roost features will not require regular maintenance.

The Natural England bat licence is a legally binding document which can be enforced by Natural England.

Bats and their roosts are fully protected. The present and future owners have a legal obligation to safeguard bats and their roosts at this location.

E.1 Mitigation Site Ownership

Not applicable

F References:

"The state of the UK's bats" – Bat Conservation Trust
Bat mitigation guidelines, Jan 2004
Bat Surveys – Good Practice Guidelines
The Conservation of Habitats and Species Regulations 2010

For and on behalf of AllAboutTrees Ltd

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G Annexes

G.1 Pre-existing survey reports;

Bat Scoping Survey Report by the Landscape Agency on 6th April 2010

G.2 Raw survey data.

G2.1 Field Survey

	Survey 1	Survey 2	Survey 3
Personnel involved	Tricia Snaith/ Andrew Watson/ Tim Archment	Tricia Snaith/ Andrew Watson/ Tim Archment	Tricia Snaith/ Andrew Watson/ Tim Archment
Date	Aug 17th 2010	Aug 18th 2010	Aug 25th 2010
day/evening	dusk	dawn	dusk
weather conditions (wind, rain)	No wind or rain	No wind or rain	No wind or rain
temperature	10°c	9°c	10°c
Sunset/sunrise	20:43	5:50	20:21
Civil twilight	21:11	5:09	20:59
Nautical twilight	21:59		21:37
Dark	N/A	N/A	N/A
Bat activity			
Start of survey	20:10	3.30	20:10
	21:05 Single pipistrelle around silage area	4:10 Single pipistrelle bat feeding on site.	20:38 pipistrelle seen in rafters
	21:17 pipistrelle bat seen feeding over sheep pens/ entering building and leaving	4:50 3 pipistrelles feeding on bottom wood	20:40 pipistrelle heard in yard
	21:21 pipistrelle feeding over wet area behind traditional buildings		21:00 pipistrelle in centre yard
	21:28 pipistrelle feeding below buildings	5:14 swallows emerged	21:02 pipistrelle circling yard and buildings
	22:02 pipistrelle feeding over sheep pens	5:30 pipistrelle observed circling over gable end	21:20 pipistrelle in distance
	22:13 pipistrelle over yard		21:25 pipistrelle over silage bags
	Bats continued to rotate around the above areas		21:41 – 21:56 pipistrelle around bottom yard
	22:50 last bat heard		22:05 noticeable drop in temperature
	Surveyors slept under canvas on site	No more bats observed on site	No more bats seen.
Finish survey	23:00	6:20	23.00

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G5 Appendix 1 - The Conservation of Habitats and Species Regulations 2010 (relevant sections)

PART 3
PROTECTION OF SPECIES

Protection of animals

European protected species of animals

40.— (1) Schedule 2 (European protected species of animals) lists those species of animals listed in Annex IV(a) to the Habitats Directive which have a natural range which includes any area in Great Britain.

(2) References in this Part to a "European protected species" of animal are to any of those species.

Protection of certain wild animals: offences

41.— (1) A person who—

(a) deliberately captures, injures or kills any wild animal of a European protected species,

(b) deliberately disturbs wild animals of any such species,

(c) deliberately takes or destroys the eggs of such an animal, or

(d) damages or destroys a breeding site or resting place of such an animal, is guilty of an offence.

(2) For the purposes of paragraph (1)(b), disturbance of animals includes in particular any disturbance which is likely—

(a) to impair their ability—

(i) to survive, to breed or reproduce, or to rear or nurture their young, or

(ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or

(b) to affect significantly the local distribution or abundance of the species to which they belong.

(3) It is an offence for any person—

(a) to be in possession of, or to control,

(b) to transport,

(c) to sell or exchange, or

(d) to offer for sale or exchange, anything to which this paragraph applies.

(4) Paragraph (3) applies to—

(a) any live or dead animal or part of an animal—

(i) which has been taken from the wild, and

(ii) which is of a species or subspecies listed in Annex IV(a) to the Habitats Directive; and

(b) anything derived from such an animal or any part of such an animal.

(5) Paragraphs (1) and (3) apply regardless of the stage of the life of the animal in question.

.....

(8) A person guilty of an offence under this regulation is liable on summary conviction to imprisonment for a term not exceeding six months or to a fine not exceeding level 5 on the standard scale, or to both.

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G6 Appendix 2 - Planning Policy Statement 9: Biodiversity and Geological Conservation (relevant sections)

Introduction

Planning Policy Statements (PPS) set out the Government's national policies on different aspects of planning in England and on the protection of biodiversity and geological conservation through the planning system. These policies complement, but do not replace or override, other national planning policies and should be read in conjunction with other relevant statements of national planning policy. This PPS replaces *Planning Policy Guidance Note 9 (PPG9) on nature conservation* published in October 1994.

Biodiversity is the variety of life in all its forms as discussed in the *UK Biodiversity Action Plan*. *Working with the grain of nature: a biodiversity strategy for England*. In moving towards this vision, the Government's objectives for planning are:

- to promote sustainable development
- to conserve, enhance and restore the diversity of England's wildlife and geology
- to contribute to rural renewal and urban renaissance by:

– enhancing biodiversity in green spaces and among developments so that they are used by wildlife and valued by people, recognising that healthy functional ecosystems can contribute to a better quality of life and to people's sense of well-being; and
– ensuring that developments take account of the role and value of biodiversity in supporting economic diversification and contributing to a high quality environment.

The planning system has a significant part to play in meeting the Government's international commitments and domestic policies for habitats, species and ecosystems.
National Planning Policies

Key Principles

1. Regional planning bodies and local planning authorities should adhere to the following key principles to ensure that the potential impacts of planning decisions on biodiversity and geological conservation are fully considered.
(i) Development plan policies and planning decisions should be based upon up-to-date information about the environmental characteristics of their areas.
(ii) Plan policies and planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests. They should ensure that appropriate weight is attached to protected species.
(iii) Plan policies on the form and location of development should take a strategic approach to the conservation, enhancement and restoration of biodiversity and geology, and recognise the contributions that sites, areas and features, both individually and in combination, make to conserving these resources.
(iv) Plan policies should promote opportunities for the incorporation of beneficial biodiversity and geological features within the design of development.
(v) Development proposals where the principal objective is to conserve or enhance biodiversity and geological conservation interests should be permitted.
(vi) The aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests

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Biodiversity within Developments

14. Development proposals provide many opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where appropriate.

Species Protection

15. Many individual wildlife species receive statutory protection under a range of legislative provisions

16. Other species have been identified as requiring conservation action as species of principal importance for the conservation of biodiversity in England. Local authorities should take measures to protect the habitats of these species from further decline through policies in local development documents. Planning authorities should ensure that these species are protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. Planning authorities should refuse permission where harm to the species or their habitats would result unless the need for, and benefits of, the development clearly outweigh that harm.

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Part 2 - Delivery Information

A. Mitigation And Compensation

A.1 Summary Of Mitigation Strategy

The existing number of pipistrelle bats will be maintained and may be increased as a result of the mitigation strategy. Specific positioning of roost access points and bat boxes will be discussed in detail at the design stage.

The strategy will include the following:

- Sensitive timing of the work to avoid bat maternity and hibernation seasons
- Re-use material to retain roosting habitat
- Create appropriate replacement new roost sites including
  - bat boxes
  - bat features in the walls of the building
- Direct external lighting away from roost entrances

B. Works To Be Undertaken By The Ecologist Or Suitably Experienced Person

B.1 Capture And Exclusion

Standard capture and exclusion methods may be employed.

As bats can remain in their building roosts year round, works that could affect bats will take place in the autumn or early spring periods (late September – October or late March – April).

A licensed Ecological Consultant will check the building(s) for bats prior to the building and maintenance work and be present during building and maintenance work to check for bats as roofs, timbers and wall cores become newly exposed.

Should any bats be discovered during any works (or suspicion arise about the possible presence of bats, for instance in a timber joint, behind a cavity, felt etc), that work will cease immediately and the licensed consultant employed to establish bat presence or otherwise and to advise as necessary.

B.2 Other Enhancements

If sufficient bat droppings are present in the existing roost, they will be collected and used to seed the new replacement roost sites.

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C. Works To Be Undertaken By The Developer/Landowner

C.1 Bat Roosts

C.1.1 In-situ Retention Of Bat Roosts

Present bat roost will be maintained.

C.1.2 Modification Of Existing Roosts

N/A

C.1.3 New Roost Creation

Habitat connectivity and habitat diversity will need to be retained within the development scheme.

Adequate replacement roost facilities must be created prior to the loss of the existing roost and well before the summer roosting period.

Roost creation will include:

- provision of bat boxes on site
- Provision of bat roost within the new build or renovation.

(More details can be found in *Biodiversity for Low and Zero Carbon Buildings: A Technical Guide for New Build* - Dr Carol Williams)

Brick boxes are designed for buildings, or underneath bridges, arches or tunnels, where conditions are relatively humid. They are particularly useful for new buildings or bridges to attract bats, or to provide new roost sites where existing buildings with bats are being renovated.

There are various bricks around to choose from:-

- Ibstock bat brick
- Norfolk bat brick
- Schwegler bat tubes - 1FR and 2FR models
- Forticrete bat box
- Tudor tiles
- Wienerberger bat boxes

External lighting should be directed away from roosts and their entrances.
The above details should be clearly shown on the architect's plans with scale bars.

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D. Post-development Site Safeguards

D.1 Habitat/site Management And Maintenance

The maintenance of the buildings and funding of works including all ecological work will be the responsibility of the developers.

D.2 Population Monitoring, Roost Usage etc.

Daytime inspections will take place before, during and immediately after development is completed. Monitoring will be undertaken in line with English Nature Bat Mitigation Guidelines, 2004.

D.3 Mechanism For Ensuring Delivery Of Post-development Works

The maintenance of the buildings and grounds will be the responsibility of the developers.

E. Timetable Of Works

The timetable aims to minimise impacts to bats by carrying out certain works outside the hibernation and summer roosting period. To avoid summer roosting and hibernation periods works should be conducted in late March/ April and/or late September/ October.

Procedure (must be carried out in following order)

A: Development activities and timing		
Activity	**Timing**	**Notes**
Example: Start and complete 'barn A' roof repairs	Mid-September to end-October 2009	Remove tiles and rotten timbers by hand only; supervised by licensed ecologist.
1. Planning permission obtained		Ongoing
2. Draft and send Natural England bat licence application -		To be drafted on receipt of planning permission
3. Natural England bat licence obtained -		Minimum of 6 weeks after application sent
4. Replacement roosts created		To be confirmed
5. Capture / exclusion work - Late March/April or late September/October		To be confirmed
6. Development starts		To be confirmed

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