Sir William Fox Hotel, Westoe
South Shields

October
2020

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R01	Draft	Feb 2020	First Issue	BC	JW	MEM
R02	Final	Oct 2020	Dusk/dawn survey results added	DG	ZA	ADM

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A. SUMMARY

E3 Ecology Ltd was commissioned in November 2019 to undertake a daytime bat risk assessment of the Sir William Fox Hotel in South Shields. Following updates to the development proposals, a single dusk emergence bat survey was commissioned in September 2020, as well as a period of remote monitoring within the loft space.

It is proposed to convert the 13 bedroom hotel into seven residential apartments, four one-bed and three two-bed, and works will largely be internal, though roof lights are now included in the proposals.

Consultation with the MAGIC website[1] indicated that there are no protected sites listed for bats within 2km. The site lies within 2km of two Natura 2000 sites, the Durham Coast Special Area of Conservation (SAC) and Northumbria Coast Special Protection Area (SPA) and RAMSAR. Due to the small size and nature of the development, impacts are not anticipated as it is not expected that there will be a net increase in recreational pressure at the coast. The site lies within 2km of two Sites of Special Scientific Interest (SSSI) and their Impact Risk Zones (IRZ). However due to the small size of the development, it does not meet the criteria for further discussion with Natural England.

Durham Bat Group provided records of only common pipistrelle within 2km of the site with just three records within 1km. Of these, only one record was of a small common pipistrelle roost from an undisclosed location.

Initial site inspection was undertaken on 24th January 2020 and comprised a detailed inspection of the structures on site. The site is situated in an area dominated by residential development. Overall, the habitats present in the local area are of low suitability for use by foraging/commuting bats.

There are two buildings on site. The buildings are two-three stories and brick built, with Building 2 being largely rendered. Both buildings have pitched slate roofs which are in good condition. Building 1 has dormer windows and a sash window on the southern elevation; these are well sealed. Pointing is in relatively good condition, internally and externally; however, there are some gaps in the brickwork on the gable end of Building 1 and gaps at the wall tops of Building 2 leading into the roof void. Both buildings share a medium-sized roof void, of a traditional attic or A-frame design, which is lined with breathable membrane. The buildings are considered to be of low suitability for use by roosting bats. Thorough internal and external inspection of the buildings recorded no field signs.

The dusk emergence survey was carried out on 29th September 2020 in suitable weather conditions. No roosts were recorded and no bats were active to the north and west of the buildings, with only a small number of common pipistrelle foraging passes recorded to the south-east of the buildings.

A remote monitoring survey was carried out in the week prior to the dusk survey in order to provide supplementary information, given that third party land access was not possible to view one elevation of the property. No bat calls were recorded within the loft space.

No protected species were recorded during the initial survey; however, there was evidence of nesting birds recorded within the loft void.

[1] MAGIC website: www.magic.gov.uk

Potential impacts of the development include:

- Residual risk of the loss of potential crevice roost locations.
- Residual risk of harm / disturbance to nesting birds should works be undertaken during the nesting bird season (March to August inclusive).
- Residual low risk of harm or disturbance to bats if they inhabit the buildings in the time leading up to the commencement of works.

Key mitigation measures include:

- External lighting that may reduce bat use of the local area will be avoided. Where security lights are required, these will be of minimum practicable brightness, be set on a short timer and will be motion sensitive only to larger objects.
- Works to install the roof lights will be undertaken outside of the bird nesting season (March to August inclusive) unless a checking survey by a suitably experienced ornithologist confirms the absence of active nests.
- Works to install the roof lights and any other external works required, including works to the roof or fasciae, will be undertaken to a method statement. Any loose bricks will be removed carefully by hand, being aware that bats may be present beneath slates, within mortise joints, cavity walls, between loose bricks, between lintels and in gaps around window frames.
- Two bird boxes suitable for either house sparrow, starling or swift will be provided on site.
- Four bat bricks or building-mounted bat boxes will be installed in the newly developed buildings.
- If bats are found during works, works will stop in that area and the ecological consultant will be contacted immediately. If it is necessary to move the bats for their safety, this will be undertaken by a licensed bat handler.

If development does not happen within 12 months of the last survey, an updating survey will be required, ideally to be undertaken between May and August.

If you are assessing this report for a local planning authority and have any difficulties interpreting plans and figures from a scanned version of the report, E3 Ecology Ltd would be happy to email a PDF copy to you. Please contact us on 01434 230982.

B. Introduction

The purpose of this report is:

- To detail the results of the survey work of the buildings on site that has been undertaken for bats.
- To provide recommendations to be incorporated into the design for the site.
- To provide recommendations for further survey work, where required.
- To set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any potentially significant effects.
- To identify appropriate enhancement measures.

The site is located within the centre of Westoe at an approximate central grid reference of NZ370 659.

Figure 1: Site Location

(OS mapping © Crown copyright and database rights 2016/2017 OS 0100039392)

B.1 Current Development Information

It is proposed to convert the hotel into seven residential apartments. Works will largely be internal, however they will include installation of roof lights.

FIGURE 2: DEVELOPMENT PROPOSALS
(Blake Hopkinson Architecture Design)

C. Planning Policy and Legislative Context

C.1 National Planning Policy

The table below details the key paragraphs from the National Planning Policy Framework (NPPF)[2] relating to the natural environment:

Table 1: National Planning Policy Framework: Conserving and Enhancing the Natural Environment	
Statement	**Paragraph**
Planning policies and decisions should contribute to and enhance the natural and local environment by: a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland; c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate; d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.	*170*
Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework[3]; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.	*171*
Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and the Broads[4]. The scale and extent of development within these designated areas should be limited. Planning permission should be refused for major development[5] other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of: a) the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy; b) the cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and c) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.	*172*
Within areas defined as Heritage Coast (and that do not already fall within one of the designated areas mentioned in paragraph 172), planning policies and decisions should be consistent with the special character of the area and the importance of its conservation. Major development within a Heritage Coast is unlikely to be appropriate, unless it is compatible with its special character.	*173*

[2] National Planning Policy Framework (February 2019), Department for Communities and Local Government,
[3] Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.
[4] English National Parks and the Broads: UK Government Vision and Circular 2010 provides further guidance and information about their statutory purposes, management and other matters.
[5] For the purposes of paragraphs 172 and 173, whether a proposal is 'major development' is a matter for the decision maker, taking into account its nature, scale and setting, and whether it could have a significant adverse impact on the purposes for which the area has been designated or defined.

Table 1: National Planning Policy Framework: Conserving and Enhancing the Natural Environment	
Statement	**Paragraph**
To protect and enhance biodiversity and geodiversity, plans should: a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity[6]; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation[7]; and b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.	*174*
When determining planning applications, local planning authorities should apply the following principles: a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest; c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons[8] and a suitable compensation strategy exists; and d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.	*175*
The following should be given the same protection as habitats sites: a) potential Special Protection Areas and possible Special Areas of Conservation; b) listed or proposed Ramsar sites[9]; and c) sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.	*176*
The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.	*177*

Section 40 of the Natural Environment and Rural Communities Act 2006, places a duty on all public authorities in England and Wales to have regard, in the exercise of their functions, to the purpose of conserving biodiversity.

Planning Practice Guidance[10] states:

[6] Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.
[7] Where areas that are part of the Nature Recovery Network are identified in plans, it may be appropriate to specify the types of development that may be suitable within them.
[8] For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.
[9] Potential Special Protection Areas, possible Special Areas of Conservation and proposed Ramsar sites are sites on which Government has initiated public consultation on the scientific case for designation as a Special Protection Area, candidate Special Area of Conservation or Ramsar site.
[10] Planning Practice Guidance: Natural Environment (www.planningguidance.communities.gov) Updated July 2019

- Planning authorities need to consider the potential impacts of development on protected and priority species, and the scope to avoid or mitigate any impacts when considering site allocations or planning applications. (para. 016)
- Information on biodiversity and geodiversity impacts and opportunities needs to inform all stages of development (including site selection and design, pre-application consultation and the application itself). An ecological survey will be necessary in advance of a planning application if the type and location of development could have a significant impact on biodiversity and existing information is lacking or inadequate. (para. 018)
- Even where an Environmental Impact Assessment is not needed, it might still be appropriate to undertake an ecological survey, for example, where protected species may be present or where biodiverse habitats may be lost. (para. 018)
- As with other supporting information, local planning authorities should require ecological surveys only where clearly justified. Assessments should be proportionate to the nature and scale of development proposed and the likely impact on biodiversity. (para. 018)
- The National Planning Policy Framework encourages net gains for biodiversity to be sought through planning policies and decisions. Biodiversity net gain delivers measurable improvements for biodiversity by creating or enhancing habitats in association with development. Biodiversity net gain can be achieved on-site, off-site or through a combination of on-site and off-site measures. (para. 022)

C.2 Relevant Legislation

Within England all bat species are specially protected under the Conservation of Habitats and Species Regulations 2017 (as amended).

As a result there is a requirement to consult with Natural England before undertaking any works that may disturb bats or their roost, and under the Conservation of Habitats and Species Regulations it is illegal to.

- Deliberately kill, injure or capture bats.
- Deliberately obstruct access to a bat roost.
- Damage or destroy a bat roost.
- Deliberately disturb bats; in particular any disturbance which is likely 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

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

Under the Wildlife and Countryside Act (1981) the above offence of disturbing bats includes low level disturbance and as such under this act it is also an offence to:

- Intentionally or recklessly disturb at bat while it is occupying a roost.
- Intentionally or recklessly obstruct access to a roost.

Under the above legal protection, only the offences under the Conservation of Habitats and Species Regulations 2017 (as amended) are strict liability offences; the remaining offences, under the Wildlife and Countryside Act (1981), are offences only where they are carried out "intentionally or recklessly".

Under the Countryside and Rights of Way Act 2000 (CROW Act) the offence in section 9(4) of the Wildlife and Countryside Act 1981 of disturbing bats is extended to cover reckless damage or disturbance.

The Hedgerow Regulations 1997 provide for the conservation of important hedgerows and their constituent trees. The presence of a protected species such as bats is a relevant consideration when assessing whether a hedgerow is important and may influence a local planning authority's decision on whether to approve removal of such hedges.

C.3 WILDLIFE SITE POLICY AND LEGISLATION

Details of the legislation surrounding protected sites are provided in the appendices.

C.4 PRIORITY SPECIES

Although not afforded any legal protection, national priority species (species of principal importance, as listed in Section 41 of the NERC Act (2006)), and local and regional priority species, as detailed within the relevant biodiversity action plans, are material considerations in the planning process and as such have been assessed accordingly within this report.

The following bat species are listed as national priority species: Barbastelle bat, Bechstein's bat, noctule, soprano pipistrelle, brown long-eared bat, greater horseshoe bat and lesser horseshoe bat. 'Bats' as a species group is also listed on the relevant local biodiversity action plan for this site.

D. Methodology

D.1 Scope of Study

The scope of the study, in terms of the survey area and the desk study area, is based on professional judgement. The scope has been determined based on the site's characteristics, the nature of the surrounding area, the development proposed at the time of reporting and the likely associated zone of influence.

For this site the survey area comprised the green line boundary as defined within the figure below, with, in addition, a 50m buffer around the periphery appraised where access was available. The survey area included all potential roost sites within and adjacent to the survey area, which may be affected by the proposed development.

The desk study included an assessment of land-use in the surrounding area and a data search covering a 2km buffer zone (see below for further detail).

The level of survey effort employed at the site has taken account of the recommendations within the Bat Conservation Trust Good Practice Survey Guidelines[11].

The figures below illustrate firstly the site boundary and secondly, to provide context, the broad habitats present on site and within an approximate 500m buffer zone.

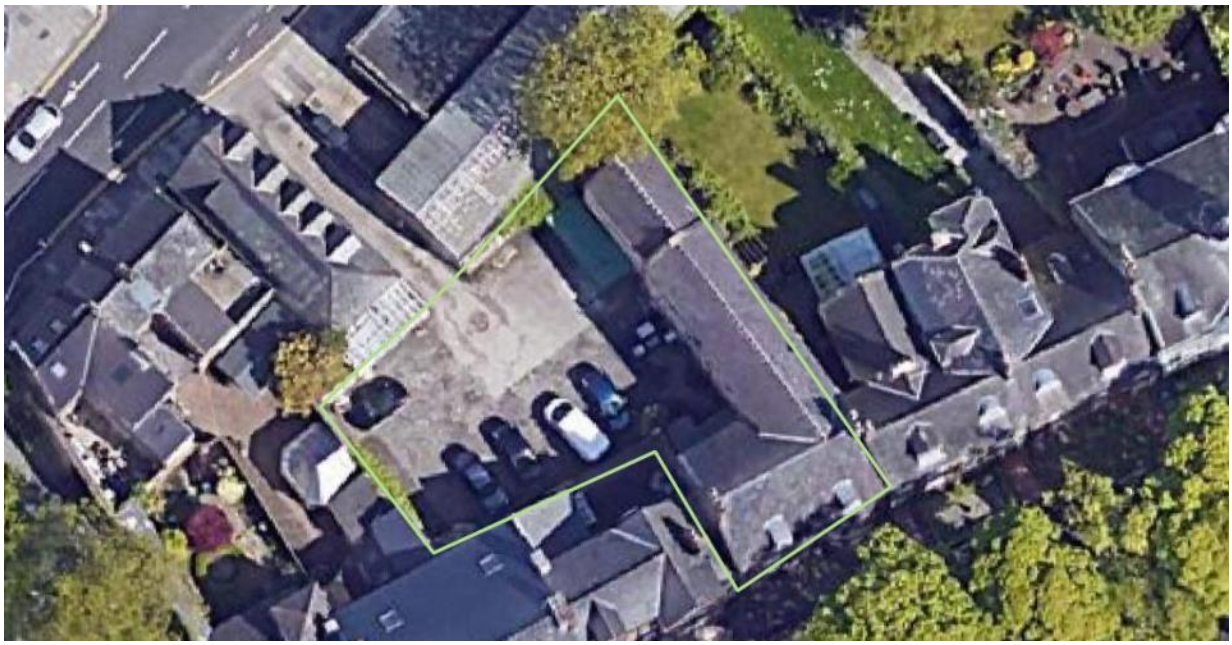


Figure 3: Site Boundary
(Reproduced under licence from Google Earth Pro.)

[11] Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

Figure 4: Site and Setting
(Reproduced under licence from Google Earth Pro.)

D.2 Desk Study

Initially, the site was assessed from aerial photographs and 1:25,000 Ordnance Survey maps. Following this, a data search was submitted to the local bat group in December 2019, requesting data relating to bats. In addition, a search was made of the MAGIC website[12] for any Natura 2000 sites within 10km, where the development may have the potential to lead to indirect disturbance of these sites, and any relevant SSSI IRZ that indicates development proposal could potentially have adverse impacts on protected sites.

D.3 Preliminary Field Study Methodology

D.3.1 Preliminary Assessment

The potential suitability of the habitats within the survey area in relation to commuting and foraging bats was classified as negligible, low, moderate or high, based on guidelines provided by the Bat Conservation Trust[13] and detailed within the table below.

Table 2: Guidelines for assessing the potential suitability of proposed development sites for bats, based on presence of habitat features within the landscape.
(to be applied using professional judgement, Table 4.1 Bat Survey Guidelines)

Suitability	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	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. 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.
Moderate	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.

[12] Multi Agency Geographic Information for the Countryside (www.magic.gov.uk)
[13] Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

	Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	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. 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. Site is close to and connected to known roosts.

D.3.2 DAYTIME BAT RISK ASSESSMENT (STRUCTURES)

A daytime assessment was made of all structures affected by the proposed development, in order to evaluate their potential for supporting bat roosts, and, where present, to record signs of use by bats.

Structures were inspected both externally and internally where access was available. Binoculars and extendable ladders were used to assist with the inspection for droppings and other field signs.

Where present, soffits, purlins and ridge boards were searched thoroughly, together with the walls and floor under potential roost sites and any mortise joints, particularly in the gable walls. Wherever practicable, roof spaces and attic areas were surveyed for signs of droppings, which persist all year in dry conditions, food debris, entry points and bats themselves. Where bats were present the survey was adapted to avoid disturbance, with identification being confirmed either by recording bats at emergence and analysing the calls or through undertaking DNA analysis of droppings.

Externally, the buildings were examined for potential roost access points indicated by clean crevices, urine marks, polished wood or stonework and droppings. Particular attention was given to sheltered areas under the eaves of buildings, window ledges and towards the tops of windows where droppings are less likely to have been washed off.

Structures were categorised as having negligible, low, moderate or high suitability to be used by roosting bats, based on guidelines provided by the Bat Conservation Trust[14] and detailed within the table below.

TABLE 3: GUIDELINES FOR ASSESSING THE POTENTIAL SUITABILITY OF PROPOSED DEVELOPMENT SITES FOR BATS, BASED ON PRESENCE OF ROOSTING HABITAT FEATURES (STRUCTURES)
(TO BE APPLIED USING PROFESSIONAL JUDGEMENT, TABLE 4.1 BAT SURVEY GUIDELINES)

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.e. 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

[14] Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

	irrespective of species conservation status, which is established after presence is confirmed).
High	A structure with one or more potential roost site 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.

Note that comments on the state of the structures within the site relate solely to their potential use by bats and must not be taken as a professional assessment of the structural integrity or safety of the structures. For example, descriptions of walls and roofs being in 'good' or 'poor condition' relate to likely provision of roost sites for bats, potential access routes to roost sites, and likely persistence of field signs such as droppings and feeding remains, which will not persist in exposed conditions. Maternity roosts are less likely to be present in cool, exposed, damp and draughty locations which may develop in a building in poor condition.

D.3.3 Preliminary Survey - Equipment

- Clulite CB2 high powered torch
- Opticron 10 x 42 binoculars
- Digital camera
- Tablet computer

D.3.4 Preliminary Survey – Dates & Environmental Conditions

Table 4: Daytime Survey Conditions

Date	Temperature	Cloud Cover	Precipitation	Wind Conditions
24/01/20	8ºC	60%	Dry	F2

D.4 Detailed Survey Methodology

D.4.1 Dusk Emergence Survey

D.4.1.1 *Survey Effort*

The level of survey effort employed has taken account of the guidance provided by the Bat Conservation Trust (BCT)[15] and summarised within the table below.

Table 5: Recommended number and timing of presence/absence survey visits required to provide confidence in negative preliminary roost assessment results (From Table 7.1 and Table 7.3 BCT Guidelines)

	Low Roost Suitability*	Moderate Roost Suitability	High Roost Suitability
Recommended minimum number of survey visits for presence/absence survey to give confidence in a negative result	One survey visit. One dusk emergence or dawn re-entry survey (structures). For trees with low roost suitability, no further surveys required.	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey.	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn.
Recommended timings for presence/absence surveys	May to August	May to September with at least one of the surveys between May and August	May to September with at least two of the surveys between May and August
***** *If a structure is classified as having low suitability for bats an ecologist should make a professional judgement on how to proceed based on all of the evidence available. If sufficient areas of a structure have been inspected and no evidence found (and is unlikely to have been removed by weather or cleaning or be hidden), then further surveys*			

[15] Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

may not be appropriate.

Note: Where a roost is confirmed as being present, further surveys may be required to fully characterise the roost

The recommendations provided above are guidelines and it is recognised by BCT that '*the number of visits could be adjusted (up or down) if necessary by the ecologist, bearing in mind the site-specific circumstances*'.

The building is of low suitability for roosting bats, therefore a single dusk survey was undertaken in accordance with the guidelines, with the survey carried out on 29th September 2020.

D.4.1.2 *SURVEY METHODS*

Activity surveys were undertaken in suitably mild conditions when bats are active. Surveyor locations sought to box-in the site and give a good degree of confidence as to whether bats were flying into or out of the survey area.

Light levels were recorded at 5 minute intervals, using a light meter, located in an open area and directed upwards to ensure a standard baseline. Light levels generally provide a more reliable indicator of the likely times for bat emergence than minutes past sunset and this approach is recommended by BCT[16]. There is significant variation in emergence times, but hundreds of surveys by E3 in northern England over recent years have indicated that pipistrelles are likely to start emerging around 70 lux, noctule at a similar level or earlier, *Myotis* bats generally start to emerge below 10 lux, with most *Myotis* activity and brown long-eared emergence below 2lux. Bats are rarely recorded above 150 lux, and as light levels go below 0.5 lux bat activity in the vicinity of the roosts tends to decrease as bats disperse across the wider countryside. Bat emergence will start at higher light levels when there is good cover close to the roost. For example *Myotis* bats have been recorded emerging in light conditions above 50 lux when there is a short flight line from the roost site to dense woodland. If a species is recorded when light levels are close to expected emergence light levels, then the likelihood that a roost is nearby is greatly increased.

Surveyors were positioned to ensure coverage of all high-risk areas of the site, including any potential flight-lines from structures within the site to adjacent cover such as woodland blocks. If bats were recorded within the site before bats were seen in the wider area, or seen flying into the site, it is assumed that roosts are present within the site.

All surveyors used both Batbox Duet bat detectors to listen for bats and Anabat Express detectors, at each surveyor location, to record and better identify bat species. Listening through earphones to both heterodyne and frequency division signals helps ensure that all bat species were detected[17], whilst recording all bat activity using the Express removes the risk of surveyor error in timings and species ID.

Timings for observations of key bat activity such as emergence, first records of each species and commuting routes were recorded using radio-wave synchronised clocks. All data were recorded using the Anabat Express for future reference and to allow confirmation of species identification through call analysis (using Analook software), and to capture brief echolocation

[16] http://www.bats.org.uk/pages/recording_light_level_data.html
[17] Listening to frequency division calls as well as heterodyne significantly increases the detection rate of *Nyctalus* species

calls that could not be reliably identified in the field[18]. Field survey recorded numbers of bats detected, feeding activity, flight paths, species (as far as is practicable), and social calls.

A total of 2 person-nights work was undertaken. Figures provided within the results section of this report illustrate the approximate location of each surveyor.

D.4.1.3 *Dusk Emergence Survey – Environmental Conditions and Timings*

Details of the environmental conditions and timings for the activity survey are provided below.

Table 6: Dusk Survey Environmental Conditions and Timings

Date	Sunset / Sunrise	Survey Timings	Temperature	Rain	Wind	Cloud Cover
29.09.20	18:46	18:31 – 20:16	14-12°C	Dry throughout	F1 throughout	0% throughout

D.4.1.4 *Survey Equipment*

- Duet bat detectors
- Anabat Expresses
- Light meter

D.4.2 Remote Monitoring

D.4.2.1 *Survey Effort*

Remote monitoring survey data was used to supplement the bat survey with additional information on how, if at all, the building may be used by bats. The north-eastern elevation of the building could not be viewed during the dusk emergence survey, which was carried out in September outside of the optimal survey period (May to August inclusive). Therefore, it was agreed with South Tyneside Council's ecologist, Clare Rawcliffe, that additional remote monitoring data could be used to provide a more robust assessment of how bats may be using the site.

D.4.2.2 *Survey Methods*

Remote monitoring was carried out using an Anabat Express detector located within the loft space with the module set up to record all activity from dusk until dawn, from 23rd September to 28th September 2020.

D.4.2.3 *Survey Equipment*

- Anabat Express

D.5 Personnel

The table below details the personnel who undertook the survey work.

[18] Reviewing data recorded by surveyors using Duet detectors and the Anabat data indicated that reliable *Myotis* records increased through Anabat use, particularly once conditions were too dark for visual cues to assist in identification, when there was a lot of bat activity, and with bats in clutter. It also reduces errors where pipistrelles in clutter can be mis-identified as *Myotis* bats.

Table 7: Personnel				
Survey	**Name**	**Position**	**Professional Qualifications**	**Natural England Survey Licence Numbers**
Daytime risk assessment	Ben Crossman	Ecologist	BSc MRes ACIEEM	2019-38816 CLS-CLS
Dusk survey and remote monitoring	Declan Ghee	Senior Ecologist	BSc ACIEEM	2018-38363 CLS CLS

Further details of experience and qualifications are available at www.e3ecology.co.uk.

D.6 Assessment Methodology

The relative value of the ecological receptors (habitats, species and designated sites) was assessed using a geographical frame of reference. For designated sites this is generally a straightforward process with the assigned designation generally being indicative of a particular value, e.g. Sites of Special Scientific Interest are designated under national legislation and are therefore generally considered to be receptors of national value. The assignment of value to non-designated receptors is less straightforward and as recognised by the Guidelines for Ecological Impact Assessment produced by the Chartered Institute of Ecology and Environmental Management[19], is a complex and subjective process and requires the application of professional judgement.

When assessing the value of species and habitats, relevant documents and legislation are considered including the lists of species and habitat of principal importance annexed to the NERC Act (2006) and those provided within relevant local Biodiversity Action Plans. Data provided through consultation is also considered. These data sources can provide context at a local, regional and national scale.

The table below provides examples of receptors of value at different geographical scales.

Table 8: Ecological Receptor Valuation	
Level of Value	**Examples**
International	An internationally designated site or candidate site.
	A site meeting criteria for international designation.
	The site is of functional importance* to a species population with internationally important numbers (i.e. >1% of the biogeographic population)
National	A nationally designated site.
	The site is of functional importance* to a species population with nationally important numbers (i.e. >1% of the national population)
Regional	The site is of functional importance* to a species population with regionally important numbers (i.e. >1% of the regional population)
County	A Local Wildlife Site (LWS) or equivalent, designated at a County level
	The site is of functional importance* to a species population of county value (i.e. >1% of the county population)
District	A Local Wildlife Site (LWS) or equivalent, designated at a District level
	The site is of functional importance* to a species population of district value (i.e. >1% of the district population)
Parish	A species population considered to appreciably enrich the nature conservation resource within the context of the parish.
	Local Nature Reserves
Local	A species population that contributes to local biodiversity but are not exceptional in the context of the parish.

19 Chartered Institute for Ecology and Environmental Management (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater and Coastal

TABLE 8: ECOLOGICAL RECEPTOR VALUATION	
Level of Value	**Examples**
Low	Habitats that are unexceptional and common to the local area.
** Functional importance defined as 'a feature which, based on professional judgement, is of importance to the day to day functioning of the population, the loss of which would have a detectable adverse effect on that population',*	

E. Results

E.1 Desktop Study

E.1.1 Pre-existing Information

Ordnance Survey Mapping and Aerial Photography

The figures in Sections B and D show that the general land use in the surrounding area is urban development with a combination of residential areas, college buildings and a cricket club, with associated amenity grassland, within 500m.

The most recent aerial photograph of the site (2018) indicates that habitats on site are dominated by buildings and hardstanding. Historic imagery suggests that the site has remained the same since at least 2001.

MAGIC Website[20]

There are no internationally and nationally statutorily designated sites for bats within 2km. The site lies within 2km of two Sites of Special Scientific Interest (SSSI) and their Impact Risk Zones. However, due to the small size of the development it does not meet the criteria for further consultation with Natural England. Two Natura 2000 sites lie within 10km of the site: Northumbria Coast SPA and Ramsar, and Durham Coast SAC.

Table 9: Designated Sites

Designation	Site Name	Brief Reason for Designation	Distance from Survey Area
Ramsar	Northumbria Coast	Designated for wintering turnstone and purple sand piper as well as breeding little tern	1.5km north east at its closest point
Special Protection Area	Northumbria Coast	Designated for wintering turnstone and purple sand piper as well as breeding little tern	1.5km north east at its closest point
Special Area of Conservation	Durham Coast	Vegetated sea cliffs on Magnesian Limestone	1.35km north east at its closest point
Site of Special Scientific Interest	Harton Down Hill	Species rich Magnesian Limestone grassland	1.9km south east
	Durham Coast	Species rich Magnesian Limestone grassland and sand dune systems as well as nationally important populations of wintering shore birds and breeding little tern.	1.35km north east at its closest point

The MAGIC website also returned a single record of a bat licence granted within 2km of the site. This was for a non-breeding common pipistrelle roost.

E.1.2 Consultation

Local Bat Group

Durham Bat Group provided only three records within 1km from the site. One of these was a common pipistrelle roost at a non-disclosed location and two foraging records from the same species. All of the known records within 2km of the site were of common pipistrelle, of which seven records were of roosts.

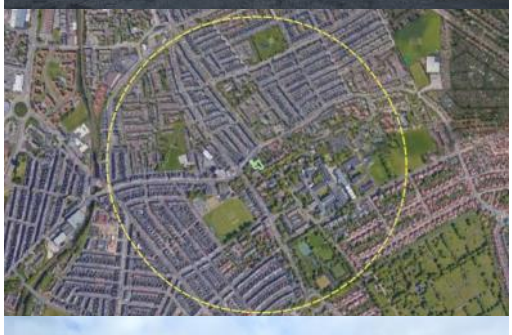
[20] MAGIC Website: www.magic.gov.uk

E.2 Daytime Risk Assessment

E.2.1 Habitats

Foraging Habitats
The site itself consists of the hotel and a hard standing car park, with no foraging opportunities for bats. The street to the south of the hotel has a tree-lined green which may provide some sub-optimal foraging opportunities.

Commuting Routes
The site is surrounded by residential development and there is limited connectivity to the wider countryside. The street to the south is tree lined and may provide connectivity to gardens, areas of amenity grassland and a tree lined cemetery to the south Which may provide some foraging opportunities.



Sheltered Flight Areas
The car park to the north and west of the buildings is almost completely enclosed by buildings and may provide a sheltered flight area.

Alternative Roost Locations
The site is set within a residential area of Westoe, South Shields and there are many similar properties which offer potential bat roosting opportunities.

E.2.2 Buildings

The following text provides building descriptions and the location of each structure is illustrated within the figure below.

Building 1

The front of the hotel faces south onto Westoe Village.

- The building is two and a half storeys;
- Brick construction appears in good condition;
- It has a pitched slate roof, in good condition, although there are some lifted slates;
- The ridge tiles are concrete, mortar appears well sealed;
- The western gable end brickwork has some gaps and missing mortar;
- There is a mix of wooden and uPVC windows which appear well sealed;
- There is a brick-built parapet on the western gable end which is sealed with lead and has some gaps in the brickwork;
- The brickwork is sealed to the neighbouring property to the west by felt flashing which appears in good condition;
- The roof is continuous with the roof of the property to the east;
- On the northern and southern elevations, wooden fasciae are present, to which guttering is secured, and these appear well sealed to the brickwork;
- There is a small extension on the northern elevation of a brick construction, with rendered walls appearing well sealed. This extension has a well-sealed mono-pitched slate roof, and uPVC fascia with a gap between it and the brickwork;
- On the southern elevation are two dormer windows in the roof; these are of wooden construction with lead roofs and hanging slates, all appear well sealed.
- There is also a large bay with sash windows on the southern elevation; this is two stories, of a brick construction, with a wooden fascia, which is tightly sealed against brickwork. The bay has a hipped slate roof with some lifted tiles;
- Brick chimneys appear well sealed;
- Internally, buildings 1 and 2 have a shared roof void;
- Roof void of Building 1 is of an attic design using traditional timbers;
- The wall tops are sealed, with no access into the cavity;
- Both voids are lined with breathable membrane throughout;
- Brickwork at gable ends is in good condition;
- Some gaps are present into the void at the wall tops;

- The ridge beam is sealed by breathable membrane;
- There is lighting within the roof void and part of it is partially boarded out for storage;
- It has been recently re-roofed.

No field signs were recorded during the survey. Overall, the building is considered to be of low suitability for roosting bats.

Building 2

Building 2 is connected to Building 1 and shares a connected roof space. It is of a similar construction but is aligned approximately north-south.

- It is brick built although the brickwork is largely rendered; rendering is in good condition and brickwork is well sealed;
- This buildings is three storeys;
- The roof steps down and is sealed by lead flashing which is in good condition;
- It has a pitched slate roof in good condition, with some lifted slates;
- Ridge tiles are concrete and appear well sealed;
- There is a mix of wood and uPVC windows, all well sealed;
- Wooden fasciae on the western elevation hold guttering in place, there are some gaps between the fascia and brickwork;
- No view of the eastern elevation was possible;
- Internally, the attic space is similar to that of Building 1, although the internal timber structure is a traditional A-frame.
- It has been recently re-roofed.

No field signs were recorded during the survey. Overall, the building is considered to be of low suitability for roosting bats.

Figure 5: Building Locations
(Reproduced under licence from Google Earth Pro.)

E.3 Overview of Site Suitability

Table 10: Overview of Site Suitability for Bats

	Habitats and Setting[21]			
	Negligible	**Low**	**Moderate**	**High**
Habitats and cover within 200m	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, urban / suburban	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		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	Isolated by	No potential flyways	Some potential commuting	Site is well connected to

[21] Building and habitat risk assessment technique audited in a research project with York University which compared the risk assessment scoring with the results of detailed field assessment for over 100 sites. Statistically significant associations were found between habitat setting and building features and the presence of absence of different bat species. For example habitat connections and nearby woodland were significant for brown long-eared bats and the presence of species-rich grassland is important for many species.

Table 10: Overview of Site Suitability for Bats				
Routes	development, major roads and housing	linking site to wider countryside	routes to and from site	surrounding area with multiple flyways
Buildings[2]				
	Negligible	**Low**	**Moderate**	**High**
Age (approx.)	Modern	Post 1940's	1900-1940	Pre 20th C
Building/ complex type	Industrial complex of modern design	Single 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 or flat 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

The buildings are considered of low bat roosting suitability and the site is located in a low suitability setting.

E.4 Activity Survey

E.4.1 Dusk Emergence Activity Survey

The dusk emergence survey was carried out on 29th September in suitable weather conditions for bat activity.

No bats were recorded roosting within the Sir William Fox hotel. A low level of common pipistrelle foraging activity was recorded to the south-east of the property, but no bat activity was recorded to the north and west of the buildings. The first bat recorded was at 19:29, 44 minutes after sunset at light levels of approximately 1 lux, though street lighting had just switched on. No other species were recorded.

The figure below provides a summary of the results of dusk emergence survey and shows the location of the remote monitoring bat detector within the loft space (see section 4.2).

Figure 6: Summary of Dusk Emergence Survey Results
(Reproduced under licence from Google Earth Pro.)

E.4.2 Remote Monitoring

No bats were recorded within the loft space during the period of remote monitoring.

E.5 Additional Species Groups

No additional species were recorded during the survey; however, there was evidence of nesting birds within the loft space.

F. Site Assessment

F.1 Assessment of survey findings

The two buildings which make up the hotel have several features suitable for roosting bats, including access into the roof void, and gaps between fasciae and brickwork. The majority of the brickwork is in good condition, and the buildings have been reroofed within the last three years. The site is set in an area of low suitability for foraging and commuting bats, with some connectivity to a few areas of green space in the local area. Overall, the buildings are considered to be of low suitability for roosting bats.

A single dusk emergence survey was carried out which did not record any bat roosts within the property. This was supplemented with a period of remote monitoring of bat echolocation calls within the loft space, which recorded complementary results with no bat calls recorded in the week prior to the dusk survey.

Only a low level of common pipistrelle activity was recorded externally during the dusk survey, restricted to the south of the hotel adjacent to the mature street trees.

Evidence of nesting birds was also found within the loft space.

F.2 Limitations and Constraints

The north-eastern elevation of Building 2 could not be observed externally as it was obscured by surrounding buildings and third party land access was not obtained.

The dusk survey was undertaken in September, outside of the optimal bat survey period (May to August inclusive) but a time of year when bats are reliably active in good weather.

In order to address the above constraints, the dusk survey was supplemented with additional remote monitoring data over the course of a week. The results of both survey methods complemented each other, along with the lack of bat field signs found during internal and external inspections, suggesting that roosting bats are likely absent from the property. Whilst no surveys were undertaken within the bat maternity period, it is considered unlikely that the building supports a maternity roost of bats based on a lack of suitability, lack of field signs and recent disturbance given the roof was replaced approximately 3 years ago.

Survey completed at the site will provide reasonably typical data for the winter and autumn periods, and internal field signs are likely to reflect activity over the preceding two or three months. Assessment of the bat use of the site at other times of year and the potential impacts of the proposed development is based on professional judgement. This is an approach supported by the Bat Conservation Trust Good Practice Guidelines[22] .

[22] Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

G. Impact Assessment

G.1 Direct Development Impacts

- Residual risk of the loss of potential crevice roost locations.
- Residual risk of harm / disturbance to nesting birds should works be undertaken during the nesting bird season (March to August inclusive).
- Residual low risk of harm or disturbance to bats if they inhabit the buildings in the time leading up to the commencement of works.

G.2 Potential Impacts and/or Effects on Statutory and Non Statutory Sites Designated for Nature Conservation

The site lies within 2km of two nationally protected SSSI's and within 10km of two internationally protected Natura 2000 sites. Direct impacts on these sites are not anticipated as the closest of these is 1.35km away. Due to the small size and nature of the development, converting a 13 room hotel into 7 apartments, both uses which provide accommodation for people who may visit the coast, indirect impacts are not anticipated as it is not anticipated that there will be a net increase in recreational pressure at the coast.

H. Recommendations

H.1 Further Survey

If development does not happen within 12 months of the last survey, an updating survey will be required, ideally to be undertaken between May and August.

H.2 Avoidance and Mitigation Strategy

H.2.1 Site Design

- External lighting that may reduce bat use of the local area will be avoided. Where security lights are required, these will be of minimum practicable brightness, be set on a short timer and will be motion sensitive only to larger objects.
- Two bird boxes suitable for either house sparrow, starling or swift will be provided on site.
- Four bat bricks or building-mounted bat boxes will be installed in the newly developed buildings, just below eaves level (ideally at a minimum height of 4m) in an area that is minimally lit.

H.2.2 Timing of Works

- Works to install the roof lights or works within the loft space will be undertaken outside of the bird nesting season (March to August inclusive) unless a checking survey by a suitably experienced ornithologist confirms the absence of active nests.

H.2.3 Working Methods and Best Practice

- Works to install the roof lights and any other external works required, including works to the roof or fasciae, will be undertaken to a method statement. Any loose bricks will be removed carefully by hand, being aware that bats may be present beneath slates, within mortise joints, cavity walls, between loose bricks, between lintels and in gaps around window frames.
- If bats are found during works, works will stop in that area and the ecological consultant will be contacted immediately. If it is necessary to move the bats for their safety, this will be undertaken by a licensed bat handler.

The following measures should be included as general good working practice:

- Timber treatments that are toxic to mammals will be avoided. If required, timber treatment will be carried out in the spring or autumn. Both pre-treated timbers and timber treatments will use chemicals classed as safe for use where bats may be present (see http://www.jncc.gov.uk/pdf/batwork_manualpt4.pdf).

H.3 Compensation Strategy

The aforementioned bat roosting features to be installed will provide compensation for the loss of a small number of low suitability potential roosting features. With the implementation of the above mitigation strategy it is not anticipated that there will be any significant adverse residual effects from the proposed development.

H.4 Monitoring

Given the nature of the proposed mitigation and/or compensation strategies, no monitoring is proposed.

H.5 ADDITIONAL ENHANCEMENT RECOMMENDATIONS

The aforementioned bat roosting features to be installed will provide enhanced long-term roosting provision which is suitable for crevice-dwelling bats species.

APPENDIX 1. Statutorily and Non- Statutorily Designated Sites

Statutorily Designated Sites

Ramsar Sites
Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. The Convention recognizes wetlands as important ecosystems and includes a range of wetland types from marsh to both fresh and salt water habitats. The wetlands can also include additional areas adjacent to the main water-bodies such as river banks or coastal areas where appropriate.

Special Protection Areas (SPAs)
SPAs are classified by the UK Government under the EC Birds Directive and comprise areas which are important for both rare and migratory birds.

Special Areas of Conservation
SACs are designated under the EC Habitats Directive and are areas which have been identified as best representing the range and variety of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the Conservation of Habitats and Species Regulations 2017 (as amended) unless they are offshore.

Sites of Special Scientific Interest
SSSIs are designated as sites which are examples of important flora, fauna, or geological or physiographical features. They are notified under the Wildlife and Countryside Act 1981 with improved provisions introduced by the Countryside and Rights of Way Act 2000. They are often components of larger SACs or SPAs.

National Nature Reserves (NNRs)
NNRs are designated by Natural England under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981 and support important ecosystems which are managed for conservation. They may also provide important opportunities for recreation and scientific study.

Country Parks
Country Parks are statutorily designated and managed by local authorities in England and Wales under the Countryside Act 1968. They do not necessarily have any nature conservation importance, but provide opportunities for recreation and leisure near urban areas.

Local Nature Reserves (LNRs)
LNRs are designated under the National Parks and Access to the Countryside Act 1949 by local authorities in consultation with Natural England. They are managed for nature conservation and used as a recreational and educational resource.

Non-Statutorily Designated Sites

Non-Governmental Organisation Property
These are sites of biodiversity importance which are managed as reserves by a range of NGOs. Examples include sites owned by the RSPB, the Woodland Trust and the Wildlife Trusts

Local Wildlife Sites (LWSs)
These are sites defined within the local plans under the Town and Country Planning system and are material considerations of any planning application determination. They are designated by the local authority although criteria can vary between authorities.

APPENDIX 2. BAT ECOLOGY

BAT LIFECYCLE

Bat survey timings are based on the lifecycle of bats which varies through the calendar year. The table below illustrates recommended survey timings and how they relate to the bat lifecycle:

BAT LIFECYCLE AS IT RELATES TO SURVEY TIMING[23]

SURVEY TYPE	J		F		M		A		M		J		J		A		S		O		N		D	
Roost Inspection																								
Mating/ Swarming Survey																								
Hibernation Survey																								
Tree survey from the ground																								
Tree roost activity survey																								
Building roost activity survey																								

Dark grey are optimal timings, light grey suboptimal.

BAT ROOST USE THROUGH THE YEAR

Day Roost																								
Night Roost																								
Feeding Roost																								
Transitional/ Occasional Roost																								
Swarming Site																								
Mating Site																								
Maternity Roost																								
Hibernation Roost																								
Satellite Roost																								

[23] Based on information provided within Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

BAT ROOST TYPES

Bat Roost Types	
Roost Type	**Definition**
Day Roost	A place where individual bats or small groups of males, rest or shelter in the day but are rarely found by night in the summer.
Night Roost	A place where bats rest or shelter in the night but are rarely found in the day. May be used by a single individual on occasion or could be used regularly by the whole colony.
Feeding Roost	A place where individual bats or a few individuals rest or feed during the night but are rarely present by day.
Transitional/Occasional Roost	Used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.
Swarming Site	Where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites.
Mating Site	Sites where mating takes place from late summer and can continue through winter.
Maternity Roost	Where female bats give birth and raise their young to independence. Females typically give birth to a single pup per year, therefore these roosts are critical to the long-term survival of a colony. Disturbance of maternity roosts can lead to abandonment and death of young.
Hibernation Roost	Where bats may be found individually or together during winter. They have a constant cool temperature and high humidity. Bats are particularly vulnerable to disturbance during the hibernation period as, once roused, they may be unable to replace energy lost due to a lack of sufficient available insect prey at this time.
Satellite Roost	An alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season.

SPECIES SPECIFIC ECOLOGY

Pipistrelle maternity colonies generally consist of 25 to 100 individuals, but colonies numbering up to 1000 are not uncommon[24]. Adult females often form large maternity roosts, occupied between May and August, and frequently number around 300 individuals. Males are often solitary or in small groups during the summer, later congregating with the females at winter hibernation roosts[25].

Maternity colonies of brown long-eared bats are generally small, consisting of 10 to 20 adults[26,27] (although numbers are likely to be underestimated, due to presence in inaccessible areas of the roost). In exceptional circumstances, colonies can reach 200+ bats.

Natterer's bats roost within crevices and cavities, typically within hollow trees, old buildings, caves and tunnels[28]. Maternity colonies comprising up to 200 adult females can be found in buildings during the summer months while bachelor roosts comprising up to 28 males have been recorded during the summer months in Scotland[29]. Maternity roosts are not exclusively female, with both adult and immature males comprising up to 25% of the colony. Male only colonies have been found with up to 30

[24] Roberts, G.M. & Hutson, A.M. 2000. *Pipistrelle*. British Bats No. 6. The Bat Conservation Trust, London
[25] Corbet, G.B & Southern, H.N., 1964. The handbook of British Mammals).
[26] Speakman, J. R. *et al.*, 1991. Minimum summer populations and densities of bats in NE Scotland, near the northern borders of their distributions. *J. Appl. Ecol.,*225: 327-345
[27] Entwistle, A.C., 1994. Roost ecology of the brown long-eared bat *Plecotus auritus* in north-east Scotland. Unpublished PhD thesis, University of Aberdeen, UK
[28] Stebbings, R.E. 1991. Natterer's bat *Myotis nattereri*. In The handbook of British Mammals. 3rd Edition Corbet, G.B. & Harris, S. (Eds) Oxford: Blackwell Scientific.
[29] Swift, S. M. 1997 Roosting and foraging behaviour of Natterer's bats (*Myotis Nattereri*) close to the northern border of their distribution. J. Zool. (Lond) **242:** 375-384.

bats[30]. Foraging individuals will perch during the night at roosts near to foraging areas, not used as day roosts. Mostly these roosts are trees or shrubs but barns will also be used[31].

Whiskered bats roost in trees and buildings. Nursery roosts can number over 100 bats, and are almost exclusively female bats. This species hibernates singly in caves, hanging on the open wall or in crevices[30].

Brandt's bat is thought to have similar roosting behaviour and foraging ecology to the whiskered bat, however, further research is needed to clarify this[30].

A third small *Myotis* species, the Alcathoe's bat has recently been confirmed within the UK.

[30] Altringham, J.D. 2003. British Bats. The New Naturalist. Pub. Harper Collins.
[31] Smith, P.G. & Racey, P.A. 2005. The itinerant Natterer: physical and thermal characteristics of summer roosts of *Myotis nattereri* (Mammalia: Chiroptera) J. Zool. Lond. 266: 171-180.

APPENDIX 3. BATS AND DEVELOPMENT

A list of development types likely to affect bats where they impact on particular features is provided within the table below.

Planning and Development Trigger List for Bat Surveys[32]	
Nature of Work	**Type of Building or feature**
Conversion, modification, demolition or removal of buildings (including hotels, schools, hospitals, churches, commercial premises and derelict buildings)	Agricultural buildings e.g. farmhouses, barns and outbuildings) of traditional brick or stone construction and/or with exposed wooden beams
	Buildings with weather boarding and/or hanging tiles that are within 200m of woodland and/or water
	Pre-1960 detached buildings and structures within 200m of woodland and/or water
	Pre-1914 buildings within 400m of woodland and/or water
	Pre-1914 buildings with gable ends or slate roofs, regardless of location
	Buildings located within, or immediately adjacent to woodland and/or immediately adjacent to water
	Dutch barns or livestock buildings with a single skin roof and board and gap or Yorkshire boarding if following a preliminary roost assessment, the building appears particularly suited to bats
Any development works	Any underground duct or structure including tunnels, mines, kilns, ice houses, adits, military fortifications, air raid shelters, cellars
	Unused industrial chimneys that are lined and of brick/stone construction
Floodlighting	Churches and listed buildings, green space (e.g. sports pitches) within 50m of woodland, water, field hedgerows or lines of trees with connectivity to woodland or water
	Any building listed in reference 1
Felling, removal or lopping	Woodland
	Field hedgerows and/or lines of trees with connectivity to woodland or water bodies
	Old and veteran trees that are more than100 years old
	Mature trees with obvious holes, cracks or cavities or which are covered with mature ivy (including dead trees)
Any development works	Within 200m or rivers, streams, canals, lakes, reedbeds or other aquatic habitats
Any development works	Within or immediately adjacent to quarries or gravel pits
	Immediately adjacent to or affecting natural cliff faces and rock outcrops with crevices or caves and sinkholes
Any single or multiple wind turbine construction	N/A – although for single turbines this can depend on size and location
Any development works	Sites where bats are known to be present

[32] Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

A summary of the likely scale of impact at a site level in relation to various bat features and development effects is provided below.

Summary of Main Impacts at Site Level				
Habitat Feature	**Development Effect**	**Scale of impact**		
		Low	**Medium**	**High**
Maternity Roost	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction; modification		✓	
	Temporary disturbance outside breeding season	✓		
	Post-development interference			✓
Major Hibernation	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction; modification		✓	
	Temporary disturbance outside hibernation season	✓		
	Post-development interference			✓
Minor Hibernation	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction; modification		✓	
	Modified management		✓	
	Temporary disturbance outside hibernation season	✓		
	Post-development interference		✓	
	Temporary destruction then reinstatement	✓		
Mating	Destruction		✓	
	Isolation caused by fragmentation		✓	
	Partial destruction; modification	✓		
	Modified management	✓		
	Temporary disturbance outside hibernation season	✓		
	Post-development interference	✓		
	Temporary destruction then reinstatement	✓		
Night Roost	Destruction	✓		
	Isolation caused by fragmentation	✓		
	Partial destruction; modification	✓		
	Modified management	✓		
	Temporary disturbance outside hibernation season	✓		
	Post-development interference	✓		
	Temporary destruction then reinstatement	✓		
N.B. This is a general guide only and does not take into account species differences. Medium impacts in particular depend on the care with which any mitigation is designed and implemented and could range between high and low.				