

BAT SURVEY

VICTORIA ROAD WEST



APRIL 2017

FINAL

CLIENT Miller Homes
PROJECT NAME Victoria Road West
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UNLESS REQUESTED OTHERWISE, THE INFORMATION BELOW, RELATING TO THE LOCAL AREA, WILL BE PROVIDED TO THE LOCAL ENVIRONMENTAL RECORDS CENTRE

SPECIES	RECORDER	DATE	LOCATION (4 FIG. NGR)	COMMENT
Common pipistrelle	E3 Ecology	July 2016	NZ3063	Commuting and foraging

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CONTENTS

A.	SUMMARY.....	5
B.	INTRODUCTION.....	6
C.	PLANNING POLICY AND LEGISLATIVE CONTEXT	8
C.1	NATIONAL PLANNING POLICY	8
C.2	RELEVANT LEGISLATION	9
C.3	WILDLIFE SITE POLICY AND LEGISLATION.....	10
C.4	PRIORITY SPECIES	10
D.	METHODOLOGY	10
D.1	SCOPE OF STUDY	10
D.2	DESK STUDY	12
D.3	PRELIMINARY FIELD STUDY METHODOLOGY	12
D.3.1	PHASE 1 HABITAT SURVEY.....	12
D.3.2	DAYTIME GROUND BASED BAT RISK ASSESSMENT (TREES)	13
D.4	DETAILED SURVEY METHODOLOGY	14
D.4.1	TRANSECT SURVEY	14
D.4.2	REMOTE MONITORING	16
D.4.3	DATA ANALYSIS	18
D.5	PERSONNEL	18
D.6	ASSESSMENT METHODOLOGY	19
E.	RESULTS	21
E.1	DESKTOP STUDY	21
E.1.1	PRE-EXISTING INFORMATION	21
E.1.2	CONSULTATION.....	21
E.2	DAYTIME RISK ASSESSMENT.....	22
E.2.1	HABITATS.....	22
E.3	OVERVIEW OF SITE SUITABILITY	24
E.4	ACTIVITY SURVEY.....	24
E.4.1	TRANSECT SURVEY	24
E.4.2	REMOTE MONITORING	28
E.5	ADDITIONAL SPECIES.....	28
F.	SITE ASSESSMENT	29
F.1	ASSESSMENT OF SURVEY FINDINGS.....	29
F.2	LIMITATIONS AND CONSTRAINTS.....	29
G.	IMPACT ASSESSMENT	30
G.1	DIRECT DEVELOPMENT IMPACTS	30
G.2	INDIRECT IMPACTS ON LOCAL POPULATIONS.....	30
H.	RECOMMENDATIONS	31
H.1	AVOIDANCE AND MITIGATION STRATEGY	31
H.1.1	SITE DESIGN	31
H.1.2	TIMING OF WORKS	31
H.1.3	WORKING METHODS AND BEST PRACTICE	31
APPENDIX 1.	STATUTORILY AND NON- STATUTORILY DESIGNATED SITES.....	32
APPENDIX 2.	BAT ECOLOGY	33
APPENDIX 3.	BATS AND DEVELOPMENT.....	36

TABLES

TABLE 1: NATIONAL PLANNING POLICY FRAMEWORK: NATURAL ENVIRONMENT	8
TABLE 2: GUIDELINES FOR ASSESSING THE POTENTIAL SUITABILITY OF PROPOSED DEVELOPMENT SITES FOR BATS, BASED ON PRESENCE OF HABITAT FEATURES WITHIN THE LANDSCAPE.	12
TABLE 3: GUIDELINES FOR ASSESSING THE POTENTIAL SUITABILITY OF PROPOSED DEVELOPMENT SITES FOR BATS, BASED ON PRESENCE OF ROOSTING HABITAT FEATURES (TREES)	13
TABLE 4: TRANSECT SURVEY ENVIRONMENTAL CONDITIONS	16
TABLE 5: REMOTE MONITORING – SURVEY EFFORT (NUMBER OF NIGHTS)	16
TABLE 6: PIPISTRELLE SPECIES IDENTIFICATION PARAMETERS	18
TABLE 7: PERSONNEL	19
TABLE 8: ECOLOGICAL RECEPTOR VALUATION.....	19
TABLE 9: DESIGNATED SITES	21
TABLE 10: CONSULTATION RECORDS.....	21
TABLE 11: CONSULTATION RESULTS (REIC NE)	21
TABLE 12: OVERVIEW OF SITE SUITABILITY FOR BATS	24

FIGURES

FIGURE 1: SITE LOCATION	6
FIGURE 2: DEVELOPMENT PROPOSALS (PROVIDED BY POD ARCHITECTS)	7
FIGURE 3: SURVEY AREA.....	11
FIGURE 4: SITE AND SETTING	12
FIGURE 5: TRANSECT ROUTE	15
FIGURE 6: REMOTE MONITORING POINT LOCATIONS	17
FIGURE 7: DESIGNATED SITES WITHIN 2KM (PRODUCED BY ERIC NE).....	22
FIGURE 8: 6 TH JULY 2016 TRANSECT SURVEY RESULTS	25
FIGURE 9: 25 TH JULY TRANSECT SURVEY RESULTS.....	27

A. SUMMARY

E3 Ecology Ltd was commissioned by Miller Homes in June 2016 to undertake baseline bat surveys of land at Victoria Road West, Hebburn.

It is proposed to develop 334 residential properties within the site. Plans currently include the creation of two access points along the eastern site boundary with associated visibility splays.

Consultation with the Multi-Agency Geographic Information for the Countryside (MAGIC) website and the Environmental Records Information Centre North East (ERIC NE) indicated the presence of one Local Nature Reserve (LNR), seven Local Wildlife Sites (LWS) and one Site of Local Conservation Importance (SLCI) present within 2km. Bat species records include common pipistrelle and brown long-eared bat.

Transect surveys were undertaken on the 6th July and the 25th July 2016. Low levels of commuting and foraging activity by common pipistrelles were recorded on site during both transects, with activity predominately recorded along the western treeline.

Remote monitoring recorded 98 bat passes over a total survey effort of 22 nights (total nights monitoring across both monitoring points). Only common pipistrelle bats were recorded on the remote detectors. Overall the site is considered likely to be of low ecological value to bat species.

Potential impacts of the development in order of conservation significance are:

- Disturbance to and/or severance of bat commuting and foraging habitats through increased lighting on site.
- Loss of potential commuting and foraging habitat for bat species within the local area.

Key mitigation measures include:

- 'Ecological corridors' along the eastern, western and southern site boundaries will be retained. Native planting will be implemented within this buffer and will be designed to enhance structural diversity, including plants bearing flowers, nectar and fruits which are attractive to invertebrates, thereby helping to maintain the food resource for bats and wildlife generally.
- Light spill along the southern and western boundaries will be less than 2 lux. Lighting around retained trees will be minimised as far as is practicable. Where security lights are required, these will be on a short timer and sensitive only to larger objects.
- Vegetation clearance/tree felling 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.
- The landscape strategy which is being developed for this site should be designed to include management of the wildlife corridor whilst this feature is established. Ongoing management of this feature should be included in the long term management of the site.

The local planning authority and Natural England are likely to require the means of delivery of the mitigation to be identified. It is recommended that mitigation and enhancement proposals are incorporated into the master-planning documents.

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

E3 Ecology Ltd was commissioned by Miller Homes in June 2016 to undertake baseline bat surveys of land at Victoria Road West, Hebburn.

The purpose of this report is:

- To identify and describe all potentially significant effects on the local bat population associated with the proposed development
- To set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any potentially significant effects
- To identify how mitigation measures will/could be secured
- To provide an assessment of the significance of any residual effects
- To identify appropriate enhancement measures
- To set out any requirements for post-construction monitoring

The site is located within the southern area of Hebburn, South Tyneside at an approximate central grid reference of NZ3039 6349. The site location is illustrated below in Figure 1.

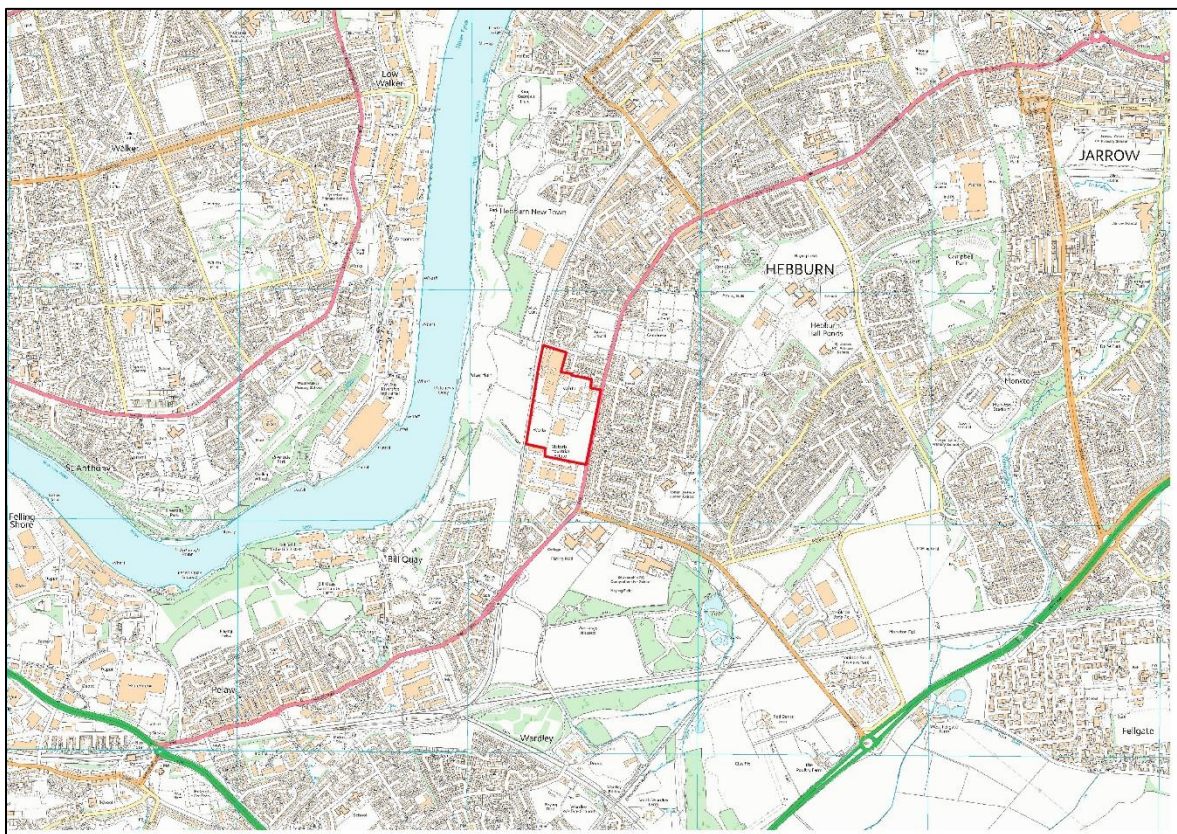


FIGURE 1: SITE LOCATION
(Reproduced from the Ordnance Survey map under licence)

It is proposed to develop 334 residential properties within the site. Plans currently include the creation of two access points along the eastern site boundary with associated visibility splays. Current plans are shown below in figure 2.



FIGURE 2: DEVELOPMENT PROPOSALS (PROVIDED BY POD ARCHITECTS)

C. PLANNING POLICY AND LEGISLATIVE CONTEXT

C.1 NATIONAL PLANNING POLICY

Table 1 details the key paragraphs from the National Planning Policy Framework (NPPF)¹ relating to the natural environment:

TABLE 1: NATIONAL PLANNING POLICY FRAMEWORK: NATURAL ENVIRONMENT	
Statement	Paragraph
The planning system should contribute to and enhance the natural and local environment by: <ul style="list-style-type: none"> o Recognising the wider benefits of ecosystem services; o Minimising impacts on biodiversity and providing net gains in biodiversity where possible 	109
Planning policies and decisions should encourage the effective use of land by re-using land that has been previously developed (brownfield land), provided that it is not of high environmental value.	111
Local planning authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife sites will be judged. Distinctions should be made between the hierarchy of international, national and locally designated sites so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks	113
To minimise impacts on biodiversity, planning policies should: <ul style="list-style-type: none"> o Promote the preservation, restoration and re-creation of priority habitats ecological networks and the protection and recovery of priority species populations, linked to national and local targets 	117
When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principals: <ul style="list-style-type: none"> o If significant harm resulting from a development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; o Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted; o Opportunities to incorporate biodiversity in and around developments should be encouraged; o Planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees, found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss 	118
By encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation	125

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 Guidance² states:

- *'The National Planning Policy Framework is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution' (para. 007).*
- *'Information on biodiversity impacts and opportunities should inform all stages of development An ecological survey will be necessary in advance of a planning application if the type and location of development are such that the impact on biodiversity may be significant and existing information is lacking or inadequate' (para. 016).*
- *'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' (para. 016).*

¹ National Planning Policy Framework (March 2012), Department for Communities and Local Government,

² Planning Practice Guidance: Natural Environment (www.planningguidance.communities.gov)

- *'Local planning authorities should only require ecological surveys where clearly justified, for example if they consider there is a reasonable likelihood of a protected species being present and affected by development. Assessments should be proportionate to the nature and scale of development proposed and the likely impact on biodiversity' (para. 016).*
- *'Biodiversity enhancement in and around development should be led by a local understanding of ecological networks, and should seek to include:*
 - *habitat restoration, re-creation and expansion;*
 - *improved links between existing sites;*
 - *buffering of existing important sites;*
 - *new biodiversity features within development; and*
 - *securing management for long term enhancement' (para. 017).*

C.2 RELEVANT LEGISLATION

Within England all bat species are specially protected under the Conservation of Habitats and Species Regulations (2010).

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 a 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 (2010) 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 red line boundary as defined within Figure 3 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 Guidelines³.

Figure 3 illustrates the survey area whilst, to provide context, Figure 4 illustrates the broad habitats present on site and within an approximate 500m buffer zone.

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



FIGURE 3: SURVEY AREA
(Reproduced under licence from Google Earth Pro.)



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 Records Centre in July 2016, requesting data relating to bats and non-statutory sites for nature conservation within 2km of the survey area. In addition, a search was made of the Multi Agency Geographic Information for the Countryside (MAGIC) website⁴ for all statutorily protected sites for nature conservation within 2km of the survey area.

D.3 PRELIMINARY FIELD STUDY METHODOLOGY

D.3.1 PHASE 1 HABITAT SURVEY

A phase 1 habitat survey of the site has been completed and the survey methodology and results are presented within a separate report.

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 Trust⁵ and detailed within Table 2.

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
-------------	---------------------------------

⁴ Multi Agency Geographic Information for the Countryside (www.magic.gov.uk)

⁵ Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

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. 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 GROUND BASED BAT RISK ASSESSMENT (TREES)

A preliminary assessment was made of any trees affected by the proposed development and the results are presented within a separate report. Trees were inspected and assessed for their potential to support roosting bats and were categorised as negligible, low, moderate or high suitability for roosting bats based on guidelines provided within the Bat Conservation Trust Bat Survey: Good Practice Guidelines⁶ and detailed within Table 3.

TABLE 3: GUIDELINES FOR ASSESSING THE POTENTIAL SUITABILITY OF PROPOSED DEVELOPMENT SITES FOR BATS, BASED ON PRESENCE OF ROOSTING HABITAT FEATURES (TREES) <i>(TO BE APPLIED USING PROFESSIONAL JUDGEMENT, TABLE 4.1 BAT SURVEY GUIDELINES)</i>	
Suitability	Roosting Habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A tree 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.

The assessment is based upon the age and species of the tree, the presence of features with potential to support roosting bats and the location of the tree and habitats present in the surrounding area. Any potential roosting locations and field signs that could indicate bat use, such as droppings, staining and scratch marks were noted.

⁶ Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

D.4 DETAILED SURVEY METHODOLOGY

D.4.1 TRANSECT SURVEY

D.4.1.1 *SURVEY EFFORT*

Consultation with the Local Authority was undertaken in order to confirm survey level. It was agreed that a desk based risk assessment of the site would be sufficient. However following an assessment of trees on site, a single willow was noted to have low suitability roosting features and in order to gain baseline data for the site two transect surveys and 22 nights of remote monitoring have been undertaken.

D.4.1.2 *SURVEY METHODS*

Transect surveys were undertaken by surveyors walking one fixed route over the survey area, recording all bat activity and identifying potential roost sites, key foraging areas and fly ways. In addition to recording all bat activity along the route.

One transect route was used, as this was sufficient to allow coverage of the full survey area within the 2 hours post sunset. The transect route was designed to sample all habitat types within the site including both areas likely to be well used by bats and those of likely lower value. The direction of the transect route surveyed was varied so that the same areas of the site weren't always surveyed at the same time in relation to sunset. The transect route is illustrated in Figure 5 below.

Data and the transect route were recorded using an Anabat Express detector. Surveyors also listened to a Duet bat detector to aid in locating bats recorded during survey. Where bats were recorded the location and timing of the record was noted on field maps with any further relevant information relating to the behaviour of the bat(s).



FIGURE 5: TRANSECT ROUTE
(Reproduced under licence from Google Earth Pro.)

D.4.1.3 *TRANSECT SURVEY – ENVIRONMENTAL CONDITIONS*

Table 4 details the environmental conditions for each transect survey.

Date	Start Time	End Time	Sunset/ Sunrise	Wind		Cloud		Precipitation		Temperature		Comments
				Start	End	Start	End	Start	End	Start	End	
06.07.16	21.30	23.50	21.45	WF2	WF2	100%	100%	NULL	NULL	17°C	17°C	Transect walked clockwise
25.07.16	21.15	23.22	21.21	WF0	WF0	90%	50%	NULL	NULL	18°C	15°C	Transect walked anti-clockwise

D.4.1.4 *SURVEY EQUIPMENT*

- Duet bat detector
- Anabat Express

D.4.2 REMOTE MONITORING

D.4.2.1 *SURVEY EFFORT*

In this case, as only baseline data for the site was required a total of 22 night's static data was recorded. Monitoring has been undertaken at 2 locations during July 2016.

All monitoring point locations are illustrated within Figure 6 while Table 5 provides information as to the number of nights survey data obtained from each monitoring point.

Date	RMP1	RMP2
6 th – 7 th July 2016	2	0
15 th – 24 th July 2016	10	10
Total Nights:	12	10



FIGURE 6: REMOTE MONITORING POINT LOCATIONS
(Reproduced under licence from Google Earth Pro.)

D.4.2.2 SURVEY METHODS

Remote monitoring was carried out using an Anabat Express detector with the module set up to record all activity from dusk till dawn.

D.4.2.3 SURVEY EQUIPMENT

- Anabat Express

D.4.3 DATA ANALYSIS

All bat calls were analysed using Analook, with calls identified to species where possible, referencing call parameters as detailed within Russ (2012)⁷ and Middleton et al (2014)⁸.

Species from the *Myotis* genus of bats produce frequency modulated calls with overlapping call parameters and cannot be reliably distinguished to species level on call alone. As such, within this report, *Myotis* calls are identified as '*Myotis ?species*', with the most likely species identified through an assessment of a combination of call slope, loudness, frequency range, habitat and, where the bat was observed in flight, flight characteristics. Where insufficient information is available, calls are simply identified as '*Myotis sp.*'.

Bats from the pipistrelle genus also produce calls with overlapping parameters and the call criteria used to differentiate between species of this genus, based on peak frequencies, are detailed within Table 6.

Species	Call Peak Frequency Range (KHz)
Common pipistrelle	>42 and <49
Soprano pipistrelle	≥51
Nathusius' pipistrelle	<40
Common or soprano pipistrelle ('50KHz pip')	≥49 and <51
Common or Nathusius' pipistrelle ('40KHz pip')	≥40 and ≤42

Similarly, bats of the *Nyctalus* genus produce calls with overlapping call parameters. Where calls are obtained in an open environment, the two *Nyctalus* species found in this region can be differentiated and calls will be identified as noctule or Leisler's bat. Where there is doubt, calls are noted as *Nyctalus sp.*.

Within this report, for all species, if the species name is given without qualification, the record was of good quality and fell within recognised parameters with no potential overlap with other species present in the region. If there is a degree of uncertainty this is indicated by a question mark, e.g. ?brown long-eared. If identification to species is not practicable, then where possible calls are identified to genus.

D.5 PERSONNEL

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

⁷ Russ, J. (2012) British Bat Calls: A Guide to Species Identification. Pelagic Publishing

⁸ Middleton, N., Froud, A. and French, K. (2014) Social Calls of the Bats of Britain and Ireland. Pelagic Publishing

Name	Position	Professional Qualifications	Natural England Survey Licence Numbers
Mandy Rackham	Ecologist	BA MSc MCIEEM	2015-12470-CLS-CLS (Bats)
Jessica Wilson		BSc MSc	-

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 Management⁹, 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.

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.
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'.

⁹ Chartered Institute for Ecology and Environmental Management (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater and Coastal

Higher quality sites for bats are likely to have a good number of bats and range of species, particularly species that are scarcer in the region and require higher habitat quality such as whiskered/Brandt's, Natterer's, brown long-eared bat and Nathusius. Sites with over five species regularly recorded will generally be of above average quality.

E. RESULTS

E.1 DESKTOP STUDY

E.1.1 PRE-EXISTING INFORMATION

ORDNANCE SURVEY MAPPING AND AERIAL PHOTOGRAPHY

Figures 1 (B) and 4 (D1) show that the land use to the north and west of the site is dominated by residential housing with scattered areas of amenity greenspaces. A small industrial estate is located adjacent to the southern boundary of the site. Land to the west of the site is made up of a mixture of grassland and scrub with the River Tyne ~360m from the western boundary of the site.

The most recent aerial photograph of the site (Figure 3, D1, 2015) indicates that habitats on site comprise a mosaic of grassland, bare ground, scrub and small blocks of trees. Historic imagery shows the Former Siemens factory (comprising a mix of industrial buildings) was present within the site between 2001 and 2013.

MULTI AGENCY GEOGRAPHIC INFORMATION FOR THE COUNTRYSIDE WEBSITE¹⁰

Table 9 below details the internationally and nationally statutorily designated sites within 2km of the survey area.

Designation	Site Name	Reason for Designation	Distance from Survey Area
Local Nature Reserve	Pelaw Quarry	Urban fringe site with a mosaic of ponds, marshes and woodland	~600m south east.

E.1.2 CONSULTATION

LOCAL RECORDS CENTRE

Table 10 below summarises the bat records provided by the Environmental Records Information Centre North East (ERIC NE). The full data search results can be provided on request.

Taxon	Species	No. of Records within Search Area	Records of Particular Note
Terrestrial Mammal	Common pipistrelle	11	2014 ~1.1km
	Brown Long-eared	1	2005 <2km

In addition, ERIC NE provided information relating to the following non-statutorily designated sites which lie within the search area:

Designation	Site Name	Reason for Designation	Distance from Survey Area
Gateshead Local Wildlife Site	Bill Quay	Rough grassland, amenity planting blocks, intertidal riverbanks, riverside cliffs and dene. Important for bird species	~55m south west

¹⁰ Multi Agency Geographic Information for the Countryside (MAGIC) www.magic.gov.uk

	Manor Gardens	Unimproved neutral grassland, marsh, pools and scattered scrub. Important for bird species	~1.2km south
Newcastle Local Wildlife Sites	Walker Riverside	Lowland neutral grassland and scrub	~960m west
	Walker Railway Station	Industrial lowland grassland and scrub with 15 species of butterfly recorded	~1.3km north west
Newcastle Site of Local Conservation Importance	Walker Riverside	Grassland and woodland	~760m west
North Tyneside Local Wildlife Site	River Tyne Tidal Extent	Important for bird species	~600m west
South Tyneside Local Wildlife Sites	Hebburn Riverside	Open grassland and broadleaf plantation rising steeply from the River Tyne. Species rich neutral grassland and marsh	~30m west
	Monkton Pond and Wood	Small pond with woodland adjacent to the metro line.	~1.5km south

The location of these sites is shown in the figure below.

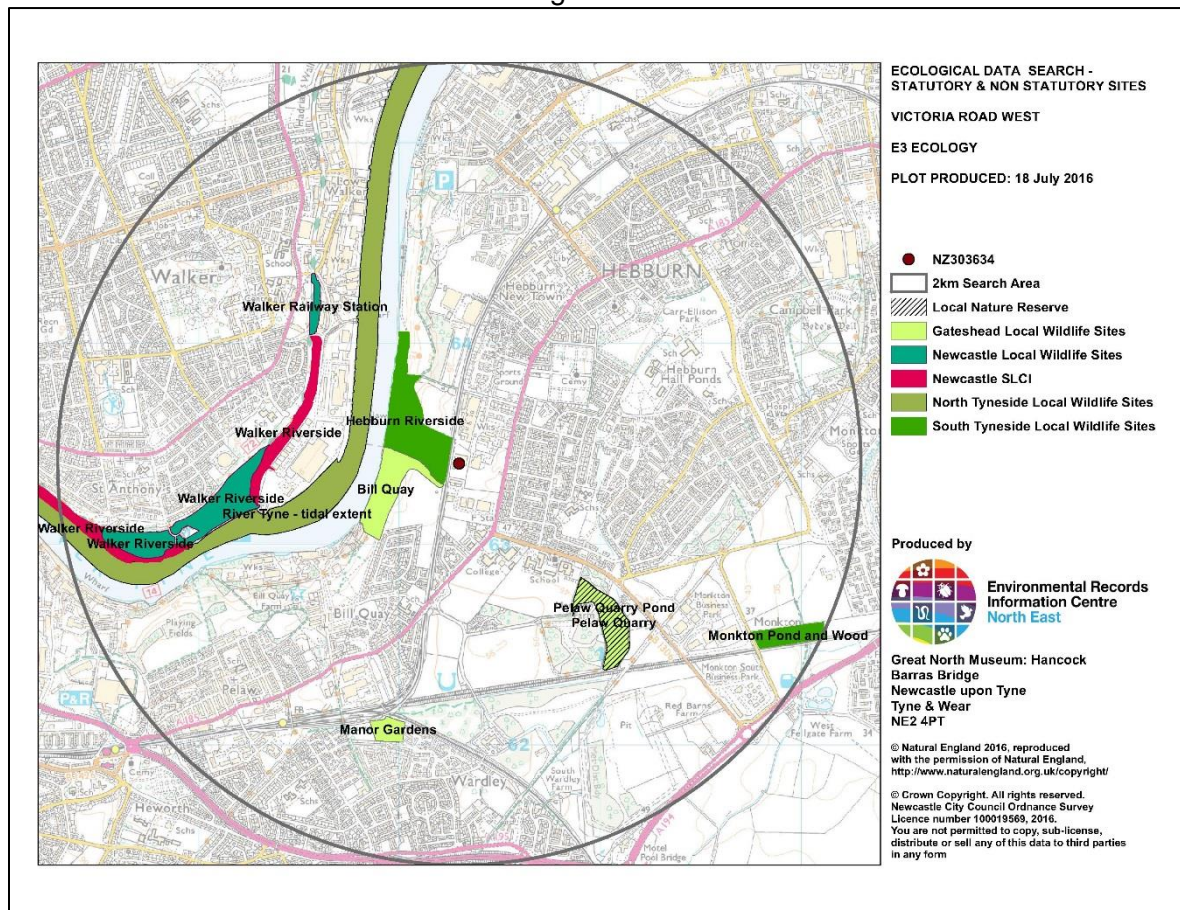


FIGURE 7: DESIGNATED SITES WITHIN 2KM (PRODUCED BY ERIC NE)

E.2 DAYTIME RISK ASSESSMENT

E.2.1 HABITATS

The site comprises a mosaic of hard standing with ephemeral vegetation, semi improved neutral grassland, scrub and blocks of trees. Full habitat descriptions are available in the Ecological Appraisal report.

FORAGING HABITATS

Blocks of semi improved neutral grassland, scrub and trees within the site have the potential to provide good quality foraging habitat.



COMMUTING ROUTES

Treelines around the site boundaries and associated with woodland block edges have the potential to provide commuting routes both within the site and also provide linkages with the surrounding area.



SINGLE HIGH RISK TREE

There is a single high risk willow tree located within the site. Aerial inspection of this tree was undertaken in October and identified no field signs of bats. For full results of the aerial inspection and precautionary felling method see the ecological assessment report.



E.3 OVERVIEW OF SITE SUITABILITY

TABLE 12: OVERVIEW OF SITE SUITABILITY FOR BATS				
HABITATS AND SETTING ¹¹				
	NEGLIGIBLE	LOW	MODERATE	HIGH
HABITATS AND COVER WITHIN 200M	City Centre	Residential with amenity grassland	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	Semi-natural habitats e.g. trees, hedgerows	Good network of woods, wetland and hedges
ALTERNATIVE ROOSTS WITHIN 1KM	City centre	Numerous alternative roost sites of a similar nature	A number of similar buildings in the local area	Few alternative buildings and site of good quality for roosts
SETTING	Inner city	Urban with little green space	Build development with green-space, wetland, trees	Rural Lowland with woodland and trees.
DISTANCE TO WATER/ MARSH	>1km	500m-1000m	200m-500m	<200m
DISTANCE TO WOODLAND/ SCRUB	>1km	500m-1000m	200m-500m	<200m
DISTANCE TO SPECIES-RICH GRASSLAND	>1km	500m-1000m	200m-500m	<200m
COMMUTING ROUTES	Isolated by development, major roads, large scale agriculture	No potential flyways linking site to wider countryside	Some potential commuting routes to and from site	Site is well connected to surrounding area with multiple flyways

The assessment indicates habitats and setting are of low to moderate suitability to support foraging, commuting and roosting bat species. Overall given the nature and location of the site it is considered to be of low to moderate potential for supporting bat species.

E.4 ACTIVITY SURVEY

E.4.1 TRANSECT SURVEY

6th July 2016

Low levels of commuting and foraging activity by common pipistrelle were recorded along the western tree line. Individual common pipistrelles were also recorded foraging along the central strip of trees within the site. No other species of bat were recorded during the survey.

Results of the transect survey are shown below in figure 8.

¹¹ 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.



FIGURE 8: 6TH JULY 2016 TRANSECT SURVEY RESULTS
(Reproduced under licence from Google Earth Pro.)

25th July 2016

Low levels of commuting and foraging activity by common pipistrelles were recorded along the western tree line. A single common pipistrelle was recorded commuting along the southern section of the eastern tree line and a further single common pipistrelle was recorded foraging along the northern boundary. No other bat species were recorded on site during the survey.

Results of the transect survey are shown below in figure 9.

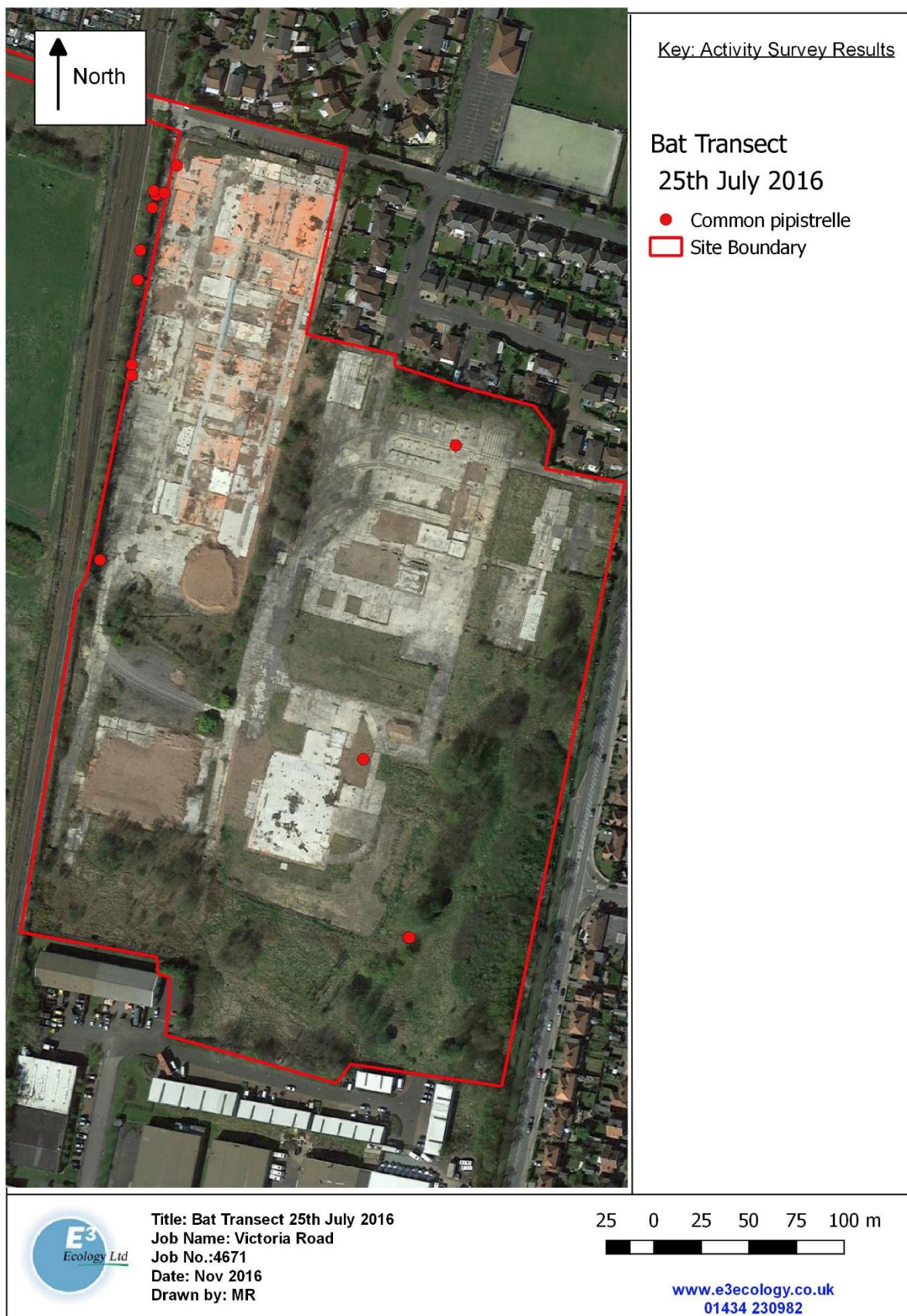


FIGURE 9: 25TH JULY TRANSECT SURVEY RESULTS
(Reproduced under licence from Google Earth Pro.)

E.4.2 REMOTE MONITORING

E.4.2.1 *SPECIES ASSEMBLAGE AND RATES OF ACTIVITY*

Remote monitoring recorded 98 bat passes over a total survey effort of 22 nights (total nights monitoring across both monitoring points). Only common pipistrelle bats were recorded.

A total of 36 bat passes were recorded at remote monitoring point 1 between the 6th and 7th July. Between the 15th and 24th July a total of 6 passes were recorded at remote monitoring point 1 and 56 passes at remote monitoring point 2.

E.5 **ADDITIONAL SPECIES**

A breeding bird risk assessment, reptile survey and butterfly surveys have been undertaken and the results are presented within the Ecological Appraisal report.

F. SITE ASSESSMENT

F.1 ASSESSMENT OF SURVEY FINDINGS

Transect surveys undertaken on the site recorded very low levels of foraging and commuting activity by common pipistrelles. Activity was predominately recorded along the western tree line however individual bats were also recorded along the northern and central sections of the site. No roosts have been confirmed within the site.

Common pipistrelle was the only bat species recorded on site through remote monitoring with a total of 98 bat passes recorded across a total of 22 nights at two monitoring points. Overall the levels of activity within the site are considered to be low and the overall value of the site to bat species is also considered to be low.

F.2 LIMITATIONS AND CONSTRAINTS

Full bat surveys have not been undertaken within the site with baseline data only having been collected. The data provided will provide a snapshot of the levels of activity within the site during the summer period.

G. IMPACT ASSESSMENT

G.1 DIRECT DEVELOPMENT IMPACTS

- Disturbance to and/or severance of bat commuting and foraging habitats through increased lighting on site.

G.2 INDIRECT IMPACTS ON LOCAL POPULATIONS

- Loss of potential commuting and foraging habitat for bat species within the local area.

H. RECOMMENDATIONS

The mitigation strategy aims to minimise effects on biodiversity by:

- avoiding significant negative impacts where possible through good design; and
- developing approaches to mitigate any remaining unavoidable impacts.

Where any significant residual impacts on biodiversity are anticipated, compensation may then be proposed. This approach is in-line with CIEEM recommendations¹².

H.1 AVOIDANCE AND MITIGATION STRATEGY

H.1.1 SITE DESIGN

- 'Ecological corridors' along the eastern, western and southern boundaries should be retained. Native planting should be implemented within this buffer and will be designed to enhance structural diversity, including plants bearing flowers, nectar and fruits which are attractive to invertebrates, thereby helping to maintain the food resource for bats and wildlife generally.
- Light spill along the southern and western boundaries will be less than 2 lux. Lighting around retained trees will be minimised as far as is practicable. Where security lights are required, these will be on a short timer and sensitive only to larger objects.

H.1.2 TIMING OF WORKS

- Vegetation clearance/tree felling 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.1.3 WORKING METHODS AND BEST PRACTICE

- The landscape strategy which is being developed for this site should be designed to include management of the wildlife corridor whilst this feature is established. Ongoing management of this feature should be included in the long term management of the site.

¹² Chartered Institute for Ecology and Environmental Management (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater and Coastal

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 2010 (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.

NON-STATUTORILY DESIGNATED SITES

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-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 ¹³												
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												

¹³ 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 uncommon¹⁴. 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 roosts¹⁵.

Maternity colonies of brown long-eared bats are generally small, consisting of 10 to 20 adults^{16,17} (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 tunnels¹⁸. 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 Scotland¹⁹. 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 bats²⁰. 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 used²¹.

¹⁴ Roberts, G.M. & Hutson, A.M. 2000. *Pipistrelle*. British Bats No. 6. The Bat Conservation Trust, London

¹⁵ Corbet, G.B & Southern, H.N., 1964. The handbook of British Mammals).

¹⁶ 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

¹⁷ 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

¹⁸ 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.

¹⁹ 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.

²⁰ Altringham, J.D. 2003. British Bats. The New Naturalist. Pub. Harper Collins.

²¹ 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.

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 crevices²⁰.

Brandt's bat is thought to have similar roosting behaviour and foraging ecology to the whiskered bat, however, further research is needed to clarify this²⁰.

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

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 SURVEYS²²	
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
Any development works	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 underground duct or structure including tunnels, mines, kilns, ice houses, adits, military fortifications, air raid shelters, cellars
Floodlighting	Unused industrial chimneys that are lined and of brick/stone construction
	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
Felling, removal or lopping	Any building listed in reference 1
	Woodland
	Field hedgerows and/or lines of trees with connectivity to woodland or water bodies
	Old and veteran trees that are more than 100 years old
Any development works	Mature trees with obvious holes, cracks or cavities or which are covered with mature ivy (including dead trees)
	Within 200m of 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

²² 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.