BUILDING X9, QINETIQ SITE, FORT HALSTEAD

WINTER HIBERNATION BAT SURVEY

A Report to: QinetiQ Ltd

Report No: RT-MME-153704-02 Rev B

Date: May 2021



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REPORT VERIFICATION AND DECLARATION OF COMPLIANCE

This study has been undertaken in accordance with British Standard 42020:2013 "Biodiversity, Code of practice for planning and development".

Report Version	Date	Completed by:	Checked by:	Approved by:
Final	07/04/2021	Jamie Fletcher (Senior Ecological Consultant)	Paul Roebuck MCIEEM (South East Manager)	Dr Nick Steggall CEnv MCIEEM (Associate Director: Technical)
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The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

DISCLAIMER

The contents of this report are the responsibility of Middlemarch Environmental Ltd. It should be noted that, whilst every effort is made to meet the client's brief, no site investigation can ensure complete assessment or prediction of the natural environment.

Middlemarch Environmental Ltd accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

VALIDITY OF DATA

The findings of this study are valid for a period of 18 months from the date of survey. If works have not commenced by this date, an updated site visit should carried out by a suitably qualified ecologist to assess any changes in the habitats present on site, and to inform a review of the conclusions and recommendations made.

NON-TECHNICAL SUMMARY

In November 2020 QinetiQ Ltd commissioned Middlemarch Environmental Ltd to undertake a Winter Hibernation Bat Survey of Building X9, QinetiQ Site, Fort Halstead, Kent. The survey is required to determine the usage of Building X9 by hibernating bats and is associated with the strategic redevelopment of QinetiQ owned land within Fort Halstead including refurbishment of existing laboratories, refurbishment of office buildings, provision of new IT, communications, heating and power, development of a new 'front of site', and the installation of new security and perimeter fencing.

Middlemarch Environmental Ltd have previously undertaken a suite of ecological assessments and surveys for QinetiQ Ltd at the site including dusk emergence and dawn re-entry bat surveys completed for Building X9 (Report RT-MME-153340-01 Rev C). During this survey it was confirmed that the building supported a transitional roost used by a low number of brown long-eared bats.

The hibernation survey comprised of three detailed inspections (December, January and February) of the open blast chamber section of Building X9 and the installation of a static detector for three survey periods of at least 14 days in December 2020 and January and February 2021. All recordings made by the static automated detectors were subject to computer analysis by a suitably qualified ecologist to determine species present and the total number of passes recorded.

During the daytime inspection surveys, no evidence of hibernating bats was recorded. Due to sensitivities and safety issues associated with the use of electronic devices on site it was only possible to complete the inspection manually, without the use of endoscopes or torches. Furthermore, it was not possible to fully inspect behind all metal blast plates due to the height or angles at which they were located.

One Song Meter SM4 static detector was installed within the open blast chamber of Building X9 from 14th December 2020 to 7th January 2021. No bat activity was recorded during this survey period.

One Song Meter SM4 static detector was installed within the open blast chamber of Building X9 from 12th January 2021 to 1st February 2021. During this survey period a total of nine brown long-eared bat detections were recorded, with all nine occurring over a period of two consecutive nights – the night of the 12th January-13th January 2021 and the night of the 13th January-14th January 2021. Analysis of the sound recordings concluded that the two detections on the night of the 12th January-13th January 2021 were of bats echolocating outside of the open blast chamber, with the faintness of the calls analysed allowing for this assessment to be made. Analysis of the sound recordings during the night of the 13th January 2021 found all seven detections to be social calls considered to be from outside of the open blast chamber due to the faintness of the recordings. The relatively warm temperature at the time of the recordings of 10°c coupled with dry conditions and low wind speed provided suitable conditions for bats to temporarily emerge from hibernation to forage or seek out an alternative hibernation roost site. No further bat activity was recorded during this survey period.

One Song Meter SM4 static detector was installed within the open blast chamber of Building X9 from 15th February 2021 to 1st March 2021. No bat activity was recorded during this survey period.

The results of the survey effort indicate that the open blast chamber of Building X9 does not support a winter hibernation bat roost due to the low number and location of calls recorded during the survey period and the absence of any evidence of bats during the daytime inspections.

All recommendations provided in this section are based on Middlemarch Environmental Ltd's current understanding of the site proposals, correct at the time the report was compiled. Should the proposals alter, the conclusions and recommendations made in the report should be reviewed to ensure that they remain appropriate. The following recommendations are made:

R1 Building X9

The results of the survey effort indicate that the open blast chamber of Building X9 does not support a winter hibernation bat roost due to the low number of calls recorded during the survey period and the absence of any evidence of bats during the daytime inspections. The findings of the current study should be used to inform the proposed construction timetable, in order to allow the potential for impact on bats to be minimised.

Natural England Bat Mitigation Guidelines (2004) states that for structures that are used as transitional roosts works during spring and autumn should be avoided, with works ideally completed between June and August inclusive or November and February inclusive.

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1. INTRODUCTION

1.1 **PROJECT BACKGROUND**

In November 2020 QinetiQ Ltd commissioned Middlemarch Environmental Ltd to undertake a Winter Hibernation Bat Survey of Building X9, QinetiQ Site, Fort Halstead, Kent. The survey is required to determine the usage of Building X9 by hibernating bats and is associated with the strategic redevelopment of QinetiQ owned land within Fort Halstead. A full description of the proposals is provided in Section 5.1.

A range of ecological surveys were completed by Waterman Group between 2006 and 2013 and by Middlemarch Environmental Ltd in 2018, with further updated surveys in 2020, to inform a separate hybrid planning application associated with the redevelopment of the wider Fort Halstead site. Land surveyed as part of these assessments included QinetiQ owned land.

Middlemarch Environmental Ltd was subsequently instructed to undertake a full suite of targeted surveys of the QinetiQ owned land, comprising:

- Preliminary Arboricultural Assessment (Report RT-MME-150872-01);
- Arboricultural Impact Assessment (Report RT-MME-150872-02 Rev B);
- Preliminary Ecological Appraisal (Report RT-MME-150872-03 Rev B);
- Preliminary Bat Roost Assessment (Report RT-MME-150872-04 Rev B);
- Badger Survey (Report RT-MME-150872-05 Rev B); and,
- Dusk Emergence and Dawn Re-Entry Bat Surveys (Report RT-MME-153340-01 Rev B).

An Ecological Mitigation Strategy (Report RT-MME-150872-06 Rev B), a Bat Protection Strategy for Building X78 (Report RT-MME-150872-08 Rev B) and a Bat Mitigation Strategy for Building X9 (Report RT-MME-150872-08 Rev B) have also been prepared.

Middlemarch Environmental Ltd has also prepared a Construction Ecological Management Plan (CEcMP, Report RT-MME-153844-03 Rev C), undertaken a Biodiversity Net Gain Assessment (Report RT-MME-153844-02 Rev B) and prepared a Landscape and Ecological Management Plan (LEMP, Report RT-MME-153844-03 Rev B) for the QinetiQ redevelopment.

During the dusk emergence and dawn re-entry bat surveys completed for Building X9 (Report RT-MME-153340-01 Rev C), it was confirmed that the building supported a transitional roost used by a low number of brown long-eared bats *Plecotus auritus*.

All buildings with suitable bat access points have the potential to support hibernating bats. High value hibernation sites typically have cool, humid conditions with a stable microclimate and low levels of disturbance; typically caves, mines, tunnels and cellars. The open blast chamber of Building X9 meets the criteria typically associated with a high value hibernation site.

All UK bat species are European protected species and they are capable of being material considerations in the planning process. A summary of the legislation protecting bats is included within Appendix 1. This section also provides some brief information on the ecology of British bat species.

1.2 SITE DESCRIPTION AND CONTEXT

The wider Fort Halstead site is located off Star Hill Road in Halstead, Kent, centred at National Grid Reference TQ 4970 5922. It is an irregular shaped parcel of land that measures 131.89 ha in size. The wider Fort Halstead site is bordered by the A224 Polhill to the north-east and Star Hill Road to the south-west. A mixture of arable and pastoral fields, pockets of woodland and farm buildings surround the site. The wider landscape is dominated by a rural setting, consisting of agricultural land interspersed with pockets of woodland and small settlements.

The planning application site extends to 15.8 ha and sits within the wider Fort Halstead site. The site is known as the QinetiQ enclave and is located on the southern-most boundary of the wider Fort Halstead site. The application site is bound by Crow Road to the north, the Scheduled Ancient Monument to the east, ancient woodland to the west and the existing site perimeter fence to the south.

At the time of the survey, the QinetiQ enclave comprised a defence research facility which contained a number of buildings with associated areas of hardstanding, surrounded by parcels of semi-natural and plantation woodland. Areas of neutral grassland, calcareous grassland and amenity grassland were also present, as well as patches of scrub and tall ruderal vegetation.

1.3 DOCUMENTATION PROVIDED

The conclusions and recommendations made in this report are based on information provided by the client regarding the scope of the project. Documentation made available by the client is listed in Table 1.1.

Document Name / Drawing Number	Author
Proposed Site Plan / 30002236-BHK-00-XX-DR-A-003	Baker Hicks

Table 1.1: Documentation Provided by Client

2. METHODOLOGY

2.1 DESK STUDY

As part of the Preliminary Ecological Appraisal completed for the wider Fort Halstead site in 2018 (Report RT-MME-127947-01) an ecological desk study (which included a search for records of bats) was undertaken within a 2 km radius. The consultee for the desk study was Kent and Medway Biological Records Centre.

Middlemarch Environmental Ltd then assimilated and reviewed the desk study data provided by this organisation. Relevant bat data are discussed in Chapter 3. In compliance with the terms and conditions relating to its commercial use, the full desk study data are not provided within this report.

The desk study included a search for statutory nature conservation sites designated for bats within a 10 km radius of the site.

2.2 WINTER HIBERNATION SURVEYS: DAYTIME INSPECTION AND AUTOMATED DETECTORS

The daytime inspection involved a systematic inspection of the blast chamber for hibernating bats in accordance with the best practice guidance described by the Bat Conservation Trust (Collins, 2016). Due to sensitivities and safety issues associated with the use of electronic devices on site it was only possible to complete the inspection manually, without the use of endoscopes or torches. It was not possible to fully inspect behind all metal blast plates due to the height or angles at which they were located.

The site was subject to three separate winter hibernation surveys.

The detectors were left in situ for a period of two weeks (fourteen consecutive nights) for three separate survey periods in December 2020 and January and February 2021.

3. DESK STUDY

3.1 STATUTORY NATURE CONSERVATION SITES

The site is located within 10 km of Westerham Mines SSSI, which is located 6.93 km to the south-west of the survey area. The principal interest of this site is the use of its abandoned ragstone mines by a variety of hibernating bats. With the increasing scarcity of bats in south-east England and the continued loss of the few suitable hibernacula remaining available to them, these mines represent an important winter refuge for bats in the county. Five species have been recorded hibernating here: Brandt's bat *Myotis brandti*, brown long-eared bat *Plecotus auratus*, Daubenton's bat *Myotis daubentoni*, Natterer's bat *Myotis nattereri* and whiskered bat *Myotis mystacinus*. The number of bats using the mines declined from the 1950s onwards, largely because of disturbance, but the fitting of grilles (allowing access for bats but not humans) and devices to maintain the air flow through the mines is thought to have led to an increase in numbers in recent years. However, it is very difficult to locate all the bats using the tunnels, and different species use them at different times during the winter. Thus, it is extremely hard to estimate the true numbers using the mines. There is also evidence that some use is made of the mines by bats in summer.

3.2 SPECIES RECORDS

The data search was carried out in July 2018 by Kent and Medway Biological Records Centre. Records of bat species within a 2 km radius of the wider Fort Halstead provided by the consultee are summarised in Table 3.1. It should be noted that the absence of records should not be taken as confirmation that a species is absent from the search area.

Species	No. of Records	Most Recent Record	Proximity of Nearest Record to Study Area	Species of Principal Importance?	Legislation
Natterer's bat Myotis nattereri	4	2016	On site	-	ECH 4, WCA 5, WCA 6
Unidentified myotis <i>Myotis</i> sp.	3	2016	On site	#	ECH 2 #, ECH 4, WCA 5, WCA 6
Common pipistrelle Pipistrellus pipistrellus	17	2014	On site	-	ECH 4, WCA 5, WCA 6
Brown long-eared bat Plecotus auritus	5	2012	On site	~	ECH 4, WCA 5, WCA 6
Leisler's bat <i>Nyctalus leisleri</i>	1	2007	On site	-	ECH 4, WCA 5, WCA 6
Serotine bat Eptesicus serotinus	20	2015	840 m south-east	-	ECH 4, WCA 5, WCA 6
Unidentified bat Chiroptera sp.	5	1999	960 m south-west	#	ECH 2 #, ECH 4, WCA 5, WCA 6
Pipistrelle species Pipistrellus sp.	5	2005	1,150 m north	#	ECH 4, WCA 5, WCA 6
Noctule Nyctalus noctula	4	2011	1,410 m west	✓	ECH 4, WCA 5, WCA 6
Soprano pipistrelle Pipistrellus pygmaeus	2	2013	1,580 m east	\checkmark	ECH 4, WCA 5, WCA 6
Long-eared bat <i>Plecotus</i> sp.	1	2002	1,960 m north- west	#	ECH 4, WCA 5, WCA 6

Key:

#: Dependent on species.

ECH 2: Annex II of the European Communities Council Directive on the Conservation of Natural Habitats and Wild Fauna and Flora. Animal and plant species of community interest whose conservation requires the designation of Special Areas of Conservation.

ECH 4: Annex IV of the European Communities Council Directive on the Conservation of Natural Habitats and Wild Fauna and Flora. Animal and plant species of community interest in need of strict protection.

WCA 5: Schedule 5 of Wildlife and Countryside Act 1981 (as amended). Protected animals (other than birds). WCA 6: Schedule 6 of Wildlife and Countryside Act 1981 (as amended). Animals which may not be killed or taken by certain methods.

Species of Principal Importance: Species of Principal Importance for Nature Conservation in England.

Table 3.1: Bat Species Records Within 2 km of Survey Area

4. SURVEY RESULTS

4.1 DAYTIME INSPECTION SURVEYS

4.1.1 Introduction

The winter hibernation surveys comprised three daytime inspection surveys of the stable on 14th December 2020 and 12th January and 15th February 2021, to search for and identify hibernating bats or other evidence of bat occupancy. Surveys were carried out by Jamie Fletcher (Senior Ecological Consultant).

The weather conditions recorded at the time of the survey are presented in Table 4.1.

Date	External Weather conditions				
Date	Temperature (⁰C)	Wind Speed (Beaufort)	Precipitation		
14/12/2020	4	F0	Nil		
12/01/2021	3	F1	Nil		
15/02/2021	6	F1	Nil		

Table 4.1: Weather Conditions During Winter Hibernation Surveys

4.1.2 Results

During the daytime inspections completed on the 14th December 2020, 12th January and 15th February 2021 no evidence of bats was identified within the open blast chamber of Building X9.

4.2 STATIC DETECTOR SURVEYS

4.2.1 Introduction

One Song Meter SM4 static detector was installed within the open blast chamber of Building X9 for a two week period during December 2020 and January and February 2021.

The detector was set to trigger and record upon the detection of sound. All recordings made by the static automated detectors were subject to computer analysis by a suitably qualified ecologist to determine species present and the total number of passes recorded. For the purposes of this report only nights were confirmed bat activity was recorded have been included in Table 4.3.

The weather conditions recorded during the survey period are shown within Table 4.2 below.

	Weather conditions (averaged)					
Date range static in-situ	Temperature Max (ºC)	Temperature Min (ºC)	Humidity Max (%Rh)	Humidity Min (%Rh)		
14/12/2020-07/01/2021	12	-1	92.2	83.4		
12/01/2021-01/02/2021	10	1	86.1	66.0		
15/02/2021-01/03/2021	12	-1	62.3	46.6		

 Table 4.2: Weather Conditions During Winter Hibernation Survey

4.2.2 Results – 14th December 2020-7th January 2021

No bat activity was recorded within Building X9 during the survey period from 14th December 2020 to 7th January 2021.

4.2.3 Results – 12th January-1st February 2021

				Species
Date	Time Band	Temperature (C*)	Humidity (%)	Brown Long-eared Bat
	16:00-17:00	7	80.8	0
	17:00-18:00	7	79.2	0
	18:00-19:00	7	77.3	0
	19:00-20:00	6	77.3	1
	20:00-21:00	6	76.1	0
12/01/2021	21:00-22:00	5	74.5	0
-	22:00-23:00	5	79.3	0
13/01/2021	23:00-00:00	4	83.7	0
Sunset:	00:00 - 01:00	4	84.2	0
16:16	01:00 - 02:00	4	86.1	0
	02:00 - 03:00	3	85.3	0
Sunrise:	03:00 - 04:00	3	84.2	0
07:58	04:00 - 05:00	4	82.5	1
	05:00 - 06:00	4	83.6	0
	06:00 - 07:00	4	82.5	0
	07:00 - 08:00	5	80.4	0
	08:00 - 09:00		83.5	0
	40.00 47.00	Iotai	75.0	2
	16:00-17:00	10	75.0	0
	17:00-18:00	10	74.2	0
	18:00-19:00	10	76.2	1
	19:00-20:00	10	77.5	0
	20:00-21:00	9	78.3	0
13/01/2021	21:00-22:00	9	79.5	0
-	22:00-23:00	9	80.8	0
14/01/2021	23:00-00:00	8	81.3	0
Sunset:	00:00 - 01:00	7	79.2	0
16:17	01:00 - 02:00	6	77.3	0
	02:00 - 03:00	5	76.1	0
Sunrise:	03:00 - 04:00	5	74.5	0
07:57	04:00 - 05:00	4	71.3	0
	05:00 - 06:00	4	69.4	0
	06:00 - 07:00	5	68.4	0
	07:00 - 08:00	5	67.5	0
	08:00 - 09:00	6	66.0	0
		Total		7

Table 4.4: Summary Of Bat Passes Recorded By Static Detector 12/01/2021-14/01/2021.

During the survey period from 12th January to 1st February 2021 a total of nine brown long-eared bat detections were recorded, with all nine occurring over a period of two consecutive nights – the night of the 12th January-13th January 2021 and the night of the 13th January-14th January 2021.

Analysis of the sound recordings concluded that the two detections on the night of the 12th January-13th January 2021 were of bats echolocating outside of the open blast chamber, with the faintness of the calls analysed allowing for this assessment to be made.

Analysis of the sound recordings during the night of the 13th January-14th January 2021 found all seven detections to be social calls considered to be from outside of the open blast chamber due to the faintness of the recordings. The relatively warm temperature at the time of the recordings of 10°c coupled with dry

conditions and low wind speed provided suitable conditions for bats to temporarily emerge from hibernation to forage or seek out an alternative roost site.

No further bat activity was recorded during this survey period.

4.2.4 Results – 15th February 2021-1st March 2021

No bat activity was recorded within Building X9 during the survey period from 15th February 2021 to 1st March 2021.

5. DISCUSSION AND CONCLUSIONS

5.1 SUMMARY OF SITE PROPOSALS

The proposals for the QinetiQ site are as follows:

Works to the proposed QinetiQ enclave comprising the erection of perimeter security fence, erection of a new reception building, creation of a new main site entrance along Crow Road, refurbishment of existing buildings including plant installation, creation of a new surface level car park and access, installation of two new explosive magazine stores and surrounding pendine block walls, demolition of existing buildings, installation of 6no. storage containers, installation of new site utilities and landscaping works.

The proposed development will involve the refurbishment of Building X9 in order to make the building operational for use as an explosives testing chamber after an extended period of the building being unused.

5.2 DISCUSSION AND CONCLUSIONS

All buildings with suitable bat access points have the potential to support hibernating bats. High value hibernation sites typically have cool, humid conditions with a stable microclimate and low levels of disturbance. The open blast chamber of Building X9 meets the criteria typically associated with a high value hibernation site.

During the daytime inspection surveys, no evidence of hibernating bats was recorded. Due to sensitivities and safety issues associated with the use of electronic devices on site it was only possible to complete the inspections manually, without the use of endoscopes or torches. It was not possible to fully inspect behind all metal blast plates due to the height or angles at which they were located. The manual daytime inspections therefore primarily comprised searches for droppings and other visible evidence of bat presence/usage. No evidence of bats was recorded during the daytime inspection surveys.

One Song Meter SM4 static detector was installed within the open blast chamber of Building X9 from 14th December 2020 to 7th January 2021. No bat activity was recorded during this survey period.

One Song Meter SM4 static detector was installed within the open blast chamber of Building X9 from 12th January 2021 to 1st February 2021. During this survey period a total of nine brown long-eared bat detections were recorded, with all nine occurring over a period of two consecutive nights – the night of the 12th January-13th January 2021 and the night of the 13th January-14th January 2021. Analysis of the sound recordings concluded that the two detections on the night of the 12th January-13th January 2021 were of bats echolocating outside of the open blast chamber, with the faintness of the calls analysed allowing for this assessment to be made. Analysis of the sound recordings during the night of the 13th January 2021 found all seven detections to be social calls considered to be from outside of the open blast chamber due to the faintness of the recordings. The relatively warm temperature at the time of the recordings of 10°c coupled with dry conditions and low wind speed provided suitable conditions for bats to temporarily emerge from hibernation to forage. No further bat activity was recorded during this survey period.

One Song Meter SM4 static detector was installed within the open blast chamber of Building X9 from 15th February 2021 to 1st March 2021. No bat activity was recorded during this survey period.

The results of the winter hibernation survey failed to provide evidence of winter hibernation roosting within Building X9, with it concluded that bats are not using the building as a hibernation roost.

No further species of bat were recorded during the survey period.

5.3 SUMMARY OF POTENTIAL IMPACTS

The results of the survey effort indicate that the open blast chamber of Building X9 does not support a winter hibernation bat roost due to the low number of calls recorded during the survey period and the absence of any evidence of bats during the daytime inspections.

Proposals include the refurbishment of the building including the replacement of damaged metal blast plates, the installation of a door and general repairs. Based on the findings of the survey it is not considered that bats will be adversely impacted should works take place during the hibernation period nor will the proposed works result in the loss of a winter hibernation roost.

The findings of the current study should be used to inform the proposed construction timetable, in order to allow the potential for impact on bats to be minimised.

Natural England Bat Mitigation Guidelines (2004) states that for structures that are used as transitional roosts works during spring and autumn should be avoided, with works ideally completed between June and August inclusive or November and February inclusive.

6. **RECOMMENDATIONS**

All recommendations provided in this section are based on Middlemarch Environmental Ltd's current understanding of the site proposals, correct at the time the report was compiled. Should the proposals alter, the conclusions and recommendations made in the report should be reviewed to ensure that they remain appropriate.

R1 Building X9

The results of the survey effort indicate that the open blast chamber of Building X9 does not support a winter hibernation bat roost due to the low number of calls recorded during the survey period and the absence of any evidence of bats during the daytime inspections. The findings of the current study should be used to inform the proposed construction timetable, in order to allow the potential for impact on bats to be minimised.

Natural England Bat Mitigation Guidelines (2004) states that for structures that are used as transitional roosts works during spring and autumn should be avoided, with works ideally completed between June and August inclusive or November and February inclusive.

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APPENDICES

APPENDIX 1: Summary of Bat Legislation and Ecology

LEGISLATION

Bats and the places they use for shelter or protection (i.e. roosts) receive legal protection under the Conservation of Habitats and Species Regulations 2017 (Habitats Regulations 2017) and the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations 2019 (Habitats Regulations 2019). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, as amended. This protection means that bats, and the places they use for shelter or protection, are capable of being a material consideration in the planning process.

Regulation 41 of the Habitats Regulations 2017, states that a person commits an offence if they:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats; or
- damage or destroy a bat roost (breeding site or resting place).

Disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or in the case of animals of a hibernating or migratory species, to hibernate or migrate; or to affect significantly the local distribution or abundance of the species to which they belong.

It is an offence under the Habitats Regulations 2017 for any person to have in his possession or control, to transport, to sell or exchange or to offer for sale, any live or dead bats, part of a bat or anything derived from bats, which has been unlawfully taken from the wild.

Changes have been made to parts of the Habitats Regulations 2017 so that they operate effectively from 1st January 2021. The changes are made by the Habitats Regulations 2019, which transfer functions from the European Commission to the appropriate authorities in England and Wales.

All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant.

The obligations of a competent authority in the 2017 Regulations for the protection of species do not change. A competent authority is a public body, statutory undertaker, minister or department of government, or anyone holding public office.

Whilst broadly similar to the above legislation, the WCA 1981 (as amended) differs in the following ways:

- Section 9(1) of the WCA makes it an offence to *intentionally* kill, injure or take any protected species.
- Section 9(4)(a) of the WCA makes it an offence to *intentionally or recklessly** damage or destroy, *or obstruct access to*, any structure or place which a protected species uses for shelter or protection.
- Section 9(4)(b) of the WCA makes it an offence to *intentionally or recklessly** disturb any protected species while it is occupying a structure or place which it uses for shelter or protection.

*Reckless offences were added by the Countryside and Rights of Way (CRoW) Act 2000.

As bats re-use the same roosts (breeding site or resting place) after periods of vacancy, legal opinion is that roosts are protected whether or not bats are present.

The reader should refer to the original legislation for the definitive interpretation.

The following bat species are Species of Principal Importance for Nature Conservation in England: barbastelle bat *Barbastella barbastellus*, Bechstein's bat *Myotis bechsteinii*, noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, greater horseshoe bat *Rhinolophus ferrumequinum* and lesser horseshoe bat *Rhinolophus hipposideros*. Species of Principal Importance for Nature Conservation in England are material considerations in the planning process. The list of species is derived from Section 41 list of the Natural Environmental and Rural Communities (NERC) Act 2006.

ECOLOGY

At present, 18 species of bats are known to live within the United Kingdom, of which 17 species are confirmed as breeding. All UK bat species are classed as insectivorous, feeding on a variety of invertebrates including midges, mosquitoes, lacewings, moths, beetles and small spiders.

Bats will roost within a variety of different roosting locations, included houses, farm buildings, churches, bridges, walls, trees, culverts, caves and tunnels. At different times of the year the bats roosting requirements alter and they can have different roosting locations for maternity roosts, mating roosts and hibernation roosts. Certain bat species will also change roosts throughout the bat activity season with the bat colony using the site to roost for a few days, abandoning the roost and then returning a few days or weeks later. This change can be for a variety of reasons including climatic conditions and prey availability. Bats are known live for several years and if the climatic conditions are unfavourable at a particular roost, they may abandon it for a number of years, before returning when conditions change. Due to the matriarchal nature of bat colonies, the locations of these roosts can be passed down through the generations. Bats usually start to come out of hibernation in March and early April (weather dependent), when they start to forage and replenish the body weight lost during the hibernation period. The female bats then start to congregate together in maternity roosts prior to giving birth and a single baby is born in June or July. The female then works hard to feed her young so that they can become independent and of a sufficient weight to survive the winter before the weather gets too cold and invertebrate activity reduces. Males generally live solitary lives, or in small groups with other males, although in some species the males can be found living with the females all year. The mating season begins in the autumn. During the winter bats hibernate in safe locations which provide relatively constant conditions, although they may venture outside to forage on warmer winter nights.