

Appendix 9.3

NOCTURNAL EMERGENCE AND DAWN RE-ENTRY BAT SURVEYS

FORT HALSTEAD, KENT

**NOCTURNAL EMERGENCE AND
DAWN RE-ENTRY BAT SURVEYS**

A Report to: CBRE Ltd

Report No: RT-MME-127947-03 Rev A

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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:
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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 12 months from the date of survey. If works have not commenced by this date, an updated site visit should be 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

Middlemarch Environmental Ltd was commissioned by CBRE Ltd to undertake nocturnal emergence and dawn re-entry bat surveys at Fort Halstead in Kent. These surveys are required to inform a hybrid planning application associated with the proposed redevelopment of the site, which will involve the demolition of the majority of existing industrial buildings and the construction of a new employment-led mixed-use village.

It is understood that a suite of baseline surveys have been completed by Waterman Group between 2006 and 2013, the results of which are provided in an Ecological Appraisal (Report EED12715-102.R.2.3.7.LM) and Protected Species and Habitat Survey (Report EED12715-102.R.3.3.6.LM), and summarised in the ecology chapter of an EIA associated with a previous application, for which outline planning consent was granted. Based on surveys undertaken between 2007 and 2013, evidence of roosting bats was found in ten buildings on site: A13, A14, A25, F6, H38, HR1, HR2, M10, N10 and R29. Buildings A25 and M10 have since been demolished, and R29 has been subject to repair works.

Due to the amount of time that has elapsed since the previous surveys were completed, updated ecological surveys were required for the current planning application.

During the Preliminary Bat Roost Assessment (Report RT-MME-127947-02), a total of 127 buildings were identified as having high potential to support roosting bats, and 108 buildings were identified as having low potential to support roosting bats.

Nocturnal emergence and dawn re-entry surveys were undertaken between 9th July and 11th September 2018.

Bat Roosts. A total of 235 buildings were subject to a full suite of bat surveys during 2018. The 2018 surveys identified bat roosts in six of the surveyed buildings; A3, F11, N2, Q4, Q7 and R64. The bat roosts consisted of one brown long-eared bat maternity roost in R64 and five common pipistrelle day roosts in the other buildings.

No bats emerged from or re-entered Buildings A13, A14, F6, H38, HR1, HR2 or N10 during the 2018 surveys. However, bats are known to regularly move between roosts and as such the buildings remain a roost whether occupied or not. Therefore, no unlicensed works can be undertaken.

Given that no bats emerged from or re-entered any of the remaining surveyed buildings, it is concluded that there are no bat roosts present in these buildings. Therefore, the proposed works to these buildings are not expected to impact roosting bats, and as such the works may proceed as scheduled.

Bat Activity. Seven bat species were recorded during the nocturnal and dawn surveys; brown long-eared bat, common pipistrelle, Nathusius' pipistrelle, noctule, serotine, soprano pipistrelle and whiskered bat. Commuting and foraging activity was recorded during the survey period. This was predominantly along the woodland edges and over the areas of grassland and trees located between the buildings.

Following the results of the nocturnal emergence and dawn re-entry surveys, the following recommendations have been made:

R1 Buildings A3, A13, A14, F6, F11, H38, HR1, HR2, N2, N10, Q4, Q7 and R64

As a bat roost/resting place has been identified in Buildings A3, A13, A14, F6, F11, H38, HR1, HR2, N2, N10, Q4, Q7 and R64, no unlicensed work can be undertaken which will contravene the legislation outlined in Appendix 1. Prior to any works being undertaken which are likely to result in a breach of the legislation, a development licence must be obtained from Natural England. The licence application process will include the submission of a method statement detailing the current status of bats on site and how the favourable conservation status of the bat population will be maintained. Prior to a licence being issued, planning permission must be granted and relevant conditions relating to protected species and habitat issues must be discharged. An appropriate level of survey work has been undertaken within this study, however should any delays occur in the planning process which results in a delay in the bat licence application beyond March 2019, the bat activity surveys may have to be updated.

R2 Building R36

Building R36 has been subject to a full suite of activity surveys in line with Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), and no bat roosts were identified. Due to the poor structural condition of this building it is deemed to be a health and safety risk, and therefore it is recommended that the building is demolished over the winter months. In the unlikely event that a bat is found during site works all works in that area must immediately cease and a suitably qualified ecologist should be contacted.

R3 Remaining Buildings

The remaining surveyed buildings have been subject to a full suite of activity surveys in line with Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), and no bat roosts were identified. The survey data obtained for the site is valid for 12 months from the survey date. In the unlikely event that a bat is found during site works all works in that area must immediately cease and a suitably qualified ecologist should be contacted.

R4 Lighting

The development should aim to limit the impact of light pollution on bats through the careful use of lighting in critical areas only and at a low level with minimum spillage. Any lighting, either temporary or permanent, along the site boundaries should be kept to a minimum and directed away from the boundary features to maintain dark areas and corridors. A lighting strategy should be designed and implemented on site to avoid impacting bat usage of the site and wider area. Materials used under lights, such as floor surfaces, should be materials that have a minimum reflective quality to prevent light reflecting upwards into the sky. This will ensure that bats using the site and surrounding area to roost/forage/commute are not affected by illumination.

R5 Habitat Enhancement

The development should aim to enhance the site for bats. This may include the provision of roosting opportunities through the installation of bat boxes, and the enhancement of foraging areas by planting species which attract night flying insects.

CONTENTS

1. INTRODUCTION	5
1.1 PROJECT BACKGROUND	5
1.2 SITE DESCRIPTION AND CONTEXT	5
1.3 DOCUMENTATION PROVIDED	6
2. METHODOLOGY	7
2.1 DESK STUDY	7
2.2 FIELD SURVEYS	7
2.2.1 Overview of Nocturnal Emergence and Dawn Re-entry Surveys	7
2.2.2 Nocturnal Emergence Bat Surveys	7
2.2.3 Dawn Re-Entry Bat Surveys	7
3. DESK STUDY	8
3.1 STATUTORY NATURE CONSERVATION SITES	8
3.2 SPECIES RECORDS	8
3.3 PREVIOUS BAT SURVEYS	9
4. SURVEY RESULTS	10
4.1 PERSONNEL	10
4.2 WEATHER CONDITIONS	10
4.3 RESULTS	10
5. DISCUSSION AND CONCLUSIONS	21
5.1 SUMMARY OF PROPOSALS	21
5.2 SUMMARY OF PREVIOUS BAT SURVEYS	21
5.3 SUMMARY OF 2018 NOCTURNAL EMERGENCE AND DAWN RE-ENTRY SURVEYS	21
5.4 CONCLUSIONS	22
6. RECOMMENDATIONS	23
7. DRAWINGS	25
REFERENCES AND BIBLIOGRAPHY	27
APPENDIX 1	28

1. INTRODUCTION

1.1 PROJECT BACKGROUND

Middlemarch Environmental Ltd was commissioned by CBRE Ltd to undertake nocturnal emergence and dawn re-entry bat surveys at Fort Halstead in Kent. These surveys are required to inform a hybrid planning application associated with the proposed redevelopment of the site, which will involve the demolition of the majority of existing industrial buildings and the construction of a new employment-led mixed-use village. It is understood that the new village will comprise business areas (Use Classes B1a/b/c with energetic testing operations), development of up to 750 residential dwellings, a village centre (Use Classes A1/A3/A4/A5/B1a/D1/D2), a one form entry primary school, use of the Fort Area and bunkers as an Historic Interpretation Centre (Use Class D1), together with amenity space, landscape and ecological enhancements both on the site and on the adjacent land within the Applicants ownership.

A suite of baseline surveys have been completed by Waterman Group between 2006 and 2013, the results of which are provided in an Ecological Appraisal (Report EED12715-102.R.2.3.7.LM) and Protected Species and Habitat Survey (Report EED12715-102.R.3.3.6.LM), and summarised in the ecology chapter of an EIA associated with a previous application, for which outline planning consent was granted.

Due to the amount of time that has elapsed since the previous surveys were completed, updated ecological surveys were required for the current planning application.

Middlemarch Environmental Ltd has been commissioned to undertake the following assessments:

- Preliminary Ecological Appraisal (Report RT-MME-127947-01);
- Preliminary Bat Roost Assessment (Report RT-MME-127947-02);
- Bat Activity Surveys (Report RT-MME-127947-04);
- Badger Survey (Report RT-MME-127947-05);
- Breeding Bird Survey (Report RT-MME-127947-06);
- Botanical Survey (Report RT-MME-127947-07);
- Terrestrial Invertebrate Survey (Report RT-MME-127947-08);
- Reptile Survey (Report RT-MME-127947-09);
- Dormouse Survey (Report RT-MME-127947-10);
- Winter Bird Survey (Report RT-MME-127947-11);
- Pre-development Arboricultural Survey (Report RT-MME-128206-01); and,
- Arboricultural Impact Assessment (Report RT-MME-128206-02).

During the Preliminary Bat Roost Assessment, a total of 127 buildings were identified as having high potential to support roosting bats, and 108 buildings were identified as having low potential to support roosting bats. Therefore, nocturnal emergence and dawn re-entry bat surveys were recommended.

This report details the results of the surveys undertaken between 9th July and 11th September 2018.

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 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.

At the time of the survey, the site 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.

The site was 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

was dominated by a rural setting, consisting of agricultural land interspersed with pockets of woodland and small settlements.

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
Fort Halstead – Design and Access Statement: 00556I	John Thompson and Partners
Site Location Plan: 00556I_S01 Rev D5	John Thompson and Partners
Land Use and Green Infrastructure Plan: 00556I_PP01 Rev D10	John Thompson and Partners
Building Heights Plan: 00556I_PP02 Rev D10	John Thompson and Partners
Access and Movement: 00556I_PP03 Rev D9	John Thompson and Partners
Demolition Plan: 00556I_PP04 Rev D8	John Thompson and Partners
Ecological Appraisal: EED12715-102.R.2.3.7.LM	Waterman Group
Protected Species and Habitats Survey: EED12715-102.R.3.3.6.LM	Waterman Group
Environmental Statement - Ecology and Nature Conservation	Waterman Group
Decision Notice (planning application number SE/15/00628/OUT)	Sevenoaks District Council

Table 1.1: Documentation Provided by Client

2. METHODOLOGY

2.1 DESK STUDY

As part of the Preliminary Ecological Appraisal (Report RT-MME-127947-01) an ecological desk study (which included a search for records of bats) was undertaken within a 2 km radius of the site. 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 FIELD SURVEYS

2.2.1 Overview of Nocturnal Emergence and Dawn Re-entry Surveys

A total of 127 buildings were classed as having high potential to support roosting bats during the daytime survey. In line with Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), three bat surveys were carried out consisting of two nocturnal emergence bat surveys and one dawn re-entry bat survey. The aim of these surveys was to detect whether bats are roosting within the buildings, and to enable a profile of site utilisation by bats to be compiled.

A total of 108 buildings were classed as having low potential to support roosting bats during the daytime survey. In line with Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), a nocturnal emergence survey was carried out.

2.2.2 Nocturnal Emergence Bat Surveys

In line with the specifications detailed in Bat Surveys: Good Practice Guidelines (Collins, 2016), the nocturnal surveys commenced 20 minutes prior to sunset and continued until 120 minutes after sunset. The nocturnal emergence surveys were conducted using electronic bat detectors (Echo Meter Touch, Bat Box Griffin and Bat Box Duet with associated recording devices) to facilitate the detection of bats and to aid in the determination of species of bat using the site. Subsequent computer analysis of recordings allowed all species of bat using the site to be identified.

2.2.3 Dawn Re-Entry Bat Surveys

Bats swarm at their roost site 10-90 minutes prior to entering the roost at dawn (Mitchell-Jones & McLeish, 2004). Surveying for dawn swarming by bats is an efficient way of detecting bat roosts. In line with the specifications detailed by Bat Surveys: Good Practice Guidelines (Collins, 2016) the dawn surveys commenced 120 minutes prior to sunrise and continued until 15 minutes after sunrise. To facilitate the detection of bats and to aid in the determination of species of bat using the site, the dawn surveys were conducted using electronic bat detectors (Echo Meter Touch, Bat Box Griffin and Bat Box Duet with associated recording devices). Computer analysis of bat detector information collected was utilised to identify all species recorded on the site.

3. DESK STUDY

3.1 STATUTORY NATURE CONSERVATION SITES

The site is located within 10 km of Westerham Mines SSSI, which is located 6.55 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' 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 survey area 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 <i>Myotis nattereri</i>	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 <i>Pipistrellus pipistrellus</i>	17	2014	On site	-	ECH 4, WCA 5, WCA 6
Brown long-eared bat <i>Plecotus auritus</i>	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 <i>Eptesicus serotinus</i>	20	2015	840 m south-east	-	ECH 4, WCA 5, WCA 6
Unidentified bat <i>Chiroptera</i> sp.	5	1999	960 m south-west	#	ECH 2 #, ECH 4, WCA 5, WCA 6
Pipistrelle species <i>Pipistrellus</i> sp.	5	2005	1,150 m north	#	ECH 4, WCA 5, WCA 6
Noctule <i>Nyctalus noctula</i>	4	2011	1,410 m west	✓	ECH 4, WCA 5, WCA 6
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	2	2013	1,580 m east	✓	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
<p>Key: #: Dependent on species.</p> <p>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.</p> <p>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.</p> <p>WCA 5: Schedule 5 of Wildlife and Countryside Act 1981 (as amended). Protected animals (other than birds).</p> <p>WCA 6: Schedule 6 of Wildlife and Countryside Act 1981 (as amended). Animals which may not be killed or taken by certain methods.</p> <p>Species of Principal Importance: Species of Principal Importance for Nature Conservation in England.</p>					

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

3.3 PREVIOUS BAT SURVEYS

A suite of baseline surveys have been completed by Waterman Group between 2006 and 2013, the results of which are provided in an Ecological Appraisal (Report EED12715-102.R.2.3.7.LM) and Protected Species and Habitat Survey (Report EED12715-102.R.3.3.6.LM), and summarised in the ecology chapter of an Environmental Impact Assessment.

Based on surveys undertaken between 2007 and 2013, evidence of roosting bats was found in ten buildings on site: A13, A14, A25, F6, H38, HR1, HR2, M10, N10 and R29. All roosts recorded were of low numbers (between one and four individuals) of common pipistrelle; however, two brown long-eared bats were recorded hibernating in the disused air-raid shelters inside the security fence (HR1 and HR2) with one individual in each shelter. One presumed summer roost was identified during the internal inspections in one of the bunkers within the Fort (Building F6), where bat droppings were recorded on the ground. It was not possible to determine the species of bat from the droppings, but it is considered likely to be a *Myotis* species roost.

The abundance of bats on site and in the wider survey area was below the expected number, given the location of the site and the perceived quality of the habitat for bats. All of the bat roosts were recorded as being of low conservation significance because of the low number of common bat species identified.

Buildings A25 and M10 have since been demolished, and R29 has been subject to repair works.

4. SURVEY RESULTS

4.1 PERSONNEL

The nocturnal emergence and dawn re-entry bat surveys were undertaken by the following personnel:

- Paul Roebuck (Principal Ecological Consultant and Licensed Bat Worker under bat class licence 17);
- Sophie Moy (Ecological Consultant and Licensed Bat Worker under bat class licence 17);
- Jamie Fletcher (Ecological Consultant);
- Victoria Aelen (Ecological Consultant);
- Harry Stone (Ecological Project Officer);
- Richard Sainsbury (Ecological Project Officer);
- Will Rees (Ecological Project Officer);
- Dean Moore (Field Assistant); and,
- Duncan Smith (Field Assistant).

4.2 WEATHER CONDITIONS

The weather conditions recorded at the time of the surveys are detailed in Table 4.1.

Date of Survey	Sunset/Sunrise Time	Conditions							
		Temperature (°C)		Cloud Cover (%)		Precipitation		Wind Speed (Beaufort)	
		Start	Finish	Start	Finish	Start	Finish	Start	Finish
09/07/2018	21:14	18	17	100	100	Nil	Nil	F1	F1
10/07/2018	21:12	16	15	25	50	Nil	Nil	F0	F0
11/07/2018	21:13	19	16	0	0	Nil	Nil	F0	F0
12/07/2018	21:12	18	16	75	50	Nil	Nil	F0	F1
16/07/2018	21:08	22	20	50	0	Nil	Nil	F0	F1
17/07/2018	21:07	22	21	20	20	Nil	Nil	F0	F1
02/08/2018	20:45	25	19	0	0	Nil	Nil	F1	F0
06/08/2018	20:41	23	20	10	50	Nil	Nil	F1	F0
07/08/2018	20:39	21	18	90	100	Nil	Nil	F0	F0
08/08/2018	20:37	17	14	75	75	Nil	Nil	F0	F1
09/08/2018	20:33	13	11	100	100	Nil	Nil	F0	F2
23/08/2018	20:10	16	14	50	50	Nil	Nil	F2	F3
03/09/2018	06:13	13	13	0	10	Nil	Nil	F0	F0
04/09/2018	06:18	14	14	50	50	Nil	Nil	F0	F1
05/09/2018	06:17	14	14	50	50	Nil	Nil	F1	F1
06/09/2018	06:19	13	13	100	100	Nil	Nil	F1	F1
10/09/2018	06:26	13	13	25	25	Nil	Nil	F2	F2
11/09/2018	06:28	17	17	80	50	Nil	Nil	F3	F3

Table 4.1: Weather Conditions During the Nocturnal Emergence and Dawn Re-entry Surveys

4.3 RESULTS

Seven species of bat were recorded during the nocturnal emergence and dawn re-entry surveys: brown long-eared bat *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, Nathusius' pipistrelle *Pipistrellus nathusii*, noctule *Nyctalus noctula*, serotine *Eptesicus serotinus*, soprano pipistrelle *Pipistrellus pygmaeus* and whiskered bat *Myotis mystacinus*.

The locations of the bat roosts identified within the buildings are summarised in Table 4.2 below and plotted on Drawing C127947-03-01 in Chapter 7.

Commuting and foraging activity was recorded during the survey period; this was predominantly along the woodland edges and over the areas of grassland and trees located between the buildings.

Building Number	First Survey			Second Survey			Third Survey		
	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning
Area A									
A1	Dusk	09/07/2018	-	Dusk	02/08/2018	-	Dawn	03/09/2018	-
A3	Dusk	09/07/2018	-	Dusk	02/08/2018	1 no. common pipistrelle emerged from S. elevation	Dawn	03/09/2018	-
A5	Dusk	09/07/2018	-	Dusk	02/08/2018	-	Dawn	03/09/2018	-
A10	Dusk	09/07/2018	-	Dusk	02/08/2018	-	Dawn	03/09/2018	-
A11	Dusk	09/07/2018	-	Dusk	02/08/2018	-	Dawn	03/09/2018	-
A12	Dusk	09/07/2018	-	Dusk	02/08/2018	-	Dawn	03/09/2018	-
A13	Dusk	09/07/2018	-	Dusk	02/08/2018	-	Dawn	03/09/2018	-
A14	Dusk	09/07/2018	-	Dusk	02/08/2018	-	Dawn	03/09/2018	-
A20	Dusk	09/07/2018	-	Dusk	02/08/2018	-	Dawn	03/09/2018	-
A23	Dusk	09/07/2018	-	Dusk	02/08/2018	-	Dawn	03/09/2018	-
A26	Dusk	09/07/2018	-	Dusk	02/08/2018	-	Dawn	03/09/2018	-
A28	Dusk	09/07/2018	-	Dusk	02/08/2018	-	Dawn	03/09/2018	-
A28.2	Dusk	09/07/2018	-	Dusk	02/08/2018	-	Dawn	03/09/2018	-
A8	Dusk	09/07/2018	-	Low Roosting Potential – only one survey required					
A28.1	Dusk	09/07/2018	-						
Area F									
F2	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
F3.1	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
F4	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
F5	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
F6	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
F10	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
F11	Dusk	17/07/2018	1 no. common pipistrelle emerged from SW corner	Dusk	23/08/2018	-	Dawn	11/09/2018	-
F14	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-

Table 4.2: Summary of Results of Nocturnal Emergence and Dawn Re-entry Surveys (cont)

Building Number	First Survey			Second Survey			Third Survey		
	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning
F15	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
F17	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
F1	Dusk	17/07/2018	-	Low Roosting Potential – only one survey required					
F3	Dusk	17/07/2018	-						
F7	Dusk	17/07/2018	-						
F8	Dusk	17/07/2018	-						
F9	Dusk	17/07/2018	-						
F12	Dusk	17/07/2018	-						
F13	Dusk	17/07/2018	-						
F16	Dusk	17/07/2018	-						
F18	Dusk	17/07/2018	-						
F19	Dusk	17/07/2018	-						
Pill Box	Dusk	17/07/2018	-						
Area H									
H1	Dusk	12/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H2	Dusk	12/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H2.1	Dusk	12/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H4	Dusk	12/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H5	Dusk	12/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H6	Dusk	12/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H7	Dusk	11/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H10	Dusk	12/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H11	Dusk	12/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H14	Dusk	12/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H16	Dusk	12/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H20	Dusk	12/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H38	Dusk	11/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-

Table 4.2 (cont'd): Summary of Results of Nocturnal Emergence and Dawn Re-entry Surveys (cont)

Building Number	First Survey			Second Survey			Third Survey		
	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning
H46	Dusk	11/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H50	Dusk	11/07/2018	-	Dusk	07/08/2018	-	Dawn	05/09/2018	-
H7.1	Dusk	12/07/2018	-	Low Roosting Potential – only one survey required					
H8	Dusk	12/07/2018	-						
H12	Dusk	12/07/2018	-						
H29	Dusk	12/07/2018	-						
H30	Dusk	12/07/2018	-						
Area M									
M18	Dusk	16/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
M1	Dusk	16/07/2018	-	Low Roosting Potential – only one survey required					
M2	Dusk	16/07/2018	-						
M3	Dusk	16/07/2018	-						
M4	Dusk	16/07/2018	-						
M5	Dusk	16/07/2018	-						
M6	Dusk	16/07/2018	-						
M7	Dusk	16/07/2018	-						
M8	Dusk	16/07/2018	-						
M9	Dusk	16/07/2018	-						
M10	Dusk	16/07/2018	-						
M10.1	Dusk	16/07/2018	-						
M11	Dusk	16/07/2018	-						
M12	Dusk	16/07/2018	-						
M14	Dusk	16/07/2018	-						
M15	Dusk	16/07/2018	-						
M16	Dusk	16/07/2018	-						
M18	Dusk	16/07/2018	-						
M20	Dusk	16/07/2018	-						
M21	Dusk	16/07/2018	-						

Table 4.2 (cont'd): Summary of Results of Nocturnal Emergence and Dawn Re-entry Surveys (cont)

Building Number	First Survey			Second Survey			Third Survey		
	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning
M23	Dusk	16/07/2018	-	Low Roosting Potential – only one survey required					
M24	Dusk	16/07/2018	-						
Area N									
N2	Dusk	11/07/2018	-	Dusk	07/08/2018	2 no. common pipistrelles emerged from roof (S. aspect)	Dawn	10/09/2018	-
N6	Dusk	16/07/2018	-	Dusk	09/08/2018	-	Dawn	10/09/2018	-
N7	Dusk	11/07/2018	-	Dusk	09/08/2018	-	Dawn	10/09/2018	-
N10	Dusk	16/07/2018	-	Dusk	07/08/2018	-	Dawn	10/09/2018	-
N17	Dusk	16/07/2018	-	Dusk	07/08/2018	-	Dawn	10/09/2018	-
N2.1	Dusk	11/07/2018	-	Low Roosting Potential – only one survey required					
N2.2	Dusk	11/07/2018	-						
N5.1	Dusk	11/07/2018	-						
N7.1	Dusk	11/07/2018	-						
N11	Dusk	11/07/2018	-						
N11.1	Dusk	11/07/2018	-						
Area Q									
Q1	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q3	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q4	Dusk	11/07/2018	-	Dusk	08/08/2018	1 no. common pipistrelle emerged from a gap in the soffit	Dawn	06/09/2018	-
Q4.1	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q5	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q6	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q6.1	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q6.2	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q6.4	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q7	Dusk	11/07/2018	1 no. common pipistrelle emerged from N. elevation	Dusk	08/08/2018	-	Dawn	06/09/2018	-

Table 4.2 (cont'd): Summary of Results of Nocturnal Emergence and Dawn Re-entry Surveys (cont)

Building Number	First Survey			Second Survey			Third Survey		
	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning
Q7.5	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q7.6	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q7.8	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q11	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q12	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q13	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q14	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q15	Dusk	11/07/2018	-	Dusk	08/08/2018	-	Dawn	06/09/2018	-
Q2	Dusk	11/07/2018	-	Low Roosting Potential – only one survey required					
Q6.5	Dusk	11/07/2018	-						
Q6.11	Dusk	11/07/2018	-						
Q7.2	Dusk	11/07/2018	-						
Q7.4	Dusk	11/07/2018	-						
Q8	Dusk	11/07/2018	-						
Q24	Dusk	11/07/2018	-						
Q24.1	Dusk	11/07/2018	-						
Q25	Dusk	11/07/2018	-						
Area R									
R7	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R14	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R15	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R16	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R18	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R19	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R20	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R20B	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R26	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R32	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-

Table 4.2 (cont'd): Summary of Results of Nocturnal Emergence and Dawn Re-entry Surveys (cont)

Building Number	First Survey			Second Survey			Third Survey		
	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning
R33	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R34.1	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R35	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R36	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R38	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R48	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R49	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R51	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R52	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R53	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R54	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R56	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R59	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R60	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R62	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R63	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R64	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	7 no. brown long-eared bats re-entered gap at top of wall
R65	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R66	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R70	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R75	Dusk	10/07/2018	-	Dusk	06/08/2018	-	Dawn	04/09/2018	-
R13	Dusk	10/07/2018	-	Low Roosting Potential – only one survey required					
R23	Dusk	10/07/2018	-						
R25	Dusk	10/07/2018	-						
R27	Dusk	10/07/2018	-						
R28	Dusk	10/07/2018	-						
R29.1	Dusk	10/07/2018	-						

Table 4.2 (cont'd): Summary of Results of Nocturnal Emergence and Dawn Re-entry Surveys (cont)

Building Number	First Survey			Second Survey			Third Survey		
	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning
R34	Dusk	10/07/2018	-	Low Roosting Potential – only one survey required					
R44	Dusk	10/07/2018	-						
R48.1	Dusk	10/07/2018	-						
R50	Dusk	10/07/2018	-						
R55	Dusk	10/07/2018	-						
R67	Dusk	10/07/2018	-						
R68	Dusk	10/07/2018	-						
R69	Dusk	10/07/2018	-						
R69B	Dusk	10/07/2018	-						
R72	Dusk	10/07/2018	-						
R73	Dusk	10/07/2018	-						
Area S									
S2	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
S12	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
S3	Dusk	17/07/2018	-	Low Roosting Potential – only one survey required					
S18	Dusk	17/07/2018	-						
S20	Dusk	17/07/2018	-						
S21	Dusk	17/07/2018	-						
Area X									
X1	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X2	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X3	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X8	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X9	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X15	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X15B	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X15C	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-

Table 4.2 (cont'd): Summary of Results of Nocturnal Emergence and Dawn Re-entry Surveys (cont)

Building Number	First Survey			Second Survey			Third Survey		
	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning
X17	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X18	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X21A	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X23	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X26	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X38	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X41	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X42	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X44	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X47	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X48	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X49	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X50	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X51	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X52	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X55	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X57	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X58	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X65	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X67	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X72	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X79	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X80	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X82	Dusk	17/07/2018	-	Dusk	23/08/2018	-	Dawn	11/09/2018	-
X4	Dusk	17/07/2018	-	Low Roosting Potential – only one survey required					
X5	Dusk	17/07/2018	-						
X6	Dusk	17/07/2018	-						
X7	Dusk	17/07/2018	-						

Table 4.2 (cont'd): Summary of Results of Nocturnal Emergence and Dawn Re-entry Surveys (cont)

Building Number	First Survey			Second Survey			Third Survey		
	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning
X10	Dusk	17/07/2018	-						
X11	Dusk	17/07/2018	-						
X12	Dusk	17/07/2018	-						
X13	Dusk	17/07/2018	-						
X15.3	Dusk	17/07/2018	-						
X16	Dusk	17/07/2018	-						
X21B	Dusk	17/07/2018	-						
X24	Dusk	17/07/2018	-						
X28	Dusk	17/07/2018	-						
X29	Dusk	17/07/2018	-						
X36	Dusk	17/07/2018	-						
X37	Dusk	17/07/2018	-						
X43.1	Dusk	17/07/2018	-						
X48.1	Dusk	17/07/2018	-						
X48.2	Dusk	17/07/2018	-						
X48.3	Dusk	17/07/2018	-						
X50.1	Dusk	17/07/2018	-						
X54	Dusk	17/07/2018	-						
X60	Dusk	17/07/2018	-						
X61	Dusk	17/07/2018	-						
X62	Dusk	17/07/2018	-						
X64	Dusk	17/07/2018	-						
X68	Dusk	17/07/2018	-						
X69	Dusk	17/07/2018	-						
X70	Dusk	17/07/2018	-						
X71	Dusk	17/07/2018	-						
X73	Dusk	17/07/2018	-						
X74	Dusk	17/07/2018	-						

Low Roosting Potential – only one survey required

Table 4.2 (cont'd): Summary of Results of Nocturnal Emergence and Dawn Re-entry Surveys (cont)

Building Number	First Survey			Second Survey			Third Survey		
	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning	Dawn / Dusk	Date	Bats Emerging or Returning
X76	Dusk	17/07/2018	-	Low Roosting Potential – only one survey required					
X78	Dusk	17/07/2018	-						
X79.1	Dusk	17/07/2018	-						

Table 4.2 (cont'd): Summary of Results of Nocturnal Emergence and Dawn Re-entry Surveys

5. DISCUSSION AND CONCLUSIONS

5.1 SUMMARY OF PROPOSALS

The proposals for the site are as follows:

Hybrid planning permission comprising:

In detail:

- *Demolition of existing buildings;*
- *Change of use and works to buildings Q13 and Q14 (including landscaping and public realm);*
- *Primary and secondary accesses.*

In outline:

- *Development of business space (use classes B1a/b/c) of up to 27,659 sq m GEA;*
- *Works within the 'X' enclave relating to energetic testing operations, including fencing, access, car parking;*
- *Development of up to 750 residential dwellings;*
- *Development of a mixed-use village centre (use classes A1/A3/A4/A5/B1a/D1/D2);*
- *Development of a one form entry primary school;*
- *Change of use of Fort Area and bunkers to Historic Interpretation Centre (use class D1) with workshop space;*
- *Roads, pedestrian and cycle routes, public transport infrastructure, car parking, utilities infrastructure, drainage;*
- *Landscaping, landforming and ecological mitigation works.*

5.2 SUMMARY OF PREVIOUS BAT SURVEYS

Based on surveys undertaken between 2007 and 2013 by Waterman Group, evidence of roosting bats was found in ten buildings on site: A13, A14, A25, F6, H38, HR1, HR2, M10, N10 and R29. All roosts recorded were of low numbers (between one and four individuals) of common pipistrelle; however, two brown long-eared bats were recorded hibernating in the disused air-raid shelters inside the security fence (HR1 and HR2) with one individual in each shelter. One presumed summer roost was identified during the internal inspections in one of the bunkers within the Fort (Building F6), where bat droppings were recorded on the ground. It was not possible to determine the species of bat from the droppings, but it is considered likely to be a *Myotis* species roost.

Buildings A25 and M10 have since been demolished, and R29 has been subject to repair works.

5.3 SUMMARY OF 2018 NOCTURNAL EMERGENCE AND DAWN RE-ENTRY SURVEYS

5.3.1 Bat Roosts

A total of 235 buildings were subject to a full suite of bat surveys during 2018. The 2018 surveys identified bat roosts in six of the surveyed buildings. The bat roosts consisted of:

- One brown long-eared bat maternity roost; and,
- Five common pipistrelle day roosts.

An overview of each building containing a roost can be found in Table 5.1.

House Number	Peak Count	Bat Roost Status	Impacted by Works and Licence Required?
A3	1 no. common pipistrelle	Common pipistrelle day roost.	Yes
F11	1 no. common pipistrelle	Common pipistrelle day roost.	Yes
N2	2 no. common pipistrelles	Common pipistrelle day roost.	Yes
Q4	1 no. common pipistrelle	Common pipistrelle day roost.	Yes
Q7	1 no. common pipistrelle	Common pipistrelle day roost.	Yes
R64	7 no. brown long-eared bats	Brown long-eared bat maternity roost.	Yes

Table 5.1: Summary of Bat Roosts

5/3.2 Bat Activity

Seven bat species were recorded during the nocturnal and dawn surveys; brown long-eared bat, common pipistrelle, Nathusius' pipistrelle, noctule, serotine, soprano pipistrelle and whiskered bat. Commuting and foraging activity was recorded during the survey period. This was predominantly along the woodland edges and over the areas of grassland and trees located between the buildings.

5.4 CONCLUSIONS

Following the suite of survey work undertaken on site it can be confirmed that six of the surveyed buildings contain bat roosts used by common pipistrelle. Therefore, no unlicensed works can be undertaken. A recommendation regarding the licence application to Natural England is made in Chapter 6.

No bats emerged from or re-entered Buildings A13, A14, F6, H38, HR1, HR2 or N10 during the 2018 surveys. However, bats are known to regularly move between roosts and as such the buildings remain a roost whether occupied or not. Therefore, no unlicensed works can be undertaken.

Given that no bats emerged from or re-entered any of the remaining surveyed buildings, it is concluded that there are no bat roosts present in these buildings. Therefore, the proposed works to these buildings are not expected to impact roosting bats, and as such the works may proceed as scheduled. Due to the poor structural condition of Building R36 it is deemed to be a health and safety risk, and therefore it is recommended that this building is demolished over the winter months.

Any new lighting, either temporary or permanent, at the site has the potential to impact foraging and commuting bats. Therefore, a recommendation regarding sensitive lighting is made in Chapter 6.

To increase the value of the site for bats, a recommendation is made in Chapter 6 regarding suitable plant species to incorporate into the soft landscaping to attract night flying insects.

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 Buildings A3, A13, A14, F6, F11, H38, HR1, HR2, N2, N10, Q4, Q7 and R64

As a bat roost/resting place has been identified in Buildings A3, A13, A14, F6, F11, H38, HR1, HR2, N2, N10, Q4, Q7 and R64, no unlicensed work can be undertaken which will contravene the legislation outlined in Appendix 1.

Examples of works which will breach this legislation include:

- Roof modifications/repairs/removal;
- Timber treatment;
- Noise, vibrations and storage of odorous and dangerous chemicals;
- Alterations to bat entrance/exit points;
- Investigations works in the roof as this can cause bats to abort their young/awake from hibernation and can alter the roof temperature/humidity; and,
- Works in the main body of the building.

N.B. This is not an exhaustive list and a bat worker should be consulted to determine if the works are likely to breach any legislation.

Prior to any works being undertaken which are likely to result in a breach of the legislation, a development licence must be obtained from Natural England. The licence application process will include the submission of a method statement detailing the current status of bats on site and how the favourable conservation status of the bat population will be maintained. Prior to a licence being issued, planning permission must be granted and relevant conditions relating to protected species and habitat issues must be discharged.

Nocturnal emergence and dawn re-entry survey data, in line with Bat Surveys: Good Practice Guidelines published by the Bat Conservation Trust (Collins, 2016), is required to inform the licence application. To ensure that the data submitted is current and appropriate for assessment by Natural England, surveys need to be carried out during the peak bat activity season closest to the start date of the proposed development. The peak bat activity season extends from May to August. An appropriate level of survey work has been undertaken within this study, however should any delays occur in the planning process which results in a delay in the bat licence application beyond March 2019, the bat activity surveys may have to be updated.

R2 Building R36

Building R36 has been subject to a full suite of activity surveys in line with Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), and no bat roosts were identified. Due to the poor structural condition of this building it is deemed to be a health and safety risk, and therefore it is recommended that the building is demolished over the winter months. In the unlikely event that a bat is found during site works all works in that area must immediately cease and a suitably qualified ecologist should be contacted.

R3 Remaining Buildings

The remaining surveyed buildings have been subject to a full suite of activity surveys in line with Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), and no bat roosts were identified. The survey data obtained for the site is valid for 12 months from the survey date. If development works to the surveyed buildings have not commenced within this timeframe it will be essential to update the survey effort to establish if bats have colonised the buildings in the interim. Updated Preliminary Bat Roost Assessments can be undertaken at any time of year. Updated surveys requiring nocturnal or dawn assessment will need to adhere to the Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016) with the surveys undertaken between April and September inclusive. In the unlikely event that a bat is found during site works all works in that area must immediately cease and a suitably qualified ecologist should be contacted.

R4 Lighting

In line with paragraph 180 of the National Planning Policy Framework, the development should aim to limit the impact of light pollution on bats through the careful use of lighting in critical areas only and at a low level with minimum spillage. Any lighting, either temporary or permanent, along the site boundaries should be kept to a minimum and directed away from the boundary features to maintain dark areas and corridors. A lighting strategy should be designed and implemented on site to avoid impacting bat usage of the site and wider area. Materials used under lights, such as floor surfaces, should be materials that have a minimum reflective quality to prevent light reflecting upwards into the sky. This will ensure that bats using the site and surrounding area to roost/forage/commute are not affected by illumination.

R5 Habitat Enhancement

In line with the National Planning Policy Framework, the development should aim to enhance the site for bats. Bat boxes should be installed to provide roosting habitat for species such as pipistrelle. In general, bats seek warm places and for this reason boxes should be located where they will receive full/partial sun, although installing boxes in a variety of orientations will provide a range of climatic conditions. Position boxes at least 3 m above ground to prevent disturbance from people and/or predators. The planting of species which attract night flying insects is encouraged as this will be of value to foraging bats, for example: evening primrose *Oenothera biennis*, goldenrod *Solidago virgaurea*, honeysuckle *Lonicera periclymenum* and fleabane *Pulicaria dysenterica*.

7. DRAWINGS

Drawing C127947-03-01 – Location of Bat Roosts on Site



C127947-03-01

Legend

- 2018 bat roost
- Bat roost identified during previous surveys
- Site boundary

Project		Fort Halstead	
Drawing		Location of Bat Roosts on Site	
Client		CBRE Ltd	
Drawing Number	C127947-03-01	Revision	00
Scale @ A3	1:3500	Date	November 2018
Approved By	SB	Drawn By	CD

MIDDLEMARCH ENVIRONMENTAL

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APPENDIX 1

LEGISLATION

Bats and the places they use for shelter or protection (i.e. roosts) receive European protection under The Conservation of Habitats and Species Regulations 2017 (Habitats Regulations 2017). 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.

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 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*.

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

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.