QINETIQ SITE, FORT HALSTEAD, KENT

PRELIMINARY BAT ROOST ASSESSMENT

A Report to: QinetiQ

Report No: RT-MME-150872-04 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	17/09/2020	Jamie Fletcher BSc (Hons) (Ecological Consultant)	Tom Docker CEcol MCIEEM (Managing Director)	Paul Roebuck MCIEEM (South-East Manager)
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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, it may be necessary to undertake an updated survey to allow any changes in the status of bats on site to be assessed, and to inform a review of the conclusions and recommendations made.

NON-TECHNICAL SUMMARY

Middlemarch Environmental Ltd was commissioned by QinetiQ to undertake a Preliminary Bat Roost Assessment at Fort Halstead in Kent. This assessment is required to support the strategic redevelopment of QinetiQ owned land within Fort Halstead.

Previous bat surveys were completed across the wider Fort Halstead site by Waterman Group between 2006 and 2013, and by Middlemarch Environmental Ltd in 2018. During the surveys undertaken between 2007 and 2013, evidence of roosting bats was found in ten buildings within the wider Fort Halsted site, but outside of the QinetiQ enclave: 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 was considered likely to be a Myotis species roost. Buildings A25 and M10 have since been demolished, and R29 has been subject to repair works.

The 2018 surveys identified bat roosts in six of the surveyed buildings, all located within the wider Fort Halsted site, but outside of the QinetiQ enclave: 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 bat roosts were identified within any of the buildings located within the QinetiQ site boundary.

To fulfil the above brief to assess the potential for the existing buildings within the QinetiQ site to support roosting bats, a Preliminary Bat Roost Assessment was undertaken on 6th August 2020 and 7th August 2020.

The site includes a wide variety of buildings of different sizes, construction and functions including conventional brick-built offices with pitched clay-tiled roofs, small brick-built flat-roofed buildings, research, development and testing facilities constructed using a wide range of materials including brick, concrete blocks, corrugated metal, plastic and asbestos, wooden lean-to sections and storage facilities used to house active services, materials or equipment, and large corrugated metal warehouse type buildings and hangars. The level of use of the buildings varied significantly, with some buildings still fully operational, whilst others are presently seldom or never used. Many of the buildings present were in a fairly poor state of repair, with a number of unused buildings being in particularly poor condition.

It was not possible to fully inspect all of the features identified around the buildings due to the height at which they were located, and as such it was not possible to establish if bats had used these features to enter a roost location at the time of surveying. No evidence of roosting bats (e.g. droppings, urine staining, feeding remains or scratch marks) was recorded within the features that could be fully inspected during the survey.

A total of 36 buildings have been identified as having high potential to support roosting bats, and 23 buildings have been identified as having low potential to support roosting bats. The proposed demolition works have the potential to disturb or destroy a bat roost if bats are found to be roosting within the buildings. Therefore, further survey effort, in the form of nocturnal emergence and dawn re-entry bat surveys, is required to establish the presence/absence of roosting bats within the buildings.

Following the results of the Preliminary Bat Roost Assessment, the following recommendations have been made:

R1 Buildings with High Roosting Potential

A total of 36 buildings have been identified as having high potential to support roosting bats. Bat Surveys: Good Practice Guidelines published by the Bat Conservation Trust (Collins, 2016) recommends that for buildings with high bat roosting potential at least three dusk emergence and/or dawn re-entry surveys be undertaken during the bat emergence/re-entry survey season to determine the presence/absence of roosting bats within the buildings.

Middlemarch Environmental Ltd has been commissioned to undertake Dusk Emergence and Dawn Re-entry Bat Surveys of the buildings. The recommendations made within Report RT-MME-153340-01 Rev C must be adhered to.

R2 Buildings with Low Roosting Potential

A total of 23 buildings have been identified as having low potential to support roosting bats. Bat Surveys: Good Practice Guidelines, published by the Bat Conservation Trust (Collins, 2016), recommends for buildings with low bat roosting potential that at least one survey (consisting of either a dusk emergence survey or a dawn re-entry survey) be undertaken during the peak bat activity season (May to August) to determine the presence/absence of roosting bats within the buildings.

Middlemarch Environmental Ltd has been commissioned to undertake Dusk Emergence and Dawn Re-entry Bat Surveys of the buildings. The recommendations made within Report RT-MME-153340-01 Rev C must be adhered to.

R3 Remaining Buildings

The remaining buildings had negligible potential for roosting bats. 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 suitable features have developed and if bats have colonised the buildings in the interim. In the unlikely event that a bat is found during demolition works all works must immediately cease and a suitably qualified ecologist should be contacted.

R4 Bat Protection Strategy – Building X78

A Bat Protection Strategy (Report RT-MME-150872-08 Rev B) has been produced for Building X78 in order to outline suitable safeguards and procedures that are to be followed during the roof replacement works. The document details how potential roost features (notably weep holes in external walls) are to remain unaffected during the construction phase of the works, ensuring any bats potentially using such features are not adversely impacted.

R5 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.

R6 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. The planting of species which attract night flying insects is also encouraged as this will be of value to foraging bats.

CONTENTS

1. INTRODUCTION

1.1 PROJECT BACKGROUND

Middlemarch Environmental Ltd was commissioned by QinetiQ to undertake a Preliminary Bat Roost Assessment at Fort Halstead in Kent. This assessment is required to support 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 site. Land surveyed as part of these assessments included QinetiQ owned land.

To inform the current application and fulfil the above brief to assess the potential for the existing buildings within the QinetiQ site to support roosting bats, a Preliminary Bat Roost Assessment was undertaken on 6th August 2020 and 7th August 2020.

In addition to the Preliminary Bat Roost Assessment, Middlemarch Environmental Ltd was also 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);
- Badger Survey (Report RT-MME-150872-05 Rev B);
- Dusk Emergence and Dawn Re-Entry Bat Surveys (Report RT-MME-153340-01 Rev C); and,
- Winter Hibernation Bat Survey (Report RT-MME-153704-02 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.

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 Rev B) an ecological desk study (which included a search for records of bats) was undertaken within a 2 km radius of the wider Fort Halstead 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 SURVEY

In line with the specifications detailed in Bat Mitigation Guidelines (English Nature, 2004) and Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), a Preliminary Bat Roost Assessment of the buildings was conducted during daylight hours. A visual assessment was undertaken to determine the presence of any Potential Roost Features (PRFs), together with a general appraisal of the suitability of the site for foraging and commuting. Table 2.1 provides examples of PRFs. Any accessible PRFs were inspected using binoculars, a torch and endoscope for evidence of possible bat presence.

Buildings were surveyed externally and internally. For reasons of health and safety, the survey was only undertaken in areas accessible from 3.5 m ladders.

Based on the PRF's present, the survey area was assessed using the suitability classes detailed within Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), as detailed in Table 2.2.

Example of Potential Roost Features
Buildings Externally • Access through window panes, doors and walls; • behind peeling paintwork or lifted rendering; • behind hanging tiles; • weatherboarding; • eaves; • soffit boxes; • fascias; • lead flashing; • gaps under felt (even including those of flat roofs); • under tiles/slates; • existing bat and bird boxes; and, • any gaps in brickwork or stonework permitting access into access to cavity- or rubble-filled walls. Internally • behind wooden panelling; • in lintels above doors and windows; • behind window shutters and curtains; • behind pictures, posters, furniture, peeling paintwork; • peeling wallpaper, lifted plaster and boarded-up windows; • inside cupboards and in chimneys accessible from fireplaces. • within attic voids: • the top of gable end or dividing walls; • the top of chimney breasts; • ridge and hip beams and other roof beams; • mortise and tenon joints; • all beams (free-hanging bats); • the junction of roof timbers, especially where ridge and hip beams meet; • behind purlins; • between tiles and the roof lining; and, • under flat felt roofs.

Table 2.1: Potential Roost Features (Adapted from Collins 2016 and BSI 2015)

Suitability	Description
High	A structure with one or more potential roost sites 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.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).
Negligible	Negligible habitat features on site likely to be used by roosting bats.

Table 2.2: Classification of Buildings with Bat Potential (Adapted from Collins, 2016)

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' 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 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 *Myotis* 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 *Nyctalus leisleri*	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	✓	ECH 4, WCA 5, WCA 6
Long-eared bat *Plecotus* 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

3.3 PREVIOUS BAT SURVEYS

A suite of baseline surveys have been completed across the wider Fort Halstead 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 within the wider Fort Halsted site, but outside of the QinetiQ enclave: 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 was considered likely to be a Myotis species roost.

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

Updated bat surveys were completed across the wider Fort Halsted site by Middlemarch Environmental Ltd in 2018 for CBRE Ltd, with the results detailed in Nocturnal Emergence and Dawn Re-entry Bat Surveys Report RT-MME-127947-03 Rev A and Bat Activity Survey Report RT-MME-127947-04 Rev A. The 2018 surveys identified bat roosts in six of the surveyed buildings, located within the wider Fort Halsted site, but outside of the QinetiQ enclave: 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 bat roosts were identified within any of the buildings located within the QinetiQ site boundary.

4. SURVEY RESULTS

4.1 INTRODUCTION

The Preliminary Bat Roost Assessment was carried out on 6th August 2020 and 7th August 2020 by Jamie Fletcher (Senior Ecological Consultant). Drawings C150872-02-01, illustrating the results of the survey are provided in Chapter 7.

Weather conditions were recorded and are presented in Table 4.1.

Parameter	Conditions	
	06/08/2020	07/08/2020
Temperature (°C)	35	30
Cloud Cover (%)	0	0
Precipitation	Nil	Nil
Wind Speed (Beaufort)	F0	F0

Table 4.1: Weather Conditions During the Preliminary Bat Roost Assessment

4.2 CONSTRAINTS

Due to sensitivities around secrecy, security and safety as well as approval, permits and escorting requirements, no internal inspections of the buildings on site were undertaken, with all buildings assessed externally only.

4.3 SURVEY RESULTS

Due to the high number of buildings assessed on site, this section provides an overview of the buildings present and details the results of the preliminary bat roost assessment undertaken for each building.

The site includes a wide variety of buildings of different sizes, construction and functions including conventional brick-built offices with pitched clay-tiled roofs, small brick-built flat-roofed buildings, research, development and testing facilities constructed using a wide range of materials including brick, concrete blocks, corrugated metal, plastic and asbestos, wooden lean-to sections and storage facilities used to house active services, materials or equipment. The level of use of the buildings varied significantly, with some buildings still fully operational, whilst others are currently unused. Many of the buildings present were in a fairly poor state of repair, with a number of unused buildings being in particularly poor condition.

Buildings assessed as having potential to support roosting bats are further described in Table 4.2.

It was not possible to fully inspect all of the features identified due to the height at which they were located, and as such it was not possible to establish if bats had used these features to enter a roost location at the time of surveying. No evidence of roosting bats (e.g. droppings, urine staining, feeding remains or scratch marks) was recorded within the features that could be fully inspected during the survey.

A number of buildings have been subject to repair works since surveys were completed on site by Middlemarch Environmental in 2018, therefore some alteration in the potential buildings have to support roosting bats was encountered.

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
Area X			
X4	Single-storey concrete building with sections that are buried in the earth. Gaps around the doors provide internal access.	-	Low
X5	Single-storey concrete building with sections that are buried in the earth. Gaps around the doors provide internal access.	-	Low
X6	Single-storey concrete building with sections that are buried in the earth. Gaps around the doors provide internal access.	-	Low
X7	Single-storey concrete building with sections that are buried in the earth. Gaps around the doors provide internal access.	-	Low
X8	Concrete blast bunker building with a flat roof. Warped internal metal plates and frames providing multiple gaps and crevices. Gaps around metal door frame. Doors open providing internal access.	-	High
X9	Concrete blast bunker building with a flat roof. Warped internal metal plates and frames providing multiple gaps and crevices. Gaps around metal door frame. Doors open providing internal access.	-	High
X10	Small brick building with a corrugated asbestos roof. Gaps were present under the corrugated roof providing internal access.	-	Low
X11	Small concrete building with a flat roof. No suitable features noted.	-	Negligible
X12	Small concrete building with a flat roof. No suitable features noted.	-	Negligible
X13	Small concrete building with a flat roof. No suitable features noted.	-	Negligible
X14	Single-storey brick building with flat felt roof and adjoining lean-to. Gaps around lean-to frame and in external brickwork providing crevices. Holes in external walls providing internal access.	-	High
X15	Single-storey brick building with a pitched clay-tiled roof. Multiple holes were present in the external walls and under end tiles providing internal access. Gaps were present in the soffits providing access into the void within the soffit box. Gaps were also present under lead flashing creating crevices.	-	High
X15B	Single-storey brick building with a flat felt roof. Multiple holes were present in the external walls providing internal access. Gaps were present in the soffits providing access into the void within the soffit box. Gaps were also present under lead flashing creating crevices.	-	High
X15C	Brick building with flat felt roof. Multiple holes were present in the external walls providing access into wall cavities.	-	High
X15.3	Two-storey brick building with a flat concrete roof and a single-storey section with a flat felt roof. No suitable features noted.	-	Negligible
X16	Single-storey brick building with a flat concrete roof. Gaps under fascia board. Louvre doors provide internal access.	-	High
X17	Two-storey brick building with wooden cladding on the walls. Multiple weep holes were present in the external walls providing access into wall cavities. Gaps were also present in the wooden cladding and along the wall tops.	-	High
X18	Two-storey brick building with a flat concrete roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities. Gaps were present under lead flashing creating crevices, and a vent on the south-western elevation provides internal access.	-	High
X19	Metal hangar. No suitable features noted.	-	Negligible
X20	Single-storey brick building with flat roof. No suitable features noted.	-	Negligible
X21A	Single-storey brick building with a flat concrete roof and section with corrugated plastic cladding on the walls and roof. Multiple holes were present in the external walls and gaps were present under the corrugated roof providing internal access.	-	High

Table 4.2: Buildings with Potential to Support Roosting Bats (Continues)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
X21B	Single-storey brick building with a flat concrete roof. No suitable features noted.	-	Negligible
X23	Single-storey brick building with a flat felt roof. There was a hole in the external wall on the north-wester elevation and another on the south-eastern elevation providing access into wall cavities.	-	High
X24	Small brick building with a corrugated metal roof. No suitable features noted.	-	Negligible
X24.2	Concrete block blast walls. Gaps present between concrete blocks throughout.	-	High
X24.3	Concrete block blast walls. Gaps present between concrete blocks throughout.	-	High
X26	Single-storey brick building with a flat felt roof. Multiple holes were present in the external walls providing internal access. Gaps were present in the soffits providing access into the void within the soffit box, and gaps were also present under fascia boards creating crevices.	-	High
X28	Small brick building with a flat felt roof. No suitable features noted.	-	Negligible
X29	Single-storey brick building with a flat felt roof. Small gap present under the fascia boards creating crevice.	-	Low
X34	Concrete bunker largely buried in earth. No suitable features noted.	-	Negligible
X35	Concrete bunker largely buried in earth. No suitable features noted.	-	Negligible
X35A	Concrete bunker largely buried in earth. No suitable features noted.	-	Negligible
X36	Partially demolished single-storey brick building with a flat concrete roof. Holes in the external wall on the north-eastern elevation provide internal access, but these were exposed.	-	Low
X37	Large hangar constructed from concrete with pebble-dashing on the lower part of the walls, corrugated metal cladding on the upper part of the walls and a pitched corrugated metal roof. Gaps were present in the corrugated metal cladding providing internal access.	-	Low
X38	Two-storey brick building with a pitched corrugated metal roof. Multiple holes were present in the external walls providing internal access. Gaps were present under lead flashing on the southern elevation creating crevices.	-	High
X41	Three-storey brick building with multiple flat roof sections. There were missing bricks either side of a boarded-up window on the top floor of the north-eastern elevation providing internal access. There were also areas of missing mortar on the second floor level on the south-western elevation creating crevices.	-	High
X42	Single-storey brick building with a flat concrete roof. Gaps in external walls and around window frames filled with expanding foam. No suitable features noted.	-	Negligible
X43.1	Single-storey brick building with a flat roof. Vented windows and louvre doors provide internal access. Gaps under lead flashing create crevices.	-	High
X44	Large building constructed from brick and concrete that varied in height with flat felt roof sections. Multiple holes were present in the external walls providing internal access. Gaps were present under fascia boards creating crevices. A vent on the north-eastern elevation and an open window on the south-western elevation provide internal access.	-	High
X47	Single-storey brick building with a mixture of pitched corrugated metal and flat felt roof sections. Multiple holes were present in the external walls providing internal access. Gaps were present under the fascia boards, lead flashing and overhanging roofing felt, as well as around lintels creating crevices. Gaps were also present in the soffits providing access into the void within the soffit box. Louvre doors provide internal access.	-	High

Table 4.2 (Continued): Buildings with Potential to Support Roosting Bats (Continues)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
X48.1	Small brick shed with pebble-dashed walls and a corrugated metal roof. Gaps were present under the fascia boards creating crevices and under the corrugated roof providing internal access.	-	Low
X48	Two-storey brick building with eight tall chimneys and a corrugated metal roof. A hole was present around a pipe inlet in the external wall on the south-eastern elevation providing internal access. Gaps were also present under the overhanging roof, and in the wooden box on the north-eastern elevation.	-	High
X48.2	Small brick shed with pebble-dashed walls and a corrugated metal roof. Gaps were present under the fascia boards creating crevices and under the corrugated roof providing internal access.	-	Low
X48.3	Small brick shed with pebble-dashed walls and a corrugated metal roof. Gaps were present under the fascia boards creating crevices and under the corrugated roof providing internal access.	-	Low
X49	Single-storey brick building. Gap present under the fascia boards creating crevice.	-	Low
X50	Single-storey brick building with a flat felt roof. Multiple holes were present in the wooden panelled roof-top structure and weep holes were present in the external brick walls providing internal access. Gaps were also present along the join of an attached store creating crevices.	-	High
X50.1	Single-storey brick building with a flat felt roof. Hole present in external wall providing internal access.	-	Low
X51	Single-storey brick building with a flat concrete roof. Multiple weep holes were present in the external walls providing access into wall cavities. Gaps were also present in the soffits providing access into the void within the soffit box, and under the fascia boards creating crevices.	-	High
X52	Single-storey brick building with a flat felt roof. Multiple holes were present in the external walls providing internal access. Gaps were present under fascia boards creating crevices.	-	High
X54	Single-storey brick building with a flat roof. Gap present between the fascia boards creating crevices.	-	Low
X55	Single-storey brick building with a flat felt roof. Multiple holes were present in the external walls providing internal access. Gaps were present under fascia boards and overhanging roofing felt creating crevices.	-	High
X56	Single-storey brick building with flat roof. Gaps under fascia boards, gaps around window frame and holes in external walls around cable inlets providing crevices and internal access.	-	High
X57	Single-storey brick building with a flat felt roof. Multiple holes were present in the external walls providing internal access. Gaps were present under fascia boards and overhanging roofing felt creating crevices.	-	High
X58	Single-storey building constructed from wooden panels with a flat felt roof. There was a hole in the soffit on the south-eastern elevation providing access into the void within the soffit box.	-	High
X60	Single-storey brick building with a flat roof. Louvre doors provide internal access.	-	Low
X61	Single-storey brick building with flat roof. Hole in the external wall above the door on the south-eastern elevation creating a crevice. Weep holes present throughout.	-	High
X62	Single-storey building constructed from brick and concrete with a flat roof. No suitable features noted.	-	Negligible
X64	Large building constructed from brick and concrete. Multiple weep holes were present in the external walls providing access into wall cavities, but these were mostly filled with cobwebs. Louvre doors provide internal access.	-	Low
X65	Building constructed from brick and concrete with flat roof. Multiple holes were present in the external walls providing internal access. Gaps were present in the soffits providing access into the void within the soffit box. A vent on the north-eastern elevation provides internal access.	-	High
X66	Concrete bunker with adjoining lean-to. Gap under lean-to frame providing crevice.	-	Low

Table 4.2 (Continued): Buildings with Potential to Support Roosting Bats (Continues)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
X67	Two-storey building constructed from brick and concrete with flat roof sections. There was a hole in the external wall on the north-western elevation providing access into a wall cavity. Gaps were present under lead flashing on same elevation creating crevices.	-	High
X68	Large building constructed from brick and concrete with adjoining lean-to. Gap under lean-to frame creating crevice.	-	Low
X69	Single-storey brick building with flat roof. Louvre doors provide internal access.	-	Low
X70	Large building constructed from brick and concrete. Multiple weep holes were present in the external walls providing access into wall cavities, but these were mostly filled with cobwebs. Louvre doors provide internal access.	-	Low
X71	Large building constructed from brick and concrete. No suitable features noted.	-	Negligible
X72	Small building constructed from concrete with a flat roof. There was a small gap between the concrete wall and wooden frame of the adjoining lean-to creating a crevice, and a small hole around a cable inlet in the external wall provides internal access.	-	High
X73	Single-storey building constructed from brick and concrete with a flat roof. There was a small gap between the concrete wall and wooden frame of the adjoining lean-to creating a crevice.	-	Low
X74	Single-storey building constructed from brick and concrete with a flat roof. There was a small gap between the concrete wall and wooden frame of the adjoining lean-to creating a crevice.	-	Low
X76	Single-storey brick building with flat roof. Louvre doors provide internal access.	-	Low
X78	Two-storey brick building with a corrugated metal roof. Multiple weep holes were present in the external walls providing access into wall cavities. Some weep holes clear of cobwebs.	-	High
X79	Single-storey brick building with a pitched corrugated metal roof. Multiple weep holes were present in the external walls providing access into wall cavities. Gaps were also present in the soffits on the north-western elevation providing access into the void within the soffit box.	-	High
X79.1	Small brick building with a pitched corrugated metal roof. Gaps present under fascia board creating crevices.	-	High
X80	Large brick building with a pitched corrugated metal roof. Multiple holes were present in the soffits providing access into the void within the soffit boxes.	-	High
X82	Single-storey concrete building with a flat roof. Multiple holes were present in the external walls providing internal access.	-	High

Table 4.2 (Continued): Buildings with Potential to Support Roosting Bats

Examples of the roost features present within the buildings on site are shown in Plates 4.1-4.8.

Plate 4.1: Gaps Around Window Frame

Plate 4.2: Weep Holes

Plate 4.3: Hole in External Wall Providing Internal Access/Access to Wall Cavity

Plate 4.4: Gaps Under Lead Flashing

Plate 4.5: Gap Under Wooden Fascia

Plate 4.6: Crack in External Wall Providing Internal Access/Access to Wall Cavity

Plate 4.7: Holes in Wooden Cladding Providing Internal Access

Plate 4.8: Lifted Roof Tiles

4.4 SITE AND SURROUNDING HABITATS

The areas of semi-natural and plantation woodland, as well as the scattered trees, scrub and various grasslands, on site offer suitable foraging and commuting opportunities for bats, linking the site to alternative roosting, foraging and commuting features in the surrounding area. Therefore, the habitats on site were considered to have high potential to be used by bats.

Habitats within 1 km of the site suitable for roosting, commuting and foraging include:

- Residential houses and associated gardens;
- Farm houses and associated agricultural buildings;
- Standing waterbodies;
- Pockets of woodland;
- Agricultural fields with tree and hedge lined boundaries;
- Churches and associated grounds; and,
- Railway lines with vegetated banks.

5. DISCUSSION AND CONCLUSIONS

5.1 SUMMARY OF PROPOSALS

The proposals for the 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.*

5.2 ASSESSMENT OF BUILDINGS

The site includes a wide variety of buildings of different sizes, construction and functions including conventional brick-built offices with pitched clay-tiled roofs, small brick-built flat-roofed buildings, research, development and testing facilities constructed using a wide range of materials including brick, concrete blocks, corrugated metal, plastic and asbestos, wooden lean-to sections and storage facilities used to house active services, materials or equipment. The level of use of the buildings varied significantly, with some buildings still fully operational, whilst others are unused. Many of the buildings present were in a poor state of repair, with a number of unused buildings being in particularly poor condition.

It was not possible to fully inspect all of the features identified due to the height at which they were located, and as such it was not possible to establish if bats had used these features to enter a roost location at the time of surveying. No evidence of roosting bats (e.g. droppings, urine staining, feeding remains or scratch marks) was recorded within the features that could be fully inspected during the survey.

A total of 36 buildings have been identified as having high potential to support roosting bats, 23 buildings have been identified as having low potential to support roosting bats and 15 buildings have been identified as having negligible potential to support roosting bats.

5.3 POTENTIAL IMPACTS ON BATS

The proposed works have the potential to disturb or destroy a bat roost if bats are found to be roosting within the buildings. Therefore, further survey effort, in the form of nocturnal emergence and dawn re-entry bat surveys, is required to establish the presence/absence of roosting bats within the buildings. A recommendation regarding this further survey work is made in Chapter 6.

There is also the potential for any new lighting, either temporary or permanent, at the site 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 any proposed 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 with High Roosting Potential

A total of 36 buildings have been identified as having high potential to support roosting bats. Bat Surveys: Good Practice Guidelines published by the Bat Conservation Trust (Collins, 2016) recommends that for buildings with high bat roosting potential at least three dusk emergence and/or dawn re-entry surveys be undertaken during the bat emergence/re-entry survey season to determine the presence/absence of roosting bats within the buildings. The bat emergence/re-entry survey season extends from May to September. At least two of the surveys should be undertaken during the peak season for emergence/re-entry surveys between May and August and one of the three surveys should be a dawn re-entry survey. If a roost is discovered during these surveys, a Natural England licence application may be required.

Middlemarch Environmental Ltd has been commissioned to undertake Dusk Emergence and Dawn Re-entry Bat Surveys of the buildings. The recommendations made within Report RT-MME-153340-01 Rev C must be adhered to.

R2 Buildings with Low Roosting Potential

A total of 23 buildings have been identified as having low potential to support roosting bats. Bat Surveys: Good Practice Guidelines, published by the Bat Conservation Trust (Collins, 2016), recommends for buildings with low bat roosting potential that at least one survey (consisting of either a dusk emergence survey or a dawn re-entry survey) be undertaken during the peak bat activity season (May to August) to determine the presence/absence of roosting bats within the buildings. Should this survey confirm the presence of roosting bats, it will be necessary to undertake additional surveys in order to inform a Natural England licence application.

Middlemarch Environmental Ltd has been commissioned to undertake Dusk Emergence and Dawn Re-entry Bat Surveys of the buildings. The recommendations made within Report RT-MME-153340-01 Rev C must be adhered to.

R3 Remaining Buildings

The remaining buildings had negligible potential for roosting bats. 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 suitable features have developed and if bats have colonised the buildings in the interim. In the unlikely event that a bat is found during demolition works all works must immediately cease and a suitably qualified ecologist should be contacted.

R4 Bat Protection Strategy – Building X78

A Bat Protection Strategy (Report RT-MME-150872-08 Rev B) has been produced for Building X78 in order to outline suitable safeguards and procedures that are to be followed during the roof replacement works. The document details how potential roost features (notably weep holes in external walls) are to remain unaffected during the construction phase of the works, ensuring any bats potentially using such features are not adversely impacted.

R5 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.

R6 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 C150872-04-01 – Preliminary Bat Roost Assessment

C150872-04-01-RevA

Legend

- High bat roost potential
- Low bat roost potential
- Negligible bat roost potential
- Site boundary

Note
The following buildings are not included in the map:
Low potential (X10 and X38)
High potential (X37 and X76)

Project	QinetiQ Site, Fort Halstead, Kent
Drawing	Preliminary Roost Assessment
Client	QinetiQ
Drawing Number: C150872-04-01-RevA	Revision: Rev A
Scale @ A3: 1:2,500	Date: May 2021
Approved By: JF	Drawn By: RP

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APPENDIX 1

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.