Appendix 9.2

PRELIMINARY BAT ROOST ASSESSMENT

FORT HALSTEAD, KENT

PRELIMINARY BAT ROOST ASSESSMENT

A Report to: CBRE Ltd

Report No: RT-MME-127947-02 Rev B

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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, 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 CBRE Ltd to undertake a Preliminary Bat Roost Assessment at Fort Halstead in Kent. This assessment is 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.

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.

To fulfil the above brief to assess the potential for the existing buildings and trees on site to support roosting bats, a Preliminary Bat Roost Assessment of buildings was undertaken between 21st May and 4th June 2018 and trees were inspected between 29th and 31st October 2018.

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, 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 have been decommissioned and as such are presently seldom or never used. Many of the buildings present were in a fairly poor state of repair, with a number of decommissioned 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 127 buildings have been identified as having high potential to support roosting bats, and 108 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.

Trees. The survey focused on trees located within the detailed planning application area, which includes the old fort and a small parcel of land located just to the north. The majority of the trees in these areas possessed no potential roosting features and were therefore considered to have negligible potential to support roosting bats. However, a small number of trees were noted to have potential roosting features. Of these, nine were considered to have high potential to support roosting bats, three were considered to have moderate potential to support roosting bats and ten were considered to have low potential to support roosting bats. Four further trees were subject to a detailed inspection and subsequently considered to have negligible potential to support roosting bats. The proposed tree removal works have the potential to disturb or destroy a bat roost if bats are found to be roosting within the trees. 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 trees.

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

R1 Buildings with High Roosting Potential
A total of 127 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 Nocturnal Emergence and Dawn Re-entry Bat Surveys of the buildings. The recommendations made within the report (RT-MME-127947-03) must be adhered to.

R2 Buildings with Low Roosting Potential

A total of 108 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 Nocturnal Emergence and Dawn Re-entry Bat Surveys of the buildings. The recommendations made within the report (RT-MME-127947-03) 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. 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 Trees with High Roosting Potential

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

R5 Trees with Moderate Roosting Potential

A total of three trees have been identified as having moderate potential to support roosting bats. Bat Surveys: Good Practice Guidelines published by the Bat Conservation Trust (Collins, 2016) recommends that for trees with moderate bat roosting potential two separate survey visits (consisting of one dusk emergence and a separate dawn re-entry survey) be undertaken during the bat activity season to determine the presence/absence of roosting bats within the trees. The bat activity season extends from May to September. At least one of the surveys should be undertaken during the peak season between May and August. Should these surveys confirm the presence of roosting bats, it will be necessary to undertake additional surveys in order to inform a Natural England licence application.

R6 Trees with Low Roosting Potential

A total of ten trees were considered to have low potential to support roosting bats. If any of these trees are to be removed as part of the proposed works, then it is recommended that these trees are soft felled under the supervision of a Licensed Bat Worker to ensure that no bats are harmed during the works should bats have colonised the trees since the inspection was completed.

R7 Remaining Surveyed Trees

The remaining surveyed trees were considered to have negligible potential to support roosting bats. 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 works to the trees all works must immediately cease and a suitably qualified ecologist should be contacted.

R8 Tree Surveys for Future Phases

Further detailed surveys of trees located outside of the detailed application area should be undertaken prior to reserved matters applications for future development phases.

R9 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.

R10 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

1.1 PROJECT BACKGROUND

Middlemarch Environmental Ltd was commissioned by CBRE Ltd to undertake a Preliminary Bat Roost Assessment at Fort Halstead in Kent. This assessment is 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.

To fulfil the above brief to assess the potential for the existing buildings and trees on site to support roosting bats, a Preliminary Bat Roost Assessment of buildings was undertaken between 21st May and 4th June 2018 and trees were inspected between 29th and 31st October 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.

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

- Preliminary Ecological Appraisal (Report RT-MME-127947-01);
- Nocturnal Emergence and Dawn Re-entry Bat Surveys (Report RT-MME-127947-03);
- 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).

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 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 and trees 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.

For the trees, an ecologist gained access to the potential bat roosting features over 3.5 m through the use of a safety harnesses and tree climbing ropes to allow a detailed inspection of all potential roosting features.

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. Trees with features present that are suitable to support roosting bats (high and moderate suitability) are discussed more fully in the report.

A summary of the trees within the survey area without suitable features to support roosting bats (low and negligible suitability) is provided within the report. Due to their negligible potential to support roosting bats, the Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016) recommend no further survey work is required for these tree classes.

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.

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

Example of Potential Roost Features
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. **Trees** • Bat, bird and dormouse boxes on trees; • Cankers (caused by localized bark death) in which cavities have developed; • Compression forks with included bark, forming potential cavities; • Cracks/splits in stems or branches (both vertical and horizontal); • Crossing stems or branches with suitable space between for roosting; • Ivy stems with diameters in excess of 50 mm with suitable roosting space behind (or where a roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk); • Man-made holes (e.g. cavities that have developed from flush cuts); • Natural holes (e.g. knot holes) arising from naturally shed branches, or cavities created by branches tearing out from parent stems; • Other hollows or cavities, including rot holes and butt rots; • Partially detached or loose, platy bark; • Woodpecker holes; or, • Other features that offer a place of shelter.

Table 2.1 (cont'd): 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. A tree 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). A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
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). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Negligible	Negligible habitat features on site likely to be used by roosting bats.

Table 2.2: Classification of Buildings and Trees 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 6.55 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 *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 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 INTRODUCTION

The Preliminary Bat Roost Assessment was carried out over six site visits, with the building assessment undertaken between 21st May and 4th June 2018 by Jamie Fletcher (Ecological Consultant), Harry Stone (Ecological Project Officer) and Pippa Jordan (Ecological Project Officer), and the tree inspection undertaken between 29th and 31st October 2018 by Victoria Worrall (Senior Ecological Consultant and Licensed Bat Worker under bat class licences 19 and 20) and Jemma Gaskin (Principal Technical Ecological Consultant and Licensed Bat Worker under bat class licence 18). Drawings C127947-02-01 and C127947-02-02, illustrating the results of the survey are provided in Chapter 7.

Weather conditions were recorded and are presented in Table 4.1.

Parameter	Condition					
	21/05/2018	29/05/2018	04/06/2018	29/10/2018	30/10/2018	31/10/2018
Temperature (ºC)	11	13	13	7	6	10
Cloud (%)	100	90	100	36	40	41
Wind (Beaufort)	F2	F1	F2	F3	F3	F3
Precipitation	Nil	Nil	Nil	Nil	Nil	Nil

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 – BUILDINGS

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, 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 have been decommissioned and as such are presently seldom or never used. Many of the buildings present were in a fairly poor state of repair, with a number of decommissioned 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.

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
Area A			
A1	Two-storey, brick building with pitched, clay-tiled roof. It had multiple holes in the exterior walls providing access to the wall cavity on the northern and western elevations. Open vents were present beneath the soffit providing potential access to the soffit box on the northern and western elevations. There were also gaps around the ground floor window and lifted lead flashing on the northern elevation, and gaps beneath the lintels of the first-floor windows on the eastern elevation.	-	High
A3	Two-storey, brick building with pitched, clay-tiled roof. Gaps were present between the external wall and the soffits, and there were holes in the soffits themselves, providing potential access points to the void within the soffit box on the southern and eastern elevations. Gaps were also present beneath window lintels and there were multiple holes in the external walls providing access to the wall cavity on the western and eastern elevations (both great tit and blue tit were nesting within the eastern wall cavity). Open vents in the eastern external wall also provide potential access points.	-	High
A5	Large brick building with a pitched corrugated metal roof and flat roof sections. There was missing mortar and holes in the external walls providing access to wall cavities. Gaps were also present between the fascia boarding and external walls, between the soffits and external walls, and above the door frame on the northern elevation. In addition, large open vents and pipes were present in the external walls providing potential internal access. The interior was partially visible through the windows. Multiple holes were present in the ceiling providing access to the ceiling cavity, and warped and lifted internal wooden boards created crevices between the wooden boards and brickwork. In addition, there was missing mortar in the internal brickwork in the open garage/lean-to section occupying the north-eastern part of the building.	-	High
A8	Single-storey brick building with a pitched corrugated metal roof and a flat roof section. There was a small gap between the soffit and external wall on the southern elevation.	-	Low
A10	Three-storey brick building with a multiple pitched corrugated metal roof. Multiple holes / weep holes in the external walls provide access to wall cavities, and gaps in the soffit provide access to the void within the soffit box. There was also a gap beneath the window lintel on the northern elevation. A large vent in the external wall and multiple louvre doors provide internal access to storage facilities. The interior was partially visible through the doors on the western elevation, revealing exposed wooden beams in the storage facilities.	-	High
A11	Disused brick building with flat felt roof. There was a hole in the external brickwork providing access to a wall cavity on the northern elevation. Gaps were present between fascia boarding and external wall on the eastern and western elevations, and a louvre door on the western elevation provides internal access.	-	High
A12	There were gaps between the soffits and external walls proving access to the void within the soffit boxes. Holes were present in external walls, around cable inlets and pipework providing access to wall cavities. An open door on the north-western elevation provides free flight access to the interior.	-	High
A13	Single-storey brick building with pitched slate roof. There were holes in the external brickwork and around cable inlets and pipework providing access to wall cavities. Gaps were also present at the eaves, around exposed ceiling joists and rafters, and between the soffits and external walls providing internal access and access to the void within the soffit boxes. There were also areas of lifted lead flashing. **Previously confirmed as a bat roost.**	-	High
A14	Single-storey brick building with pitched slate roof. There were gaps around the window frames on the western elevation, between the lintel and window frames on the eastern elevation, and under the ridge tiles on the northern elevation. **Previously confirmed as a bat roost.**	-	High
A20	Brick building with pitched corrugated metal roof. Multiple holes and weep holes were present in the external walls providing access to wall cavities. There were also gaps at the eaves, under fascia boards and between soffits and external walls providing internal access. Gaps were also noted under the ridge capping.	-	High

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

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
A23	Single-storey brick building with pitched felt roof. Multiple holes and weep holes were present in the external brickwork, including around cable inlets and where pipework has been removed, providing access to wall cavities.	-	High
A26	Single-storey brick building with pitched corrugated metal roof. Holes were present around cable inlets in the soffits and external walls providing internal access. There were also vents and louvre doors providing internal access.	-	High
A28	Large brick building with corrugated metal roof. Holes were present around cable inlets in the external walls on the northern and western elevations.	-	High
A28.1	Single-storey brick building with corrugated metal roof. There was a gap under the metal soffit providing an internal ledge throughout.	-	Low
A28.2	Large brick building with corrugated metal roof. Gaps were present in the external wall cladding and around cable inlets providing internal access.	-	High
Area F			
F1	Small brick building with a pitched felt roof. There was a small gap under the fascia boards on the eastern elevation creating crevices.	-	Low
F2	Single-storey concrete building with sections that are buried in the earth. Multiple holes were present in the external walls providing internal access and access into wall cavities. Missing window panes provide internal access.	-	High
F3	Single-storey brick building with a flat concrete roof. A vent on the northern elevation provides internal access.	-	Low
F3.1	Single-storey concrete building with sections that are buried in the earth. Multiple holes were present in the external walls providing internal access and access into wall cavities. Missing window panes provide internal access.	-	High
F4	Single-storey concrete building with sections that are buried in the earth. Multiple holes and weep holes were present in the external walls providing internal access and access into wall cavities. Open doors provide internal access, and gaps under lead flashing create crevices.	-	High
F5	Single-storey brick building with a corrugated metal roof. Holes were present in the external walls on the north-eastern and south-eastern elevations providing internal access. Gaps were also present along the top of the wall on the north-western elevation and around the lintel.	-	High
F6	Single-storey building constructed from brick and concrete with sections that are buried in the earth. A hole was present in the large metal door providing internal access. **Previously confirmed as a bat roost.**	-	High
F7	Single-storey building constructed from brick and concrete with sections that are buried in the earth. Multiple holes were present in the external walls providing internal access. Gaps were present around window frames.	-	Low
F8	Single-storey building constructed from brick and concrete with sections that are buried in the earth. Multiple holes were present in the external walls providing internal access. Gaps were present around window frames.	-	Low
F9	Single-storey building constructed from brick and concrete with sections that are buried in the earth. Multiple holes were present in the external walls providing internal access. Gaps were present around window frames.	-	Low
F10	Small brick building with a pitched corrugated metal roof. A hole was present in the external wall providing internal access. Gaps were present under the fascia boards creating crevices. There was also a gap around a window lintel.	-	High
F11	Two-storey brick building with pitched felt roof. Multiple holes were present in the external walls providing internal access and access into wall cavities. Gaps were also present under lead flashing creating crevices.	-	High
F12	Brick building with a flat roof. Gaps were present under fascia boards on the western elevation creating crevices.	-	Low
F13	Dilapidated brick structure. Open doors provide internal access.	-	Low

Table 4.2 (cont'd): Buildings with Potential to Support Roosting Bats (cont)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
F14	Brick building with a pitched corrugated metal roof. There were gaps under the corrugated roof providing internal access. Gaps were also present in the brickwork and around window frames creating crevices.	-	High
F15	Single-storey brick building with a flat roof. Gaps were present under fascia boards creating crevices, and around the door frame providing internal access.	-	High
F16	Single-storey concrete building with a flat roof. Holes were present in the external wall on the western elevation providing internal access.	-	Low
F17	Brick building with flat and sloped concrete roof sections that varied in height. Holes were present in the external walls around cable/pipe inlets providing internal access and access into wall cavities. There was also a gap in the large door on the eastern elevation.	-	High
F18	Single-storey brick building with a flat concrete roof. Holes were present in the external wall on the western elevation providing internal access.	-	Low
F19	Single-storey brick building with a flat concrete roof. Holes were present in the external wall around cable inlets on the northern elevation providing internal access. There was also a gap above the door frame.	-	Low
Pill Box	Derelict pill box constructed from brick with a concrete base. It had a dense growth of ivy covering the exterior and extending inside the building indicating the presence of holes. The ivy itself did not form any roosting features.	-	Low
Area H			
H1	Brick building with tall chimney and pitched clay-tiled roof. A number of roof tiles had become dislodged, and there were gaps in the soffits on the eastern elevation and south-western corner.	-	High
H2	Two-storey brick building with pitched corrugated metal roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities. There were also gaps behind fascia boards and holes around cable inlets in soffits, as well as vents and louvre doors providing internal access.	-	High
H2.1	Multiple holes and weep holes were present in the external walls providing access into wall cavities. There were also gaps in soffits and around window frames providing internal access.	-	High
H4	Two-storey brick building with flat felt roof. Multiple holes were present in the external walls, around cable inlets and pipework providing access into wall cavities (blue tit nest in hole on south-western elevation).	-	High
H5	Single-storey building with rendered walls and a pitched felt roof. There were gaps between fascia boards and external walls, and tears in the roofing felt creating crevices.	-	High
H6	Multiple holes and weep holes were present in the external walls providing access into wall cavities. There were also gaps in soffits and around window frames providing internal access.	-	High
H7	Single-storey E-shaped building constructed from brick with a flat felt roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities. There were also gaps between the brick pillars and external walls creating crevices.	-	High
H7.1	Wooden shed with brick base and a pitched felt roof. There was a small gap at the eaves on the western elevation and under the decorative overhang feature on the eastern elevation where the board had warped.	-	Low
H8	Building with concrete rendered walls and a pitched felt roof. There was a metal beam on the northern elevation with gaps behind it creating crevices. Gaps were also present between the concrete soffit and external wall providing access into the void within the soffit box.	-	Low
H10	Single-storey brick building with a flat roof. 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. In addition, louvre doors provide internal access.	-	High

Table 4.2 (cont'd): Buildings with Potential to Support Roosting Bats (cont)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
H11	Single-storey brick building with a pitched roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities.	-	High
H12	Single-storey brick building with a pitched corrugated metal roof. Gaps were present behind the fascia boards.	-	Low
H14	Single-storey brick building with large barn-like section and sloped felt roof. Multiple holes and weep holes were present in the external walls, around cable inlets and pipework providing access into wall cavities.	-	High
H16	Two-storey brick building with pitched corrugated metal roof forming part of a fire station complex. Multiple holes and weep holes were present in the external walls providing access into wall cavities (blue tit nest in hole on northern elevation). There was also a gap between the wall and lintel above the doors, and lifted lead flashing on the southern elevation.	-	High
H20	Brick building with a pitched corrugated metal roof and flat felt roof sections. Holes were present in the external walls and around cable inlets providing internal access. There was also a vent on the southern elevation with large gaps providing internal access. Gaps were also noted behind the fascia boarding on the northern elevation creating crevices.	-	High
H29	Single-storey brick building with a flat corrugated metal roof. There was a large opening in the stud wall between the open and closed sections of the garage providing internal access.	-	Low
H30	Single-storey brick building with a flat felt roof. There was a hole in the external wall on the eastern elevation providing internal access.	-	Low
H38	Single-storey brick building with pitched corrugated metal roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities. There were also gaps at the eaves providing internal access, and gaps behind fascia boards creating crevices. **Previously confirmed as a bat roost.**	-	High
H46	Single-storey brick building with a flat felt roof and a taller workshop area. Multiple holes and weep holes were present in the external walls providing access into wall cavities (blue tit nest in hole on eastern elevation).	-	High
H50	Single-storey brick building with a flat felt roof. Holes were present in the external wall on the northern elevation providing internal access. Gaps were also present behind the fascia boards on the eastern elevation.	-	High
Area M			
M1	Single-storey brick building with a flat roof. There was a small area of missing mortar in the external wall on the south-western elevation creating a crevice.	-	Low
M2	Single-storey brick building with a flat roof. There was a small area of missing mortar in the external wall on the north-western elevation creating a crevice.	-	Low
M3	Large concrete building with sections that are buried in the earth. There was a small hole in the external wall around a cable inlet providing internal access.	-	Low
M4	Small concrete building with sections that are buried in the earth. There was a small gap around the door frame providing internal access.	-	Low
M5	Small concrete building with sections that are buried in the earth. There was a small gap around the door frame providing internal access.	-	Low
M6	Small concrete building with sections that are buried in the earth. There was a small gap around the door frame providing internal access.	-	Low
M7	Small concrete building with sections that are buried in the earth. There was a small gap around the door frame providing internal access.	-	Low
M8	Small concrete building with sections that are buried in the earth. There was a small gap around the door frame providing internal access.	-	Low

Table 4.2 (cont'd): Buildings with Potential to Support Roosting Bats (cont)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
M9	Small concrete building with sections that are buried in the earth. There was a small gap around the door frame providing internal access.	-	Low
M10	Small brick building with plastic cladding on the walls and a flat roof. Multiple weep holes were present in the external walls providing access into wall cavities, but these were mostly filled with cobwebs. Gaps were also present under lead flashing creating crevices.	-	Low
M10.1	Small concrete building with sections that are buried in the earth. There was a small gap around the door frame providing internal access.	-	Low
M11	Small brick building with plastic cladding on the walls and a flat roof. Gaps were present under lead flashing creating crevices.	-	Low
M12	Small concrete building with sections that are buried in the earth. There was a small gap around the door frame providing internal access.	-	Low
M14	Small brick building with plastic cladding on the walls and a flat roof. Multiple weep holes were present in the external walls providing access into wall cavities, but these were mostly filled with cobwebs.	-	Low
M15	Small brick building with plastic cladding on the walls and a flat roof. Multiple weep holes were present in the external walls providing access into wall cavities, but these were mostly filled with cobwebs.	-	Low
M16	Small brick building with plastic cladding on the walls and a flat roof. Multiple weep holes were present in the external walls providing access into wall cavities, but these were mostly filled with cobwebs.	-	Low
M18	Single-storey brick building that varies slightly in height with a flat felt roof. Louvre doors provide internal access, and gaps under overhanging roofing felt create crevices.	-	High
M20	Small concrete building with sections that are buried in the earth. Vents provide internal access.	-	Low
M21	Small concrete building with sections that are buried in the earth. Vents provide internal access.	-	Low
M23	Small concrete building with sections that are buried in the earth. Vents provide internal access.	-	Low
M24	Small concrete building with sections that are buried in the earth. Vents provide internal access.	-	Low
Area N			
N2	Large warehouse type building constructed from brick and corrugated metal with a pitched roof and flat roof sections. Multiple holes were present in the external walls providing access into wall cavities. There were also gaps behind fascia boards and under roofing felt creating crevices, and gaps in soffits providing access to the void within the soffit box.	-	High
N2.1	Small gaps were present around the cable inlet on the northern elevation, and around the steel beam located above the doors on the northern elevation.	-	Low
N2.2	Small weep holes were present in the brickwork; these were mostly filled with cobwebs.	-	Low
N5.1	Single-storey brick building with a pitched corrugated metal roof. There was a small gap under the fascia boarding on the southern elevation and small gaps under the corrugated roof providing internal access.	-	Low
N6	Single-storey brick building. Multiple holes were present in the external walls providing internal access and access into wall cavities. Gaps were also present around the door frames providing internal access.	-	High
N7	Single-storey brick building with a pitched tiled roof. Large holes were present in the soffits around drains pipes providing internal access. Gaps were also present under the end roof tiles and at the eaves providing internal access. A louvre door on the western elevation also provides internal access.	-	High

Table 4.2 (cont'd): Buildings with Potential to Support Roosting Bats (cont)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
N7.1	Single-storey brick building with a pitched tiled roof. A small gap was present where lead flashing meets fascia boarding on the eastern elevation, and there was a small gap around a metal beam where it extends from the western elevation.	-	Low
N10	Flat-roofed building with wooden cladding and hanging tiles on walls. There were lifted, broken and missing hanging tiles throughout, and gaps around warped wooden boarding providing crevice features. There were also gaps behind fascia boards, around window frames and under lifted lead flashing. **Previously confirmed as a bat roost.**	-	High
N11	Small gaps were present under the fascia boards on the southern elevation and around a cable inlet on the southern elevation.	-	Low
N11.1	Small gaps were present under the fascia boards on the northern elevation.	-	Low
N17	Single-storey building constructed from brick and wooden panels with a pitched felt roof. There were multiple broken windows and holes in the external walls providing internal access, as well as vents. Gaps were also present under the overhanging roofing felt creating crevices, and significant ivy growth on the western elevation was entering the building indicating the presence of more gaps.	-	High
Area Q			
Q1	Brick building with flat felt roof. Multiple holes were present in the external walls providing access into wall cavities. Gaps were present under fascia boards creating crevices, and vents provide internal access.	-	High
Q3	Two-storey brick building with a pitched corrugated metal roof and flat felt roof sections. Multiple holes were present in the external walls providing internal access. Gaps were present under wooden cladding and lead flashing, and also around window frames.	-	High
Q4	Warehouse type building constructed from brick with a corrugated asbestos roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities. Gaps were present in the soffits providing access into the void within the soffit box. Gaps were also present under lead flashing and fascia boards creating crevices, and under the corrugated roof providing internal access.	-	High
Q4.1	Single-storey brick building with a mixture of pitched corrugated metal and flat felt roof sections. Gaps were present under fascia boards and overhanging roofing felt creating crevices. Louvre doors provide internal access.	-	High
Q5	Single-storey brick building with flat felt roof. Two holes were present in the external wall on the south-western elevation providing internal access. Vented windows on the south-eastern elevation also provide internal access.	-	High
Q6	Single-storey brick building with a mixture of pitched corrugated metal and flat concrete roof sections. Multiple holes and weep holes were present in the external walls providing access into wall cavities. Gaps were also present under fascia boards creating crevices.	-	High
Q6.1	Brick building with a corrugated asbestos roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities. Gaps were present around concrete lintels and door frames, and under lead flashing and overhanging roofing felt.	-	High
Q6.2	Brick building with a corrugated asbestos roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities. Louvre doors provide internal access.	-	High
Q6.4	Brick building with a corrugated asbestos roof. Multiple weep holes were present in the external walls providing access into wall cavities.	-	High
Q6.5	Single-storey brick building with a flat concrete roof. A small hole was present in the external wall around a cable inlet providing internal access.	-	Low
Q6.11	Brick building with a flat felt roof. Multiple holes were present in the external walls providing internal access.	-	Low

Table 4.2 (cont'd): Buildings with Potential to Support Roosting Bats (cont)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
Q7	Large brick building with a flat corrugated metal roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities. Gaps were present under fascia boards, lead flashing and overhanging roofing felt creating crevices. Vents provide internal access.	-	High
Q7.2	Tall building constructed from corrugated metal. Gaps in the external walls provide internal access.	-	Low
Q7.4	Single-storey brick building with a flat roof. Gaps were present under the fascia boards on the south-eastern elevation creating crevices.	-	Low
Q7.5	Single-storey brick building with a flat roof. Small number of holes were present in external wall on south-eastern elevation providing internal access. There was a large gap above the doors on the south-eastern elevation providing internal access.	-	High
Q7.6	Single-storey brick building with a flat roof. Small number of holes were present in external wall on south-eastern elevation providing internal access. There was a large gap above the doors on the south-eastern elevation providing internal access.	-	High
Q7.8	Single-storey brick building with a flat roof. Small number of holes were present in external walls on north-eastern and north-western elevations providing internal access. Vents and louvre doors also provide internal access. Gaps were present under fascia boards and overhanging roofing felt creating crevices.	-	High
Q8	Single-storey brick building with corrugated metal roof. Gaps were present under fascia boards creating crevices, and a vent on the south-western elevation provides internal access.	-	Low
Q11	Large 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
Q12	Single-storey brick building with a pitched clay-tiled roof. Multiple holes were present in the external walls providing internal access. Gaps were present under fascia boards creating crevices, and there was a gap between the soffit and external wall on the south-western elevation providing access into the void within the soffit box.	-	High
Q13	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. Vent on north-eastern elevation provides internal access.	-	High
Q14	Three-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 around steel lintels.	-	High
Q15	Large brick building with a flat corrugated metal roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities. Gaps were present under fascia boards creating crevices.	-	High
Q24	Single-storey brick building with a flat felt roof. Multiple weep holes were present in the external walls providing access into wall cavities, but these were mostly filled with cobwebs.	-	Low
Q24.1	Single-storey brick building with flat felt roof. Multiple weep holes were present in the external walls providing access into wall cavities, but these were mostly filled with cobwebs.	-	Low
Q25	Single-storey brick building with a flat felt roof. Multiple weep holes were present in the external walls providing access into wall cavities, but these were mostly filled with cobwebs.	-	Low
Area R			
R7	Large building constructed from corrugated metal with a pitched roof, and an adjoining two-storey brick building with a flat felt roof. Multiple holes and 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 a gap in the porch provides internal access.	-	High
R13	Single-storey building constructed from a brick base and corrugated metal above with a corrugated metal roof. Multiple weep holes were present in the external walls providing access into wall cavities, but these were mostly filled with cobwebs.	-	Low

Table 4.2 (cont'd): Buildings with Potential to Support Roosting Bats (cont)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
R14	Single-storey brick building with a flat felt roof. Multiple holes and weep holes were present in the external walls providing internal access and access into wall cavities. Gaps were also present behind fascia boards and in soffits.	-	High
R15	A long brick building with a flat felt roof and adjoining storage shed with a corrugated asbestos roof. Multiple holes were present in the external walls providing access into wall cavities. Gaps were also present under the corrugated roof, and louvre doors provide internal access.	-	High
R16	Large building constructed from concrete with a flat roof. Gaps were present in the soffits providing access into the void within the soffit box.	-	High
R18	Single-storey building constructed from concrete with a flat roof. The soffit boxes were open at the ends providing access into the void within the soffit box.	-	High
R19	Single-storey building constructed from concrete with a flat roof. Multiple holes were present in the external walls providing internal access. Gaps were also present under lead flashing creating crevices.	-	High
R20	L-shaped brick building that varied from single-storey to two-storey in height with a flat felt roof. Multiple holes were present in the external walls providing internal access, and haps were present under the fascia boards creating crevices. Gaps were also present under lead flashing and overhanging roofing felt.	-	High
R20B	Single-storey brick building with a flat felt roof. Gaps were present under the fascia boards creating crevices large enough to support more than a few individual bats.	-	High
R23	Single-storey brick building with a flat roof. Multiple holes were present in the external walls providing internal access, and gaps were present under the fascia boards creating crevices.	-	Low
R25	Tall flat-roofed building with a brick base and corrugated metal sheets around the upper half of the walls. Gaps were present under the lead flashing on the western elevation creating crevices.	-	Low
R26	Single-storey building constructed from concrete with corrugated plastic cladding and a flat roof. Multiple gaps were present in the cladding and under lead flashing creating crevices. Vents and louvre doors provide internal access.	-	High
R27	Building constructed from concrete with corrugated plastic cladding on the walls and a flat felt roof. Gaps were present behind the plastic cladding and under the overhanging roofing felt creating crevices.	-	Low
R28	Single-storey brick building with plastic cladding on the walls and a flat felt roof. Gaps were present behind the plastic cladding and under the fascia boards creating crevices.	-	Low
R29.1	Single-storey brick building with a flat felt roof. Multiple weep holes were present in the external walls providing access into wall cavities, but these were mostly filled with cobwebs.	-	Low
R32	Single-storey brick building with a flat felt roof. Multiple holes were present in the external walls providing internal access and creating crevices. Gaps were also present under lead flashing and overhanging roofing felt creating crevices, and around a wooden door frame on the north-western elevation.	-	High
R33	Single-storey brick building with a flat felt roof. Multiple holes were present in the external walls providing internal access and creating crevices.	-	High
R34	Single-storey brick building with a flat felt 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. A boarded up window on the south-eastern elevation had gaps between the boards providing internal access.	-	Low
R34.1	Single-storey brick building with plastic cladding and a flat roof. Gaps were present in the cladding providing access to the crevices behind.	-	High

Table 4.2 (cont'd): Buildings with Potential to Support Roosting Bats (cont)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
R35	Single-storey building with wooden cladding on the walls and a flat felt roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities. Gaps were also present under the wooden cladding, fascia boards and around concrete lintels.	-	High
R36	Single-storey brick building with a flat felt roof that had partially collapsed. Multiple holes and weep holes were present in the external walls providing access into wall cavities. Gaps were present in the soffits providing access to the void within the soffit box.	-	High
R38	Single-store brick building with pitched corrugated asbestos roof. Gaps were present under the ridge capping providing internal access. Gaps were also present between the soffit and wall on the southern elevation providing access into the void within the soffit box.	-	High
R44	Large building constructed from corrugated metal with a flat roof. Gaps were present under the fascia boards creating crevices.	-	Low
R48	Single-storey brick building with a flat felt roof. There was a hole in the external wall on the southern elevation providing access into a wall cavity.	-	High
R48.1	Small brick lean-to with a corrugated plastic roof. It was open sided and crevices were present where the exposed wooden beams meet the walls.	-	Low
R49	Single-storey building constructed from concrete blocks with plastic cladding on the walls and a pitched corrugated asbestos roof. Holes were present in the external walls around cable inlets on the northern and western elevations providing internal access. Gaps were also present under the corrugated roof and around the door frames.	-	High
R50	Small brick building with a flat concrete roof. Gaps were present under the lead flashing on the western elevation creating crevices.	-	Low
R51	Building constructed from brick and concrete with flat felt roof sections that varied in height. Multiple holes were present in the external walls providing internal access, and gaps were present under the overhanging roofing felt on the south-western elevation creating crevices.	-	High
R52	Single-storey building constructed from concrete blocks with plastic cladding on the walls and a pitched corrugated asbestos roof. Holes were present in the external walls around cable inlets on the eastern and western elevations providing internal access. Gaps were also present under the corrugated roof and around the door frames.	-	High
R53	Large building constructed from brick and concrete. There was a gap in the soffit on the north-western corner providing access into the void within the soffit box.	-	High
R54	Two-storey brick building with a flat felt roof. Multiple holes were present in the external walls providing internal access. Gaps were also present behind fascia boards and under lifted lead flashing.	-	High
R55	Single-storey brick building with flat felt roof. There is a crevice where a red box is attached to the external wall.	-	Low
R56	Large building constructed from brick and concrete. There was a missing brick on the southern elevation that provides access into a wall cavity. A louvre door provides internal access, and gaps were present behind the fascia boards and under the overhanging roofing felt creating crevices.	-	High
R59	Building constructed from brick and concrete with a flat felt roof and corrugated plastic lean-to. Small crevices were present behind old signs and fascia boards, and a hole was present between the door frame and wall.	-	High
R60	Single-storey building constructed from brick and concrete with a flat roof. Multiple holes were present in the external walls providing internal access. There were gaps under the overhanging roofing felt creating crevices. Gaps were also present under the fascia boards.	-	High

Table 4.2 (cont'd): Buildings with Potential to Support Roosting Bats (cont)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
R62	Single-storey building constructed from brick and concrete with a flat roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities. There were gaps under the corrugated roof (multiple bird's nests) providing internal access, and gaps under the overhanging roofing felt creating crevices. Gaps were also present under the fascia boards and in the soffits.	-	High
R63	Single-storey building constructed from brick and concrete with a flat roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities. There were gaps under the corrugated roof (multiple bird's nests) providing internal access, and gaps under the overhanging roofing felt creating crevices. Gaps were also present under the fascia boards and in the soffits.	-	High
R64	Single-storey concrete block building with a flat roof. Gaps were present behind the fascia boards creating crevices. There was a vented store room with a missing door providing internal access. This allowed the interior to be viewed; there were exposed wooden beams and crevices.	-	High
R65	Single-storey concrete block building with a flat roof. Holes were present in the external walls providing internal access. Gaps were present behind the fascia boards creating crevices.	-	High
R66	Single-storey brick building with flat felt roof. Multiple holes and weep holes were present in the external walls providing access into wall cavities. Gaps were present under overhanging roofing felt and lifted lead flashing creating crevices. There were also gaps around window frames and doors.	-	High
R67	Brick building with flat roof. There was a in the fascia board above the door, and some of the other fascia boards had lifted creating crevices.	-	Low
R68	Single-storey brick building with a flat felt roof. A small number of holes were present in the external walls providing internal access. There was also a gap between the overhanging roofing felt and the concrete lintel on the north-eastern elevation.	-	Low
R69	Single-storey brick building with a shallow pitched corrugated metal roof. There was a small gap in the soffit on the eastern elevation providing access into the void within the soffit box.	-	Low
R69B	Single-storey brick building with flat felt roof. Gaps were present between the wooden frame adjoining this building and R69 creating crevices.	-	Low
R70	Single-storey brick building with a pitched corrugated asbestos roof. Gaps were present along the ridge and under the fascia boards.	-	High
R72	Single-storey brick building with a pitched corrugated metal roof. Gaps were present in the external wall on the eastern elevation, and under the corrugated roof providing internal access.	-	Low
R73	Single-storey brick building with a pitched corrugated metal roof. Gaps were present under the corrugated roof providing internal access.	-	Low
R75	Single-storey concrete block building with a flat roof. Holes were present in the external walls providing internal access. Gaps were present behind the fascia boards creating crevices.	-	High
Area S			
S2	Large building with corrugated metal walls and several brick additions used for storage. Multiple holes and weep holes were present in the external walls providing internal access and access into wall cavities. Gaps were also present around the roller shutter door on the south-western elevation. Vents and louvre doors provide internal access, and gaps under fascia boards and overhanging roofing felt create crevices.	-	High
S3	Single-storey brick building with a flat felt roof. Holes were present in the external walls on the north-eastern and south-eastern elevations providing internal access.	-	Low

Table 4.2 (cont'd): Buildings with Potential to Support Roosting Bats (cont)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
S12	Brick building with pitched corrugated metal and flat felt roof sections. Multiple holes and 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 and overhanging roofing felt creating crevices. Vents and louvre doors provide internal access.	-	High
S18	Large three-storey building constructed from brick and concrete with a mixture of pitched corrugated metal and flat felt roof sections. Multiple weep holes were present in the external walls providing access into wall cavities, but these were mostly filled with cobwebs.	-	Low
S20	Brick building with a flat roof. Gaps were present under the fascia boards creating crevices.	-	Low
S21	Brick building with a flat roof. Gaps were present under the fascia boards creating crevices. Louvre doors also provide internal access.	-	Low
Area X			
X1	Brick building with a flat concrete roof. There was a hole in the external wall on the eastern elevation providing internal access. Gaps were present under the fascia boards and lead flashing creating crevices.	-	High
X2	Brick building with a pitched clay-tiled roof. Multiple holes were present in the external walls and numerous roof tiles had become dislodged with gaps also present along the ridge providing internal access. There were gaps in the soffits providing access into the void within the soffit box, and gaps under fascia boards and lead flashing create crevices. Gaps were also present around the doorframe on the northern elevation.	-	High
X3	Brick building with a pitched clay-tiled roof. Multiple holes were present in the external walls and numerous roof tiles had become dislodged with gaps also present along the ridge providing internal access. There were gaps in the soffits providing access into the void within the soffit box, and gaps under fascia boards and lead flashing create crevices.	-	High
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	Small concrete building with a flat roof. Multiple holes were present in the external walls providing internal access. The interior was partially visible revealing holes in the wooden boards that lined the walls and rotten wooden beams in the roof.	-	High
X9	Small concrete building with a flat roof. Multiple holes were present in the external walls providing internal access. The interior was partially visible revealing holes in the wooden boards that lined the walls and rotten wooden beams in the roof.	-	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. Gaps were present under lead flashing creating crevices.	-	Low
X12	Small concrete building with a flat roof. Gaps were present under lead flashing creating crevices.	-	Low
X13	Small concrete building with a flat roof. Gaps were present under lead flashing creating crevices.	-	Low
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

Table 4.2 (cont'd): Buildings with Potential to Support Roosting Bats (cont)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
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. Gaps were present under the fascia boards and overhanging roofing felt creating crevices.	-	Low
X16	Single-storey brick building with a flat concrete roof. Louvre doors provide internal access.	-	Low
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
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
X21B	Single-storey brick building with a flat concrete roof. Multiple holes were present in the external walls providing internal access.	-	Low
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. Gaps were present under the corrugated roof providing internal access.	-	Low
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. Multiple holes were present in the external walls providing internal access. The majority were blocked but some were clear.	-	Low
X29	Single-storey brick building with a flat felt roof. Gaps were present under the fascia boards creating crevices.	-	Low
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. There was a hole in the external wall on the north-western elevation providing access into a wall cavity. Gaps were also present around a window frame and pipe inlet providing internal access.	-	High
X43.1	Single-storey brick building with a flat roof. Vented windows and louvre doors provide internal access. Gaps under lead flashing create crevices.	-	Low

Table 4.2 (cont'd): Buildings with Potential to Support Roosting Bats (cont)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
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
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
X48.1	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
X48.2	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. There was a hole in the external wall on the south-eastern elevation providing internal access. Gaps were also present under the fascia boards creating crevices.	-	High
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. Multiple holes were present in the external walls 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. Gaps were 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
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, and gaps were present under fascia boards creating crevices.	-	Low
X61	Single-storey brick building with flat roof. There was a single hole in the external wall above the door on the south-eastern elevation creating a crevice.	-	Low

Table 4.2 (cont'd): Buildings with Potential to Support Roosting Bats (cont)

Building Number	Description and Potential Roost Features	Evidence of Bats?	BCT Suitability
X62	Single-storey building constructed from brick and concrete with a flat roof. There was a small hole around a cable inlet in the external wall providing internal access.	-	Low
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
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. Louvre doors provide internal access, and gaps under lead flashing create crevices.	-	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. 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
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, but these were mostly filled with cobwebs.	-	Low
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 were present under the corrugated roof providing internal access.	-	Low
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 (blue tits were nesting in some of the holes).	-	High

Table 4.2 (cont'd): Buildings with Potential to Support Roosting Bats

Plate 4.1: Brick building with hipped, tiled roof

Plate 4.2: Brick building with pitched, corrugated metal roof

Plate 4.3: Brick building with flat, felt roof

Plate 4.4: Brick building with pitched, corrugated metal roof and corrugated metal cladding

Plate 4.5: Corrugated metal building with pitched roof

Plate 4.6: Dislodged roof tiles

Plate 4.7: Broken, dislodged and missing hanging tiles

Plate 4.8: Weep holes in brickwork

Plate 4.9: Hole in brickwork around cable inlet

Plate 4.10: Hole in brickwork around pipework

Plate 4.11: Gap behind fascia board

Plate 4.12: Gap in soffit

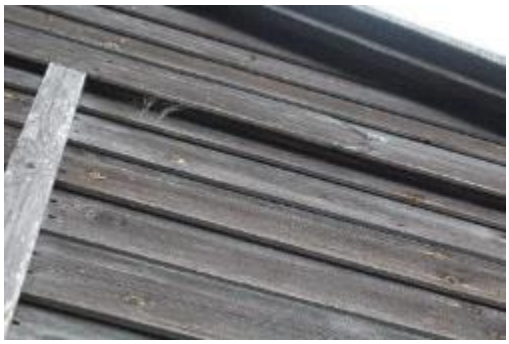

Plate 4.13: Gap in wooden cladding

Plate 4.14: Louvre door with large gaps

Plate 4.15: Vent with large gaps

4.4 SURVEY RESULTS – TREES

A number of trees were present on site. These ranged from young to mature in age. Species present included ash *Fraxinus excelsior*, beech *Fagus sylvatica*, blackthorn *Prunus spinosa*, cherry *Prunus* sp., crab apple *Malus sylvestris*, dogwood *Cornus sanguinea*, elder *Sambucus nigra*, English oak *Quercus robur*, field maple *Acer campestre*, goat willow *Salix caprea*, hawthorn *Crataegus monogyna*, hazel *Corylus avellane*, hemlock *Tsuga* sp., horse chestnut *Aesculus hippocastanum*, larch *Larix* sp., Leyland cypress *X Cupressocyparis leylandii*, oak *Quercus* sp., rowan *Sorbus aucuparia*, Scots pine *Pinus sylvestris*, silver birch *Betula pendula*, sweet chestnut *Castanea sativa*, sycamore *Acer pseudoplatanus*, whitebeam *Sorbus aria* agg. and yew *Taxus baccata*.

The Preliminary Bat Roost Assessment focused on trees located within the detailed planning application area, which includes the old fort and a small parcel of land located just to the north. The majority of the trees in these areas possessed no potential roosting features and were therefore considered to have negligible potential to support roosting bats. However, a small number of trees were noted to have features that could potentially support roosting bats. These trees are further described in Table 4.3.

Tree No.	Species	Description	BCT Suitability Class
Trees within old fort			
980 (Tag 134)	Oak	Tree measures approximately 18 m in height and 0.8 m in stem diameter at chest height. There were numerous small cracks on the lower lateral branches, which were checked with binoculars and a torch and did not ingress to any significant depth. They were found to offer only limited roosting opportunities for individual bats.	Low
1001	Goat willow	Tree measures approximately 10 m in height and 0.4 m in stem diameter at chest height. There were cracks and splits on the lower lateral branches, with some on the vertical stems where branches have snapped off. All gaps and cracks were checked and no bats or evidence of bats was present, although the internal substrate showed signs of smoothing and staining possibly indicating use by fauna. The holes lead into cavities that could be utilised by multiple bats.	High
1027	Sycamore	Tree measures approximately 14 m in height and 0.6 m in stem diameter at chest height. There was a large vertical crack in the main stem. This was inspected with a torch and endoscope and found to offer negligible roosting opportunities for bats. No evidence of bats was found.	Negligible
1035	Oak	Tree measures approximately 16 m in height and 0.7 m in stem diameter at chest height. There was a rot hole on a lateral branch, which did not ingress beyond 10 cm and therefore offers only limited roosting opportunities for bats. Lots of debris was present in the bottom of the small cavity but no evidence of bats was found. It had rough sides, indicating that it has not been used frequently by fauna.	Low
1036	Silver birch	Tree measures approximately 14 m in height and 0.3 m in stem diameter at chest height. Two rot holes were present where branches have fallen off. These were inspected with an endoscope and neither extended into a cavity.	Negligible
1489	Sycamore	Tree measures approximately 14 m in height and 0.4 m in stem diameter at chest height. The main stem had extensive ivy cover, which did not create any potential roosting features itself. There was a tear-out wound at the union of two stems at 8 m above ground level. This feature appeared to ingress; however, the tree was not climbed due to the presence of a fence on one side and a ditch on the other. Feature appeared to ingress.	High
1498	Cherry	Tree measures approximately 14 m in height and 0.4 m in stem diameter at chest height. There was a lot of damage to the main stem at low level (Plate 4.16). The cracks and crevices were inspected with an endoscope and torch and none of them extended to any significant depth. They were found to offer only limited roosting opportunities for individual bats.	Low

Table 4.3: Summary of Trees With Potential Roosting Features Within the Survey Area (cont)

Tree No.	Species	Description	BCT Suitability Class
A	Sweet chestnut	Tree measures approximately 16 m in height and 0.8 m in stem diameter at chest height. There was a large tear-out wound on the main stem, extending from 2-4 m above ground level, with cracks around it which lead into cavities. Hazard beams were also present on lateral branches at approximately 10 m above ground level and there was a broken limb with lateral cracks extending towards the main stem (Plate 4.17). This tree could not be climbed as it was deemed unsafe.	High
B	Silver birch	Tree measures approximately 12 m in height and 0.3 m in stem diameter at chest height. There was a small crack and a rot hole on the western aspect at approximately 9 m above ground level. When checked using binoculars and a torch, the hole did not ingress to any significant depth, offering only limited roosting opportunities for bats. The edges were rough and flaky indicating that it has not been used by fauna.	Low
Trees within area to the north of the old fort			
247 (Tag 1136)	Oak	Tree measures approximately 12 m in height and 0.6 m in stem diameter at chest height. There was a split in the end of an upper limb that was partially dead (Plate 4.18). However, this did not lead into any cavities.	Negligible
735 (Tag 795)	Oak	Tree measures approximately 12 m in height and 0.5 m in stem diameter at chest height. There was a small split in a limb on the northern aspect at approximately 8 m above ground level. This did not ingress to any significant depth, offering only limited roosting opportunities for bats. It was also rather exposed to the elements, so likely to only be used by opportunistic bats.	Low
736 (Tag 796)	Oak	Tree measures approximately 12 m in height and 0.5 m in stem diameter at chest height. There was a small rot hole on the western aspect at approximately 7 m above ground level. This was inspected and found to ingress beyond the length of the endoscope. The feature narrowed and bent around a corner. It was clear of cobwebs and debris, possibly indicating recent use by fauna. The internal substrates were distinctly smooth with significant staining, suggesting frequent use by fauna. No evidence of bats was recorded, but the whole feature could not be inspected.	High
1402 (Tag 309)	Oak	Tree measures approximately 14 m in height and 0.7 m in stem diameter at chest height. There was a hole at the end of a limb on the northern aspect at approximately 10 m above ground level. Holes were also present on the southern aspect of the main stem at 6 m and 7 m above ground level (Plate 4.19). These holes were checked and they did not ingress beyond 10 cm, offering only limited roosting opportunities for bats. A scar was present on the upper side of a lateral limb located above a covered walkway. Due to its position, this scar could not be inspected.	High
1528 (Tag 658)	Oak	Tree measures approximately 14 m in height and 0.7 m in stem diameter at chest height. There was a scar with a hole in it on the eastern aspect at approximately 8 m above ground level (Plate 4.20). There was also a hole on the northern aspect at 8 m above ground level. These holes were found to ingress 20 cm and they narrowed. Some debris and cobwebs were present, but no evidence of bats was recorded.	Moderate
1531 (Tag 655)	Oak	Tree measures approximately 14 m in height and 0.8 m in stem diameter at chest height. There was a dead hollow branch on the southern aspect at approximately 7 m above ground level (Plate 4.21). The hollow extended 30 cm and was quite dry inside despite it being slightly open. No evidence of bats was recorded.	High
1535 (Tag 663)	Oak	Tree measures approximately 14 m in height and 0.7 m in stem diameter at chest height. There was a split limb on the southern aspect at approximately 5 m above ground level (Plate 4.22). This split was found to ingress 20 cm and it contained a few cobwebs with a small amount of debris. No evidence of bats was recorded.	Moderate
1536 (Tag 664)	Sweet chestnut	Tree measures approximately 10 m in height and 0.5 m in stem diameter at chest height. Peeling bark and splits were present throughout the tree. Where accessible, features were checked and found to offer only limited roosting opportunities for bats. However, the tree was not limbed for safety reasons and there was no high anchor point.	Low

Table 4.3 (cont'd): Summary of Trees With Potential Roosting Features Within the Survey Area (cont)

Tree No.	Species	Description	BCT Suitability Class
1543 (Tag 679)	Oak	Tree measures approximately 12 m in height and 0.4 m in stem diameter at chest height. There was a hole on the eastern aspect at 8 m above ground level (Plate 4.23). This was inspected and found to ingress 15 cm. It had smooth sides and was clear of cobwebs and debris, possibly indicating frequent and recent use by fauna.	High
1564 (Tag 674)	Oak	Tree measures approximately 15 m in height and 0.7 m in stem diameter at chest height. There was minor dead wood in the canopy with peeling bark. The bark had peeled back to expose the feature, reducing its potential to support roosting bats. No evidence of bats was recorded.	Low
1565 (Tag 820)	Oak	Tree measures approximately 10 m in height and 0.4 m in stem diameter at chest height. Peeling bark was present on the southern aspect at approximately 8 m above ground level. This did not extend into any crevices or cavities suitable for use by bats.	Negligible
1566 (Tag 822)	Oak	Tree measures approximately 12 m in height and 0.5 m in stem diameter at chest height. There was a scar and rot hole at 10 m above ground level and multiple splits were present at the end of lateral branches (Plate 4.24). The rot hole extends 20 cm downwards and 20 cm upwards, creating suitable roosting opportunities for bats. Debris was present in the bottom of the feature, but there was no smoothing or staining. No evidence of bats was recorded.	High
1568 (Tag 824)	Oak	Tree measures approximately 15 m in height and 0.7 m in stem diameter at chest height. Rot holes were present at the end of branches on the western aspect at approximately 12 m above ground level. There was also a split in a branch stump on the northern aspect at approximately 9 m above ground level. A light covering of ivy was present on the main stem, but this did not create any potential roosting features (Plate 4.25). Due to the position of the tree next to the main entrance of a car park and close proximity to a building, the tree could not be climbed.	Moderate
1571 (Tag 849)	Oak	Tree measures approximately 9 m in height and 0.5 m in stem diameter at chest height. There was a split in the south-eastern aspect of the main stem at 5 m above ground level (Plate 4.26). This did not ingress to any significant depth, offering only limited roosting opportunities for bats. It contained leaf litter and cobwebs, indicating no recent use by fauna. It was also quite wet inside, so likely to only be used by opportunistic bats.	Low
1572 (Tag 848)	Oak	Tree measures approximately 12 m in height and 0.6 m in stem diameter at chest height. There was a scar on the eastern aspect at approximately 6 m above ground level and a hole on a lateral branch (Plate 4.27). The scar did not ingress to any significant depth, offering only limited roosting opportunities for bats. The hole in the branch was found to ingress 10 cm, but it was wet inside with no signs of being used by fauna. No evidence of bats was recorded.	Low
1573 (Tag 847)	Oak	Tree measures approximately 16 m in height and 0.8 m in stem diameter at chest height. There was a hole on the northern aspect at 7 m above ground level, and a scar with a hole on the south-eastern aspect at 7 m above ground level (Plate 4.28). These features connect but do not extend further into the tree. The cavity created by the two features extends 20 cm upwards and 20 cm downwards. It was predominantly clear of cobwebs, possibly indicating recent use by fauna. No evidence of bats was recorded.	High
1581 (Tag 840)	Oak	Tree measures approximately 15 m in height and 0.8 m in stem diameter at chest height. There was a hole in the southern aspect of the main stem at approximately 8 m above ground level. This feature did not ingress to any significant depth, offering only limited roosting opportunities for bats. It was exposed to the elements, so likely to only be used by opportunistic bats.	Low

Table 4.3 (cont'd): Summary of Trees With Potential Roosting Features Within the Survey Area

Plate 4.16: Tree 1498

Plate 4.17: Tree A

Plate 4.18: Tree 247

Plate 4.19: Tree 1402

Plate 4.20: Tree 1528

Plate 4.21: Tree 1531

Plate 4.22: Tree 1535

Plate 4.23: Tree 1543

Plate 4.24: Tree 1566

Plate 4.25: Tree 1568

Plate 4.26: Tree 1571

Plate 4.27: Tree 1572

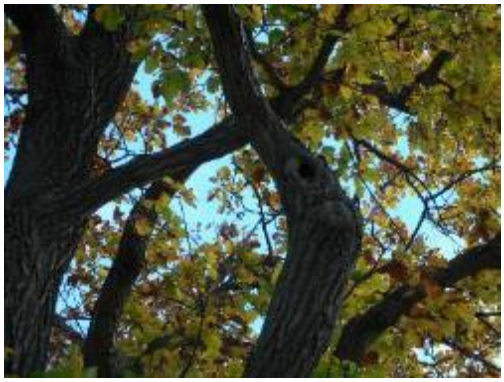

Plate 4.28: Tree 1573

4.5 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:

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 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, 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 have been decommissioned and as such are presently seldom or never used. Many of the buildings present were in a fairly poor state of repair, with a number of decommissioned 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 127 buildings have been identified as having high potential to support roosting bats, and 108 buildings have been identified as having low potential to support roosting bats.

5.3 ASSESSMENT OF TREES

The survey focused on trees located within the detailed planning application area, which includes the old fort and a small parcel of land located just to the north. The majority of the trees in these areas possessed no potential roosting features and were therefore considered to have negligible potential to support roosting bats. However, a small number of trees were noted to have potential roosting features. Of these, nine were considered to have high potential to support roosting bats, three were considered to have moderate potential to support roosting bats and ten were considered to have low potential to support roosting bats. Four further trees were subject to a detailed inspection and subsequently considered to have negligible potential to support roosting bats.

5.4 POTENTIAL IMPACTS ON 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. A recommendation regarding this further survey work is made in Chapter 6.

In addition, the proposed tree removal works have the potential to disturb or destroy a bat roost if bats are found to be roosting within the trees. 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 trees. 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 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 with High Roosting Potential

A total of 127 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 Nocturnal Emergence and Dawn Re-entry Bat Surveys of the buildings. The recommendations made within the report (RT-MME-127947-03) must be adhered to.

R2 Buildings with Low Roosting Potential

A total of 108 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 Nocturnal Emergence and Dawn Re-entry Bat Surveys of the buildings. The recommendations made within the report (RT-MME-127947-03) 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 Trees with High Roosting Potential

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

R5 Trees with Moderate Roosting Potential

A total of three trees have been identified as having moderate potential to support roosting bats. Bat Surveys: Good Practice Guidelines published by the Bat Conservation Trust (Collins, 2016) recommends that for trees with moderate bat roosting potential two separate survey visits (consisting of one dusk emergence and a separate dawn re-entry survey) be undertaken during the bat activity season to determine the presence/absence of roosting bats within the trees. The bat activity season extends from May to September. At least one of the surveys should be undertaken during the peak season between May and August. Should these surveys confirm the presence of roosting bats, it will be necessary to undertake additional surveys in order to inform a Natural England licence application.

R6 Trees with Low Roosting Potential

A total of ten trees were considered to have low potential to support roosting bats. If any of these trees are to be removed as part of the proposed works, then it is recommended that these trees are soft felled under the supervision of a Licensed Bat Worker to ensure that no bats are harmed during the works should bats have colonised the trees since the inspection was completed.

R7 Remaining Surveyed Trees

The remaining surveyed trees were considered to have negligible potential to support roosting bats. The survey data obtained for the site is valid for 12 months from the survey date. If proposed site works have not commenced within this timeframe it will be essential to update the survey effort to establish if the trees have developed features that could be used by roosting bats in the interim. In the unlikely event that a bat is found during works to the trees all works must immediately cease and a suitably qualified ecologist should be contacted.

R8 Tree Surveys for Future Phases

Further detailed surveys of trees located outside of the detailed application area should be undertaken prior to reserved matters applications for future development phases.

R9 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.

R10 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 C127947-02-01 – Preliminary Bat Roost Assessment – Buildings

Drawing C127947-02-02 – Preliminary Bat Roost Assessment – Trees

C127947-02-01

Legend

Buildings surveyed:

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

N

Project	Fort Halstead
Drawing	Preliminary Bat Roost Assessment - Buildings
Client	CBRE Ltd
Drawing Number: C127947-02-01	Revision: 00
Scale @ A3: 1:3500	Date: October 2018
Approved By: SB	Drawn By: CD

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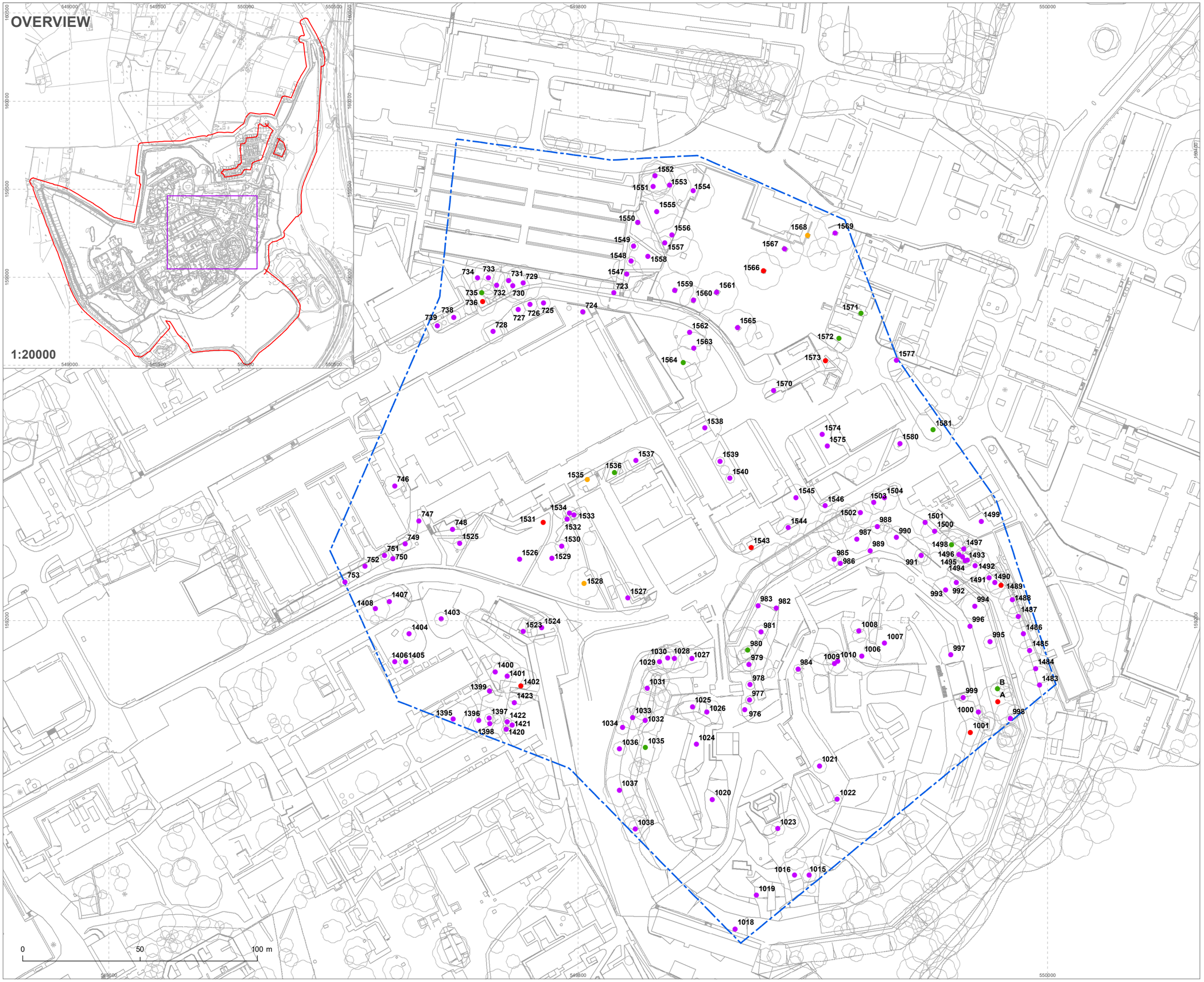

C127947-02-02

Legend

- Tree with high bat roost potential
- Tree with low bat roost potential
- Tree with moderate bat roost potential
- Tree with negligible bat roost
- Survey area
- Site boundary

Project	Fort Halstead
Drawing	Preliminary Bat Roost Assessment - Trees
Client	CBRE Ltd
Drawing Number: C127947-02-02	Revision: 00
Scale @ A3: 1:1500	Date: December 2018
Approved By: SB	Drawn By: CD

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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.