BIDWELLS

PEMBROKE COLLEGE, OLD QUAD: BAT REPORT

The proposed decarbonisation and refurbishment works at the Old Quad of Pembroke College include limited works within loft spaces.

The scope of works within loft spaces is limited to internal insulation and replacement of the dormer windows within the Old Quad building and Staircase 8. Some loft insulation is already present in these locations, and the proposed works include the increase in amounts of insulation and the repair of insulation where it is patchy or damaged.

Given the historic nature of the Pembroke College buildings, these works were considered to have the potential to impact on bats. Assessments of the areas of relevance have been undertaken by two Ecology Consultants: Ecology By Design and Nicholsons. These reports are included in the appendices of this note.

	REPORT	SCOPE	INVESTIGATION
Appendix 1	Ecology By Design, July 2023	Old Quad North Quad Staircases 13-15	Preliminary roost assessment of buildings conducted in March 2023. Emergence surveys conducted in May and June 2023.
Appendix 2	Nicholsons, September 2023	SCR Staircase 8 The Chapel Rokos Quad	Preliminary roost assessment of building conducted in August 2023. Emergence and re-entry surveys of the SCR, Staircase 8 and Chapel in August 2023.

This covering note to the bat assessments is provided to clarify the scope of the present proposal, as the two reports include works which are not being applied for under the current application.

The proposed works which could affect bats are limited to the Old Quad (loft insulation and works to dormer windows) and Staircase 8 (loft insultation). The proposals do not affect the North Quad Staircases 13-15, the Chapel, the SCR or the Rokos Quad, and therefore the discussion of results related to these elements can be ignored of the purposes of this Full Planning and Listed Building Consent application.

Scope of Nicholsons Report

Scope of Ecology By Design Report

Scope of proposed works affecting loft spaces

APPENDIX 1

ECOLOGY BY DESIGN, JULY 2023

Bat Report

Pembroke College, Oxford

On behalf of Pembroke College

July 2023

Ecology by Design Ltd,

Hampden House, Monument Park, Chalgrove, Oxon OX44 7RW.

Tel 01865 893346 **www.ecologybydesign.co.uk**

Project Code	Title	Date of Issue
EBD02924	Pembroke College, Oxford	14 July 2023

	Name	Date
Prepared by	Aoife Sweeney BA (Hons), MSc, QCIEEM	10 July 2023
Checked by	Laura Grant BSc (Hons), MCIEEM	14 July 2023

ecologybydesign

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1 Executive Summary

Report purpose	This report identifies the potential ecological impacts, mitigation, compensation and enhancement measures in relation to extension works proposed at St Aldate's, Oxford, OX1 1DW.
Date and methods of survey	A preliminary roost assessment of the Old Quad and Cottages was conducted in March 2023 which identified the need for further survey for bats comprising two emergence surveys conducted in May and June 2023.
Key findings	The site, situated in Oxford, Oxfordshire, comprises the Old Quad and Cottages 13 -15 in the North Quad. • A preliminary roost assessment of the Old Quad and the cottages concluded that they had moderate potential to support roosting bats, with a low number of pipistrelle droppings within a loft void of the Old Quad; • Two dusk emergence surveys were undertaken during which no bat roosts were identified within the buildings; and • Three common species of bat were recorded actively foraging and commuting in and around the site in low numbers.
Potential impacts	No bat roosts with potential to be impacted by the proposals were identified within the Old Quad or Cottages during the surveys therefore roosting bats do not pose a constraint to the proposed refurbishment works. In the absence of mitigation, the proposals may result in the disturbance of bats foraging and commuting within the site through increased levels of lighting.
Measures to avoid and/or reduce impacts and deliver biodiversity enhancements	Recommendations are made to: (R1) protect foraging and commuting bats by incorporating sensitive lighting, (R2) enhance the site for bats and (R3) adopt a precautionary method of works. These measures will ensure the development is compliant with best practice guidance and national and local planning policy.

2 Introduction

2.1 Background and Proposed Works

2.1.1 Ecology by Design Ltd was commissioned by Pembroke College to undertake bat surveys of two areas of Pembroke College, St. Aldate's, Oxford, OX1 1DW (central grid reference SP 51333 05965).

2.1.2 The proposals include:

- Refurbishment of the dormers within the Old Quad (the loft spaces will not be impacted by the proposals); and
- Extensive refurbishment of the 'North Quad Staircase 13-15' from herein referred to as 'the Cottages'.

2.2 Site Description

2.2.1 The Cottages are terraced with pitched roofs situated along Pembroke Street, St Aldate's, Oxford. The Old Quad is a square of terraced buildings around a courtyard with dormers, situated between Pembroke Square and Brewers street, St Aldate's, Oxford.

2.3 Aims of Report

2.3.1 This report presents an appraisal of the potential impacts of the proposed development works on bats. The report outlines recommendations for avoidance, mitigation, compensation, and enhancement measures.

2.4 Personnel

2.4.1 The project was led by Ecology by Design Assistant ecologist Aoife Sweeney BSc, MSc, QCIEEM who has two years of experience in ecological consultancy including bat surveys and assessments of this scale.

2.4.2 Project supervision and review of the report was provided by Associate Laura Grant BSc (Hons) MCIEEM who has been an ecological consultant for 15 years.

2.5 Limitations

2.5.1 The narrow width of Pembroke Street prevented a full view of the northern aspect of the roofs of the Cottages. Thermal imaging cameras were used to make observations of any bats commuting over or from the roof, with radio contact to surveyor south of the buildings to communicate regarding flight lines, preventing this being a significant constraint.

3 Methods

3.1 Desk Study

3.1.1 Records of bats within a 2km radius of central OS national grid reference SP 51409 08527 were requested from Thames Valley Environmental Records Centre (TVERC) with records returned on 29th June 2023.

3.1.2 A search of MAGIC (www.magic.gov.uk, accessed 29 June 2023) was undertaken for granted European Protected Species Mitigation (EPSM) licences granted for bats within 2km of the site.

3.2 Preliminary Roost Assessment

3.2.1 An external and internal Preliminary Roost Assessment was conducted of all buildings on site on the 2nd of March 2023 by Ecology by Design. The assessment was based on the guidance in Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016) and government guidance (Gov.uk., 2015).

3.2.2 The survey was conducted by Associate Ecologist Laura Grant (Natural England Licence Number Level 2 – 2015-10871-CLS-CLS) and Assistant Ecologist Aoife Sweeney.

3.2.3 The surveyors used a high-power torch (LEDLenser Lamp) and 10x42mm close focusing binoculars an endoscope and 3.8m telescopic ladder to inspect features of interest. All external areas of the buildings were inspected as well as internal areas. Evidence searched for included the presence of free hanging bats and bats within gaps and crevices, bat droppings, urine stains, rub marks, scratch marks and feeding remains.

3.3 Emergence and Re-Entry Surveys

3.3.1 Two dusk emergence surveys were conducted of buildings which had suitability for roosting bats to confirm presence or likely absence of roosting bats. The surveys undertaken within the site are detailed in Table 3.1.

3.3.2 **Table 3.1:** *Details of bat roost surveys completed in 2023*

Date	Building ID	Surveyors	Type
18 May 2023	Old Quad	Laura Grant (2015-10871-CLS-CLS) and Nick Boyd,	Dusk
	Cottages	Danielle Linton (2015-13416-CLS-CLS), Ross Hellier, Daniel Bardey (2023-10979-CL18-BAT) and Rebecca Dunn	Dusk

08 June 2023	Cottages	Anna Spence, Rebecca Dunn, Jess Botha and Daniel Bardey (2023-10979-CL18-BAT).	Dusk
	Old Quad	Nick Boyd and Danielle Linton (2015-13416-CLS-CLS)	Dusk

3.3.3 The surveys were based on the guidance included in the Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016). Bat detectors utilized included Elekon Batlogger M detectors to record any bats emerging from or re-entering the buildings.

3.3.4 Thermal imaging cameras and infra-red video cameras were used to observe and records bats during emergence surveys of the tunnels as follows:

- TrackIR pro 19mm thermal imaging monoscopes were used, recording at 1280x960 HD display and 50Hz frame rate.
- Canon XA40 infrared cameras alongside a ZL-ZT T8X15-140 pair of InfraRed lamps (powerful infrared illuminators) were used, recording at 3840x2160 (150 Mbps) and 25p video frame rate.

3.3.5 The emergence surveys commenced approximately 15 minutes before sunset and lasted until 1.5 hours after sunset.

3.3.6 Surveyors were located on each aspect of the buildings, focused on features identified during the preliminary roost assessment as being suitable for roosting bats. During the survey emergence and/or re-entry points were mapped, species were identified (where possible) and flight lines were noted. The results of the survey are detailed in Figure 1 in Appendix 2.

3.4 Limitations/Constraints

3.4.1 The wildlife and wider ecological interest of a site can change. The report presented here is a statement of the findings of the surveys carried out between March and June 2023.

3.4.2 Any appreciable delay in making reference to this report may necessitate a re-survey.

4 Results and Interpretation

4.1 Desk Study

4.1.1 392 records of at least 12 species of bat were returned by TVERC within 2km of the site. 10 granted Protected Species Mitigation Licences were located within 2km of the site during a search of MAGIC (accessed 23rd June 2023).

Table 4.1: *Details of bat records located within 2km of the site*

Species of Bat	Latin Name	Date of Most Recent Record	Approx. Location of Nearest Record	Records
Unidentified bats	*Chiroptera* sp.	2019	0.63Km	15
Daubenton's	*Myotis daubentonii*	2018	0.25Km	26
Leisler's	*Nyctalus leisleri*	1995	1.01Km	2
Noctule	*Nyctalus noctule*	2020	0.42Km	33
Pipistrelle species	*Pipistrellus* sp.	2017	0.26Km	79
Common pipistrelle	*Pipistrellus pipistrellus*	2020	0.17Km	96
Soprano pipistrelle	*Pipistrellus pygmaeus*	2021	0.42Km	64
Brown long-eared	*Plecotus auratus*	2020	0.42Km	13
Alcathoe bat	*Myotis alcathoe*	2017	1.51Km	2
Lesser horseshoe bat	*Rhinolophus hipposideros*	2017	1.23Km	3
Nathusius' pipistrelle	*Pipistrellus nathusii*	2017	1.51Km	3
Myotis bat species	*Myotis Sp.*	2020	0.47Km	29
Long eared bat species	*Plecotus Sp.*	2017	1.46Km	3
Natterers bat	*Myotis nattereri*	2017	0.72Km	20
Serotine	*Eptesicus serotinus*	2017	1.78Km	1
Barbastelle	*Barbastella barbastellus*	2017	1.13Km	1
Nyctalus bat species	*Nyctalus Sp.*	2017	0.61Km	3

Table 4.2: *Details of granted protected species mitigation licenses located within 2km of site*

Species of Bat	Start Date	Approx. Location	Resting Place	Breeding Site
Common pipistrelle (*Pipistrellus pipistrellus*) and Soprano pipistrelle (*Pipistrellus pygmaeus*)	2016	0.6 km NE	Yes	No
Common pipistrelle (*Pipistrellus pipistrellus*)	2016	1.5 km N	Yes	No
Common pipistrelle (*Pipistrellus pipistrellus*)	2016	1.5 km N	Yes	No
Daubenton's bat (*Myotis daubentoniid*)	2017	0.5 km S	Yes	Yes
Common pipistrelle (*Pipistrellus pipistrellus*)	2017	0.7 km NE	Yes	No
Soprano pipistrelle (*Pipistrellus pygmaeus*)	2018	0.7 km NW	Yes	No
Soprano pipistrelle (*Pipistrellus pygmaeus*)	2019	1.4 km N	No	Yes
Brown long-eared bat (*Plecotus auritus*) and Soprano pipistrelle (*Pipistrellus pygmaeus*)	2019	1.5 km NE	Yes	No
Brown long-eared bat (*Plecotus auritus*) and Soprano pipistrelle (*Pipistrellus pygmaeus*)	2019	1.5 km NE	Yes	No
Common pipistrelle (*Pipistrellus pipistrellus*)	2020	1.8 km SE	No	Yes

4.2 Preliminary Roost Assessment

4.2.1 Table 4.3 includes descriptions of the buildings within the site, any evidence of roosting bats found and an assessment of their suitability to support roosting bats (see photographs in Appendix 1 and survey plan in Appendix 2).

Table 4.3: *Suitability of buildings for roosting bats and summary of roosts found*

Building Reference	Description	Assessment
Cottages-Staircase 13 	Staircase 13 is a mid-terraced two-storey building with jettied floors and lime rendering. It has a pitched slate roof with gable-ends to the east and west. Potential features included gaps in render providing access beneath fascia on the southern aspect. Gaps at the eaves beneath roof tiles on the western aspect and a hole at first floor level into the wall beneath the gutter. The loft space comprises a plaster boarded room with a small void above it which was not accessible. A small hole indicated a modern roofing membrane present above the boarding. No evidence of bats was found within the loft space.	Moderate
Cottages-Staircase 14 	A mid-terraced two-story building of Cotswold stone which has a complex roof structure with slate tiles. Features that render the building suitable for bats are gaps beneath the wooden soffit box on the southern gable end, gaps beneath ridge tiles, missing tiles on the eastern aspect, gap in mortar at the ridge near the central chimney and a small gap above the bay window on the northern aspect. The loft space is open with a modern roofing membrane beneath the tiles on the northern aspect and a felt material on the southern aspect. A 2m x 1m section of lath and plaster wall is broken within the loft, enabling access into the western section of the Staircase 15 loft. No evidence of bats was found internally.	Moderate
Cottages-Staircase 15 	This is a mid-terraced building with gable-ends to the east and west. The building comprises two sections; a one-storey rendered building with a gambrel slate roof and gable-fronted dormers, and a two-storey. External features suitable for bats included lifted lead flashing around the dormer window on the southern aspect and gaps beneath ridge tiles. Internally, the loft is a small, open space with modern roofing membrane beneath tiles on the northern aspect and a felt material on the southern aspect. A 2m x 1m section of lath and plaster wall is broken, enabling access into the Staircase 14 loft. There is a 50cm x 50cm hole in the brick wall between the western and eastern sections of Staircase 15. Two droppings (<5 yr old) were found in the loft space which had characteristics of pipistrelle (*Pipistrellus sp.)* bats. The eastern section of Staircase 15 is c. 3m height to ridge, with a cluttered space due to water storage tanks. No evidence of bats was found internally.	Moderate

Building Reference	Description	Assessment
The old quad 	The quad buildings comprise two storey Cotswold stone walls with accommodation built into the slate roofs which have 19 Casement Dormer Windows and 11 Bay Dormer Windows facing the central quad. The dormer windows are not visible from the loft spaces which were internally inspected. Each loft space has bitumen-type felt. The Casement Dormer Windows comprise small dormers with wooden window frames, lead sides, ornate rendered frontages and pitched slate roofs with three ridge tiles (see Photographs 1 and 2). These frequently have gaps beneath the ridge tiles (on Dormers D_03, D_04, D_05, D_07, D_08, D_09, D_11, D_12, D_13, D_14, D_15, D_16, D_17, D_18 and D_19) of moderate suitability, and gaps beneath the ledge flashing on the sides (on Dormers D_04, D_05, D_15, D_16, D_17, D_18 and D_19) of low suitability. The gaps beneath the ridge tiles may provide access to the small voids which are present above each of the Casement Dormer Windows which are sealed and therefore unable to be internally inspected. The gaps beneath the ledge flashing on the sides provide opportunities for single crevice-dwelling bats to roost and some rarely may provide access between the slates and felt, providing opportunities for greater numbers of crevice-dwelling bats. The Bay Dormer Windows comprise large wooden bay windows with lead sides and flat lead roofs. These frequently have minor shallow gaps beneath the ledge flashing on the sides (B_02, B_04, B_05, B_06, B_07, B_09 and B_10) of low suitability and rarely have more significant gaps beneath the led flashing on the sides, beneath the valleys or at the base of the windows (B_01 and B_03) of moderate suitability. The shallow gaps may provide opportunities for single crevice-dwelling bats to roost. The more significant gaps may provide access to voids between the slates and felt, providing opportunities for greater numbers of crevice-dwelling bats. Evidence of bats found within the loft spaces included: - Two bat droppings >1yr old with characteristics of pipistrelle (Pipistrellus sp.) bats within the loft above Staircase 1; and - Six bat droppings >1yr old with characteristics of pipistrelle bats within the loft above Staircase 4. There was no evidence of bats within the remainder of roof spaces and none of the dormers provide direct access into the internal loft spaces.	Moderate

4.3 Emergence and Re-Entry Surveys

4.3.1 The survey timings and weather conditions for the dusk emergence surveys are detailed in Table 4.4 below, with weather conditions being optimal for both surveys.

Table 4.4: *Survey weather conditions*

Date	Sunset/ Sunrise	Start	End	Weather
18 May 2023	20:56	20:41	22:26	16°C to 13°C, Cloud 6/8[1] to 7/8[1], 0-1 Beaufort[2]
08 June 2022	21:25	21:10	22:55	22°C to 20°C, Cloud 2/8 to 1/8, 1-0 Beaufort

Dusk emergence survey 18th May 2023

4.3.2 No bats were recorded emerging from either the Old Quad or the Cottages during the survey. Two species were recorded during the survey between 21:15 and 22:25 comprising common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*). Common and soprano pipistrelle individuals were seen by surveyors foraging and commuting in the area. Activity levels throughout the survey were very low, likely reflecting the sub-optimal city-centre location and high levels of lighting within the site.

Dusk emergence survey 15th June 2022

4.3.3 No bats were recorded emerging from either the Old Quad or the Cottages during the survey. Two species of bat were recorded between 21:46 -22:50 comprising common pipistrelle and noctule (*Nyctalus noctula*). Low level commuting activity from these species were recorded and common pipistrelle was also found to be foraging in the area. Activity throughout the survey was low as per the previous survey.

4.3.4 The thermal imaging data was analysed using motion meerkat and no emergences were recorded.

4.4 Site/ Species Valuation for Bats

4.4.1 As the refurbishment work on the Old Quad is focussed on the dormers (with no other re-roofing required) surveyors did not observe every aspect of the building (just two surveyors were located with cameras within the Quad itself). As such, it is possible that the eight old pipistrelle droppings recorded within the loft spaces of the Old Quad originated from a bat which gained access to the loft space from outside the Quad on the opposite aspect of the

[1] Cloud cover is measured using the system called oktas. The visible sky is divided into eight and cloud presence is determined within each section. A value of one to eight is then assigned (1 okta being cloudless to 8 oktas being total cloud cover).

[2] The Beaufort scale is an empirical measure from 0-12 which relates wind speed to observed conditions. 0- Calm, 1- Light air, 2- Light breeze, 3- Gentle breeze, 4- Moderate breeze, 5- Fresh breeze, 6- Strong breeze, 7- Moderate gale, 8- Fresh gale, 9- Strong gale, 10- Whole gale, 11- Storm, 12- Hurricane force.

pitched roofs from the dormers. It is considered likely that should an active roost be present within a loft space this would comprise an individual bat given the historical evidence and very low level of bat activity observed within the site.

4.4.2 The possible presence of an individual pipistrelle within the lofts is not considered to be of significance as the individual would not be disturbed as a result of the proposals and no access points will be lost or modified.

4.4.3 In summary, the site is considered to be of negligible value in relation to roosting bats but has some intrinsic value as foraging and commuting habitat.

5 Potential Impacts and Recommendations

5.1 Bats

5.1.1 No bat roosts with potential to be impacted by the proposals were identified within the Old Quad or Cottages during the surveys therefore roosting bats do not pose a constraint to the proposed refurbishment works. Nevertheless, recommendations are made to: (R1) protect foraging and commuting bats by incorporating sensitive lighting, (R2) enhance the site for bats and (R3) adopt a precautionary method of works. These measures will ensure the development is compliant with best practice guidance and national and local planning policy.

5.1.2 **Recommendation R1:** Any new lighting for the development will be designed sensitively in accordance with industry standard guidance (BCT & ILP, 2018) and the following principles will be adopted:

- Not up-lighting buildings or trees;
- Where lighting is required, ensuring:

  - Light levels are less than 3 Lux;

  - LED luminaires with a warm white spectrum ideally <2700 Kelvin (to avoid blue / UV elements);

  - Bollard or low-level downward directional luminaires are used and mounted on the horizontal (with no upward tilt); and

  - Security lighting, if required, is motion-activated with short (< 1 minute) timers.

5.1.3 **Recommendation R2:** In line with planning policy, which requires developments to enhance the site for wildlife, one woodcrete / woodstone bat box to be installed immediately east of the Old Quad at ///courier.shin.loving on the west facing wall at c. 3m height. See example in Appendix 3.

5.1.4 **Recommendation R3:** A precautionary method of works will be adopted to include:

- A licensed bat worker delivering a toolbox talk to contractors and project managers regarding bats and their protected status, detailing features of the buildings with suitability for roosting bats and how they should be sensitively removed by hand, inspecting the undersides of suitable features to identify any bats which may be present.
- In the unlikely event a roosting bat is encountered, all works must stop and a bat licensed ecologist consulted to identify an appropriate way forward (likely securing an Earned Recognition bat licence to enable the works to lawfully resume).

6 Relevant Legislation and Policy

6.1 Exit from European Union

6.1.1 The Conservation of Habitats and Species Regulations 2017 (as amended), referred to as the '2017 Regulations,' are one of the pieces of domestic law that transposed the land and marine aspects of the Habitats Directive (Council Directive 92/43/EEC) and certain elements of the Wild Birds Directive (Directive 2009/147/EC) (known as the Nature Directives). Changes to the 2017 Regulations have been made by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (referred to as the '2019 Regulations') to transfer functions from the European Commission to the appropriate authorities in England and Wales.

6.1.2 The amendments prescribed by the 2019 Regulations allow existing protections afforded by current wildlife legislation and transposed EC Council Directives to be operable from 01 January 2021.

6.1.3 The 2019 Regulations protect rare and vulnerable birds and the habitats that they depend upon. This is achieved in part through the classification of Special Protection Areas (SPAs). The Habitats Directive aims to protect plants, habitats and animals other than birds. This is achieved in part through the creation of Special Areas of Conservation (SACs). SPAs and SACs are collectively referred to as the 'National Site Network'.

6.1.4 Designated Wetlands of International Importance (known as Ramsar sites) do not form part of the National Site Network, however, all Ramsar sites remain protected in the same was as SACs and SPAs.

6.1.5 At the time of writing (June 2022), the 2019 Regulations are still Draft; therefore the 2017 Regulations have been referred to within this report.

6.2 National Planning Policy Framework

6.2.1 The National Planning Policy Framework (NPPF) was updated in July 2021 (MHCLG, 2021) thereby replacing the older version of February 2019. The new framework sets out in section 15 that to protect and enhance biodiversity and geodiversity, plans should:

- identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation and

- promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

6.2.2 When determining planning applications, local planning authorities should apply the following principles:

- if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

6.2.3 The following should be given the same protection as habitats sites:

- potential Special Protection Areas and possible Special Areas of Conservation;
- listed or proposed Ramsar sites; and
- sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

6.2.4 The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

6.3 Local Planning Policy

6.3.1 The Oxford City Council Local Plan 2016-2036 was adopted in June 2020. The following policies are of relevance to this development:

6.3.2 **Policy G2: Protection of biodiversity and geo-diversity**

6.3.3 Development that results in a net loss of sites and species of ecological value will not be permitted.

6.3.4 Sites and species important for biodiversity and geodiversity will be protected. Planning permission will not be granted for any development that would have an adverse impact on sites of national or international importance (the SAC and SSSIs), and development will not be permitted on these sites, save where related to and required for the maintenance or enhancement of the site's importance for biodiversity or geodiversity.

6.3.5 Development proposed on land immediately adjacent to the SSSIs should be designed with a buffer to avoid disturbance to the SSSIs during the construction period.

6.3.6 On sites of local importance for wildlife, including Local Wildlife Sites, Local Geological Sites and Oxford City Wildlife Sites, on sites that have a biodiversity network function, and where there are species and habitats of importance for biodiversity that do not meet criteria for individual protection, development will only be permitted in exceptional circumstances whereby:

6.3.7 there is an exceptional need for the new development and the need cannot be met by development on an alternative site with less biodiversity interest; and

6.3.8 adequate onsite mitigation measures to achieve a net gain of biodiversity are proposed; and

6.3.9 where this is shown not to be feasible then compensation measures will be required, secured by a planning obligation.

6.3.10 Compensation and mitigation measures must offset the loss and achieve an overall net gain for biodiversity. For all major developments proposed on greenfield sites or brownfield sites that have become vegetated, this should be measured through use of a recognised biodiversity calculator. To demonstrate an overall net gain for biodiversity, the biodiversity calculator should demonstrate an improvement of 5% or more from the existing situation. Offsetting measures are likely to include identification of appropriate off- site locations/projects for improvement, which should be within the relevant Conservation Target Area if appropriate, or within the locality of the site. When assessing whether a site is suitable for compensation, consideration will be given to the access, enjoyment and connection to nature that the

biodiversity site to be lost has brought to a locality. A management and monitoring plan might be required for larger sites. The calculation should be applied to the whole site.

6.4 Bats

6.4.1 Bats and their roost sites are protected by UK legislation.

6.4.2 The Wildlife and Countryside Act (1981) (as amended) makes it an offence to:

- Intentionally kill, injure or take a bat;
- Possess or control any live or dead specimen or anything derived from a bat;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat; and
- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for that purpose.

6.4.3 Additionally, The Conservation of Habitats and Species Regulations 2017 (as amended) make it an offence to:

- Deliberately capture or kill a bat;
- Deliberately disturb a bat;
- Damage or destroy a breeding site or a resting place of a bat; and
- Keep, transport, sell or exchange or offer for sale or exchange a live or dead bat or any part of a bat.

7 References

BCT & ILP (2018). *Guidance Note 08/18 Bats and artificial lighting in the UK.* Bats and the Built Environment series

Collins, J. (ed.) (2016). *Bat surveys for Professional Ecologists: Good Practice Guidelines (3rd edn).* The Bat Conservation Trust, London.

Oxford City Council (2020). Local Plan 2036 https://www.oxford.gov.uk/info/20067/planning_policy/1311/oxford_local_plan_2016-2036 (accessed 20th May 2022)

Appendix 1 - Photographs of Old Quad

Photograph 1: Western section

Photograph 2: Eastern section

Photograph 3: Northern section

Photograph 4: Western section

Photograph 5: Northern loft internally

Photograph 6: Northern loft internally

Appendix 2 - Pictures of Student Accommodation Cottages

Photograph 7: Northern aspect

Photograph 8: Southern aspect

Photograph 9: Central loft

Photograph 10: Southern aspect

Photograph 11: Northern aspect

Photograph 12: Northern aspect

Appendix 3 - Proposed Enhancement

Products	Description
	**Beaumaris Woodstone bat Box** Suitable for hanging on external walls and made of long lasting woodstone, this bat box has a narrow internal cavity favoured by crevice-roosting species such as soprano pipistrelle. With an entrance hole at the bottom, this box is self-cleaning and requires little-no maintenance. https://www.nhbs.com/beaumaris-woodstone-bat-box

APPENDIX 2

NICHOLSONS, SEPTEMBER 2023

NICHOLSONS

Leading solutions for the natural environment

Preliminary Roost Assessment & Bat Nocturnal Survey Report

Pembroke College

Chapel Quad and ROKOS Quad

Ref:	Client No. 4461
Version:	1
Date:	September 2023
Author:	Rachel Jackson
Position:	Ecological Consultant

Northamptonshire Office
7-8 Melbourne House
Corbygate Business Park
Weldon
Northamptonshire
NN17 5JG
01536 408 840
contact@nicholsonsgb.com

Oxfordshire Office
The Park
North Aston
Oxfordshire
OX25 6HL

01869 340342
contact@nicholsonsgb.com

www.nicholsonsgb.com

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DOCUMENT CONTROL SHEET

Ecological Team	
Jo Alderton BA (Hons) BSc (Hons) PGDip Law	Ecological Team Manager
Kate Rooney BSc (Hons) MSc ACIEEM	Senior Ecological Consultant
Natasha Hannah-Lyons BSc (Hons)	Ecological Consultant
Rachel Jackson BSc (Hons)	Ecological Consultant
Elliot Williams BSc (Hons)	Ecological Consultant
Rachel Crapper BSc (Hons) MSc	Assistant Ecological Consultant
Charlotte Quigley BSc (Hons)	Graduate Ecological Consultant
Marie Allcoat	Project Administrator

REVISION HISTORY

Rev	Description of change	Date	Initials
1	Original report	14/09/2023	RJ

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DISCLAIMER

It should be noted that the information above provides details of the Site's current ecological situation. In the event that the proposed development does not commence within 12 months of the date of this report, further advice should be sought from a suitably qualified ecologist as to whether the information provided requires updating in light of changing ecological conditions.

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1. INTRODUCTION

Terms of Instruction

1.1 This report has been commissioned by Pembroke College. It provides further detail on the likely usage of a series of buildings within Chapel Quad and ROKOS Quad, Pembroke College (hereafter referred to as "the Site") to support roosting bats.

Report Limitations

1.2 This is an ecological report and as such no reliance should be given to comments relating to buildings, engineering or other unrelated matters.

Documents Provided

1.3 No formal plans were provided at the time of commission.

Site Description

1.4 Chapel Quad is located at OS grid reference SP 51305 05982 and ROKOS Quad is located at SP 51257 05925.

1.5 At the time of the assessment, Chapel Quad and ROKOS Quad comprised buildings and hardstanding, with areas of open amenity grassland spaces with associated introduced planting, measuring approximately 1.2ha in area.

1.6 The Site location plan is provided below at **Figure 1**. A plan of the buildings within the Site is provided at **Figure 2**.

Aim of the Study

1.7 The purpose of this report is to provide an assessment of the suitability of the Site for bats and to provide an assessment of whether the Site is being used by roosting bats.

Proposed Development

1.8 The SCR building, the Chapel and 'Staircase 8' (SC8) within the Chapel Quad are to have works on the roof to improve insulation. The buildings within the ROKOS Quad will have plant installed on the roof spaces. The combination of these works is hereafter referred to as the "Proposed Development".

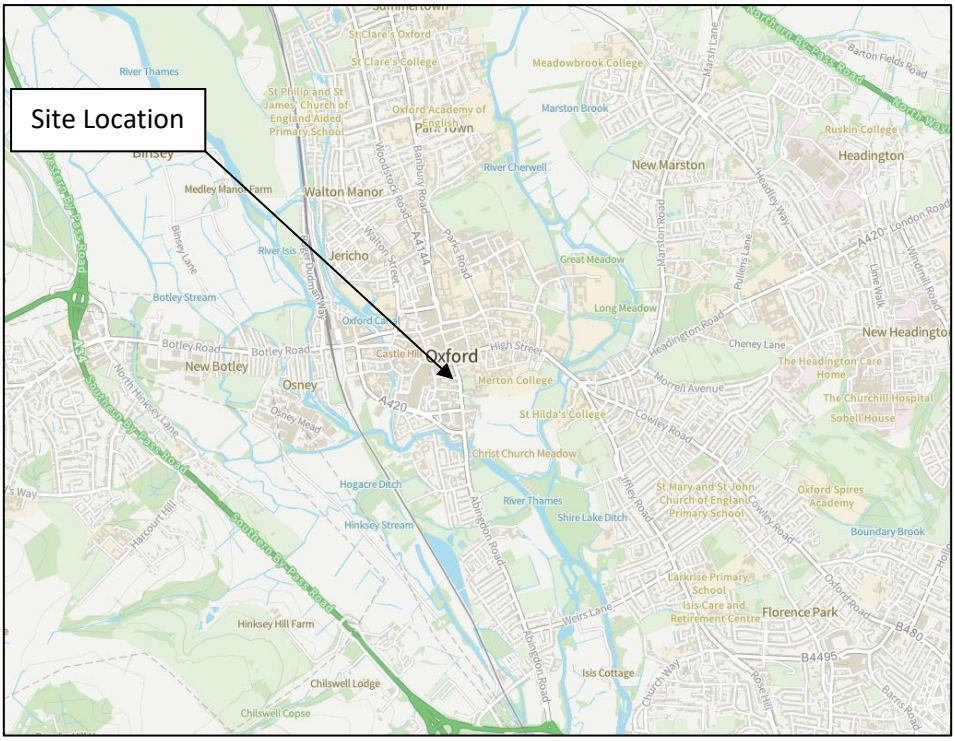

Figure 1: Site location plan

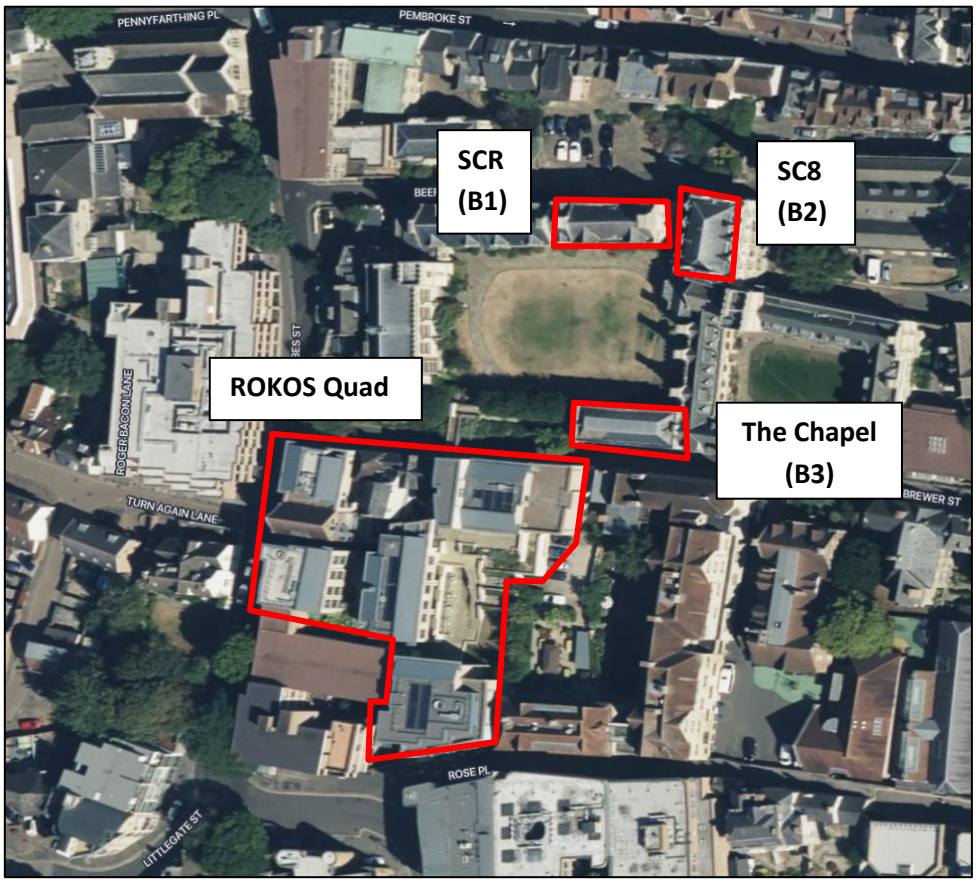

Figure 2: Building layout plan

2. METHODOLOGY

2.1 The methodology for the ecological assessment may be split into two main areas: preliminary roost assessment and nocturnal surveys. These are discussed in more detail below.

Preliminary Roost Assessment

2.2 An internal and external assessment of the buildings within the Site was undertaken to determine its potential to support roosting bats.

2.3 The inspection was conducted on 7th August 2023 in reasonable weather conditions (50% cloud cover, BFT 2, temperature 19°C).

2.4 The survey was undertaken by Rachel Jackson and Rachel Crapper and included a detailed check of all suitable features for bats. Features searched and checked included cracks, wall cavities, enclosed roof voids and open joints. Small squeeze spaces such as behind timber boarding, shelving and insulation fitted on the walls were also examined.

2.5 A pair of binoculars (8x44mm), as well as a range of larger and smaller hand torches (e.g. 1 million candle power to 200 lumens) were used where appropriate.

2.6 A 4m surveyor's ladder was also used to allow aerial features to be checked where accessible and safe to do so and to gain access into loft voids where present.

2.7 As part of the survey, actual bats, and signs of their usage including droppings, feeding remains and urine staining were also searched for as part of the assessment.

2.8 Based on the findings of the assessment each building was rated as being of negligible, low, moderate or high suitability to support roosting bats based on the type and number of suitable bat features present, in accordance with best practice guidance, Bat Conservation Trust (2016) Bat Surveys: Good Practice Guidelines 3rd Edition.

1. High Suitability – 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;

2. Moderate Suitability – 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 – this assessment is irrespective of species conservation status, which is established after presence is confirmed).

3. Low Suitability – 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 by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).

4. Negligible Suitability – negligible habitat features on site likely to be used by roosting bats.

Nocturnal Surveys

2.9 The emergence and dawn re-entry survey methods used were based on survey guidelines published by the Bat Conservation Trust (2016).

2.10 One emergence survey and one dawn re-entry survey were undertaken covering the north and south elevations of buildings B1-B3 within the Chapel Quad.

2.11 As part of each assessment, surveyors were located around the Site so as to ensure comprehensive coverage. To supplement the assessments, two Sony HDR-SR10 cameras with infrared illuminator were also used to monitor the north elevation of B1 and B3.

2.12 Surveyors were equipped with full spectrum ultrasound detectors (Echometer Touch 2 Pro) to listen for bat calls. Recordings from these detectors were recorded to enable subsequent analysis.

2.13 The dusk emergence survey commenced 15 minutes before sunset and concluded at least 90 minutes afterwards. The dawn re-entry survey commenced 90 minutes before sunrise and concluded at sunrise.

2.14 Recorded calls were later converted using Kaleidoscope software and manually analysed using AnalookW. Sonograms from the recorded files were compared against the reference classifiers and example sonograms for different bat species in Russ (2012).

2.15 **Table 1** provides a summary of the survey effort for the nocturnal surveys within the Site.

2.16 The nocturnal bat surveys were conducted on the 7th August and 22nd August 2023 in good weather conditions (see **Table 1** for more details).

Table 1: Summary of Survey Effort

Building	Date	Type of Survey	Number of Surveyors	Equipment Used	Timings	Atmospheric Conditions
B1	07/08/2023	Dusk emergence survey	3	Echometer Touch 2 Pro, Sony HDR-SR10 with infrared illuminator	20:29 (start) 20:44 (sunset) 22:14 (finish)	BFT 3-2, 17°C - 14°C, 20-50% cloud cover
	22/08/2023	Dawn re-entry survey	3	Echometer Touch 2 Pro, Sony HDR-SR10 with infrared illuminator	04:31 (start) 06:01 (sunrise) 06:01 (finish)	BFT 1-1, 16°C-16°C, 80-100% cloud cover
B2	07/08/2023	Dusk emergence survey	3	Echometer Touch 2 Pro	20:29 (start) 20:44 (sunset) 22:14 (finish)	BFT 3-2, 17°C - 14°C, 20-50% cloud cover
	22/08/2023	Dawn re-entry survey	3	Echometer Touch 2 Pro	04:31 (start) 06:01 (sunrise) 06:01 (finish)	BFT 1-1, 16°C-16°C, 80-100% cloud cover
B3	07/08/2023	Dusk emergence survey	3	Echometer Touch 2 Pro, Sony HDR-SR10 with infrared illuminator	20:29 (start) 20:44 (sunset) 22:14 (finish)	BFT 3-2, 17°C - 14°C, 20-50% cloud cover
	22/08/2023	Dawn re-entry survey	3	Echometer Touch 2 Pro, Sony HDR-SR10 with infrared illuminator	04:31 (start) 06:01 (sunrise) 06:01 (finish)	BFT 1-1, 16°C-16°C, 80-100% cloud cover

3. LEGISLATION

Legislation

3.1 In the United Kingdom all bat species, their breeding sites and resting places are fully protected by law under Schedule 5 of the Wildlife & Countryside Act (1981) (as amended) and as a "European protected species" under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended).

3.2 As a result, it is against the law to:

- Deliberately capture, injure, or kill bats.
- Damage or destroy a breeding or resting place (bat 'roost').
- Obstruct access to their resting or sheltering places (bat 'roost').
- Possess, sell, control or transport live or dead bats, or parts of them.
- Intentionally or recklessly disturb a bat while it's in a structure place of shelter or protection.

3.3 For the purposes of the legislation a 'roost' is any structure or place which any wild bat uses for shelter or protection. Roosts are protected irrespective of whether bats are present or not at a specific time, due to the seasonal nature of many roosting sites.

4. PRELIMINARY ROOST ASSESSMENT

Habitat Description

4.1 Habitats identified during the survey are detailed below in alphabetical order:

Amenity Grassland

4.2 A large patch of amenity grass formed the centre of the Chapel Quad. The sward was kept short at approximately 5cm and was mown regularly.

4.3 Species recorded within the amenity grassland included red fescue *Festuca rubra*, perennial rye *Lolium perenne,* creeping bent *Agrostis stolonifera*, annual meadow grass *Poa annua* and lesser trefoil *Trifolium dubium*.

Figure 3: Amenity grassland habitat

Buildings

B1/SCR

4.4 B1 was a three-storey building forming part of the Chapel Quad. It was of stone construction with a pitched slate tile roof and dormers, measuring approximately 12m in height.

4.5 A small number of missing tiles were recorded on the north and south elevations of B1, allowing potential access to the interior loft space.

4.6 No access was available to the interior loft space; however, it is assumed to be of similar construction and condition to B2 as described further below.

4.7 Overall B1 was determined to be of Moderate Suitability for roosting bats based on its external features and its potential internal features.

Figure 4: B1/SCR located to the north of Chapel Quad

B2/SC8

4.8 B2 was a four-storey extension to a larger building which formed part of Chapel Quad and Old Quad (outside the boundary of this assessment). B2 was of stone construction with a pitched slate tile roof, measuring approximately 14m in height.

4.9 A small number of missing tiles were recorded on the north and west elevations of B2, allowing potential access to the interior loft space.

4.10 The loft void was constructed of a timber frame with bitumen underfelt lining. The felt was peeling and sagging in places, creating opportunities for roosting bats.

4.11 The loft void was heavily cobwebbed and dusty, but mostly in good condition.

4.12 No evidence of bats was found within the loft void.

4.13 Overall, B2 was determined to be of Moderate Suitability for roosting bats based on its external and internal features.

Figure 5: B2/SC8 located to the north-east of Chapel Quad

Figure 6: Internal loft void within B2/SC8

B3/The Chapel

4.14 B3 was a one-storey building measuring approximately 10m in height. B3 was constructed of stone with a pitched slate tile roof. The roof was difficult to assess due to a high stone parapet located around the north, west and south elevations of the building which obscured most of the roof from view.

4.15 B3 has no internal loft space with the interior open to the ridge.

4.16 Overall, B3 was determined to be of Moderate Suitability for roosting bats due to the uncertainty with the presence of any potential external roof features.

Figure 7: The Chapel located to the south of Chapel Quad

ROKOS Quad

4.17 ROKOS Quad was formed by a collection of flat-topped buildings constructed of stone and a PVC membrane roof, ranging from 10-14m in height.

4.18 All buildings were well sealed around the edges of the roof and no visible cracks or gaps were recorded.

4.19 Overall, the buildings in ROKOS Quad were determined to be of Negligible Suitability for roosting bats.

Figure 8: Roof top of one of the buildings within ROKOS Quad

Figure 9: Roof top view of the other buildings within ROKOS Quad

Introduced Planting

4.20 The borders around Chapel Quad adjacent to the buildings consisted of introduced shrubs and ornamental planting.

4.21 Introduced species mix included foxglove *Digitalis purpurea*, dogwood *Cornus spp*., *Geranium spp.,* lavender *Lavendula spp*., *Cotoneaster spp.*, *Hebe spp*., holly *Ilex aquifolium*, *Fuschia spp*., *Bergenia spp.*, *Salvia spp*., rose *Rosa spp*., *Euphorbia spp*., *Helleborine spp.*, *Ribes spp*., poppy

Papaver spp., star-jasmin *Trachelospermum jasminoides*, thistle *Cirsium rivulare 'Atropurpureum*', feverfew *Tanacetum parthenium*, box *Buxus spp*. and *Griselinia spp*.

Figure 10: Introduced planting within Chapel Quad

5. SURVEY RESULTS

5.1 The raw data for the surveys is set out in **Appendix 1**.

Dusk emergence survey 07/08/2023

5.2 No bats were observed emerging or re-entering B1, B2 or B3 during the survey.

5.3 Overall bat activity across the Site was relatively low and included both foraging and commuting bats. Activity was highest within the Chapel Quad between B1 and B3.

5.4 Two species of bat were encountered during the survey. These included common pipistrelle *Pipistrellus pipistrellus* and noctule *Nyctalus noctula.*

5.5 The first bat encountered was a noctule recorded at 21:11, 27 minutes after sunset. The timing of this sighting does not suggest the bat emerged from nearby and no roosts suitable for noctule were located on Site.

5.6 Common pipistrelle was the most frequently encountered species during the survey and mostly observed foraging in the Chapel Quad between B1 and B3.

Dawn re-entry survey 22/08/2023

5.7 No bats were observed re-entering B1, B2 or B3 during the survey.

5.8 Overall bat activity across the Site was relatively low and included both foraging and commuting bats. Activity was highest within Chapel Quad between B1 and B3.

5.9 One species of bat was encountered during this survey, namely common pipistrelle.

5.10 The last bat encountered was a common pipistrelle recorded at 05:43, 18 minutes prior to sunrise. The timing of this recording is indicative of a bat returning to a nearby roost, however, the bat was not observed re-entering a building within the Site.

6. DISCUSSION & CONCLUSION

Overview

6.1 The PRA undertaken in August 2023 concluded that B1, B2 and B3 were of Moderate Suitability for roosting bats based on its external and internal features. The buildings within ROKOS Quad were determined to be of negligible suitability for roosting bats. As such, further survey effort in the form of nocturnal surveys was recommended for B1, B2 and B3.

6.2 The Site was used by low numbers of foraging and commuting bats with a peak of two species recorded during one survey.

6.3 More frequently used habitat by foraging bats was located in the courtyard between B1 and B3.

6.4 The early evening and late morning recordings suggest that habitats in the wider area support bat roosts, particularly for *Pipistrellus* species.

6.5 No emergences or re-entries were recorded at B1, B2 or B3 during either survey.

Conclusion

6.6 It is concluded that the Proposed Development will not result in the loss of any current bat roosts as bats are likely absent from B1, B2 and B3. However, the proposed works may disrupt foraging and commuting activity in the immediate vicinity of the Site without the adoption of reasonable avoidance measures.

7. RECOMMENDATIONS

Mitigation

7.1 The Proposed Development is considered to pose a low risk to roosting bats.

7.2 As bats are considered likely absent from B1, B2 and B3, works are able to proceed without the requirement for a European Protected Species Mitigation Licence (EPSML).

7.3 However, a precautionary approach should be applied when implanting these works to safeguard foraging and commuting bats within the wider Site area.

7.4 Prior to the commencement of works a Toolbox Talk should be given by a Suitably Qualified Ecologist (SQE) to all key contractors. The Toolbox Talk will outline the protection afforded to bats, the types of locations where you are most likely to encounter bats, what activities could potentially harm or disturb bats, and what to do if a bat is encountered and an SQE is not present. More information regarding the works Method Statement is provided in **Appendix 2**.

7.5 In addition to the Toolbox Talk, a pre-works check by an SQE should be completed for both buildings, including interior voids/loft spaces where accessible. The pre-works check should be completed immediately before works are due to commence.

7.6 In the event bats are discovered, an EPSML must be sought prior to works re-commencing. This may need to be informed by additional survey information.

Construction and External Lighting

7.7 Bats were found to forage and commute past and around the Chapel Quad. All construction lighting should therefore be focused on the proposed works areas only with baffles and cowling used as appropriate to minimise light throw around the fringes of these areas.

7.8 No construction lighting should be directed at any neighbouring buildings or vegetation, particularly within the Chapel Quad. Construction lighting (including that associated with any site compound, or welfare facilities) should be switched-off at the end of the working day).

General

7.9 If in the event any bats (or other protected species e.g. nesting birds) are encountered, works are to stop immediately with advice sought from ourselves (Nicholsons – 01869 640642).

8. REFERENCE AND BIBLIOGRAPHY

Bat Conservation Trust (2016) Bat Surveys: Good Practice Guidelines 3rd Edition

Russ, J. (2012) British Bat Calls: A guide to species identification 1st Edition Pelagic

9. APPENDICES

Appendix 1: Raw Data from Nocturnal Survey

Ref: 22-3125 (v1)

22-3125 Pembroke College (Chapel Quad) Bat Data Analysis

Dusk 07/08/2023

Sunset: 20:44; Start time: 20:29; End time: 22:14

Temperature: 17°C; Cloud cover: 20%-50%; Beaufort: 2-3.

Time	Species	Observation
Surveyor 1 (RC) –South of B1 and south-west of B2		
21:11	Noctule	Seen not heard- commuting high from the north-east to the west, along the southern aspect of B1
21:11- 21:25	Common pipistrelle	Foraged around the courtyard, circling clockwise continuously. Left to the east over the southern section of B2
21:31	Common pipistrelle	Foraged west through the courtyard. Left to the north over B1
21:33-21:36	Common pipistrelle	Bat came from the west. Foraged around the courtyard, circling clockwise continuously. Left to the north over B1
21:39-21:40	Common pipistrelle	Foraged west to east through the courtyard south of B1
21:57	Noctule	Heard not seen
Surveyor 2 (RJ) – North of B1		
21:11	Noctule	Bat commuted high from the south, over B1 to the north
21:40	Common pipistrelle	Heard not seen
22:03	Common pipistrelle	Heard not seen
22:10-22:11	Common pipistrelle	Heard not seen
Surveyor 3 (KR) - North of B1 and B2		
21:04	Common pipistrelle	Heard not seen
21:15-21:19	Common pipistrelle	Heard not seen – likely foraging nearby
21:21-21:22	Common pipistrelle	Heard no seen
21:24-21:27	Common pipistrelle	Heard not seen, faint foraging
21:41	Common pipistrelle	Heard not seen, faint foraging
22:03	Common pipistrelle	Heard not seen
22:10-22:11	Common pipistrelle	Heard not seen
Camera 1 – north of B1		
21:11	Noctule	Bat commuted from the south to the north, over the top of B1
Camera 2 – north of B3		
21:12	Bat	Bat commuted from west to east along the northern aspect of the chapel.
21:13-21:26	Bat	Bat foraging, continuously circling clockwise around the chapel. Exited to the east.
21:26-21:28	Bat	Heard not seen
21:32-21:38	Bat	Heard not seen
21:41	Bat	Heard not seen

Dawn 22/08/2023

Sunrise: 06:01; Start time: 04:31; End time: 06:01

Temperature: 16°C; Cloud cover: 80%-100%; Beaufort: 1.

Time	Species	Observation
Surveyor (RJ) - North elevation of B1		
05:38	Common pipistrelle	Heard not seen
Surveyor (RC) – South elevation of B1 and B2		
04:49	Common pipistrelle	Heard not seen
05:07	Common pipistrelle	Heard not seen – social calls recorded
05:09	Common pipistrelle	Heard not seen – social calls recorded
05:13	Common pipistrelle	Heard not seen – social calls recorded
05:29	Common pipistrelle	Heard not seen
05:31-05:43	Common Pipistrelle	Foraging around courtyard
Surveyor (CQ) – North elevation of B1 and B2		
05:04	Common pipistrelle	Heard not seen
05:07	Common pipistrelle	Heard not seen
05:13	Common pipistrelle	Heard not seen
Camera 1 – north of B1 – no bats recorded		
Camera 2 – north of B3 – no bats recorded		

Appendix 2: Bat Method Statement

Procedure to Be Followed Should Bats Be Found and an Ecologist Is Not Present

If at any point in the works, bats are discovered, contractors should stop works immediately and telephone Nicholsons on 01869 340342.

Nicholsons will either provide an appropriately licensed bat worker or member of staff to the site.

Should it transpire that the operation being carried out is of risk to bats, works will be stopped until a licence can be sort from Natural England.

Bats are a protected species and there should be no attempt to handle a bat if discovered.

The bat should be covered with a light material (e.g. cloth) and a licensed bat worker or bat care worker called out to carry out the rescue.

If a bat is found under a tile or any other aperture, works will stop immediately (as above).

If the bat does not voluntarily fly out, then the aperture will be carefully covered over to protect the bat from the elements, leaving a small gap for the bat to escape from voluntarily.

Any covering should be free from grease or other contaminants and should not be of a fibreglass-based material.

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Oxfordshire: The Park, North Aston, OX25 6HL | 01869 340342
Northamptonshire: 7-8 Melbourne House, Corbygate Business Park, Weldon, NN17 5JG | 01536 408840

contact@nicholsonsgb.com | www.nicholsonsgb.com