



Dusk Emergence and Dawn
Return to Roost Survey

Hampstead School

For

Wates Construction Ltd

Project No.: BWAT114/005/001/001

July 2016

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Project Number	Report No.
BWAT114/005	001

Revision No.	Date of Issue	Author	Reviewer	Approver
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Figure 1: Site Location

Figure 2: Surveyor Location and Recorded Dusk Emergence

Figure 3: Photos of building B5 and Potential Roost Features

1. Summary and Main Recommendations

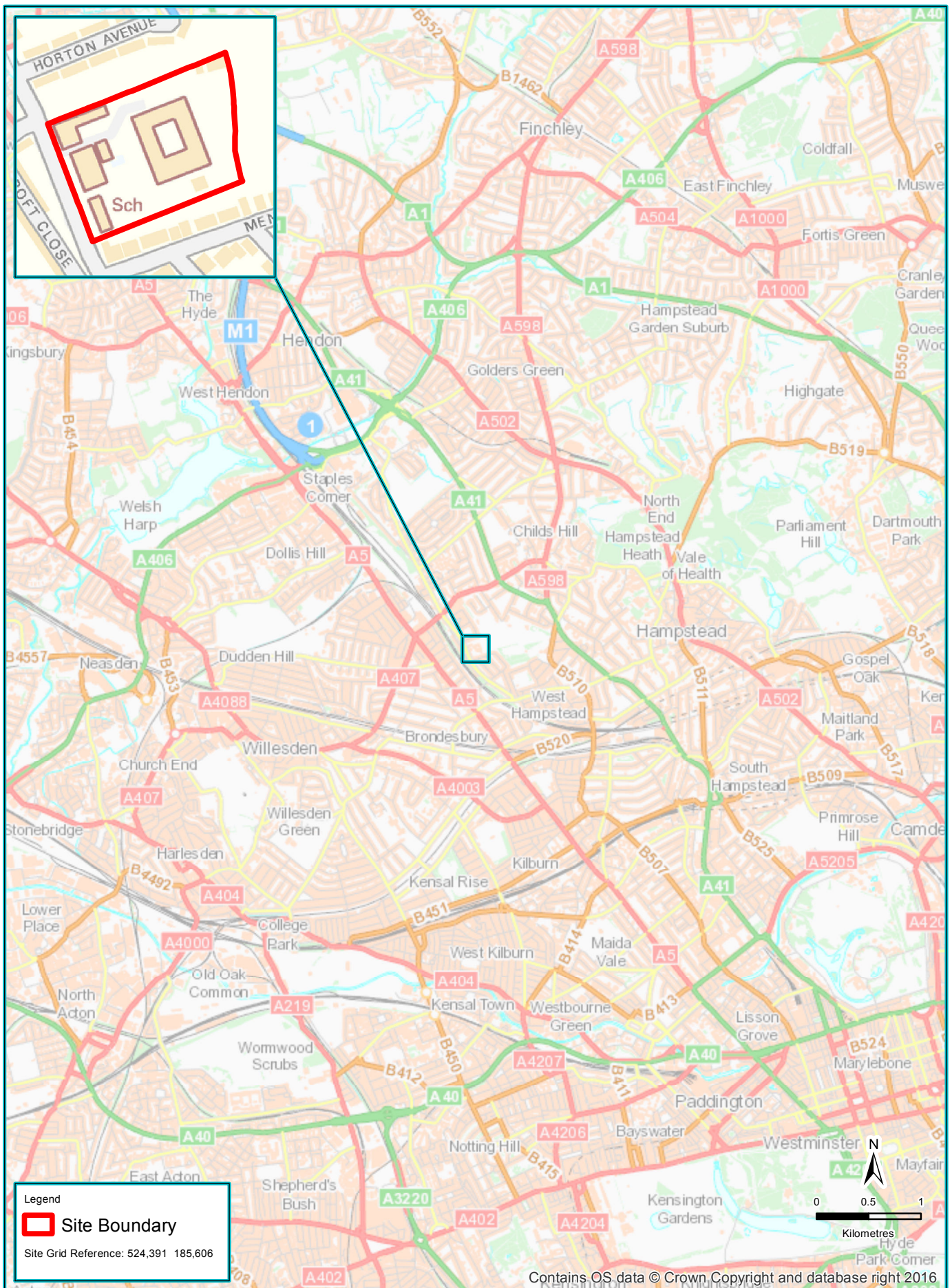
1.1 Summary

- 1.1.1** Wates Construction Ltd is in the process of a redevelopment scheme on behalf of the Education Funding Agency at Hampstead School, Westbere Road, London (see Figure 1), on an area of 21,118m².
- 1.1.2** The preliminary ecological appraisal (PEA) carried out by Thomson Ecology Ltd on the 6th of April 2016 identified the presence of potential roosting features (PRFs) for bats on building B5, known as the 'donut' building, which is scheduled for demolition. Therefore a dusk emergence and dawn return to roost survey, in line with the Bat Conservation Trust's (BCT) best practice guidelines (Collins, 2016), was recommended to ascertain the presence or likely absence of roosting bats within the building.
- 1.1.3** The survey recorded a dusk emergence of a single common pipistrelle (*Pipistrellus pipistrellus*) from the central part of the south facing side of building B5. As such, the building was confirmed as a roost and a further two surveys were required in line with BCT best practice guidelines (Collins, 2016) to enable characterisation of the nature of the roost. No further emergences or re-entries were recorded and activity levels observed were very low for all surveys apart from the final dusk survey on 7th July 2016 when low levels were recorded.
- 1.1.4** The potential roost features are considered to be summer or transitional roosts as each feature is only able to support individual or a very small number of bats, making it unlikely that it will be used during the summer as a maternity roost. The features are also exposed to the elements and varying temperature making it unlikely that the features will be used as hibernation roosts (Collins, 2016). The recording of a single common pipistrelle emergence during the surveys supports this roost classification.
- 1.1.5** Bats and their roosts are protected under the Conservation of Habitats and Species Regulations 2010, as amended. Bats are also protected from disturbance under the Wildlife and Countryside Act 1981, as amended and are afforded some protection under the Countryside and Rights of Way Act, 2000 and Natural Environment and Rural Communities (NERC) Act 2006. Taken together, these make it an offence to deliberately capture, injure, kill or disturb a bat or to intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat.
- 1.1.6** As building B5 has been confirmed as a roost, a European Protected Species Licence (EPSL) will be required and an appropriate mitigation strategy in order for the development to fully comply with European and UK legislation, as it permits otherwise unlawful activities (Natural England, 2004).

1.2 Main Recommendations

- 1.2.1** The main recommendations are set out below:
- An EPSL from Natural England should be sought to cover the demolition of building B5;

- A method statement to include details of the procedures to follow during the demolition and appropriate mitigation measures identifying appropriate replacement roost options; and
- A discussion with Natural England in order to determine whether further roost characterisation surveys will or will not be required.

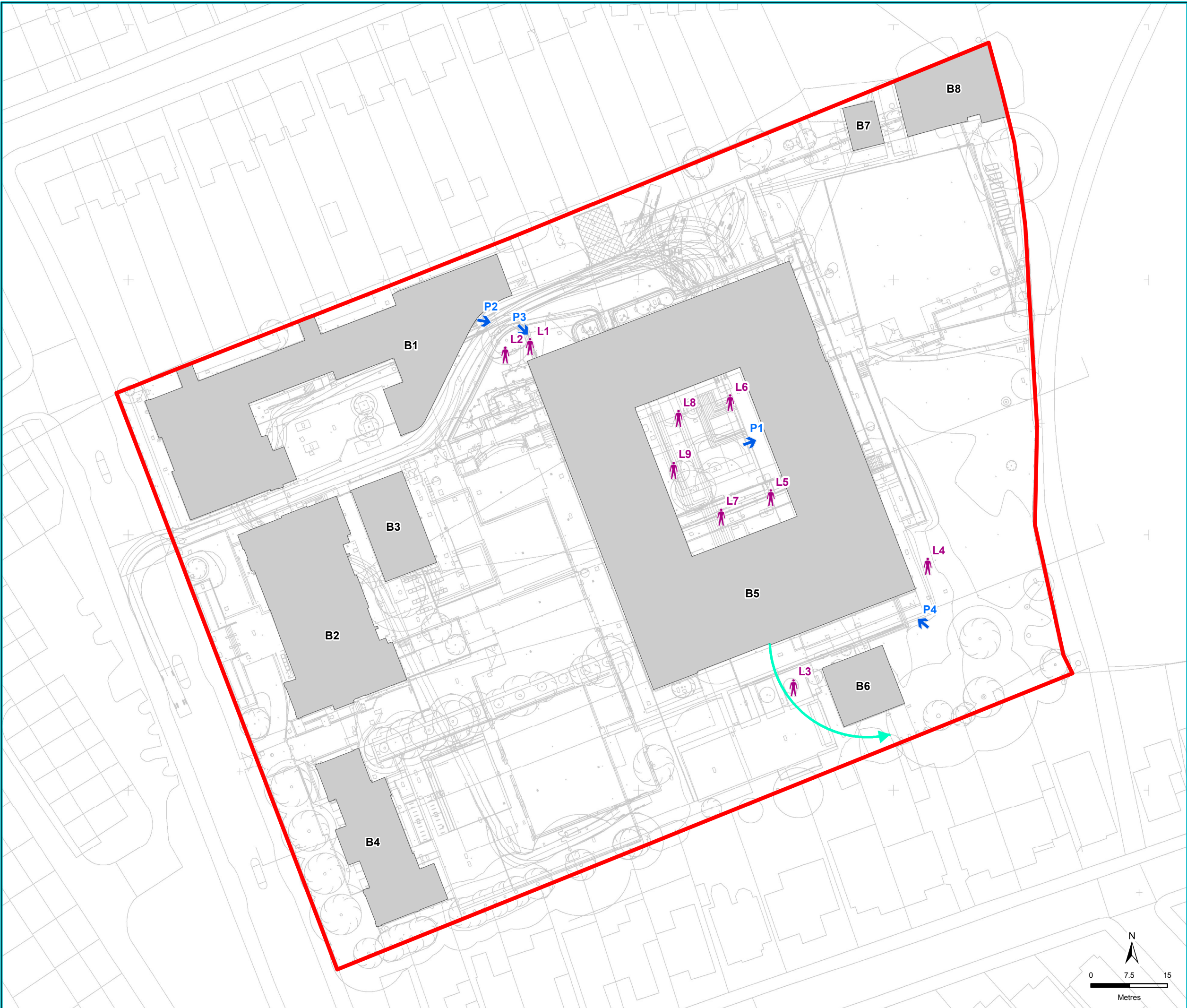


Client	Wates Construction Ltd		Drawing Ref	BWAT114/21417/1	
Figure Number	1		Scale at A4	1:50,000	
Figure Title	Site Location		Drawn	DJ	Checked
			Date	14/07/2016	14/07/2016

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Legend

- ➔ Photograph Location and Direction
- 🧑 Surveyor Location
- ➡ Pipistrelle Flight Path
- Building
- ▭ Site Boundary

Site Grid Reference: 524,391 185,606

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Drawing Ref
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Scale at A3
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Date 14/07/2016	Date 14/07/2016
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Client
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Figure Number
2

Figure Title
Surveyor Location and
Recorded Dusk Emergence



Photograph 1:
Lifted fascia board in courtyard of building B5.




Photograph 2:
North facing side of building B5.



Photograph 3:
North-west corner of building B5.



Photograph 4:
South-east corner of building B5.

Client	Wates Construction Ltd	Drawing Ref	BWAT114/21419/1		 www.thomsonecology.com enquiries@thomsonecology.com	
Figure Number	3	Scale at A4	Not applicable			
Figure Title	Photographs of Building B5 and Potential Roost Features	Drawn	DJ	Checked		NS
		Date	14/07/2016	Date		14/07/2016

2. Introduction

2.1 Development Background

2.1.1 Wates Construction Ltd is in the process of constructing a new sports hall and teaching block at Hampstead School, Westbere Road, London (Grid Reference TQ243856, see Figure 1). The proposed project includes the demolition of the existing buildings including building B5, known as the 'donut' building. The new sports hall will be situated in the north-east of the site, on an area that is currently hardstanding. The new teaching block is proposed to be built to the west of building B5. The predevelopment site layout is shown in Figure 2.

2.1.2 The development proposal includes the retention of landscaped areas, where possible, with proposed ornamental planting and hedges. Of the 63 trees on site, 31 trees are proposed to be removed (Wates, 2016), including those situated in the courtyard of building B5. The amenity grassland and trees present in the courtyard of building B5 require removal as the building is to be demolished and an all-weather pitch constructed in their place.

2.1.3 The proposals described above are hereafter referred to collectively as 'the development'.

2.1.4 An extended Phase 1 habitat survey of Hampstead School was carried out on the 28th of January 2014 by Jacobs (Jacobs, 2014). This original ecological assessment was used to gain planning permission which was granted by the Camden Council Planning Authority under the following condition:

2.1.5 *"Prior to first occupation of the development, details of proposals for the enhancement of biodiversity, with particular reference to bats, and a plan showing details of bird and bat box locations and types and indication of species to be accommodated shall be submitted to and approved in writing by the local planning authority. The boxes shall be installed in accordance with the approved plans prior to the occupation of the development and thereafter retained."*

2.1.6 This condition in the planning permission secures appropriate features to conserve and enhance wildlife habitats and biodiversity measures within the development, in accordance with the requirements of the London Plan (Consolidated with Alterations Since 2004), Camden Planning Guidance 2006 and policy CS15 of the London Borough of Camden Local Development Framework Core Strategy.

2.2 Ecology Background

2.2.1 A preliminary ecological appraisal (PEA) was carried out by Thomson Ecology Ltd on the 6th of April 2016 to inform a BREEAM assessment of the development. The site currently consists of scattered broad-leaved trees, amenity grassland, introduced shrub, hardstanding, wall and buildings.

2.2.2 A Phase 1 habitat report by Jacobs carried out a desk study (accessed 22nd January 2013) in which *Pipistrellus* species, common pipistrelle (*Pipistrellus pipistrellus*) and Soprano pipistrelle (*Pipistrellus pygmaeus*) were recorded within a 1km search area (Jacobs, 2014)

2.2.3 The surrounding landscape is residential with statutory protected sites and habitats within 1km, the nearest of which is Westbere Copse Local Nature Reserve (LNR), located 300m to the south. Connectivity to the LNR from the school site is limited by roads and housing to the west and playing fields (Thomson, April 2016).

2.2.4 A summary of the biology, conservation status and legal protection of bats is given in Appendix 1.

2.3 The Brief and Objectives

2.3.1 Wates Construction Ltd commissioned Thomson Ecology Ltd on 11th June 2016 to undertake a dusk emergence and dawn return to roost survey of building B5 within the development, which was identified as having potential roosting features for bats during the PEA carried out on 19th April 2016. A further two surveys were commissioned on 14th June 2016. The brief was to:

- Carry out three dusk emergence and dawn return to roost surveys of building B5 to determine presence or likely absence of roosting bats in line with BCT best practice guidelines (Collins, 2016); and
- Provide a report, supported by digitised mapping, detailing the survey methodology, including any limitations, and survey results. A discussion of the legislative implications will be included in addition to the need for a European Protected Species licence to proceed with the proposed development.

2.4 Limitations

2.4.1 Access was restricted on the eastern side of the building due to the development already being underway (see Figure 3, Photograph 4). This limitation was overcome by placing an Anabat detector near the north-eastern corner of the building and positioning the surveyor at the south-eastern corner. This allowed a full visual of the building and the Anabat ensured no bat recordings were missed.

2.4.2 At the time of the surveys, a three-storey building was in the process of being constructed next to building B5, and the scaffolding limited the view of potential roost features on the western facing side of the building. The Infrared camera and surveyor were positioned in a location, which provided the optimal view possible of the features along this side of the building.

2.4.3 Infrared cameras were used in order to provide greater coverage and to record the emergence or return to roost of bats. However, the equipment failed to record for the full length of the first survey. In subsequent surveys, greater power packs were used to ensure that the equipment had greater recording ability. There was also a rotation of positions to ensure that some key points were covered by both infrared cameras and surveyors. Effort was increased on subsequent surveys to include a second infrared and two Anabat detectors. A greater proportion of surveyors to infrared cameras were used in line with BCT best practice guidelines (Collins, 2016).

2.4.4 Due to equipment failure on the dusk emergence survey on the 24th May 2016, the equipment failed to record the audio produced by one of the detectors. The field surveyor had recorded the data manually, which was cross-referenced with the audio data of surveyors positioned nearby. This does not therefore represent a significant limitation.

2.4.5 The glare from the security lights resulted in surveyor position 3 changing location from the first survey, where they were positioned at the south-east corner, to a position as shown in Figure 2, facing the south facing side of building B5. This ensured adequate coverage of potential roost features and therefore does not present a significant limitation.

2.4.1 This report is based on the development boundary and layout prior to development shown on Figure 2. Subsequent changes to either may result in a requirement to reassess the potential impacts of the development and the requirements for avoidance, mitigation and enhancement.

2.5 **Surveyors**

2.5.1 The surveys were carried out by Sarah Hawes BSc (Hons) MSc (Natural England Class 1 bat licence 2016-22779-CLS-CLS), Emily Power BSc (Hons) MSc (Natural England Class 1 bat licence 2016-22854-CLS-CLS), GradCIEEM, Charlotte Hewitt BSc (Hons) MSc, Robert Allan BSc (Hons) MSc, Adam Jones BSc and Jake Williams BSc.

3. Methodology

3.1 Dusk emergence and dawn return to roost survey

- 3.1.1** In accordance with BCT's Good Practice Guidelines (Collins, 2016) three dusk emergence and dawn return to roost surveys were undertaken of building B5. Initially this building was identified as having low potential to support roosting bats. However, following the recording of a dusk emergence, further roost characterisation surveys were undertaken in order to inform an EPSL application.
- 3.1.2** Three ecologists and two 1080 HD infrared night vision cameras with external infrared light sources were stationed at suitable locations to allow observation of potential access and egress points identified during the Phase 1 habitat survey (see Figures 2 and 3). Details of the features identified are presented in Table 4 in Appendix 2).
- 3.1.3** During the emergence surveys, potential roost features were watched continuously by the ecologists. During the re-entry surveys, bats were tracked back to any potential roost features within the view of the ecologists. All potential roost features were surveyed. Surveyors were moved from one set of features, during the dusk emergence survey, to another set of features during the dawn return to roost survey. This ensured full coverage of all the potential roosting features on the building during each visit. This methodology is in line with the BCT best practice guidelines (Collins, 2016).
- 3.1.4** A Bat Box Duet heterodyne bat detector was used by each ecologist to detect any bats that may have been emerging from or returning to the potential roost site. An MP3 player attached to the detector was used to record any bat passes. Recordings were retained for later analysis using Adobe Audition software.
- 3.1.5** Infrared cameras were used as both supplementary information and in place of surveyors. The use of infrared cameras is identified within Table 3 with an IR alongside the location number. Each infrared camera was accompanied by an Anabat detector in order to passively record any bat calls and therefore identify any emergences or return to roosts.
- 3.1.1** The first dusk survey began 15 minutes before sunset and ended 120 minutes after sunset. This was subsequently reduced to 90 minutes after sunset for the second and third survey as later emerging species were not recorded during the first survey and the potential roost features do not provide typical roosting opportunities for them. Similarly, the first dawn survey began 120 minutes before sunrise and ended at 15 minutes after sunrise. Again this was reduced to 90 minutes before sunrise for the same reasons.
- 3.1.2** During the dusk emergence and dawn return to roost surveys incidental bat activity within the vicinity of the potential roost was also recorded along with the cloud cover, wind strength, rain and temperature.
- 3.1.3** A bat pass is defined as an unbroken stream of echolocation calls, heard as a series of 'clicks' on a bat detector as the bat passes in and out of the detector's range.

- 3.1.4** Where a recorded echolocation call cannot confidently be identified to species level, the call will be identified to genus level instead, for example *Pipistrellus* species (excluding *Pipistrellus nathusii*), *Myotis* species and *Nyctalus* species.
- 3.1.5** As a gauge to the overall level of activity, a bat activity index is calculated in the following way: the total number of passes for all species during each survey event at the survey location are divided by the duration time of the survey. This is then multiplied by 100 to give an activity score. The activity score is then compared to those in Table 1.

3.2 Categorisation of Results

Table 1: Categorisation of Activity Level (Based on Analysis of Bat Surveys undertaken by Thomson Ecology in 2006 and 2007).

Activity Score	Assessment of Activity Level
Up to 5	Very Low
6 - 30	Low
31-50	Medium
51-90	High
91 plus	Very High

3.3 Dates of Survey and Weather Conditions

3.3.1 The weather conditions during the dusk emergence and dawn return to roost surveys are shown in Table 2.

Table 2: Weather conditions during the dusk emergence and dawn return to roost surveys.

Visit	Date	Timing of survey		Temperature °C)		Cloud cover	Rain	Wind (Beaufort scale)	Overall weather conditions
		Start	End	Min	Max				
1. Dusk	24/05/16	20:45	23:00	7.2	11.5	3/3	Dry	3	Suitable
1. Dawn	25/05/16	02:55	05:10	8.9	10.4	3/3	Dry	1	Suitable
2. Dusk	23/06/16	21:07	22:52	19.1	21.0	3/3	Dry	0	Optimal
2. Dawn	24/06/16	03:14	04:59	13.3	18.7	0	Dry	1	Optimal
3. Dusk	07/07/16	21:03	22:48	17.3	20.2	3/3	Dry	1	Optimal
3. Dawn	08/07/16	03:24	05:09	16.1	17.5	3/3	Dry	1	Optimal

4. Results

4.1 Dusk Emergence and Dawn Return to Roost Surveys

- 4.1.1 One common pipistrelle (*Pipistrellus pipistrellus*) was seen to emerge from the central section of the south facing side of building B5 during the dusk emergence survey carried out on 24th May 2016.

4.2 Incidental Records

- 4.2.1 Bat activity recorded was very low for all surveys apart from the third dusk emergence survey on the 7th July 2016 when low activity was observed. Common pipistrelle and *Pipistrellus* species were most abundant with a single soprano pipistrelle (*Pipistrellus pygmaeus*), Leisler's bat (*Nyctalus Leisleri*) and one *Nyctalus* species was also encountered. Incidental records of bat activity are summarised in Table 3.

4.3 Interpretation of Results

- 4.3.1 The very low level of incidental foraging and commuting behaviour observed during the dusk emergence and dawn return to roost surveys indicate that the site is not highly valued as a foraging or commuting resource by local bat populations.
- 4.3.2 The emergence of a common pipistrelle from building B5 during the dusk emergence survey on 24th of May 2016 confirms that building B5 is used as a roost.
- 4.3.3 The PEA carried out by Thomson Ecology Ltd on the 6th of April 2016 and the three dusk emergence and dawn return to roost surveys discussed in this report have informed the classification of the potential roost features. The potential roost features are considered to be summer or transitional roosts as each feature is only able to support individual or a very small number of bats, making it unlikely that it will be used during the summer as a maternity roost. The features are also exposed to the elements and varying temperature making it unlikely that the features will be used as hibernation roosts. The recording of a single common pipistrelle emergence during the surveys supports this roost classification (Collins, 2016).

Table 3: Summary of Dusk Emergence and Dawn Return to Roost Surveys and Incidental Bat Activity.

Date	Sunset/ sunrise time	Location	Details of bats emerging from buildings	Incidental results of return to roost survey	
				Species and description of behaviour	Overall level of activity ((passes / survey time) *100)
24/05/16	21:00	1	No bats seen emerging.	Two common pipistrelle passes recorded, with the first pass at 43 minutes after sunset.	1.48 = Very Low
		2 (IR)	No bats seen emerging.	Recording failed. See results of surveyor position 1.	n/a
		3	Bat seen emerging	Recording failed. See results of surveyor position 4. Infrared camera recorded no emergence.	n/a
		4	Bat seen emerging	One common pipistrelle seen emerging from central section of south facing side of B5 at 75 minutes after sunset. In total, four common pipistrelle were recorded, with the first pass 35 minutes after sunset. One <i>Pipistrellus</i> species pass was recorded 25 minutes after sunset. One unknown bat species pass was recorded 15 minutes after sunset.	4.44 = Very Low
25/05/2016	04:55	3	No bats seen to return.	One <i>Pipistrellus</i> species pass recorded 66 minutes before dawn.	0.74 = Very Low

Date	Sunset/ sunrise time	Location	Details of bats emerging from buildings	Incidental results of return to roost survey	
				Species and description of behaviour	Overall level of activity ((passes / survey time) *100)
		5	No bats seen to return.	No bats were recorded.	0.00
		6	No bats seen to return.	No bats were recorded.	0.00
		8 (IR)	No bats seen to return.	Anabat detector recorded no bats and no bats were recorded on the infrared camera.	0.00
23/06/2016	21:22	5	No bats seen emerging.	One common pipistrelle pass recorded 83 minutes after sunset. Two <i>Pipistrellus</i> species recorded, with the first pass 42 minutes after sunset.	2.86 = Very Low
		6	No bats seen emerging.	One <i>Pipistrellus</i> species pass recorded 43 minutes after sunset.	0.95 = Very Low
		7	No bats seen emerging.	Two common pipistrelle recorded, with the first pass 42 minutes after sunset.	1.90 = Very Low
		8 (IR)	No bats seen emerging.	Infrared camera recorded no emergence. The Anabat recorded two common pipistrelle, with the first pass 51 minutes after sunset.	1.90 = Very Low
		9 (IR)	No bats seen emerging.	Infrared camera recorded no emergence. The Anabat recorded two common pipistrelle, with the first pass 51 minutes after sunset.	1.90 = Very Low
24/06/2016	04:44	1	No bats seen to return.	One <i>Pipistrellus</i> species pass recorded 58 minutes before sunrise. One <i>Nyctalus</i> species pass recorded 41 minutes before sunrise.	1.90 = Very Low

Date	Sunset/ sunrise time	Location	Details of bats emerging from buildings	Incidental results of return to roost survey	
				Species and description of behaviour	Overall level of activity ((passes / survey time) *100)
		2 (IR)	No bats seen to return.	Anabat detector recorded no bats and no bats were recorded on the infrared camera.	0.00
		3	No bats seen to return.	One <i>Pipistrellus</i> species pass recorded 78 minutes before sunrise.	0.95 = Very Low
		4	No bats seen to return.	Four <i>Pipistrellus</i> species were recorded, with the last pass 41 minutes before sunrise.	3.81 = Very Low
07/07/16	21:18	1	No bats seen emerging.	No bats were recorded.	0.00
		2 (IR)	No bats seen emerging.	Anabat detector recorded no bats and no bats were recorded on the infrared camera.	0.00
		3	No bats seen emerging.	Four common pipistrelle were recorded, with the first pass 27 minutes after sunrise. Three <i>Pipistrellus</i> species passes were recorded, with the first pass 37 minutes after sunset.	6.67 = Low
		4	No bats seen emerging.	Four common pipistrelle passes were recorded, with the first pass 31 minutes after sunset. Four <i>Pipistrellus</i> species were recorded, with the first pass 39 minutes after sunset. One soprano pipistrelle was recorded 37 minutes after sunset.	8.57 = Low
08/07/16	04:54	5	No bats seen to return.	One <i>Pipistrellus</i> species pass recorded 63 minutes before sunrise. One common pipistrelle pass recorded 59 minutes before sunrise.	1.90 = Very Low

Date	Sunset/ sunrise time	Location	Details of bats emerging from buildings	Incidental results of return to roost survey	
				Species and description of behaviour	Overall level of activity ((passes / survey time) *100)
		6	No bats seen to return.	One Leisler's bat pass recorded 63 minutes before sunrise.	0.95 = Very Low
		7	No bats seen to return.	One common pipistrelle pass recorded 58 minutes before sunrise.	0.95 = Very Low
		8 (IR)	No bats seen to return.	Anabat detector recorded no bats and no bats were recorded on the infrared camera.	0.00
		9 (IR)	No bats seen to return.	Anabat detector recorded no bats and no bats were recorded on the infrared camera.	0.00

5. Legal Considerations

- 5.1.1** The content of the legislation section is the legislation considerations that we know are relevant based on this bat dusk emergence and dawn return to roost survey.
- 5.1.2** Planning policy issues are not discussed in this report due to planning permission having already being attained by the client and approved.
- 5.1.3** Details of the legislation pertaining to bats are provided in Appendix 1. Bats and their roosts are protected under the Conservation of Habitats and Species Regulations 2010, as amended. Bats are also protected from disturbance under the Wildlife and Countryside Act 1981, as amended and are afforded some protection under the Countryside and Rights of Way Act 2000 and Natural Environment and Rural Communities (NERC) Act 2006.
- 5.1.4** Taken together, these make it an offence to deliberately capture, injure, kill or disturb a bat or to intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat. This is discussed in more detail in Appendix 1.
- 5.1.5** Furthermore, development affecting bats is governed by a licensing procedure administered by Natural England.
- 5.1.6** Seven species of bat including the noctule (*Nyctalus noctula*) and soprano pipistrelle (*Pipistrellus pygmaeus*) recorded on site, are species of principal importance (SPI) for the conservation of biodiversity in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. This places a duty on all public bodies (including the Education Funding Agency for whom Wates Construction Ltd are undertaking the development work at Hampstead School) to have regard for the conservation of these species and on the Secretary of State to further, or promote others to further, the conservation of these species.
- 5.1.7** Without mitigation and licensing, the proposed development would contravene the legislation and policy set out above with respect to bats. This is because the demolition of building B5 would destroy a bat roost and could result in disturbance and harm to individual bats. However, using established techniques it should be possible to:
- Avoid harm to individual bats during the development or maintenance process; and
 - Maintain the population of bats at a favourable conservation status.
- 5.1.8** Recommendations for mitigation are given in Section 6.

6. Recommendations

6.1 Mitigation

6.1.1 As it is necessary to demolish building B5 to facilitate the development, an EPSL will need to be obtained from Natural England prior to any demolition works taking place.

6.1.2 EPSL applications for works affecting bats are subject to very close scrutiny and must satisfy regulations set out in the Conservation of Habitats and Species Regulations 2010 (as amended), that:

- The actions are essential for '*imperative reasons of overriding public interest*';
- '*There is no satisfactory alternative*'; and
- '*The action authorised will not be detrimental to the maintenance of the population of the species conserved at a favourable conservation status in their natural range*'.

6.1.3 A reasoned statement will need to be produced to cover the first two bullet points, and this will need to be accompanied by a method statement, which sets out a mitigation strategy to ensure that the development is not detrimental to the favourable conservation status of bats in their natural range. The method statement should cover all activities with the potential to affect the bat roosts and bat activity on site and state how negative impacts will be prevented.

6.2 Further survey

6.2.1 A discussion with Natural England is recommended in order to determine whether further roost characterisation surveys will or will not be required. This is due to the restricted ability to carry out an internal and external survey of building B5 which would have otherwise informed the EPSL.

6.3 Opportunities for Enhancement

6.3.1 Government guidance to local authorities also highlights the need for consideration of biodiversity and protected species during the consideration of planning applications. The National Planning Policy Framework (NPPF) encourages local planning authorities to identify, conserve and restore ecological networks and states that planning permission should be refused if significant harm to biodiversity cannot be avoided, mitigated or compensated. In addition, the Government Circular 06/05, which relates to biodiversity conservation, states that all protected species, such as bats, are a material consideration for the planning authority when considering proposed developments. Furthermore, Camden Biodiversity Action Plan requires that developers consider biodiversity in their proposals and contribute to an overall biodiversity enhancement (Camden Council, 2013).

- 6.3.2** Suggestions for how the site could be enhanced for bats has been highlighted in a prior report to inform a BREEAM Assessment (Thomson Ecology Ltd (2016) BREEAM BWAT114/002/001/001).

7. Conclusion

- 7.1.1** Due to the presence of a bat roost within building B5, if there is no satisfactory alternative to the building being demolished, an EPSL will need to be obtained from Natural England and appropriate mitigation measures implemented in order for the development to lawfully proceed.
- 7.1.2** The recommendations outlined in this report, if followed, will ensure the development is in compliance with all legislation pertaining to bats.

8. References

- 8.1.1 Camden Council (2013) Camden Biodiversity Action Plan: http://www.camden.gov.uk/ccm/cms-service/download/asset?asset_id=3132995 (Accessed 15/07/2016).
- 8.1.2 Collins, J (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn), Bat Conservation Trust, London.
- 8.1.3 Jacobs (2014) Hampstead School Extended Phase 1 Habitat Survey Report.
- 8.1.4 Natural England (2004) Bat Mitigation Guidelines.
- 8.1.5 Thomson Ecology Ltd (2016) Ecological Management Plan BWAT114 / 002 / 002 / 001.
- 8.1.6 Thomson Ecology Ltd (2016) BREEAM BWAT114/002/001/001.
- 8.1.7 Wates (2016) General Arrangement Plan: Drawing no. 0220-101.
- 8.1.8 Wates (2016) Ornamental Planting Detail Plan 01: Drawing no. 0220-303.
- 8.1.9 Wates (2016) Ornamental Planting Detail Plan 02: Drawing no. 0220-304.
- 8.1.10 Wates (2015) Soft works Plan 01: Drawing no. 0220-301.
- 8.1.11 Wates (2016) Soft works Plan 02: Drawing no. 0220-302.
- 8.1.12 Wates (2016) New Teaching Building Second Floor GA Plan: Drawing no. 2657-GA-132.

Appendix 1: British bats

8.2 Introduction

- 8.2.1 A summary of the biology of British bats and the legislation and policy that protects them concern is provided below.

8.3 Biology

- 8.3.1 There are 18 British species of bats of two families, the horseshoe bats (*Rhinolophidae*) and vesper bats (*Vespertilionidae*). In Britain, there are two species of horseshoe bat both of which belong to the genus *Rhinolophus*, and the 16 species of vesper belonging to six genera (*Myotis*, *Eptesicus*, *Nyctalus*, *Pipistrellus*, *Plecotus* and *Barbastella*). Whilst there are many differences in the biology of the different species, all share certain characteristics and these are described below.

Roosting

- 8.3.2 Bat species utilise roost sites of varying character; some preferring tree roosts whilst others are thought to be almost entirely dependent on built structures. Most bats will have a variety of available roosting sites within their range which they move between throughout the year. They are generally faithful to their roosts and a colony of bats may use the same roost site(s) year after year.
- 8.3.3 In winter bats hibernate, often animals gather to hibernate communally remaining in the same hibernation roost from November to February/March. Hibernation roost sites typically have a constant low temperature and high humidity levels, sites include caves, mines, thick walled buildings and hollow trees. As the temperature and day length increase in spring bats leave their hibernation roosts, either moving immediately to summer roost sites or utilising occasional, transitional roosts.
- 8.3.4 By June breeding females congregate in maternity roost sites where they will give birth to, and nurture young. Male bats are also occasionally found roosting in maternity roosts but during this period they mostly roost alone. Maternity roost sites include hollowed out trees, buildings and bridges. Male bats may use similar sites but also cracks and crevices in trees, under loose tiles or even amongst dense ivy growth during the summer period. Similar sites may be used by bats for brief periods during the night when they are resting or eating recently caught prey. In autumn, male bats establish mating roosts and are visited by females and then a variety of roost sites may be used until the bats return to their hibernation roosts.

Foraging

- 8.3.5 All British bat species feed on invertebrates, with flies, beetles, moths and other insects making up much of their diet. Areas rich in insects are therefore favoured foraging sites for bats, with woodlands, scrub, wetlands, river corridors and flower rich grasslands being favoured foraging habitats. Habitats such as intensively farmed arable land, and amenity grassland support a much lower invertebrate diversity and is therefore unfavourable foraging habitat for bats.

Commuting

8.3.6 Bats favour roost sites in close proximity to suitable foraging habitat, however given variation in prey availability, land-use change, and competition with other bats, for at least part of the year bats must commute between their roosts and foraging habitat

8.3.7 Commuting routes tend to follow linear features in the landscape such as hedgerows, woodland edges, rivers and other watercourses, particularly when crossing areas of less favourable habitat. The distance that bats commute between roost sites and foraging areas is dependent on local geography and also the species of bat. Some species will travel up to 18km, though shorter distances are more typical.

8.4 Site Designation

8.4.1 In addition, the most important sites for certain bat species in the UK receive further statutory protection by being designated as Special Areas of Conservation (SACs) and/or Sites of Special Scientific Interest (SSSIs).

8.4.2 Four bat species, greater and lesser horseshoe, barbastelle and Bechstein's bats, in the UK are included on Annex II of the European Community Directive of the Conservation of Natural Habitats and of Wild Fauna and Flora, referred to as the Habitats Directive. The Habitats Directive is transposed into UK law by the Conservation of Habitats and species Regulations 2010. This legislation requires that areas are designated as Special Areas of Conservation (SACs) to protect populations of these four bat species. To date, 26 SACs have been designated specifically to protect these species, and these sites are of international importance for the populations of bats that they support. A further five SACs have been designated, where the presence of at least one of the four bat species is a qualifying feature but not the primary reason that the site was designated.

8.4.3 Sites designated under the Wildlife and Countryside Act 1981 (WCA) are known as Sites of Special Scientific Interest (SSSIs). SSSIs received further protection under the Countryside and Rights of Way Act 2000 (CROW) and the Natural Environment and Rural Communities Act 2006.

8.4.4 Some SSSIs are designated for the population(s) of bats that they support. The criteria for selecting SSSIs on the basis of their bat populations are provided in Guidelines for the Selection of Biological SSSIs (NCC, 1989):

- Greater horseshoe bat - all main breeding roosts and all winter roosts with 50 or more adult bats;
- Lesser horseshoe bat - all main breeding roosts containing 100 or more adult bats and all winter roosts containing 50 or more bats;
- Barbastelle, Bechstein's and grey long-eared bats - any traditional breeding roosts;
- Natterer's, Daubenton's, whiskered, Brandt's, serotine, noctule and Leisler's bats - only exceptionally large breeding roosts or those with a long history of use.
- Mixed Roost sites - all hibernacula containing four or more species and more than 50 individuals or three species and 100 or more individuals or two species and 150 or more individuals, though these criteria may be lower in some parts of the UK.

8.4.5 Sites that qualify as SSSIs for the bat populations they support are considered to be of at least national importance.

- 8.4.6** Sites designated for nature conservation at the county level may also include bat populations as part of the site qualifying criteria, although the criteria used may vary from county to county. Such sites are protected through the planning system and there is generally a presumption against development that affects such sites in local authority development plans.

8.5 Species Protection

Legislation

- 8.5.1** All bat species are protected by the Conservation of Habitats and Species Regulations 2010. The Regulations make it an offence, with very few exceptions, to:

- Deliberately capture, injure or kill a bat;
- Deliberately disturb a bat in such a way as to be likely:
 - i. to impair its ability to survive, to breed or reproduce, or to rear or nurture its young; or
 - ii. to impair its ability to hibernate or migrate; or
 - iii. to affect significantly the local distribution or abundance of the species to which they belong.
- Damage or destroy a breeding site or resting place of a bat;
- Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead bat, or any part of, or anything derived from a bat.

- 8.5.2** In addition to the protection given to bats under the Conservation of Habitats and Species Regulations 2010 already described, bats are also partially protected in England under the Wildlife and Countryside Act 1981, which adds the following offences (with certain exceptions):

- Disturbance while it is occupying a structure or place which it uses for shelter or protection; or
- Obstructing access to any structure or place used for shelter or protection.

- 8.5.3** A roost is any structure or place used by bats for shelter or protection. As bats tend to re-use the same roosts year after year, the roost is protected whether bats are present or not at the time.

- 8.5.4** In this context, 'damage' would include such operations as treatment of wood with toxic preservatives or use of rodenticides near roosting bats while 'disturbance' includes any work in or affecting a bat roost.

- 8.5.5** If proposed actions, such as redevelopment of an existing building may lead to an offence under the above legislation, appropriate mitigation which seeks to avoid these impacts should be devised and implemented under licence from Natural England to allow the activity to proceed legally.

- 8.5.6** In addition to the above legislation, all bats are protected under the Bonn Convention, within which the Agreement on the Conservation of Bats in Europe (1991) or EUROBAT, establishes a mechanism for international collaboration to conserve bats and their habitats, including foraging

habitats. All European bat species are covered under Appendix II of the Conservation of Migratory Species of Wild Animals (CMS).

- 8.5.7** The Hedgerow Regulations 1997 provide for the conservation of ‘important’ hedgerows and their constituent trees. The presence of a protected species such as bats is included in the assessment of whether a hedgerow is considered ‘important’ and applications to remove such hedgerows must be made to the planning authority.

Planning Policy

- 8.5.8** The National Planning Policy Framework (NPPF) gives further direction with respect to biodiversity conservation and land use change / development. The NPPF encourages local planning authorities to identify, conserve and restore, ecological networks, which should benefit bats, and it also states that planning permission should be refused if significant harm to biodiversity cannot be avoided, mitigated or compensated. In addition, the Government Circular 06/05, which relates to biodiversity conservation states that all protected species, such as bats, are a material consideration for the planning authority when considering proposed developments.

UK Post-2010 Biodiversity Framework species and Species of Principal Importance

- 8.5.9** Seven species of bat (Barbastelle (*Barbastella barbastellus*), Bechstein’s (*Myotis bechsteinii*), greater horseshoe (*Rhinolophus ferrumequinum*), lesser horseshoe (*Rhinolophus hipposideros*), brown long-eared (*Plecotus auritus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and noctule (*Nyctalus noctula*)) are listed as UK Post-2010 Biodiversity Framework species and species of principle importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Under this Act, the Secretary of State must take steps, or encourage others to take steps, to further the conservation of these species. In addition, every public authority, including local planning authorities, has a general duty to have regard for the purpose of conserving biodiversity. This duty does not extend specifically to the Section 41 list; however, guidance published by Defra indicates that the Section 41 species should be considered a priority when implementing the duty. Furthermore, the NPPF states that local planning authorities should promote the protection and recovery of priority species populations which presumably means those listed under the Section 41 of the Act.

8.6 Species Protection

- 8.6.1** Altringham, J. (2003). British Bats. New Naturalist Series No. 93.
- 8.6.2** Entwistle, A. C., Harris, S., Hutson, A., Racey, P., Walsh, A., Gibson, S., Hepburn, I., and Johnston, J. (2002). Habitat management for bats: A guide for land managers, land owners and their advisors. JNCC, Peterborough.
- 8.6.3** Highways Agency (1999 et seq). Design Manual for Roads and Bridges, Volume 10 Environmental Design and Management, Section 3 The Good Roads Guide- Nature Conservation, Part 6 Nature Conservation Management Advice in Relation to Bats.
- 8.6.4** Her Majesty’s (HM) Government (1995). Biodiversity: The UK Steering Group Volume 2: Action Plans. JNCC, Peterborough.

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- 8.6.5** HM Government (1998). Tranche 2 Action Plans: Volumes I and II. English Nature, Peterborough.
 - 8.6.6** HM Government (2012). National Planning Policy Framework. Department for Communities and Local Government.
 - 8.6.7** Collins, J. (2016). *Bat Surveys, Good Practice Guidelines 3rd Edition*. Bat Conservation Trust, London.
 - 8.6.8** Mitchell-Jones, A.J. & McLeish, A.P. (1999). Bat Workers' Manual (2nd Edition). Joint Nature Conservancy Committee, Peterborough
 - 8.6.9** Nature Conservancy Council (NCC) (1989). Guidelines for Selection of Biological SSSIs. Nature Conservancy Council, Peterborough
 - 8.6.10** Russ, J. (1999). The Bats of Britain and Ireland. Alana Ecology, Shropshire

Appendix 2: Potential roost features

Table 4: Description of potential roost features identified on building B5.

Building No.	Building Description	Potential Roost Feature Descriptions	Evidence of Bats	Potential to support roosting bats		
				Maternity	Hibernation	Transitional
B5	A three-storey flat-roofed concrete building with an open internal courtyard (see Figure 2). Building B5 is located to the eastern side of the site. B5 was assessed as having low potential for transitional roosts during the extended Phase 1 habitat survey undertaken on the 6 th of April.	<p>Fascia boarding: Lifted in sections at the top of the building on all sides including within the courtyard (see Figure 3). Provides potential for transitional summer roosts.</p> <p>Missing mortar: Identified on the central section of the building, approximately 3-4m up. The holes have a south facing aspect and are 25mm across and an unknown depth. Potential for transitional summer roost.</p>	None	Negligible	Negligible	Confirmed