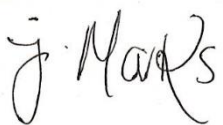




The King David High School, Manchester
Ecological Appraisal

June 2019

Control sheet

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Executive Summary

Bowland Ecology Ltd was commissioned by The King David High School to undertake an ecological appraisal of a site within the campus of The King David High School, Manchester (NGR: SD 83648 02208) in December 2018. Upon completion of the daytime building inspection survey, dusk emergence surveys were undertaken in May and June 2019.

Key ecological features, potential impacts, further survey requirements and outline mitigation measures are summarised in the following table.

Ecological Feature	Potential Impact	Further surveys if affected	Outline Mitigation
Habitats of Principal Importance (HPI)	Indirect impacts through pollution	N	Adherence to pollution prevention measures.
Mature Tree	Direct impact	N	Retention of trees where possible and/or the replacement of trees at a ratio of 2:1.
Roosting bats	Direct impact, through loss of potential roosting habitat	Y*	Hand removal of potential roosting features, if works completed during the bat active season (April - October inclusive*)
Foraging and commuting bats	Direct and indirect impact through habitat loss and increased lighting on site	N	Retention of tree and/or replacement at a ratio of 1:2. Sensitive lighting schemes to be developed.
Other mammals	Loss of foraging and shelter habitat.	N	Ensure contractors aware of possible presence of small mammals. Retention/replacement of habitats.
Birds	Damage/destroy nests, kill and injure nesting birds. Loss of nesting and foraging habitat.	N	Carry out work outside of nesting season (March – August inclusive) or pre-clearance/demolition nesting bird check by an ecologist required.

1. Introduction

- 1.1 Bowland Ecology Ltd was commissioned by The King David High School to undertake an ecological appraisal and dusk/dawn bat surveys of the Yavneh Girls buildings, within The King David High School campus, Manchester (NGR: SD 83648 02208). This report is submitted in support of a planning application in relation to the demolition of the buildings and re-development of the site. The full scheme proposals are not yet known.
- 1.2 The site currently comprises three red brick buildings, hardstanding, a mature lime tree, scrub and introduced shrubs. Habitats which may be affected by the works include buildings, a mature tree and the surrounding hardstanding areas with ornamental and scrub species. Habitats in the wider area are predominantly residential, comprising roads, residential properties with gardens and infrastructure associated with a large town.
- 1.3 The purpose of the survey was to: 1) identify and map all habitats occurring within the survey area, 2) identify the presence of (or potential for) wildlife interests with particular reference to the need for further surveys and legal requirements, and 3) provide an ecological appraisal, identify potential impacts and provide recommendations pertaining to the proposed development.
- 1.4 This report includes a description of survey methods and results; provides recommendations for further survey; and outlines proposals to provide protection, mitigation and enhancements for biodiversity and protected species.

2. Methodology

- 2.1 The desk study, extended Phase 1 Habitat survey and ecological appraisal follow the Guidelines for Preliminary Ecological Appraisal and the Guidelines for Ecological Report Writing (CIEEM, 2017 a & b) and are in line with the British Standard 'Biodiversity – Code of practice for planning and development' (BS42020:2013).

Desk Study

- 2.2 The aim of the desk study was to identify the presence of statutory and non-statutory wildlife sites within 1.5 km of the Site and any legally protected species or Habitats and Species of Principal Importance for the conservation of biodiversity (Section 41 NERC Act, 2006).
- 2.3 The Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk) was reviewed for information on locally, nationally and internationally designated sites of nature conservation importance (statutory sites only) on or within 1.5 km of the site boundary.
- 2.4 Local records on and within 1.5 km of the site were obtained following a data search with the local records centre, Greater Manchester Local Records Centre (GMLRC).
- 2.5 Ordnance survey (OS) maps and aerial photographs (<http://maps.google.co.uk/maps>) were reviewed to help identify any waterbodies, continuous habitat and any other notable habitats within the surrounding area.
- 2.6 Natural England's great crested newt (*Triturus cristatus*) licensing method statement template (Form WML-A14-2 (version December 2017¹) advises that, for developments resulting in permanent or temporary habitat loss at distances over 0.25 km from the nearest pond, careful consideration should be given to whether a survey is appropriate. Although the species may use suitable terrestrial habitat up to 0.5 km from a breeding pond, in this instance a 0.25 km search radius was considered appropriate due to the small scale of the proposed development and absence of ponds in the surrounding area.

Extended Phase 1 Habitat Survey

- 2.7 An extended Phase 1 Habitat survey was undertaken, following standard methodology (JNCC, 2010, and CIEEM, 2017). Habitats and their locations were mapped on a colour coded plan (Appendix B). The survey was carried out by Jodie Marks MSc, BSc (Hons) and Jack Driver BSc (Hons) on the 7th December 2018. The weather was overcast, with a light breeze and occasional heavy rain showers. The temperature was approximately 5°C.
- 2.8 The extended Phase 1 Habitat survey methodology records information on the habitats together with any evidence of and potential for legally protected and notable fauna, in particular:
- potential roosting sites for bats within buildings and trees (identification of suitable cracks and crevices – survey undertaken externally and from ground only). Assessment of building and tree suitability is assessed according to the BCT Good Practice Guidelines 3rd Edition (2016) (Appendix E);
 - assessing the suitability of habitats for notable and protected species such as nesting birds (including any active or disused nests), reptiles, water vole (*Arvicola amphibius*), otter (*Lutra lutra*), white-clawed crayfish (*Austropotamobius pallipes*), badger (*Meles meles*) and invertebrates;

¹ <https://www.gov.uk/government/publications/great-crested-newts-apply-for-a-mitigation-licence>

- checking for the most common invasive plant species subject to strict legal control including: Japanese knotweed (*Fallopia japonica*), giant knotweed (*F.sachalinensis*), hybrid knotweed (*F. x bohemica*), giant hogweed (*Heracleum mantegazzianum*), rhododendron (*Rhododendron ponticum*) and Himalayan balsam (*Impatiens glandulifera*); and,
- assessing the suitability of the habitat for amphibians and for the protected great crested newt. Ponds on site and within 0.25 km (access permitting) were subject to a habitat suitability index (HSI) (Oldham *et al.* 2000) assessment for great crested newt².

Daytime Building Inspection

- 2.9 A daytime internal and external inspection of the buildings (shown in Appendix B) was undertaken on the same day as the Phase 1 Habitat survey and by the same surveyors. The survey followed the Bat Conservation Trust 'Good Practice Guidelines' (Collins, 2016).
- 2.10 The internal inspection involved a search of the buildings for field signs, particularly within accessible roof spaces, such as; bats, bat droppings, urine stains, bat feeding remains (moth wings, insect cases), bat staining, a distinctive smell of bats, scratch marks and smoothing of surfaces, which would indicate a roosting site.
- 2.11 The external inspection involved checking for field signs of bats on external features of the buildings with particular attention being paid to windowsills, windowpanes and ledges, walls, doors and the ground around the buildings. An assessment of the potential of the building to support bats was also made during the survey i.e. searching for suitable roosting crevices. High power torches (LED Lenser T7.2 320 Lumens) were used to aid the survey.
- 2.12 Natural England's Bat Mitigation Guidelines (A.J. Mitchell-Jones 2004) states that a significant bat roost can normally be determined on a single visit at any time of the year, provided that the entire structure is accessible and that signs of bats have not been removed by others.
- 2.13 Using the information collected during the internal and external assessment, a 'roost potential' score was given to the building according to the criteria shown in Appendix E (Collins, 2016).
- 2.14 An assessment of the suitability of the site for bats was undertaken, including the identification of potential foraging and roosting areas, potential flight lines and important commuting corridors.

Dusk Emergence Survey

- 2.15 Dusk emergence surveys were undertaken on the 1st May 2019 and the 13th June 2019. The survey methodology followed the guidelines as described in Collins, 2016. Details regarding the start time, weather conditions and surveyors on each survey is shown in Table 1 below.

² An HSI is a numerical index, between 0 and 1. Values close to 0 indicate unsuitable habitat, 1 represents optimal habitat. The HSI for the great crested newt incorporates ten suitability indices, all of which are factors known to affect this species. The HSI for great crested newts is a measure of habitat suitability - it is not a substitute for newt surveys.

Table 1: Summary of bat survey weather conditions and surveyors

Date	Start and end time and time of sunset/ sunrise	Weather Conditions	Surveyors ³
01.05.19	Start: 20:20 End: 22:08 Sunset: 20:38	Light Cloud cover (30%) mild, with a light breeze Start Temp - 14.9°C End Temp - 10.8°C Precipitation - Nil Beaufort wind scale - 1 to 3	EL, JS, LM, HW
13.06.19	Start: 21:18 End: 22:40 Sunset: 21:38	Overcast (100% cloud). Start Temp - 11°C End Temp - 9°C Precipitation - Nil Beaufort wind scale - 0	HW, SR, LH and JT

- 2.16 The surveyors positioned themselves to get the best coverage of the building and focused in on those areas with the most potential as roosting habitat. The survey was aided by the use of the following bat detectors: Bat Box Duet, Petterson and EM Touch.
- 2.17 The emergence surveys were completed at an appropriate time of year and the weather conditions were suitable, therefore a full assessment of the potential of the building to support roosting bats was undertaken.

Survey Limitations

- 2.18 The timing of the Phase 1 Habitat survey was outside the optimum period, however, the entire site was accessible and the habitats commonly occurring. Therefore a valid assessment of the habitats present and their potential to support legally protected species was undertaken.
- 2.19 Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year. The weather conditions were suitable and the whole of the site was accessible, as a result, a valid assessment of the habitats present and their potential to support legally protected species was undertaken.
- 2.20 The list of invasive plant species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) is extensive and these plants are found in a range of different habitats, including aquatic habitats. The extended Phase 1 habitat survey checked, in particular, for the presence of Japanese knotweed, giant knotweed, hybrid knotweed, giant hogweed, rhododendron and Himalayan balsam. There may be other invasive plant species present on the site which were not recorded, but it is considered that this survey is sufficient to identify any significant constraints posed by invasive plants.
- 2.21 The internal inspection of B2, B2a, B2b and B3 was limited as keys to the buildings were not available and access doors were locked. The roof space of B2 could not be accessed as loft hatches could not be located. Loft voids above the original ceiling in B2 could not be accessed due to the presence of sealed loft hatches above a suspended ceiling. The client was only aware of one loft hatch, this revealed the void above the upstairs corridor. These limitations to the building inspection survey are considered further and addressed within the evaluation section of this report.
- 2.22 The second dusk emergence survey lasted one hour due to access restrictions as security guards on site were required to lock up the campus before 11 pm. However, no bats were seen to emerge from the buildings during both surveys, and the building is not considered favourable for species of bat that emerge from roosting sites later in the evening.

³ EL: Eve Loxham MBiolSci (Hons), Grad CIEEM, JS: Jack Sykes BSc (Hons), MCIEEM, (Nat Eng Licence: 2015-16340-CLS-CLS CL18 Level 2), LM: Lee Moat (Nat Eng Licence: 2015-16327-CLS-CLS), HW: Heather Whalley BSc (Hons), LH: Luke Hall BSc (Hons), SR: Sam Robinson BA, JT: Jack Taylor

Therefore, the restricted timing of the second survey is not considered a significant constraint to the assessment.

3. Results

Statutory and Non-Statutory Wildlife Sites

- 3.1 There are two non-statutory designated Local Wildlife Sites (LWS) within 1.5 km of the site;
- Blackley Forest (LWS) located approximately 1 km north of the site. Habitats present include broadleaved and plantation woodland, grassland, lake, marsh and the River Irk which flows through the forest park. Kingfisher (*Alcedo atthis*) is present within the LWS; and
 - The Cliff/Kersal Dale (LWS) located approximately 1.2 km south west of the site. The site comprises woodland, open water, marsh and semi-natural grassland with a cliff edge. The LWS contains a variety of wildlife including woodpeckers (*Picidae* sp.) and common kingfishers.
- 3.2 There are three non-statutory Sites of Biological Importance (SBI) within 1.5 km of the site:
- Bowker Vale Reservoirs (SBI) located approximately 0.8 km north of the site. The SBI is a 1.8 hectare amber (grade C) site comprising of two reservoirs surrounded by woodland. A diverse array of aquatic plants, insects, birds and amphibians are present here;
 - Lakeland Woodland (SBI) located within Heaton Park, the largest park in Greater Manchester, is located approximately 1.37 km north of the site. The SBI comprises parkland, woodland and a lake; and
 - The River Irwell (SBI) is located 1.37 km south west of the site. The river is of vital importance for many bird species.
- 3.3 The search of the Multi Agency Geographical Information Centre (www.magic.gov.uk) identified several areas classified as Habitats of Principal Importance (HPI).
- More than 120 areas of deciduous woodland, the closest of which is located approximately 0.2 km south of the site boundary; and
 - One area of lowland fen habitat located approximately 1.45 km south west of the site boundary.
- 3.4 Based on a review of aerial photographs and OS maps there are no ponds on or within 0.25 km of the site.

Habitats

- 3.5 Target notes summarising key interest features for wildlife recorded during the extended Phase 1 Habitat survey are included in Appendix D. The Phase 1 Habitat plan of the site is presented in Appendix B and includes the locations of the target notes. Plant species nomenclature follows Stace (2010).

Introduced shrubs (TN1)

- 3.6 A strip of introduced shrub is located adjacent to an access ramp, in front of the main door to the Yavneh Girls building. The area comprises conifer species, rose species, Wilson's honeysuckle and butterfly bush. Small ornamental rocks border the area.

Small area of scrub (TN1)

- 3.7 A small area of scrub with young beech and ash saplings is situated either side of the Yavneh Girls access ramp. Ground flora includes herb Bennet, rosebay willowherb, herb Robert and dandelion.

Mature tree

- 3.8 A mature, common lime tree is situated on the south western boundary of the site.

Other habitats

- 3.9 The majority of the site comprises hard standing with small brick walls and metal/timber fencing surrounding the buildings.

Species

Bats

- 3.10 The data search returned numerous records for bats within 1.5 km of the site including the following: common pipistrelle (*Pipistrellus pipistrellus*); soprano pipistrelle (*P. pygmaeus*); Daubenton's (*Myotis daubentonii*); whiskered (*M. mystacinus*); noctule (*Nyctalus noctula*); brown long eared (*Plecotus auritus*); brandt's (*Myotis brandti*) and natterers bat (*Myotis nattereri*). The closest record is for a pipistrelle species located approximately 95 m north west of the site. The closest roost record is of common pipistrelle, located approximately 0.5 km north of the site boundary. The record is connected to the site by mature trees along the site boundary.
- 3.11 The site is considered to have low potential for foraging and commuting bats, as it has limited tree cover and is dominated by hard standing, buildings and roads, with high levels of artificial lighting.
- 3.12 The site comprises three red brick buildings, B1, B2, B2 (a & b) and B3.

Building 1

- 3.13 B1 is a single storey, red brick building with a flat bitumen felted roof with standard and bay windows and is located adjacent to B2 and B3. The building is a classroom facility. Externally, the metal overhang bordering the top of the external walls and above windows is well sealed. Mortar between the brickwork is generally well sealed, with a few small gaps behind the drainpipe on the eastern elevation and above uPVC windows, however, the mortar does not appear to extend further into the building and is considered unsuitable for roosting bats. A slight gap behind the bargeboard, with vegetation growing within, is located above the window on the northern elevation where the timber barge board has come away.



B1; flat roofed building



B1; bitumen roof



B1; gap behind bargeboard

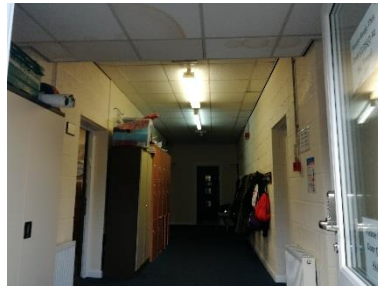


B1; gaps in the mortar

- 3.14 Internally, the building comprises large classrooms and interlinked corridors; all the rooms comprise suspended ceilings. Evidence of damp is located on several ceiling tiles. Above the suspended ceiling a view of electrical wires and the plaster/bitumen felted roof can be seen. A small gap is present between the suspended ceiling and the flat roof, however, no internal access for bats is possible on the building.
- 3.15 The building has several bat roosting features, however, due to vegetation growing from the gap behind the bargeboard and very small gaps in the mortar the features are deemed unsuitable for roosting bats. Therefore, the building is considered to have **negligible** potential to support roosting bats.



B2; Missing tile revealing roof



B2; Corridor with damp stained ceiling tiles

Building 2

- 3.16 B2 is a two-storey red brick building with a pitched, slate tiled roof. Three red brick chimneys are also present. The chimneys are in poor condition with several gaps from missing mortar located between the brickwork. Mortar between the brick work on the external walls is generally well sealed and appears to have been repointed in places. There are numerous gaps beneath roof slates below the central chimney and a slipped roof slate on the north east elevation below the chimney, providing potential bat access to the loft void and under slates. The ridge tiles are generally well sealed with one lifted tile on the southern edge of the ridge. uPVC windows are well sealed and airtight. The timber soffit box is weathered with numerous large holes (approximately 5 cm by 8 cm) present along the eastern elevation of the building providing potential interior access into the soffit for roosting bats. The felt above the soffit box is also degraded with visible gaps underneath.



B2; Yavneh Girls building



B2; Slipped roof slate



B2; Lifted ridge roof slate



B2; Large hole in soffit box



B2; Lifted felt above soffit box

- 3.17 Internally, the building has large classrooms on both levels with a staff room on the first floor. Suspended ceilings are present in all top floor rooms with a loft hatch located above the suspended ceiling at the south eastern end of the first-floor corridor. The loft space is approximately 1 - 1.25 m high with timber joists and beams present in generally good condition. The roof is lined with bitumastic felt, which is in good condition with brick supporting walls. The brick wall has collapsed in places and exposed additional areas of the loft void which are uncluttered. Electrical wires and water pipes are present. A potential old squirrel drey was present on the loft floor, with evidence of chewing on the wall plate timber. The building has **moderate** potential to support roosting bats.



B2; Loft void above corridor



B2; Loft void and squirrel drey

B2a and B2b

- 3.18 Two red brick lean-to structures are located on the southern edge of B2. B2b is of more recent construction than B2a. Both rooves are sloped with metal, corrugated tiles and air vents are present within the brick walls on both structures. B2b has an approximate 2 cm gap above the door providing access into the interior and possibly creating a draught. B2b has cracked brickwork where the structure joins B2, with lifted felts and lead flashing along the south western elevation. Mortar within the brickwork is well sealed on both structures. No internal access was available at the time of survey. The buildings have external features that are suitable for roosting bats, as such the buildings are considered to provide **low** bat roosting potential.



B2a and B2b



B2a; Lifted roof felt

Building 3

- 3.19 B3 is a single storey, red brick building with a sloping, tiled roof. The building is a more recent extension of B1. UPVC windows on the western elevation of the building are covered with metal mesh. The roof is in good condition with no gaps between the tiles or felt. The mortar between the brick work is also well sealed. The barge board along the western elevation of the property is rotten with numerous holes present. No internal access was available at the time of survey. The building has **low** potential to support roosting bats.



B3; sloping tiled roof



B3; Western elevation



B3; Gaps in bargeboard

- 3.20 There is a mature lime tree and a small patches of introduced shrub and scrub within the survey area, with a number of mature trees in the immediate surrounding habitat to the south of the site, which may be used by foraging and commuting bats, although the site is very well-lit on all sides. The aforementioned habitats including the mature lime tree, are considered to provide **low** value foraging and commuting opportunities for bats within the site.

Dusk Emergence Survey

- 3.21 No bats were recorded emerging from the buildings during the dusk emergence surveys, and bat activity throughout the duration of the surveys was relatively low. Full details of bats recorded during each survey and their behaviour is detailed in Appendix F.
- 3.22 During the dusk emergence survey on the 1st May 2019, a total of 13 common pipistrelle passes/foraging activity and one faint (not seen) noctule (21:27 hours) pass was recorded by the surveyors. The first common pipistrelle was recorded at 21:16, 37 minutes after sunset. The bat was seen foraging along the north eastern elevation of the building.
- 3.23 During the dusk emergence survey on the 16th June 2019, a total of 12 common pipistrelle passes/foraging activity were recorded by the surveyors; the first at 21:42, four minutes after sunset. The bat was seen commuting along the south eastern elevation of the building.

Other mammals

- 3.24 The introduced shrubs and scrub on site provide habitat for small mammals, specifically hedgehog (*Erinaceus europaeus*), a SPI. The data search returned two hedgehog records. It is likely that the species is common in the area due to the abundance of residential properties with gardens and tree lines, which provide ample foraging and nesting opportunities for the species.

Birds

- 3.25 The data search returned records for lapwing (*Vanellus vanellus*), house sparrow (*Passer domesticus*), starling (*Sturnus vulgaris*), bullfinch (*Pyrrhula pyrrhula*), dunnoek (*Prunella modularis*), grass hopper warbler (*Locustella naevia*), herring gull (*Larus argentatus*), lesser redpoll (*Acanthis cabaret*), linnet (*Linaria cannabina*), song thrush (*Turdus philomelos*) and yellow wagtail (*Motacilla flava*) in the search area. Four records of kingfisher (*Alcedo atthis*) and one record of a little ringed plover (*Charadrius dubius*) both

birds listed under Schedule 1 of the Wildlife and Countryside Act (1981, as amended), were also returned. Common gulls (*Larus canus*) were recorded on site during the survey.

- 3.26 The mature lime, introduced shrubs and scrub on site provide suitable nesting habitat for breeding birds. The buildings on site also offer opportunities for small nesting birds, such as wren (*Troglodytes troglodytes*), robin (*Erithacus rubecula*), pied wagtail (*Motacilla alba*), house sparrow, dunnock and blackbird (*Turdus merula*). There is no suitable habitat within the site for Schedule 1 kingfisher and little ringed plover, as such they are not considered further within this report.

Other species

- 3.27 No evidence of suitable habitat for any other protected species was identified at the time of survey.

4. Evaluation and Assessment of Potential Impacts

- 4.1 An assessment of effects on ecological features has been made using the available design and survey information and the professional judgement of the ecologist. This includes a consideration of the relevant legislation and planning guidance (see Appendix A). If there are changes to the proposals, such as a change to the proposed development design or a change in the developmental footprint, the assessment would need to be reviewed. Scheme proposals are unknown at the time of writing.

Designated Sites and Habitats of Principal Importance

- 4.2 Due to the distance of the LWS's and SBI's from the site (greater than 0.8 km) and the small footprint of the works it is considered unlikely that there will be any adverse effects on the aforementioned sites as a result of the development. Therefore, they are not considered further within this report.
- 4.3 HPI's within 1.5 km of the site include several areas of deciduous woodland; the closest of which is located 0.2 km from the site boundary. It is anticipated that future development of the site will not directly impact the broadleaved woodland due to its distance from the Site. However, potential future site clearance and construction activities have the risk of indirectly impacting the HPI through an increase in dust pollution. Dust pollution reduces the availability of light for photosynthesis and can also alter the pH of soils which may affect the long term success of plants within the woodland.

Habitats

- 4.4 The development will result in the loss of a small area of introduced shrubs. This habitat is locally common and of limited ecological value. Therefore, the loss of this habitat will not result in negative ecological impact.
- 4.5 The development will result in the loss of scrub and a mature lime tree which create habitat for a variety of species with trees providing structure in the landscape. The loss of the these habitats would result in a negative ecological impact to a range of fauna (detailed below).

Species

Bats

- 4.6 The mature lime was assessed to have **negligible** bat roosting potential due to the lack of suitable roosting features. The potential loss of this tree could result in the loss of foraging habitat for these species. However, mature trees are present to the south of the site which provide further foraging opportunities for bats within the area. Increased lighting within the site could cause increased disturbance to bats and reduced foraging opportunities through avoidance of highly lit areas.
- 4.7 No bats or evidence of roosting bats was noted during the daytime inspection survey and the buildings are considered to have **negligible** hibernation potential. Buildings within the site were assessed as having varying levels of suitability for roosting bats (Appendix E), summarised below;
- **Negligible suitability:** The flat roofed building, B1 had no features suitable for roosting bats.
 - **Low suitability:** The red bricked building (B3) and small lean-to buildings (B2a & B2b) are considered to have low potential for roosting bats. Bat roosting opportunities for crevice dwelling bats included gaps/entrances behind bargeboards

(B3) and gaps within and behind cracked brickwork and lifted felt/lead flashing (B2a & B2b). These buildings were not subject to an internal inspection.

- **Moderate suitability:** The traditional red bricked building (B2) is considered to have moderate potential for roosting bats. Abundant roosting opportunities suitable for crevice dwelling species included lifted/shifted/broken roof slates, gaps along the roof ridge and gaps into soffit boxes. B2 also has a sheltered loft void that could not be inspected thoroughly during the survey.

4.8 With the exception of B1, any works to demolish or modify the other four buildings may result in the disturbance and/or killing and injury of individual bats, resulting in an offence if bats were present at the time of works (Appendix A). Works affecting the buildings may also lead to the loss of potential bat roosting sites and/or access points.

4.9 During the dusk emergence survey no bats were recorded to emerge from the buildings. Therefore, the likelihood of bats using the building as roosting habitat is considered to be of **low risk**. However, as bats are a mobile species and use a variety of roosting sites, occasional use of the building by individual, opportunistic bats cannot be completely discounted. In the absence of appropriate mitigation, there is a **low** risk of causing harm or disturbance to individual bats during demolition works, which would result in an offence.

Other mammals

4.10 The removal of introduced shrubs and scrub has the potential to impact small mammals including hedgehog, which may potentially use the features for hibernating/sheltering. Therefore, removal of the aforementioned features may cause disturbance and/or direct harm to any small mammals, if present during the works.

Birds

4.11 Where buildings, scrub, introduced shrubs and the mature lime tree are removed/affected as part of site clearance, impacts to nesting birds could occur if works are undertaken within the nesting bird season (March to August inclusive) and/or without due care and attention, which would constitute an offence (see Appendix A). The removal of these habitats will also result in the loss of bird foraging habitat.

5. Recommendations

- 5.1 This section provides the required measures to mitigate the impacts of the proposed development. A key element of the National Planning Policy Framework is to minimise impacts to biodiversity and provide enhancements. Paragraph 170 states that ‘*Planning policies and decisions should contribute to and enhance the natural and local environment by ... minimising impacts on and providing net gains for biodiversity*’. Paragraph 175 also states that ‘*when determining planning applications, local planning authorities should ...*’ encourage ‘*opportunities to incorporate biodiversity improvements in and around developments*’. This section also therefore includes suggested enhancement measures. The following recommendations are designed to comply with legal requirements and national and local planning policy.

Habitats of Principal Importance

- 5.2 If, in future, construction activities are to proceed, then appropriate pollution prevention measures will be adhered to throughout the construction period to ensure that the broadleaved woodland HPI will not be indirectly impacted during the works. Examples of suitable mitigation that can be adopted during site clearance and construction includes;
- Maintaining high standards of housekeeping;
 - Dampening down working areas and haul roads in dry periods;
 - Using covered wagons and skips; and
 - Keeping roads clean with the use of road sweepers.

Habitats

- 5.3 Suitable mitigation for the loss of the mature lime tree and scrub should be implemented within the proposed site. Specifically, the replanting of new trees and scrub that are native, (examples are ash, elder, hawthorn or field maple) and of local provenance at a ratio of 2:1.

Species

Bats

- 5.4 The mature lime within the survey area was found to not offer suitable bat roosting features. The mature lime and scrub provide low foraging and commuting habitat for bats. The replanting of any removed trees (see paragraph 5.3) is considered appropriate to mitigate the loss to bat foraging and commuting habitat within the site. Short-term disturbance to foraging bats during the works will be minimised through turning off any additional site lighting at night or using motion sensors (within the active bat season, April - October inclusive).
- 5.5 As bats are a mobile species, a precautionary approach to demolition is recommended. Contractors will be made aware of the procedure should bats be encountered and the following RAMs will be adhered to during the demolition works.
- Before any works proceed all contractors should be made aware of the possible presence of bats, bat field signs to look for and procedure if bats are found or discovered (see Appendix C);
 - Works should be scheduled to occur between November and March (inclusive), when bats are highly unlikely to be present within the buildings due to the lack of suitable hibernation features;
 - If careful timing of works is not possible and demolition must proceed during the bat active season (April to October inclusive), features providing potential bat roosting potential on Building 2; timber barge boards, Building 2(a & b); cracked brickwork,

lifted felts/flushing and Building 3; timber soffit boxes, felt, ridge tiles, chimney and roof slates should be carefully removed by hand;

- A suitably qualified ecologist will be on call during the works and if a bat is found the ecologist will attend site, remove the bat, check the health of the bat and then place it in a suitable bat box; and
- If a bat is in immediate danger it will only be picked up with gloved hands and placed in a secure container with air holes.

5.6 Any new lighting schemes for the development of the site will be designed so that they are 'bat friendly'. Examples of low impact lighting schemes (BCT/ILP, 2018) include, but are not limited to:

- Use of low pressure sodium lamps or high pressure sodium instead of mercury or metal halide lamps;
- Lighting should be directed to where it is needed and light spillage avoided in particular along the site boundaries.

Small mammals

5.7 Demolition works should be progressed slowly and methodically when clearing habitats. Any excavations associated with works should be covered overnight or fitted with egress boards to prevent animals becoming trapped. Any small mammals found within the works area during construction should be carefully relocated off-site to a sheltered and undisturbed location with plenty of vegetation cover

Birds

5.8 Any required vegetation removal works should take place outside the breeding bird season which runs from March until August, in order to prevent any impacts upon breeding birds.

5.9 Any vegetation clearance work that must be carried out within the bird breeding season will be subject to a pre-clearance bird survey carried out by a suitably experienced ecologist. No vegetation clearance will be carried out within 5 m of an identified nest until the young have fledged and are no longer returning to the nest site. Vegetation will only be cleared once a scheme ecologist has declared the nest to be no longer in use.

Enhancement measures

5.10 As designs for the site develop an ecologist can provide site specific advice on ways to enhance the wildlife value of the final development and contribute towards a net gain in biodiversity. Simple examples of enhancement measures which could be considered and designed into the proposals include (but are not limited to):

- Additional planting of scrub and trees carried out around the margins of the site will develop a mosaic of habitats and improve the biodiversity of the site. New planting should comprise native species of local provenance. Planting of additional native trees will enhance ecological connectivity within the wider landscape and benefit many species of wildlife including bats, birds and invertebrates;
- Installation of bird boxes within the future development of the site including swift, house martin and house sparrow boxes;
- Installation of bat boxes (Schwegler 2F) on suitable trees outside of the developmental area.
- Creation of log/brush piles from the felled mature lime tree to attract invertebrates and fungi, which will also provide shelter and foraging resources for small mammals.

Re-survey of the Site

- 5.11 If no works are undertaken on site within 12 months of this survey or if any changes to the proposals are made, a further ecological survey may be necessary (because of the mobility of animals and the potential for colonisation of the site).

References

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JNCC, 1993 revised 2010. Handbook for Phase 1 Habitat Survey: A technique for environmental audit (reprint). Joint Nature Conservation Committee, Peterborough.

Mitchell-Jones, A. J., 2004, Bat Mitigation Guidelines, Natural England.

Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155.

Appendix A - Legal Information

This report provides guidance of potential offences as part of the impact assessment. This report does not provide detailed legal advice and for full details of potential offences against protected species the relevant acts should be consulted in their original forms i.e. The Wildlife and Countryside Act, 1981, as amended, The Countryside and Rights of Way Act 2000, The Natural Environment and Rural Communities Act, 2006 and The Conservation of Habitats and Species Regulations 2010.

Species	Legislation	Offences	Notes on licensing procedures and further advice
Species that are protected by European and national legislation			
Bats <i>European protected species</i>	Conservation of Habitats and Species Regulations 2017 Reg 41	Deliberately ¹ capture, injure or kill a bat; Deliberate disturbance ² of bats; Damage or destroy a breeding site or resting place used by a bat. The protection of bat roosts is considered to apply regardless of whether bats are present.	An NE licence in respect of development is required in England. https://www.gov.uk/bats-protection-surveys-and-licences <i>European Protected Species: Mitigation Licensing- How to get a licence</i> (NE 2010) <i>Bat Mitigation Guidelines</i> (English Nature 2004) <i>Bat Workers Manual</i> (JNCC 2004) <i>BS8596:2015 Surveying for bats in trees and woodland</i> (BSI, 2015)
	Wildlife and Countryside Act 1981 (as amended) ⁴ S.9	Intentionally or recklessly ³ obstruct access to any structure or place used for shelter or protection or disturb a bat in such a place.	Licence from NE is required for surveys (scientific purposes) that would involve disturbance of bats or entering a known or suspected roost site.
Birds	Conservation of Habitats and Species (Amendment) Regulations 2017	N/A	Authorities are required to take steps to ensure the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of the upkeep, management and creation of such habitat. This includes activities in relation to town and country planning functions.
	Wildlife and Countryside Act 1981 (as amended) ⁴ S.1	Intentionally kill, injure or take any wild bird; Intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built; Intentionally take or destroy the nest or eggs of any wild bird. Schedule 1 species Special penalties are liable for these offences involving birds on Schedule 1 (e.g. most birds of prey, kingfisher, barn owl, black redstart, little ringed plover). Intentionally or recklessly ³ disturb a Schedule 1 species while it is building a nest or is in, on or near a nest containing eggs or young; intentionally or recklessly disturb dependent young of such a species.	No licences are available to disturb any birds in regard to development. Licences are available in certain circumstances to damage or destroy nests, but these only apply to the list of licensable activities in the Act and do not cover development. General licences are available in respect of 'pest species' but only for certain very specific purposes e.g. public health, public safety, air safety. https://www.gov.uk/wild-birds-protection-surveys-and-licences https://www.gov.uk/prevent-wild-birds-damaging-your-land-farm-or-business
Rabbits, foxes and other wild mammals	Wild Mammals (Protection) Act 1996	Intentionally inflict unnecessary suffering to any wild mammal.	Natural England provides guidance in relation to rabbits (Technical Information note TIN003, Rabbits- management options for preventing damage, July 2007) and foxes (which are also protected under the Wildlife and Countryside Act 1981)

For species BAP and Species of Principal Importance, see below			from live baits and decoys, see Species Information notes SIN003 (2011), <i>Urban foxes</i> and SIN004 (2011) <i>The red fox in rural areas</i> as well as other wild mammals. Lawful and humane pest control of these species is permitted.
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¹Deliberate capture or killing is taken to include “accepting the possibility” of such capture or killing. ²Deliberate disturbance of animals includes in particular any disturbance which is likely a) to impair their ability (I) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of hibernating or migratory species, to hibernate or migrate; or b) to affect significantly the local distribution or abundance of the species to which they belong.

Lower levels of disturbance not covered by the Conservation of Habitats and Species Regulations 2010 remain an offence under the Wildlife and Countryside Act 1981 although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided. Thus deliberate disturbance that does not result in either (a) or (b) above would be classed as a lower level of disturbance. ³The term ‘reckless’ is defined by the case of Regina versus Caldwell 1982. The prosecution has to show that a person deliberately took an unacceptable risk, or failed to notice or consider an obvious risk. ⁴The Wildlife and Countryside Act (1981) has been updated by various amendments, including the Countryside and Rights of Way Act 2000 and the Natural Environment and Rural Communities Act 2006. A full list of amendments can be found at <http://jncc.defra.gov.uk/page-1377>.

Habitats & Species	Legislation	Guidance
Species and Habitats of Principal Importance for the Conservation of Biodiversity	Natural Environment & Rural Communities Act 2006 S.40 (which superseded S.74 of the Countryside & Rights of Way Act 2000).	S.40 of the NERC Act 2006 sets out the duty for public authorities to conserve biodiversity in England. Habitats and species of principal importance for the conservation of biodiversity are identified by the Secretary of State in consultation with NE, are referred to in S.41 of the NERC Act for England. The list of habitats and species was updated in 2008: http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx The habitats and species listed are not necessarily of higher biodiversity value, but they may be in decline. Habitat Action Plans and Species Action Plans are written for them or are in preparation, to guide their conservation. Ecological impact assessments should include an assessment of the likely impacts to these habitats and species.

Appendix B – Phase 1 Habitat Plan



Appendix C – Information Sheet for Contractors on Bats

BATS



Information, legal responsibilities and best practice for the construction industry

Legal Protection

All UK Bat species are protected by European and UK law, in practical terms this means it is an offence to:

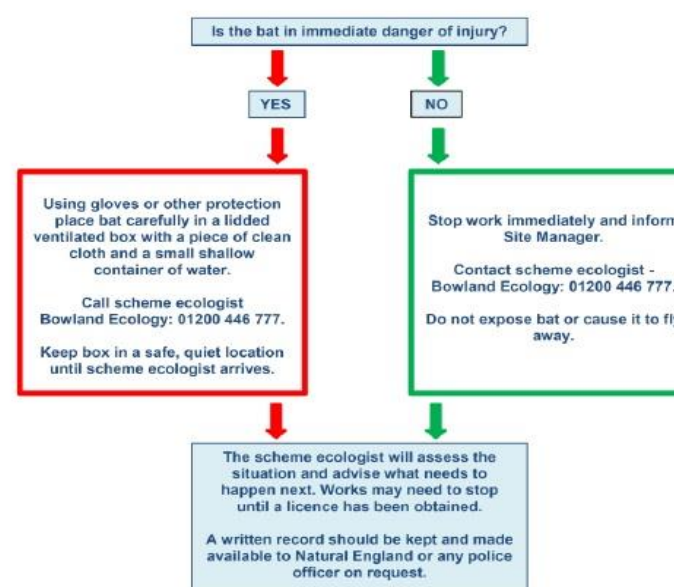
- Deliberately capture, injure or kill a bat;
- Deliberately disturb bats;
- Damage or destroy a breeding site or resting place (even if bats are not occupying the roost at the time);
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb a bat in such a place;
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat.

Penalties on conviction: the maximum fine is £5,000 per incident or per bat (some roosts contain several hundred bats), up to six months in prison, and forfeiture of items used to commit the offence, e.g. vehicles, plant, machinery.

Defences include:

1. Tending/caring for a bat solely for the purpose of restoring it to health and subsequent release.
2. Mercy killing where there is no reasonable hope of recovery (provided that person did not cause the injury in the first place – in which case the illegal act has already taken place).

Found a bat during unsupervised works?



Field signs of bat presence:

- Live or dead bats: the smallest UK bat species, the pipistrelle is only 3.5-4.5cm long.
- Droppings: bat droppings look like mouse droppings but will crumble between your fingers (they are dry and made entirely of insects).
- Feeding remains: piles of butterfly/moth wings are often left below bat feeding perches.



Places that bats may use in buildings



Schematic from www.bats.org.uk

Bats can roost in the following places:

- The top of gable end or dividing wall;
- The top of chimney breasts;
- Ridge and hip beams and other roof beams;
- Mortise and tension joints;
- All beams/ceilings/pipework (free hanging bats);
- The junction of roof timbers, especially where ridge and hip beams meet;
- Behind purlins;
- Between tiles and the roof lining;
- Under flat felt roofs;
- In trees (cracks/holes/ivy cladding) ;
- Under barge boards;
- In cavity walls;
- In cracks in stone or concrete;
- Behind peeling paint/wall coverings;
- Gaps behind window and door frames;
- Between window panes and timber boarding.

Why wear gloves?

There is a small risk that some bats carry a rabies virus – European Bat Lyssavirus. The purpose of wearing gloves is to reduce the chance of being bitten, as the virus is transmitted via bat saliva. Thick leather gloves are appropriate for removing a bat from imminent danger but these should be clean.

In the event that you are bitten, wash the wound, gently but thoroughly, with soap and water. Speak to a health professional immediately, advising them that you have been bitten by a bat.



References:

Bat Conservation Trust. August 2016. Why wear gloves when handling bats?
BCT Bat Surveys for Professional Ecologists, Good Practice Guidelines, 3rd Edition, 2016

version 1 August 2017

Appendix D – Phase 1 Habitat Survey Target Notes

TN/T	Description	Photograph
TN1	A small area of introduced shrubs and scrub with young beech (<i>Fagus sylvatica</i>) and ash (<i>Fraxinus excelsior</i>) saplings (scrub) situated either side of the Yavneh Girls access ramp. Species include conifer sp. (<i>Pinophyta</i>), dog rose (<i>Rosa canina</i>), Wilsons honeysuckle (<i>Lonicera nitida</i>), and butterfly bush (<i>Buddleja davidii</i>). Ground flora includes herb Bennet (<i>Geum urbanum</i>), rosebay willowherb (<i>Chamerion angustifolium</i>), herb Robert (<i>Geranium robertianum</i>) and dandelion (<i>Taraxacum</i> agg.). The introduced shrub provides potential foraging and nesting opportunities for birds and small mammals.	
B1	B1 is a single storey red brick building with a flat bitumen roof with standard and bay windows, located adjacent to B2 and B3. The building is used as classrooms. Externally, the metal overhang bordering the top of the external walls and above windows is well sealed. Mortar between the brickwork is generally well sealed, with a few small gaps behind the drain pipe on the eastern elevation and above uPVC windows, however, the mortar does not appear to extend further into the building and is considered unsuitable for roosting bats. A slight gap behind the bargeboard, with vegetation growing within, is located above the window on the northern elevation where the timber barge board has come away. Internally, the building comprises large classrooms and interlinked corridors; all the rooms comprise a suspended ceiling. Evidence of damp is located on several ceiling tiles. Above the suspended ceiling, a view of electrical wires and the plaster/bitumen roof can be seen. A small gap will possibly be present between the suspended ceiling and the flat roof, however, no external bat access is possible to this area. The building has negligible potential to support roosting bats.	

B2	B2 is a two storey red brick building with a pitched slate roof. Three brick chimneys are present on the roof. All chimneys are in poor condition with several gaps from missing mortar located between the brickwork. Mortar between the brick work on the external walls is generally well sealed and appears to have been repointed in places. There are numerous gaps beneath roof slates below the central chimney and a slipped roof slate on the north east elevation below the chimney, providing potential bat access to the loft void and under slates. The roof ridge tiles are generally well sealed with one lifted tile on the southern edge of the roof ridge. uPVC windows are well sealed and airtight. The timber soffit box is very weathered with numerous large holes (approximately 5 cm by 8 cm) present along the eastern elevation of the building providing potential interior access into the soffit for roosting bats. The felt above the soffit box is also degraded with visible gaps underneath. Internally, the building has large classrooms on both levels with a kitchen staff room on the first floor. A suspended ceiling is present in all top floor rooms with a loft hatch present above the suspended ceiling at the south eastern end of the first floor corridor.. The loft space is approximately 1 - 1.25 m high with timber joists and beams present in generally good condition. The roof is lined with bitumastic felt, which is in good condition with brick supporting walls. The brick wall has collapsed in places and exposed additional areas of the loft void which didn't appear to be cluttered. Electrical wires and water pipes were visible. A potential old squirrel drey was present on the loft floor, with evidence of chewing on the wall plate timber. The building has moderate potential to support roosting bats.	
B2a B2b	Two red brick lean-to structures located on the southern edge of B2. B2b is of more recent construction due to newer brick work. Both roofs are sloped with metal, corrugated tiles and air vents are present within the brick walls on both structures. B2b has an approximate 2 cm gap above the door providing access into the interior and possibly creating a draught. B2b has cracked brickwork where the structure joins Building 2, with lifted felts and lead flashing along the south western elevation. Mortar within the brickwork is well sealed on both structures. No internal access was available at the time of survey. The buildings have low potential to support roosting bats.	
B3	B3 is a single storey, red brick building with a sloped tiled roof. This building is a more recent extension of B1. UPVC windows on the western elevation of the building are covered with metal mesh. The roof is in good condition with no gaps between the tiles or felt. The mortar between the brick work is also well sealed. The barge board along the western elevation of the property is rotten with numerous holes present. No internal access was available at the time of survey. The building has low potential to support roosting bats.	

Appendix E – Bat Roost Potential and Habitat Suitability Categories

Suitability	Description of Roosting Habitat	Commuting & Foraging Habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitats to be used on a regular basis or by a larger number of bats (i.e. unlikely to be suitable maternity or hibernation). A tree of sufficient size and age to contain potential roosting features but with none seen from the ground, or feature seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions, and surrounding habitat but unlikely to support a roost of high conservation status.	Continuous habitat connected to the wider landscape that could be used by bats for commuting, such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging, such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis, and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous high quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats, such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close and connected to known roosts.

Appendix F – Bat Activity During Dusk Emergence Surveys

Survey 1

Eve Loxham (Surveyor 3)		
Time	Species	Activity
21:23	Common pipistrelle	HNS (heard not seen) nearby commute, towards west
21:25	Common pipistrelle	HNS nearby commute, towards west
21:26	Common pipistrelle	HNS nearby commute, towards west
21:33	Common pipistrelle	HNS nearby commute, towards west
21:36	Common pipistrelle	Commuting (west to east)
21:36	Common pipistrelle	Commuting (HNS)
21:38	Common pipistrelle	Commuting (west to east)
22:41	Common pipistrelle	Foraging along tree line to south
21:44	Common pipistrelle	HNS- foraging
21:45	Common pipistrelle	HNS- foraging
21:50	Common pipistrelle	HNS- foraging
22:03	Common pipistrelle	Two bats foraging
Jack Sykes (Surveyor 1)		
Time	Species	Activity
20:16	Common pipistrelle	Foraging along the building SW to NE
21:25	Common pipistrelle	Foraging along the building NE to SW
21:37	Common pipistrelle	Foraging (HNS)
21:41	Common pipistrelle	Foraging (HNS)
21:45	Common pipistrelle	Foraging (HNS)
21:50	Common pipistrelle	Foraging (HNS)
22:03	Common pipistrelle	Foraging (HNS)
22:06	Common pipistrelle	Foraging (HNS)
Lee Moat (Surveyor 4)		
Time	Species	Activity
21:23	Common pipistrelle	Commuting, one bat observed
21:27	Common pipistrelle	HNS (faint detection)
21:33	Common pipistrelle	Commuting
21:37	Common pipistrelle	Commuting
21:44	Common pipistrelle	Commuting, HNS
21:50	Common pipistrelle	Commuting, HNS
22:03	Common pipistrelle	HNS
Heather Whalley (Surveyor 2)		
Time	Species	Activity
21:22	Common pipistrelle	Foraging, HNS
21:25	Common pipistrelle	Foraging (HNS)
21:37	Common pipistrelle	Foraging (HNS)
21:41	Common pipistrelle	Foraging (HNS)
21:50	Common pipistrelle	Foraging (HNS)
22:03	Common pipistrelle	Foraging (HNS)
22:07	Common pipistrelle	Foraging (HNS)
22:09	Common pipistrelle	Foraging (HNS)

Survey 2

Heather Whalley (Surveyor 3)		
Time	Species	Activity
21:42	Common pipistrelle	Foraging
21:55	Common pipistrelle	Foraging
22:03	Common pipistrelle	Foraging E to S
22:29	Common pipistrelle	Foraging in trees to the S
22:35	Common pipistrelle	Heard not seen
22:38	Common pipistrelle	Heard not seen
22:40	Common pipistrelle	Heard not seen

Luke Hall (Surveyor 1)		
Time	Species	Activity
21:42	Pipistrelle Sp	Heard not seen
21:55	Pipistrelle Sp.	Heard not seen
22:01	Pipistrelle Sp.	Heard not seen
22:03	Pipistrelle Sp.	Commuting along building
22:28	Pipistrelle Sp.	Commuting along building
22:39	Pipistrelle Sp.	Heard not seen
22:40	Pipistrelle Sp.	Commuting along building
Jack Taylor (Surveyor 2)		
Time	Species	Activity
21:42	Common pipistrelle	Commuting along building
21:54	Common pipistrelle	Commuting along building
22:00	Common pipistrelle	Foraging in trees to S
22:03	Common pipistrelle	Heard not seen
22:28	Common pipistrelle	Commuting along building
22:37	Common pipistrelle	Foraging in trees to S
22:38	Common pipistrelle	Foraging in trees to S
22:39	Common pipistrelle	Commuting along building
22:40	Common pipistrelle	Heard not seen
22:43	Common pipistrelle	Commuting along building
Sam Robinson (Surveyor 4)		
Time	Species	Activity
22:03	Unknown	HNS
22:15	Common pipistrelle	Commuting along building
22:30	Unknown	HNS
22:40	Common pipistrelle	Commuting along building
22:45	Common pipistrelle	2 bats commuting SW