St James Primary School, Clitheroe

Preliminary Ecological Appraisal

July 2021

Control sheet

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Signed (Author)	Signed (QA)
	

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Executive Summary

Bowland Ecology Ltd was commissioned by Cassidy & Ashton on behalf of St James School, to complete a phase 1 habitat survey, bat roost assessment and dusk/dawn bat surveys of the two buildings and surrounding grounds of St James School, Clitheroe, Lancashire (NGR: SD 74130 41305). Current proposals include the partial demolition of the western building (B1) with the retention of the school hall and after school room. Works are required to accommodate a car park and the subsequent construction of a new junior school building at the south-eastern corner of the school grounds, with associated vehicular access and parking. Further proposals include a small extension on the western elevation of the eastern building (B2) and the creation of a number of soft and hard play areas.

Key ecological features, potential impacts, further survey requirements and outline mitigation measures are summarised in Table 1, below.

Ecological Feature	Potential Impact	Further surveys	Outline Mitigation / Recommendations
Primrose Lodge (BHS) & Mearley Brook (HPI)	Indirect impacts through pollution	N	Implementation of best practice during works
Habitats - broad-leaved woodland, scattered mature trees and hedgerows	Loss of habitat and/or disturbance	N	Minimise loss and disturbance Any trees/hedgerows removed as part of the works will be replaced on a 2:1 ratio Root Protection Area (RPA) of trees marked off prior to works
Bats	Disturbance to roosting/commuting /foraging bats Loss of roosting and/or foraging habitat	N	Implementation of Reasonable Avoidance Measures (RAMs) during works Demolition works on B1 will be supervised by a licenced ecologist and will take place during the winter months or the autumn/spring transition periods (November to March inclusive), when bats are highly unlikely to be present within the building and are least vulnerable to disturbance. Compensation for roost modification will comprise the installation of a single bat box within the school ground (see Section 5).
			Any lighting on site will be designed in accordance with the appropriate guidance
Birds	Killing/disturbance of nesting birds and/or their nests Loss of nesting and foraging habitat	Y*	Vegetation clearance to be undertaken outside of breeding season (March – August inclusive) *If works are carried out during the bird breeding season, a pre-works nesting bird check of suitable habitat will be required
Amphibians & small mammals	Killing/disturbance of amphibians Loss of sheltering and/or foraging habitat	N	Implementation of Reasonable Avoidance Measures (RAMs) during works
Invertebrates	Loss of habitat and/or disturbance	N	Planting of wildflower areas

1. Introduction

1.1 Bowland Ecology Ltd was commissioned by Cassidy & Ashton on behalf of St James School, to complete a phase 1 habitat survey, bat roost assessment and dusk/dawn bat surveys of the two buildings and surrounding grounds of St James School, Clitheroe, Lancashire (NGR: SD 74130 41305). Current proposals include the partial demolition of the western building (B1) with the retention of the school hall and after school room. Works are required to accommodate a carpark with the subsequent construction of a new junior building at the south-eastern corner of the school grounds with associated vehicular access and parking. Further proposals include a small extension on the western elevation of the eastern building (B2) and the creation of numerous soft and hard play areas.

1.2 The buildings are located within the grounds of St James School, on Greenacre Street, Clitheroe. The school grounds comprise two buildings with an associated school yard, hard standing areas and woodland at the southern boundary with Mearley Brook (HPI) centrally intercepting the campus, separating the two school buildings. Habitats surrounding the site are predominantly residential and commercial to the northeast and west, with Primrose Lodge (BHS) adjacent to the southern boundary and Clitheroe Castle Knoll (BHS) further north. The site location and layout are presented in Figure 1. Photographs of the buildings are provided in Appendix C.

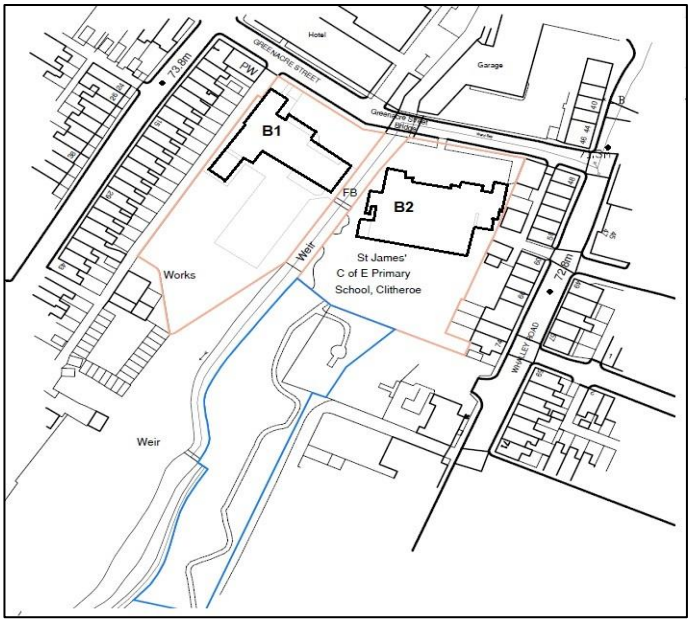

Figure 1: Site location (red line boundaries) and layout.

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 assessment, identify potential impacts and provide recommendations pertaining to the proposal.

1.4 This report includes a description of survey methods, a summary description of habitats and fauna and outlines recommendations to provide protection and enhancements for biodiversity and protected species.

2. Methodology

2.1 The desk study, extended Phase 1 habitat survey and ecological assessment followed the Guidelines for Preliminary Ecological Appraisal (GPEA) (CIEEM, 2017) and the Guidelines for Ecological Report Writing (CIEEM, 2017). They are also in line with the British Standard BS42020:2013 'Biodiversity – Code of practice for planning and development'.

Desk Study and Data Search

2.2 The aim of the desk study was to identify the presence of statutory and non-statutory wildlife sites within the area 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 (https://magic.defra.gov.uk/) was reviewed for information on locally, nationally and internationally designated sites of nature conservation importance (statutory sites only) on or within 1 km of the site boundary.

2.4 Local records on and within 1 km of the site were obtained following a data search with Lancashire Environment Record Network (LERN)[1].

2.5 Ordnance Survey (OS) maps, Mario maps (MARIO-Maps & Related Information Online Lancashire.go.uk) and aerial photographs (http://maps.google.co.uk.maps) were reviewed to help identify any continuous habitat and any other notable habitats within the surrounding area, together with any ponds within 0.25 km of the site.

2.6 Natural England's great crested newt (*Triturus cristatus*) licensing method statement template (Form WML-A14-2 (version November 2017) 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 residential nature of surrounding habitats.

Extended Phase 1 Habitat Survey

2.7 An extended Phase 1 habitat survey was undertaken on the 21st May 2021 by Eve Loxham MBiolSci (Hons), Natural England Survey Licence holder for bats (Class I 2017-28371-CLS-CLS) and GCN (2017-27825-CLS-CLS) and Jack Taylor BSc (Hons). The weather was cloudy (8/8), calm (Beaufort scale no. 1) with light rain and a temperature of approximately 10°C.

2.8 The survey followed the Phase 1 habitat survey methodology (JNCC, 2010) and the recommended approach within the 'Guidelines for Preliminary Ecological Appraisal' (CIEEM, 2017).

2.9 The survey boundary is shown on the Phase 1 habitat plan in Appendix D. All features of ecological significance were target noted (Appendix C) and a colour coded map of the habitats on site has been produced (Appendix D).

2.10 The survey method records information on the habitats, together with any evidence of and potential for legally protected and notable fauna, in particular:

[1] Records from 2005 onwards are included within the report.

- potential roosting sites for bats within buildings and trees (identification of suitable cracks and crevices – survey undertaken externally and from ground level only). An assessment of suitability was undertaken according to the Bat Conservation Trust's Good Practice Guidelines 3rd Edition (Collins, 2016) (see Appendix B);
- assessing the suitability of habitats for other notable and protected species such as nesting birds (including any active or disused nests), reptiles, water vole (*Arvicola amphibious*), otter (*Lutra lutra*), white-clawed crayfish (*Austropotamobius pallipes*), badger (*Meles meles*) and invertebrates;
- 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 (*R. ponticum, R. ponticum x R. maximum and R. luteum)* and Indian balsam (*Impatiens glandulifera*);
- assessing the suitability of the habitat for amphibians, including the protected GCN.

Daytime Building Inspection Survey

2.11 A daytime external and internal building inspection was carried out on the same day as the Extended Phase 1 Habitat Survey.

2.12 The external inspection involved checking for field signs of bats on external features of the buildings with particular attention being paid to ledges, walls, doors and the surrounding ground. An assessment of the potential of the buildings to support bats was also made during the survey i.e. searching for suitable roosting crevices.

2.13 The internal inspection involved a search of the buildings for field signs 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. High power torches (LED LENSER T7.2 - 320 lumens) and close focusing binoculars were used to aid the survey.

2.14 Using the information collected during the internal and external assessment, a 'roost potential' score was given to the buildings according to the criteria shown in Appendix B (Collins, 2016).

2.15 Natural England's Bat Mitigation Guidelines (Mitchell-Jones, 2004) state 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.

2.16 Using the information collected during the external and internal assessment, a 'roost potential' score was given to the building according to the criteria shown in Appendix B (Collins, 2016).

Dusk Emergence Survey

2.17 Dusk emergence and dawn re-entry surveys were undertaken on the 8th June, 29th June and the 21st July 2021. The survey methodology followed the guidelines as described in Collins, 2016. The survey dates, timings, weather conditions and surveyors is shown in Table 1 below.

Table 1: Summary of bat survey weather conditions and surveyors

Date	Start and end time and time of sunset/ sunrise	Weather Conditions	Surveyors[2]
08.06.21	Start: 21:15 End: 23:03 Sunset: 21:37	Clear, dry, mild with a light breeze, Start Temp – 16°C End Temp – 13°C Precipitation - none Beaufort wind scale – 2	JM, JT, FS
29.06.21	Start: 21:22 End: 23:15 Sunset: 21:44	Overcast (75% cloud), dry Start Temp – 10.9°C End Temp – 12°C Precipitation - None Beaufort wind scale – 0/1	EL, AH, LK
21.07.21	Start: 3:36 am End: 5:21 am Sunrise: 5.06am	Clear, dry Start Temp – 16 °C End Temp – 15°C Precipitation - None Beaufort wind scale – 0/1	JMorris, AH

2.18 Surveyors positioned themselves to get the best coverage of the buildings during the surveys and focused in on those areas with the most potential as roosting habitat. The surveys were aided by the use of the following bat detectors: Bat Box Duet, Pettersson and EM Touch.

2.19 The emergence and re-entry surveys were completed at an appropriate time of year and the weather conditions were suitable, therefore a full assessment of the potential of the buildings to support roosting bats was undertaken.

Survey Limitations

2.20 Lack of bat roosting evidence does not necessarily preclude it from being present at a later date. Bat use of a particular structure or area of land can significantly vary, not only on a seasonal basis but also from day to day.

2.21 External field signs of bats can be lost over time due to weathering and damp conditions. Therefore, recent heavy rain may have washed off any bat evidence on the exterior of the building. Droppings and other field signs are not always visible through non-intrusive inspection. Inspection of rooftops is limited to inspection from ground level using close-focussing binoculars and high-powered torchlight only, due to the health and safety restrictions of accessing a rooftop.

2.22 No access was available to the loft space of B1 due to the loft floors not being boarded, this area was therefore inspected from loft hatch openings throughout the school. Consequently, there is potential for missed bat evidence due to limited access of loft spaces.

2.23 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 (Appendix A). If there are changes to the proposals, such as a change to the proposed development design or to the construction method and programme, the assessment would need to be reviewed.

[2] JM: Jodie Marks MSc BSc (Hons), FS: Fiona Shuttle BSc (Hons) Bat class licence (Level 1: 2021-51224-CLS-CLS), Jack Taylor BSc, EL: Eve Loxham MBiolSci (Hons), AH: Abigail Hamer BSc (Hons), LK: Liz Kenyan BSc, JMorris: Jack Morris.

3. Results

Statutory and Non-Statutory Wildlife Sites

3.1 There are no statutory designated wildlife sites within 1 km of the site.

3.1 There are two non-statutory Biological Heritage sites (BHS) within 1 km of the site:

- Primrose Lodge (BHS) is located adjacent to the school ground's southern boundary. The site comprises the lodge for the former Primrose Print Works created by the damming of Mearley Brook and adjacent semi-natural broadleaved woodland with an extensive area of wet woodland, a UK Priority Habitat. The site supports the largest known colony of Green Figwort (*Scrophularia umbrosa*) a nationally scarce species in the Ribble Valley.
- Clitheroe Castle Knoll (BHS) is located 257 m north of the school grounds. The site consists of several rock outcrops and steep sloping areas of limestone grassland, scrub and developing woodland below Clitheroe Castle.

Habitats of Principal Importance

3.2 The search of Multi-Agency Geographical Information for the Countryside identified over 40 areas of deciduous woodland HPI within 1 km of the site. The closest of which are located approximately 100 m north and south within Clitheroe Castle Knoll (BHS) and Primrose Lodge (BHS).

3.3 Habitat connectivity from the site to the deciduous woodlands include roadside habitats (verges and hedgerows) and garden boundaries to Clitheroe Castle Knoll (BHS), and tree lines directly connecting to woodland within the Primrose Lodge (BHS) to the south.

3.4 Based on a review of aerial photographs and OS maps there are no ponds within 250 m of the school grounds or within the site. Mearley brook (HPI) runs between the two school buildings and becomes part of Primrose Lodge (BHS) to the south.

Extended Phase 1 Habitat Survey

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

Habitats

<u>Amenity grassland</u>

3.6 Amenity grassland comprising the school playground occupies half the northeast and southwest areas of the western portion of the site. The grassland is managed regularly (mown), resulting in a short sward height. Species present at TN 1 include perennial rye grass (*Lolium perenne*), meadow grass species (*Poa* sp.) and red fescue (*Festuca rubra*) along with herbs including red clover (*Trifolium pratense*), daisy (*Bellis perennis*) and dandelion (*Taraxacum*). The grassland is generally flat although there is a mound towards the south. Amenity grassland is also present at the front of B1 (TN 5) with a similar species composition.

<u>Semi-improved neutral grassland</u>

3.7 There is a small un-mown central area of semi-improved neutral grassland at TN 5 with greater species diversity and a taller sward height than surrounding amenity grassland. Species include Yorkshire fog (*Holcus lanatus*), rose (*Rosa* sp.), daisy, dandelion, creeping buttercup (*Ranunculus repens*), fescue grass (*Festuca* sp.), ornamental herb species, cleavers (*Galium aparine*), and oxeye daisy (*Leucanthemum vulgare*).

Broadleaved woodland

3.2 Mature trees surround the southern boundary of the amenity grassland and hard standing playground forming a woodland strip (TN 3). Canopy species include lime (*Tilia* sp.), alder (*Alnus glutinosa*), ash (*Fraxinus excelsior*), beech (*Fagus sylvatica*), hazel (*Corylus avellana*), willow (*Salix* sp.), sycamore (*Acer Pseudoplatanus*), poplar (*Populus* sp.), rowan (*Sorbus aucuparia*), field maple (*Acer campestre*) and silver birch (*Betula pendula*) with an understory of holly (*Ilex aquifolium*), hawthorn (*Crataegus monogyna*) and hazel. The ground flora is predominantly amenity grassland with scattered perennial plants at the perimeter including wood avens (*Geum urbanum*), broadleaved willowherb (*Epilobium montanum*), creeping buttercup, herb Robert (*Geranium robertianum),* lesser celandine (*Ficaria verna*), common nettle (*Urtica dioica*), ivy (*Hedera*), common hogweed (*Heracleum sphondylium*) and holly. There are some areas of leaf litter and patches of bare ground.

Species-poor hedgerows

3.3 A short (approximately 10 m in length) hedgerow is present at the edge of the amenity grassland playground at TN 2. The hedge is approximately 3 m tall and 2 m wide with a species composition of field maple and privet (*Ligustrum* sp.).

3.4 A small (approximately 10 m in length) beech hedgerow is present at the southern edge of the amenity grassland at TN 5.

Scattered trees and scrub

3.5 Scattered mature trees including rowan, silver birch and whitebeam (*Sorbus aria*) are present within the amenity grassland at TN 5 with immature trees and scattered scrub, species identified as being the same as those listed in TN's 3 & 4, present at TN 7.

Introduced shrubs

3.6 A small area of ornamental planting is present to the north of the woodland strip (TN 4). Species present include ornamental non-native shrubs along with privet, rose and holly.

3.7 Small sections of introduced shrubs are planted at the edge of the amenity grassland (TN 5) which include rose and grey poplar (*Populus alba*) with further introduced shrubs bordering the hard standing playground at TN 7.

Mearley Brook (HPI)

3.8 Mearley Brook (TN 6), approximately 4 m wide, dissects the school campus in the centre and is out of the footprint of works. The brook is a channelised watercourse, roughly flowing north to south, with vertical stone embankments. The watercourse has an absence of emergent vegetation with ivy growth on the stone walls. At the time of the survey the brook had a moderate flow rate and was slightly discoloured brown, possibly due to recent heavy rain.

Other habitats

3.9 A hard standing playground is present to the rear of B2 (TN 7).

Species

Bats

3.10 The search of MAGIC revealed no records of active or inactive Natural England bat mitigation licences within 1 km of the site.

3.11 The data search returned 162 records of bat activity within 1 km of the site for pipistrelle (*Pipistrellus* sp.) and an unidentified bat species. The closest record is for a pipistrelle maternity roost, located approximately 250 m southwest of the site, dated 2018. The record is for the count of 144 adult bats.

3.12 One building (B1) has the potential on site to support roosting bats. The woodland strip and scattered trees/scrub provide both foraging and commuting habitat for bats and connect the site to habitats in the wider area, predominately the riparian woodland to the south (Primrose Lodge BHS). The Mearley brook running central to the school campus also acts as a feeding and commuting corridor for bats.

3.13 The site comprises two buildings (B1 & B2). The site layout and building locations are shown in Appendix D with bat foraging and roost locations shown in Appendix E. Photographs of the buildings are provided in Appendix C.

Daytime building inspection

3.14 B1 is situated to the west of the site and is an irregular T-shaped, single storey school building. The walls are constructed of brick with small areas of external concrete render and wooden cladding. There are several areas of extensions to the main school building as evidenced by several different roof structures and compositions. The majority of the roof is pitched with gable ends at the south-eastern and north-western elevations. The main hall section of the school towards the north-west is much taller than the rest of the school and has a pitched roof with gable ends at the north-east and south-west elevations. A small extension joins onto the main hall on the south-west elevation, this has a mono pitch roof which is constructed of corrugated metal. There is a small single storey-flat roof extension at the front of the building (north-eastern elevation) which houses the entrance. The fascia boards and soffit boards are a combination of plastic and wood construction.

3.15 The south-east elevation comprises a gable end and single storey flat roof extension which faces towards Mearley Brook. There are three identified gaps suitable for roosting bats: 1) a gap at the southern corner where the roof edge meets the wall plate and the soffit, measuring 10 cm by 10 cm and of an undetermined depth which may lead into the roof space; 2) a gap at the peak of the gable end beneath the end ridge tile with undetermined dimensions that may lead into the roof space or into the ridge tile void; and 3) an identical gap to gap 1) on the opposite eastern corner of the building.

3.16 The south-western elevation is at the rear of the school and faces towards the playground, a combination of hard standing, amenity grassland and broadleaved woodland. There is a permanent awning structure which extends outwards from approximately half of the building on the eastern side. The roof tiles and ridge tiles on this elevation appear to be well sealed. There are three visible gaps suitable for roosting bats: 1) a small gap measuring approximately 5 cm by 8 cm at the corner of the tall main hall windows where the soffit meets the wall plate and adjacent to an exterior light; 2) a long gap between the soffit and wall plate which is approximately 2 cm by 3 cm and extends along the edge of the main hall building at the roof valley; and 3) gap beneath the white fascia along the entire gable end of the main school hall building.

3.17 The north-eastern elevation is at the front of the school and faces a small area of amenity grassland, scattered trees and shrubs which are situated in front of Greenacre Street. This elevation is well sealed for bats apart from a single small gap beneath the gable end peak ridge tile of the northern extension area. The gap measures approximately 5 cm square with possible interior access to the loft. The north-western elevation faces the alley and is well sealed with negligible potential for roosting bats.

3.18 B1's internal loft space was accessed via three loft hatches throughout the school. The loft space consists of one continuous space which is sectioned by breeze block walls which have small crawl-space entryways between. The roof is lined with breathable roofing membrane and has wooden rafters, purlins and vertical struts. The vertical struts are partially boarded between with plywood. The space is well-insulated on the floor and

is rarely used, seemingly only for access to any wiring or pipework which are present in the loft. There are no obvious areas of exterior light spill viewed from the loft hatches which suggests no large gaps to the exterior. No signs of bats were identified from the loft hatch vantage points. Several undisturbed cobwebs were noted, and a single mouse dropping was discovered. B1 is considered to have **low potential** to support roosting bats.

3.19 A small extension will be constructed on the western elevation after the demolition of the toilet block. Building 2 is situated to the east of the site and is constructed of stone walls with a slate tiled roof. The roof structure is complex and includes gable roof sections, hipped roof sections, flat roofed sections, along with window dormer sections. Negligible bat roosting features were identified; the building is in good condition and well-sealed.

Emergence/Re-entry Surveys

3.20 Common and soprano pipistrelles, noctules and myotis were recorded foraging, commuting and social calling during the dusk and dawn bat surveys (see Appendix F). During the dusk surveys on the 8th and 29th June, one common and one soprano pipistrelle were recorded emerging from B1 on both occasions. No bats were observed re-entering either of the two roost locations during the dawn survey on the 21st July. Further details regarding bat emergences are detailed in Table 2. Full details of bat foraging and commuting activity, and emergence locations are provided in Appendix E.

Table 2: Summary of common and soprano pipistrelle emergence at B1

Date	Emergence /Re-entry Time	Building & Feature	Surveyor
08.06.21	22:05	Soprano pipistrelle emerged from under fascia board on the southern elevation of the roof apex	FS
	22:20	Common pipistrelle emerged from under roof flashing within the roof joining	FS
29.06.21	22:02	Soprano pipistrelle emerged from under fascia board on the southern elevation of the roof apex and commuted west	LK
	22:06	Common pipistrelle emerged from under roof flashing within the roof joining	LK
21.07.21	N/A	No re-entry observed	N/A

Badger

3.21 No evidence of European badger (*Meles meles*) in the form of latrines, footprints or setts were recorded during the survey. The scrub, hedgerows and grassland habitats provide suitable foraging habitat for badger with woodland providing potential sett creation habitat. However, the site is surrounded by a walled boundary (except to the southeast where there is a small perimeter of metal fencing) which presents a barrier to badger dispersal into the grounds if they were to be present within Primrose Lodge (BHS). Furthermore, the grounds are subjected to high levels of disturbance which renders the area even more less suitable. Badger are therefore not considered further within this report.

Otter

3.22 The data search returned four records for European otter (*Lutra lutra)*, dated 2018 & 2019, located within Pendleton Brook, 555 m south of the school grounds. Connecting habitat between the school grounds and the record comprises the crossing of Primrose Road into Primrose Lodge (BHS), which is considered optimal habitat for otter foraging and commuting along Mearley Brook. However, woodland within the site is considered unsuitable for holt creation and lay up areas due to the disturbed nature of the grounds and the walled boundary. Otter are therefore not considered further within this report.

Small mammals

3.23 The data search returned nine records for European hedgehog (*Erinaceus europaeus*), an SPI, within the search area. A hedgehog was observed crossing the Mearley Brook bridge on the initial bat dusk survey. Areas of woodland, hedgerow, scrub, scattered trees, introduced shrub and unmanaged grassland present within the school grounds are considered suitable for use by European hedgehog, alongside other non-SPI mammals including wood mouse (*Apodemus sylvaticus*), field vole (*Microtus agrestis*) and common shrew (*Sorex araneus*).

3.24 The data search also returned one record for European hare (*Lepus europaeus*), an SPI, located 905 m east of the school grounds. Connecting habitat between the grounds and the record is poor, comprising of roads and residential gardens. Hares prefer habitats of a rural, open nature comprising fields of arable crops, therefore due to a lack of suitable foraging habitats on site, they are not considered further within this report.

Birds

3.25 The data search returned records of the following notable bird species within, 1 km, that could be present within the school grounds: Black headed gull (*Chroicocephalus ridibundus*), dunnock (*Prunella modularis*), grey wagtail (*Motacilla cinerea*), house sparrow (*Passer domesticus*), lesser redpoll (*Acanthis cabaret*), spotted Flycatcher (*Muscicapa striata*) and tree sparrow (*Passer montanus*).

3.26 Woodland, hedgerow, scattered trees, scrub and introduced shrub provide suitable nesting and foraging habitat for a range of tree and scrub nesting birds.

3.27 There is no potential within the site for ground nesting birds due to regular mowing and the disturbance of grassland from school pupils. The buildings present on site are not considered to offer high quality nesting opportunities due to the absence of suitable nesting locations.

Amphibians

3.28 The data search returned one record for common toad (*Bufo bufo*), an SPI, within the search area, located 280 m south of the school grounds within Primrose Lodge BHS. The record is dated 2018.

3.29 Woodland, hedgerow, scattered trees, scrub and introduced shrub provide suitable refuge and foraging habitat for a range of common amphibian species.

Invertebrates

3.30 The data search returned three records for notable invertebrate species within the search area: ringlet (*Aphantopus hyperantus*) butterfly, cinnabar (*Tyria jacobaeae*) moth and latticed heath (*Chiasmia clathrate*) moth. The records are located approximately 420 m north within Clitheroe Castle Knoll (BHS) and are dated 2019 & 2020. The presence of the foodplant of both the ringlet butterfly and the lattice heath moth (meadow grass and red clover) within the school grounds makes the presence of these species on site likely.

3.31 Woodland, hedgerow, scattered trees, scrub, introduced shrub and semi-improved neutral grassland present on site are considered suitable to support a range of common invertebrate species.

4. Evaluation & Impact Assessment

Scheme Proposal

4.1 Current proposals include the partial demolition of B1 with the retention of the school hall and after school room (southwestern rooms). Works are required to accommodate a carpark with the subsequent construction of a new junior building at the south-eastern corner of the school grounds with associated vehicular access and parking. Further proposals include a small extension on the western elevation of B2 and the creation of numerous soft and hard play areas within the grounds.

Biological Heritage Sites

4.2 Due to the close proximity of Primrose Lodge BHS to the site, site clearance and construction works have the potential to directly impact the BHS through impacts to tree Root Protection Areas (British Standard: BS:5837:2012). Indirect impacts that may also occur in the absence of mitigation include pollution (fuel spillages incidents, runoff and dust), in particular pollution of Mearley Brook (HPI) located within the BHS.

Habitats of Principal Importance

4.3 The broad-leaved woodland scattered mature trees and hedgerows provide high ecological and botanical value within the school grounds, with the woodland connecting to wider woodland habitat of Primrose Lodge BHS to the south. Therefore, clearance of a number of trees and hedgerows to accommodate soft/hard play areas and a carpark will result in the reduction in ecological connectivity, along with a reduction in resources affecting the viability of plant/animal populations. Furthermore, works in proximity to trees to be retained has the potential to impact RPA's, compromising the health and stability of the tree. As such, the loss of these habitats is considered to represent a medium scale negative ecological impact at site and local level.

4.4 Current proposals suggest that scattered young trees, scrub, introduced shrub and a small area of semi-improved neutral grassland will be lost to accommodate a carpark. These habitats provide limited ecological and botanical value, however, they do provide some structure in the landscape and habitats for a variety of fauna (further described below).

4.5 Current proposals suggest that amenity grassland will be lost to accommodate a car park and soft/hard play areas. This habitat is of limited ecological value due to low species diversity and intense mowing regime. This habitat is also common within the surrounding area. Therefore, the loss of amenity grassland will have a minor ecological impact at a site level and no mitigation is required.

Species

<u>Bats</u>

4.6 The woodland strip and scattered trees/scrub within the school grounds provide high-quality foraging habitat for 'edge' species, including pipistrelle and whiskered bats (*Myotis mystacinus)* with the woodland providing habitat for brown long eared (*Plecotus auritus*) bats which prefer more 'closed' environments. The woodland strip acts as an extension to the Primrose Lodge BHS corridor which could be used by foraging and commuting bats to navigate around and between foraging areas.

4.7 Any new lighting associated with the completed development has the potential to impact foraging and commuting bats utilising adjacent habitats, particularly if directed onto the broadleaved woodland to the south. An increase in artificial illumination poses a barrier to bat movement and reduces foraging opportunities by depleting invertebrates from unlit areas, thereby reducing food abundance for light-sensitive bats such as brown long-eared

bats and *Myotis* species. Unmitigated, potential disturbance to bats could occur through increased lighting of the site at night, particularly if light spillage occurs onto roosting features or linear features used for commuting and foraging.

4.8 No trees within the school grounds had features to offer possible bat roosting habitat. Although no evidence of roosting bats was found during the building inspection surveys, B1 was categorised as having low potential for roosting bats; features identified on the exterior of this building provide suitable entry points/roosting potential for individual, or small numbers of crevice dwelling bats. Features identified during the inspection of B1, including gaps behind fascia boards/soffits and under raised/loose roof slates and ridge tiles provide potential roosting locations suitable for small numbers of crevice dwelling bats.

4.9 Over the course of the two dusk emergence surveys undertaken in June 2021, one common pipistrelle bat and one soprano pipistrelle bat on both occasions were observed emerging from two separate roost locations within B1. No bats were observed re-entering either roost during the dawn survey in July. Therefore, the roosts within B1 are assessed to be occasional day roosts used by individual pipistrelles. There is no evidence to suggest the building supports a maternity roost as surveys were completed in the peak season and only individual bats were recorded.

4.10 The soprano pipistrelle day roost is at the western end of the southern elevation of B1 and this area is to be retained in current proposals. Based on the results of the three surveys, it is considered that the common pipistrelle roost leads into the retained section of B1. Therefore, works are able to proceed without licencing as the roost will not be lost but may be temporarily modified due to its close proximity to the section of the building due for demolition. In the absence of appropriate mitigation, works may result in the modification of a bat roost and the potential accidental killing and/or injury to bats, which would result in an offence (see Appendix A). In accordance with the Bat Mitigation Guidelines (2004), day roosts of common species including common and soprano pipistrelle bats are considered to be of **low conservation significance**.

Small mammals

4.11 European hedgehog (SPI) and other small mammals may be present on site. Potential impacts to this species during site clearance and construction may include the disturbance/harm of individuals, the loss of foraging and refuge habitats and entrapment within excavations.

Birds

4.12 Any removal or temporary disturbance to woodland, hedgerow, scattered trees, scrub and introduced shrub dry has the potential to impact nesting birds if undertaken within the nesting bird season (March to August inclusive) and/or without due care and attention. This would constitute an offence (see Appendix A).

Amphibians

4.13 Impacts to woodland, hedgerow, scattered trees, scrub and introduced shrub has the potential to impact common amphibians, that may be sheltering in these habitats, if works are undertaken without due care and attention. Clearance of this habitat may also result in the loss of refuge habitat for the species.

4.14 It is considered that the risks of encountering GCN are low as there are no records for GCN within 2 km of the school and are no ponds within 500 m of the school. However, encountering individual GCN within suitable terrestrial habitats (woodland, hedgerow, scattered trees, scrub and introduced shrub) cannot be entirely ruled out.

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*". (National Planning Policy Framework, 2019) This section also therefore includes suggested enhancement measures. The following recommendations are designed to comply with legal requirements and national and local planning policy.

Primrose Lodge (BHS), Mearley Brook (HPI) and adjacent broadleaved woodland

5.2 Appropriate pollution control and prevention measures will be applied throughout the construction period to ensure Primrose Lodge (BHS), Mearley Brook (HPI) and adjacent broadleaved woodland are not negatively affected during the works through run-off and dust created during the demolition and construction period. The Scottish Environmental Protection Agency (SEPA) and Northern Ireland Environment Agency (NIEA) have published guidance on the NetRegs website (NetRegs, 2018). In the absence of any guidance in England it is advised that the information published on the NetRegs website is adhered to during the works. The information provided is considered recognised good practice and the most up to date guidance currently provided. Examples of suitable mitigation that can be adopted during site clearance and construction includes:

- Maintaining high standards of housekeeping;
- Enforcing speed limits on site and dampening down working areas in dry periods to prevent dust;
- Using covered wagons and skips;
- Keeping roads clean with the use of road sweepers; and
- Vehicle refuelling in designated compounds/area at least 10 m from Mearley Brook;
- Any fuel will be stored in double bunded containers at least 10 m from Mearley Brook;
- Drip trays or plant nappies to be used when refuelling and left under stationary machinery;
- Oil spill kits to be kept within the school grounds and within all vehicles; and
- All materials such as excavated topsoil must be stored in a bunded area away from the brook, and protected from potential rainfall and runoff.

5.3 In line with BS 5837:2012, Root Protection Areas (RPA) will be set up along the boundary of the BHS to ensure no trees are directly impacted by the scheme.

Habitats

5.4 The loss of woodland, trees and hedgerow within the site, particularly mature trees, will be avoided where possible. Compensation for the works must be implemented as follows;

- It is advised that a Root Protection Area (RPA) of retaining trees is marked off prior to works, and no works will be undertaken within the designated RPA; and the replanting of new trees at a 2:1 ratio to those lost. Species used for planting will be native, appropriate to the locality and sourced locally. Planting will be undertaken at an appropriate time of year (autumn or early spring when there is no ground frost) and specimens protected from grazing by rabbits and deer (see Appendix G for suitable species).

- Hedgerow options include temporary removal and reinstatement or replanting of removed sections with suitable native species saplings of local provenance. Suitable species are given in Appendix G. In addition, further lengths of native species hedgerow could be established elsewhere, particularly along the eastern and western boundaries to extend the woodland habitat to the south. New planting should aim to link in to surrounding woody habitat.

Bats

5.5 Any new lighting schemes will be designed so that they are 'bat friendly' to avoid impacts to foraging and commuting bats. Lighting schemes should be designed in accordance with the appropriate guidance to minimise impacts on foraging bats (BCT/IPL, 2018). Examples of low impact lighting schemes include, but are not limited to:

- The use of low-pressure sodium lamps or high-pressure sodium instead of mercury or metal halide lamps; and
- Lighting should be directed to where it is needed, and light spillage avoided in particular along the site boundaries (broadleaved woodland to the south).

5.6 The potential impacts on roosting bats are considered to be low, due to; 1) the temporary nature of works in close proximity to the roost site; 2) only individual bats are using the roost; 3) there is high availability of alternative roosting habitat within the surrounding area; and 4) the roost is used on an occasional basis only. Therefore, it is considered that a Reasonable Avoidance Measures (RAMs) approach is appropriate in this case. The following RAMs will be adhered to throughout the demolition and construction works. Should strict adherence to the RAMs not be possible, a mitigation licence from Natural England would be required to allow the works to proceed lawfully.

5.7 The following measures will be adhered to during works within the demolition and construction period;

- Demolition works will take place during the winter months or the autumn/spring transition periods (November to March inclusive) when bats are highly unlikely to be present in B1 or are least vulnerable to disturbance;
- Before any works proceed all contractors will be made aware of the possible presence of bats and the signs to look for and procedure if bats are found or discovered (see Appendix H);
- **Prior to the commencement of works**, a single Roost Maternity Bat Box (See Figure 2 below) with multiple internal crevices will be installed on a mature tree under the supervision of an experienced ecologist, along the perimeter of the school grounds. The bat box will be used to receive any bats found during the works and be retained for long term enhancement of bat roosting habitat within the surrounding area.
- The partial demolition of B1 is to be undertaken with precaution and contractors will have an ecological watching brief with demolition works supervised by a licenced ecologist. If works alter/modify the common pipistrelle bat roost, then the roost feature will be placed back to its original state;
- If bats are encountered within the working area, all works must cease immediately and the watching brief (and licensed ecologist) on site notified;
- If a bat is found or suspected when the ecologist is not on site all works should cease and the ecologist called immediately, leaving the bat in situ;
- If the bat is in immediate danger it should only be picked up with **gloved hands** and placed in a secure container with air holes in a dark, quiet place until the ecologist arrives at site;
- **Breathable Roof Membranes (BRM's) should never be used on the retained roofing areas of B1 as the building supports bat roosts, BRM's contain long synthetic fibres in which bats become entangled resulting in mortality;** and

- If changes to the proposed works and/or proposed work schedule occur, the ecologist must be contacted immediately.

Figure 2. Roost maternity bat box

As Building 2 had negligible bat roost potential, no further survey or mitigation measures with respect to bats are required.

Small mammals

5.8 Contractors will be made aware of the potential presence of mammals, including hedgehog on site. Potential removal of trees, hedgerow, scrub and introduced shrub should be undertaken with care to avoid disturbance to sheltering/hibernating mammals. Any debris from works will not be left on site and any holes or trial pits associated with works will 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 to sheltered location with plenty of vegetation cover, in an area off site which will remain undisturbed.

5.9 In addition to the above, the following mitigation, in respect of European hedgehog will also be undertaken;

- Provision of artificial or natural hedgehog boxes located in quiet undisturbed areas with ground covering vegetation, preferably against a boundary. For example, three or four logs may be arranged to leave an appropriate sized hole for a hedgehog to nest in (big enough for the hedgehog and its nest) and covered with masses of twigs and leaves;
- The creation of 'hedgehog highways' by leaving holes in any boundary fencing to allow the movement of hedgehogs throughout the site; and
- Retaining wood piles from felled trees to attract invertebrates and fungi, providing a good local food source for hedgehogs and possible nesting sites (materials from site works could be used for this purpose).

Birds

5.10 It is recommended that the loss of bird nesting habitat (woodland, scattered trees, scrub, hedgerows and introduced shrub) is kept to a minimum. Where this is not possible, compensation for the loss of woodland, trees and hedgerows as recommended above (Paragraphs 5.4), will ensure the continuation of foraging and nesting opportunities for birds within the area.

5.11 Any clearance works (woodland, scattered trees, scrub, hedgerows and introduced shrub) will be undertaken outside of nesting bird season (March – September). If this is not possible, a pre-commencement nesting bird check must be completed by a suitably experienced ecologist. If nesting birds are identified, no work must take place until all young have fledged. Clearance will **only** be allowed to proceed once a scheme ecologist has declared any nests to be no longer in use.

Amphibians

5.12 From results showing no GCN within 2 km and no ponds within 500 m of the site, it is considered unlikely that GCN are present within the working area. However, the presence of GCN cannot be entirely ruled out and it is recommended that contractors are made aware of the potential presence of this species and other amphibians on site, especially common toad (SPI). Based on the current understanding of the proposed works, it is considered that Reasonable Avoidance Measures (RAMS) are appropriate to mitigate for the low risk to GCN and therefore reduce to a negligible level:

- Hand search for amphibians, including GCN, prior to any woodland, tree and hedgerow removal by a suitably qualified ecologist;
- Any brash/log/rubble piles should be dismantled by hand and be taken out of the working area for use to create habitat piles in suitable locations outside of the proposed works location;
- Any excavations should be backfilled, covered over, or a means of escape provided (e.g. plank) at the end of each day in order to prevent amphibians becoming stranded within trenches;
- All works, stockpiling of materials or storage of machinery must be contained within sub-optimal habitat (hard standing); and
- In the event that any GCN are encountered during the works, all works must cease immediately and the ecologist contacted for further advice. Any GCN should be moved by a suitably qualified ecologist to a suitable location outside the works location.

Invertebrates

5.13 Landscaping proposals for the site should consider introducing wildflower areas to compensate for the loss of semi-improved neutral grassland (including the planting of meadow grass and red clover) and compensation for the loss of woodland, trees and hedgerows as recommended above (Paragraphs 5.4) will ensure the continuation of foraging opportunities for invertebrates within the area. In addition, the creation of wood piles from felled trees, as detailed in paragraph 5.20, will create suitable habitat for a variety of invertebrates.

Enhancement Measures

5.14 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):

- Installation of additional wildlife boxes (bird and bat) on suitable trees close to or within the school grounds;
- Bat friendly features can also be incorporated into new building designs. Incorporation of roosting opportunities within the proposed development should be achievable and can be designed to meet with planning requirements and building regulations. It is recommended that one of the following is incorporated into the buildings with south or west aspects:
    - Access gaps between soffits and walls (15-20mm);
    - Access points to the roof void via bat tiles incorporated into the roof structure or bat tubes built into gaps in the masonry or into wall

surfaces (tubes such as the Schwegler 2FR Bat Tube would be suitable).
    - Access points over the top of cavity walls by specifically constructed gaps;
    - External bat bricks installed at a height of 3 m (or close to the roof line), in the south or west facing elevation (Schwegler 1FR Bat Tube would be suitable).
- The creation of habitat for invertebrates by excavating small trenches, filling with suitable materials (e.g. rubble and woody debris) and covering with freely draining soils and nectar rich plants to form a low mound.
- Additional planting of scrub, hedgerows and trees carried out around the margins of the site, that is in excess of mitigation requirements, will improve the diversity of habitats. New planting should comprise native species of local provenance. Planting of such additional native trees/hedgerows will enhance ecological connectivity within the wider landscape and benefit many species of wildlife including bats, birds and amphibians.

Re-survey of the Site

5.15 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).

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

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Natural England (2010). Guidance Note: European Protected Species and the Planning Process - Natural England's Application of the 'Three Tests' to Licence Applications http://publications.naturalengland.org.uk/publication/113030.

Mitchell-Jones (2004) *Bat Mitigation Guidelines,* English Nature.

Mitchell-Jones A. et al. (2004) *Bat Worker's Manual 3rd edition*, Joint Nature Conservation Committee.

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 2017.

Species	Legislation	Offences	Notes on licensing procedures and further advice
Species that are protected by European and national legislation			
Bats *European protected species*	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 *European Protected Species: Mitigation Licensing- How to get a licence* (NE 2010) *Bat Mitigation Guidelines* (English Nature 2004) *Bat Workers Manual* (JNCC 2004) *BS8596:2015 Surveying for bats in trees and woodland* (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 2012	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

[1]Deliberate capture or killing is taken to include "accepting the possibility" of such capture or killing

[2]Deliberate 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 2017 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.

[3]The 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.

[4] The 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.

Site Designation	Legislation	Protection	Guidance
Local Sites	There is no statutory designation for Local Sites.	Local Sites are given protection through policies in the Local Development Plan.	Development proposals that would potentially affect a Local Site would need to provide a detailed justification for the work, an assessment of likely impacts, together with proposals for mitigation and restoration of habitats lost or damaged. Further guidance can be found in the National Planning Policy Framework and the accompanying joint Circular (ODPM Circular 6/2005 & Defra Circular 01/2005), which is still valid.

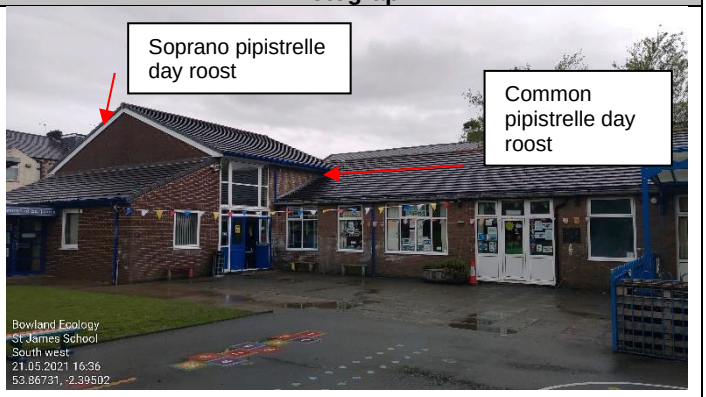
Habitats & Species	Legislation (England & Wales)	Guidance
Species and Habitats of Principal Importance for the Conservation of Biodiversity	Natural Environment & Rural Communities Act 2006 S.40 (which superseded S.74 of the Countryside & Rights of Way Act 2000).	S.40 of the NERC Act 2006 sets out the duty for public authorities to conserve biodiversity in England. Habitats and species of principal importance for the conservation of biodiversity are identified by the Secretaries of State for England and Wales, 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: England: http://www.ukbap-reporting.org.uk/news/details.asp?x=45 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 – Bat Roost Potential and Habitat Suitability Categories

Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape (Collins, 2016).

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 C – Photographs and Target Notes

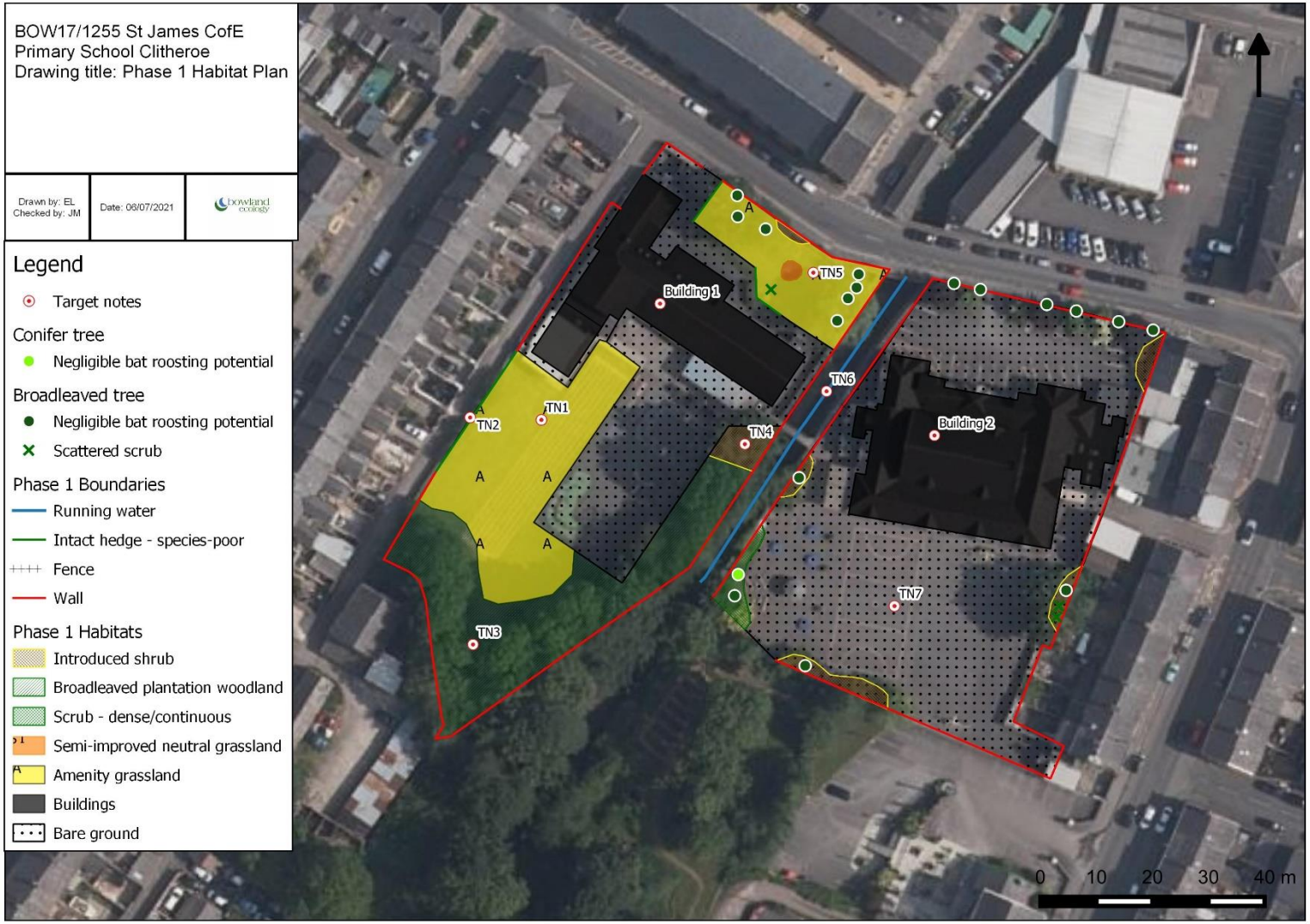
Ref	Description	Photograph
B1	B1 is situated to the west of the site and is an Irregular T-shaped, single storey school building. The walls are constructed of brick with small areas of external concrete render and wooden cladding. There are several areas of extensions to the main school building as evidenced by several different roof structures and compositions. The majority of the roof is pitched with gable ends at the south-eastern and north-western elevations. The main hall section of the school towards the north-west is much taller than the rest of the school and has a pitched roof with gable ends at the north-east and south-west elevations. A small extension joins onto the main hall on the south-west elevation, this has a mono pitch roof which is constructed of corrugated metal. There is a small single storey-flat roof extension at the front of the building (north-eastern elevation) which houses the entrance. The fascia boards and soffit boards are a combination of plastic and wood construction. The south-east elevation comprises a gable end and single storey flat roof extension which faces towards Mearley Brook. There are three identified gaps suitable for roosting bats: 1) a gap at the southern corner where the roof edge meets the wall plate and the soffit, measuring 10 cm by 10 cm and of an undetermined depth which may lead into the roof space; 2) a gap at the peak of the gable end beneath the end ridge tile with undetermined dimensions that may lead into the roof space or into the ridge tile void; and 3) an identical gap to gap 1) on the opposite eastern corner of the building. The south-western elevation is at the rear of the school and faces towards the playground, a combination of hard standing, amenity grassland and broadleaved woodland. There is a permanent awning structure which extends outwards from approximately half of the building on the eastern side. The roof tiles and ridge tiles on this elevation appear to be well sealed. There are three visible gaps suitable for roosting bats: 1) a small gap measuring approximately 5 cm by 8 cm at the corner of the tall main hall windows where the soffit meets the wall plate and adjacent to an exterior light; 2) a long gap between the soffit and wall plate which is approximately 2 cm by 3 cm and extends along the edge of the main hall building at the roof valley; and 3) gap beneath the white fascia along the entire gable end of the main school hall building. The north-eastern elevation is at the front of the school and faces a small area of amenity grassland, scattered trees and shrubs which are situated in front of Greenacre street. This elevation is well sealed for bats apart from a	   

	single small gap beneath the gable end peak ridge tile of the northern extension area. The gap measures approximately 5 cm square with possible interior access to the loft. The north-western elevation faces the alley and is well sealed with negligible potential for roosting bats. B1's internal loft space was accessed via three loft hatches throughout the school. The loft space consists of one continuous space which is sectioned by breeze block walls which have small crawl-space entryways between. The roof is lined with breathable roofing membrane and has wooden rafters, purlins and vertical struts. The vertical struts are partially boarded between with plywood. The space is well-insulated on the floor and is rarely used, seemingly only for access to any wiring or pipework which are present in the loft. There are no obvious areas of exterior light spill viewed from the loft hatches which suggests no large gaps to the exterior. No signs of bats were identified from the loft hatch vantage points. Several undisturbed cobwebs were noted and a single mouse dropping was discovered. B1 is considered to have **low potential** to support roosting bats.	 
B2	A small extension will be constructed on the western elevation after the demolition of the toilet block. Building 2 is situated to the east of the site and is constructed of stone walls with a slate tiled roof. The roof structure is complex and includes gable roof sections, hipped roof sections, flat roofed sections, along with window dormer sections. Negligible bat roosting features were identified - the building is in good condition and well-sealed.	
T1	Amenity grassland comprising the school playground occupies half the northeast and southwest areas of the western half of the site. The grass is managed resulting in a short sward height. Species present include perennial rye grass meadow grass species and red fescue along with herbs including red clover, daisy and dandelion. The grassland is generally flat although there is a mound towards the south	

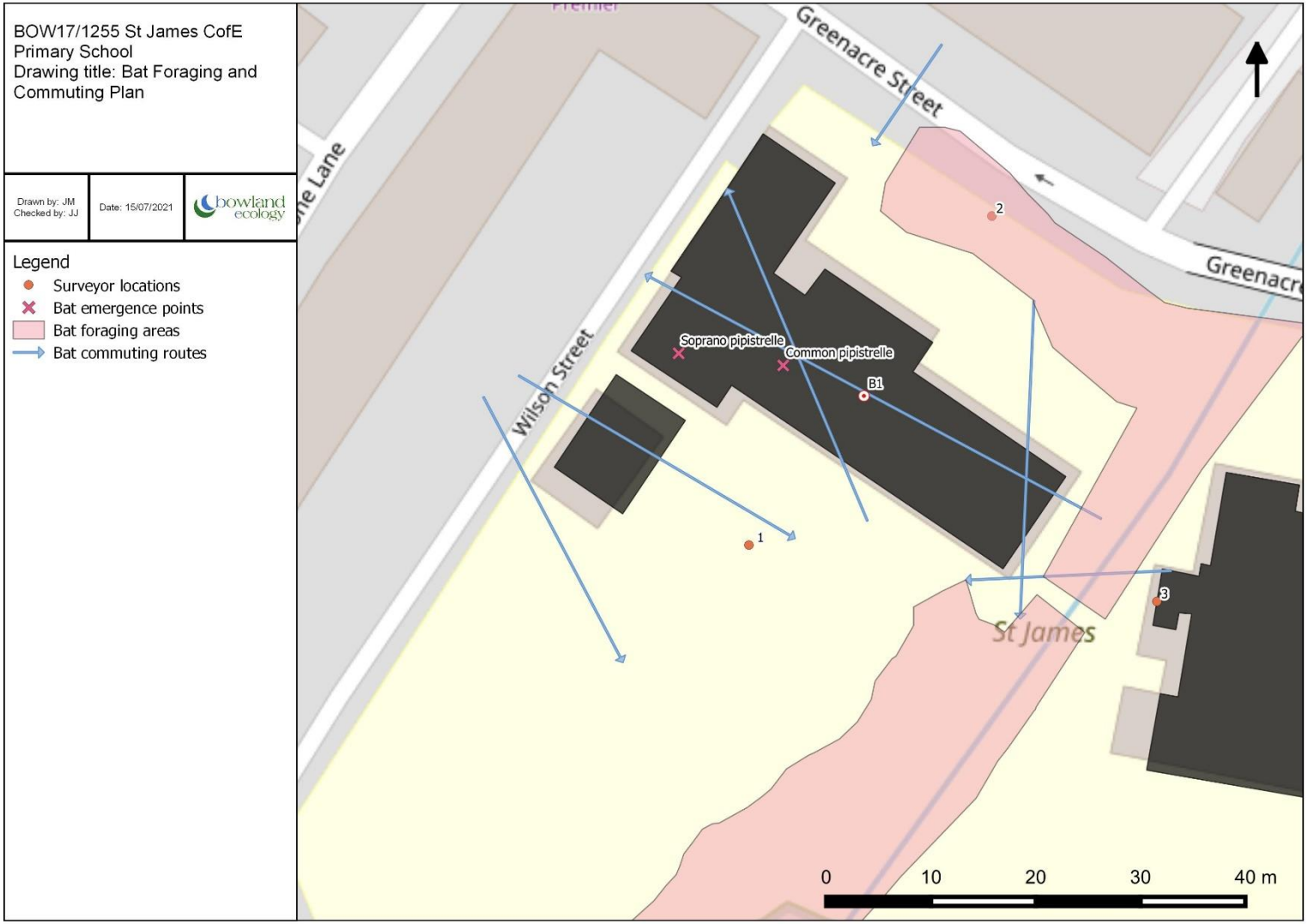
T2	A short (approximately 10 m in length) hedgerow is present at the edge of the amenity grassland playground. The hedge is approximately 3 m tall and 2 m wide with a species composition of field maple and privet.	
T3	Mature trees surround the southern boundary of the amenity grassland and hard standing playground forming a woodland strip. Canopy species include lime, alder, ash, beech, hazel, willow, sycamore, poplar, rowan, field maple and silver birch with an understory of holly, hawthorn and hazel. The ground flora is predominantly amenity grassland with scattered perennial plants at the perimeter including wood avens, broadleaved willowherb, creeping buttercup, herb Robert, lesser celandine, common nettle, ivy, common hogweed and holly. There are some areas of leaf litter and patches of bare ground.	
T4	A small area of ornamental planting is present to the north of the woodland strip. Species present include ornamental non-native shrubs along with privet, rose and holly.	
T5	Amenity grassland at the front of the school which is surrounded by short sections of managed hedges (beech and ornamental species) along with scattered mature trees including rowan, silver birch and white beam. There is a small un-mown central area with greater species diversity and taller sward including Yorkshire fog, rose, daisy, dandelion, creeping buttercup, fescue grass, ornamental herb species, cleavers, and oxeye daisy. There are small sections of introduced shrubs planted at the grassland edge which include some rose, grey poplar, forget-me-not, dandelion, willowherb.	

T6	Mearley Brook approximately 6 m wide, intercepts the school campus in the centre and is out of the footprint of works. The brook is a channelised watercourse, roughly flowing north to south, with vertical stone embankments. The watercourse has an absence of emergent vegetation with ivy growth on the stone walls. At the time of the survey the brook had a moderate flow rate and was slightly discoloured brown, possibly due to recent heavy rain.	
T7	Playground is present at the rear of Building 2. This area comprises hard standing with scattered borders of introduced ornamental shrubs, scattered scrub and immature trees with the species identified as being the same as those listed in TN3, 4 and 5.	

Appendix D – Phase 1 Habitat Plan



Appendix E – Bat Foraging and Commuting Plan



Appendix F – Bat Activity During Dusk Surveys

Survey: 8th June 2021 (V1) - DUSK		
Surveyor 1 (FS)		
Time	Species	Activity
22:05	**Soprano Pipistrelle**	**Soprano pipistrelle emerged from under fascia board at the top of the south western elevation**
22:06	Common pipistrelle	Two quick passes HNS (Heard not seen)
22:11	Common pipistrelle	Flew from north to south over the building (2 bats)
22:12	Common pipistrelle	Flew from south to north around the building
22:12	Common pipistrelle	Flew from north to south over the building
22:18	Common pipistrelle	Flew from around the south western elevation of the building - foraging
22:20	**Common Pipistrelle**	**Common pipistrelle emerged from under the roof flashing within the roof joining**
22:26	Soprano Pipistrelle	Faint Pass (HNS)
22:30	Soprano Pipistrelle	(HNS)
22:33	Soprano Pipistrelle	Flew from north to south around the south western elevation of the building
22:34	Common pipistrelle	At least two bats foraging (7 passes)
22:40	Common pipistrelle	Commuting over building west to east
22:42	Soprano Pipistrelle	Flew from north to south around the south western elevation of the building
22:43	Soprano Pipistrelle & Common pipistrelle	Flew from north to south around the south western elevation of the building, commuting and foraging (> 4 bats)
22:48	Common pipistrelle	Foraging along tree line to the south
22:48	Soprano Pipistrelle	Commuting south to north over the building & foraging
23:07	Soprano Pipistrelle	Commuting over the building west to east
Surveyor 2 (JM)		
22:08	Common pipistrelle	Commuting (HNS)
22:10	Common pipistrelle	Commuting south to north over the building
22:12	Common pipistrelle	Foraging over the school (2 bats)
22:21	Common pipistrelle	Foraging under the mature trees on school grounds eastern boundary
22:25	Soprano pipistrelle	Commuting over school east to west
22:32	Common pipistrelle	Foraging under the mature trees on school grounds eastern boundary (2 bats)
22:41	Common pipistrelle	Foraging (HNS)
22:48	Common pipistrelle	Foraging under the mature trees on school grounds eastern boundary
23:00	Common pipistrelle	Foraging (HNS)

Surveyor 3 (JT)		
21:59 – 23:07	Common pipistrelle & Soprano pipistrelle	3 soprano pips & 2 common pips foraging along Mearley Brook
22:22	Common pipistrelle	Pass- east to west across Mearley Brook
22:51	Common pipistrelle	Pass over the building
23:03	Unknown	Pass over the river (not echolocating)
Survey: 29th June 2021 (V2) – DUSK		
Surveyor 1 (LK)		
Time	Species	Activity
22:02	**Soprano Pipistrelle**	**Soprano pipistrelle emerged from under fascia board at the top of the southwestern elevation**
22:03	Soprano pipistrelle	Commuting (2 bats)
22:06	**Common pipistrelle**	**Common pipistrelle emerged from under the roof flashing within the roof joining and commuted SE**
22:07	Common pipistrelle	Commuting west to east over the building
22:13	Soprano pipistrelle	Pass (HNS)
22:14	Common pipistrelle	Foraging- (HNS)
22:17	Soprano pipistrelle	Faint (HNS)
22:18	Common pipistrelle	Commuting west to north over building
22:19	Soprano pipistrelle	Faint (HNS)
22:21	Common pipistrelle	Commuting (HNS)
22:25	Soprano pipistrelle	Faint (HNS)
22:27	Common pipistrelle	Pass (HNS)
22:28	Soprano pipistrelle	Faint (HNS)
22:31	Common pipistrelle	Foraging- (HNS)
22:31	Soprano pipistrelle	Foraging- (HNS)
22:34	Common pipistrelle	Foraging Faint- (HNS)
22:38	Common pipistrelle	Faint (HNS)
22:52	Common pipistrelle	Faint (HNS)
23:14	Common pipistrelle	Pass (HNS)
Surveyor 2 (EL)		
22:03	Soprano pipistrelle	Two passes flying south to north
22:07	Common pipistrelle	Flew from behind building then north and west along road
22:14	Common pipistrelle	(HNS)

22:19	Soprano pipistrelle	Foraging over trees
22:21	Common pipistrelle	Foraging and commuting south to west, passed onto the road and flew west
22:22	Common pipistrelle	Same description as 22:21 but opposite direction
22:27	Soprano pipistrelle	(HNS)
22:30	Soprano pipistrelle	Commuting west to east along front of school across grassland
22:34	Soprano pipistrelle	(HNS)
Surveyor 3 (AH)		
21:41	Soprano pipistrelle	Commuting west to east along Mearley Brook (2 bats)
21:45	Noctule	West of the building, foraging over Mearley Brook (2 bats)
21:45	Myotis	(HNS) - faint
21:50 – 22:00	Noctule	Same as 21:45
21:50 – 22:00	Soprano pipistrelle	Foraging on Mearley Brook
22:06	Soprano pipistrelle	Foraging on Mearley Brook
22:08	Common pipistrelle	(HNS)
22:13	Soprano pipistrelle	Foraging west to east over Mearley Brook
22:14	Soprano pipistrelle	(HNS)
22:20	Soprano pipistrelle	Foraging west to east over Mearley Brook
22:23	Soprano pipistrelle	Commuting east to west over Mearley Brook
22:27	Soprano pipistrelle	(HNS)
22:30	Soprano pipistrelle	(HNS)
22:31	Common pipistrelle	Foraging along tree line
Survey: 21st July 2021 (V3) – DAWN		
Surveyor 1 (AH)		
Time	**Species**	**Activity**
03:37	Soprano pipistrelle	(HNS)
03:38	Noctule	(HNS)
03:40 – 04:05	Soprano pipistrelle	Foraging overhead
03:42	Common pipistrelle	(HNS) 2 passes
03:42	Noctule	(HNS)
03:46	Soprano pipistrelle & Noctule	Sp – foraging overhead continual passes N – (HNS) 3 passes
03:52	Common pipistrelle	(HNS)
03:55	Noctule	(HNS) 3 passes
04:00	Common pipistrelle	(HNS)

04:09	Common pipistrelle	1 pass
04:12	Soprano pipistrelle & Noctule	(HNS)
04:19	Common pipistrelle	Foraging
04:24	Soprano pipistrelle	Commuting heading west
04:34	Unknown bat species	Bat flew east to west not echolocating
04:34	Soprano pipistrelle	(HNS)
04:40	Unknown bat species	Bat flew southwest to north
Surveyor 2 (JMorris)		
03:36	Noctule	(HNS)
03:36 – 03:34	Soprano pipistrelle	Foraging along the watercourse
03:34	Noctule	(HNS)
03:44 – 03:46	Soprano pipistrelle	(HNS)
03:45	Noctule	(HNS)
03:46	Noctule	(HNS)
03:47 – 03:50	Soprano pipistrelle	Foraging between buildings and along watercourse, social calls heard X 2 bats
03:52	Soprano pipistrelle	Foraging between buildings
03:55	Noctule	(HNS)
03:56	Noctule	(HNS) 3 passes
04:01	Soprano pipistrelle	Foraging along watercourse
04:02	Pip sp.	(HNS)
04:04	Soprano pipistrelle	(HNS)
04:06	Common pipistrelle	(HNS)
04:09	Soprano pipistrelle	(HNS)
04:14	Soprano pipistrelle	Foraging along watercourse
04:16	Soprano pipistrelle	Foraging along watercourse
04:18 - 04:37	Soprano pipistrelle	Foraging along watercourse, social calls heard X 2 bats

Appendix G – Suitable Native Species for Use in Planting Schemes

Tree and shrub planting mix							
		Location / Landscape Type		Local Conditions			
				Soil		Hydrology	
Scientific name	**Common name**	**County Wide**	**Lowlands Below 75m**	**Neutral**	**Alkaline**	**Damp**	**Dry**
Alnus glutinosa	Alder		*	*		*	
Betula pendula	Silver Birch		*	*	*		*
Betula pubescens	Downy Birch		*	*	*	*	
Corylus avellana	Hazel		*	*	*		*
Crataegus monogyna	Hawthorn	*	*	*	*		*
Fraxinus excelsior	Ash		*	*	*		*
Ilex aquifolium	Holly	*	*	*			*
Ligustrum vulgare	Wild Privet		*	*	*		*
Lonicera periclymenum	Honeysuckle		*	*	*		*
Malus sylvestris	Crab Apple		*	*	*		*
Populus tremula	Aspen		*	*		*	
Prunus avium	Wild Cherry		*	*	*		*
Prunus padus	Bird Cherry			*			*
Prunus spinosa	Blackthorn		*	*	*		*
Quercus robur	Pedunculate Oak		*	*	*		*
Rosa arvensis	Field Rose		*	*	*		*
Rosa canina agg.	Dog Rose		*	*	*		*
Salix caprea	Goat Willow		*	*	*	*	
Salix cinerea	Grey Willow		*	*	*	*	
Salix fragilis	Crack WillowG		*	*		*	
Salix viminalis	Osier					*	
Sambucus nigra	Elder		*	*	*		*
Sorbus aucuparia	Rowan	*	*	*	*		*
Ulmus glabra	Wych Elm		*		*		*
Viburnum opulus	Guelder-rose		*	*		*	

Appendix H – Information for Contractors on Bats in Buildings

BATS

Information, legal responsibilities and best practice for the construction industry

bowland ecology

Legal Protection

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

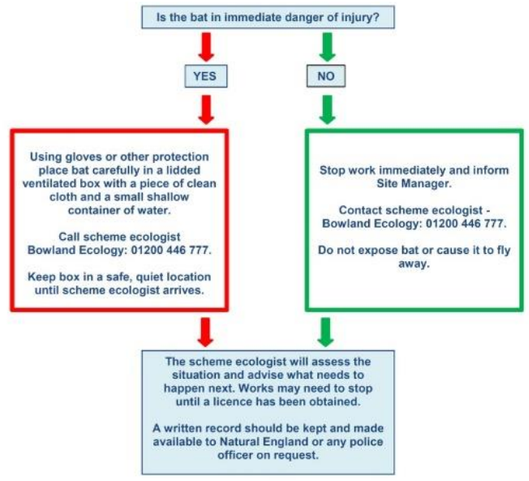
- Deliberately capture, injure or kill a bat;
- Deliberately disturb bats;
- Damage or destroy a breeding site or resting place (even if bats are not occupying the roost at the time);
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb a bat 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.

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;
- 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.
- In trees (cracks/holes/ivy cladding).

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