

**PRELIMINARY ECOLOGICAL
APPRAISAL
& BAT SCOPING REPORT**

**at
Ashbrow Road
Huddersfield
West Yorkshire
HD2 1EX**

**Client:
Halcyon Living Space**

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**JCA Ref:
14838a/JB Rev1**

**Date of Report:
28/05/19**



Quality Assurance

Version	Desktop Survey Completed:		Site Surveyed:		Report Completed:		Checked:	
	Date	Name	Date	Name	Date	Name	Date	Name
14838a/JB	01/05/19	Joe Earnshaw	19/03/19	Jenny Butler	28/05/19	Jenny Butler	31/05/19	David Bodenham

This report has been prepared and provided in accordance with the *British Standard 42020: Biodiversity – Code of practice for planning and development 2018* and the *CIEEM's Code of Professional Conduct*.

Risk Assessment Completed	
Bio-security Procedure Completed	
Lone Worker Procedure Completed	



Summary

A report is required for **Ashbrow Road**, to assess the ecological value of the site by documenting the habitat types present and the site's potential for supporting rare and protected species. The development proposed on this site is for four residential units and associated parking and garden facilities.

A desktop study was undertaken on the in order to obtain any relevant ecological records that may be present within a 2km radius of the site, including protected and notable species records and nature conservation designations.

The site was surveyed on the 19/03/19 by Jenny Butler *AMIEnvSc, BSc (Hons)*. A thorough site assessment was undertaken following the guidelines set out in the JNCC's *Handbook for Phase 1 habitat surveys*.

Recommendations:

- **Birds:** The woodland habitat and scrub on site provides excellent nesting opportunities for breeding bird species. In the UK the key breeding period for birds is from March until September (depending on species and behaviour). If tree removal occurs within this period, a nesting bird survey is required prior to vegetation removal commencing. Outside of this period, if birds are found to be nesting during tree removal then the removal must cease immediately, and a suitably competent ecologist contacted. *NB: Schedule 1 bird species are afforded a higher level of protection, if Schedule 1 bird species are found to be present on-site works must cease immediately and a suitably qualified and licensed ecologist contacted prior to works continuing.*
- **Amphibians:** The site contains suitable over-wintering habitat for amphibian species. There are no waterbodies present within the development area, however there is a pond adjacent to the site boundary. A best practice, avoidance to harm method statement should be produced for the site manager before starting works on the site for amphibians to cover the pre-construction, construction and post-construction phases of the development. The installation of refugia areas on site is advised to provide habitat for over-wintering amphibians.
- **Badgers:** The wider site contains suitable habitat to support foraging badgers. There are no badger setts present onsite, however habitat connectivity is good locally, allowing easy badger access to site for foraging purposes. A best practice, avoidance to harm method statement should be produced for the site manager before starting works on the site for badgers to cover the pre-construction, construction and post-construction phases of the development. A 'soft-edge' buffer should be planted between the development area and adjacent woodland in order



to minimise light and noise pollution to the woodland on site post-development and provide a foraging and commuting corridor for badgers on site.

- Faunal Boxes: The proposed development plans will require the removal of some trees and the scrub habitat on site. To compensate for the loss of habitat on site faunal boxes are to be installed. 4 bird boxes, 2 bat boxes and 2 insect boxes are advised. Hedgehog holes in fencing must be included within the development to ensure hedgehog commuting corridors are retained post-development.
- Lighting Design: Inappropriate lighting in the vicinity of bat roosts can cause disturbance to bat populations and individuals and could be constituted as an offence under the Wildlife and Countryside Act 1981. As such, we have prepared guidance in line with the information provided by the Institute of lighting Professionals (ILP, 2018) to aid in planning lighting schemes with the aim of limiting the impact that lighting may have on local bat populations.

It is important to avoid:

- Uniform levels of luminance across the site.
- Metal halide and florescent lighting.
- Upward tilting lighting that increases skyline luminance.

Instead the following should be installed:

- Dark buffer zones.
- Screening in the form of vegetation, fences and structures.
- Appropriately designated darkened areas.
- Luminaries absent of UV elements
- LED luminaries with a sharp cut-off, low intensity and good rendition.
- Peak luminaire wavelength at a minimum of 550nm.
- Downward directional luminaires with upward light ratios of 0%
- Lower light columns to limit light spill.
- Recessed internal light fixtures.
- Window glazing treatments or automated blind systems



- A Biodiversity Enhancement Plan should ideally be designed pre-construction to be implemented post construction during the landscaping phase of the development. This plan will aim to ensure there is no net loss of habitats on site and to increase biodiversity and opportunities for wildlife on site, due to the result of the proposed development. The biodiversity enhancement plan will aim to provide opportunities for local wildlife to ensure the development does not have a significant detrimental impact on local or national wildlife populations. The Biodiversity Enhancement Plan should include:
- Quantities and locations of faunal boxes for bats, birds, hedgehogs and insects.
- Native shrub/tree/grass/hedgerow planting.
- Gaps in fencing to allow movement for hedgehogs and other small mammals
- Low level lighting options and lighting buffer zones in accordance with the BCT and ILP 2018 guidance.
- Management scheme on vegetation clearance.
- Methods to avoid unnecessary harm to amphibians over-wintering terrestrially on site and a method statement to avoid harm to badgers using the site for foraging purposes.
- A design for a 'soft-edge' buffer between the development site boundary and adjacent wooded habitat on site. This will provide a green buffer between the woodland and gardens reducing the impact of light and noise disturbance on local wildlife populations.



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1. Introduction and Terms of Reference

1.1 Terms of Reference

- 1.1.1 I am instructed by **Halcyon Living Space** to visit the site and prepare my findings in a report.
- 1.1.2 For this purpose, I have been supplied with a site map (drawing: P02), and brief details of the proposal. Please see **Appendix 2** for the proposed development plan at Ashbrow Road.

1.2 Scope of the Report

- 1.2.1 This survey was carried out in accordance with the Joint Nature Conservation Committee's (JNCC's) *Handbook for Phase 1 habitat survey - A technique for environmental audit* (2010).
- 1.2.2 This report is compiled in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM's) *Guidelines for Ecological Report Writing* and to the British Standard Institution's *Biodiversity – Code of Practice for Planning and Development* (2018) by Jenny Butler AMIEnvSc, BSc (Hons).
- 1.2.3 The results and recommendations contained within this report are considered to be valid for a period of between 18 and 24 months. After this period, an update to the report and re-assessment of the site may be required in order to inform ecological constraints to any developments proposed, and/or to accompany a planning submission. If the proposed development changes significantly or land use alter substantially, updates may be required in advance of the expiry period of the report.

1.3 Purpose of the Report

- 1.3.1 This report aims to assess and classify all habitats present on site, and to determine the ecological value of these habitats. The report will determine the likely impact of the proposed development on the local environment and biodiversity as well as the potential impact of the proposed development on regional biodiversity and wildlife populations. The report will determine the extent of potential habitat fragmentation likely to be caused by the proposed development and provide recommendations, where necessary, to limit the impact of the proposed development on habitat connectivity and biodiversity locally.



1.4 Details of Proposed Development

1.4.1 The development proposed on this site is to clear the scrub area and several trees in order to build 4 residential units. See **Appendix 2** for proposed site development layout. The development will be primarily to the north of the overall site bordering Ashbrow Road, with the landscaped garden areas adjacent to the on-site woodland habitat. The woodland habitat will remain undisturbed throughout the construction and post construction phases of the development.

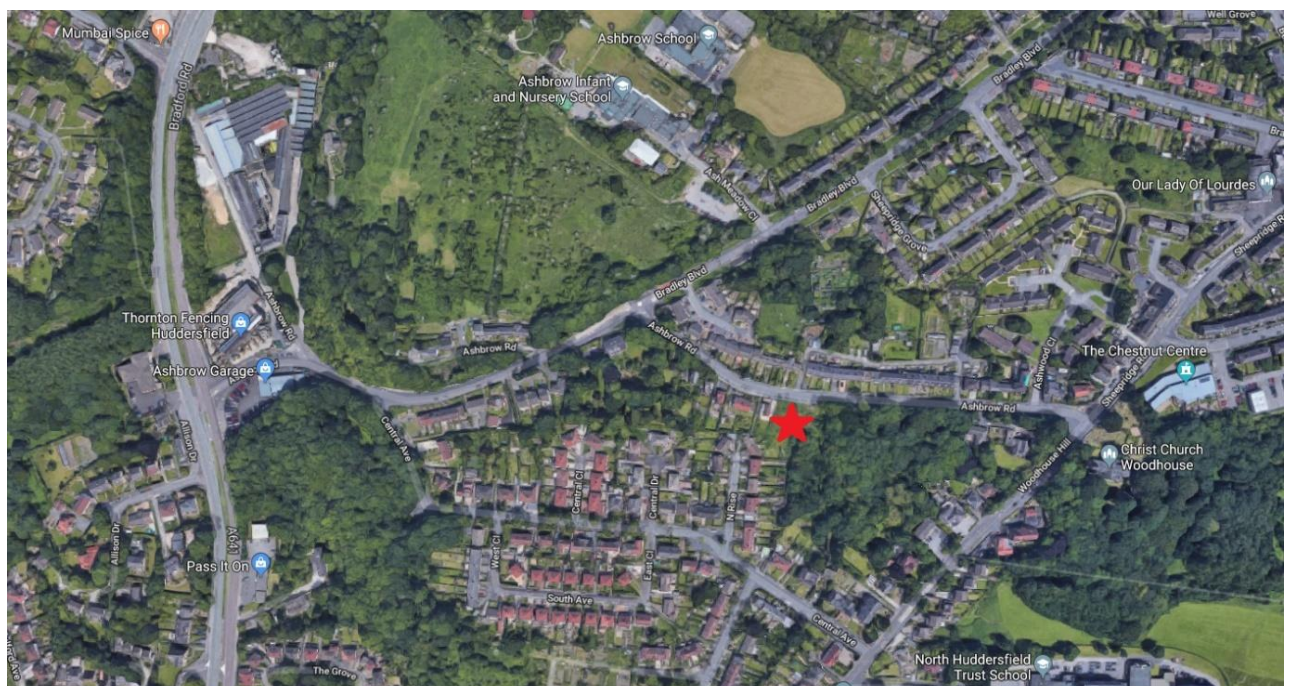
1.5 Site Description

1.5.1 **Ashbrow Road**, is situated 2km north of Huddersfield town centre, at grid reference: SE148190.

1.5.2 The overall site consists of an area of woodland, bordered by scrub. There are the remnants of greenhouse foundation present as the site used to be a garden centre/nursery. The site borders Ashbrow Road, and there is a mix of wall and fencing forming the boundary line. The development area is a small section of the overall site to the north.

1.5.3 The site is surrounded predominantly by residential properties to the north, woodland to the east, and a mix of residential and wooded areas to the south. A map of the site in relation to surrounding habitats can be seen below.

Figure 1: Google Maps image of **Ashbrow Road**, showing the survey site in relation to the surrounding landscape and habitats. Red star indicates site location.



Google map image © March 2019.

1.6 Bats and the Law

1.6.1 All bat species and their roosts in the UK are protected under European and UK law. The main piece of legislation protecting UK bats is the Conservation of Habitats and Species Regulations 2017.

1.6.2 In addition to this, bats and their roosts are also protected in England and Wales under the Wildlife and Countryside Act 1981 and The Countryside and Rights of Way Act 2000.

1.6.3 Under these legislations, it is an offense to:

- Deliberately capture, injure or kill a bat.
- Deliberately disturb a bat in a way that would affect its ability to survive, breed or rear young (or hibernate or migrate in England, Wales and Northern Ireland) or (Significantly in England, Wales and Scotland) affect the local distribution or abundance of the species.
- Damage or destroy a roost (this is an 'absolute' offence).
- Possess, control, transport, sell, exchange or offer for sale/exchange any live or dead bat or any part of a bat.
- Intentionally or recklessly disturb a bat at a roost.
- Intentionally or recklessly obstruct access to a roost.

If it is discovered that development may impact upon bat roosts (thus leading to an offence being committed) a **Mitigation Plan** should be devised and a **Bat Mitigation Licence** applied for from the relevant government department (i.e. Natural England). Gaining a licence will depend on many variables, such as the bat species present, roost type, roost size and its local/regional/national importance.



2. Methodology

2.1 Desktop Study Methodology

- 2.1.1 A desktop study was undertaken on 01/05/19 in order to obtain any relevant ecological records that may be present within a 2km radius of the site. This includes protected and notable species records, as well as nature conservation designations. For this information, the local ecological records centre was contacted: West Yorkshire Ecology Centre.
- 2.1.2 The search buffer of 2km from the central site grid reference is considered to be sufficient in order to cover the potential zone of influence of the proposed development.
- 2.1.3 The Multi-Agency Geographic Information for the Countryside (MAGIC) website was used to locate any designated sites, both statutory and non-statutory, such as Local Nature Reserves (LNRs), Ramsar Sites, Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or Sites of Special Scientific Interest (SSSIs) that may be present within 2km of the survey site.

2.2 Site Assessment Methodology

- 2.2.1 A thorough site assessment was undertaken on 19/03/19 by Jenny Butler AMIEnvSc, BSc (Hons), following the guidelines set out in the JNCC's *Handbook for Phase 1 habitat surveys*.
- 2.2.2 The entire site was walked over by an experienced consultant who mapped and described each habitat type that was present. The dominant floral species of each habitat were noted as well as any faunal species that were encountered.
- 2.2.3 All habitats present with the potential to support protected or notable species were classified and noted. Signs of fauna were noted as target notes on the site, which can be seen in **Appendix 1, Phase 1 Map** (where signs were found).
- 2.2.4 In the context of this report, rare, protected or notable species are those listed under the following: UK or European legislation, UK Biodiversity Framework Priority Species (including, but not limited to LBAP species), nationally rare or scarce flora/fauna/habitats, Species of Conservation Concern (JNCC Red List, RSPB/BTO Amber Lists).
- 2.2.5 Non-native, invasive species, as listed under Schedule 9 of the Wildlife



and Countryside Act (1981) as amended have been noted and mapped, where present as under the Wildlife and Countryside Act (1981) as amended it is an offence to release or allow to escape into the wild any flora/fauna not ordinarily a resident of the UK, which has been categorised as potential harmful to the UK flora and/or fauna.

- 2.2.6 Whilst conducting the overall site walk-over, any features that may be of specific ecological value to or have the potential to support protected species were noted and photographic evidence taken (please refer to **Appendix 3**). Such protected species include, but are not limited to, Badgers, Bats, Dormice, Great Crested Newts, Nesting Birds, Otters, Reptiles, Water Voles, White-Clawed Crayfish (please see **Appendix 7**).
- 2.2.7 Limitations: The survey was conducted during the sub-optimal time for botanical surveys. Therefore, many of the plant species encountered were either not in flower/leaf or were dead. Plant species that may be present in the summer months are often not visible in the winter. If a more accurate and comprehensive floral record is required, the optimum time to conduct botanical surveys would be between the months of April and September.
- 2.2.8 This limitation made floral identification difficult, meaning this report will not represent a comprehensive indication of the site's biodiversity. However, this constraint will not affect the overall conclusion of the report, as habitat types can still be classified and the potential for protected species can still be accurately assessed.
- 2.2.9 There were no perceived limitations that would significantly impact on the conclusions and recommendations given within this report.

2.3 Scoping Survey Methodology

- 2.3.1 The site was surveyed for foraging, commuting and roosting potential. A detailed search of habitat, buildings structures and trees was conducted during daylight hours in order to identify potential bat roosting sites and look for evidence of bat activity. Potential roost sites and features deemed to be of value to bats were documented on the site map (please refer to **Appendix 1**) and photographic evidence was taken (please refer to **Appendix 3**).
- 2.3.2 All surveys are conducted by experienced surveyors using the following equipment to ensure an accurate assessment; a printed site map, camera, 1 million candlelight torch, binoculars and ladders.
- 2.3.3 Signs that bats have previously or are currently using a potential roost site include:



- Scratch marks, urine and oil stains around holes in buildings or trees.
- Droppings, carcasses and/or food remains found around the site.
- Bats observed flying in/out of a hole in a building or tree.
- Bats heard 'chattering' within a potential roost site, especially on warm summer days.

2.3.4 Limitations: It must be highlighted that the absence of any of these signs is not proof that the site is not being used by bats. Weathering and other factors will often remove any signs of bat activity, especially when present on the exterior of a building or a tree. As previously explained, many bat species will have several roost sites which they regularly move between and therefore an absence during a survey visit does not exclude their presence at a later date.



3. Results

3.1 Desktop Study Results

3.1.1 Local Data Centre Records: West Yorkshire Ecology has been commissioned to provide the records held for protected and notable species within a 2km radius of the survey site. The results have been summarised below. It should be noted that the absence of records should not be taken as confirmation that a species is absent from the search area. Please see **Table 1** below for a summary of the protected and priority species records obtained from the West Yorkshire Ecology Records Centre.

Table 1: Priority and protected species records obtained from the West Yorkshire Ecology Centre within a 2km radius of the site boundary.

Taxonomic Group	Common Name	Scientific Name	On site	Within 500m	Within 1km	Within 2km	Notes
Amphibians	Palmate Newt	<i>Lissotriton helveticus</i>	x	x	x	✓	One record (field record) from 2008. This is a West Yorkshire Biodiversity Action Plan (BAP) species.
Bats	Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	x	✓	✓	✓	Numerous records (unclassified roosts, recorded via aural bat detector, foraging and field records) from 2005-2017, including one record of ten individuals recorded as field records.
	Unidentified Pipistrelle Species	<i>Pipistrellus sp.</i>	x	x	x	✓	Three records (grounded, unclassified roost and excluded roost) from 2006-2007.
	Noctule	<i>Nyctalus noctula</i>	x	x	✓	✓	Eleven records (foraging, hibernation roost and field records) from 2008-2017, including one records of a hibernation roost with three individuals recorded. This is a UK BAP species.
	Leisler's Bat	<i>Nyctalus leisleri</i>	x	x	x	✓	Two records (field records) from 2011.
	Whiskered Bat	<i>Myotis mystacinus</i>	x	x	x	✓	One record (Injured) from 2006.
	Unidentified Myotis Species	<i>Myotis sp.</i>	x	x	x	✓	Two records (field records) from 2009.
	Unidentified Bat Species	<i>Chiroptera</i>	x	✓	✓	✓	Numerous records (possible roosts, unclassified roosts, bachelor roost, hibernation roost, roost in tree, casualty and bats in buildings) from 1996-2012, including one record of



							an unclassified roost with 52 individuals recorded in 2005.
Other Mammals	Otter	<i>Lutra lutra</i>	x	x	x	✓	One record (field record) from 2006. This is a UK and Local BAP species.
	Badger	<i>Meles meles</i>	x	x	x	✓	One record (unclassified sett) from 2009.
Birds (Schedule 1)	Kingfisher	<i>Alcedo atthis</i>	x	x	x	✓	Two records (field records) from 2007-2008.
Birds (Other)	Mallard	<i>Anas platyrhynchos</i>	x	x	✓	✓	Five records (field records) from 2015-2017.
	Swift	<i>Apus apus</i>	x	x	x	✓	Two records (field records) from 2007-2008.
	Kestrel	<i>Falco tinnunculus</i>	x	x	x	✓	One record (field record) from 1990.
	Swallow	<i>Hirundo rustica</i>	x	x	x	✓	One record (field record) from 1990.
	Grey Wagtail	<i>Motacilla cinerea</i>	x	x	x	✓	Two records (field records) from 1988-2008.
	Spotted Flycatcher	<i>Muscicapa striata</i>	x	x	x	✓	One record (field record) from 1990. This is a UK Bap species.
	Green Woodpecker	<i>Picus viridis</i>	x	x	x	✓	One record (field record) from 1998.
	Dunnock	<i>Prunella modularis</i>	x	x	x	✓	Three records (field records) from 1990-2008. This is a UK BAP species.
	Bullfinch	<i>Pyrrhula pyrrhula</i>	x	x	x	✓	One record (field record) from 2007. This is a UK BAP species.
	Starling	<i>Sturnus vulgaris</i>	x	x	x	✓	One record (field record) from 2005. This is a UK BAP species.
	Song Thrush	<i>Turdus philomelos</i>	x	x	x	✓	One record (field record) from 2008. This is a UK BAP species.
Reptiles	Grass Snake	<i>Natrix natrix</i>	x	x	x	✓	One record (field record) from 1936. This is a UK BAP species.
Crustacean	White-clawed Crayfish	<i>Austropotamobius pallipes</i>	x	x	x	✓	One record (field record) from 2011. This is a UK and Local BAP species.
Invertebrates	<i>Aleochara ruficornis</i>	<i>Aleochara ruficornis</i>	x	x	x	✓	One record (field record) from date unknown.
	<i>Amara praetermissa</i>	<i>Amara praetermissa</i>	x	x	x	✓	One record (field record) from date unknown.
	<i>Chrysolina oricalcia</i>	<i>Chrysolina oricalcia</i>	x	x	✓	✓	One record (field record) from date unknown.
	<i>Cypha pulicaria</i>	<i>Cypha pulicaria</i>	x	x	x	✓	One record (field record) from date unknown.
	<i>Gyrophana manca</i>	<i>Gyrophana manca</i>	x	x	x	✓	One record (field record) from date unknown.



	Flax Flea Beetle	<i>Longitarsus parvulus</i>	x	x	x	✓	Two records (field records) from date unknown.
	<i>Odontus armiger</i>	<i>Odontus armiger</i>	x	x	x	✓	One record (field record) from date unknown.
	<i>Proteinus crenulatus</i>	<i>Proteinus crenulatus</i>	x	x	x	✓	One record (field record) from date unknown.
	<i>Rhizophagus nitidulus</i>	<i>Rhizophagus nitidulus</i>	x	x	x	✓	One record (field record) from date unknown.
	Green Hairstreak	<i>Callophrys rubi</i>	x	x	✓	✓	One record (field record) from 2000. This is a Local BAP species
Plants	Floating Water-Plantain	<i>Luronium natans</i>	x	x	x	✓	Five records (field records) from date unknown. This is a UK BAP species.
	Bluebell	<i>Hyacinthoides non-scripta</i>	x	x	✓	✓	Four records (field records) from 1986-2015. This is a Local BAP species.
Plants (Schedule 9)	Himalayan Balsam	<i>Impatiens glandulifera</i>	x	x	✓	✓	Seven records (field records) from 1986-2009.
	Japannese Knotweed	<i>Fallopia japonica</i>	x	x	✓	✓	Sixteen records (field records) from 2009-2015.
	Rhododendron	<i>Rhododendron ponticum</i>	x	x	✓	✓	Two records (field records) from 1986-2003.
	Canadian Waterweed	<i>Elodea canadensis</i>	x	x	x	✓	Two records (field records) from 2005-2009.
	Nuttall's Water-Weed	<i>Elodea nuttallii</i>	x	x	x	✓	Five records (field records) from 2009
	Water Fern	<i>Azolla filiculoides</i>	x	x	x	✓	Six records (field records) from 2009.
Animals (Schedule 9)	American Mink	<i>Mustela vison</i>	x	x	x	✓	One record (track) from 2009.
	Grey Squirrel	<i>Sciurus carolinensis</i>	x	x	✓	✓	One record (field record) from 2015.

3.2 Desktop Bat Records

3.2.1 The records obtained from the West Yorkshire Bat Group for **Ashbrow Road, Huddersfield** are as follows:

Table 2: Summary of bat records held by the West Yorkshire Bat Group within 2km of the site.

Taxonomic Group	Common Name	Scientific Name	On site	Within 500m	Within 1km	Within 2km	Notes
Bats	Noctule	<i>Nyctalus noctula</i>	x	x	✓	✓	One record (recorded with aural bat detector) from 2017.
	Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	x	✓	✓	✓	Five records (possible roosts, unclassified roosts and bats)



							recorded with aural bat detector) from 1997-2017.
	Whiskered Bat	<i>Myotis mystacinus</i>	x	x	x	✓	One record (injured bat) from 2006.
	Unknown Pipistrelle species	<i>Pipistrellus sp.</i>	x	x	x	✓	Three records (grounded, unclassified roost and excluded roost) from 2007.
	Unknown Vesper Species	<i>Vespertilionidae</i>	x	✓	✓	✓	Seventeen records (unclassified roosts, possible roosts, hibernation roost, bachelor roost, casualty, bats in buildings and field records) from 1998-2014, including one record of an unclassified roost with fifty-two individuals recorded.

The data search revealed one record of a Noctule bat (recorded with an aural bat detector) in 2017 within 1km of the site. No records were obtained within 500m of the site. There were three historic records of Unknown Pipistrelle species within 2km of the site, this included one grounded bat, one unclassified roost and an excluded roost. No records were obtained of Unknown Pipistrelle species within 1km of the site.

The data search revealed five records of Common Pipistrelle within 2km of the site. These consisted of an unclassified roost in 2015 and a possible roost in 1997 within 2km, a possible roost and bat recorded with an aural bat detector within 1km of the site. A Common Pipistrelle was recorded within 500m of the site with an aural bat detector in 2015. No records were obtained of Common Pipistrelle onsite.

Seventeen records of Unknown Vesper Species were obtained within 2km of the site. These records consisted of four unclassified roosts, two possible roosts, one hibernation roost, one bachelor roost, one casualty, one field record and two records of bats recorded in buildings within 2km of the site. All records within 2km are historic records. Within 1km of the site a recent record of an unclassified roost, a historic possible roost and a bat recorded in a building in 2003 were obtained. The data search revealed records of a possible roost and an unclassified roost within 500m of the site, both of which were historic. No records were obtained of Unknown Vesper species onsite.

3.3 Nature Conservation Designations

Statutory Nature Conservation Sites

3.3.1 There are no statutory nature conservation sites within the boundary of the site.

3.3.2 No records were obtained of designated conservation sites within 2km of



the site.

Non-Statutory Nature Conservation Sites

3.3.3 There are no non-statutory nature conservation sites within the boundary of the site.

3.3.4 The search revealed four non-statutory conservation sites within 2km of the site, which can be seen in **Table 3** below.

Table 3: Non-statutory designated sites with 2km of the site.

Name	Designation	Description	Distance from Site
Sir John Ramsden Canal	Local Wildlife Site (LWS)	This canal supports a range of aquatic and swamp communities, typical of slow-moving water. Although most of the communities are species poor, they contain a representative range which includes the regionally rare <i>Ceratophyllum demersum</i> and <i>Alisma lanceolatum</i> . This site holds the county's largest population of this latter species. In addition, the site is of considerable importance for the presence of the nationally rare <i>Luronium natans</i> . This is an internationally protected species under Annex 1 of the Berne Convention for Conservation and Britain holds the major population of this species in the canal networks of Wales, Cheshire, Lancashire and West Yorkshire.	845m Southeast
Bradley Park Woods	Local Wildlife Site (LWS)	These two small areas of woodland within the site meet the Wd5 criteria for their bluebell coverage. Trees within these areas of woodland are mature and comprise mainly oak, with some mature ash. Both areas of woodland comprise a good amount of standing and fallen deadwood. Other ancient woodland indicator field layer species are present.	1.9km Northeast
Grimescar Wood	Local Wildlife Site (LWS)	The woodland contains a good density cover of bluebell and meets Criteria Wd5.	1.9km West
Roundhill	Local Geological Site (LGS)	Geologically, Round Hill is an outlier of Greenmoor Rock (formerly thought to be the Elland Flags, but now recognized as being of different origin) lying on older sediments. The present structure of Round Hill is a testament to the processes of weathering and erosion slowly shaping the rock over geological time.	1.9km Northwest

3.3.5 The site lies adjacent to the Kirklees Wildlife Habitat Network.

3.4 Site Assessment Results

3.4.1 The site was surveyed on 19/03/2019 by Jenny Butler AMIEnvSc, BSc (Hons). Survey conditions are summarised in **Table 4**.



Table 4: Survey times and weather conditions.

Survey date	Lead surveyor	Temp	Humidity	Wind speed/Direction		Cloud Cover	Precipitation
19/03/2019	Jenny Butler	9°C	85%	9mph	WSW	100%	Light showers

Habitats Present

3.4.2 The following habitat types are present at **Ashbrow Road**: Amenity grassland, buildings, fence, and hard standing. Please see **Table 5** below for detailed descriptions of each habitat present on site and the species recorded during the time of the survey.

Table 5: Habitats present on site (classified in accordance with the JNCC guidelines)

Habitat Type/Feature	Species Present	Other Observations	Target Notes
Semi-natural broadleaf woodland	Ash (<i>Fraxinus excelsior</i>), Beech (<i>Fagus sylvatica</i>), Hawthorn (<i>Crataegus monogyna</i>), Holly (<i>Ilex aquifolium</i>), Lombardy Poplar (<i>Populus nigra 'Italica'</i>), Ivy (<i>Hedera helix</i>), Herb Robert (<i>Geranium robertianum</i>), Bramble (<i>Rubus fruticosus</i>), Lords and Ladies (<i>Arum maculatum</i>), Yarrow (<i>Achillea millefolium</i>), Yorkshire Fog (<i>Holcus lanatus</i>), Perennial Rye-grass (<i>Lolium perenne</i>), Cow Parsley (<i>Anthriscus sylvestris</i>), Daffodil Species (<i>Narcissus</i> sp.), Bluebell (<i>Hyacinthoides non-scripta</i>), Snowdrop (<i>Galanthus nivalis</i>), Common Nettle (<i>Urtica dioica</i>), Wild Garlic (<i>Allium ursinum</i>), Broadleaved Dock (<i>Rumex obtusifolius</i>), Evening Primrose (<i>Oenothera biennis</i>), Foxglove (<i>Digitalis purpurea</i>), Brassica Species (<i>Brassica</i> sp.), Wild Strawberry (<i>Fragaria vesca</i>), Chives (<i>Allium schoenoprasum</i>), Wood Avenas (<i>Geum urbanum</i>), Cleavers (<i>Galium aparine</i>), Wood Anemone (<i>Anemone nemorosa</i>), Ragwort (<i>Senecio jacobaea</i>), Common Laurel (<i>Prunus laurocerasus</i>), Bracken (<i>Pteridium aquilinum</i>), Sycamore (<i>Acer pseudoplatanus</i>), Hogweed (<i>Heracleum sphondylium</i>), Hazel (<i>Corylus avellana</i>), Elder (<i>Sambucus nigra</i>), Goat Willow (<i>Salix caprea</i>), Dandelion (<i>Taraxacum</i> sp.), Cock's Foot (<i>Dactylis glomerata</i>), Sorrel (<i>Oxalis acetosella</i>), Cherry Species (<i>Prunus</i> sp.), Willowherb Species (<i>Epilobium</i> sp.), Prickly Lettuce (<i>Lactuca serriola</i>), Box (<i>Buxus sempervirens</i>), Lilac (<i>Syringa vulgaris</i>), Dog Rose (<i>Rosa canina</i>), Currant Species (<i>Ribes</i> sp.), Groundsel (<i>Senecio vulgaris</i>).	The woodland makes up the majority of the habitats present on site.	Target Note 1 Two Beech trees with large front splits and cavities. High Bat roosting potential.
Soil Embankment	Daffodil (<i>Narcissus</i> sp.), Yarrow (<i>Achillea millefolium</i>), Bramble (<i>Rubus fruticosus</i> agg.), Fir Species (<i>Abies</i> sp.), Ivy (<i>Hedera helix</i>), Herb Robert (<i>Geranium</i>	None	None



	<i>robertianum</i>), Wild Strawberry (Synonyms <i>Fragaria</i>), Chive (<i>Allium schoenoprasum</i>).		
Dense Scrub	Ivy (<i>Hedera helix</i>), Holly (<i>Ilex aquifolium</i>), Bramble (<i>Rubus fruticosus</i> agg.), Common Nettle (<i>Urtica diocta</i>), Ash (<i>Fraxinus excelsior</i>).	Located within the proposed development area and towards the south of the site.	Target Note 2 Potential for Hedgehogs and nesting birds.
Building (ruin).	Ivy (<i>Hedera helix</i>), Holly (<i>Ilex aquifolium</i>), Bramble (<i>Rubus fruticosus</i> agg.).	Old greenhouse ruins with self-seeded trees.	None

Fauna Species Encountered

3.4.3 The following species were either seen, heard or evidence of their presence was found during the site investigation:

- Blackbird (*Turdus merula*)
- Blue Tit (*Cyanistes caeruleus*)
- Chaffinch (*Fringilla coelebs*)
- Coal Tit (*Parus ater*)
- Goldfinch (*Carduelis carduelis*)
- Great Tit (*Parus major*)
- House Sparrow (*Passer domesticus*)
- Jackdaw (*Corvus monedula*)
- Jay (*Garrulus glandarius*)
- Magpie (*Pica pica*)
- Wood Pigeon (*Columba palumbus*)
- Wren (*Troglodytes troglodytes*)

3.4.4 No invasive plant species were found at this site whilst conducting the site investigation.

3.5 Scoping Survey Results

3.5.1 The site was surveyed on the 19/03/19 by lead surveyor Jenny Butler BSc (Hons), NE Level 2 Class Licence – 2018-33192-CLS-CLS. Survey conditions are summarised in **Table 6**.



Table 6: Survey times and weather conditions.

Survey date	Lead surveyor	Temp	Humidity	Wind speed/Direction		Cloud Cover	Precipitation
19/03/19	Jenny Butler	9°C	85%	9mph	WSW	100%	Light Showers

3.5.2 Habitats and Features Present

The site is predominantly broad-leaved woodland bordered by scrub. The woodland has a thick, well connected canopy; however, most of the trees are thin, smoothed stemmed specimens with very few large trees present. The scrub areas were previously gardens, originally connected to the adjacent residential property. The old foundations of greenhouses remain present on site. The foundations are a mix of brick and concrete.

The development area is a small section of the site located to the north, bordering Ashbrow Road, the development area consists primarily of dense scrub. The woodland on site is not within the proposed development area boundary.

3.5.3 Building Assessment/ Built Structure Assessment

There are no buildings present on site. There are foundations present, from when there were greenhouses, but the greenhouses have been removed, leaving only the concrete bases.

3.5.4 Tree Assessment

The overall site is primarily woodland. The woodland consists of Common Ash (*Fraxinus excelsior*), Beech (*Fagus sylvatica*), Hawthorn (*Crataegus monogyna*), Holly (*Ilex aquifolium*), Lombardy Poplar (*Populus nigra*), Crab Apple (*Malus sylvestris*), Goat Willow (*Salix caprea*), Bird Cherry (*Prunus padus*), Lilac (*Syringa vulgaris*), Box (*Buxus sempervirens*) and English Oak (*Quercus robur*).

The trees are mostly thin stemmed, smooth and free of Ivy cover. There are however a few larger trees present on site, with Ivy cover that have the potential to support bat roosting sites. These trees are outside of the proposed development area, but within the site boundary line. The site connects onto further woodland and grassland habitats. The local landscape is a mix of grassland, woodland and residential areas.

The woodland is proposed to be retained and protected throughout the development phase and the woodland will not be encroached upon by the proposed development plans.



4. Discussion and Interpretation of Results

4.1 Nature Conservation Designations

- 4.1.1 No designated nature conservation sites are located within the boundary of the site or within 2km.
- 4.1.2 There are four non-statutorily designated sites within 2km of the site. Three of these designated sites are located over 1km away, one is located within 1km of the site boundary. Sir John Ramsden Canal is a LWS located 845m from the site boundary. There is good habitat connectivity between the site and Sir John Ramsden Canal LWS. The development site is connected to this LWS by a woodland corridor and riparian habitats.
- 4.1.3 The proposed development is likely to reduce habitat connectivity; however the development is unlikely to sever the woodland corridor connection, thus no significant habitat fragmentation or loss is perceived.

4.2 Priority and Protected Habitats

- 4.2.1 The site contains the following habitats: semi-natural broadleaved woodland, soil embankment, dense scrub and buildings (ruins only).
- 4.2.2 The scrub and woodland on site are classed as habitats of principle importance in Kirklees. The scrub habitat is to be largely removed as part of the proposed development plans. The woodland on site is to remain, except for some management and maintenance from a safety perspective. A negligible number of the trees are to be removed along the edge of the woodland on site to facilitate the proposed development.

4.3 Priority and Protected Species

- 4.3.1 Amphibians: One record of Palmate Newt was obtained within 2km of the site boundary. No records of amphibians were obtained within 1km of the site. The site does not contain the required aquatic habitats suitable for breeding amphibians such as toads, frogs or newts. The site does contain terrestrial habitats suitable for supporting over-wintering amphibians. The woodland is likely to support amphibians due to the presence of excellent terrestrial habitat on site and a small pond adjacent to the site boundary.
- 4.3.2 Badgers: The data search revealed records within 2km of the site. No records were obtained within 1km of the site boundary. The site contains the required steep embankments hedgerows to support sett creation. The site is well connected to adjacent woodland habitats suitable for supporting badger setts. The site is unlikely to suffer high levels of



human noise and light disturbance. It is likely badgers are present on the site, potentially relying on the site as a key foraging habitat. The entire site was walked over, no signs of badger setts were found. There is limited likelihood of a badger sett being present within 30m of the development area.

- 4.3.3 Barn Owls: No records of barn owl were obtained within 2km of the site boundary. Barn Owls require a mixed habitat including rough grassland, field margin strips, set aside and ditches/watercourses for hunting. Barn Owls require between 1 and 47 hectares of suitable roosting and hunting habitats, as stated by the Barn Owl Conservation Trust, barnowltrust.org.uk, accessed April 2018. The proposed development site does not contain the required open grassland habitats for foraging, or barn style buildings for roosting. The site is unlikely to support Barn Owls.
- 4.3.4 Bats: The data search revealed records of seven bat species within 2km of the site boundary: Common Pipistrelle, Unknown Pipistrelle Species, Noctule, Leisler's Bat, Unknown Myotis Species, Unknown Bat Species and Whiskered Bat. Common Pipistrelle and Unknown Bat Species were recorded within 500m of the site boundary. The woodland contains a number of trees that could support roosting bat species. The trees within the woodland form an excellent commuting and foraging area. The woodland connects directly to adjacent woodland habitats and the Canal. The woodland is likely to support roosting, foraging and commuting bat species.
- 4.3.5 Dormice: The data search did not reveal any records of Hazel Dormice within 2km of the site. Dormice are usually found in deciduous broadleaved woodland habitats, and are vulnerable to habitat fragmentation and disturbance. Dormice are found primarily in the south of England. Dormice populations have plummeted in recent years, with their range in the UK shrinking rapidly and population numbers continuing to decline. West Yorkshire is outside of their known habitat range, as stated in the *Dormouse Conservation Handbook, second edition, written by Paul Bright, Pat Morris and Tony Mitchell-Jones, 2006*. There are no known Dormouse reintroduction sites within 5km of the proposed development site. It is unlikely that the proposed development site supports Dormice.
- 4.3.6 Invertebrates: The data search revealed numerous invertebrate records within 2km of the site boundary. Two records were obtained within 1km of the site, including Green Letter Hairstreak. The site contains scrub and woodland that is likely to support good insect diversity and population sizes. The removal of habitat is likely to reduce the invertebrate diversity and populations on site.



- 4.3.7 Nesting Birds: The data search revealed records of 11 bird species within 2km of the site boundary, including Kingfisher, a Schedule 1 species. No records of bird species were obtained within 1km of the site boundary. The trees on site have the potential to support numerous bird species. The development is likely to remove potential bird nesting habitat on site.
- 4.3.8 Otters: The data search revealed records of Otter within 2km of the site boundary. Otters have been recorded as exploiting virtually all types of water and waterway in the UK. Although populations in England and Wales are confined mainly to fresh water, they readily exploit suitable coastal habitats in Scotland as well as elsewhere. Otters require vegetation along bank sides, and prefer tree lined/wooded bank areas (*Ecology of the European Otter, Conserving Natura 2000 Rivers 2010*). The site does not contain the water bodies and riparian habitats required to support breeding or hunting Otters. It is unlikely Otters are using the site.
- 4.3.9 Plants: The data search revealed flowering plant records within 2km of the site boundary, including non-native invasive plant species. No records of non-native invasive plant species were obtained on site during the survey. No regionally or nationally rare plant species were recorded on site during the time of the survey. The site supports a range of floral species, the development is likely to reduce floral diversity on site.
- 4.3.10 Reptiles: The data search revealed records of Grass Snake within 2km of the site boundary. Reptiles rely on conditions that allow them to maintain their body temperature. They need to be able to bask and also to be able to avoid extremes of temperature. Reptiles require a mosaic of habitat, including grassland, bare ground and refugia piles/areas, preferring habitats where Bracken is sparse and tree numbers are low (*Habitat Management for Reptiles, Amphibian and Reptile Trust ARC, accessed 2018*). The site does not contain the range of habitats and interconnectivity required to support reptiles. It is unlikely reptiles are present on site.
- 4.3.11 Water Voles: The data search did not reveal records of Water Vole within 2km of the site boundary. Water voles generally prefer channels with slow flowing water and steep sided banks, ideally around 45-60 degrees, to enable them to burrow successfully into them. They burrow up to two meters into the banks, and usually have more than one entrance. One entrance is often at the water level to give access to the burrow quickly for refuge, with a second often located higher up to allow access should the water level increase. Water voles are very sensitive to changes in water levels and the need to escape when they rise. Water



voles generally prefer watercourses with swards of dense vegetation along the banks and within the channel, to provide both refuge and food. Although they are omnivorous, the diet of water voles is almost completely vegetarian, and comprises a wide range of grasses, reeds, tall ruderal, marginal and emergent vegetation (*Water Vole Conservation and Management, 2016*). The site does not contain the required aquatic habitats and riparian corridors of vegetation to support Water Vole. It is unlikely that Water Vole are present on site.

4.3.12 West European Hedgehog: The data search did not reveal any records of hedgehog within 2km of the site boundary. The site is unlikely to support nesting and breeding hedgehogs; however, the woodland habitat offers some foraging opportunities for hedgehogs. The development is likely to impact on the available foraging habitat for hedgehogs and therefore has the potential to restrict movement of hedgehogs locally.

4.3.13 White Clawed Crayfish: The data search revealed records of White Clawed Crayfish within 2km of the site boundary. White Clawed Crayfish require slow flowing waterbodies, high quality water of pH 6.8-8.6, rocks, debris, rubble or submerged vegetation for breeding purposes. White Clawed Crayfish are limited in their range as they are unable to travel significant distances over terrestrial habitats as stated in Guidance on Habitat for White-clawed Crayfish and its Restoration by Stephanie Peay, July 2002. The site does not contain the required waterbody to support White Clawed Crayfish; therefore it is unlikely that the site supports this species.

*The absence of any signs of or features considered valuable for supporting protected species, cannot be considered evidence that these species are absent from a site, or that these species will not occupy the site in the future. It must therefore always be recommended that work be conducted with care and vigilance. Should any protected species be encountered during work (please see **Appendix 7**), work should stop immediately and JCA or Natural England contacted.*

4.4 Bat Scoping Results

4.4.1 The overall site is primarily wooded, with areas of previous building foundations present. There is a small section of the site that is mainly scrub, this area of the site was connected to the adjacent residential property and used as a garden before being sold off. Please refer to **Section 3.5** for further details.

4.4.2 The bat scoping survey highlighted a number of features on the site suitable for supporting roosting, foraging and commuting bats. The woodland on site supports several trees that have the potential to provide



roosting opportunities for bat species. The woodland is well connected to adjacent treelines and wooded/riparian habitats, which provides an excellent foraging and commuting line for bat species.

- 4.4.3 The overall site has **moderate to high potential for supporting roosting bat species**. Please see **Table 7** below for the guidelines used for assessing the roosting potential of a site. Please note these guidelines are applied using the professional judgement of the licenced bat worker undertaking the assessment.

Table 7: Guidelines used for assessing the bat roosting suitability of a site (taken from the BCT: Bat surveys for professional Ecologists, Good Practice Guidelines; 3rd Edition).

Roosting Suitability	Roosting Features Present
Negligible	No visible features on the site likely to be used by roosting bats. No signs of bats found during the initial assessment.
Low	A structure with one or more potential roosting opportunities that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough shelter, protection, surrounding habitats, or the appropriate conditions to be used on a regular basis by larger numbers of bats e.g. unlikely to support hibernation or maternity roosts. A tree of sufficient size and age to contain features suitable for bat roosting, but with no features seen from the ground. No signs of bat use found during the initial assessment.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to the size of the potential roosting feature which is sufficient to provide: shelter, protection, optimal conditions and surrounding habitats. The feature(s) are unlikely to support a roost of high conservation status. Signs (potential signs) of bat use found during the initial assessment.
High	A structure or tree with one or more potential roost sites that could be used by bats due to the size of the potential roosting feature which is sufficient to provide: shelter, protection, optimal conditions and surrounding habitats. The features have the potential to support large colonies of bats (e.g. maternity or hibernation) for long periods of time. Signs of bat use present.

4.5 Impacts of Proposed Development

- 4.5.1 **Table 8** below summarizes the likely impacts the proposed development will have on protected species present/likely present on site:

Table 8: The indicative potential impacts of the proposed development on protected species likely and/or found to be present on site.

Species	Negative Impact (includes scale and nature of impact)
Amphibians	The site contains terrestrial habitats suitable for supporting over-wintering amphibians. There is a pond adjacent to the site boundary. The site is likely to support over-wintering



	amphibians. The development is unlikely to impact on over-wintering amphibians, however, will removed suitable habitats, potentially having a detrimental impact on the species. A method statement is required to reduce the short-term adverse impacts of the construction phase on over-wintering amphibians.
Barn Owls	None perceived
Bats	The trees on site may offer roosting opportunities for bat species. The trees with roosting potential are to remain as part of the development plans. The scrub habitat is planned for removal, which will reduce available foraging habitat for bat species. Mitigation will be required in the form of a planting scheme and bat boxes to compensate for the loss of foraging and roosting habitat as a result of the proposed development plans.
Badgers	The site is unlikely to support badger setts; however, the site may provide a key foraging area for the local badger population. To ensure no harm to badgers during the construction phase of the development a badger method statement should be provided. Any lighting will also need to be considered for its impact on wildlife locally.
Dormice	None perceived
Invertebrates	The development will remove scrub habitats on site which are likely to support invertebrate populations. The development may have a long-term detrimental impact on invertebrates. The installation of invertebrate boxes and a native wildflower planting scheme should be provided on site to ensure no long-term detrimental impacts on invertebrate diversity and populations as a result of the proposed development.
Nesting Birds	The site contains woodland and scrub habitats suitable for supporting nesting birds. The removal of the scrub will reduce potential nesting areas for bird species. To ensure no long-term detrimental impacts on breeding birds nest boxes are to be installed to mitigate for the loss of nesting opportunities on site as a result of the proposed development plans.
Otter	None perceived
Plants	The removal of scrub habitat on site will reduce floral diversity locally. A native wildflower planting scheme is to be designed to ensure no introduction on invasive species on site and to ensure floral diversity locally is maintained.
Reptiles	None perceived
Water Vole	None perceived
White-clawed Crayfish	None perceived
Other Species	Hedgehogs have the potential to be negatively impacted by the development. Hedgehog holes and corridors are to be incorporated into the development plans to limit the impact of the development on hedgehog movements.

*NB: The overall impact of the proposed development is based upon plans provided by Halcyon Living Space, see drawing: (P02) as included in **Appendix 2**. This report has been compiled and produced by JCA Ltd, and accounts for and assesses the likely impacts on local wildlife populations and biodiversity that is to occur as a result of the development given in **Appendix 2**. Should these plans change then this report will need revising and the potential impacts re-evaluating.*



5. Conclusions

- 5.1 JCA Ltd were commissioned to carry out a Preliminary Ecological Appraisal Survey and related report by Halcyon Living Space in order to determine the potential impacts of the proposed development on on-site habitats, species and local priority habitats at **Ashbrow Road**.
- 5.2 The site was surveyed on the 19/03/19 by Jenny Butler AMIEnvSc, BSc (Hons).
- 5.3 After conducting a thorough site investigation and a detailed Desktop Study, we consider **Ashbrow Road**, to contain habitats of moderate to high ecological value (please see **Section 3.5**).
- 5.4 After conducting a thorough Bat Roost Potential survey and a detailed Desktop Study, we consider **Ashbrow Road**, to have a moderate potential for supporting foraging, commuting and roosting bats. The trees with roosting potential are to remain as part of the development plans. Only trees with negligible bat roosting potential are to be removed to facilitate the development.
- 5.5 The site is situated within influencing distance of Sir John Ramsden Canal (LWS). The proposed development is likely to impact on local habitat connectivity, resulting in a biodiversity net loss, as such landscaping and biodiversity enhancements must be made in order to compensate for the loss of habitats as a result of the proposed development. The planting of species rich hedgerows and a 'soft-edge' buffer zone between the development area and adjacent woodland is advised in order to provide habitat and wildlife corridors for species such as hedgehogs, birds, bats and small mammals.
- 5.6 No non-native invasive species were found to be present on site during the time of the site survey.
- 5.7 **Summary:** The development will retain the woodland habitat but will remove the scrub areas on site. The removal of the scrub will reduce nesting opportunities for birds. The site may support over-wintering amphibians. The site is likely to provide foraging and roosting areas for bat species. The site is likely to support foraging badgers. Additional lighting on site is likely to have an adverse effect on local wildlife. The overall development will result in a biodiversity net loss, therefore a biodiversity enhancement plan and landscaping scheme will be required to compensate for the loss of habitat and lead to biodiversity net gain post development.



6. Recommendations

6.1 Based on the findings outlined in this report the following recommendations are made:

- **Birds:** The woodland habitat and scrub on site provides excellent nesting opportunities for breeding bird species. In the UK the key breeding period for birds is from March until September (depending on species and behaviour). If tree removal occurs within this period, a nesting bird survey is required prior to vegetation removal commencing. Outside of this period, if birds are found to be nesting during tree removal then the removal must cease immediately, and a suitably competent ecologist contacted. *NB: Schedule 1 bird species are afforded a higher level of protection, if Schedule 1 bird species are found to be present on-site works must cease immediately and a suitably qualified and licensed ecologist contacted prior to works continuing.*
- **Amphibians:** The site contains suitable over-wintering habitat for amphibian species. There are no waterbodies present within the development area, however there is a pond adjacent to the site boundary. A best practice, avoidance to harm method statement should be produced for the site manager before starting works on the site for amphibians to cover the pre-construction, construction and post-construction phases of the development. The installation of refugia areas on site is advised to provide habitat for over-wintering amphibians.
- **Badgers:** The wider site contains suitable habitat to support foraging badgers. There are no badger setts present onsite, however habitat connectivity is good locally, allowing easy badger access to site for foraging purposes. A best practice, avoidance to harm method statement should be produced for the site manager before starting works on the site for badgers to cover the pre-construction, construction and post-construction phases of the development. A 'soft-edge' buffer should be planted between the development area and adjacent woodland in order to minimise light and noise pollution to the woodland on site post-development and provide a foraging and commuting corridor for badgers on site.
- **Faunal Boxes:** The proposed development plans will require the removal of some trees and the scrub habitat on site. To compensate for the loss of habitat on site faunal boxes are to be installed. 4 bird boxes, 2 bat boxes and 2 insect boxes are advised. Hedgehog holes in fencing must be included within the development to ensure hedgehog commuting corridors are retained post-development.



- Lighting Design: Inappropriate lighting in the vicinity of bat roosts can cause disturbance to bat populations and individuals and could be constituted as an offence under the Wildlife and Countryside Act 1981. As such, we have prepared guidance in line with the information provided by the Institute of Lighting Professionals (ILP, 2018) to aid in planning lighting schemes with the aim of limiting the impact that lighting may have on local bat populations.

It is important to avoid:

- Uniform levels of luminance across the site.
- Metal halide and fluorescent lighting.
- Upward tilting lighting that increases skyline luminance.

Instead the following should be installed:

- Dark buffer zones.
- Screening in the form of vegetation, fences and structures.
- Appropriately designated darkened areas.
- Luminaries absent of UV elements
- LED luminaries with a sharp cut-off, low intensity and good rendition.
- Peak luminaire wavelength at a minimum of 550nm.
- Downward directional luminaires with upward light ratios of 0%
- Lower light columns to limit light spill.
- Recessed internal light fixtures.
- Window glazing treatments or automated blind systems
- A Biodiversity Enhancement Plan should ideally be designed pre-construction to be implemented post construction during the landscaping phase of the development. This plan will aim to ensure there is no net loss of habitats on site and to increase biodiversity and opportunities for wildlife on site, due to the result of the proposed development. The biodiversity enhancement plan will aim to provide opportunities for local wildlife to ensure the development does not have a significant detrimental impact on local or national wildlife populations. The Biodiversity Enhancement Plan should include:



- Quantities and locations of faunal boxes for bats, birds, hedgehogs and insects.
- Native shrub/tree/grass/hedgerow planting.
- Gaps in fencing to allow movement for hedgehogs and other small mammals
- Low level lighting options and lighting buffer zones in accordance with the BCT and ILP 2018 guidance.
- Management scheme on vegetation clearance.
- Methods to avoid unnecessary harm to amphibians over-wintering terrestrially on site and a method statement to avoid harm to badgers using the site for foraging purposes.
- A design for a 'soft-edge' buffer between the development site boundary and adjacent wooded habitat on site. This will provide a green buffer between the woodland and gardens reducing the impact of light and noise disturbance on local wildlife populations.

JCA Ltd. can provide these and other ecological surveys if required, please do not hesitate to contact us for further information.



5. References

Guidelines for surveys and report writing:

British Standards Institute (BSI), (2013) *BS 42020:2013, Biodiversity - Code of practice for planning and development*. London.

Chartered Institute of Ecology and Environmental Management (CIEEM), (2015) *Guidelines for Ecological Report Writing*. Winchester.

Joint Nature Conservation Committee (JNCC), (2010) *Handbook for Phase 1 habitat survey: A technique for environmental audit*.

Websites:

Advice on protected species is consolidated at:

Environmental management: Wildlife and habitat conservation - GOV.UK (2016) *Gov.uk*.

Available at: <https://www.gov.uk/topic/environmental-management/wildlife-habitat-conservation> (Accessed: 21 September 2016).

Magic Map Application (2016) *Magic.defra.gov.uk*. Available at:

<http://magic.defra.gov.uk/MagicMap.aspx> (Accessed: 21 September 2016).

The RSPB (2016). Available at: <http://www.rspb.org.uk/> (Accessed: 21 September 2016).

Surveys and mitigation plans: protected species - Detailed guidance (2015) *Gov.uk*. Available at: <https://www.gov.uk/guidance/surveys-and-mitigation-plans-protected-species> (Accessed: 21 September 2016).

Within this detailed guidance on surveys and mitigation information is available on the following protected species:

- Bats
- Natterjack toads
- Otters
- Reptiles
- Water voles
- White-clawed crayfish
- Wild birds
- Hazel dormice
- Great crested newts
- Badgers

Wildlife licences: when you need to apply - Detailed guidance (2014) *Gov.uk*. Available at: <https://www.gov.uk/guidance/wildlife-licences> (Accessed: 21 September 2016).

Within this detailed guidance on licensing information is available on licences for the following protected species:

- Bats
- Natterjack toads
- Otters
- Reptiles
- Water voles
- White-clawed crayfish
- Wild birds
- Hazel dormice
- Great crested newts
- Badgers

As well as:

- Non-native Bumblebee species
- Deer
- Freshwater fish
- Invertebrates
- Mink, coypu, muskrat and grey squirrel
- Plants

Species Specific Information:



Badgers:

Natural England, (2007) *Badgers and Development: A Guide to Best Practice and Licensing*. Competencies for Species Survey: Badger, Chartered Institute of Ecology and Environmental Management CIEEM, 2013. Accessed 2018-06-21

Bats:

Bat Conservation Trust, (2007) *Bats, Development & Planning in England*. London.
Mitchell-Jones, A. and McLeish, A. (ed.). (2004) *Bat Workers' Manual*. 3rd ed. JNCC.
The Bat Worker's Manual, Anthony J. Mitchell-Jones, 2015
Bats: surveys and mitigation for development projects, <https://www.gov.uk/guidance/bats-surveys-and-mitigation-for-development-projects> Accessed 2018-06-21
Guidance note 8: bats and artificial lighting in the UK, bats and the built environment series, Bat Conservation Trust and ILP, produced 2018, accessed November 2018.
<https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>
Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition, Bat Conservation Trust, written 2016

Dormice:

Bright, P., Morris, P. and Mitchell-Jones, A. (1996) *The dormouse conservation handbook*. Peterborough: English Nature.

Great Crested Newts:

Langton, T., Beckett, C. and Foster, J. (2001) *Great Crested Newt Conservation Handbook*. Halesworth: Froglife. pdf
Advice note 4 (revised) - *Amphibian Disease Precautions, A Guide for UK Fieldworkers*, Amphibian and Reptile Conservation trust, 2017. Accessed 2018-06-21

Otters: Natural England, (2007) *Species Information Note SIN006, Otter: European protected species*.

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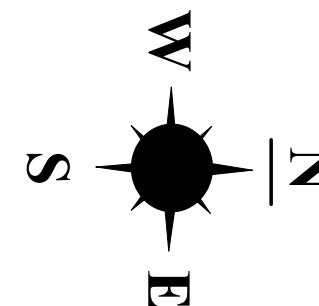


Appendices



Appendix 1: Phase 1 Habitat Map





Appendix 1: Phase 1 Habitat Map

Address: Ashbrow Road,
Huddersfield, HD2 1EX
JCA Ref: 14838a/JB

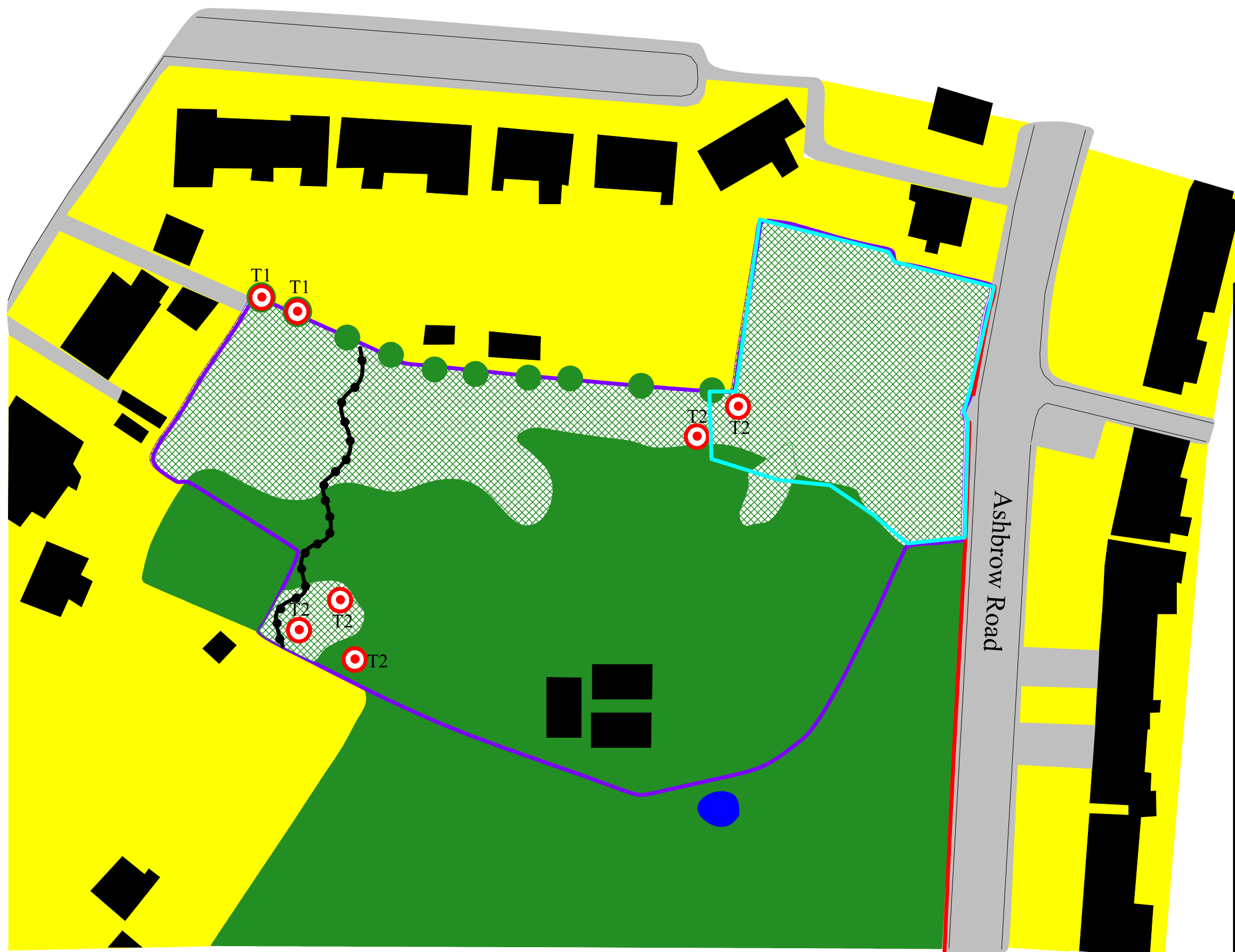
NOT TO SCALE

KEY

	Standing water
	Broad-leaved woodland (Semi-natural)
	Amenity grassland
	Hard standing
	Dense scrub
	Buildings
	Wall
	Proposed Development Area
	Site Boundary
	Target note

JCA Limited

Arboricultural & Ecological Consultants



Appendix 2: Proposed Development Plan



Appendix 3: Photographic Evidence



Photo 1: Deadwood on site



Photo 2: Trees with large cavities on site.



Photo 3: Tree cavities within woodland.



Photo 4: Bare ground path leading through the site.



Photo 5: Brash present on site.



Photo 6: Scrub present on site.





Photo 7: Dense bramble cover.



Photo 8: Trees on site within woodland.



Photo 9: Ivy covered trees within the woodland.



Photo 10: Trees on site.



Photo 11: Trees with fire damage on site.



Photo 12: Adjacent wooded area.





Photo 13: Woodland on site.



Photo 14: Ivy across woodland floor.



Photo 15: Pond adjacent to site.

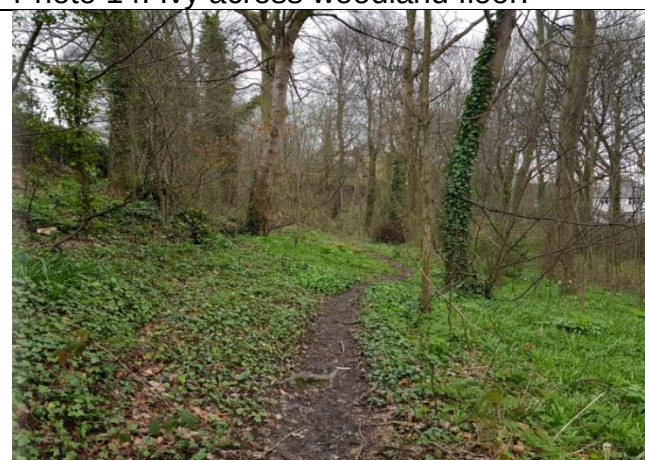


Photo 16: Path leading through woodland on site.



Photo 17: Scrub on site.



Photo 18: Building foundations on site.



Appendix 4: Species List

To be submitted to the appropriate Local Records Centre

Site Name: Ashbrow Road, Huddersfield

Provided by: JCA Ltd

Grid Ref: SE150190

Verified by: Jenny Butler

Table 9: Complete list of species encountered during survey.

Common Name	Scientific Name	Number	Comment
Fir Species	<i>Abies sp.</i>	N/A	None
Sycamore	<i>Acer pseudoplatanus</i>	N/A	None
Yarrow	<i>Achillea millefolium</i>	N/A	None
Chives	<i>Allium schoenoprasum</i>	N/A	None
Wild Garlic	<i>Allium ursinum</i>	N/A	None
Wood Anemone	<i>Anemone nemorosa</i>	N/A	None
Cow Parsley	<i>Anthriscus sylvestris</i>	N/A	None
Lords and Ladies	<i>Arum maculatum</i>	N/A	None
Brassica Species	<i>Brassica sp.</i>	N/A	None
Box	<i>Buxus sempervirens</i>	N/A	None
Goldfinch	<i>Carduelis carduelis</i>	1	None
Wood Pigeon	<i>Columba palumbus</i>	1	None
Jackdaw	<i>Corvus monedula</i>	1	None
Hazel	<i>Corylus avellana</i>	N/A	None
Hawthorn	<i>Crataegus monogyna</i>	N/A	None
Blue Tit	<i>Cyanistes caeruleus</i>	1	None
Cock's Foot	<i>Dactylis glomerata</i>	N/A	None
Foxglove	<i>Digitalis purpurea</i>	N/A	None



Willowherb Species	<i>Epilobium sp.</i>	N/A	None
Beech	<i>Fagus sylvatica</i>	N/A	None
Wild Strawberry	<i>Fragaria vesca</i>	N/A	None
Ash	<i>Fraxinus excelsior</i>	N/A	None
Chaffinch	<i>Fringilla coelebs</i>	1	None
Snowdrop	<i>Galanthus nivalis</i>	N/A	None
Cleavers	<i>Galium aparine</i>	N/A	None
Jay	<i>Garrulus glandarius</i>	1	None
Herb Robert	<i>Geranium robertianum</i>	N/A	None
Wood Avens	<i>Geum urbanum</i>	N/A	None
Ivy	<i>Hedera helix</i>	N/A	None
Hogweed	<i>Heracleum sphondylium</i>	N/A	None
Yorkshire Fog	<i>Holcus lanatus</i>	N/A	None
Bluebell	<i>Hyacinthoides non-scripta</i>	N/A	None
Holly	<i>Ilex aquifolium</i>	N/A	None
Prickly Lettuce	<i>Lactuca serriola</i>	N/A	None
Perennial Rye-grass	<i>Lolium perenne</i>	N/A	None
Daffodil Species	<i>Narcissus sp.</i>	N/A	None
Evening Primrose	<i>Oenothera biennis</i>	N/A	None
Sorrel	<i>Oxalis acetosella</i>	N/A	None
Great Tit	<i>Parus major</i>	1	None
House Sparrow	<i>Passer domesticus</i>	1	None
Coal Tit	<i>Periparus ater</i>	1	None
Magpie	<i>Pica pica</i>	1	None



Lombardy Poplar	<i>Populus nigra 'Italica'</i>	N/A	None
Cherry Laurel	<i>Prunus laurocerasus</i>	N/A	None
Cherry Species	<i>Prunus sp.</i>	N/A	None
Bracken	<i>Pteridium aquilinum</i>	N/A	None
Currant Species	<i>Ribes sp.</i>	N/A	None
Dog Rose	<i>Rosa canina</i>	N/A	None
Bramble	<i>Rubus fruticosus</i>	N/A	None
Broadleaved Dock	<i>Rumex obtusifolius</i>	N/A	None
Goat Willow	<i>Salix caprea</i>	N/A	None
Elder	<i>Sambucus nigra</i>	N/A	None
Ragwort	<i>Senecio jacobaea</i>	N/A	None
Groundsel	<i>Senecio vulgaris</i>	N/A	None
Lilac	<i>Syringa vulgaris</i>	N/A	None
Dandelion Species	<i>Taraxacum sp.</i>	1	None
Wren	<i>Troglodytes troglodytes</i>	1	None
Blackbird	<i>Turdus merula</i>	1	None
Common Nettle	<i>Urtica diocta</i>	N/A	None



Appendix 5: Bat Survey Calendar

Figure 2: Survey timings calendar (taken from BCT: Bat surveys for professional Ecologists, Good Practice Guidelines; 3rd Edition).

Survey type	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
Preliminary ecological appraisal – fieldwork												
Preliminary roost assessment – structures ^a												
Emergence/re-entry survey for maternity or summer roosts ^b												
Emergence/re-entry ^c survey for transitional roosts ^b												
Emergence survey for mating roosts ^b												
Hibernation survey – structures ^a												
Preliminary ground level roost assessment – trees ^d												
Potential roost feature (PRF) inspection survey – trees												
Ground level bat activity survey – transects and automated/static												
Pre-, during and post-hibernation – automated/static bat activity survey												
Swarming survey												
Back-tracking survey												
Trapping survey ^e												
Radio tagging and tracking survey ^e												

= optimal period
 = sub-optimal period
 = weather or location dependent (i.e. may not be suitable due to spring and autumn conditions in any one year or in more northerly latitudes). Note that October surveys are not acceptable in Scotland.

^a Not including trees



Appendix 6: Glossary

Activity surveys - are used to assess the level of bat activity at a site. This can be done either by using equipment such as an AnaBat device, or manually walking around a site with a heterodyne detector, documenting the number of bat passes and interceptions.

Dawn surveys - begin around 2 hours before and up to sunrise when bats are returning to their roosts from foraging, and swarming behaviour can be seen close to roost entrances.

Dusk surveys - begin around 30 minutes before sunset and up to 2 hours afterwards. These are done in order to see bats emerging from their roost sites at night.

Echolocation – is a system similar to sonar that allows bats to travel and forage even in total darkness. Bats make a call and then listen to the returning echoes in order to build up a map of their surrounding area. This allows bats to gauge the identity and distance of an object by how long the echo takes to return to them.

Habitat - the ecological or environmental area that is inhabited by a particular species of animal, plant or other type of organism.

Hibernation - is a state of inactivity and metabolic depression characterized by lower body temperature, slower breathing, and lower metabolic rate. Hibernating animals conserve energy, especially during winter when food is short, tapping energy reserves, i.e. body fat, at a slow rate.

Hibernacula - typically consist of underground sites, such as caves and cellars, which remain relatively cold and humid. Bats will hibernate to conserve energy over the winter months when falling temperatures cause a drop in the abundance of insects. These will typically be colonised around November to around March.

Insectivorous – is when an organism feeds exclusively on insects.

Nocturnal - a behaviour characterized by being active during the night and sleeping during the day.

Maternity roosts – colonised around late May early June and consist of mature females and their young. These roosts need to be warm and quiet, and are used up until around August, with females typically leaving first and then the young.

Mating roosts – mating begins around late October to November. Males of most species use special mating calls to attract females. These can include purrs, clicks and buzzing.

Roost – a site where bats live during the day, rear young and hibernate. These can be in man made structures, such as buildings, bridges, tunnels, cellars and mines, or natural features such as mature trees and caves.

Roosts in buildings – many types of buildings will be used by bats. The most likely sites are agricultural buildings (e.g. farmhouses and barns), buildings with exposed wooden beams (greater than 20cm thick), buildings with weather boarding and/or hanging tiles, and buildings close to woodland and/or water.

Roosts in trees – these are typically in mature trees with deep sheltered cracks, under loose sections of bark, or in woodpecker holes.

Species – a group of organisms in which all members can interbreed and produce viable offspring.

Summer roosts (non-breeding) - these are generally occupied by groups of males and immature females during the summer, and are usually only occupied for a short period before the group moves to another location.

Swarming – a behaviour exhibited by bats returning to their roost sites at dawn. Bats can be seen repeatedly flying to and from the roost entrance, making it much easier for consultants to identify where roosts are on a building or structure.

Temporary/Transitory roosts – These are used after hibernation (March – April) before mature females disperse to maternity roosts and male/immature females colonise summer (non-breeding) roosts. Similarly, temporary roosts form before hibernation (August -October).



Underground Roosts – these are typically used during the winter and can be mines, caves, tunnels or cellars.



Appendix 7: Protected Species Information

The following species are protected under EU law, such as the Conservation (Natural Habitats, &c.) Regulations (2017):

- All UK bat species
- Dormouse
- Great Crested Newt and Natterjack Toad
- Large Blue Butterfly
- Otter
- Pine Marten
- Polecat
- Scottish Wild Cat
- Smooth Snake and Sand Lizard
- Various aquatic and plant species

These species are afforded the highest protection in the UK. Under this protection it is an offence to; deliberately capture, injure or kill any wild animal of a European protected species; deliberately disturb wild animal of any such species; deliberately take or destroy the eggs of such an animal, or damage or destroy a breeding site or resting place of such an animal.

In addition to this it is an offence to be in possession of, or to control, transport, sell or exchange, or to offer for sale or exchange, a European Protected species.

The following species are protected under UK law, such as the Wildlife and Countryside Act 1981:

- Badger
- Nesting birds
- Red Squirrel
- Reptiles (Adder, Common lizard, Grass snake, Slow worm)
- Water Vole
- White Clawed Crayfish
- Various bird species i.e. Barn Owl
- Various plant species

Therefore under this protection it is an offence to; kill, injure or take any of the above species.

Nesting birds are only protected during the breeding season whilst on their nest. In addition to the adults being protected, the eggs, young and nest itself whilst in use are protected.

The Wildlife and Countryside Act 1981 also contains measures to prevent the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9 in England and Wales (e.g. Japanese Knotweed and Himalayan Balsam).

Badgers are protected under The Protection of Badgers Act 1992. Under this legislation it is an offence to; take, injure, kill, or cruelly ill-treat a badger; interfere with a badger sett; sell or possess a live badger; or mark or ring a badger.

The following habitat types are protected under UK Law:

- Habitats that are used by protected species
- Habitats that fall within designated sites

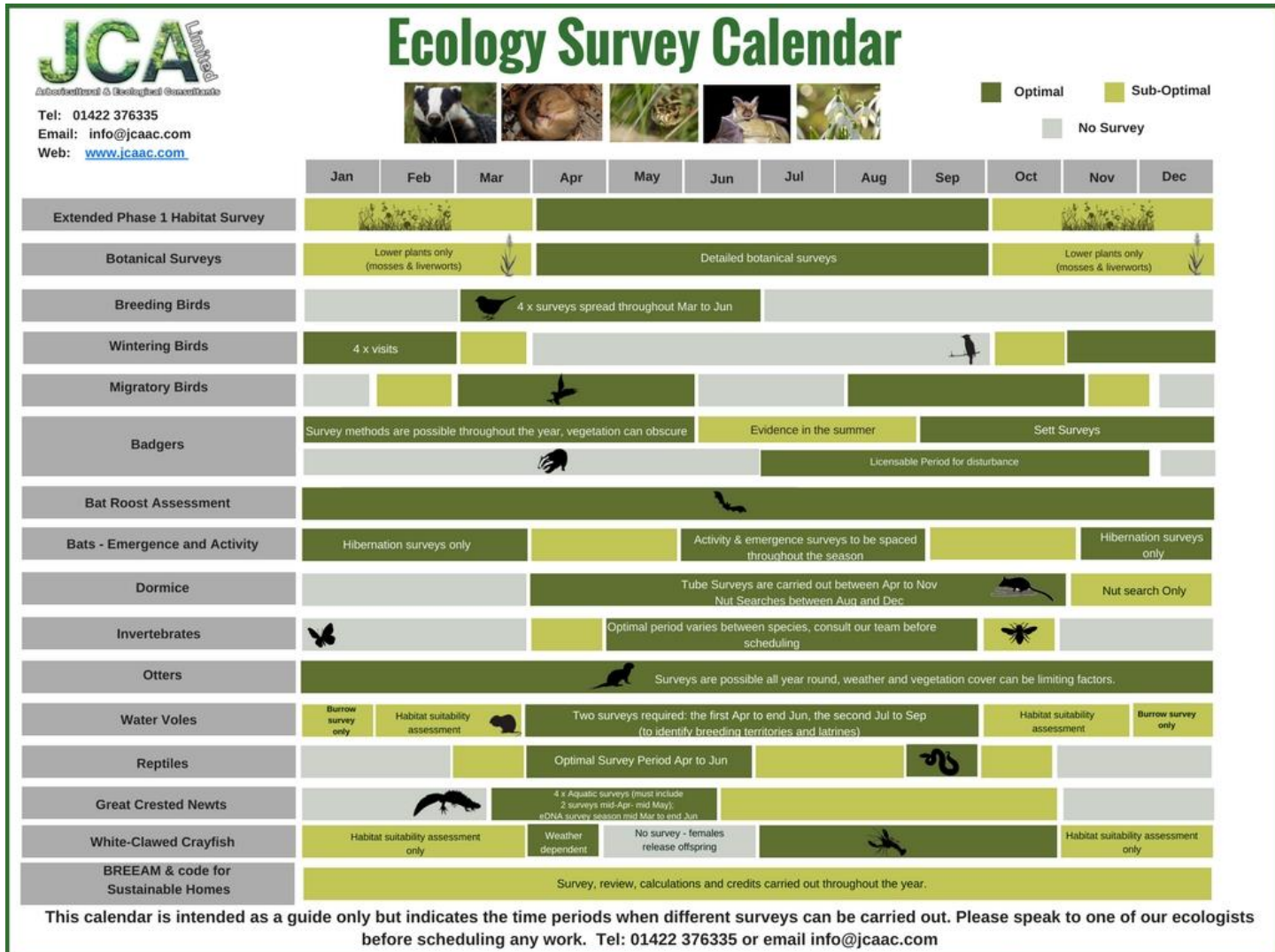


- Hedgerows
- Individual trees/woods can be protected under Tree Preservation Orders



Appendix 8: Survey Calendar

Figure 3: Survey calendar for protected species and habitat surveys.



Appendix 9: Author Qualifications

Principal Consultant and Managing Director

Jonathan Cocking

F.R.E.S., Tech. Cert. (Arbor.A), PDipArb (RFS) FArborA CBiol MSB. MICFor.

Jonathan is a Registered Consultant and Fellow of the Arboricultural Association and sits on its Professional Committee. He has 31 years experience in the Arboricultural profession and served for eight years as Senior Arboriculturist with a large local authority before establishing JCA in 1997. Jonathan has since developed JCA's portfolio of services and its extensive client base. He is a Chartered Biologist, a Chartered Arboriculturalist and an Expert Witness with much experience of litigation work.

Technical Director

Toby Thwaites

BSc (Hons), HND (Arboriculture).

Toby joined JCA in 1998 after graduating in Ecology at the University of Huddersfield and has since graduated in Arboriculture at the University of Central Lancashire. A former JCA team leader and Consulting Arboriculturist, Toby is now Technical Director and oversees all office and on-site activities at JCA and is on hand to offer technical support and advice.

Consulting Staff: Ecology

David Bodenham, Consultant Ecologist

BSc Ind (Hons) Zoology, MSc Biodiversity and Conservation.

An advocate of evidence-based conservation David's long-standing interest in the natural world and the conservation of our planet's biodiversity, led him to a career in conservation biology and ecology. He has worked for such institutions as the University of Leeds and the Discovery Channel and his work ranges from conservation research, to science education and film-making. After studying a BSc in Zoology (Ind) and an MSc in Biodiversity and Conservation, David gained the myriad of skills needed as a conservation biologist and ecologist. David has now worked as a consultant within the ecological industry for over 9 years with companies across the UK. David specialises in European Protected Species Licencing and Biodiversity Action Plans.

Licencing and accreditations:

Natural England Bat Survey Level 2 - Class Licence CL18, Natural England Great Crested Newt Survey Level 2 - Class Licence CL09, CITB - Health, Safety and Environment CSCS

Memberships:

British Ecological Society, British Arachnological Society, Bat Conservation Trust

Jenny Butler, Consultant Ecologist

AMEnvSc, BSc (Hons) Environmental Science.

Jenny joined JCA's ecology department in 2017, bringing with her a bachelor degree in Environmental Science from Bangor University. Jenny has previously worked as an Environmental Consultant for an Agri-Environment company and as a freelance ecological consultant. Jenny specialises in great crested newt and bat ecology. She holds a Level 2 Natural England, Welsh and Scottish bat licences, level 2 Natural England, Welsh and Scottish Great Crested Newt licences and is currently working towards her Hazel Dormouse and Natterjack Toad licences. Jenny is a member of the Bat Conservation Trust, Botanical Society for Britain and Ireland (BSBI) and the Arboricultural Association. Jenny is an active volunteer for the West Yorkshire, South Lancashire and Clwyd bat groups, as well as a volunteer for the Shropshire Dormouse Monitors. Jenny holds a CSCS Card and is DBS checked.

Amanda Beck, Ecological Officer

Cert/He in Field Ecology, Diploma Field and Conservation Ecology, CIEEM member.

Amanda joined JCA's ecology department in 2018, previously working as a freelance Ecological Consultant in North Wales and as a trainee Ecologist in South Wales. She has a background surveying for botanical, amphibians, birds, terrestrial and marine mammals along with small mammal trapping and invertebrate research work on SSSI sites. She has practical experience in habitat management and creation while working as a volunteer for North Wales Wildlife Trust and currently volunteers with Yorkshire Wildlife Trust. She is a member of the Butterfly Conservation Trust, Bat Conservation Trust, Clwyd Bat Group and the British Hedgehog Preservation Society. Amanda is DBS checked and holds a Natural England level 1 bat licence.

Joe Earnshaw, Trainee Ecologist

BSc (Hons), MSc Biodiversity and Conservation.

Joe joined the ecology department of JCA in 2018 after taking part in JCA's student training programme. He initially obtained a bachelor degree in Animal Management from Askham Bryan College, York. He has since furthered his education and brings to the company an MSc in Biodiversity and Conservation from the University of Leeds. Joe has expertise in aquatic invasive species identification and control.



The information which we have prepared and provided is true. We confirm that
the opinions expressed are our true and bona fide opinions.

Signed



.....
Jenny Butler *AMEnvSc, BSc (Hons) Environmental Science*
31/05/2019

Proofread by



.....
David Bodenham *BSc Ind (Hons) Zoology, MSc Biodiversity and Conservation*
Ecology, CIEEM member
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For and on behalf of **JCA Ltd**

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ECOLOGICAL SERVICES

Ecological Pre-Planning Services

- Phase 1 Habitat Surveys
- Great Crested Newt eDNA Sampling
- Protected species: Bat, Wintering and Nesting Bird, Badger, Amphibian, Otter, Water Vole, White-Clawed Crayfish, Dormice and Reptile Surveys.
- Preparation for Environmental Impact Assessment (EIA)
- Invasive Species Surveys
- Code for Sustainable Homes
- Butterfly & Insect Surveys

Ecological Post-Planning Services

- Biodiversity Enhancement Plans
- Protected Species Mitigation
- Ecological Management (Bat and Bird box installation and inspection)
- Planting Schemes
- Monitoring of bird or bat boxes.

ARBORICULTURAL SERVICES

Guidance for Architects & Developers

- British Standard 5837 Surveys
- Arboricultural Implications Assessments (AIA)
- Arboricultural Method Statements (AMS)

Advice for Engineers, Loss Adjusters and Insurers

- Tree Surveys for Subsidence
- Heave Assessment
- Tree Root Identification

Advice for Local Authorities and Social Housing

- Tree Safety Surveys
- Specialist Decay Detection
- Landscape and Orchard Design

Tree Advice for the Legal Profession

- Subsidence Litigation
- Personal Injury and Accident Investigation
- Expert Witness, Planning Inquiries and Appeals

Veteran Tree Management

- Ancient Woodland Management
- Veteran Tree Management

Tree Health and Pest and Disease Management

- Pest and Disease Surveys
- Tree Health Checks
- Disease Mitigation and Control



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