ECOLOGICAL IMPACT ASSESSMENT REPORT

at

St Pauls Road
Mirfield
West Yorkshire
WF14 8AX

Client:
Brewster Bye Architects

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Quality Assurance

Version	Desktop Survey Completed:		Site Surveyed:		Report Completed:		Checked:	
	Date	Name	Date	Name	Date	Name	Date	Name
Final Version	28/03/19	Joe Earnshaw	18/03/19 27/06/19 09/07/19 29/05/19	Jenny Butler	30/10/19	Jenny Butler	31/10/19	Jon Cocking

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 Guidelines for ecological impact assessment in the UK and Ireland: Terrestrial, freshwater, coastal and marine, 2018.

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Summary

A report is required for **St Pauls Road,** to identify, quantify and evaluate the potential effects of development-related activities, or other proposed actions on habitats, species and ecosystems on site and within the zone of influence of the site. The ecological impact assessment report process describes and evaluates all significant effects of proposed developments on local ecosystems and biodiversity and provides avoidance, mitigation, compensation and enhancement measures to ensure no net loss of biodiversity and will aim to achieve net biodiversity gain post-construction. The development proposed on this site is the demolition of the existing derelict buildings and the creation of 20 flats and associated facilities in its footprint.

A desktop study was undertaken on the 28/03/19 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 18/03/19 by Jenny Butler *AMIEnvSc, BSc (Hons)* and Joe Earnshaw *MSc, BSc (Hons).* A thorough site assessment was undertaken following the guidelines set out in the JNCC's *Handbook for Phase 1 habitat surveys*.

The bat activity surveys were carried out by Jenny Butler *AMIEnvSc, BSc (Hons)* on the 27/06/19, 09/07/19 and 29/05/19, following the guidance set out in the *Bat Conservation Trust's Bat Surveys- Good Practice Guidelines.*

Recommendations:

A bat mitigation licence will be required from Natural England and a bat mitigation plan produced.

Lighting installed as part of the development must be in line with the BCT/ILP 2018 guidance.

The development will result in the loss of natural habitat and overall biodiversity net loss. To ensure that biodiversity net gain is obtained post-development the following measures are to be implemented:

- Installation of 4 insect boxes
- Installation of 6 bat boxes/bricks/tubes
- Installation of 6 bird boxes: standard boxes, swift boxes and swallow boxes
- Installation of 2 hedgehog houses/shelters
- Including gaps of 13cx13cm in fencing to allow hedgehog movement

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across the site

- Planting of pollinator rich wildflowers and grasses
- Planting of native trees only
- Planting of native shrub species
- Planting of hedgerows instead of fencing along boundary lines
- Following lighting design given by the BCT/ILP 2018 guidance
- Prior to development, once planning permission has been obtained a Bat Mitigation Licence will be required. A bat mitigation scheme will be needed as part of the licence application.

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1. Introduction and Terms of Reference

1.1 Terms of Reference

1.1.1 I am instructed by **Brewster Bye Architects** 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:501/01(01)07), and brief details of the proposal.

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 All bat surveys and reports are compiled in accordance with the Bat Conservation Trust's (BCT) 'Bat Surveys - Good Practice Guidelines', the Joint Nature Conservation Committee's (JNCC) 'Bat Workers Manual' (3rd Edition) and Natural England's 'Bat Mitigation Guidelines' by Consultant's name and qualifications.

1.2.3 All reports were 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).

1.2.4 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.

1.3.2 The report will determine the extent of potential habitat fragmentation likely to be caused by the proposed development and provide

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recommendations, where necessary, to limit the impact of the proposed development on habitat connectivity and biodiversity locally.

1.3.3 The report will detail avoidance, mitigation, compensation and enhancement measures to ensure no net loss of biodiversity on site and will aim to increase post-construction biodiversity on site to reduce the impact of the development on the local landscape and environment. The report will also set out the requirement for post-construction monitoring.

1.4 Details of Proposed Development

1.4.1 The development proposed on this site is the demolition of the existing derelict buildings and the creation of 20 flats and associated facilities in its footprint.

1.5 Site Description

1.5.1 **St Pauls Road** is situated 4.7km southwest of Dewsbury Town centre, at grid reference: SE201198.

1.5.2 The site is currently being used as a council storage depot, with the majority of the buildings onsite containing various materials or council owned equipment.

1.5.3 The site is surrounded predominantly by residential housing. With commercials properties to the southeast and number of industrial units. To the west and southwest the landscape changes to agricultural fields with recreational grounds in the form of playing fields and parks dotted throughout the landscape, and the site itself backs onto Ings Grove Park to the north. The River Calder runs from the west to the east with the closest section of the river being 150m to the southwest of the site. Huddersfield Road (A644) acts as a major transport link to and from Dewsbury town centre and is located in close proximity to the site. A map of the site in relation to surrounding habitats can be seen below:

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Figure 1: Google Maps image of **St Pauls Road,** showing the survey site in relation to the surrounding landscape and habitats. Red line indicates site boundary.

Google map image © 2019

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2. Methodology

2.1 Desktop Study Methodology

2.1.1 A desktop study was undertaken on 28/03/19 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.

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 18/03/2019 by Jenny Butler *AMIEnvSc, BSc (Hons)* and Joe Earnshaw *BSc* (*Hons*), *MSc, Student CIEEM member* 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 scare 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

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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 site walk-over, any features that may be of value to or have the potential to support protected species were noted and photographic evidence taken (please refer to **Appendix 8**). 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 5**). Specific survey methodologies for protected species on site are found in **Appendix 6**.

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 Impact Assessment Methodology

2.3.1 The criteria for assessing the Ecological Impact of the proposed development follows guidance provided by CIEEM: *Guidelines for ecological impact assessment in the UK and Ireland: Terrestrial, freshwater, coastal and marine, 2018.* Valuation of habitat and potential to support species is also informed by the LPA Biodiversity Action Plan Species (LBAPS) and alert zone maps.

2.3.2 Impacts are assessed using the aforementioned guidance and the surveyor's professional opinion. Impacts are assessed on a site by site basis, according to the extent of the proposed development and likely overall impacts on local flora and fauna. Where possible avoidance methods are advised. Where avoidance is impossible measure, to minimise impact, mitigation and enhancements are given. Solutions are

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aiming to be practical for the client and to satisfy the requirements of the Local Planning Authority. In this case, LPA. The Ecological Impact Assessment will aim to highlight wildlife/species/habitat issues and present information on how to avoid damage, loss or disturbance, mitigate, enhance and monitor in order to limit the overall damage and disturbance as a result of the proposed development on local ecological receptors.

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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 West Yorkshire Ecology within a 2km radius of the site boundary.

Taxonomic Group	Common Name	Scientific Name	On site	Within 500m	Within 1km	Within 2km	Notes
Amphibians	Common Frog	*Rana temporaria*	×	×	×	✓	Two records (torching and field records) from 2000, including one record with two adults and twenty-nine counts of spawn recorded. This is a West Yorkshire BAP species.
	Common Toad	*Bufo bufo*	×	×	×	✓	Three records (torching and field records) from 2000-2012, including one record with eleven adults recorded. This is a UK and local BAP species.
	Great Crested Newt	*Triturus cristatus*	×	×	×	✓	Three records (field records) from 2000-2006, including one record with two adults recorded. This is a UK and local BAP species.
	Smooth Newt	*Lissotriton vulgaris*	×	×	×	✓	Seven records (bottle trap, torching and field records) from 2000-2008, including one record with sixty adults recorded. This is a West Yorkshire BAP species.
	Palmate Newt	*Lissotriton helveticus*	×	×	×	✓	Two records (bottle trap and field records) from 2007-2008, including one record with four adults recorded. This is a West Yorkshire BAP species.
Bats	Common Pipistrelle	*Pipistrellus pipistrellus*	×	✓	✓	✓	Fifty-five records (unknown roost type, droppings, foraging, aural bat detector,

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							injured, transitional roost and field records) from 2005-2017. This is a West Yorkshire BAP species.
	Soprano Pipistrelle	*Pipistrellus pygmaeus*	×	✓	✓	✓	Three records (foraging and field records) from 2001-2013. This is a UK and local BAP species.
	Unidentified Pipistrelle Species	*Pipistrellus sp.*	×	✓	✓	✓	Nine records (maternity roost, unknown roost type, possible roost, casualty and field records) from 2004-2013.
	Brown Long-eared	*Plecotus auritus*	×	✓	✓	✓	Six records (Aural bat detector, unknown roost type, maternity roost and field records) from 2005-2014. This is a UK and West Yorkshire BAP species.
	Noctule	*Nyctalus noctula*	×	✓	✓	✓	Sixteen records (unknown roost type, foraging, aural bat detector and field records) from 2007-2016. This is a UK and local BAP species.
	Leisler's Bat	*Nyctalus leisleri*	×	✓	✓	✓	Seven records (foraging, unknown roost type, possible roost, grounded and field records) from 2003-2017. This is a West Yorkshire BAP species.
	Natterer's Bat	*Myotis nattereri*	×	×	×	✓	One record (unknown roost type) from 2010 of one individual. This is a West Yorkshire BAP species.
	Unidentified Myotis Species	*Myotis sp.*	×	✓	✓	✓	Three records (unknown roost type and field records) from 2010-2016.
	Unidentified Vesper Species	*Vespertilionidae*	×	✓	✓	✓	Eighteen records (unknown roost, grounded, excluded roost, maternity roost, within a building, casualty, possible roost and field records) from 1995-2007.
Other Mammals	Hedgehog	*Erinaceus europaeus*	×	×	✓	✓	One record (field record) from 2017. This is a UK and local BAP species.
	Brown Hare	*Lepus europaeus*	×	×	✓	✓	One record (field record) from 1984. This is a UK and local BAP species.
	Badger	*Meles meles*	×	×	×	✓	Ten records (unknown sett type, main sett and field records) from 1986-2013, including one historic record of one juvenile and three adults recorded.

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Birds (Other)	Cuckoo	*Cuculuc canorus*	×	×	✓	✓	Two records (field observations) from 2015. This is a UK and local BAP species.
	Kestrel	*Falco tinnunculus*	×	×	×	✓	One record (field record) from 2012 of three individuals recorded. This is a West Yorkshire BAP species.
	Swallow	*Hirundo rustica*	×	×	×	✓	One record (field record) from 2011. This is a West Yorkshire BAP species.
	Mew Gull	*Larus canus*	×	×	×	✓	One record (field record) from 2010 of ten individuals recorded. This species is amber listed under the BTO.
	Black-headed Gull	*Larus ridibundus*	×	×	×	✓	One record (field record) from 2010 of one hundred individuals recorded. This species is amber listed under the BTO.
	House Sparrow	*Passer domesticus*	×	×	×	✓	One record (field record) from 2011. This is a UK and local BAP species.
	Willow Warbler	*Phylloscopus trochilus*	×	×	×	✓	One record (field record) from 2013. This species is amber listed under the BTO.
	Dunnock	*Prunella modularis*	×	×	×	✓	One record (field record) from 2011. This is a UK and West Yorkshire BAP species.
	Song Thrush	*Turdus Philomelos*	×	×	×	✓	One record (field record) from 2013. This is a UK and local BAP species.
Bony Fish	European Eel	*Anguilla anguilla*	×	✓	✓	✓	One record (field record) from 2002 of one individual. This is a UK and local BAP species.
Invertebrates	Horsetail Weevil	*Grypus equiseti*	×	×	×	✓	Two records (field records) from 2007.
	Oedostethus quadripustulatus	*Oedostethus quadripustulatus*	×	×	✓	✓	Five records (field records) from 2007.
	Tropiphorus obtusus	*Tropiphorus obtusus*	×	×	×	✓	Two records (field records) from 2007.
	Small Heath	*Coenonympha pamphilus*	×	×	×	✓	One record (field record) from 2007. This is a UK and local BAP species.
	Cinnabar	*Tyria jacobaeae*	×	×	×	✓	Four records (field records) from 2007. This is a UK and West Yorkshire BAP species.

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Plants	Bluebell	*Hyacinthoides non-scripta*	×	×	×	✓	Three records (observation and field records) from 2013-2015. This is a local BAP species.
	Floating Water-Plantain	*Luronium natans*	×	×	×	✓	One record (field record) from 2014. This is a UK and West Yorkshire BAP species.
Plants (Schedule 9)	Himalayan Balsam	*Impatiens glandulifera*	×	✓	✓	✓	Ten records (observation and field records) from 2005-2017, including one record with frequent abundance recorded.
	Japanese Knotweed	*Fallopia japonica*	×	×	✓	✓	Five records (observation and field records) from 2013-2017,
	Wall Cotoneaster	*Cotoneaster horizontalis*	×	×	✓	✓	One record (field record) from 2006.
	Giant Rhubarb	*Gunnera tinctoria*	×	×	✓	✓	One record (field record) from 2006.
	Floating Pennywort	*Hydrocotyle ranunculoides*	×	×	×	✓	One record (field record) from 2003.
	Curly Waterweed	*Lagarosiphon major*	×	×	✓	✓	One record (field record) from 2006.
	Rhododendron	*Rhododendron ponticum*	×	×	×	✓	One record (field record) from 2013.

3.2 Desktop Bat Records

3.2.1 The records obtained from the West Yorkshire Bat Group for **St Pauls Road** 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	Leisler's Bat	*Nyctalus leisleri*	×	✓	✓	✓	Seven records (possible roosts, maternity roosts, field record, grounded bat and aural bat detector) from 1993-2017, including one historic record of a maternity roost with 51-100 individuals recorded.
	Natterer's Bat	*Myotis nattereri*	×	×	×	✓	Two records (unknown roost type and maternity roost) form 2014-2015, including a 2015 record of a maternity roost containing 46 individuals.
	Noctule	*Nyctalus noctula*	×	✓	✓	✓	One record (field record) from 2013.
	Common Pipistrelle	Pipistrellus pipistrellus	×	✓	✓	✓	Six records (unknown roost type, maternity roost and aural bat

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							detector) from 2011-2017, including one maternity roost with 58 individuals recorded.
	Soprano Pipistrelle	Pipistrellus pygmaeus	✗	✓	✓	✓	One record (field record) from 2013.
	Unidentified Pipistrelle Species	Pipistrellus sp.	✗	✓	✓	✓	Seven records (unknown roost type, maternity roost, casualty and field records) from 1993-2014, including one maternity roost containing 21-50 individuals recorded.
	Unidentified Vesper Species	*Vespertilionidae*	✗	✗	✓	✓	Thirteen records (unknown roost type, possible roost, maternity roost, casualty, grounded bat and field records) from 1993-2006.

Natterer's Bat records consist of two recent records of one unknown roost type with five individuals recorded, and one maternity roost containing forty-six individuals. Both records are within 2km of the site and there are no records within 500m of the site. Leisler's Bat records consist of seven records (recent and historic) of two possible roosts recorded within 2km and 500m of the survey site, one historic field record 1km from the site, one historic maternity roost containing 51-100 individuals 1.1km from the site, one grounded bat recorded within km of the site in 2003. Two bats were recently recorded with aural bat detectors, one of which was 277m from the site. Records for Noctule consist of one adult recorded in 2013 within 500m of the site.

Common Pipistrelle records consist of seven records (recent and historic) of a maternity roost containing fifty-eight individuals 1.3km from the site in 2014, two recently recorded unknown roost types one of which is 306m from the site and two bats recorded with an aural bat detector in 2011 and 2017 within 2km of the site. A single Soprano Pipistrelle was recorded within 500m of the site in 2013.

Unknown Pipistrelle Species records consist of seven records (historic and recent) of three maternity roosts within 1km of the site with one being an historic roost with 21-50 individuals recorded. Two unknown roost types and two casualties were also recorded within 2km of the site, with one of the roosts being recorded in 2014 and the rest recorded in 2007.

Unknown Vesper Species records consist of fourteen records (historic and recent) of six unknown roost types with one roost being within 1km of the site, one maternity roost in 2005 within 1km, three historic records of possible roosts within 1km and 500m of the site. Other records are made up of two grounded bats with one recorded in 2003 within 1km of the site and the other in 2003 within 500m, one casualty in 2006 within 2km and one field record in 2003 within 1km of the site.

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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 The search revealed one designated conservation site within 2km of the site, which can be seen in **Table 3** below.

Table 3: Statutory designated sites with 2km of the site.

Name	Designation	Description	Distance from Site
Sunny Bank Pond	Local Nature Reserve (LNR)	The reserve is divided into two distinct areas, a small parkland area with mature trees and a short circular path, and two sunken man-made pits that make up the wetland area. The pond area is home to a large population of smooth newts, frogs and toads. Other wildlife attracted to the pond include species of garden birds, Fox (*Vulpes vulpes*), deer, pipistrelle bats and other small mammals, all of which use the pond as a feeding area. The site contains various levels of fen habitat, nutrient rich standing water and an area of grassland.	1744m North

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 six non-statutory conservation sites within 2km of the site, which can be seen in **Table 4** below.

Table 4: Non-statutory designated sites with 2km of the site.

Name	Designation	Description	Distance from Site
Briery Bank Wood	Local Wildlife Site (LWS)	This is a replanted ancient woodland with Sessile Oak (*Quercus petraea*), Silver Birch (*Betula pendula*), Poplar Species (*Populus sp.*). Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna)* and Elder (*Sambucus nigra*) present. The south of the site consists of a wet woodland containing Alder species (*Alnus sp.*), Silver Birch, Goat Willow (*Salix caprea*), Hazel, Holly, Meadowsweet (*Filipendula ulmaria*), Tufted Hair-Grass (*Deschampsia cespitosa subsp. cespitosa*), Watercress (*Rorippa nasturtium-aquaticum*), Ramson (*Allium ursinum*), Wild Angelica (*Angelica sylvestris*), Yellow Archangel (*Lamiastrum galeobdolon*) and Bittersweet (*Solanum dulcamara*).	1139m South South-east

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Covey Clough Wood	Local Wildlife Site (LWS)	Similar to W10 acid woodland it contains Ash (*Fraxinus excelsior*), Sessile Oak and English Oak (*Quercus robur*). The understorey is sparse with Holly. The ground flora has Bluebells (*Hyacinthoides non-scripta*), Bramble (*Rubus fruticosus agg*.), Creeping Soft-grass (*Holcus mollis*), Broad Buckler-fern (*Dryopteris dilatate*) and Hypnum Moss (*Hypnum cupressiforme*). Wood Sorrel (*Oxalis acetosella*), Lords and Ladies (*Arum maculatum*) and Wavy Hair-grass (*Deschampsia flexuosa*) is also present here.	1602m South
Gregory Spring	Local Wildlife Site (LWS)	This is a WD3 species rich acid woodland with a high ground coverage of Bluebell. No further information is available.	1963m South South-east
Liley Wood	Local Wildlife Site (LWS)	Liley Wood is a mixed deciduous replanted ancient woodland. Canopy species include Sycamore *(Acer pseudoplatanus)*, Sessile Oak, Silver Birch, Ash (*Fraxinus excelsior)* and Common Alder (*Alnus glutinosa)*, the latter being restricted to a south. To the north a flowing stream in a valley becomes deeply incised towards the central and southern parts of the site. The shrub layer varies across the site with Elder being the most constant species. The valley supports old coppice stools of Hazel, stands of Holly, Wych Elm (*Ulmus glabra)* and Rowan (*Sorbus aucuparia)* occur in other parts of the site. The ground flora is dominated by a carpet of Bluebell.	1992m South-east
Sunny Bank Pond	Local Wildlife Site (LWS)	The nature reserve covers an area of approximately 1400 m2 and is managed by Kirklees Metropolitan Council and is divided into two distinct areas, a mini parkland area with mature trees and a short circular path, and the two sunken man-made pits that make up the wetland area. The left brick pit houses a pond while the right pit makes up a drier grassland area with willow and tall herbs. Management of the site also forms part of the Kirklees Countryside Volunteers' calendar of events to regulate the growth of fast-growing plants such as Willow, Flag Iris and Bulrush (*Typha latifolia*). The pond area is home to a large population of Smooth Newts, Common Frogs and Common Toads.	1744m North
Whitley Wood	Local Wildlife Site (LWS)	This replanted ancient woodland site supports predominantly deciduous woodland with Beech (*Fagus sylvatica*), Sycamore and Sessile Oak being the dominant canopy species. In the central western area is a small patch of mixed woodland with Larch (*Larix decidua*) and Corsican Pine (*Pinus nigra laricio*) adding to the canopy. The shrub layer consists mainly of Holly, with Elder and Hawthorn (*Crataegus monogyna*) adding additional native components. In the northern and southern parts of the site Rhododendron (*Rhododendron ponticum*) and Laurel have been planted, but are relatively limited in extent. The ground flora supports areas of abundant native Bluebell, but these also have about 5% Spanish Bluebell in the northern part of the wood. In some areas the woodland ground flora is more diverse supporting Ramson, Male Fern (*Dryopteris filix-mas*), Wood Speedwell (*Veronica montana*), Wood Anemone (*Anemone nemorosa*), Yellow Archangel and Dog's Mercury (*Mercurialis perennis*) however these are generally only rare. Some areas under mature Beech and close to footpaths have relatively sparse ground flora.	1907m SE

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3.4 Site Assessment Results

3.4.1 The site was surveyed on 18/03/2019 by Jenny Butler *AMIEnvSc, BSc (Hons)* and Joe Earnshaw *BSc (Hons), MSc*, *Student CIEEM member*. Survey conditions are summarised in **Table 5**.

Table 5: Survey times and weather conditions.

Survey date	Lead surveyor	Temp	Humidity	Wind speed/Direction		Cloud Cover	Precipitation
18/03/2019	Jenny Butler	7°C	72%	9 mph	WSW	90%	Light showers

3.4.2 The site comprises of a series of storage buildings with outbuildings surrounding a courtyard with a three-story building positioned centrally. The courtyard itself is made up of a concrete base with areas of refuse and vegetative matter piled in several locations and bordered by walls, fences or buildings themselves. One building onsite is currently in use with the rest being unoccupied. There are two metal storage containers located to the south of the site.

Habitats Present

3.4.3 The following habitat types are present at **St Pauls Road, Mirfield**: Buildings, fence, wall, scattered broadleaf trees, spoil, refuse-tip, scattered scrub and hard standing. Please see **Table 6** below for detailed descriptions of each habitat present on site and the species recorded during the time of the survey.

Table 6: Habitats present on site (classified in accordance with the JNCC guidelines)

Habitat Type/Feature	Species Present	Other Observations	Target Notes
Buildings	Not Applicable.	One building centrally positioned with other buildings spread around much of the site's boundary. All buildings vary in size, use and condition.	**Target Note 1** Bird nest.
Fence	Not Applicable.	Metal fencing located around some sections of the site's boundary. Some fencing was full size while other fenced areas was reduced in height when positioned on top of walls.	None.
Wall	Not Applicable.	A stone wall makes up much of the west, north and east boundary of the site with some walls having metal fencing on top.	None.
Scattered Broadleaf Trees	Ash, Sycamore and Willow Species (*Salix sp*).	Highly likely to be self-seeded with thin smooth stems and are all young specimens.	None.

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Spoil	Not Applicable.	Piles of mainly disused metal items dotted around the site but with the majority found towards the west of the site.	None.
Refuse-tip	Willowherb Species (*Epilobium sp*.), Dandelion Species (*Taraxacum sp.*), Perennial Rye-grass (*Lolium perenne*), Wood Aven (*Geum urbanum*), Buddleia (*Buddleja davidii),* Wintercress (*Barbarea vulgaris*), Common Nettle (*Urtica dioica),* Common Brome (*Bromus hordeaceus*), Chickweed (*Stellaria media*), Bramble (*Rubus Fruticosus*), Common Whitlow Grass (*Erophila verna*).	An area of wasteland with detritus and other similar products.	None.
Scattered Scrub	Bramble, Sycamore, Ash, Groundsel (*Senecio vulgaris*), Buddleia, Common Nettle, Willowherb Species.	Located along the east boundary of the site. This area was not accessible at the time of the survey but showed the usual characteristics of scattered scrub. Several young trees were located within the scrub.	None.
Hard Standing	Not Applicable.	Consisting of a tarmac/concrete mix, this habitat makes up the majority of the site's habitats.	**Target Note 2** Area of refuge in the form of wood chippings and plant matter.

Fauna Species Encountered

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

- Blackbird *(Turdus merula)*
- Wood Pigeon *(Columba palumbus)*

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

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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.

4.1.2 There is one statutorily designated conservation area within 2km of the site. Sunny Bank Pond (LNR) consists of two man-made ponds and an area of parkland with mature trees and amenity grassland. The proposed development will not have an impact on this site as there is limited habitat connectivioty between the proposed site and Sunnt Bank LNR. This LNR is located 1744m north of the proposed development site and is separated by residential housing and road networks.

4.1.3 There are six non-statutorily designated sites within 2km of the site. Briery Bank Wood, Covey Clough Wood, Sunny Bank Pond, Gregory Spring, Liley Wood and Whitley Wood are all habitats of various woodland classifications and are designated as LWS.

The proposed development will not have an impact on these sites because they are located a substantial distance from the proposed development site. These sites are also separated from the site by residential housing estates, industrial units and the A644 that serves as a major transport link to and from Dewsbury to the east and the M62 motorway to the west. Further habitat fragmentation for terrestrial species in the area is provided by the presence of the River Calder that flows west to east between the proposed development site and these LWS.

4.2 Priority and Protected Habitats

4.2.1 The site consists of hard standing, scattered broad-leaf trees, spoil and refuse-tip and are not listed as LBAP habitats for Kirklees County Council. Biodiversity Action Plan. There is scattered scrub present onsite, this is an LBAP priority habitat for Kirklees. This scrub habitat is limited in terms of its onsite coverage, species diversity and is isolated from all other habitat types via the presence of walls, buildings and hard standing.

4.2.2 The ecological value of the site is extremely limited through the lack of natural habitats, are species poor and have limited ecological value. The removal of these habitats will have little to no impact on local wildlife populations.

4.3 Priority and Protected Species

4.3.1 Amphibians: The data search revealed records of Common Frog, Common Toad, Great Crested Newt, Smooth Newt and Palmate Newt

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within 2km of the site boundary. The data search provided no records of amphibians 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 not contain any terrestrial habitats suitable for supporting over-wintering amphibians. The site is unlikely to support amphibians.

4.3.2 Badgers: The data search revealed records of Badger within 2km of the site boundary. The data search provided no records of Badger within 1km of the site. The site does not contain the required steep embankments or hedgerows to support sett creation. The site is isolated from connecting habitats, and is bordered by walls, residential and commercial properties and fences. The fences that surround the entirety of the site are installed into the hardstanding causing the entry of badgers to be unlikely. The site is likely to suffer high levels of human noise and light disturbance. It is unlikely badgers are present on the site, or rely on the site as a foraging habitat.

4.3.3 Barn Owls (*Tyto alba*): No records of Barn Owls 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 open-fronted style buildings for roosting. The site is unlikely to support Barn Owls.

4.3.4 Bats: The data search revealed records of Common Pipistrelle, Soprano Pipistrelle, Unidentified Pipistrelle Species, Brown Long-eared, Noctule, Leisler's Bat, Natterer's Bat, Unidentified Myotis Species and Unidentified Vesper Species within 500m of the site boundary. These records consist of various roost types, field records, droppings, casualties/injured bats and bats recorded with an aural bat detector. No records of bats were obtained onsite. The proposed development site contains buildings suitable for roosting bat species. The habitats onsite offers little to no potential to support foraging and commuting bats. The buildings onsite are likely to support roosting bat species.

4.3.5 Bony Fish: The data search revealed records of European Eel within 500m of the site. The data search revealed no records of European Eel onsite. The site does not contain the aquatic habitat required to support European Eel. It is unlikely that the proposed development site supports European Eel.

4.3.6 Hazel Dormice (*Muscardinus avellanarius*): The data search did not reveal any records of Hazel Dormice within 2km of the site. Dormice are

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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.

4.3.7 Invertebrates: The data search revealed records of Horsetail Weevil, *Tropiphorus obtusus*, Small Heath and Cinnabar within 2km of the site. *Oedostethus quadripustulatus* was recorded within 1km of the site. No records of invertebrates were obtained within 500m of the site. it is unlikely that the site supports a range of invertebrate species.

4.3.8 Nesting Birds: The data search revealed records of Kestrel, Swallow, Mew Gull, Black-headed Gull, House Sparrow, Willow Warbler, Dunnock and Song Thursh within 2km of the site. Cuckoo was recorded within 1km of the site. No records of bird species were obtained within 500m of the site. The buildings onsite are likely to support nesting bird species, particularly Swallow (*Hirundo rustica*) and Swift (*Apus apus*).

4.3.9 Otters: The data search did not reveal any 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.

4.3.10 Plants: The data search revealed records of Bluebell and Floating Water-Plantain within 2km of the search. No records of plants were obtained within 1km of the site. The proposed development will not have a detrimental impact on the floral diversity of the site as the site is already limited in the floral species present. There are no rare of listed floral species present onsite.

4.3.11 Reptiles: The data search did not reveal any records of reptiles 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,

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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.

4.3.12 Water Voles (*Arvicola amphibius*): The data search did not reveal any records of Water Voles within 2km of the site. 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.

4.3.13 West European Hedgehog: The data search revealed records of Hedgehog within 1km of the site boundary. The data search did not reveal any records of Hedgehog within 500m of the site. The site is unlikely to support nesting and breeding Hedgehogs but does contain grassland habitat used by Hedgehogs for foraging. The site is isolated from surrounding habitats. It is unlikely that Hedgehogs can enter the site. The development is unlikely to impact on the available foraging habitat for Hedgehogs or restrict the movement of Hedgehogs locally.

4.3.14 White-clawed Crayfish (*Austropotamobius pallipes*): The data search did not reveal any 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 the site supports this species.

*The absence of any signs of or features considered valuable for supporting protected species, can **not** be considered evidence that these species are absent from a site, or that these species will not occupy the site in the future. It*

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*must therefore always be recommended that work be conducted with care and vigilance. Should any protected species be encountered during work (please see **Appendix 12**), work should stop immediately and JCA or Natural England contacted.*

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5. Impact Assessment

5.1 Zone of Influence

5.1.1 For the purpose of this report, the zone of influence has been determined as within 2km of the site boundary. The proposed development is a small to medium scale, low to moderate ecological impact development with a low significance of on-site development footprint proposed.

5.1.2 By considering the zone of influence, visual and noise impacts are considered, as well as the potential increase in light, pollution and traffic pollution during and post-construction works. These impacts, as a result of the proposed development, are considered against site biodiversity as well as local impacts on ecology and biodiversity (including impacts on designated sites/habitats/species and the wider landscape).

5.2 Impacts of Proposed Development

5.2.1 **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	None perceived
Barn Owls	None perceived
Bats	The buildings on site are likely to support roosting bats. Further assessment will be required, including the provision of mitigation (if required) and enhancement such as integral boxes, incorporated into the proposed development plans. Additional emergence/re-entry surveys will be required on buildings with bat roosting potential, if they are to be impacted upon by the proposed development to determine whether the development will result in the direct loss of bat roosts, and if so, appropriate mitigation must be designed. Provision of habitat (flower mixes and trees) to attract invertebrates will be required as part of the landscaping design for the site, this will provide food for bats locally and reduce the impact of the proposed development on local bat populations, minimising the long term effects of the development on bats locally. Provision of new roosting opportunities - in the form of integral or external bat boxes must be incorporated into the proposed development plans to ensure no long term net loss of potential roosting sites and provide new roosting opportunities to improve the habitat on site for bats. Exterior lighting must be pre-approved and agreed upon with the local county ecologist or project ecologist. The lighting plan must be 'wildlife friendly' and follow guidance given by the BCT to ensure no long term detrimental impacts on bat commuting and foraging behaviour as a result of the development.
Badgers	None perceived

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Bony Fish	None perceived
Dormice	None perceived
Invertebrates	None perceived
Nesting Birds	The buildings on site are likely to support nesting birds. Provision of bird boxes for a range of bird species, eg. robins, blackbirds and finches must be included within the proposed development. Native, species rich planting must be included where possible, within the proposed development plans, as part of the landscaping design. This should be provided within a biodiversity enhancement plan for the site to ensure no long-term significant loss of potential nesting sites for bird species.
Otter	None perceived
Plants	No rare or vulnerable plant species were found to be present on site during the time of the survey. A landscaping plan is to be devised and to include the provision of native grasses, flowers, shrubs and trees to improve the botanical diversity on site and minimise the impact of the proposed development on long term botanical diversity.
Reptiles	None perceived
Water Vole	None perceived
White-clawed Crayfish	None perceived
Other Species	None perceived

NB: The overall impact of the proposed development is based upon plans provided by Brewster Bye Architects, see drawing: (501/01(01)07),) 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.*

5.3 Impacts: Construction Phase

5.3.1 Construction vehicles/machinery: The development will require construction vehicles and machinery to be brought onto site, which will increase noise, vibration, light and human disturbance, as well as causing soil compaction.

Avoidance: Where possible only light machinery will be used as part of the proposed development, and construction vehicles are not to be stored overnight on site, if this can be avoided. Construction vehicles are not to damage adjacent habitats or habitats that are to be retained post construction phase. Where possible the construction phase will be kept to a minimum and construction works will cease before sunset and will not begin again until after sunrise, to avoid causing undue disturbance to foraging and commuting bats and other species such as hedgehogs and badgers. Pollution via diesel leaks etc. into the watercourses adjacent to the proposed development area is to be avoided. Machinery must be parked a minimum of 20m from waterbodies to reduce the risk of accidental pollution incidents occurring.

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Compensation: Where habitats are damaged or destroyed as a result of construction works, these are to be replaced with like for like, or habitats of greater ecological value, only species native to the area are to be used.

Enhancements: Post construction a landscaping plan is to be implemented which will improve the sites floral diversity overall and focus on providing more foraging habitat for species such as birds and bats, which are likely to be present locally and utilize the site currently.

The use of machinery on site will have a short-term impact, no long-term detrimental impacts will occur.

5.3.2 Chemicals/storage of chemicals on site: Chemicals may be required on site as part of the proposed development. Many chemicals are toxic to the environment, and if spilled/leaked into the landscape can detrimentally impact on flora and fauna.

Avoidance: The use of toxic chemicals on site is to be avoided where possible. If avoidance is impossible then all chemicals are to be stored in leak proof, sealed containers, away from water courses.

Following avoidance measures given, chemicals are unlikely to have an impact on the floral and faunal diversity on site, or impact on local ecosystems. If chemical leaks occur a plan must be in place to isolate and clean up any spills to reduce the impact on the environment.

5.3.3 Increase in light/noise/human disturbance: The proposed development will cause an increase in light, noise and human disturbance whilst construction works take place.

Avoidance: Construction works will only take place during the hours of daylight. All construction works are to cease before sunset and are not to begin until after sunrise. Human presence is to be kept to a minimum, and works should be completed as quickly as possible on site.

Compensation: During the construction phase an increase in light, noise and human disturbance will occur, which is likely to have a negative, temporary impact on local wildlife populations. Post construction plans for low level lighting are to be devised to reduce the long-term impact of the increase in noise and light pollution occurring.

The proposed development will have a long-term increase in noise, light and human disturbance on site; however the significance of this disturbance can be reduced via the use of a lighting plan and vegetative screening, which is to be implemented post construction.

5.3.4 Burning of waste: If waste materials on site are to be disposed of, these may require burning, which pollutes the environment and may reduce

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biodiversity temporarily, this is particularly likely to impact on mammals and birds, species that are sensitive to smoke.

Avoidance: Waste is to be taken off site and burned. No waste materials are to be burned on site. Fires on site are not permitted.

5.3.5 Laying down of hard surfaces: The installation of hard surfaces can create surface run off into neighboring ditches post construction, causing an increase in pollution and changing the dynamics of the local freshwater ecosystems.

Avoidance: Hard surfaces are only to be installed where necessary. Where possible natural materials such as stone/gravel or wood are to be used, which allow free drainage of water. If hard surfaces such as tarmac are to be used then adequate drainage must be installed to ensure minimal pollution associated with surface run off.

Mitigation: Where ditches and watercourses are present, pollution from surface water run-off must be avoided. Provision of adequate drainage systems in these areas to catch and direct surface run off must be given to ensure no significant, long term impacts on the local habitats and ecosystems.

5.3.6 Use of herbicides: Herbicides may be used as part of the vegetation removal. Many herbicides are toxic to the environment and pollute water courses such as ditches and rivers. Herbicides can also be toxic to pollinators such as bees and butterflies and may have a significant detrimental impact on invertebrates on site, which impacts further up the food chain on species such as birds and bats.

Avoidance: Toxic herbicides are not to be used on site to remove vegetation/manage habitats. Visitors are to be made aware they are not to bring any chemicals such as herbicides or pesticides with them when visiting the log cabins on site. Environmentally friendly products are to be used, and where possible herbicides in general are to be avoided. Manual management should occur instead.

Following the avoidance measures above no significant, detrimental or long-term adverse impacts to local wildlife or ecosystems should occur.

5.4 Impacts: Operational Phase

5.4.1 Access routes and increase in traffic: An increase in traffic on site will occur as a result of the proposed development.

Compensation: This cannot be avoided; however, all parking facilities should be lit only with solar powered, low luminance lighting that is motion

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activated. A cap on the maximum number of vehicles allowed per unit should be given to reduce the impact on the local environment. All vehicles are to be parked on hard surfaces, and not on the grassland habitats on site.

5.4.2 Drainage and litter pollution issues: An increase in net waste water on site, vehicle presence and creation of hard standing surfaces is likely to significantly increase waste water from the site, which could lead to polluted water bodies.

Avoidance: Where possible waste water should be limited to contained areas such as waste water tanks, or drains associated with surface water run off.

Mitigation: Waste water must not be released into the immediate environment as this will cause an increase in pollution and nutrients and will change the immediate environment and ecosystems, potentially artificially raising the pH levels in the soil and waterbodies/ ditches.

5.4.3 Landscaping and habitat management: The proposed development could result in the increase of non-native, ornamental plant species on site. An increase in nutrient levels and herbicide use could also be a result of the proposed plans. This would have a significant, long-term impact on floral diversity, and likely impact on wildlife using the area.

Avoidance: Planting must be of a native, floral rich design, with only species found in the local area used. Where possible the floral planting will aim to increase species diversity and target key species locally.

Mitigation: A planting scheme is to be designed, focusing on locally abundant and diverse floral species only. Where trees fail/hedges do not take or shrubs die back, a like for like must be planted to maintain the local habitat.

Compensation: Where possible planting will consider the wider landscape and available habitats and will aim to improve habitat connectivity and available food sources. Ornamental garden species are not to be used. Only organic fertilisers and pesticides are to be applied. And burning of waste material must be done off site.

5.4.4 Lighting plan and design: Additional lighting will be required on site. Floodlight style designs will significantly, permanently and negatively impact upon wildlife and their behaviour.

Avoidance: Where possible lighting will be avoided. The use of floodlight style lighting is not permitted on site. Any lights present must be on timers/motion sensors and not permanently turned on during the hours of darkness (from sunset until sunrise).

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Mitigation: Buffers such as natural shrub rows will minimise light spill into the adjacent habitats to the site development area and provide a natural light screen.

Compensation: Any lighting installed will be in accordance with the guidance given by BCT and the ILP. See recommendations section 7.1 for lighting guidance. Where lights are unavoidable, buffer zones are to be implemented. Dark zones on site are to be maintained, to allow wildlife areas of low light pollution.

5.4.5 Building integration into the landscape: The construction of building in an area of visual beauty must be reduced where possible in order to maintain the natural beauty of the landscape.

Avoidance: A limited number of structures are to be placed on site. This will minimise the overall long-term visual impact locally.

Mitigation: The structures are to blend in with the environment, this could be done via natural, muted colours and natural materials being used, such as wooden panels rather than plastic panelling. To reduce the negative impact visually green roofing could be used.

5.4.6 Increase in pets: An increase in domestic animals present on site is likely to have an adverse impact on local wildlife.

Avoidance: Dogs must be kept on leads where possible. A limit on the number of dogs present on site should be given to reduce the likely impact of dogs on species such as birds.

Mitigation: A fence line between the structures and natural habitats on site is to be installed, one that will prevent access to dogs and ensure a barrier between dogs on site and local wildlife.

The presence of domesticated animals on site is likely to have a significant adverse impact on local wildlife. This impact can be reduced but cannot be removed entirely.

5.4.7 Run off/pollution into watercourses: Due to the presence of sewage tanks, bins and other human associated contaminants, the likelihood of pollution and run off into local waterbodies is increased.

Avoidance: Bins are to be emptied regularly. Communal bin areas should be away from watercourses or waterbodies and must be secure so adverse weather conditions such as high winds do not cause a spill of litter into the environment. Bins must have lids to ensure wildlife cannot get into rubbish or recycling areas. Regular rubbish removal and litter clean ups must be carried out by the site owners once visitors have left. Bins must be on a hard surface to prevent leeching of chemicals and

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waste into the soil.

Mitigation: Plans for the removal of waste are to be implemented to ensure the risk of contamination and litter is reduced.

Following the avoidance and mitigation method above this should result in no long term significant detrimental impacts to local wildlife or ecosystems.

5.5 Impacts: Decommissioning Phase

5.5.1 The site must be returned to the state pre-development should the structures be removed or decommissioned. Any waste/rubble/sewage must be removed from the site and not left to pollute the local environment or watercourses. Any perceived hazards to wildlife, such as open holes, chemicals or machinery must be removed if the site should be decommissioned.

5.6 Potential Non-Standard Operations

5.6.1 Plans and procedures must be designed in case of chemical spills, fires, or other pollution incidents prior to the site being opened to the public. Failure to create best practice plans could result in significant environmental damage and pollution should a spill/leak/incident occur.

5.7 Ecosystem Services

5.7.1 The development will increase the number of residential properties in the immediate area. There will be an overall ecosystem service net gain as a result of the proposed development, particularly for local convenience stores and outlets.

5.8 Cumulative Impact and Effects

5.8.1 The proposed development will, overall, have a negative impact on local wildlife by increasing light and noise pollution, and by increasing the level of human disturbance on site significantly. However, these impacts can be lessened significantly by the implementation of a lighting plan, planting

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scheme, installation of faunal boxes and access restrictions to habitats not being developed.

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6. Conclusions

6.1 JCA Ltd were commissioned to carry out an Ecological Impact Assessment Survey and related report by Brewster Bye Architects in order to determine the potential impacts of the proposed development on on-site habitats, species and local priority habitats at **St Pauls Road.**

6.2 The site was surveyed on the 18/03/2019 by Jenny Butler *AMIEnvSc, BSc (Hons)* and Joe Earnshaw *MSC, BSc (Hons).*

6.3 After conducting a thorough site investigation and a detailed Desktop Study, we considered **St Pauls Road, Mirfield** to contain habitats of low ecological value.

6.4 After conducting a thorough Bat Roost Potential survey and a detailed Desktop Study, we considered **St Pauls Road** to have a moderate to high potential for supporting foraging, commuting and roosting bats.

6.5 As the site has been considered to have a moderate to high potential of supporting bat roosting sites, we recommended that dawn/dusk emergence surveys should be carried out to establish the absence/presence of roosting bats at **St Pauls Road.**

6.6 Dawn and dusk bat surveys are conducted between May and September and are used to determine whether bats are currently roosting at a site. It can also give you an indication of the level of bat activity at a survey site and any specific foraging patterns. Dawn surveys are started around 1.5 hours before sunrise, when swarming behaviour can be observed around roost sites. Dusk surveys are started around 30 minutes before sunset and up to 2 hours after and look for the emergence of bats from their roost sites. If bats are then confirmed to be roosting on the site, a **Bat Mitigation Licence** may be applied for from Natural England, and a mitigation plan devised so development causes as little impact on local bat populations as possible. It was recommended at **St Pauls Road** that **three** surveys were required. Please refer to **Appendix 4** for bat survey calendar.

6.7 It was recommended at St Pauls Road, Mirfield that one survey was required on buildings with low bat roosting potential (Buildings 3 and 5), two surveys on buildings with moderate bat roosting potential (Building 1) and three surveys on buildings with high bat roosting potential (Buildings 2 and 4).

6.8 After conducting the emergence/re-entry surveys Common Pipistrelle and Soprano Pipistrelle were found to be roosting within building two on site. As bats have been confirmed to be roosting at **St Pauls Road**, a **Bat Mitigation Licence** should be applied for from Natural England, and a mitigation plan devised so development causes as little impact on local

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bat populations as possible.

6.9 *The development of any building or structure has the potential risk of removing bat roosting habitat. Therefore, JCA always recommended that alternative bat roosting opportunities should be provided to replace any that are lost due to building alterations. Should you like advice on putting up bat boxes, or on increasing your site's value to bats through carefully designed planting schemes and habitat creation, JCA can provide this service.*

6.10 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.

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7. Recommendations

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

Bats: After conducting the emergence/re-entry surveys Common Pipistrelle and Soprano Pipistrelle were found to be roosting within building two on site. As bats have been confirmed to be roosting at **St Pauls Road**, a **Bat Mitigation Licence** should be applied for from Natural England, and a mitigation plan devised so development causes as little impact on local bat populations as possible.

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.

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- 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.

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Hedgehogs: It is recommended that the site should maintain as much semi-natural habitats as possible. The site is located in an area where hedgehogs may be present. It is recommended that the following best practice measures are implemented:

- Work on site during October and March should be carefully undertaken to avoid injuring hibernating hedgehogs. Hand searching piles of logs and thick vegetation before removal.

- Where possible the total area of hard standing should be minimised in favour of grassland or permeable living driveways. A variety of sward structures and lengths is recommended to encourage invertebrates for hedgehogs to consume.

- Fencing if being used should be created with a 13cm x 13cm gap at ground level or be cut into fencing/walls or gravel boards at the bottom to allow hedgehogs to pass through from one garden to the next.

- Avoid using fence netting unless a 13cm gap is left from the ground to the start of the fence. Fence netting causes painful death for hedgehogs.

- Caution should be used when operating machinery at ground level, and when removing scrub and other items that are lying in vegetation. Stimmers are responsible for high numbers of hedgehog's deaths; these should be used with caution.

- Hedgehog shelters should be included in the development plans and positioned in secluded nooks and corners of the development.

- Planting of native hedgerows across the development to reduce habitat fragmentation. Ideal hedgerows have a thick base with tussocky vegetation allowing hedgehogs to nest. Recommended hedgerow species include: Hawthorn (*Crataegus monogyna*) and Crab Apple (*Malus sylvestris*) which attracts over ninety different insect species, providing food for hedgehogs.

- Providing log/dead wood piles to increase nesting opportunities for hedgehogs.

- Implement a post-development plan to include careful monitoring of garden machinery, such as strimmers and leave leaf litter in place or in piles. Avoid the use of pesticides only use organically friendly products.

Hedgehogs travel approximately one mile every night from one area to the next foraging for food, nest sites and a mate. We recommend hedgehog highways

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are cut into fencing of new homes to improve connectivity throughout the development and help protected this endangered species.

If you require advice in creating hedgehog highways into your development/s please view www.hedgehogstreet.org.

Biodiversity Enhancement: The development will result in the loss of natural habitat and overall biodiversity net loss. To ensure that biodiversity net gain is obtained post-development the following measures are to be implemented:

- Installation of 4 insect boxes
- Installation of 6 bat boxes/bricks/tubes
- Installation of 6 bird boxes: standard boxes, swift boxes and swallow boxes
- Installation of 2 hedgehog houses/shelters
- Including gaps of 13cx13cm in fencing to allow hedgehog movement across the site
- Planting of pollinator rich wildflowers and grasses
- Planting of native trees only
- Planting of native shrub species
- Planting of hedgerows instead of fencing along boundary lines
- Following lighting design given by the BCT/ILP 2018 guidance
- Prior to development, once planning permission has been obtained a Bat Mitigation Licence will be required. A bat mitigation scheme will be needed as part of the licence application.

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5. References

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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:

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Great Crested Newts:
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Appendices

Appendix 1: Phase 1 Habitat Map

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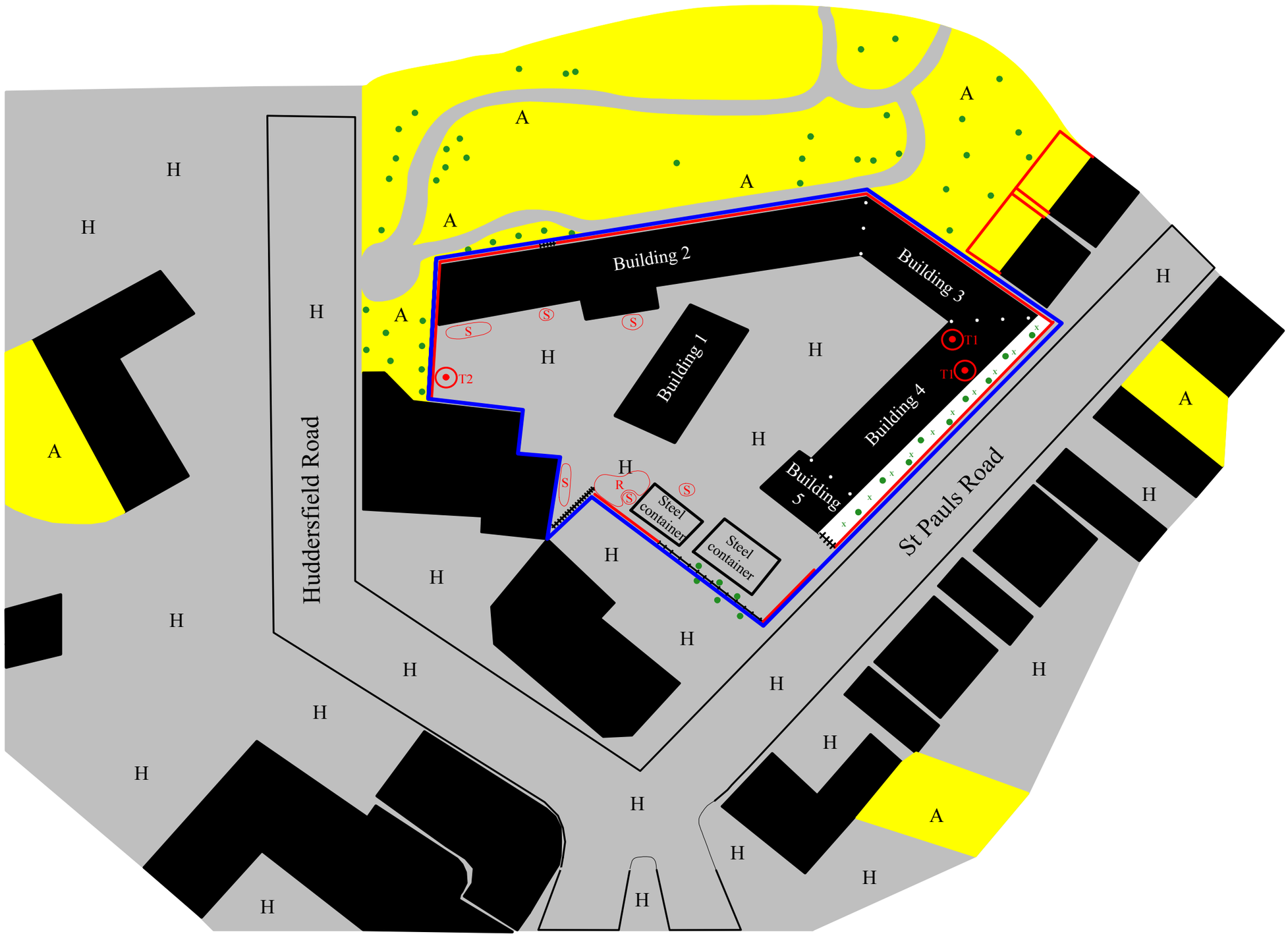

Appendix 1:
Phase 1 Habitat Map

Address: St Pauls Road, Mirfield, West Yorkshire, WF14 8AX
JCA Ref: 14607b/JB

NOT TO SCALE

KEY	
A	Amenity grassland
	Buildings
H	Hard standing
	Scattered broad-leaved trees
x x x x x x	Scattered scrub
	Fence
R	Refuse-tip
S	Spoil
	Wall
	Proposed development area
	Target note

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Appendix 2: Bat Habitat Map

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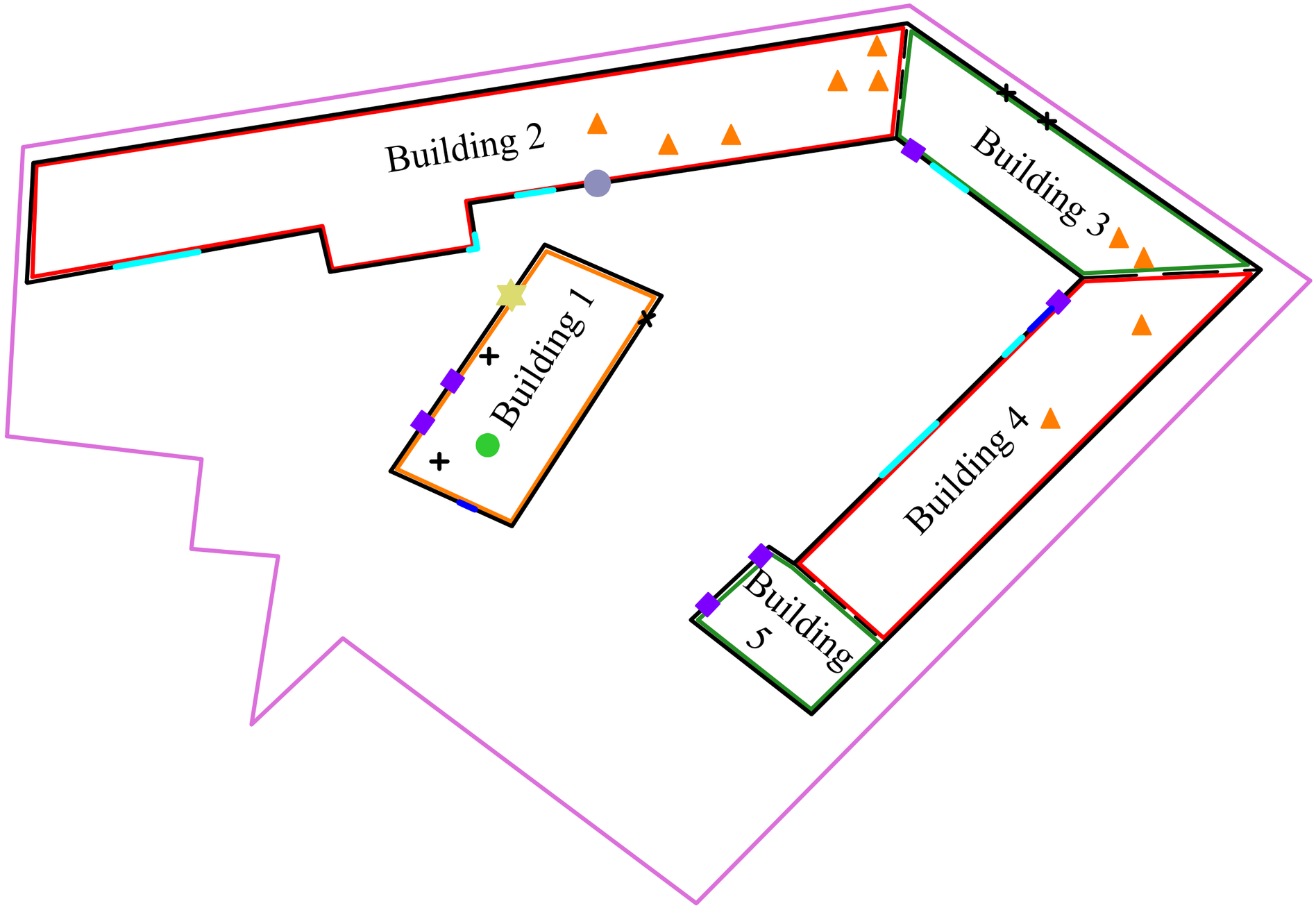

N
W E
S

Appendix 3: Bat Roosting Potential Plan

Address: St Pauls Road, Mirfield, West Yorkshire, WF14 8AX
JCA Ref: 14607b/JB

NOT TO SCALE

KEY	
▲	Missing roof tile
■	Airbrick
●	Lifted roof tile
★	Damaged/missing pointing
+	Crack/crevice
●	Broken window
—	Lifted roof tiles at eaves
—	Gap under door
▭	Buildings
—	Building with low bat roosting potential
—	Building with moderate bat roosting potential
—	Building with high bat roosting potential
—	Proposed development area

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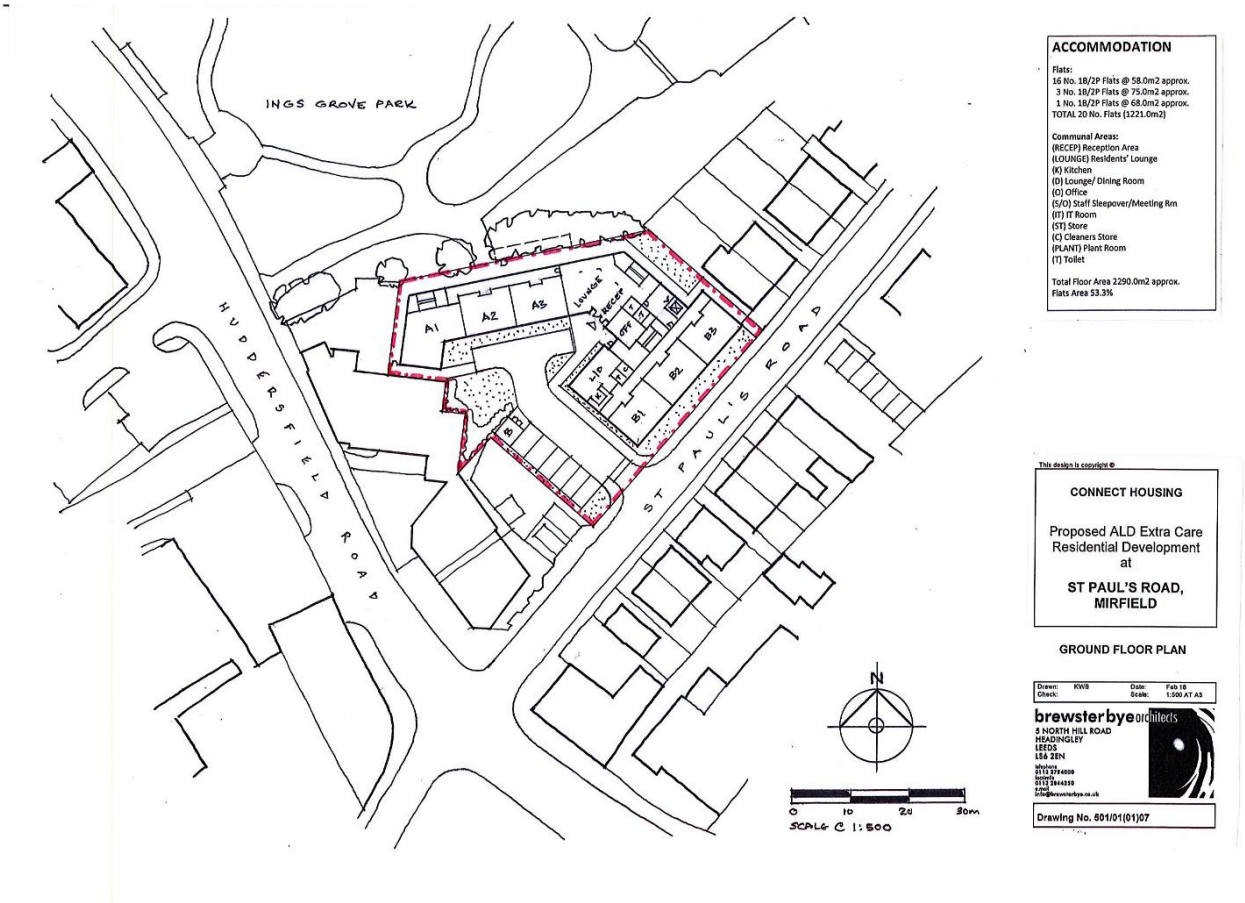
Appendix 3: Proposed Development Plan



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Appendix 4: Enhancement Plan

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Appendix 5: 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

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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

Bats and the Law

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.

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.

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.

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Birds and the Law

In the UK **all** breeding birds are protected under the Wildlife and Countryside Act 1981 (as amended). Under this piece of legislation all birds, their nests and eggs are legally protected meaning it is an offence to recklessly or intentionally:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while in use or being built;
- Take or destroy the egg of any wild bird.
- Possess or control and wild bird or egg unless obtained legally

This legal protection only applies whilst the nest is in use. Therefore to avoid an offence being committed it is recommended that development is undertaken outside of the nesting bird season (nesting bird season being beginning of March to the end of October).

Within the Wildlife and Countryside Act 1981 (as amended), birds listed in Schedule 1 are afforded special protection at all times. This additional protection means it is illegal to intentionally or recklessly disturb any schedule 1 bird while it is nesting or to disturb any of its young.

Birds listed on the IUCN's Red and Amber list are species of conservational concern and any impact, as a result of development, must be considered carefully and appropriate mitigation provided. A similar attitude should be employed when species listed on the Local Biodiversity Action Plan (LBAP) are found to be using or are periodically present within a site.

All UK birds are also offered legal protection against cruelty under the Protection of Animals Act 1911.

Hedgehogs and the Law

Hedgehogs (*Erinaceus europaeus*) have national and European protection under Schedule 6 of the Wildlife and Countryside Act (WCA) 1981 (as amended). The Wild Mammal Protection Act 1996 and Appendix III of the Bern Convention.

They are recognised as a species of Principle Importance for the Conservation of Biodiversity under Section 41 (England) of the Natural Environment and Rural Communities (NERC) Act 2006, The National Planning Policy Framework 2012 and are listed on the Durham Biodiversity Action Plan (BAP).

Currently there is no legal protection for the habitats hedgehogs use.

Under this legislation it is an offense to:

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- Wilfully kill, injure or take a hedgehog (or attempt to do so).
- It is illegal to capture or trap a hedgehog.
- Cruelly ill-treat a hedgehog.
- Intentionally or recklessly damage or destroy a hedgehogs nest, or obstruct access to it.
- Disturb a Hedgehog when it is occupying a nest.
- Hedgehogs cannot be trapped without a licence from Natural England.

If hedgehogs are using the site to build nests, it can impact upon the land development and a mitigation plan should be devised and strategies implemented for hedgehog conservation.

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Appendix 6: Protected Species Methodology

Bats

Scoping Survey Methodology

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 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, ladders and a duet heterodyne bat detector.

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.

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.

There were no perceived limitations that would significantly impact on the conclusions and recommendations given within this report.

Emergence/re-entry Survey Methodology

Emergence re-entry surveys are conducted either 15 minutes before sunset and up to two hours after or up to 2 hours before sunrise and 15 minutes after. Due to the lifecycle of bats emergence surveys are conducted between the months of May through to August, and can occasionally run into September. All surveyors used by JCA have experience in conducting bat emergence surveys

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and an appropriate level of knowledge in bat ecology.

All surveyors present are equipped with the following items during each survey; a heterodyne bat detector, Walkie Talkie, clock, printed site map, note pad and pen.

An initial Scoping survey of the site will highlight all areas of the site that are likely to support bat roost sites. This information will then be used to influence the number of surveyors used and their positions around the site.

Limitations: Detecting bats using bat detectors can be limited. Bat species that produce calls at both a high amplitude (loud) and a low frequency, such as noctules are easier to detect than bats with low amplitude (quiet) and high frequency calls such as the brown long-eared bat and greater horseshoe bats respectively.

Many species of bat in the UK are crevice dwelling, and signs of bats and individual bats can be difficult to find within a building or within areas that are inaccessible, although all possible care has been given to survey for crevice dwelling bats during the initial assessment.

Physical access was available internally and externally to all structures; except where limited by health and safety constraints. Health and safety issues are given by the client and by the surveyor carrying out the assessment. It is up to the discretion and professional judgement of the surveyor whether the property is safe or not to survey. All efforts to comprehensively survey the site have been made, taking into account the safety constraints outlined above.

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Appendix 7: Protected Species Results

Bats

Scoping Survey Results

The site was surveyed on the 18/03/2019 by lead surveyor Jenny Butler *BSc (Hons), NE Level 2 Class Licence – 2018-33262-CLS-CLS.* Other surveyors included Joe Earnshaw *BSc (Hons), MSc, Student CIEEM member.* Survey conditions are summarised in **Table 7**.

Table 7: Survey times and weather conditions.

Survey date	Lead surveyor	Temp	Humidity	Wind speed/Direction		Cloud Cover	Precipitation
18/03/2019	Jenny Butler	7°C	72%	9mph	WSW	90%	Light showers

Habitats and Features Present

The site is primarily hard standing with several buildings positioned throughout the site with areas of spoil and refuse-tip located mainly towards the west of the site. Other habitats include scattered young and smooth stemmed broadleaf trees, an area of scattered scrub to the east, walls and metal fences.

The buildings onsite have bat roosting potential, with all other habitats providing negligible potential to support roosting and foraging bats. The vegetative habitats are short, with poor floral diversity.

It is important to note the presence of Ings Grove Park to the northwest of the site. A number of mature trees are located within this adjacent site and may support foraging and roosting bats. The site may also act as a commuting corridor as it provides partial landscape connectivity from the park to the rear gardens of properties to the northeast. Whilst bats may use this area for commuting and foraging it may not be suitable for roosting bats, that may be using the buildings onsite for roosting.

Building Assessment/ Built Structure Assessment

The buildings onsite are council owned and acts as the local storage depot with evidence of materials and equipment found being stored within several buildings. The site and its buildings have fallen into various levels of disrepair with most buildings no longer in use, while one building remains in use on a daily basis.

Various access points for roosting bats were noted and these are highlighted on **Appendix 3, Bat Roosting Potential Plan.** After a scoping survey of all buildings the overall bat roosting potential of the buildings onsite is as follows:

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- **Workshop (Building 1)** was assessed as having a **moderate bat roosting potential.**

- **Firehouse (Building 2)** and **Storage Sheds (Building 4)** were assessed as having a **high bat roosting potential.**

- **Outbuildings (Building 3)** and **Canteen (Building 5)** were assessed as having a **low bat roosting potential.**

Workshop (Building 1)

External Inspection: After intermittent use as a workshop over the last two years, this brick three-story building is now disused and suffers little human disturbance. The pointing was generally in good condition, but areas of missing/damaged pointing remained (**See photo 1**) providing access points into this building. The pitched slate roof had lifted tiles both on the westward pitch, roof apex and along two sections where the brickwork meets the roof (**See photo 2).** Two air bricks located at ground level on the west wall **(See photo 3)** also provided access into this building's cellar. Floodlights were positioned around the building, but they are unlikely to be in use currently.

Internal Inspection: The cellar of the building is poorly sealed with gaps evident under and around the external door and air bricks. Visible daylight could be seen when within the cellar area. Gaps were present that provided access into the building's brickwork with missing/damaged brickwork and timbers, utilities entering and exiting the building and large cavities within the timber framework (**See photo 4**).

The ground and first floor are well sealed with no visible gaps, with an intact roof liner and the wooden window frames are in good condition. The timber roof had recently been relined and had a new black breathable roof membrane (**See photo 5**). No timber gaps were noted and no enclosed loft space was present.

Signs of Bat Use: No evidence of bats was found to be present during the time of the survey.

Firehouse and Associated Buildings (Building 2)

External Inspection: This building has been used for several purposes over the years and is currently disused, and therefore has limited disturbance. The pointing was in excellent condition with the majority of the external brickwork being intact, but a number of windows were noted as having missing/broken panes. While a number of these windows had been boarded up, a single window on the second floor within the middle section of the building remained open (**See photo 7**).

The pitched slate roof varied in condition with the west of the building being intact and gaps only present at the eaves of the roof. This however changed

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towards the east of the building with clear holes and missing tiles visible within the roof. Along the length of the roof lifted tiles were also noted, providing further access into the building. Floodlights were positioned around the building, but it is unknown if they were operational.

Internal Inspection: The west section of the building is two stories in height with no flooring present between stories. This section had a metal framed roof that was wood paneled, making inspection of the roof not possible. Gaps were noted under external doors (**See photo 8**) and vents/pipes exiting the building, where daylight was visible within them. The roof was of various constructions methods and materials and had clearly been added to over time. From an open metal framed construction this changed to timber beams with sections having a roof membrane (**See photo 9**), while other areas remained unlined.

An open chimney breast on the second floor (**See photo 10**) provided a likely access point for bats within the building and while efforts to board windows were made, gaps remained evident. A loft space at the east end of the building was not accessible due to the condition of the roof and floor (**See photo 11**), however it was noted that there was missing tiles, and the roof was in a state of collapse. No enclosed loft space or cellar is present.

Signs of Bat Use: No evidence of bats was found to be present.

Outbuildings (Building 3) and Storage Sheds (Building 4)

External Inspection: These buildings are single storied and were in use for storing a range of tractor equipment, compost and other materials. Their construction is brick and stone with the pointing being in an excellent condition. The outbuildings had metal roller shutters fitted but remained open during the night creating a light and exposed space within. Both the outbuildings and storage sheds had missing/lifted roof tiles and gaps at the roof eaves (**See photo 12**), with the ridge tiles along the storage sheds noted to have shifted creating further bat access points (**See photo 13**).

Internal Inspection: The roof of the outbuildings is timber framed with wood paneling and slate tiles above. Here gaps and visible daylight could be seen through the paneled roof (**See photo 14**) and voids were noted behind the plasterboard (**See photo 15**). Further gaps were noted through missing tiles and air bricks towards the roof (**See photo 16**).

The storage shed consisted of three sections, all of them having a similar construction of brick walls, slate and timber roofs with no roof liner present except for the middle section. Here an unusual insulation style roof liner was present that was noted to have come away in various sections (**See photo 17**). Large wooden doors allowed entry into the sheds with gaps noted around the entirety of the doors. Two bird nests were found within these storage sheds, one of which was a swallow's nest. Both nests were old and not in use. No enclosed loft space or cellar is present.

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Signs of Bat Use: No evidence of bats was found to be present.

Canteen (Building 5)

External Inspection: This is a one storied building that is currently in use as a staff canteen and rest area. It has a pitched slate roof and stone construction, both of which are generally in a good condition with no missing/lifted tiles and has intact pointing within the brickwork. External entry points for bats were noted via airbricks at roof and ground level (**See photo 18 and 19**).

Internal Inspection: The roof space was not visible due to the building being boarded out internally and a false roof having been installed (**See photo 20)**. The building was heated with a moderate level of human disturbance and was generally well sealed with no visible gaps noted.

Signs of Bat Use: No evidence of bats was found to be present.

Tree Assessment

The trees present onsite are all small, thin, smooth stemmed specimens. Mostly saplings or self-seeded: Species present include Ash, Sycamore and Willow Species. These trees have negligible bat roosting potential due to the absence of suitable roosting opportunities for bats.

Emergence Survey Results

The site was surveyed from the 29/05/2019 to the 09/07/2019 by lead surveyor Jenny Butler *AMIEnvSc, BSc (Hons), NE Level 2 Class Licence – 2018-33262-CLS-CLS.* Survey conditions are summarised in **Table 7**.

Table 7: Survey times and weather conditions.

Survey date	Lead surveyor	Start/Finish		Temp Start/Finish		Humidity	Wind speed/Direction		Cloud Cover	Precipitation
29/05/2019	Jenny Butler	21:00	22:55	11°C	11°C	44%	11mph	S	100%	Light showers
27/06/2019	Jenny Butler	02:50	04:55	10°C	7°C	85%	7mph	E	100%	None
09/07/2019	Jenny Butler	21:20	23:10	15°C	13°C	57%	8mph	SW	20%	None

Emergence Survey 1 results – 29/05/2019

Bat Emergence – At 21:30 five Common Pipistrelles were recorded emerging from the Lime tree within Ings Grove Park to the north of building three. Under the roof hip of building two a single Soprano Pipistrelle emerged at 21:37 with a Soprano Pipistrelle recorded re-entering into the same location at 21:57. A Common Pipistrelle emerged from underneath a ridge tile of the same building at 21:44 (see **Appendix 3: Bat Activity Map 29/05/19**).

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Bat Activity - There was a high level of activity from 21:30 to 22:50 within Ings Grove Park to the north of the site, with the majority of the activity being foraging. Numerous Common and Soprano Pipistrelle bats were recorded foraging amongst the parkland trees, with a single Noctule recorded to the west of building two at 22:39. (see **Appendix 3: Bat Activity Map 29/05/19**).

Along St Pauls Road to the southeast of the site there was a low level of bat activity from 21:24 to 22:45. Species recorded include Common Pipistrelle, Noctule and an unconfirmed Soprano Pipistrelle. The majority of the bats were heard and not seen with only a few individuals visible during the survey. Common Pipistrelles were noted exiting the site close to building five and commuting southeast over the adjacent terraced houses, as well as travelling northeast up St Pauls Road (see **Appendix 3: Bat Activity Map 29/05/19)**. Noctule activity was limited but was recorded along the entire length of the southeast boundary of the site.

The site itself offers little in foraging opportunities for the local bat population but does have roosting potential with bats noted emerging from building two. Ings Grove Park adjacent the site offers extensive foraging and roosting opportunities due to the presence of large trees with notable cavities and sections of decay.

Re-entry Survey 2 results – 27/06/2019

Bat Emergence – No bats were seen emerging from the property during the survey.

Bat Activity - There was a low level of activity from 02:58 to 03:50 within the site boundary itself, with the majority recorded around and to the east and north of building one. Species consisted of Common Pipistrelle and Soprano Pipistrelle (see **Appendix 3: Bat Activity Map 27/06/19)**.

Emergence Survey 3 results – 09/07/2019

Bat Emergence - Three Common Pipistrelles were seen to emerge from a tree within Ings Grove Park, adjacent to the site boundary at 21:45 to 21:48. No bats were seen to emerge from the property during the time of the survey.

Bat Activity – A high level of bat activity was recorded from 21: 49 to 22:55 within Ings Grove Park. Species consisted of Common Pipistrelle and Soprano Pipistrelle. At 22:02 a Noctule was seen foraging along the tree line between the site and Ings Grove Park. There was a high level of bat foraging activity across the site, between buildings 2 and 3. Species consisted of Common Pipistrelle and Soprano Pipistrelle, with a Noctule foraging along the tree canopies to the rear of building 2 (see **Appendix 3: Bat Activity Map 09/07/19)**.

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Appendix 8: Photographic Evidence

Photo 1: Missing/damaged pointing on building 1.

Photo 2: Lifted tile along the roof ridge and at the eaves of the roof.

Photo 3: Airbrick at ground level of building 1.

Photo 4: Cavity within timbers in cellar of building 1.

Photo 5: Recently installed roof liner in building 1.

Photo 6: Intact moth within building 1.

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Photo 7: Missing window pane on second floor of building 2.	Photo 8: Gap under external door in building 2.
	
Photo 9: Timber framed roof with roof liner in building 2.	Photo 10: Open chimney breast on second floor of building 2.
	
Photo 11: Roof in state of collapse with gaps evident in building 2.	Photo 12: Lifted roof tiles at eaves of building 3.

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Photo 7: Missing window pane on second floor of building 2.

Photo 8: Gap under external door in building 2.

Photo 9: Timber framed roof with roof liner in building 2.

Photo 10: Open chimney breast on second floor of building 2.

Photo 11: Roof in state of collapse with gaps evident in building 2.

Photo 12: Lifted roof tiles at eaves of building 3.

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Appendix 9: Species List

Site Name: St Pauls Road, Mirfield **Provided by**: JCA Ltd

Grid Ref: SE201198 **Verified by:** Amanda Beck

Table 11: Complete list of species encountered during survey.

Common Name	Scientific Name	Number	Comment
Sycamore	*Acer pseudoplatanus*	Not Applicable	None
Wintercress	*Barbarea vulgaris*	Not Applicable	None
Common Brome	*Bromus hordeaceus*	Not Applicable	None
Buddleia	*Buddleia davidii*	Not Applicable	None
Wood Pigeon	*Columba palumbus*	1	Flying west to east across site.
Willowherb Species	*Epilobium*	Not Applicable	None
Common Whitlow Grass	*Erophila verna*	Not Applicable	None
Ash	*Fraxinus excelsior*	Not Applicable	None
Wood Aven	*Geum Urbanum*	Not Applicable	None
Perennial Rye-grass	*Lolium perenne*	Not Applicable	None
Bramble	*Rubus Fruticosus*	Not Applicable	None
Willow Species	*Salix sp.*	Not Applicable	None
Groundsel	*Senecio vulgaris*	Not Applicable	None
Chickweed	*Stellaria media*	Not Applicable	None
Dandelion Species	*Taraxacum sp.*	Not Applicable	None
Blackbird	*Turdus merula*	1	Perched on tree within park to the northwest.
Common Nettle	*Urtica dioica*	Not Applicable	None

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Appendix 10: Bat Survey Calendar

Figure 4: 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

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Appendix 11: 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.

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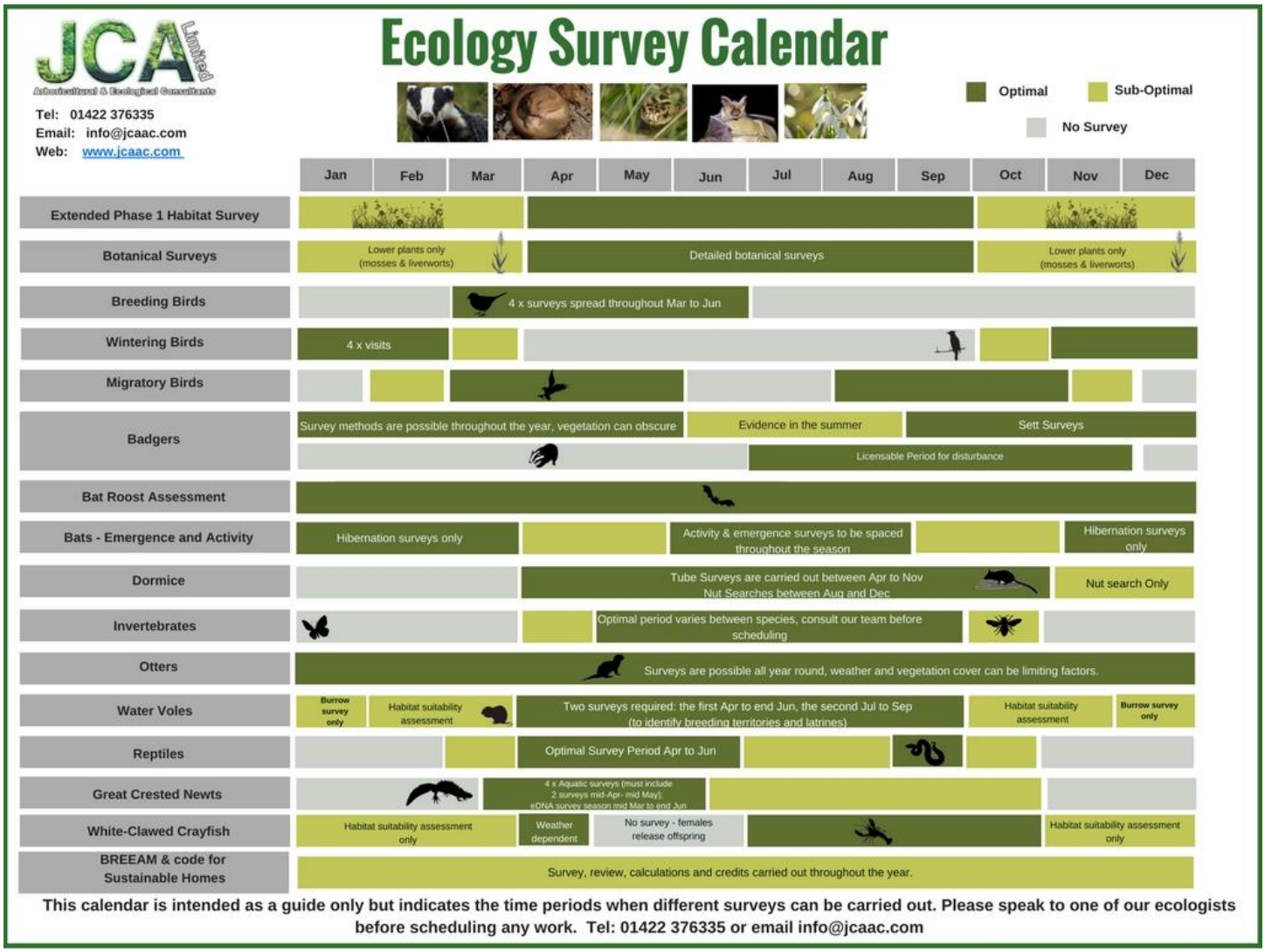
Appendix 12: Survey Calendar

Figure 5: Survey calendar for protected species and habitat surveys.



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Appendix 13: 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
AMIEnvSc, 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.

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The information which we have prepared and provided is true, and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and bona fide opinions.

Signed

.....
Jenny Butler *AMIEnvSc, BSc (Hons) Environmental Science*
30/10/19

Proofread by

.....
Jonathan Cocking
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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

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- 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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