



**East Lancashire Hospitals Trust**

# **Clitheroe Community Hospital**

**Extended Phase 1 Habitat Survey and Daytime  
Building Inspection**

**December 2016**

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Clitheroe Community Hospital – Extended Phase 1 Habitat Survey and Daytime Building Inspection



**Document Control**

Project: Clitheroe Community Hospital  
Client: East Lancashire Hospitals Trust  
Job Number: A094939  
File Origin: \\lds-dc-vm-002\Group Ecology\Projects\Projects A094000 on\A094939 Clitheroe\REPORTS\Extended Phase 1 Habitat Survey - 2015

<b>Issue 1</b>	15th January 2016	Comment/Status
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<b>Issue 2</b>	15th December 2016	Comment/Status – updated due to issue of revised proposed site layout plan
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## Executive Summary

Site Description and Scope of Works		
<p>The site is located on Chatburn Road, Clitheroe, Lancashire, BB7 (Ordnance Survey Grid Reference: SD 75458 43012) and is approximately 2 hectares in size. Habitats present on-site include amenity grassland, poor semi-improved grassland, scrub, orchard, tall ruderal, bare ground, hedgerows and a spoil mound. Walls and fencing boundary features are present. Clitheroe Hospital is located within the centre of the site and includes a complex of eight buildings, some of which are internally connected, surrounded by areas of hard standing.</p> <p>The site has been selected for residential development. It is anticipated that all existing built structures will be demolished. Trees and hedgerows will be retained where possible.</p> <p>The purpose of the extended Phase 1 habitat survey is to identify any potential ecological constraints to the proposed works at the earliest opportunity, to minimise future delays to potential works and provide advice as to how works on site will avoid breaching any UK or European nature conservation legislation.</p>		
Potential Constraints	Yes	No
<b>Great crested newts</b>		
Has the site been assessed for great crested newts?	✓	
Are great crested newts a potential constraint to development of the site?		✓*
<b>Reptiles</b>		
Has the site been assessed for reptiles?	✓	
Are reptiles a potential constraint to development of the site?		✓*
<b>Breeding birds including barn owls</b>		
Has the site been assessed for breeding birds including barn owls?	✓	
Are nesting birds a potential constraint to development of the site?	✓	
<b>Bats</b>		
Has the site been assessed for bats?	✓	
Are roosting bats a potential constraint to development of the site?	✓*	
Are foraging / commuting bats a potential constraint to development of the site?	✓*	
<b>Badgers</b>		
Has the site been assessed for badgers?	✓	
Are badgers a potential constraint to development of the site?	✓	
<b>Other protected species (e.g. otters, water voles, white-clawed crayfish)</b>		
Has the site been assessed for otters, water voles and white-clawed crayfish?	✓	
Are otters, water voles and/or white-clawed crayfish a potential constraint to development of the site?		✓
<b>Notable species (e.g. hedgehog, common toad)</b>		
Has the site been assessed for hedgehog, common toad and other notable species?	✓	

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Are hedgehog, common toad and other notable species a potential constraint to development of the site?	✓	
Toad and hedgehog		
<b>Other features of nature conservation interest</b>		
Does the application site support Habitats of Principal Importance or Local Biodiversity Action Plan (BAP) Priority Habitats?	✓	
<ul style="list-style-type: none"> <li>• Traditional orchard</li> <li>• Derelict, Underused or Neglected Land</li> <li>• Gardens and Backyards</li> <li>• New and Existing Built Structures</li> </ul>		
Have details of biodiversity enhancements been included with the application?	✓	
<b>Recommendations</b>		
Are further surveys recommended to inform the ecological impact assessment?	✓	
<b>Further survey: Protected/notable species</b>		
<p>*The following further surveys were recommended and commissioned in April 2016. The methodology used, findings and conclusions of the further surveys are detailed within a separate Protected Species Survey report (WYG, December 2016).</p> <ul style="list-style-type: none"> <li>• <b>Great crested newts:</b> Presence / likely absence survey at Ponds 1-3;</li> <li>• <b>Reptiles:</b> Presence / likely absence survey;</li> <li>• <b>Roosting bats – buildings:</b> Emergence / re-entry surveys;</li> <li>• <b>Foraging and commuting bats:</b> Activity survey (reduced effort).</li> </ul>		
Is mitigation (including avoidance/compensation) and enhancement recommended?	✓	
<b>Mitigation</b>		
<ul style="list-style-type: none"> <li>• <b>Designated sites:</b> Any trees lost to accommodate the new development should be replaced. These trees should be planted in shared open green spaces preferably around the periphery of the site and not within residential gardens. Any trees selected for planting should be native species of local provenance.</li> <li>• <b>Habitats:</b> Include fruit-producing species such as wild cherry <i>Prunus avium</i>, walnut <i>Juglans regia</i> and apple <i>Malus</i> spp. to replace felled orchard trees.</li> <li>• <b>Nesting birds:</b> To ensure legal compliance, it is recommended that <b>tree works</b> and any works to the buildings and vegetation with nesting bird potential are avoided during the bird nesting season (March to September inclusive) or, if necessary, preceded by a search for nesting birds by a suitably experienced and qualified ecologist/ECoW.</li> <li>• <b>Roosting bats – trees:</b> No further survey is required, but reasonable avoidance measures are recommended during crown works or felling works for trees assessed as Category 2.</li> <li>• <b>Roosting bats – trees:</b> Retain and protect trees in the northwest section of the site. If this is not possible then these trees should be assessed for bat roost potential.</li> <li>• <b>Badger:</b> A pre-construction badger survey is recommended at least 2-6 months prior to the start of site preparation works i.e. vegetation clearance and ground investigations.</li> <li>• <b>Common toad and hedgehog:</b> Any toads and hedgehogs found should be carefully captured using gloved hands</li> </ul>		



and placed (where capture is possible and humane) in a ventilated box and released into suitable nearby vegetation that will be unaffected by the proposed works.

- **Fox:** Any foxes disturbed by site works should be allowed to disperse on their own accord and should not be approached/touched.
- **Invasive species:** A management programme to treat Japanese knotweed, wall cotoneaster and montebretia should be developed and applied as soon as possible. In the interim to prevent further spread around the site the infested areas should be 'fenced off' and separated from any form of disturbance which may facilitate their spread.

#### **Best practice**

- **Habitats:** A Habitat Management and Maintenance Plan should be produced for the proposed site works to protect habitats to be retained within and adjacent to the site.
- **Species:** It is recommended that an a suitably experienced ecologist/ECOW delivers a Tool Box Talk regarding best practice to site personnel with regard to ecological issues in advance of any works commencing.

#### **Enhancements**

- Manage areas of soft landscaping using good horticultural practice which is low-intensity and wildlife friendly;
- Additional trees should be planted along the new roads and adjacent to the hedgerows around the boundary of the site to enhance the capability of the site to intercept airborne pollution. Any trees selected for planting should be native species of local provenance.
- Installation of at least 20 bird boxes on site.
- Install bat boxes on site (number to be confirmed following further bat surveys)
- Planting of new areas of soft landscaping with insect-attracting native species of local provenance, wherever possible, to enhance the site's biodiversity.



## 1.0 Introduction

### 1.1 Background

WYG were commissioned by East Lancashire Hospitals Trust in November 2015 to undertake an Extended Phase 1 Habitat Survey and a Daytime Building Inspection at the former Clitheroe Community Hospital (hereafter referred to as the 'site').

This report was prepared by WYG Senior Ecologist Laura Holmes ACIEEM<sup>1</sup> and WYG Ecologist Georgina Whittaker GradCIEEM<sup>2</sup>.

### 1.2 Site Location and General Description

The site is located on Chatburn Road, Clitheroe, Lancashire, BB7 (Ordnance Survey Grid Reference: SD 75458 43012) and is approximately 2 hectares in size.

Habitats present on-site include amenity grassland, poor semi-improved grassland, scrub, orchard, tall ruderal, bare ground, hedgerows and a spoil mound. Walls and fencing boundary features are present. Clitheroe Hospital is located within the centre of the site and includes a complex of seven buildings, some of which are internally connected, surrounded by areas of hardstanding.

The site is bounded by Chatburn Road (A671) to the north and a hard standing car park to the east. To the immediate south of the site is a corrugated metal warehouse and land to the west is predominantly agricultural. In the wider area surrounding the site land to the south and west is predominantly residential and commercial development. The remaining land is dominated by agricultural fields.

An active railway track passes west-east approximately 150m north of the site, beyond this is Bankfield Quarry and the River Ribble. The town of Clitheroe is located to the south-west of the site and in the wider area the majority of the surrounding habitats are agricultural fields with scattered settlements.

A drawing showing the existing site layout and habitats is provided in Appendix A, Figure 1. A figure showing the layout of buildings on-site is provided in Appendix B.

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### **1.3 Development Proposals**

The site has been selected for residential development. The proposed site layout plan is provided in Appendix C, which shows how the site can accommodate up to 50 dwellings with associated access and parking.

It is anticipated that all existing built structures will be demolished. Trees and hedgerows will be retained where possible.

### **1.4 Survey and Reporting Objectives**

The purpose of the survey was to identify any potential ecological constraints to the proposed development at the earliest opportunity, to minimise future delays to potential works and provide advice as to how works on-site will avoid breaching any UK or European nature conservation legislation. Further information relating to biodiversity and environmental legislation, conventions & threatened lists is provided in Appendix D.

This report identified the sites ecological constraints to the proposed development and recommendations for avoidance, mitigation and enhancements have been made, as appropriate.

#### **1.4.1 Extended Phase 1 Habitat Survey**

The Extended Phase 1 Habitat Survey included the following objectives:

- A desk study to obtain existing information on statutory and non-statutory sites of nature conservation interest and records of protected / notable species within the site and its environs;
- An extended Phase 1 habitat survey involving a walkover of the site to record habitat types and dominant species, including any invasive species, and a reconnaissance survey for evidence of protected fauna or habitats capable of supporting such species;
- An assessment of the external features of mature trees and buildings within / adjacent the site for their potential to support bats; and
- An assessment of the potential ecological constraints to the proposed development within the site and recommendations, if any, for further survey, avoidance, mitigation and enhancement where appropriate.





### **1.4.2 Building Inspection**

The building inspection included the following objectives:

- Undertake an external and internal (where accessible) search for evidence of roosting bats;
- Undertake an external and internal (where accessible) search for features which have potential to support roosting bats; and
- Determine the presence / likely absence of roosting bats within the buildings.



## 2.0 Methodology

### 2.1 Desk Study

#### 2.1.1 Previous Reports

Previous ecological survey reports completed for the site/adjacent land have been reviewed and used to inform field survey effort, these include:

- Ecological Survey and Assessment (including surveys for protected species) by ERAP (2008)
- Updated Ecological Survey and Assessment by ERAP (2012)

#### 2.1.2 Data Search

In November 2015, data was obtained from Lancashire Environment Record Network (LERN; Local Biodiversity Records Centre for Lancashire) and a search was made of Natural England's interactive, web-based MAGIC (Multi-Agency Geographic Information for the Countryside) database regarding the presence of statutory and non-statutory nature conservation designations and protected and notable species within 2km of the site boundary.

The data search covers:

- Statutory nature conservation designations, such as National Nature Reserves (NNR) and Sites of Special Scientific Interest (SSSI);
- Non-statutory nature conservation designations, such as Local Wildlife Sites (LWS);
- Protected species, such as great crested newts, bats and badgers; and
- Notable species, such as those listed under section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and within the Local Biodiversity Action Plan (LBAP).

The data search does not cover:

- Tree Preservation Orders (TPOs); or
- Conservation areas designated for their special architectural and historic interest.

Nature conservation legislation and national policy, including schedules of protected and invasive species, are provided in Appendix D.



## 2.2 Field Surveys

### 2.2.1 Habitats

The vegetation and habitat types within the site were noted during the survey in accordance with the categories specified for a Phase 1 Vegetation and Habitat Survey (Joint Nature Conservation Committee, 2010). Dominant plant species were recorded for each habitat present using nomenclature according to Stace, C. (2010).

### 2.2.2 Protected & Notable Species

The site was inspected for evidence of and its potential to support protected or notable species, especially those listed under the *Conservation of Habitats and Species Regulations 2010 (as amended)*, the *Wildlife & Countryside Act 1981 (as amended)*, including those given extra protection under the *Natural Environment and Rural Communities (NERC) Act 2006* and *Countryside & Rights of Way (CROW) Act 2000*, and listed within the Local Biodiversity Action Plan (LBAP).

The following species were considered:

#### Great crested newts

The site was appraised for its suitability to support great crested newts *Triturus cristatus*. The assessment was based on guidance outlined in the Joint Nature Conservation Committee *Herpetofauna Workers' Manual* (Joint Nature Conservation Committee, Gent. T. And Gibson, S., 2003) and the *Great Crested Newt Conservation Handbook* (Langton, T.E.S. et al., 2001).

#### Reptiles

The site was appraised for its suitability to support reptiles. The assessment was based on guidance outlined in the Joint Nature Conservation Committee *Herpetofauna Workers' Manual* (Joint Nature Conservation Committee, Gent. T. And Gibson, S. 2003).

#### Nesting birds

The site was appraised for its suitability to support breeding birds including any notable bird species (Schedule 1; Birds of Conservation Concern; NERC Section 41; or Local BAP).

Notes were made regarding any bird observations made within the site boundary including observations of potential breeding behaviours such as displaying, singing and territorial behaviour.



Bats

Habitats within the site boundary were appraised for their suitability to support breeding, resting and hibernating bats and foraging and commuting bats using survey methods based on those outlined in the Bat Conservation Trust’s *Bat Surveys: Good Practice Guidelines 2<sup>nd</sup> edition* (Hundt, 2012).

**Roosting bats - trees**

A thorough and systematic daytime visual examination of all trees, except those in the north-west section of the site due to access constraints, was carried out from ground level to identify features that could provide opportunities and signs of evidence for roosting bats. Features on trees that may be used by bats and signs indicating possible use of trees by bats are shown in Table 1.

**Table 1.** Factors influencing potential for trees to be used by roosting bats (adapted from BCT Guidelines (Hundt, 2012)).

Features of trees used by bats	Signs indicating possible use by bats
<ul style="list-style-type: none"> <li>• Natural holes</li> <li>• Woodpecker holes</li> <li>• Cracks/splits in major limbs</li> <li>• Loose bark</li> <li>• Behind dense, thick-stemmed ivy</li> <li>• Hollows/cavities</li> <li>• Within dense epicormic growth</li> <li>• Bird and bat boxes</li> </ul>	<ul style="list-style-type: none"> <li>• Tiny scratches around entry point</li> <li>• Staining around entry point</li> <li>• Bat droppings in/around/below entrance</li> <li>• Audible squeaking at dusk or in warm weather</li> <li>• Flies around entry point</li> <li>• Distinctive smell of bats</li> <li>• Smoothing of surfaces around cavity</li> </ul>

BCT Guidelines (Hundt, 2012) use the following system to categorise trees:

- Known or confirmed roost with field evidence proving bats are present;
- Category 1\*: Trees with multiple, highly suitable features capable of supporting larger roosts;
- Category 1: Trees with definite potential, supporting fewer suitable features than Category 1\* trees or with potential for use by single bats;



- Category 2: Trees with no obvious potential, although the trees is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some feature which may have limited potential to support bats; or
- Category 3: Trees with no potential to support bats.

### ***Roosting bats - buildings***

There are seven buildings on site. The layout of building is provided in Appendix B. Three of the buildings were inspected both externally and internally namely the Main Hospital Building (with cellar), Outbuilding and Boiler House. The Outpatients Building, Second Hospital Wing, Derelict Building 1 and Derelict Building 2 were inspected externally only. The external and internal inspection of the building was carried out in accordance with BCT Guidelines (Hundt, 2012).

The external inspection comprised an examination for signs of evidence of use by bats such as staining, scratch marks, feeding remains and droppings at each building. The inspection also included a search for features which had potential to support roosting bats. The internal inspections involved an examination of accessible roof voids for suitability to support roosting bats and evidence of bat activity such as feeding remains and droppings.

Based upon the evidence and features recorded at each building, the BCT Guidelines (Hundt, 2012) were used to assign a category to each building as follows:

- Known or confirmed bat roost with field evidence proving bats are present;
- High Potential: Highly suitable features capable of supporting larger roosts. Surrounding habitat is high quality for foraging activity and the site is connected to the wider landscape by strong linear features for use by commuting bats.
- Low-Moderate Potential: Numerous features providing potential roosting opportunities. Surrounding habitat is good quality for foraging activity and the site is connected to the wider landscape by linear features for use by commuting bats.

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- Low Potential: Small number of features providing potential roosting opportunities. Surrounding habitat is isolated and is limited in extent for use by bats for foraging activity. The site is not connected to the wider landscape by strong linear features for use by commuting bats.
- Negligible Potential: No features suitable for roosting, foraging or commuting bats.

### ***Foraging and commuting bats***

BCT Guidelines (Hundt, 2012) use the following system to categorise the potential value of habitats and features for use by foraging and commuting bats:

- High Quality: Habitat is high quality for foraging activity and connected to the wider landscape by strong linear features for use by commuting bats.
- Medium Quality: Habitat is good quality for foraging activity and is connected to the wider landscape by linear features for use by commuting bats.
- Low Quality: Habitat is isolated and is limited in extent for use by bats for foraging. The site is not connected to the wider landscape by prominent linear features for use by commuting bats.

### Badger

The site was surveyed for evidence of badger setts or other badger activity such as paths, latrines or signs of foraging. Methodologies used and any setts recorded were classified according to published criteria (Harris, S. *et. al.*, 1989) and surveyed to a distance of 50m (where access/visibility was available) as recommended in English Nature's *Badgers and Development* (2002).

### Other species

The site was appraised for its suitability to support other protected or notable fauna including mammals, birds and invertebrates in accordance with the Chartered Institute for Ecology and Environmental Management's *Guidelines for Preliminary Ecological* (2013). Evidence of any current or historical presence of such species was recorded.



### 2.2.3 Invasive species

The site was searched for evidence of invasive plant species such as Japanese knotweed *Fallopia japonica*, giant hogweed *Heracleum mantegazzianum*, Indian (Himalayan) balsam *Impatiens glandulifera*, Rhododendron *Rhododendron ponticum*, montbretia *Crocasmia pottsii x aurea = C. x crocosmiiflora* and yellow archangel *Lamium galeobdolon subsp. argentatum* (see Appendix D Table D2 for full list).

## 2.3 Limitations

The survey was undertaken on the 25<sup>th</sup> November 2015 which is outside the optimal period to undertake an Extended Phase 1 Habitat Survey (optimum months generally considered to be April to September inclusive). Due to the past use (i.e. the main buildings on site were originally built as a workhouse in the early 1870s and were converted for use as a hospital after 1930) and the current use of the site (i.e. derelict hospital in partial use for residential purposes) and the types of habitats recorded it is not considered that surveying the site outside of the optimum survey season affected the accurate recording of habitat types present or assessment of the potential ecological constraints present within the site.

The building inspection for bats was limited due to a lack of access (locked doors leading to rooms containing loft hatches) to a number of roof voids, namely the void(s) above the Outpatients Building (Building 2), Second Hospital Wing (Building 3), Derelict Building 1 (Building 5) and Derelict Building 2 (Building 6); further details are provided in Appendix E: Full Building Inspection Results.

Trees scattered within the dense scrub in the north-west section of the site could not be assessed for roosting bat potential (this area is highlighted in purple in Appendix A, Figure 1). The scrub in this area was too dense to enable the surveyors to get close enough to the trees. In addition this area could not be searched for evidence of, and full assess its suitability to support, protected and notable species. Furthermore the section of hedgerow along the boundary of the site adjacent to and beyond the dense area of scrub in the north-west corner of the site could also not be access or surveyed. It has therefore been assumed for the purposes of this assessment that this entire area which was dominated by bramble scrub as appeared from its perimeter and that the hedgerow consisted of similar species to those present along the accessible southern section of the hedgerow. It is considered that the lack of access to the dense scrub in the north-west section of the site limited the protected species assessment at the site.

To determine presence or likely absence of protected species usually requires multiple visits at suitable times of the year. As a result, this survey focuses on assessing the **potential** of the site to support species

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of note, which are considered to be of principal importance for the conservation of biodiversity with reference to those given protection under UK or European wildlife legislation. This report cannot therefore be considered a comprehensive assessment of the ecological interest of the site. However, it does provide an assessment of the ecological interest present on the day the site was visited and highlights areas where further survey work may be recommended.

The details of this report will remain valid for a period of **two years** from the date of survey, i.e. until end of November 2017. Beyond this period, if works have not yet been undertaken, it is recommended that an update review of the ecological conditions is undertaken.





## 3.0 Baseline Conditions

### 3.1 Desk Study

#### 3.1.1 Previous Reports

The information contained in the two previous reports, as summarised below, has been used to inform this report.

- Ecological Survey and Assessment (including surveys for protected species) by ERAP (2008).

The survey area included the site and land to the west of the site up to Pimlico Link Road. The main findings and recommendations of this report were:

- The site contains semi-mature trees and marginal hedgerows with value as wildlife corridors and as habitat for foraging/nesting birds and foraging bats and habitat connectivity around the site.
- Confirmed presence of common pipistrelle bat satellite roost in Building 3 and confirmed pipistrelle sp. bat roost in Buildings 1 and 7.
- Confirmed common pipistrelle foraging and commuting activity around the tree lined roads and footpath leading from Chatburn Road and along the western boundary of the site.
- Use of the surveyed areas by breeding passerine bird species.
- The use of the buildings on site by nesting swallows (two nests).
- No great crested newts recorded during presence/absence surveys.
- Three stands of the invasive plant Japanese knotweed on site.



- Updated Ecological Survey and Assessment by ERAP (2012)

The survey area comprised land to the west of the site up to Pimlico Link Road. A walkover of the site was also undertaken to determine the status of invasive plant species infestations. No building inspection was carried out during this survey.

- The tree line and scrub habitat separating the survey area from the site still had value for edge feeding bat species such as pipistrelle and bird species including dunnock. Birds were still considered likely to nest within these habitats.
- Japanese knotweed, wall cotoneaster, monte-bretia and rhododendron present on site.

### 3.1.2 Data search

The records identified by LERN and MAGIC are summarised below. The non-statutory site data provided by LERN is provided in Appendix F. The species data set provided by LERN contains confidential information pertaining to badgers and is therefore not included in this report.

- **Statutory sites**

Sites with statutory designations receive varying degrees of legal protection under UK statute and European Directives. There are a number of statutory designations used for sites of high nature conservation value in the UK which are made depending upon the importance of the site in a local, regional, national or international context.

The site is in proximity to five statutory designated sites (Table 2).

**Table 2.** Summary of Statutory Nature Conservation Sites within 2 km of the site.

Name	Designation	Distance from Site (km)	Direction from Site
Coplow Quarry	SSSI	0.17	North-west
Salthill and Bellman Park Quarries	SSSI	0.19	South
Salthill Quarry	LNR	0.19	South
Cross Hill Quarry	LNR	0.62	North-west
Clitheroe Knoll Reefs	SSSI	1.20	East

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Four of the statutory designated sites (two SSSI and two LNR sites) are disused/partially active limestone quarries. The fifth and furthest from the site, Clitheroes Knoll Reefs, consists of a road cutting and series of small hills. All three of the SSSI sites were notified for their geological interest although parts of Coplow Quarry SSSI and Salthill Quarry SSSI are also designated as non-statutory designated sites for their biodiversity value. Parts of Clitheroe Knoll Reefs SSSI and the two LNR sites are recognised as Important Sites containing important example of calcareous grassland within the Lancashire BAP. Both of the LNR sites support also stony ground and outcrops with soils at various stages of establishment. The less established soils support plants adapted to harsh conditions such as bee orchid *Ophrys apifera*, Carline thistle *Carlina vulgaris*, milkwort *Polygala* sp and gentian *Gentiana* sp.. The deeper and more established soils support wild flower-rich calcareous grassland, scrub and woodland. These habitat mosaics support wildlife including Lancashire BAP bryophytes, butterflies, birds and mammals. Similar habitats exist within the parts of Coplow Quarry SSSI and Salthill Quarry SSSI designated BHS.

One of the designations located 150 m north-east of the site, namely Bellman Farm Marsh BHS, is noted for having underlying peaty soil supporting fen meadow.

- **Non-statutory sites**

Non-statutory sites are designated by Local Authorities and are recognised as being of local conservation interest. These sites do not have statutory protection but are a 'material consideration' in the determination of planning applications. The titles of these sites can vary between counties. In Lancashire they are known as Biological Heritage Sites (BHS).

LERN and MAGIC record search produced fifteen records of non-statutory sites within 2 km of the site (Table 3). These were fourteen BHS and one Important Bird Area (IBA) namely Bowland Fells. Bowland Fells IBA supports a typical range of breeding upland birds, and is a breeding stronghold of hen harrier *Circus cyaneus*. The site is also important for breeding waders and gulls.

**Table 3.** Non-statutory sites within 2 km of the site.

Name	Designation	Distance from Site (km)	Direction from Site
Bellman Farm Marsh	Biological Heritage Site	0.15	North-east
Coplow Quarry and Pimlico Road Grassland	Biological Heritage Site	0.16	North-west
Salthill Quarry	Biological Heritage Site	0.21	South

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Cross Hill Quarry	Biological Heritage Site	0.62	North-west
Bellman Park Quarry	Biological Heritage Site	0.51	Southeast
River Ribble from London Road Bridge Preston, in West, to County Boundary, in East	Biological Heritage Site	1.05	West and North
A59 Road Cutting, Worston to Chatburn	Biological Heritage Site	1.18	East
Worsaw Hill, Warren Hill, Crow Hill and The Ridge	Biological Heritage Site	1.22	South-east
Worston Common	Biological Heritage Site	1.24	South-east
Dog House Wood	Biological Heritage Site	1.54	East
Waddington Brickworks Old Working	Biological Heritage Site	1.62	North-west
Clitheroe Castle Knoll	Biological Heritage Site	1.66	South-west
Boy Bank	Biological Heritage Site	1.66	East
Bowland Fells	Important Bird Area	1.88	North
Bean Hill Wood and Grassland	Biological Heritage Site	1.92	North-east

- Protected and notable habitats**

LERN and MAGIC record search produced records of priority and other notable habitats within 2 km of the site boundary (Table 4).

Where numerous records for a particular habitat type were provided only the closest record to the site boundary has been provided below; this is to provide context for the site and surrounding area potentially affected by activities on site:

**Table 4.** Notable habitats within 2 km of the site.

Name	Distance from Site (km)	Direction from Site
Coastal and Floodplain Grazing Marsh	1.58	North
Good quality semi-improved grassland	0.20	South
Lowland Calcareous Grassland	0.40	South
Lowland Fens	0.54	Northeast
Deciduous Woodland	0.13	Northeast
National Inventory of Woodland and Trees	0.12	Northeast
Woodpasture and Parkland	1.63	Southwest

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- **Protected and notable species**

LERN and MAGIC produced the following records for protected species within 2 km of the site boundary and notable species within 1 km of the site boundary. The details of the closest record for species considered relevant to the site are summarised below in Table 5.

**Table 5.** Protected and notable species within 2 km of the site.

Common Name	Scientific Name	Status*	Approximate Distance (km); and Direction from Site Boundary
Bluebell	<i>Hyacinthoides non-scripta</i>	WCA;	0.35; South
Field Gentian	<i>Gentianella campestris</i>	NERC	0.46; Not specified
Latticed Heath	<i>Chiasmia clathrata</i>	NERC	0.51; South-west
Small Heath	<i>Coenonympha pamphilus</i>	NERC	0.46; South-east
Wall	<i>Lasiommata megera</i>	NERC	0.46; South-east
Ghost Moth	<i>Hepialus humuli</i>	NERC;	1.13; West
Cinnabar	<i>Tyria jacobaeae</i>	NERC	0.51; South-west
Shaded Broad-bar	<i>Scotopteryx chenopodiata</i>	NERC	0.51; South-west
Buff Ermine	<i>Spilosoma luteum</i>	NERC	1.13; North-west
Small Square-spot	<i>Diarsia rubi</i>	NERC	1.13; West
Lesser Redpoll	<i>Acanthis cabaret</i>	NERC; BoCC - red	0.46; South-east
Meadow Pipit	<i>Anthus pratensis</i>	BoCC – amber	0.66; North-east
Tree Pipit	<i>Anthus trivialis</i>	BoCC – red	0.66; North-east
Reed Bunting	<i>Emberiza schoeniclus</i>	NERC; BoCC – amber	0.46; Not specified
Peregrine	<i>Falco peregrinus</i>	WCA;	0.66; North-east
Kestrel	<i>Falco tinnunculus</i>	BoCC – amber	0.46; South-east
Swallow	<i>Hirundo rustica</i>	LBAP	0.46; South-east
Linnet	<i>Linaria cannabina</i>	BoCC – red	0.46; South-east
Cuckoo	<i>Cuculus canorus</i>	NERC; BoCC – red	0.66; North-east
House Martin	<i>Delichon urbicum</i>	BoCC – amber	0.46; Not specified
Spotted Flycatcher	<i>Muscicapa striata</i>	NERC; BoCC – red	0.46; South-east
Curlew	<i>Numenius arquata</i>	NERC; BoCC – red	0.46; Not specified
House Sparrow	<i>Passer domesticus</i>	NERC; BoCC – red	0.46; South-east
Tree Sparrow	<i>Passer montanus</i>	NERC; BoCC – red	0.46; South-east
Dunnock	<i>Prunella modularis</i>	BoCC – amber	0.46; South-east
Redwing	<i>Turdus iliacus</i>	WCA; BoCC – red	0.56; South
Fieldfare	<i>Turdus pilaris</i>	WCA; BoCC – red	0.66; North-east
Lapwing	<i>Vanellus vanellus</i>	NERC; BoCC – red	0.46; South-east
Swift	<i>Apus apus</i>	LBAP; BoCC – amber	0.46; South-east
Willow Warbler	<i>Phylloscopus trochilus</i>	LBAP; BoCC – amber	0.46; South-east
Bullfinch	<i>Pyrrhula pyrrhula</i>	LBAP; BoCC – amber	0.46; South-east
Starling	<i>Sturnus vulgaris</i>	LBAP; BoCC - red	0.46; South-east
Song Thrush	<i>Turdus philomelos</i>	LBAP; BoCC - red	0.46; South-east

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Curlew	<i>Numenius arquata</i>	NERC; BoCC - red	Within 2 km
Grey partridge	<i>Perdix perdix</i>	NERC; BoCC - red	Within 2 km
Redshank	<i>Tringa totanus</i>	BoCC - amber	Within 2 km
Snipe	<i>Gallinago gallinago</i>	BoCC - amber	Within 2 km
Unidentified Myotis Bat	<i>Myotis sp.</i>	EPS;WCA;	0.99; North-west
Daubenton's Bat	<i>Myotis daubentonii</i>	EPS;WCA;	0.97; North-west
Noctule Bat	<i>Nyctalus noctula</i>	EPS;NERC; WCA;	1.01; North-west
Pipistrelle Bat species	<i>Pipistrellus</i>	EPS;WCA;	1.76; North
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	EPS;WCA;	0.34; North-west
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	EPS;NERC; WCA;	1.01; North-west
Brown Long-eared Bat	<i>Plecotus auritus</i>	EPS;WCA;	1.28; Southwest
Chiroptera	<i>Bats</i>	EPS;WCA;	1.47; North
Bats	<i>Vespertilionidae</i>	EPS; WCA;	1.28; South-west
West European Hedgehog	<i>Erinaceus europaeus</i>	NERC;	1.39; South-west
Water vole	<i>Arvicola amphibius</i>	NERC; WCA;	1.08; West
Eurasian Badger	<i>Meles meles</i>	PBA	CONFIDENTIAL

**\*Key**

**EPS:** European Protected Species: Species listed under the Conservation of Habitats and Species Regulations 2010 (as amended)

**WCA:** Species listed under the Wildlife and Countryside Act 1981 (as amended)

**NERC:** Species listed under section 41 of the Natural Environment and Rural Communities Act 2006.

**LBAP:** Local Biodiversity Action Plan species

**BoCC:** British Trust for Ornithology (BTO) Birds of Conservation Concern 4 – Red, Amber, Green

- Invasive species**

LERN and MAGIC provided the following records for non-native species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) within 2 km of the site (Table 6).

**Table 6.** Non-native species within 2 km of the site.

Common Name	Scientific Name	Approximate Distance (km); and Direction from Site Centre
Canadian Waterweed	<i>Elodea canadensis</i>	1.31; North-west
Japanese Knotweed	<i>Fallopia japonica</i>	0.17; North-east
Bohemian knotweed	<i>Fallopia japonica x sachalinensis = F. x bohemica</i>	1.08; West
Indian Balsam	<i>Impatiens glandulifera</i>	0.32; West
Monkeyflower	<i>Mimulus guttatus</i>	0.46; Not specified



Hybrid Monkeyflower	<i>Mimulus guttatus x luteus = M. x robertsii</i>	1.08; West
Blood-drop-emlets	<i>Mimulus luteus</i>	1.89; East
American Mink	<i>Neovison vison</i>	0.66; South
Fringed Water-lily	<i>Nymphoides peltata</i>	0.72; South-east
Rhododendron	<i>Rhododendron ponticum</i>	1.53; West

- **Proximity of nearest water bodies/courses to site**

Using freely available ordnance survey maps, eight watercourses or water bodies were identified within 500m of the site boundary (Table 7).

**Table 7.** Water bodies within 500m of the site.

Name	Distance from Site (m)	Direction from Site
Pond	85	East
Brook	100	North/north-west/north-east
Pond	277	South
Pond	392	North
Pond	425	East
Pond	426	North
Drain	500	East
Pond	500	West

## 3.2 Field Surveys

Summary descriptions of habitats identified during the 25<sup>th</sup> November 2015 field survey by WYG are presented below. Site photographs are provided in Appendix G and the survey results are shown on the Extended Phase 1 Habitat Survey plan provided in Appendix A, Figure 1.

### 3.2.1 Habitats

#### Scattered trees

Mature scattered trees form a frontage to the site along Chatburn Road and form a corridor along the hard standing access roads/footpaths on-site leading from Chatburn Road (Appendix G, Photograph 1). Semi-mature and mature scattered trees are also present within the areas of dense scrub and semi-improved

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grassland in the western and southern sections of the site. Species recorded include beech *Fagus sylvatica*, ash *Fraxinus excelsior*, birch *Betula* sp., lime *Tilia* sp. and oak *Quercus* sp..

### Plantation woodland / Orchard

Two apple *Malus* sp. orchards are present within the semi-improved grassland adjacent to the southeast boundary of the site (Appendix G, Photograph 2).

### Scrub

Scattered and dense scrub is present on site.

Scattered scrub is present within areas of introduced shrub, within cracks that have formed within/along the edges of hard standing and within/adjacent to the amenity grassland. Species recorded include elder *Sambucus nigra*, bramble *Rubus fruticosus*, holly *Ilex aquifolium* and hazel *Corylus avellana*.

Dense scrub is present along the south-west boundary and within the north-west section of the site. These areas are dominated by bramble with scattered snowberry *Symphoricarpos albus* (introduced), hazel and hawthorn *Crataegus monogyna*. An additional area of scrub is present within the amenity grassland. Species present are tutsan *Hypericum androsaemum*, flowering current *Ribes sanguineum*, willow *Salix* sp., bramble and elder.

### Poor semi-improved grassland

Poor semi-improved grassland is present to the west and south of the hard standing areas on site (Appendix G, Photograph 3). Species recorded are Yorkshire fog *Holcus lanatus*, cleavers *Galium aparine* and scattered tall ruderal plants.

### Tall ruderal

Tall ruderal plants are scattered within habitats across the site. Species recorded include broad-leaved dock *Rumex obtusifolius*, common nettle *Urtica dioica*, willowherb *Epilobium* sp. and common hogweed *Heracleum sphondylium*.



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### Spoil mound

A spoil mound consisting of rubble is present towards the southern boundary of the site (Appendix G, Photograph 4). The spoil pile is approximately 2 m wide, 10 m long and 2 m tall.

### Amenity grassland

Amenity grassland is adjacent to the north-west boundary of the site (Appendix G, Photograph 1). Species present include meadow grasses *Poa* sp.

### Introduced shrub

Introduced shrubs are present adjacent to areas of hard standing. Species recorded are spotted laurel *Aucuba japonica*, cherry laurel *Prunus laurocerasus*, berberis *Berberis thunbergii*, butterfly bush *Buddleja davidii*, wall cotoneaster *Cotoneaster horizontalis*, wilson's honeysuckle *Lonicera nitida*, rose-of-sharon *Hibiscus syriacus* and hebe *Hebe* sp.

### Building

Seven buildings lie within the site boundaries. The locations of the seven buildings are shown in Appendix B. These are:

- Building 1 – Main hospital building (with cellar) (Appendix G, Photograph 5);
- Building 2 – Outpatients building (Appendix G, Photograph 6);
- Building 3 – Second hospital wing (Appendix G, Photograph 7);
- Building 4 – Outbuilding (Appendix G, Photograph 8);
- Building 5 – Derelict building 1 (Appendix G, Photograph 9);
- Building 6 – Derelict building 2 (Appendix G, Photograph 10); and
- Building 7 – Boiler House (Appendix G, Photograph 11).

Buildings 1, 2 and 3 are linked by narrow one storey flat-roofed corridors.

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### Bare ground

Bare ground with an earth surface is present along the edge of the amenity grassland in the north of the site around and between the bases of scattered trees.

### Hedgerow

Four hedgerows are present on site. These are:

- Hedgerow 1 (H1): Dominated by privet *Ligustrum* sp.. The hedgerow is connected to an area of shrubs containing holly, willow and elder Appendix G, Photograph 12);
- Hedgerow 2 (H2): Dominated by hawthorn. Also present is bramble, snowberry, hazel and holly Appendix G, Photograph 3);
- Hedgerow 3 (H3): Dominated by beech Appendix G, Photograph 13);
- Hedgerow 4 (H4): Mixed hedgerow containing hazel, elder, blackthorn *Prunus spinosa*, snowberry, holly and bramble Appendix G, Photograph 2).

### Priority and notable habitats

One priority habitat listed within the superseded UKBAP and three priority urban habitat types listed within the Lancashire Biodiversity Action Plan are present on site namely:

- Traditional orchard

The orchards on site qualify as traditional orchards, as distinct from non-traditional orchards, because they are managed in a low-intensity way.

- Derelict, Underused or Neglected Land

Residents occupy some of the rooms/wards within the existing buildings however the low level of activity on site have meant that sections of the site towards the boundaries are disused and unmanaged. A thin layer of pioneer plants (i.e. mosses) have established on hard standing areas to



the south of the existing buildings and habitats to the south and west of the hard standing have become overgrown with mature scrub and/or tall ruderal.

- Gardens and Backyards

The grounds of the former hospital can be considered a 'formal garden' albeit rough and unmanaged in places. The amenity grassland to the north of the site appeared to be fairly recently managed with relatively short grass height unlike the semi-improved grassland to the west and south of the site. The tree lined access roads/footpaths to the site create a formal entrance to the site from Chatburn Road. In addition there is an orchard within the semi-grassland to the south of the site and ornamental flower and shrub beds adjacent/within areas of hard standing.

- New and Existing Built Structures

The buildings on site were noted to be at varied states of dilapidation. At least one building on site supports a confirmed bat roost.

It is considered that the three Lancashire BAP habitat types present on site are likely common in the wider area. Based upon the proposed site layout plan provided in Appendix C it is understood that the majority of mature trees, the hedgerows and a large proportion of the dense scrub habitats forming these priority habitats on site will be retained. The existing orchard is proposed for felling.

### **3.3 Protected & Notable Species**

#### Great crested newts

No ponds are located on site. Habitats on site have potential to provide GCN with terrestrial foraging and dispersal habitat (i.e. semi-improved grassland and beneath the scrub and hedgerows) and hibernating habitat (i.e. spoil pile, hedgerow root systems).

There are six ponds within 500m of the site boundary. Three of the ponds are potentially connected to the site by potentially suitable dispersal habitat. These ponds are located 85m east, 277 m south and 500 m west of the site hereafter referred to as Ponds 1-3 respectively. The three remaining ponds are all separated from the site by roads considered to be obstacles to GCN dispersal. Two of the ponds (Ponds 4 and 5) are located 392 m and 426 m north of the site and are separated from the site by Chatburn Road



and the final pond (Pond 6) is located 425 m east of the site and is separated from the site by Pimlico Link Road. A plan showing the location of ponds within 500m of the site boundary is provided in Appendix A, Figure 2.

A Habitat Suitability Index (HSI) assessment was undertaken at Ponds 1 (Appendix G, Photograph 14) and 2 (Appendix G, Photograph 15) to calculate their suitability to support GCN. Access to Pond 3 was not available during the survey. Pond 1 and Pond 2 were both assessed as having 'average' habitat suitability to support GCN. The HSI assessment is summarised in Table 8.

**Table 8.** Pond HSI assessment summary for great crested newts

Pond reference	HSI Score	Water body suitability	Distance from the site (m)	Direction from the site
1	0.643	Average	85 m	East
2	0.674	Average	277 m	South

The data search returned no records of GCN within 2 km of the site boundary. In 2008 ERAP Limited undertook a GCN survey presence/absence survey at Pond 1 (ERAP, 2008). No GCN were recorded however the survey was constrained since because some areas of the banks were inaccessible due to their steepness thereby restricting the deployment of bottle traps. Netting was stated as the only other survey technique applied to the pond. GCN presence/absence data is not available for Pond 2 or Pond 3.

Pond 1 is surrounded by a ring of scrub approximately 10 m wide. The scrub ring is bound to the north by an active hospital site, to the east by Pimlico Road, to the south by Deansfield (a road) and to the west by the rear of a line of warehouses at the edge of Link59 Business Park. Based upon freely available aerial images of the site Pond 1 appears to be directly linked to the site via a 70 m long and 5-10m wide strip of scrub/rough habitat. Potential GCN would therefore likely commute via the western boundary of the site through the site/site boundaries and along the connecting strip of scrub/rough grassland to access Pond 1 for breeding. Pond 2 and Pond 3 located 277 m south and 500 m west of the site respectively are both located within/adjacent to Salthill Quarry. Salthill Quarry comprises a mosaic of habitats including developing woodland and is a former limestone quarry with exposed outcrops.

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Given the time elapsed since the previous survey (i.e. approximately 8 years) and the limitations to the GCN presence/absence survey reported (ERAP, 2008), **an updated GCN presence/absence survey at Ponds 1-3 was recommended and commissioned in April 2016. The GCN presence/absence survey ruled out GCN as a potential constraint to the proposed development (WYG, December 2016).**

### Reptiles

The habitats considered potentially suitable for reptiles on site are limited in extent. It is therefore considered that the site would not be sufficient to support a population of reptiles however the site could act as a supplemental habitat resource for the wider area. Potentially suitable supplemental habitats on site for reptiles include the semi-improved grassland habitat, hedgerow bases and scrub towards the south-west and south-east boundaries of the site. Reptiles may be able to hibernate within the spoil pile located within the south-west of the site.

No records of reptiles were returned from the data search however reptiles have the potential to access the site from the grassland and scrub habitats to the west of the site.

**Reptiles were considered to be a constraint to the proposed works and further survey (a presence/absence survey) was commissioned in April 2016. The reptile presence/absence survey ruled out reptiles as a potential constraint to the proposed development (WYG, December 2016).**

### Nesting birds

- Vegetation

All trees on site, except those in the north-west section of the site where access was restricted by dense scrub, were assessed for their potential to support nesting birds from ground level. No trees were recorded on site with potential to offer suitable opportunities such as openings that were large enough to accommodate roosting owls. No evidence of barn owl activity was found on site however the semi-improved grassland is considered suitable to supplementary support foraging Barn owl (WCA.sch.1).

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Scattered trees, introduced shrub and scrub habitats on site have potential to support nesting birds. Three common and widespread bird species were recorded on site during the survey namely robin *Erithacus rubecula*, blackbird *Turdus merula* and carrion crow *Corvus corone*. No active nests were noted within vegetation on site but this is not surprising given that the survey was undertaken outside the nesting bird season (generally considered to be March-September). The grassland habitats on site are too limited to be suitable for ground nesting species.

A breeding bird survey was undertaken at the site in July 2008. The survey identified 20 bird species within and adjacent to the site including three breeding NERC priority species (house sparrow, spotted flycatcher and dunnock). No active nests were recorded within vegetation habitats on site however the surveyor did record families (i.e. parents and fledglings) feeding within habitats and recorded typical nesting behaviours such as adult birds carrying out territorial singing and fighting on site.

- Buildings

None of the accessible buildings on-site were assessed as having confirmed presence of or potential to support nesting birds including barn owls.

A breeding bird survey was undertaken at the site in July 2008. The survey identified at least one pair of swallows feeding young within a nest at the 'toilet block' presumably Building 4. No active swallow nests were recorded during the site visit however this is as expected since the survey was undertaken in November and swallows typically migrate to more southern wintering grounds in September/October. It is considered possible that swallows may nest at buildings on site during future nesting seasons.

None of the bird species recorded during the breeding bird survey undertaken in 2008 (ERAP, 2008) were listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Since the breeding bird survey was undertaken the habitats on site have not changed much and no new habitats are present. The cover of scrub and rough grassland has increased likely due to reduced management. It is considered that any update breeding bird survey would therefore yield similar results.

**No further survey is recommended however it is considered that nesting birds are likely to be a constraint to the proposed development.**

### Bats

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All suitable features within the site were checked for their potential to support roosting, foraging and commuting bats in accordance with BCT Guidelines (Hundt, 2012) as follows.

### ***Roosting bats - Trees***

All trees on-site, except those in the north-west section of the site where access was limited by dense scrub, were assessed from ground level for their potential to support roosting bats. Three trees were assessed as BCT Guidelines (Hundt, 2012) Category 2. All remaining trees were assessed as BCT Guidelines (Hundt, 2012) Category 3 having no potential to support roosting bats.

All existing trees are scheduled for retention and therefore no further survey is recommended.

### ***Roosting bats - Buildings***

Detailed building inspection results are provided in Appendix E.

Confirmed bat roosts were recorded at Buildings 1, 3 and 7 in 2008 (ERAP, 2008). During the 2015 site survey one building (Building 7) was re-confirmed to be a bat roost, two buildings (Buildings 1 and 3) were assessed as having 'High' potential to support roosting bats, three buildings (Buildings 4-6) were assessed as having 'Low-Moderate' potential to support roosting bats and one building (Building 2) was assessed as having 'Negligible' potential to support roosting bats.

The potential impact of the proposed works on each building is summarised in Table 9.

**Table 9.** Bat roost potential suitability rating assigned to each building inspected on site

Building reference	BCT Category	Proposed works to impact confirmed/potential bat roost
1	High	Yes – Demolition will result in loss of bat roost and possible harm to bats
2	Negligible	No
3	High	Yes – Demolition will result in loss of bat roost and possible harm to bats
4	Low-Moderate	Potentially yes – Demolition may result in loss of roost feature and possible harm to bats
5	Low-Moderate	Potentially yes – Demolition may result in loss of roost



		feature and possible harm to bats
6	Low-Moderate	Potentially yes – Demolition may result in loss of roost feature and possible harm to bats
7	Confirmed bat roost	Yes – Demolition will result in loss of bat roost and possible harm to bats

**Bats were considered to be a constraint to the proposed works and further survey (dusk emergence and pre-dawn re-entry survey) was recommended and commissioned in April 2016. The bat survey identified bat roosts at two buildings on site namely Building 3 and Building 7 (WYG, December 2016).**

***Foraging and commuting bats***

The scattered trees, dense scrub and the hedgerows on-site provide potentially suitable foraging and commuting habitat for bats. Bats would also be able to forage over the grassland habitats adjacent to these features. Based upon freely available aerial photographs of the site, there is good habitat connectivity to the wider landscape via hedgerows and tree lines.

It is therefore considered that the habitats on site provide medium quality habitat for foraging and commuting bats.

**Foraging/commuting bats were considered to be a constraint to the proposed works and bat activity surveys was recommended and commissioned in April 2016. Bat foraging and commuting was seen on the western and southern sides of the site with very little activity observed over the complex of buildings (WYG, December 2016).**

Badger

The data search returned three records of badger within 2 km of the site. It is considered that badgers are therefore active in the wider area surrounding the site.

During the survey the north-west part of the site could not be fully accessed, neither could adequate views be obtained into it due to the density of the vegetation. Although no badger setts or evidence of badger activity such as pathways was recorded within the surveyed areas of the site, it is considered that the presence of active badger setts within the inaccessible areas of dense scrub cannot entirely be ruled out.





Badgers are also highly mobile and have the potential to excavate new or additional setts on site in the future since the site is connected to the wider area via suitable dispersal habitat to the west.

**It is considered that badgers are a potential constraint to the proposed works and a 2-6 month pre-construction badger survey is recommended and should be facilitated by cutting back brambles to gain further access into the north-west area of the site.**

#### Water vole and otter

The data search returned one record of water vole within 2 km of the site. The record was created 1.08km west of the site. No records of otter were returned from the data search.

Water voles have a strong preference for riparian vegetation and are largely confined to runs in dense vegetation 2-5m from the banks of water courses (Strachan *et al*, 2011). Most otters within the United Kingdom are confined to freshwater and will utilise dry watercourse channels and will travel over terrestrial habitats (i.e. dry passage) to cross watersheds. Otters use holts (usually underground and enclosed) and couches (above ground and semi-/unenclosed) sites to rest. Female otters can use natal holt sites well away from watercourses to give birth (Chanin, 2003b).

No watercourses were recorded on the site. The data search returned records of two watercourses within 500 m of the site namely a brook 100 m north/northwest/northeast of the site and a drain 500 m east of the site. Neither of these watercourses are connected to the site via habitats considered suitable for water vole or otter dispersal. It is considered that water voles and otters are therefore not likely to be present on site.

No evidence of water vole or otter presence (e.g. footprints or spraints etc.) was found on-site.

It is considered that water voles and otters are not present on the site.

#### Other protected and notable species

##### ***Brown hare***

Brown hares *Lepus europaeus* are found in agricultural areas typically on exposed land. Hares do not use burrows but instead make small depressions in the ground within tall grass / vegetation, woodland edge or



beside a structure (e.g. large rock) for some protection from the elements (e.g. wind). The depression in the ground is known as a 'form'. Brown hares will readily move to a new location and create a new 'form' if required.

No records of brown hare within 2 km of the site were returned from the data search. It is considered that the grassland habitats on site are too overgrown to provide brown hares with open vistas to see predators. This would deter hares from using the habitats on site.

It is considered that brown hare are not present on site.

### ***White-clawed crayfish***

White-clawed crayfish *Austropotamobius pallipes* tend to occur in flowing, hard, mineral-rich waters on calcareous and rapidly weathering rocks but can also occur in static lakes, canals, reservoirs and water-filled quarries.

No records of white clawed crayfish were returned from the data search. No suitable water courses or water bodies exist on site to support white clawed crayfish.

It is considered that white clawed crayfish are not present on site.

### ***Invertebrates***

It is considered that invertebrate species on-site would represent common and widespread species because the habitats present within the site are relatively new established and common in the wider area.

It is considered that orchard is the most valuable habitat to invertebrates on site since this habitat type is not common in the wider area. The bark of fruit trees is often textured and can contain areas of decaying wood which provide invertebrates such as butterflies, ants, hornets, solitary bees and hoverflies with hibernation and refuge sites. The nectar from the wildflowers and fruit blossom is valuable to pollinating species such as the Western honeybee *Apis mellifera*.

### ***Other mammals***



No fox *Vulpes vulpes* dens or evidence of fox were recorded on site. It is considered likely however that foxes are present in the wider area and may enter the site to forage and/or temporarily shelter on site.

Small mammals such as field vole *Microtus agrestis* and common shrew *Sorex araneus* and are also likely to be present on site undertaking foraging, nesting and dispersing activities.

### ***European hedgehog and common toad***

The data search returned one record of hedgehog *Erinaceus europaeus* and no records of common toad *Bufo bufo* within 2km of the site. However during the reptile presence/absence survey, a low sized population of toads were recorded on site (WYG, December 2016).

The hedgehog record was produced 1.39km southwest of the site boundary. The habitats present on site have potential to support the foraging and hibernation requirements of both hedgehogs and common toad.

Hedgehogs favour low growing bramble and similar woody, thorny shrubs which hold nesting materials in position and provide a supporting structure for their hibernation nests. These areas also tend to collect piles of leaves and are sheltered so retain more moisture than exposed habitats. Areas of bramble scrub exist along the southwest boundary of the site and in the northwest corner of the site. It is considered that hedgehogs may use these habitats on site to build daytime and hibernation nests. Toads could take refuge within holes in the ground and amongst leaf piles under these habitats. Hedgehogs and common toads have potential to forage and travel across the grassland and scrub habitats on site during the development.

## **3.4 Invasive species**

Three invasive species are present on site namely Japanese knotweed *Fallopia japonica*, wall cotoneaster *Cotoneaster horizontalis* and monte-bretia *Crocosmia* as follows:

- Japanese knotweed: One stand recorded within the dense scrub in the northwest section of the site (Appendix G, Photograph 16).
- Wall cotoneaster: Multiple shrubs recorded across the site within areas of introduced shrub often adjacent to buildings.

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- Montebretia: Multiple plants recorded on the amenity grassland between the strip of dense scrub and the tree westernmost lined access road.

**Therefore invasive species are considered to be a constraint to the proposed works.**



## 4.0 Constraints and Opportunities

### 4.1 Designated Sites

Three SSSI and two LNRs are present within 2 km of the site.

It is considered that the site is sufficient distance from the five statutory designated sites to avoid direct impacts and most indirect impacts such as run-off, recreational disturbance and habitat loss. The post-development indirect impact of pollution (i.e. particulates and nitrogen deposition) on calcareous grasslands in the wider area due to traffic on site is unlikely to occur should the overall number of trees on site remain the same or increase as a result of development. Trees to some extent intercept urban air pollution by intercepting particulate matter (McDonald *et al*, 2016).

It is recommended that any trees lost to accommodate the new development should be replaced. These trees should be planted in shared open green spaces preferably around the periphery of the site or shared open green spaces and not within residential gardens. Any trees selected for planting should be native species of local provenance.

### 4.2 Habitats

#### Habitat retention

Based upon the proposed site layout plan provided in Appendix C, it appears that the orchard habitat on site will be lost to accommodate the development. It is recommended that the planting schedule include fruit-producing species such as wild cherry *Prunus avium*, walnut *Juglans regia* and apple *Malus* spp. to replace felled orchard trees.

#### Best practice

To prevent any adverse impacts on habitats to be retained within and adjacent to the site as a result of development activities it is recommended that a Habitat Management and Maintenance Plan be developed prior to site preparation and construction works and include:



- A safe system for the correct storage of materials/chemicals should be implemented to ensure that materials are stored in a suitable manner as to avoid potential impacts on vegetation.
- Avoidance of impacts on water quality through planning good site-specific working practices.
- A system to ensure waste is removed at the earliest opportunity to avoid contamination of ground and possible disturbance to wildlife and soil quality. Contractors should also avoid leaving construction waste within the site.
- Methods to adequately protect all features of ecological value from damage during site clearance, site preparation and construction activities.
- Site operations and plant should take into account wide and tall loads to prevent them coming into contact with trees off-site and with trees adjacent to and overhanging the site boundaries.
- Trees adjacent to the site should be protected from direct impact and from severance or asphyxiation of the roots in accordance with BS5837: 2012 "Trees in Relation to Design, Demolition and Construction – Recommendations" (British Standard, 2012).

### **4.3 Protected & Notable Species**

#### Great crested newts

Great crested newts (GCN) are fully protected through their inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and in Schedule 2 of the Conservation of Habitats and Species (Amendment) Regulations 2012 as European protected species. Under the legislation, it is an offence to intentionally kill, injure or take GCN as well as intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a GCN or disturb an animal while it is occupying a structure or place which it uses for that purpose.

The proposed site layout plan provided in Appendix C indicates that 0.1-0.5ha of potential GCN habitat is to be cleared comprising dense scrub, a spoil pile and rough grassland. These habitats are within 100m of a potential GCN breeding water body.

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In order to determine whether the development of the site will result in the contravention of legislation and therefore subsequently require a development licence, the Natural England “Rapid Risk Assessment” tool has been used for the proposed works. Based upon proposed site layout plan (Appendix C) it is considered that if GCN are present on site then an offence is highly likely in the absence of appropriate mitigation measures (Table 10).

**Table 10.** Rapid Risk Assessment (Taken from Natural England Method Statement to support application for licence under Regulation 53(2)(e) in respect of great crested newts *Triturus cristatus*. Form WML-A14-2 (Version April 13))

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.5
Land 100-250m from any breeding pond(s)	No effect	0
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	Killing or injuring newts	0.8
	Maximum:	0.8
Rapid risk assessment result:	<b>RED: OFFENCE HIGHLY LIKELY</b>	

It was therefore recommended that further surveys be undertaken at Ponds 1-3 to confirm the presence/ likely absence of GCN on the site to inform appropriate mitigation for the scheme. WYG were commissioned to undertake the GCN presence/ likely absence survey in April 2016. Presence / likely absence surveys recorded **no GCN to be present** within either of the two ponds surveyed therefore **no further survey, licensing or mitigation for this species is required.**

**The methodology used, findings and conclusions of the GCN presence/ likely absence survey are detailed within a separate Protected Species Survey report (WYG, December 2016).**

Reptiles

All six species of reptiles native to the UK are protected under the Wildlife and Countryside Act 1981 (as amended) and benefit from various levels of protection. This legislation makes it an offence to:

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- Intentionally or recklessly kill or injure these animals; and
- Sell, offer for sale, possess or transport for the purpose of sale or publish advertisement to buy or sell individual reptiles.

Habitats on site have potential to support reptile species therefore further surveys were recommended to determine the presence / absence of reptiles on site. WYG were commissioned to undertake the reptile presence/ likely absence survey in April 2016. Presence / likely absence surveys recorded **no reptiles** to be present therefore **no further survey or mitigation for reptile species is required.**

**The methodology used, findings and conclusions of the reptile presence/ likely absence survey are detailed within a separate Protected Species Survey report (WYG, December 2016).**

### Nesting birds

Mitigation and Avoidance Recommended:

All breeding wild birds, their nests and eggs are protected by the Wildlife and Countryside Act 1981 (as amended) against intentional disturbance, damage and destruction during the nesting season (generally considered to be March to September inclusive although some species are known to breed throughout the year). Additional legal protection under Schedule 1 of this act extends beyond that afforded to all nesting birds and prohibits disturbance not only whilst nesting but to all individuals whilst dependent young are present. Schedule 1 bird species also receive additional protection in that reckless disturbance, damage and destruction are also offences.

Nesting birds have the potential to be present in tree, scrub and hedgerow habitats around the periphery of the site. In addition nesting birds may be present within buildings, including Building 4 and those that were inaccessible for survey during the site visit.

To prevent a breach in UK or European wildlife legislation it is recommended that any future works that will likely disturb, damage or destroy an active nest be avoided during the bird breeding season (i.e. March to September inclusive). If restricting works to outside the bird nesting season is not possible, it is recommended that an Ecological Clerk of Works (ECoW) conducts a check for the nesting birds within the site in advance of any works commencing. Once complete, a five day window will allow for site works to



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commence should no active nests be identified. Should works cease for more than five days then an additional check for breeding birds should be repeated.

If a nesting bird is identified, the ECoW will advise on suitable working methods and exclusion zones to restrict works on site. Measures recommended will depend on the nature of the works in that area as well as any bird species identified to be nesting. Note that suitable working methods may result in delay(s) to undertaking site works within specific areas of site until the ECoW has advised that all the chicks have fledged.

### Bats

All species of British bats and their roosts are fully protected under the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats and Species (Amendment) Regulations 2012 (see Appendix D).

### ***Roosting bats – Buildings***

#### Further Survey Required:

Further survey was considered necessary at Buildings 1 and 3-7 to establish usage, roost type and size. Building 2 will also be demolished but was assessed as having negligible bat roost potential.

**WYG were commissioned to undertake the bat surveys in April 2016. The bat survey identified bat roosts at two buildings on site namely Building 3 and Building 7 (WYG, December 2016).**

Survey effort at these two buildings was increased to gather sufficient data to support a European Protected Species Licence application to Natural England to destroy these bat roosts. In order to secure a license it will be expected that the developer / owner will provide appropriate alternative roosting facilities for the bats e.g. bat boxes, and a precautionary approach would be adopted when demolishing the building/structure such as:

- All contractors to be made aware of the potential presence of bats on site and briefed via a Tool Box Talk delivered by an Ecological Clerk of Works (ECoW) on the appropriate action should a bat be encountered; and



- Structures that support roosting bats be removed / opened up using soft demolition techniques to expose crevices and thereby reduce the suitability of the structures for roosting bats prior to any heavy demolition. This action should be undertaken under the supervision of a licensed bat worker if required.

Please note, a licence to destroy / disturb / modify a bat roost can only be issued where planning permission has been awarded. The license application will take up to six weeks to be processed by Natural England.

**The methodology used, findings and conclusions of the bat surveys are detailed within a separate Protected Species Survey report (WYG, December 2016).**

### ***Roosting bats – Trees***

#### Mitigation and Avoidance Recommended:

All trees except those in the north-west section of the site dominated by dense scrub on site were assessed for their potential to support roosting bats from ground level.

Three trees were assessed as Category 2 according to BCT Guidelines (Hundt, 2012). It is recommended that these trees are retained where possible and disturbance to the trees avoided. No further survey is required, but reasonable avoidance measures are recommended should the trees require felling / crown works to accommodate the development.

To avoid and reduce the likelihood of an offence being committed, the proposed works to the Category 2 trees should be implemented under the supervision of a licensed bat ecologist. The licensed bat ecologist will provide a toolbox talk prior to the works commencing to fully brief all personnel involved pruning / felling activities to include:

- Legislation and ecology in regards to bats; and
- Working methods to be followed where removing branches and ascending/descending trees.

Advice provided by the licensed bat ecologist would include:



- Epicormic growths / callus rolls not to be cut through; and,
- If any personnel find a roosting bat(s) during pruning works then all works must stop immediately and the licensed bat ecologist will advise further as appropriate.

It is considered that working to these methods will avoid an offence being committed.

It is recommended that trees in the north-west section of the site which could not be assessed during the site visit be retained and protected during development. Based upon the proposed site layout plan provided in Appendix C this is considered to be possible. If the proposals for the site change such that these trees require felling/crown works then it is recommended that the trees are assessed for their potential to support roosting bats. To access the area to carry out the assessment of the trees for their potential to support bats would require the under storey of brambles being cut back.

### ***Foraging and commuting bats***

Based upon BCT Guidance (Hundt, 2012), the recommended survey effort for sites greater than 1-15ha in area with medium quality bat habitat is one walked transect survey per month to be undertaken between April and September during suitable weather conditions. At least one of the surveys should comprise dusk and pre-dawn (or dusk to dawn) within one 24-hour period. In addition automated surveys should be undertaken at 2 locations per transect. Data from the automated surveys should be collected on 5 consecutive nights each month.

However given that the majority of potentially suitable bat foraging and commuting habitat on site will be retained, it is considered that reduced survey effort would be acceptable to identify key areas of the site used by bats. **WYG were commissioned to undertake the Bat Surveys in April 2016. Surveyors were stationed across the site during the Bat Surveys are recorded and remained in place monitoring general bat activity for the duration of each survey therefore obtaining a record of the level of bat activity on site. Bat foraging and commuting was seen on the western and southern sides of the site with very little activity observed over the complex of buildings.**

**The methodology used, findings and conclusions of the bat surveys are detailed within a separate Protected Species Survey report (WYG, December 2016).**

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### Badger

#### Mitigation and Avoidance Recommended:

Badgers and their setts are protected under the *Protection of Badgers Act 1992*, and *ODPM 06/2005: Biodiversity and Geological Conservation – Statutory Obligations and their impact within the Planning System* (the guidance document that accompanied PPS9) stipulates that considering their welfare and mitigating for damage to their habitat are material considerations when considering planning applications.

As badgers are mobile animals it is possible that their current usage of the site may change over time. A pre-construction badger survey is recommended at least 2-6 months prior to the start of site preparation works. The timings of the surveys will depend on the proposed commencement date for the vegetation clearance or ground investigations required prior to the development. If badgers are identified within the site at any stage additional measures to protect badgers against harm during site works are also recommended.

The licensing period to permit interference / closure of a badger sett in any given year is between July to November inclusively. The pre-construction survey should be carried out leaving sufficient time to provide mitigation for the badgers should they be identified within the site at any stage of the development.

### Common toad and Hedgehog

#### Mitigation and Avoidance Recommended:

Any toads and/or hedgehogs found should be carefully placed (where capture is possible and humane) in a ventilated box using gloved hands and released into suitable nearby vegetation that will be unaffected by the proposed works. Hedgehogs and toads should not be touched using non-gloved hands and should not be handled for longer than is necessary. Hedgehogs can carry ticks and fleas and toads secrete a toxin through their skin. Wash hands immediately after handling these species.

Note that hedgehogs and toads are most vulnerable to harm during the hibernation period, considered to be November to February inclusive. Site preparation works carried out during this sensitive period (between November – February) should take into account the potential presence of hibernating animals within areas of dense vegetation, particularly within bramble and other thorny shrubs.

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### Fox

#### Mitigation and Avoidance Recommended:

Whilst foxes are not a protected species like badger, they are protected by the Wild Mammal Protection (WMP) Act 1996 from cruelty and unnecessary harm. Therefore it is recommended that their potential presence be noted by contractors on site and they are briefed accordingly.

Any foxes disturbed by site works should be allowed to disperse on their own accord and should not be touched.

### Invasive species

#### Mitigation and Avoidance Recommended:

Three invasive species are present on site namely Japanese knotweed *Fallopia japonica*, wall cotoneaster *Cotoneaster horizontalis* and montebretia *Crocsmia* as follows:

- Japanese knotweed: One stand recorded within the dense scrub in the northwest section of the site (Appendix G, Photograph 16).
- Wall cotoneaster: Multiple shrubs recorded across the site within areas of introduced shrub often adjacent to buildings.
- Montebretia: Multiple plants recorded on the amenity grassland between the strip of dense scrub and the tree westernmost lined access road.

These species are listed under Section 9 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to plant these species in the wild, knowingly allow them to spread, or otherwise cause them to grow. It is important to make sure that parts of the site previously unaffected by invasive plant species do not become contaminated. The Environment Agency recommends that:

- i) A management plan is implemented for the site;



- ii) All staff on site are aware of what the invasive plant species look like and what their responsibilities are; and
- iii) That a clerk of works be appointed on site that is responsible for the management of invasive species.

It is recommended that a programme to treat the invasive species be developed and applied as soon as possible as eradication of the infestation may take several years to complete. In the interim to prevent further spread around the site the infested areas should be 'fenced off' and separated from any form of disturbance which may facilitate their spread.

#### **4.4 Best Practice**

It is recommended that contractors are briefed accordingly as to the potential presence of notable/protected species. This can be achieved by the provision of an ECoW at the start of clearance activities on site to provide a Tool Box Talk to site operatives. It is recommended that the toolbox talk includes advice on best practice with regard to all ecological issues in advance of any works commencing and should include the following recommendations to reduce the risk of harming or disturbing them during the works phase:

- Emergency procedure: In the unlikely event that a protected/notable species, evidence of these or its resting place is located during site clearance then works in that area must cease until further advice has been sought from the ECoW;
- If any excavations must remain open overnight, it is recommended that access ramps are installed each night near to crossing points to allow any animals that accidentally fall into the excavation a means of climbing out. Animals that may enter the site to forage at night include badger, fox and hedgehog. These can again be roughened planks of wood, or even a ramp of earth;
- Avoid-works at night where possible to minimise disturbance and the impact of noise and light pollution to wildlife foraging / commuting nearby to the site. When works after dark cannot be



avoided, any lighting should only be used where necessary and be designed to be sympathetic by minimising light spill on the habitats adjacent to the works areas;

- Daily checks of any excavations should be made by contractors prior to commencing work to ensure that no badgers, foxes, hedgehogs or other animals have become trapped in the excavations. Should a trapped protected/notable species be found within the works, WYG should be immediately contacted for advice;
- Any pipes stored, or installed on site, with a diameter of greater than 200mm should be covered or capped at night to reduce the risk of animals such as badgers becoming trapped inside; and
- Consideration should be given to the placement of any gravel storage, or piles of materials that may create mounds suitable for digging (e.g. burrow creation). We would advise that any such piles are checked on a daily basis by contractor staff to ensure that no digging/burrowing activity has taken place. If the mounds are to be in place overnight, the safest approach may be to temporarily fence them to ensure that animals cannot access the fresh soil; and
- If injured or sickly animals are found then the animal should be admitted to a wildlife hospital or centre for relocation by an ECoW.

## 4.5 Enhancements

Opportunities should be sought where possible for nature conservation enhancement of the site in line with current policy guidance (Department for Communities and Local Government, 2012). The landscaping scheme for the new development should aim to incorporate the following:

- Existing trees and hedgerows will be retained to provide wildlife with travel corridors around the site boundaries. Three areas of soft landscaping will also be created adjacent to the northern boundary of the site. Management of these three areas of soft landscaping should be low-intensity and wildlife friendly using good horticultural practice such as no or minimal pesticide/herbicide application, the use of peat-free and recycled compost, mulches, and soil conditioners and the careful timing of grass cutting until after the grasses and other plants have flowered and seeded (usually late June to late August inclusive).

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- Additional trees should be planted along the new roads and adjacent to the hedgerows around the boundary of the site to enhance the capability of the site to intercept airborne pollution. Any trees selected for planting should be native species of local provenance.
- Install bird boxes on retained trees and the new buildings. A minimum of 20 bird boxes are recommended. It is recommended that the following bird box types are purchased and installed on site:
  - **Bird:** at least ten 1B Schwegler Nest Box (or equivalent) with 32mm entrance holes to attract small-medium crevice nesting species such as tree sparrow *Passer montanus*, great tit *Parus major* and blue tit *Cyanistes caeruleus*.  
<https://www.nhbs.com/title/158587/1b-schwegler-nest-box>
  - **Bird:** at least five 1B Schwegler Nest Box (or equivalent) with 26mm entrance holes to attract small crevice nesting species such as coal tit, blue tit and wren.  
<https://www.nhbs.com/title/158587/1b-schwegler-nest-box>
  - **Bird:** at least two 2H Schwegler Nest Box (or equivalent) with open front to attract robin *Erithacus rubecula* and spotted flycatcher *Muscicapa striata*.  
<https://www.nhbs.com/title/161277/2h-schwegler-robin-box>
  - **Bird:** at least two ISP Schwegler Sparrow Terraces (or equivalent) to attract house sparrows  
<https://www.nhbs.com/title/174850/1sp-schwegler-sparrow-terrace>
  - **Bird:** one set (x 10 cups) of No.10 Schwegler Sparrow Nests (or equivalent) to replace swallow nesting habitat lost. It is recommended that the cups be installed at the eaves of the retained frontage (northern aspect) of Building 1.  
<https://www.nhbs.com/title/158625/no-10-schwegler-swallow-nest>



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- Install bat boxes. The number of bat boxes to be installed should be determined following further bat surveys to identify the species of any bats using the site and how each species uses the habitats on site i.e. to roost, forage and/or commute.
- Planting of new areas of soft landscaping with insect-attracting, native species of local provenance, wherever possible, to enhance the site's ecology. This approach should apply to any tree/scrub species planted, as well as the ground flora/grass mixes sown and will create valuable habitats for invertebrates. Planting woody species that produce fruit and berries and nectar-producing herbaceous plants that flower at different times of the year would have the greatest benefits for local wildlife.



## 5.0 Summary of Recommendations

### Further survey: Protected/notable species

The following further surveys were recommended and commissioned in April 2016. The methodology used, findings and conclusions of the further surveys are detailed within a separate Protected Species Survey report (WYG, December 2016).

- **Great crested newts:** Presence / likely absence survey at Ponds 1-3;
- **Reptiles:** Presence / likely absence survey;
- **Roosting bats – buildings:** Emergence / re-entry surveys;
- **Foraging and commuting bats:** Activity survey (reduced effort).

### Mitigation

- **Designated sites:** Any trees lost to accommodate the new development should be replaced. These trees should be planted in shared open green spaces preferably around the periphery of the site and not within residential gardens. Any trees selected for planting should be native species of local provenance.
- **Habitats:** Include fruit-producing species such as wild cherry *Prunus avium*, walnut *Juglans regia* and apple *Malus* spp. to replace felled orchard trees.
- **Nesting birds:** To ensure legal compliance, it is recommended that **tree works** and any works to the buildings and vegetation with nesting bird potential are avoided during the bird nesting season (March to September inclusive) or, if necessary, preceded by a search for nesting birds by a suitably experienced and qualified ecologist/ECOW.
- **Roosting bats – trees:** No further survey is required, but reasonable avoidance measures are recommended during crown works or felling works for trees assessed as Category 2.

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- **Roosting bats – trees:** Retain and protect trees in the northwest section of the site. If this is not possible then these trees should be assessed for bat roost potential.
- **Badger:** A pre-construction badger survey is recommended at least 2-6 months prior to the start of site preparation works i.e. vegetation clearance and ground investigations.
- **Common toad and hedgehog:** Any toads and hedgehogs found should be carefully captured using gloved hands and placed (where capture is possible and humane) in a ventilated box and released into suitable nearby vegetation that will be unaffected by the proposed works.
- **Fox:** Any foxes disturbed by site works should be allowed to disperse on their own accord and should not be approached/touched.
- **Invasive species:** A management programme to treat Japanese knotweed, wall cotoneaster and montebretia should be developed and applied as soon as possible. In the interim to prevent further spread around the site the infested areas should be 'fenced off' and separated from any form of disturbance which may facilitate their spread.

### Best practice

- **Habitats:** A Habitat Management and Maintenance Plan should be produced for the proposed site works to protect habitats to be retained within and adjacent to the site.
- **Species:** It is recommended that an a suitably experienced ecologist/ECoW delivers a Tool Box Talk regarding best practice to site personnel with regard to ecological issues in advance of any works commencing.

### Enhancements

- Manage areas of soft landscaping using good horticultural practice which is low-intensity and wildlife friendly;
- Additional trees should be planted along the new roads and adjacent to the hedgerows around the boundary of the site to enhance the capability of the site to intercept airborne pollution. Any trees selected for planting should be native species of local provenance.

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- Installation of at least 20 bird boxes on site.
- Install bat boxes on site (number to be confirmed following further bat surveys)
- Planting of new areas of soft landscaping with insect-attracting native species of local provenance, wherever possible, to enhance the site's biodiversity.



## 6.0 References

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