



Ecological Impact Assessment Marsh Quarry, Sowerby Bridge

ISSUE RECORD

Client name	Bands Capital III Ltd
Project name	Marsh Quarry, Sowerby Bridge
Project number	BanCa01
Report title	Ecological Impact Assessment
Issue number	1
Date	17/05/2019
Written by	Michelle Cullimore-Pike Senior Ecologist
Checked by	Amy Slater Ecologist
Approved by	Lorna Griffiths Senior Ecologist

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ISO9001	QMF 32	Issue 1	Reviewed 04/03/2016
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Peak Ecology Limited
Arden House
Deepdale Business Park
Bakewell
Derbyshire
DE45 1GT
01629 812511



www.peakecology.co.uk

EXECUTIVE SUMMARY

Overview

This report has been prepared by Peak Ecology Ltd on behalf of Band Capital III Ltd. It provides the results of a Ecological Impact Assessment associated with the proposed residential development within Marsh Quarry, Sowerby Bridge. The proposals involve the development of 20 residential buildings on a parcel of land currently used for quarrying.

The site comprised approximately 0.4ha of land. The site itself was dominated by bare, quarried ground with a grassed bund on the southern boundary and hedgerow adjacent to the western boundary. The immediate surrounding habitat was dominated by mixed recreational and pasture grassland to the north and urban residential to the south, interspersed with treelines and woodland copses.

The PEA was undertaken on 16th April 2019: the broad habitat types were identified, mapped and assessed for their ecological importance and the potential of the site was assessed to support protected species. As part of the PEA an Extended Phase 1 Habitat Survey with a Desk Study and a Daytime Building Inspection for bats and nesting birds was conducted.

Designated Sites

No designated sites are anticipated to be affected by the proposals. The site did fall within a SSSI risk zone, but the development proposals do not fall into any of the risk categories.

Habitats

None of the habitats (poor semi-improved grassland, quarried materials, scattered scrub, species-poor hedgerow and scattered broad-leaved trees) within the proposed site boundary are considered to provide botanical ecological value. In addition, the habitats present on site did not qualify under the UK Post-2010 Biodiversity Framework.

Japanese knotweed has been identified over 50m to the north of the site. All site workers should be aware of Japanese knotweed and its various stages of growth. They should remain vigilant for evidence of this plant throughout works. Should Japanese knotweed be identified on site at any point, then works should cease and an appropriate management plan developed to address the correct treatment of this species and prevent the spread on site and to adjacent habitats.

Protected Species

Implications and recommendations	
Badgers	As badgers may be utilising the site for foraging and commuting any open trenches or pits must be covered over at night or left with a sloping end, to prevent mammals such as badger from falling in and becoming trapped. Similarly, any pipes over 200mm will need to be capped off at night to prevent mammals from using them for shelter. Night work should be avoided where possible and in the unlikely event that evidence of sett digging is observed then works should cease until a full assessment can be made by an ecologist.

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1 INTRODUCTION

1.1 Scope of Report

This report has been prepared by Peak Ecology Ltd on behalf of Bands Capital III Ltd. It provides the results of a Ecological Impact Assessment associated with the proposed residential development within Marsh Quarry, Sowerby Bridge. The purpose of this report is to:

- Describe the ecological baseline of the site, including existing habitats, presence of protected and priority species (see Appendix A for details) and nearby designated sites;
- Highlight potential significant ecological impacts associated with the proposals;
- Identify suitable mitigation measures and state how they will be secured;
- Assess the significance of any residual impacts;
- Highlight opportunities for ecological enhancement where appropriate; and
- Set out requirements for post-construction monitoring.

The approach to this assessment follows best practice published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2013 & 2015) and the British Standards Institution (BSI, 2013). Details of individual survey methods and associated supporting information are provided in Section 2.

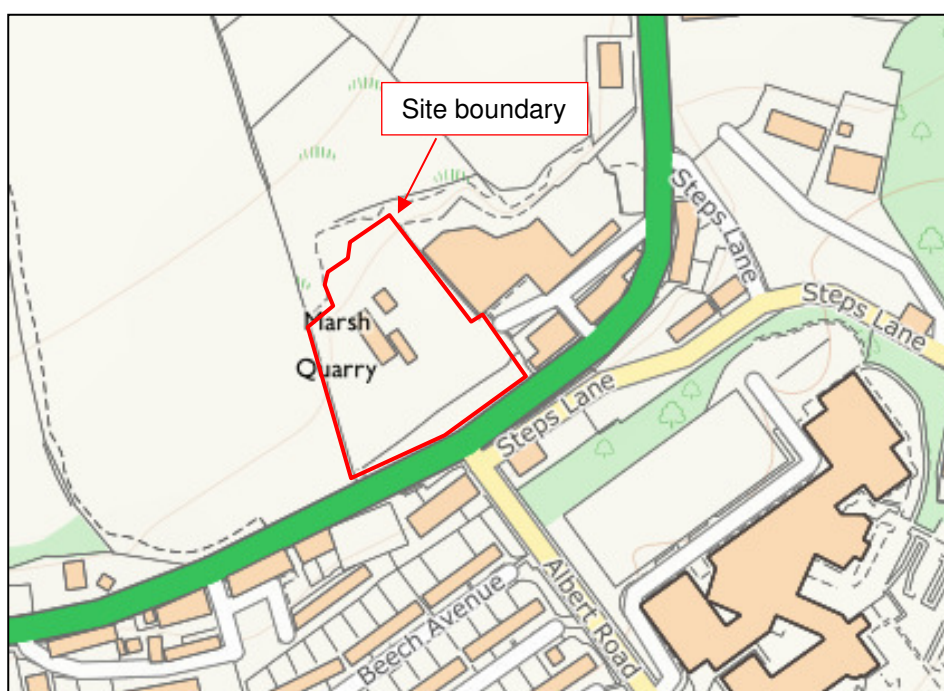
1.2 Site Description

The site comprised approximately 0.4ha of land located in the north of Sowerby Bridge on the western outskirts of Halifax, West Yorkshire (central grid reference: SE 05976 24287). The site is currently in use as a quarry. Although all quarrying works have now ceased within the site boundary, removal of quarried material is on-going and quarrying is still active to the north of the site.

The site itself was dominated by bare, quarried ground with a grassed bund on the southern boundary and hedgerow adjacent to the western boundary. The immediate surrounding habitat was dominated by mixed recreational and pasture grassland to the north and urban residential to the south, interspersed with treelines and woodland copses. Additional features of note within the wider environment included several large fishing ponds (approximately 350m to the east), the Rochdale Canal and River Calder (approximately 570m and 680m to the south respectively).

The survey boundary is as per the site boundary on Proposed Block Plan drawing (Drawing No. 245/01) provided by the client. The site location is illustrated overleaf in Figure 1.

Figure 1: Location Plan*



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1.3 Zone of Influence

The geographical extent of the potential impact of a proposed development is known as the Zone of Influence. The Zone is determined by the nature of the development and also in relation to individual species, depending on their habitat requirements, mobility and distances indicated in any best practice guidelines.

In relation to great crested newts (GCN) *Triturus cristatus* and badgers *Meles meles* the Zone of Influence is considered to be the site itself and up to 500m and 30m from the site boundary, respectively. In regards to bats the Zone is considered to be the site itself and any connecting habitat links suitable for use as commuting and foraging corridors.

1.4 Planning Context and Legislation

The National Planning Policy Framework 2019 requires that when assessing a planning application all Local Planning Authorities (LPAs) must consider potential impacts on biodiversity that may result from the proposals. In addition to this, county and borough councils typically have biodiversity policies within their Local Development Frameworks that they must also comply with.

In practice, this means that potential impacts on designated sites, priority species and habitats such as those listed on the UK Post-2010 Biodiversity Framework (formerly the UK Biodiversity Action Plan) and species that receive legal direct protection (typically via the Conservation of Habitats and Species Regulations 2017 (as amended) and/or the Wildlife and Countryside Act 1981 (as amended)) are all material planning considerations.

In relation to European Protected Species, the LPA requires sufficient information about likely impacts and mitigation or compensatory measures to satisfy the three Habitats Directive tests, the most relevant to ecological reports being that which relates to the Favourable Conservation Status of the species in question.

Appendix A provides a definition of “protected or priority species” for the purposes of this report, and Appendix B provides details on the legislation for species relevant to this site.

2 METHODOLOGY

2.1 Desk Study

The desk study comprised a review of existing information held by the local biological records centre and other specialist groups, as appropriate. The West Yorkshire Ecological Record Centre (WYEC) was contacted to obtain locations of designated sites and any existing records of protected or priority species within 2km of the site. A Site Check Report was also carried out using the online interactive mapping tools on the Magic (Multi-Agency Geographic Information for the Countryside) website to identify any statutory designated sites within the search radius.

2.2 Phase 1 Habitat Survey

The survey was undertaken on 16th April 2019 by Michelle Cullimore-Pike MSc BSc (Hons) and assisted by Nick Townsend MSc BSc (Hons). Michelle has been a professional ecologist for over five years and is experienced in the use of the Phase 1 Habitat Survey methodology, identification of vascular plants and scoping assessments for protected species.

Both surveyors are appropriately experienced to carry out this type of survey based on the CIEEM competency framework (CIEEM, 2012). In addition, Michelle holds a Natural England class licence for surveying great crested newts (licence number 2016-23099-CLS-CLS) and bats (licence number 2017-28061-CLS-CLS).

Following standard methodology (JNCC, 2010) the survey comprised a walkover of the site to classify and map the extent of individual habitat types, based on the identification of individual plant species. Nomenclature for vascular plant species follows Stace (2010). Any evidence of invasive plants such as Japanese knotweed *Fallopia japonica* was also noted.

2.3 Scoping for Protected and Priority Species

The habitats present were assessed for their potential to support any legally protected or otherwise notable species and any incidental sightings or field signs discovered during the surveys were recorded.

All British wildlife and countryside legislation, policy and guidance were taken into consideration including;

- The Wildlife and Countryside Act 1981 (as amended);
- The Conservation of Habitats and Species Regulations 2017 (as amended);
- EC Council Directive on the Conservation of Wild Birds 79/409/EEC;
- The Protection of Badgers Act 1992;
- The Countryside and Rights of Way Act 2000;

- The Hedgerow Regulations 1997;
- The Natural Environment and Rural Communities Act 2006; and
- The UK Post-2010 Biodiversity Framework (formerly known as UK BAP).

Appendix B provides greater detail on the legislation context relevant to this site. Specific methodologies were used in regards to surveying for GCN and bats. Full details of these methodologies have been detailed in Appendix C.

2.4 Limitations

2.4.1 3rd Party Data

Desk study data obtained for this assessment is provided and validated by third parties therefore Peak Ecology have no control over any errors within the dataset. The data represents the information available at the date of request and a lack of records for any particular species does not necessarily indicate absence from the local area as many species are under-recorded.

2.4.2 Survey Methods

Based on the identification of individual plant species, the Phase 1 Habitat Survey provides sufficient information to enable classification of broad habitat types; however, it does not constitute a detailed botanical survey. Plant species lists compiled by this type of survey should not be considered definitive as not all species will be apparent at all times of year.

2.4.3 Lifespan of Data

The results and recommendations contained within this report are considered to be valid for up to two years from the date of survey, assuming that there are no significant changes to the site condition or management within this period. After this period, or should the site conditions change, an update may be required in order to inform ecological constraints to development proposals and/or accompany a planning submission.

3 **RESULTS**

3.1 **Desk Study**

3.1.1 **Designated Sites**

There are two local Statutory designated sites within the search area. The West Yorkshire Ecological Record also provided details of four Non-Statutory sites, including three Local Wildlife Sites (LWS), and one Local Geographical Site (LGS). Further details of which are provided in the table below.

Table 1: Designated sites identified during the desk study

Name	Status	Reason for Designation	Approximate distance & Direction from site
Statutory Designated Sites			
Milner Royd	LNR	A woodland corridor with a variety of trees. Habitats include grassland, scrub, secondary woodland and hedgerows.	1.17km to SE
Norland Moor	LNR	A 91.7ha expanse of heather moorland and blanket bog with small birch woodland. A number of priority bird species including curlew and short-eared owl.	1.88km to SSE
Non-statutory Designated Sites			
Rochdale Canal	LWS (notified)	Canal with botanically diverse water plant community including a variety of pondweeds and floating water-plantain.	0.53km to SW
Dixon Scar, Sowerby	LGS (notified)	Exposures of Upper Carboniferous East Carlton Grit. Two types of plant fossils can be found in blocks of fallen rock. Site situated in woodland.	0.80km to SW
Milner Royd	LWS (notified)	A woodland corridor with a variety of trees. Habitats include scrub woodland and grassland. Good number of plants and birds.	1.17km to SE
Norland Moor	LWS (notified)	A 91.7ha expanse of heather moorland and blanket bog with small birch woodland. A number of priority bird species including curlew and short-eared owl.	1.88km to SSE

3.1.1 **Protected / Notable Species**

The table below provides a summary of the species records received from the West Yorkshire Ecological Record Centre that are considered most relevant to the site and/or proposals. The full dataset is not included here but is available on request.

Table 2: Summary of protected and notable species records relevant to the site and/or proposals

Species	Approximate location of closest record and date of record	Approximate location of most recent record and date of record	Total Number of Records
Amphibians			
Common Toad <i>Bufo bufo</i>	1.36km to WSW 2010	1.50km to ESE 2011	10
Common Frog <i>Rana temporaria</i>	0.34km to ENE 2009	1.50km to ESE 2011	19
Palmate Newt <i>Lissotriton helveticus</i>	1.37km to ESE 2010		9
Smooth Newt <i>Lissotriton vulgaris</i>	1.48km to ESE 2009		1
Birds			
Skylark <i>Alauda arvensis</i>	1.64km to NNW 2015	1.78km to NNW 2015	2
Kingfisher <i>Alcedo atthis</i>	1.21km to SE 2010		1
Mallard <i>Anas platyrhynchos</i>	1.70km to W 2010		1
Pink-Footed Goose <i>Anser brachyrhynchos</i>	1.62km to SW 2009		1
Meadow Pipit <i>Anthus pratensis</i>	1.41km to NNW 2015	1.51km to NNW 2015	7
Swift <i>Apus apus</i>	1.05km to SSW 2011	1.31km to NE 2011	6
Linnet <i>Carduelis cannabina</i>	1.43km to SSE 2009	1.78km to NNW 2015	8
Stock Dove <i>Columba oenas</i>	1.33km to NW 2015	1.60km to WNW 2015	3
House Martin <i>Delichon urbica</i>	1.25km to S 2011		3
Peregrine <i>Falco peregrinus</i>	1.62km to SW 2009		1
Kestrel <i>Falco tinnunculus</i>	1.81km to NW 2015	1.97km to WNW 2015	2
Swallow <i>Hirundo rustica</i>	1.11km to NW 2011	1.25km to S2011	9
Curlew <i>Numenius arquata</i>	1.48km to NW 2015		1
House Sparrow <i>Passer domesticus</i>	1.43km to SSE 2009	1.47km to W 2015	7

Species	Approximate location of closest record and date of record	Approximate location of most recent record and date of record	Total Number of Records
Golden Plover <i>Pluvialis apricaria</i>	0.71km to N 2012		4
Starling <i>Sturnus vulgaris</i>	1.37km to NNW 2015	1.83km to WNW 2015	5
Song Thrush <i>Turdus philomelos</i>	1.21km to SE 2010		2
Invasive Non-native Species			
Japanese Knotweed <i>Fallopia japonica</i>	1.28km to SSW 2015		7
Himalayan Balsam <i>Impatiens glandulifera</i>	0.90km to SSW 2009	1.32km to SSW 2015	6
American Mink <i>Neovison vison</i>	1.77km to W 2010		1
Mammals			
Badger <i>Meles meles</i>	*Within search area		8
Hedgehog <i>Erinaceus europaeus</i>	0.29km to SE 2013	1.81km to SW 2014	12
Daubenton's Bat <i>Myotis daubentoni</i>	1.50km to WSW 2012		10
Whiskered Bat <i>Myotis mystacinus</i>	0.83km to NW 2012		2
Noctule <i>Nyctalus noctula</i>	1.39km to S 2010	2.00km to W 2012	2
Pipistrelle <i>Pipistrellus pipistrellus</i>	0.25km to NE 2016		29
Brown Long-Eared Bat <i>Plecotus auritus</i>	0.75km to WSW 2010	1.49km to W 2016	6

*NB. Due to the risk of persecution of this species any badger records, if present, remain confidential.

3.2 Phase 1 Habitat Survey

The individual habitat types recorded at the site are described under the sub-headings below, with the location and extent of each illustrated on the Phase 1 Habitat Map in Figure 2. Details of target notes can be found on the figure.

Habitats recorded during the Phase 1 site visit include:

- Quarry (partially active)
- Poor semi-improved grassland
- Species-poor intact hedge
- Standing water
- Scattered scrub
- Scattered broad-leaved trees
- Fence/ site boundary
- Building
- Invasive species

3.2.1 *Quarry (active)*

The majority of the site comprised piles of quarried materials, with no vegetation, due to the high levels of disturbance from the quarry activity. Although quarrying has temporarily ceased within the site boundary, there is still some ongoing works to remove quarried materials with heavy machinery. The quarry is still active to the north of the site and has resulted in the clearance of a section of green belt.



Bare ground from quarrying activity, dominant across site.

3.2.2 **Poor semi-improved grassland**

The embankment in the south of the site between the quarry boundary and the main Burnley road, was dominated by poor semi-improved grassland. Species recorded within this area were dominated by perennial rye-grass *Lolium perenne* and cock's-foot grass *Dactylis glomerata*, with occasionally occurring common nettle *Urtica dioica*, broad-leaved dock *Rumex obtusifolius* and cleavers *Galium aparine*.



Grassland on the southern bank adjacent to the road.

3.2.3 **Species Poor Intact Hedge**

The western boundary of the site was mainly lined by a species-poor intact hedgerow located on the top of a rubble filled embankment. The dominant species were common hawthorn *Crataegus monogyna* and bramble *Rubus fruticosus*, with occasional holly *Ilex aquifolium* and elder *Sambucus nigra* and rarely occurring foxglove *Digitalis purpurea*.



Species-poor intact hedgerow on western boundary of site.

3.2.4 **Standing Water**

In the north of the site an area of standing water (approximately 2m by 10m) had collected in an old excavation. There was no vegetation in or around the water and it is highly likely that the waterbody dries on a regular basis. The northern boundary of the site (although not a physical barrier) was noted to intersect the waterbody.



Standing water in the north of the site.

3.2.5 **Scattered Scrub and Encroaching Vegetation**

Directly south from the intact hedgerow on the western boundary of the site was a strip of scattered scrub consisting of bramble, foxglove and common thistle *Cirsium vulgare*.

Vegetation from the hedgerow and area of scattered scrub had begun to encroach into the edge of the quarry. Species recorded within these areas included wavy bittercress *Cardamine flexuosa*, Yorkshire fog *Holcus lanatus*, perennial rye grass, rosebay willowherb *Chamaenerion angustifolium*, weld *Resuda luteola*, cleavers, oilseed rape *Brassica napus*, bush vetch *Vicia sepium*, dock *Rumex sp.*, common dandelion *Taraxacum officinale agg.*, common nettle, cock's-foot, forget me not *Myosotis sp.*, and groundsel *Senecio vulgaris*.



Scattered scrub and encroaching vegetation on the western boundary of the site.

An area of bramble was also present in the south of the site on the embankment adjacent to the road.

3.2.6 **Scattered broad-leaved trees**

Semi-mature trees (approximately 7m to 10m tall) were scattered along the embankment on the southern boundary of the site adjacent to the road. Species present included hawthorn, rowan *Sorbus aucuparia*, silver birch *Betula pendula* and field maple *Acer campestre*.

3.2.7 **Fence/ Site Boundary**

The eastern and western boundaries of the site were partially fenced by palisade and post and rail fencing respectively. The southern boundary of the site was denoted by the busy commuter route of Burnley Road, with the northern boundary encroaching into the green belt.



Eastern boundary of the site looking across to the western fence/hedge line.

3.2.8 **Buildings**

A metal container, approximately 4m by 2m, was located in the south of the site and being used as a site cabin. A small floodlight was also present on the northern elevation of the building.



Site cabin, in the south of the site.

3.2.9 **Invasive species**

An extensive stand of Japanese knotweed was recorded approximately 55m to the north of the site, adjacent to the western boundary hedgerow. The established stand was approximately 7m long by 1.5m wide. New growth was recorded along the bank, with evidence of Japanese knotweed shoots extending to the northern boundary of the quarry.



New shoots in the piles of quarried material to the north west of the site.

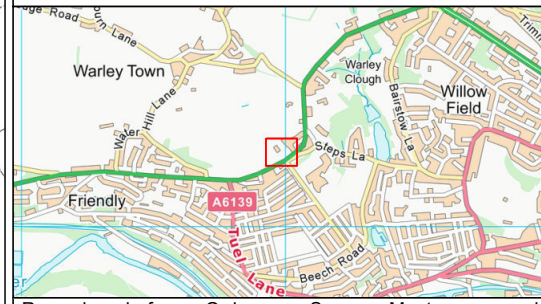
Mature stand of Japanese knotweed.



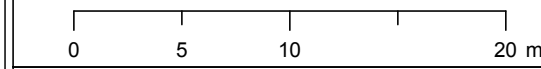
Map Legend

	Site boundary
	Standing water
	Building
	Quarry (active)
	Intact species poor hedgerow
	Fence
	Green belt boundary
	Scattered scrub
	Target note

Target Notes:
 [1] Japanese knotweed, measuring 7.5m x 1.5m, new growth seen.



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Project	Marsh Quarry, Sowerby Bridge [BanCao01]			
Figure	Extended Phase 1 Habitat Survey - April 2019			
Client	Bands Capital III Ltd			
Date	Reviewer	Version	Scale	Size
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3.3 Protected and Priority Species

3.3.1 *Badger*

No evidence of badger *Meles meles* such as setts, snuffle holes or latrines, was found on site. In addition, the high levels of disturbance on site and the lack of soil was considered sub-optimal to support sett excavation.

Several mammal trails and five dung pits were identified along the dry-stone to the north of the quarry edge. This was located approximately 115m to the north of the site boundary.

3.3.2 *Breeding Birds*

Semi-mature trees in the south of the site provided suitable nesting habitat for a range of common bird species. No birds were noted on site during the survey, likely due to the high levels of disturbance from the heavy machinery. However, blackbirds *Turdus merula* (favourable conservation status) and house sparrow *Passer domesticus* (Red List bird of conservation concern (Eaton *et al*, 2015)) were recorded during the survey, to the north-west of the site.

3.3.3 *Bats*




None of the semi-mature trees on site were noted to have features that would be suitable to potentially support roosting bats. In addition, no features were identified on the site cabin (metal container) with potential to support roosting bats. As such, the site has been assessed as having **negligible** potential to support roosting bats.


The habitats on site offered **low** potential to support foraging and commuting bats, with opportunities limited to the semi-mature trees and hedgerow in the south and west of the site. The site was connected to the wider environment by the linear feature of the hedgerow and tree line along the western boundary. It was noted that there were more optimal habitats for foraging bats in the wider environment including areas of woodland, open pasture and hedgerows/tree lines (approximately 110m-170m to the north and east of the site) offering a varied vegetation structure and habitat to support a good number of night time flying insects upon which bats may predate.

3.3.4 *Great Crested Newts*

A single waterbody (W1) was present on site. Following a search of aerial photography and OS mapping a further four waterbodies (W2 to W5) were identified within 500m of the site. A Habitat Suitability Index (HSI) assessment was carried out on the five waterbodies to assess their suitability to support a breeding population of great crested newts *Triturus cristatus*. The results of which are outlined in Table 3.

Table 3: Habitat suitability index assessment results

Waterbody number and location	Description	Photo	HSI result
W1 – SE059624230	Water retention in an excavation on site. Temporary in nature due to topography changes as a result of ongoing quarrying works. Good drainage on site means that this feature, if retained, is likely to dry on a regular basis.		0.27 - Poor
W2 - SE05842446	Runoff collection ditch. Dry at the time of the survey with aquatic vegetation evident.		0.45 - Poor
W3 – SE06342395	Private fishing pond with fishing platforms. Small jetty with brick walls offering crevices, potentially suitable as refugia. Evidence of water fowl although not resulting in a large impact to the waterbody. Gently sloping earth banks (<45°) with sparse vegetation and heavy leaf litter.		0.46 - Poor

Waterbody number and location	Description	Photo	HSI result
W4 – SE06352432	Large fishing lake with sloping earth banks (<90°), heavily vegetated within exposed tree root system. Evidence of water fowl although not resulting in a large impact to the waterbody.		0.46 - Poor
W5 – SE06322442	Overflow pond with weir feeding into adjacent waterbody (W4). Fed by small flowing tributary to the north (approximately 2-3m wide). Very low water levels at the time of the survey, however, evidence of fluctuating water levels. Emergence vegetation evidence at higher water level line.		0.67 - Average

The site was dominated by sub-optimal habitats (active quarried ground) and was therefore, not considered suitable to support foraging, commuting and hibernating habitats. The scattered scrub, hedgerow and poor semi-improved grassland offered limited potential, due to the cover from predators, for foraging and commuting GCN. The piles of larger grade quarried material provided suitable refugia potential, however, due to the high levels of disturbance within this habitat it has been assessed as sub-optimal for use by GCN.

3.3.5 Reptiles

The scattered scrub, hedgerow and poor semi-improved grassland provided some commuting, foraging and hibernating opportunities for reptiles, with the habitats bordering the exposed quarried rock providing limited suitability for basking reptiles. No evidence of reptiles was identified during the survey.

3.3.6 **Other Protected and/or Priority Species**

No suitable habitat was identified on site to support water vole *Arvicola amphibious*, white-clawed crayfish *Austropotamobius pallipes* or otter *Lutra lutra*. In addition, no previous records of these species were identified within the desk study. No further consideration has been given to the presence of these species within this report.

Due to a lack of suitable habitats, the site is not considered likely to support any other protected or priority species.

4 EVALUATION

4.1 Habitats & Botanical Interest

The site consisted of a small number of habitats all of which were considered to have limited ecological value within the wider landscape, such as poor semi-improved grassland, scattered scrub, species-poor hedgerow and exposed rock of an active quarry. In addition, these habitats did not qualify under the UK Post 2010 Biodiversity Framework, as they are common and widespread throughout the local area.

Invasive species

A stand of Japanese knotweed was recorded 155m to the north west of the site and new growth recorded throughout the spoil heaps north of the main stand. Although this is out of the site boundary, it is within the current active quarry and is at risk of being spread into the site. It is strongly advised that the quarry owner is informed of its presence and they should treat and/or remove the Japanese knotweed, ideally prior to commencement of works on site. To allow the knotweed to spread would be an offence under the Wildlife and Countryside Act 1981 (as amended).

Greenbelt land

The north eastern section of the proposed site is located within an area of greenbelt. It was noted that this area and an extensive area to the north of the proposed site had been quarried at the time of the survey. In accordance with National Planning Policy Framework (NPPF, 2019) development within a greenbelt area is generally considered inappropriate, however, this should be reviewed in conjunction with the Local Plan and agreement from the Local Authority.

The ecological value of the section of greenbelt, that falls within the proposed site boundary, is considered to be very poor consisting in entirety of quarried material. Although the proposed plans would mean a small amount of residential development (garden and parking) would encroach into the greenbelt, the proposed soft landscaping across the site would potentially lead to an overall enhancement of the area in regards to biodiversity. Therefore, recommendation have been made in Section 5 of this report for suitable planting and habitat types that would potentially lead to an increase in floral and faunal biodiversity.

4.2 Protected and Priority Species

The habitats on site have potential to support several protected and/or notable species as outlined in the sections below.

4.2.1 *Badger*

No habitats were identified on site suitable to support sett excavation and no evidence of badgers was identified during the site visit. No evidence of badger activity was noted within

30m (zone of influence) of the site, however, previous records of badger were identified in the desk study within 2km of the site.

Due to the transient nature of this species and evidence of commuting badger (mammal paths and dung pits) being recorded 115m to the north of the site, it cannot be fully discounted that badgers may commute and forage through the site. As such, Section 5 of this report provides general recommendations to ensure badgers, and other mammal species are not harmed during development of the site.

4.2.2 **Breeding Birds**

Semi-mature trees in the south of the site and a hedgerow in the west provided suitable nesting habitat for a range of common bird species. All bird species identified during the site visit were considered to be common and widespread and typical for the habitats present within/adjacent to the site, however house sparrow is a Priority Species under the Post 2020 Framework.

The semi-mature trees and hedgerow are to be retained throughout works, and as such works will not result in a negative impact on breeding birds. Therefore, no further recommendations are required in regards to this species.

4.2.3 **Bats**

Buildings and habitats on site have been assessed as having **negligible** potential to support roosting bats, therefore proposed works will not result in an impact on roosting bats. Previous records of brown long-eared *Plecotus auritus*, noctule *Nyctalus noctule*, common pipistrelle *Pipistrellus pipistrellus* and myotis *Myotis sp.* bats were identified within the desk study, the closest of which was brown long-eared bats 0.75km to the west southwest of the site boundary. As foraging and commuting habitat is limited within the site with more suitable habitats located to the north and east of the site, it is considered highly unlikely that the development will result in a detrimental impact to foraging and commuting opportunities for bats.

In addition, the semi-mature trees in the south of the site and hedgerow in the west are to be retained throughout works. Due to the urban nature of the site, and street lights located immediately adjacent to the trees, it is considered highly unlikely that any proposed lighting for a residential development would result in a significant increase in lighting spill onto the suitable commuting and foraging habitats (semi-mature trees and hedgerow) in the south and west of the site. However, it is still recommended that a suitable lighting plan is adhered to for the proposed works, as outlined in Section 5 of this report.

4.2.4 ***Great crested newt***

A single waterbody was identified on site with four additional waterbodies within 500m (zone of influence) of the site. However, the site comprises terrestrial habitats largely considered to be sub-optimal for great crested newts (regularly disturbed, quarried materials), with more optimal habitats for terrestrial refuge, including the hedgerow being retained. In addition, no previous records of GCN were identified within the desk study.

In assessing the loss against the Natural England rapid risk assessment, the total loss within the 100m zone would be 0.35ha of habitat. This would typically result in an assessment result of 'Amber: Offence Likely'. However, taking into account the sub-optimal nature of the habitats on site, the results of the HSI assessment and lack of previous records within the area it is considered highly unlikely that GCN would persist on site. In addition, all suitable habitat on the western boundary and in the south of the site is to be retained.

As such, no further recommendations are considered necessary in regards to this species.

4.2.5 ***Reptiles***

The habitats on site provided limited suitability for commuting, foraging and hibernating reptiles, with edge habitat adjacent to quarried areas providing some opportunities for basking reptiles. No evidence of reptiles was identified during the survey and no previous records of reptiles were identified in the desk study data. As with GCN, the high levels of disturbance resulting from the quarry works increase the suboptimal nature of the site for reptiles.

It is considered highly unlikely that the site would form a core habitat for reptiles, with more suitable habitats identified within the wider area, including the mosaic of woodland and grassland surrounding the Warley Clough 160m to the east of the site. The surrounding urban habitats, limited connectivity of the site with the wider environment and lack of historic records within the area means it is highly unlikely that reptiles would be present on site. As such, further surveys or recommendations are considered disproportionate.

4.2.6 ***Summary of Protected Species with Specific Biodiversity Value***

Table 4 summarises the species which may either be present on site or have the potential to commute and/or forage through the site during the proposed works. As such, these species may be impacted on as a result of the proposed loss of habitat or as a direct result of works on site. Further mitigation and/or compensation is therefore required for these species either during or after the construction phase. Required mitigation is fully detailed within Section 5 of this report.

Table 4. Summary of protected and notable species in the field survey

Protected and notable species	Protection	Site Interest
Commuting and Foraging Badgers	The Badger Act 1982	Potential for commuting and foraging badgers to pass through the site whilst works are being carried out and following completion of works.

5 ASSESSMENT OF EFFECTS AND MITIGATION MEASURES

5.1 Development Proposals

Proposals for the site include the development of 20 new residential buildings with associated gardens and parking. The development will utilise the exiting access point off Burnley Road and will protect all semi-mature trees located in the south of the site, with no impact to the hedgerow along the western boundary. Although soft landscaping proposals are yet to be confirmed, grassland, shrub and tree planting is intended across the site.

Due to the dominance of the active quarry, limited connectivity and widespread nature of the habitats identified on site, proposed works will not result in a significant negative ecological impact. In addition, as long as the mitigation measures outlined below for badgers and other mammals are adhered to, there will be no direct impact to animals during the construction phase of the works.

The proposed works currently include the retention of all semi-mature trees in the south of the site and the hedgerow along the western boundary of the site. However, should alterations to the proposal occur which would result in the removal of either of these habitats, then there is potential that works may impact on nesting birds. In this instance advice should be sought from an ecologist to ensure that all nesting potential is retained on site and no direct impact to an active nest occurs through site works.

5.2 Designated Sites

The closest statutory designated site is Milner Royd LNR and non-designated site is Rochdale Canal LWS, located 1.17km and 0.53km to the south east and south west of the site respectively. The site also falls within the SSSI Impact Risk Zone for Crimsworth Dean SSSI. However, none of the proposed works on site fall within the activities that are listed as causing potential threats to the status of the SSSI's. Due to the isolated nature of the site within the urban environment and the limited impact on the surrounding habitats, there will be no direct impact on the LWS's as a result of the development.

5.3 Habitats & Botanical Interest

5.3.1 *Invasive species*

Due to the proximity of the knotweed to the site it is recommended that, at minimum, a fact sheet identifying what Japanese knotweed is, with images showing the various stages of growth is kept on site. This would allow the workmen to remain vigilant for its presence throughout works. Should it be found on site, then a management plan should be produced to ensure the correct treatment of the plant and that no further spread of it occurs.

5.3.2 *Protection of trees*

All trees in the south of the site are to be retained and should be adequately protected during the works in line with BS5837:2012 *Trees in relation to design, demolition and*

construction - Recommendations. No materials should be stored under the canopy of the retained trees during construction works and all Root Protection Areas (RPA's) marked out prior to commencement of work.

5.3.3 **Planting for Site Enhancement (Greenbelt offset)**

To enhance the site for biodiversity, it is recommended that the ecological enhancements outline in Section 5.5 of this report are followed. In addition, the following should also be considered for planting guidance:

- In amenity areas of grassland which will be subject to a regular mowing regime a flowing lawn mixture such as Emorsgate EL1 seed mix should be used with a minimum of 20% flower mix. Ideally, grasses should be slow growing to allow for quicker establishment of the flowers.
- Enhancement of boundary hedgerows with a greater diversity of species including hawthorn and blackthorn *Prunus spinosa*, which provide nectar, berries and bird nesting opportunities. Additional species would include hazel *Corylus avellane*, field maple, dogwood *Cornus sanguinea*, holly *Ilex aquafolium*, hornbeam *Carpinus betulus*. It is recommended that hawthorn forms the majority of the mix (60%) with lower percentages of the remaining species. For cover over the winter period a good proportion of beech, hornbeam or holly should be used. Four plants per metre should be planted in a single row and six plants per metre for a double (staggered) row.
- Additional trees and shrubs to be planted throughout the site should include native species where possible. Species such as those mentioned above for hedgerow enhancement would be ideal, with addition species such as rowan and elder providing good foraging opportunities.
- Where native species planting is not possible then species with known benefit to wildlife should be used, as outlined within Section 5.5. The client has expressed a wish to utilise Leyland cypress *Cupressus × leylandii* for screening in the north of the site. This species is known to have exceptionally rapid growth and dense foliage which, if left unmanaged, can block light for adjacent native species. This can often result in a decrease in ground flora and reduction of biodiversity. However, if managed they can provide good sound barriers on site with some benefits for sheltering and nesting birds.

5.4 Protected and Priority Species

5.4.1 *Bats*

Following confirmation of the proposed lighting scheme, it is recommended that a review of the proposed lighting scheme is undertaken to ensure the increase in lighting spill onto either the hedgerow or trees does not have a negative impact on bat commuting and foraging potential on site.

5.4.2 *Badger*

As badgers and other mammals are likely to commute and forage on site, it is recommended that deep, steep sided excavations are not left overnight without an escape route, either a ramp or sloping bank. Similarly, it is advised that any pipes stored on site are capped.

5.5 Ecological Enhancement

National planning policy recommends that all developments incorporate ecological enhancement in order to “pursue opportunities for securing measurable net gains for biodiversity” (NPPF, 2019), therefore consideration should be given to the following suggestions.

- Use native species within soft landscaped areas, many native plants are suitable for inclusion in planting areas, including herbaceous perennials, annual plants, trees and shrubs. Suitable species are listed on the RHS website: <https://www.rhs.org.uk/science/pdf/conservation-and-biodiversity/wildlife/plants-for-pollinators-wildflowers.pdf>
- If native species are not practical it is recommended that species with known benefit to wildlife are considered as an alternative, suitable species are listed on the RHS website: (<https://www.rhs.org.uk/science/conservation-biodiversity/wildlife/plants-for-pollinators>)

6 CONCLUSIONS

Table 5 provides an overview of the potential mitigation measures, recommendations and/or further survey work that may be required with regard to the proposals associated with the development.

Table 5. Overview – Potential mitigation measures, recommendations and/or further survey work

Feature	Recommendations	Further survey required?
Designated Sites and Habitats		
Japanese knotweed	All site workers should be aware of Japanese knotweed and its various stages of growth. They should remain vigilant for evidence of this plant throughout works. Should Japanese knotweed be identified on site at any point, then works should cease and an appropriate management plan developed to address the correct treatment of this species and prevent the spread on site and to adjacent habitats.	No further surveys.
Biodiversity enhancement	Suitable native species should be used for planting to enhance biodiversity across site. The enhancement of the site should be discussed with the Local Authority, when considering the work in conjunction with development of the greenbelt area.	No further surveys.
Protected and Notable species		
Badgers	Precautionary methodology to be adhered to during the construction phase.	No further surveys.

7 REFERENCES

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APPENDIX A : Protected and Priority Species

Legal protection is afforded to particular habitats and species (as well as designated sites), see Appendix B. The legislation, and the habitats and species listed, vary between the different jurisdictions. Certain habitats and species are also considered to have some level of nature conservation importance, due to factors such as their rarity, vulnerability or declining population/status. This document uses the term 'priority habitats' and 'priority species', as they are those which should be considered as priorities for conservation (it should not be confused with priority habitats and species as listed in the EU Habitats Directive). Priority habitats and species are defined as those which are:

- 1) listed as a national priority for conservation (such as those listed as habitats and species of principal importance for the conservation of biodiversity);
- 2) listed as a local priority for conservation, for example in the relevant local Biodiversity Action Plan (BAP);
- 3) Red Listed using International Union for the Conservation of Nature (IUCN) criteria (e.g. in an all-Ireland Red List, in one of the UK Species Status Project reviews, in the Species of Conservation Concern Red List, Birds of Conservation Concern in Wales, or BWI/ RSPB Red List for Ireland and Northern Ireland (Birds of Conservation Concern in Ireland 2014 to 2019) or, where a more recent assessment of the taxonomic group has not yet been undertaken, listed in a Red Data Book);
- 4) listed as Near Threatened or Amber Listed e.g. in an all-Ireland Red List, in one of the UK Species Status Project reviews, in Birds of Conservation Concern in Wales, in the Species of Conservation Concern Amber List or BirdWatch Ireland (BWI)/RSPB Amber List for Ireland and Northern Ireland (Birds of Conservation Concern in Ireland 2014 to 2019);
- 5) listed as a Nationally Rare or Nationally Scarce species (e.g. in one of the Species Status Project reviews) or listed as a Nationally Notable species where a more recent assessment of the taxonomic group has not yet been undertaken; and/or
- 6) endemic to a country or geographic location (it is appropriate to recognise endemic sub-species, phenotypes, or cultural behaviours of a population that are unique to a particular place).

Most protected species are also considered to be priority species, although there are some exceptions. There are numerous priority habitats and species which do not receive any legal protection.

Note that the terms 'priority habitat' and 'priority species' used in this document differ from the following uses of the same terms:

- a) These terms were previously used to denote those habitats and species afforded the highest level of priority for conservation under the UK BAP; this has been superseded by the lists of habitats and species of principal importance for the conservation of

biodiversity in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, Section 7 of the Environment (Wales) Act 2016, or their equivalents in Scotland (Nature Conservation (Scotland) Act 2004, Scotland's Biodiversity Strategy and the Scottish Biodiversity List¹⁵) and Ireland (Actions for Biodiversity – Ireland's National Biodiversity Plan 2017 -2021¹⁶; and Valuing Nature – A Biodiversity Strategy for Northern Ireland to 2020).

b) The terms 'Priority Natural Habitat Type' and 'Priority Species' are used to denote specific lists of habitats and species under The Conservation of Habitats and Species Regulations 2017; these are defined in Articles 1(d) and 1(h) respectively of the Habitats Directive.

APPENDIX B : Relevant Legislation

The following text provides information on the key legislation, which is applicable to this survey.

The main wildlife legislation in the UK is as follows:

European Legislation

The relevant sections of the EC Directives and international conventions are summarised below:

- EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitat Directive 1992) as amended (92/43/EEC)

The Directive requires Member States to introduce a range of measures including the protection of species listed in the Annexes. The 189 habitats listed in Annex I of the Directive and the 788 species listed in Annex II, are to be protected by means of a network of sites. Once adopted, these are designated by Member States as Special Areas of Conservation (SACs), and along with Special Protection Areas (SPAs) classified under the EC Birds Directive. The Habitats Directive introduces the precautionary principle; that disturbance to the designated sites can only be permitted having ascertained no adverse effect on the integrity of the site.

- EC Directive on the Conservation of Wild Birds (Birds Directive 1979) as amended (79/409/EEC)

The main provisions of the Directive includes; the maintenance of the favourable conservation status of all wild bird species across their distributional range.

- Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)

The Convention imposes legal obligations on contracting parties, protecting over 500 wild plant species and more than 1000 wild animal species.

UK Legislation

The sections of UK legislation considered to be of relevance include:

- The Conservation (Natural Habitats, and c.) Regulations 2017 (as amended)

This transposes the Habitats Directive into national law. The Regulations provide for the designation and protection of 'European sites', and the protection of 'European protected species'.

- The Wildlife and Countryside Act 1981 (as amended) (WCA)

This consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive) in Great Britain.

- The Countryside and Rights of Way Act 2000 (CRoW)

This act strengthens wildlife enforcement legislation.

- The Protection of Badgers Act 1992

Species-Specific Legislation

Species specific legislation is provided in the Table below:

Species-Specific Wildlife Legislation

Feature/Species	Legislation	It is an offence to:
Invasive weeds – Japanese knotweed, Himalayan balsam,	Sch. 9 Wildlife and Countryside Act 1981 (as amended)	<ul style="list-style-type: none"> • Allow to spread.
Breeding birds	Wildlife and Countryside Act 1981 (as amended). Countryside and Rights of Way Act 2000.	<ul style="list-style-type: none"> • Kill; • Injure; • Take; any wild bird, their eggs or nest (with the exception of those on Sch. 2).

Feature/Species	Legislation	It is an offence to:
Badgers	The Protection of Badgers Act 1992	<ul style="list-style-type: none"> • Wilfully kill, injure, take, or cruelly ill-treat a badger, or attempt to do so; • Possess any dead badger or any part of, or anything derived from, a dead badger; • Intentionally or recklessly interfere with a sett by disturbing badgers whilst they are occupying a sett, damaging or destroying a sett, causing a dog to enter a sett, or obstructing access to it. <p>A badger sett is defined in the legislation as “any structure or place, which displays signs indicating current use by a badger”.</p>
Bats	Sch. 5 Wildlife and Countryside Act 1981 (as amended). Conservation of Habitats and Species Regulations 2010 (as amended).	<ul style="list-style-type: none"> • Intentionally or deliberately kill, injure or capture (or take) bats: • Deliberately disturb bats (whether in a roost or not); • Recklessly disturb roosting bats or obstruct access to their roosts; • Damage or destroy bat roosts.
Common reptiles	Sch. 5 Wildlife and Countryside Act 1981 (as amended). Countryside and Rights of Way Act 2000.	<p>Deliberate or reckless:</p> <ul style="list-style-type: none"> • Killing; • Injuring • Sale.
Common amphibians	Sch. 5 and Sch. 9 Wildlife and Countryside Act 1981 (as amended). Countryside and Rights of Way Act 2000.	<ul style="list-style-type: none"> • Sell; • Transport; and • Advertise for sale.

Feature/Species	Legislation	It is an offence to:
Great crested newt	Sch. 5 Wildlife and Countryside Act 1981 (as amended). Conservation of Habitats and Species Regulations 2017 (as amended).	<ul style="list-style-type: none"> • Kill; • Injure; • Disturb • Destroy any place used for rest or shelter.

In addition, species and habitats listed on the UK Post-2010 Biodiversity Framework (formally the UK BAP) are also considered. Details on these species and habitats can be found at: <http://jncc.defra.gov.uk/page-5705>.

Protected Sites

A network of protected sites, at varying levels, have been put in place across the UK. Further details are provided below;

International importance

- Natura 2000

Natura 2000 is the name of the European Union-wide network of nature conservation sites established under the EC Habitats and Birds Directives. This network will comprise Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

- Special Areas of Conservation (SAC)

SACs are designated under the EC Habitats Directive. The Directive applies to the UK and the overseas territory of Gibraltar. SACs are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs in terrestrial areas and territorial marine waters out to 12 nautical miles are designated under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). New and/or amended Habitats Regulations are shortly to be introduced to provide a mechanism for the designation of SACs and SPAs in UK offshore waters (from 12-200 nm).

National importance

- Sites of Special Scientific Interest (SSSI)

The SSSI series has developed since 1949 as the national suite of sites providing statutory protection for the best examples of the UK's flora, fauna, or geological or physiographical features. Most SSSIs are privately-owned or managed; others are owned or managed by public bodies or non-government organisations. The SSSIs designation may extend into

intertidal areas out to the jurisdictional limit of local authorities, generally Mean Low Water in England and Northern Ireland; Mean Low Water of Spring tides in Scotland. In Wales, the limit is Mean Low Water for SSSIs notified before 2002, and, for more recent notifications, the limit of Lowest Astronomical Tides, where the features of interest extend down to LAT. There is no provision for marine SSSIs beyond low water mark. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs have been renotified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and the Nature Conservation (Scotland) Act 2004.

Regional/local importance

- Wildlife Sites

Local authorities for any given area may designate certain areas as being of local conservation interest. The criteria for inclusion, and the level of protection provided, if any, may vary between areas. Most individual counties have a similar scheme, although they do vary. These sites, which may be given various titles such as 'Listed Wildlife Sites' (LWS), 'County Wildlife Sites' (CWS), 'Local Nature Conservation Sites' (LNCS), 'Sites of Importance for Nature Conservation' (SINCs), or 'Sites of Nature Conservation Importance' (SNCIs), together with statutory designations, are defined in local and structure plans under the Town and Country Planning system and are a material consideration when planning applications are being determined.

APPENDIX C : Methodologies

Assessment Method for Great Crested Newts

Ponds were evaluated using the Habitat Suitability Index (HSI) assessment method (Oldham et al, 2000). During a daytime site visit, each pond was assessed against 10 key habitat criteria, or Suitability Indices (SI) as follows:

- SI1 Geographic area
- SI2 Pond area
- SI3 Pond drying
- SI4 Water quality
- SI5 % shoreline shade
- SI6 Presence of waterfowl
- SI7 Presence of fish
- SI8 Pond count within 1km
- SI9 Terrestrial habitat quality
- SI10 % macrophyte cover

Based on a standardised scoring system, each SI achieves a score of between 0 and 1, and these are used to calculate an overall score for that pond. The scores equate to a habitat suitability rating as per the Table below.

Summary of HSI assessment scale

HSI score	Pond Suitability	Occupancy Rate
<0.5	Poor	3%
0.5 – 0.59	Below average	20%
0.6 – 0.69	Average	55%
0.7 – 0.79	Good	79%
>0.8	Excellent	93%

In general, ponds with high HSI scores are more likely to support GCN than those with low scores. This alone does not determine whether or not a pond should be subject to further survey, but rather provides an indication of habitat quality to aid professional judgement on survey requirements and is a useful tool for informing mitigation or ecological enhancement proposals.

Assessment Method for Bats

Following current good practice guidelines (Collins (ed) 2016), the assessment comprised a visual inspection of each of the trees and built structures, for the latter including any internal areas such as roof voids or cellars. For ease of reference, each structure was numbered B1, B2, B3 etc and trees were numbered T1, T2, T3 etc.

The location and description of any features such as holes, crevices or internal voids that could potentially be used by roosting bats was recorded and a search was made for any evidence of bat presence such as droppings or feeding remains. Binoculars, ladders, high powered torches and endoscopes were used where necessary to facilitate more detailed inspection of individual features.


Based on the number, location and type of any potential roost features, structures and trees were categorised as having negligible, low, moderate or high potential for roosting bats, or confirmed roost where direct evidence of bat presence was encountered. Evaluation of roost potential is necessarily subjective and relies on the professional judgment of the surveyor; however, the table below provides a useful guide to how this is informed.

Examples of characteristics that inform assessment of roost potential

Status	Typical characteristics
Negligible potential	<ul style="list-style-type: none"> • Modern construction / immature trees • Lack of access points for bats • Situated within very poor quality foraging habitat • High levels of external lighting
Low potential	<ul style="list-style-type: none"> • Small number of minor hole / crevice features suitable for opportunistic roosting • Lack of roof voids or small cluttered roof spaces • Features obscured by dense cobwebs • Unlikely to support breeding or hibernating bats • Situated within poor quality foraging habitat
Moderate potential	<ul style="list-style-type: none"> • One or more hole / crevice features suitable for roosting, e.g. damaged soffits, uneven roof tiles • Access into large, dark internal spaces such as roof voids • Trees with small fissures and crevices in dead wood suitable for day roosting • Situated within or near to moderate/good quality foraging habitat

Status	Typical characteristics
High potential	<ul style="list-style-type: none"> • Old buildings / mature or veteran trees • Trees with woodpecker holes or deep fissures and crevices in dead wood • Structures with large, uncluttered roof voids • Traditional brick, stone or timber framed barns • Features suitable for large numbers of bats and/or several different species • Types of structure suitable for hibernation, e.g. caves, tunnels, ice houses etc • Low level of disturbance by humans • Little / no external lighting • Situated within good quality foraging habitat
Confirmed Roost	Bats seen or heard within the roost feature during the survey Bat droppings, particularly if piled rather than scattered Feeding remains such as moth wings Existing record of roost at that location

Guidance for assessing the overall value of potential development sites for bats (Collins (ed), 2016)

Site Status	Description
 Increasing site value for bats	<ul style="list-style-type: none"> • No features likely to be used by bats • Small number of potential roost sites but unlikely to be suitable for maternity roosts or hibernacula • Isolated habitat that could be used by foraging bats • Isolated site not connected by prominent linear features to suitable other/adjacent foraging habitats • Several potential roost sites in buildings, trees or other structures • Habitat suitable for foraging bats (e.g. trees, water, scrub, grassland present) • Site is connected with the wider landscape by features that could be used by foraging/commuting bats (e.g. gardens backed by scrub or line of trees) • Buildings, trees or other structures (e.g. caves or underground structures) of particular significance for roosting bats • Site includes high quality foraging habitat (e.g. broadleaved woodland, tree-lined watercourses, parkland with mature trees and rough grass) • Site is connected with the wider landscape by strong linear features that could be used by commuting bats (e.g. hedgerows, river valleys) • Site is close to known roosts • Bats recorded or observed using an area for foraging or commuting close to a potential roost