

2 Methods

The PEA assessment and Report follows the good practice methodology as detailed within the *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2019).

2.1 Desk Study

2.1.1 Online Resources and Local Records Centre

Due to the size and low impact of the proposed development and being located within a rural area of Clitheroe, a 2km Local Data Search was conducted as it is deemed an appropriate distance for the Zone of Influence.

Sources of information used in the desk study are presented in Table 1.

Table 1 – Desk Study Sources of Information

Source	Date Consulted	Information Sought
MAGIC website (www.magic.gov.uk)	09/02/2022	Locations of statutory designated sites within 1km of the site boundary. Locations of Natura 2000 sites (Ramsar, Special Area of Conservation (SAC) and Special Protection Area (SPA) within 5km of the site boundary. Locations of European Protected Species Licences (EPSL) and Class Licences within 1km.
Natural England (https://designatedsites.nature.England.org.uk/)	09/02/2022	Relevant statutory designated site citations.
JNCC (https://jncc.defra.gov.uk/)	09/02/2022	Information on European wildlife sites. Details of relevant Section 41 species and habitats.
Lancashire Environment Record Network (LERN)	02/09/2020	Locally designated wildlife sites within 1km of site boundary. Records of protected and notable species within 1km of the site boundary.
Lancashire Local Biodiversity Action Plans	04/09/2020	Species and habitats which are given special conservation status at the local level.
Catchment Data Explorer	09/02/2022	Summary of data relating to river condition and catchment data, provided The Environment Agency (EA)

2.2 Field Survey

2.2.1 Vegetation

The site was subject to a field survey on the 10th of February 2022 by Assistant Ecologist Jake Healy and Senior Biodiversity Consultant Maisie McKenzie. The weather conditions were 7°C, cloudy (4/8 oktas), with a wind speed of 4 on the Beaufort scale, and dry.

The methods were based on the standard methodology as detailed by *JNCC Handbook for Phase 1 Habitat Survey* (JNCC, 2010). A Phase 1 Habitat Plan has been produced to demonstrate habitats within the proposed development and the surrounding area. The mapping techniques are based on *the Phase 1 Habitat Survey* (JNCC, 2010) guidance.

Flora species listed as protected in the *Wildlife and Countryside Act 1981* (as amended) and species which are indicators of important and/or uncommon habitats, were searched for during the survey.

Species abundance is described using the DAFOR scale as shown in Table 2. Percentages are an approximate indication rather than a quantitative measure.

Table 2 – Key to Species Abundance

		Description	Indicative Percentage Ranges
D	Dominant	Covers most of the area	90% or greater
A	Abundant	Very common throughout the area.	50 – 90%
F	Frequent	Common or with many individuals.	20 – 50%
O	Occasional	Occurs in several places but not throughout. Populations are not large.	5 – 20%
R	Rare	Occurs in low numbers in relation to size of area.	Less than 5%
“L” will be used to indicate abundance in a localised area, e.g. LA = Locally abundant			

Any invasive species, including those listed on the revised (April 2010) Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) were noted during the field survey when sighted.

2.2.2 Fauna

A site search for field signs of protected and notable fauna was undertaken, and incidental sightings are detailed. The searches completed were as follows:

- Suitability of any ponds to support notable and protected amphibians, and the suitability of the site’s terrestrial habitats to support amphibians.
- Suitability of the site to support reptiles by way of habitat structure and refuge piles, as well as links to the wider landscape.
- Search of any watercourses for signs or suitability for white clawed-crayfish (*Austropotamobius pallipes*), water vole (*Arvicola amphibius*) and otter (*Lutra lutra*) by way of burrows, resting places, holts and foraging signs.
- Suitability of the site to support notable bird species. Bird nests and droppings of notable and protected bird species.
- Suitability of the site to support notable invertebrates.
- Search of the site for any invasive species.

- Badger (*Meles meles*) field signs such as setts, mammal, paths, snuffle holes and latrines.
- Suitability of the site to support notable terrestrial mammals including harvest mouse (*Micromys minutus*) and brown hare (*Lepus europaeus*).

2.3 Bat Assessment

2.3.1 Preliminary Roost Assessment

A Preliminary Roost Assessment (PRA) was carried out on the site buildings and trees using a high-powered torch and close-focussing binoculars, where possible.

The PRA methodology is based on information contained within the Bat Conservation Trust (BCT) guidelines, 3rd edition (Collins, 2016). The categorisation within this report is based on that set out in Table 3, which is used as a basis for determining the requirement for further surveys.

Table 3 – Suitability of Buildings and Trees for Roosting Bats (adapted from Collins, 2016)

Category of Suitability	Typical Characteristics	Further Survey Requirements
High Roost Suitability	A structure/tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. Surveys can be undertaken between May and September, with at least two surveys between May and August.
Moderate Roost Suitability	A structure/tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but are unlikely to support a roost of high conservation status.	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey. Surveys can be undertaken between May and September with at least one survey between May and August.
Low Roost Suitability	A structure/tree with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate condition and/or suitable surrounding habitat to be used on a regular basis by larger numbers of bats.	Structures: one emergence/re-entry survey between May and August. Trees: No further survey required but precautionary methods of felling recommended.
Negligible Suitability	Negligible habitat features on site likely to be used by roosting bats.	No further work required.

2.3.2 Commuting and Foraging Bats

The site was assessed for its suitability for use by commuting and foraging bats.

The commuting and foraging assessment methodology is based on information contained within the Bat Conservation Trust guidelines 3rd edition (Collins, 2016). The categorisation within this report is based on that set out in Table 4, which is used as a basis for determining the requirement for further surveys.

Table 4 – Suitability of Site for Foraging and Commuting Bats (adapted from Collins, 2016)

Category of Suitability	Typical Characteristics
High Suitability	Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting or foraging bats such as; river valleys, streams, hedgerows, lines of trees or woodland edge. Site is close to or connected to known roosts.
Moderate Suitability	Continuous habitat connected to the wider landscape that could be used by commuting bats such as lines of trees, scrub or linked back gardens. Habitat connected to wider landscape that could be used for bats for foraging such as; trees, scrub, grassland or water.
Low Suitability	Habitat that could be used by small number of commuting bats such as; defunct hedgerow, isolated features not well connected to surrounding habitat or Isolated habitat that could be used by a small number of foraging bats such as a lone tree or patch of scrub.
Negligible Suitability	No features on site suitable for use by commuting and foraging bats.

2.4 Constraints to the Survey

Whilst every effort has been made to provide a comprehensive description of the site, no investigation could ensure the complete characterisation and prediction of the natural environment.

This PEA does not constitute a full botanical survey. The protected species assessment provides a view of the likelihood of protected species occurring on the site based on the known distribution of species in the local area and the suitability of the habitat. It should not, however, be taken as providing a full and definitive survey of any protected species group.

February is a suboptimal time for carrying out a Phase 1 Habitat Survey due to being outside of the optimal plant growing season. Therefore, it is likely that some plants are present on the site but were not evident at the time of the survey and were not recorded. This is not considered to be a significant constraint with regards to the general Phase 1 Habitat Survey results as the habitats remained consistent with previous surveys, and due to the size and location of the site and limited extent of the habitats, it is considered very unlikely that any rare or priority plant species were missed.

Where a lack of records is found during the desk search for a defined geographical area, it does not necessarily mean that there is a lack of ecological interest; the area may be simply under-recorded.

The conclusions and recommendations detailed in this report are based upon the site redline boundary and the development proposals as outlined by the client at the time of writing. Should there be any changes to the site redline boundary or development proposals at a later stage, this assessment should be reviewed to determine whether any amendments or additional survey work is required.

The findings of this report represent the professional opinion of qualified ecologists and do not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited within this document.

Where broad grid references are returned within the data search the records have been referred to as “Within 2km”.

Two ponds were present within 250m of the site associated with a private residence and grounds to the south-east of the site. These ponds were inaccessible and as such were unable to be surveyed for HSI scores. As these ponds are the only two ponds within 250m of the site it is unlikely that they support GCN due to their isolated nature. And if they were to support GCN more favourable habitat is present within the immediate area than is found on site.

The area of broadleaved woodland on site comprised a high number of trees that were difficult to survey individually. As such many of these trees were unable to have a detailed Preliminary roost assessment conducted. This has been considered throughout the report.

2.5 Lifespan of Report

In accordance with CIEEM’s Advice Note on the Lifespan of Ecological Reports and Surveys (CIEEM, 2019), the details of this report will remain valid for a period of **18 months** from the date of the survey (i.e. until 10th August 2023). After this date, this assessment should be reviewed to determine whether any updated surveys are required.

2.6 Definitions

For the purposes of this report, the term ‘protected and notable species’ relates to:

- Species included on Schedules 2 and 4 of *The Conservation of Habitats and Species Regulations 2017*;
- Species included on Schedules 1, 5 and 8 of the *Wildlife and Countryside Act 1981* (as amended), excluding species that are only protected in relation to their sale (see section 9[5] and 13[2]);
- Invasive non-native species included on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended);
- Species of principal importance for the conservation of/maintaining and enhancing biodiversity as required under: Section 41 of the *Natural Environment and Rural Communities Act 2006* (England), Section 7 of the *Environment (Wales) Act 2016*, Section 2[4] of the *Nature Conservation (Scotland) Act 2004*;
- Local species of importance as identified within various local biodiversity action plans; and,
- Badgers, which are protected under the *Protection of Badgers Act 1992*.

3 Baseline Ecological Conditions

3.1 Desk Study

3.1.1 Site Location

The site is located on the rural-urban fringe of Clitheroe town, which is present approximately 1km north of the site. An un-named tributary of Pendleton Brook (a tributary of Mearley Brook which flows into the River Ribble) is present on site running north to south-west through the centre of the site. Pendleton Brook borders the south of the site running from east to west. The River Ribble is located approximately 1.5km west of the site, with Mearley Brook present approximately 350m west of the site. Residential properties are located to the north, north-west and west of the site with arable grassland present on all other aspects. Areas of woodland are present within the wider area to the south of the site.

It is anticipated these habitats will provide suitable foraging, resting, and commuting resources within the local area for a variety of wildlife, such as birds, bats and other terrestrial and aquatic mammals.

3.1.2 Designated Sites

No sites that form part of the National Site Network were located within 5km of the site boundary. One statutory and one non-statutory designated site was located within 2km of the site and are detailed within Table 5.

Table 5– Designated Sites within the Search Areas

Designated Site	Approx. Distance from Site	Details
Statutory designated sites		
Salthill Quarry Sites of Special Scientific Interest (SSSI)	1.7km north	The famous Carboniferous Limestone site is the type locality for the fossiliferous Salthill Bank Beds (Chadian) and the Salthill Cap Beds (Arundian) of the Clitheroe Limestone Complex. It provides the best sections through the Chadian and the Knoll Reefs of the Craven Basin, and some of the finest such sections in the English Lower Carboniferous. It shows three-dimensional relationships of reefs associated sediments and rich marine, especially echinoderm, faunas and is a key site for studies of fauna, carbonate sedimentology diagenesis and palaeoecology in the Lower Carboniferous.
Non-statutory designated sites		
Salthill Quarry Local Nature Reserve (LNR) and Biological Heritage Site (BHS)	1.7km north	As above

Based on consultation with MAGIC the site also falls within the Impact Risk Zone of the Salthill Quarry SSSI which is detailed in Table 5.

3.1.3 Flora and Fauna

The following section summarises protected and/or notable species records that have been recorded within 2km of the site.

Vascular Plant

The data search returned 44 records of a notable vascular plant species including bluebell (*Hyacinthoides non-scripta*), fragrant orchid (*Gymnadenia conopsea*), deadly nightshade (*Atropa belladonna*), barberry (*Berberis vulgaris*), nettle-leaved bellflower (*Campanula trachelium*), sheep's-bit (*Jasione montana*), common gromwell (*Lithospermum officinale*), Solomon's-seal (*Polygonatum multiflorum*), tuberous comfrey (*Symphytum tuberosum*), globeflower (*Trollius europaeus*), stinking hellebore (*Helleborus foetidus*), bird's-eye primrose (*Primula farinosa*), mossy saxifrage (*Saxifraga hypnoides*), buckthorn (*Rhamnus cathartica*), small scabious (*Scabiosa columbaria*), lesser meadow-rue (*Thalictrum minus*), blue water-speedwell (*Veronica anagallis-aquatica*), northern yellow-cress (*Rorippa islandica*), and darnel (*Lolium temulentum*).

The closest record was attributed to bluebell, which was located at the southern extent of the site in 1988.

Bluebell are listed under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) and the darnel is listed under Section 41 of the NERC Act 2006. The remaining records are all listed under the Lancashire LBAP.

Invertebrates

Thirty-three records of notable or protected invertebrates, were returned within the data search, comprising white-letter hairstreak (*Satyrium w-album*), butterbur moth (*Hydraecia petasitis*), ringlet (*Aphantopus hyperantus*), small heath (*Coenonympha pamphilus*), wall (*Lasiommata megera*), broom moth (*Ceramica pisi*), buff ermine (*Spilosoma lutea*), cinnabar (*Tyria jacobaeae*), dot moth (*Melanchra persicariae*), green brindled crescent (*Allophytes oxyacanthae*), latticed heath (*Chiasmia clathrata*), oblique carpet (*Orthonama vittata*), small phoenix (*Ecliptopera silaceata*), small square spot (*Diarsia rubi*), and white ermine (*Spilosoma lubricipeda*).

The closest record was located approximately 850m north-west of the site from 2020 and was related to a latticed heath moth.

The butterbur moth and ringlet butterfly are listed on the Lancashire LBAP, while the small heath butterfly, wall butterfly, and white-letter hairstreak butterfly are listed on the Lancashire LBAP and under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. All other species are listed solely under Section 41 of the NERC Act.

Amphibians

Six records of common amphibian were returned in the data search comprising toad (*Bufo bufo*) and common frog (*Rana temporaria*). The closest record was located approximately 1.3km west of the site from 2018.

Both species are listed on the Lancashire LBAP, common toad is also listed on Section 41 of the NERC Act 2006.

A MagicMap search returned no granted EPSL relating to great crested newts present within 1km of the site.

Reptiles

One record of common lizard (*Zootoca vivipara*) was received within 2km of the site from 1833.

This species is listed on Section 41 of the NERC Act (2006) and on the Lancashire LBAP.

Birds

A total of 120 records of protected or notable birds were returned within 2km of the site as detailed in Table 6.

Table 6 – Protected or notable birds recorded within 2km

Scientific Name	Common Name	Protection	Closest Record to Site	
			Approx. Min. Distance (m)	Date
<i>Chroicocephalus ridibundus</i>	Black-headed gull	BoCC5**, LBAP	400m	2008
<i>Pyrrhula pyrrhula</i>	Bullfinch	BoCC5**, S41*****, LBAP	1.8km	1993
<i>Actitis hypoleucos</i>	Common sandpiper	BoCC5**, LBAP	Within 2km	1999
<i>Numenius arquata</i>	Curlew	BoCC5*, S41*****, LBAP	Within 2km	2005
<i>Cinclus cinclus</i>	Dipper	BoCC5**	Within 2km	1999
<i>Prunella modularis</i>	Dunnock	BoCC5**, S41*****, LBAP	500m	2008
<i>Chloris chloris</i>	Greenfinch	BoCC5*	Within 2km	1999
<i>Ardea cinerea</i>	Grey Heron	LBAP	1.5km	2020
<i>Perdix perdix</i>	Grey partridge	BoCC5*, S41*****, LBAP	Within 2km	2004
<i>Motacilla cinerea</i>	Grey wagtail	BoCC5**	500m	2008
<i>Larus argentatus</i>	Herring gull	BoCC5*, S41*****, LBAP	500m	2019
<i>Delichon urbicum</i>	House martin	BoCC5*	900m	2020
<i>Passer domesticus</i>	House sparrow	BoCC5*, S41*****, LBAP	1.5km	2018
<i>Falco tinnunculus</i>	Kestrel	BoCC5**, LBAP	Within 2km	1999
<i>Alcedo atthis</i>	Kingfisher	Sch.1****, BoCC5**	500m	1992
<i>Vanellus vanellus</i>	Lapwing	BoCC5*, S41*****, LBAP	Within 2km	2005
<i>Acanthis cabaret</i>	Lesser redpoll	BoCC5*, S41*****	Within 2km	2004
<i>Dendrocopos minor</i>	Lesser spotted woodpecker	BoCC5*, S41*****, LBAP	Within 2km	2004
<i>Carduelis cannabina</i>	Linnet	BoCC5*, S41*****	Within 2km	1999
<i>Charadrius dubius</i>	Little Ringed Plover	Sch.1****, LBAP	Within 2km	1999
<i>Anas platyrhynchos</i>	Mallard	BoCC5**	50m	2019
<i>Anthus pratensis</i>	Meadow pipit	BoCC5**, LBAP	Within 2km	1999
<i>Turdus viscivorus</i>	Mistle thrush	BoCC5*	Within 2km	1999
<i>Gallinula chloropus</i>	Moorhen	BoCC5**	500m	2008
<i>Haematopus ostralegus</i>	Oystercatcher	BoCC5**, LBAP	Within 2km	1999

Scientific Name	Common Name	Protection	Closest Record to Site	
			Approx. Min. Distance (m)	Date
<i>Falco peregrinus</i>	Peregrine	Sch.1****, LBAP	1,5km	2018
<i>Aythya ferina</i>	Pochard	BoCC5*, LBAP	500m	1992
<i>Tringa totanus</i>	Redshank	BoCC5**, LBAP	Within 2km	2005
<i>Gallinago gallinago</i>	Snipe	BoCC5**, LBAP	Within 2km	2005
<i>Turdus philomelos</i>	Song thrush	BoCC5**, S41****, LBAP	Within 2km	1999
<i>Accipiter nisus</i>	Sparrowhawk	BoCC5**	Within 2km	1999
<i>Muscicapa striata</i>	Spotted flycatcher	BoCC5*, S41****, LBAP	Within 2km	2004
<i>Sturnus vulgaris</i>	Starling	BoCC5*, S41****, LBAP	Within 2km	1999
<i>Apus apus</i>	Swift	BoCC5*, LBAP	800m	2004
<i>Strix aluco</i>	Tawny owl	BoCC5**	Within 2km	1999
<i>Anas crecca</i>	Teal	BoCC5**, LBAP	500m	1992
<i>Passer montanus</i>	Tree sparrow	BoCC5*, S41****, LBAP	Within 2km	2005
<i>Anas penelope</i>	Wigeon	BoCC5**, LBAP	500m	1992
<i>Phylloscopus trochilus</i>	Willow warbler	BoCC5**, LBAP	1,5km	2004
<i>Troglodytes troglodytes</i>	Wren	BoCC5**	400m	2008

* Red list of BoCC5 (2021)

** Amber list of BoCC5 (2021)

*** Black list BoCC5 (2021)

**** Section 21 of the NERC Act (2009)

***** Schedule 1 or 5 of the WCA (1981)

Bats

Nine records of bats were returned within the data search, including records of common pipistrelle (*Pipistrellus pipistrellus*), unidentified pipistrelle species (*Pipistrellus* spp), as well as a record of an unidentified bat species (*Chiroptera* spp).

Six records were related to roosts, with one record relating to an unidentified pipistrelle maternity roost. The closest record was located approximately 450m west of the site from 2015 and was related to a common pipistrelle roost.

Two records were related to field signs, and both were attributed to common pipistrelle. The closest record was located approximately 1.4km west of the site.

All species of bat returned are listed on the Lancashire LBAP and all bats, excluding the common pipistrelle, are listed on Section 41 of the NERC Act (2006).

MAGIC also detailed the presence of one granted EPSL within 1km of the site (Ref: 2018-34104-EPS-MIT). This licence was to allow for the impact and damage of a breeding site and for the damage and

destruction of a resting place for common pipistrelle and soprano pipistrelle between 2018 - 2023. It was located approximately 200m south-east of the site.

Hedgehog

A total of 29 records of hedgehog were returned with 2km of the site, with the closest record located approximately 200m north of the site from 2020.

Hedgehog are listed on Section 41 of the NERC Act (2006) and on the Lancashire LBAP.

Red squirrel

Two records of red squirrel (*Sciurus vulgaris*) were returned within the data search, with the closest record located approximately 1.4km east of the site in 1997.

Red squirrel are listed on Section 41 of the NERC Act (2006) and on the Lancashire LBAP.

Fish

Four records of brook lamprey (*Lampetra planeri*) were returned within the data search. The closest record was located approximately 1.6km south-west of the site from 2008.

Four records of European eel (*Anguilla anguilla*) were returned within the data search. The closest record was located approximately 1.6km south-west of the site from 2014.

Twenty-one records of bullhead (*Cottus gobio*) were returned within the data search. The closest record was located immediately south of the site from 2011.

Six records of Atlantic salmon (*Salmo salar*) were returned within the data search. The closest record was located approximately 750m west of the site from 2011.

Thirteen records of brown trout (*Salmo trutta*) were returned within the data search. The closest record was located immediately south of the site from 2011.

All species are listed on the Lancashire LBAP, and the European eel, atlantic salmon, and brown trout are all listed under Section 41 of the NERC Act 2006.

Brown Hare

Ten records of brown hare (*Lepus europaeus*) were returned within the data search, with the closest record located approximately 900m south of the site from 2012.

Brown hare are listed on Section 41 of the NERC Act (2006) and on the Lancashire LBAP.

Badger

Two records of badger field signs were returned within the data search, with the closest record located approximately 1.4km south-east of the site from 2013.

Badger are protected by the Protection of Badgers Act 1992.

Otter

Five records of otter were received within the data search, with the closest record located approximately 200m west of the site from 2019.

Otter are listed on Section 41 of the NERC Act (2006), are a European protected species through the EC Habitats Directive (1992), and are on the Lancashire LBAP.

Invasive Non-native Species

Fauna

A total of 17 records relating to invasive non-native fauna species were returned in the data search, comprising sika deer (*Cervus nippon*) and eastern grey squirrel (*Sciurus carolinensis*). All records were located within 2km of the site.

Both are listed under Schedule 9 of the Wildlife and Countryside Act 1981.

Flora

Ninety-one records of invasive non-native plant species were returned within 2km of the site, comprising cotoneaster species (*Cotoneaster* spp.), Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*), rhododendron ponticum (*Rhododendron ponticum*), Canadian waterweed (*Elodea canadensis*), Nuttall's waterweed (*Elodea nuttalli*), and Japanese rose (*Rosa rugosa*).

The closest record to site was attributed to Himalayan balsam located on site in 2008.

All species are listed under Schedule 9 of the Wildlife and Countryside Act 1981.

No Records Returned

The data search returned no records for:

- Great crested newt
- Hazel dormice (*Muscardinus avellanarius*)
- Water vole
- White-clawed crayfish

3.2 Field Survey

The site habitats and accompanying Target Notes are presented in the Phase 1 Habitat Map in Appendix 3.

3.2.1 Improved Grassland

Improved grassland comprised much of the site and was utilised as agricultural grazing land, which was also used by the public, as a public footpath was present through the site. Species composition of this habitat was dominated by Yorkshire fog (*Holcus lanatus*), with occasional bird's foot trefoil (*Lotus corniculatus*), ribwort plantain (*Plantago lanceolata*) and mouse ear chickweed (*Cerastium fontanum*). To the south of the site the grassland adjacent to Pendleton Brook comprised a more diverse species composition exhibiting an abundance of Yorkshire fog and perennial rye grass (*Lolium perenne*), and an occasional occurrence of rough stalked meadow grass (*Poa trivialis*), broad leaved dock (*Rumex obtusifolius*), creeping thistle (*Cirsium arvense*), ribwort plantain, and common nettle (*Urtica dioica*).



Photograph 1 – Improved Grassland at west of the site



Photograph 2 – Improved Grassland at east of the site

3.2.2 Hedgerow with trees

Two hedgerows (shown in Figure 2) were present within the western section of the site running from north to south. Both hedgerows were species poor and defunct with a number of trees associated with the hedge line. The average height of the hedgerows was 1.5m and the average width was 0.5m, showing evidence of regular pruning. The hedgerows were dominated by hawthorn (*Crataegus monogyna*) while the trees associated with the hedgerows comprised ash (*Fraxinus excelsior*), pedunculate oak (*Quercus robur*), beech (*Fagus sylvatica*), and sycamore (*Acer pseudoplatanus*). The hedgerows qualify as habitats of principal importance.

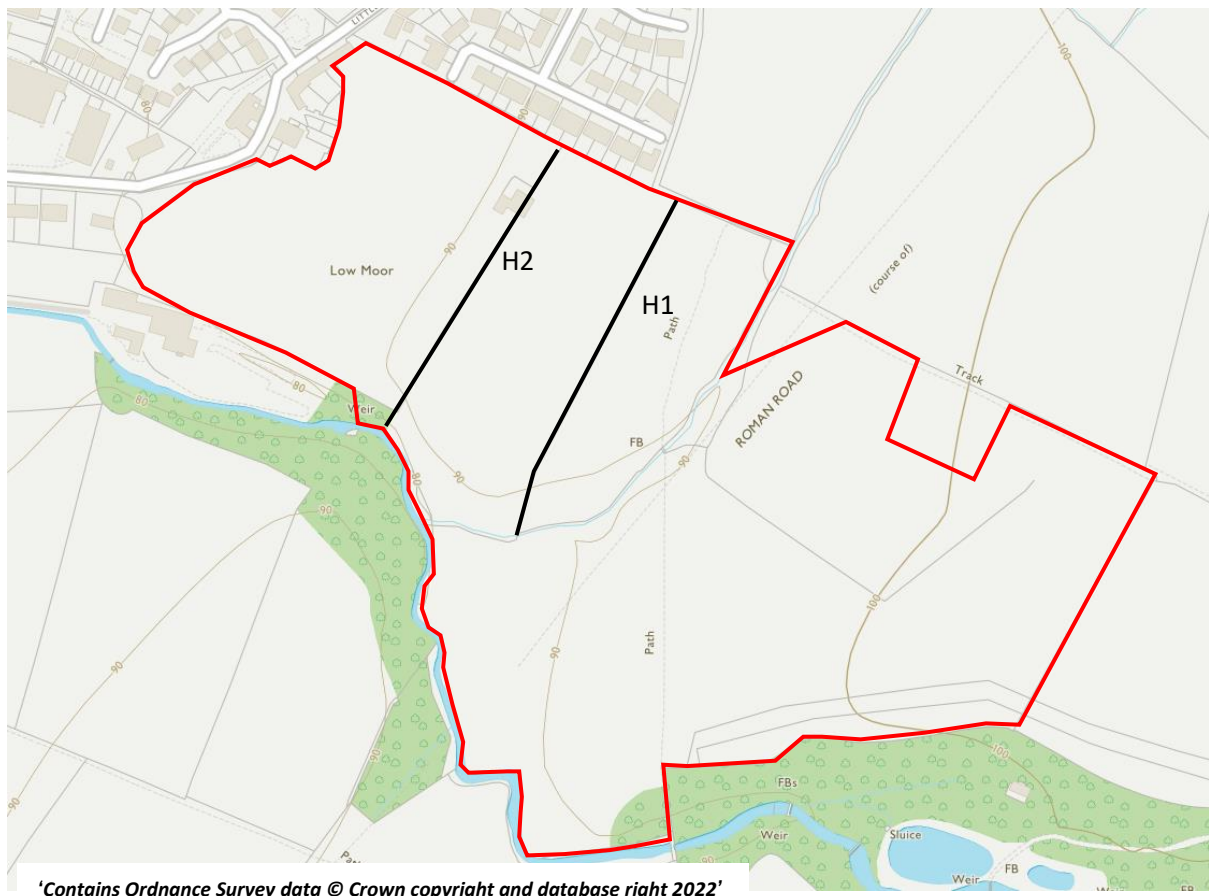


Figure 2 – Map of hedgerows on site



Photograph 3 – Hedgerow with trees (H1)



Photograph 4 – Hedgerow with trees (H1)



Photograph 5 – Hedgerow with trees (H2)



Photograph 6 – Hedgerow with trees (H2)

3.2.3 Broadleaved Woodland

A strip of woodland was present running through the centre of the site from north to south-west associated with Pendleton Brook (detailed in Section 3.2.5). Tree species included hawthorn, ash, oak (*Quercus* spp.), alder (*Alnus glutinosa*), sycamore, blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*), hazel (*Corylus avellana*), field maple (*Acer campestre*), and holly (*Ilex aquifolium*). The understorey and ground flora associated with the broadleaved woodland comprised locally dominant ivy (*Hedera helix*) and frequent bramble (*Rubus fruticosus* agg.). Snowdrop (*Galanthus nivalis*), rose (*Rosa* spp.), herb robert (*Geranium robertianum*), red campion (*Silene dioca*), rosebay willowherb (*Chamaenerion angustifolium*), cleavers (*Galium aparine*), and hogweed (*Heracleum sphondylium*) all occurred occasionally.



Photograph 7 – Broadleaved Woodland



Photograph 8 – Broadleaved Woodland

3.2.4 Scattered Trees

A number of scattered trees are also present on site, predominantly found in the eastern section of the site including oak and ash species.



Photograph 9 – Scattered trees on site



Photograph 10 – Scattered trees on site



Photograph 11 – Scattered trees on site



Photograph 12 – Scattered trees on site

3.2.5 Watercourses

An un-named tributary of Pendleton Brook was present on site, running through the centre from north to south-west of the site. The brook comprised rocky substrate with water flowing at a moderate speed in a north to south direction. The brook is surrounded by broadleaved woodland detailed in Section 3.2.3 and is therefore fully shaded by the environment. It was also noted that Pendleton Brook (TN1) immediately borders the south of the site which has areas of fast-flowing water and deeper pools, flowing in an east to west direction. Pendleton Brook contains rocky substrate and vegetated banks and qualifies as a Habitat of Principal Importance.



Photograph 13 – Tributary of Pendleton Brook on site



Photograph 14 – Tributary of Pendleton Brook on site



Photograph 15 – Pendleton Brook bordering the south of the site (TN1)



Photograph 16 – Pendleton Brook bordering the south of the site (TN1)

3.2.6 Building

One building (B1) was present on site comprising a dis-used brick barn located in the western section of the site adjacent to H2. For a full description and assessment of the building, please see Appendix 2.



Photograph 17 – Building 1



Photograph 18 – Building 1

3.3 Site Suitability for Protected and Notable Species

3.3.1 Species Discounted from Assessment

Hazel dormouse (*Muscardinus avellanarius*) mainly occur in southern counties, especially in Devon, Somerset, Sussex, and Kent. There are few recorded localities north of the Midlands, though they are present in parts of the Lake District and in scattered Welsh localities (Matthews *et al.*, 2018). The species are not generally known to be present within the Clitheroe area (Wembridge *et al.*, 2016). The habitats on site are of limited value due to limited areas of extensive woodland and scrub. As such, the species are reasonably discounted from site.

3.3.2 Vascular Plants

It is anticipated that the site does not offer potential for notable plant species. The majority of the site comprises improved grassland with no floristic diversity as was found within the broadleaved woodland on site. The site is also used by the public and dog walkers were seen utilising the site during the field survey. Therefore, it is anticipated that there would be a high level of disturbance within these areas which would limit the sites potential for notable plant species further.

As such, notable plant species have been reasonably discounted from site and are not considered further within this report.

3.3.3 Invertebrates

The site offers the potential to support notable and protected invertebrates, with dead wood and aquatic habitats present which offer an important habitat in the invertebrate life cycle. However, no areas of high floristic diversity are present on site which would offer optimal foraging habitat. The data search returned a total of 33 records of notable invertebrates confirming that the species are in the area.

As such, it is anticipated that notable invertebrate species may be on site, although will probably be restricted to the watercourses and woodland habitats.

3.3.4 White-Clawed Crayfish

Aquatic habitats, in the form of an un-named tributary of Pendleton Brook which is present on site and Pendleton Brook which borders the south of the site, may offer suitable habitat for white-clawed crayfish. However, the brook running through the centre of the site appears to be unconnected to other watercourses upstream but joins Pendleton Brook that runs to the south of the site. This watercourse is anticipated to be unsuitable for white-clawed crayfish as it has areas of faster flowing water which limits the potential for the species. A weir is present just offsite which would limit the spread of any populations upstream and on to the site, and no records were returned within 2km of the site. It was also considered that as both water courses run either through the site or along the border of the site that these watercourses are potentially subject to increased levels of high nutrient run off decreasing the water quality and further limiting the potential for white-clawed crayfish.

As such, white-clawed crayfish have been reasonably discounted from the site.

3.3.5 Amphibians

No ponds were located on site, although two ponds were located within 250m of the site, which were inaccessible as described in Section 2.4. These ponds were isolated, with no other ponds located within 250m of the ponds or the site. As detailed in the ARG UK Advice Note 5 (ARG, 2010) the site is located in Zone B for geographic location (Factor 1 of the Habitat Suitability Index). There is also a watercourse

present immediately south of these ponds which has the potential to frequently inundate these ponds making them unsuitable for GCN as well as providing a significant barrier to dispersal/colonisation of these ponds. It is therefore anticipated that there is sufficient evidence to discount GCN from the site.

The tributary, and surrounding woodland on site offers suitable aquatic and terrestrial habitat for common amphibians. Ornamental water bodies may be located within nearby residential gardens which may provide suitable conditions for breeding common amphibians.

As such, the presence of great crested newts within the site is reasonably discounted, though common amphibians may occur on site.

3.3.6 Reptiles

The site was found to provide value for reptiles, as varied vegetation structure was present within the broadleaved woodland and around the hedgerows on site. The watercourses associated with the site also offer foraging and commuting potential to grass snake which tend to hunt within waterbodies and watercourses. The site also offers a south-facing edge to the woodland which may provide suitable basking habitat.

As such the site provides the potential to support reptiles.

3.3.7 Birds

Ground Nesting

The site offers limited suitability to ground nesting species as the majority of the site comprises improved grassland of short sward height. The woodland habitat offers the most value, however, there is a lack of varied vegetation structure present, and the vast number of trees present on site offer suitable foraging perches for birds of prey.

As such, ground nesting birds are reasonably discounted from the site.

Passerine

The site offers optimal habitat for nesting passerine birds. The broadleaved woodland, building, and scattered trees on site offer various opportunities for nest building and a number of passerine bird species were returned within the data search including dunnock, house martin, song thrush, and wren.

Several bird species were identified on site during the site visit, including blue tit, wood pigeon, gull, magpie, and kestrel.

As such, the site has been confirmed as providing nesting potential.

Birds of Prey/Barn Owl

The site offers the potential to support birds of prey and barn owl. The presence of B1 (detailed in 3.2.6) provides suitable nesting habitat for barn owl and the surrounding fields and tree lines offer good foraging potential for the species. Owl pellets were also found inside B1 (see photograph 19). T10 also offers nesting potential for barn owl with a large open cavity in the stem of the tree.

The site also offers the potential to support birds of prey through good quality foraging habitat and the broadleaved woodland and scattered trees offering nesting and perching value to such species in the area. A kestrel was seen hunting by the brook running through the site during the field survey.

As such, the site has been confirmed as providing nesting and foraging potential for birds of prey and barn owl.



Photograph 19 – Owl pellets inside B1



Photograph 20 – T10 with nesting barn owl potential

3.3.8 Bats

Preliminary Roost Assessment

A PRA was completed on all scattered trees and buildings on site and adjacent. However as detailed in the Section 2.4 not all trees forming the area of Broadleaved Woodland on site were able to be assessed. Please refer to Appendix 2 for the results of the PRA and imagery of Potential Roosting Features (PRF) identified during the survey. A map of the structures providing roosting potential can be found in Appendix 4.

In summary, the following features and trees were assessed as having bat roosting potential:

- One building and two trees were assessed as having **High** bat roost potential.
- Six trees were assessed as having **Moderate** bat roost potential.
- Sixteen trees were assessed as having **Low** bat roost potential.

Commuting and Foraging Bats

The habitats on site offer high commuting and foraging potential for bats through the presence of various linear features within the site and surrounding the boundaries of the site. The broadleaved woodland, hedgerows and watercourses are of the most importance offering linear commuting features as well as foraging potential. These features link the site to the north and south with offsite habitats that also offer potential for bats such as the woodland to the south-east of the site.

3.3.9 Hedgehog

The broadleaved woodland and hedgerow habitats will provide suitable cover and foraging potential for the species.

Hedgehog are potentially present within the site.

3.3.10 Red Squirrel

The site offers suitable potential for red squirrel in the form of the broadleaved woodland and scattered trees on site. However, the most recent records of red squirrel within 2km of the site are from 1997 and are not known to occupy areas of east Lancashire at present. It is anticipated that high abundances of grey squirrel (*Sciurus carolinensis*) are present within this region (Shuttleworth/RSST n.d.). This species will displace red squirrel through competition as well as cause increased red squirrel mortality through the spread of squirrel pox (The Mammal Society, 2020).

As such, red squirrel have been reasonably discounted from the site.

3.3.11 Water Vole

No evidence of water vole was identified during the field survey and the brook on site is unsuitable to support the species due to a lack of steep, vegetated banks that water vole require. The habitats on site do not offer nest building opportunities due to a lack of varied structure within the grassland habitats and the understorey of the broadleaved woodland and no records of water vole were returned within the data search.

However, Pendleton Brook that borders the south of the site has the potential to offer value to water vole through the presence of steep banks and vegetated verges, which may be used for resting and foraging purposes.

As such, water vole may be present on site.

3.3.12 Otter

The watercourses on site and bordering the south of the site offer limited holt construction potential for otter and there was no evidence of otter holts present during the field survey. The habitats on site don't offer suitable habitat for holt construction due to the shallow depth of the watercourses. However, they offer reasonable foraging and commuting value to the species as the watercourses are known to support populations of prey fish species and are linked to Mearely Brook and the River Ribble.

As such, it is anticipated that otter may use the site for foraging and commuting purposes.

3.3.13 Badger

No evidence of badger was seen on site during the field survey, although two records were returned within the data search and the site offers suitable sett constructing and foraging habitat. The area of broadleaved woodland bound to the western border of the site is located on an embankment and therefore offers suitable sett constructing habitat, however the presence of the brook may limit the potential due to the chances of flooding. The improved grassland on site also offers suitable foraging potential for the species and other areas of woodland are present within the surrounding area and are linked to the site through green corridors.

As such, badger may be present on site

3.4 Invasive Species

3.4.1 Flora

No invasive, non-native species were present on the site at the time of the field survey. However, it should be noted that some invasive non-native plants are very fast spreading and therefore the potential for these species to be introduced to the site at a later date cannot be ruled out.

4 Ecological Constraints and Recommended Mitigation

4.1 Proposed Development

Taylor Wimpey are proposing to develop land at Littlemoor Road in Clitheroe (hereafter referred to as 'the site'). The proposals include the development of a residential estate in two phases, with associated hard and soft landscaping and areas of public open space (POS).

4.2 Designated Sites

The site is located within the impact risk zone of Salthill Quarry SSSI located approximately 1.7km north of the site. It is anticipated that the designated sites are a sufficient distance away and are separated by anthropogenic barriers such as the residential areas, that no impacts as a result of development are anticipated.

Salthill Quarry LNR and BHS is located approximately 1.7km north of the site boundary. There may be small increase of visitors to the nearby sites. However, based on the size of the scheme and the proposed retention of green space on site, it is anticipated the potential impacts will not be of significance.

4.3 Habitats

The site comprised habitats that were found to be widespread within the local area; however, they did contain value for wildlife such as bats, birds, terrestrial and aquatic mammals. The broadleaved woodland, scattered broadleaved trees, hedgerows and aquatic habitats are of highest value, though the building on site may provide suitable roosting opportunities for bats and nesting opportunity for barn owls and other birds.

The hedgerows on site and Pendleton Brook bordering the south of the site qualify as habitats of principal importance and as such must be considered accordingly.

Due to the presence of the watercourses on and adjacent to the site it is recommended that a detailed Construction and Environment Management Plan (CEMP) specific to the proposed development is created (and adhered to throughout the course of construction works) to avoid, minimise and mitigate for negative impacts resulting from construction practices on all habitats surrounding the site.

This plan will detail measures to avoid, minimise or mitigate any potential negative effects caused by construction practices on the environment on and surrounding the site including:

- The control of run-off from areas of arisings to prevent any pollutants/contaminants entering nearby watercourses.
- Appropriate measures to suppress dust during hot, dry and/or windy conditions.
- Excavations should be sealed overnight or should have at least one shallow-sloping side to allow any animals that may fall in to escape.
- An ecologist should be contacted for advice should any protected species be discovered during construction.

4.3.1 Broadleaved Woodland, Trees, and Hedgerows

It is recommended that retained areas of the broadleaved woodland should implement a development buffer of a minimum 10m either side to protect it from adverse impacts as this habitat forms part of the

most ecological valuable area on site and would be sensitive to adverse impacts. The woodland forms an ecological corridor linking the site to offsite habitats. Buffer zones not only act as protection for the natural environment but also can provide visual screens which improve views and reduce noise.

Generally, the protection measures of retained trees and hedgerows will be through the use of temporary protective demarcation fencing to protect the trees and shrubs. The fencing must extend outside the canopy of the retained trees and must remain in position until all plots have been developed to ensure protection is provided throughout the construction phase.

The fencing will be in accordance with BS 5837:2012 Trees in Relation to Design, Demolition and Construction: Recommendations.

It is recommended that replacement tree planting at a 1:3 ratio is required to compensate for loss of any trees. It is recommended that the planting comprises native species and species known to be of value for the attraction of wildlife. This will include fruiting and flowering species.

4.3.2 Watercourses

It is recommended that a minimum buffer of 10m is implemented throughout the construction to the watercourses associated with the site. These watercourses flow in to Mearley Brook and subsequently the River Ribble, both of which are mentioned within the Ribble Catchment Flood Management Plan (2009). Pendleton Brook also qualifies as a habitat of principal importance and, although off site, must be considered within the development. The buffer implemented will reduce the impact on the watercourses and the potential for flooding and other impacts further downstream.

4.4 Fauna

4.4.1 Invertebrates

The site offers the potential to support notable and protected invertebrates, with dead wood and aquatic habitats present which offer an important habitat in the invertebrate life cycle. However, no areas of high floristic diversity are present on site which would offer optimal foraging habitat.

It is recommended that as much of the aquatic habitat and dead wood habitat on site is retained. If it is not possible to retain this habitat then other dead wood habitats should be created and native plant species such as ragwort should be planted on site as part of the landscape design.

4.4.2 Amphibians

Great crested newts were deemed unlikely to be present on site and no further consideration for the species is required. However, there is a possibility that common amphibians such as common toad may be present on site.

It is recommended that Reasonable Avoidance Measures are to be followed during site clearance. All site contractors are to be inducted to the potential presence of the species. Any debris is to be cleared by hand, and any common amphibians located moved carefully, by hand, to outside of the development area.

4.4.3 Reptiles

The site offers the potential to support reptiles and as such should be considered during the development. Further surveys would be required to fully understand the use of the site by reptiles.

It is recommended that Reasonable Avoidance Measures are to be followed during site clearance. All site contractors are to be inducted to the potential presence of the species. Any debris is to be cleared by hand, and any reptiles located moved carefully, by hand, to outside of the development area.

4.4.4 Birds

Due to areas of the woodland currently requiring removal, and its potential value to support notable birds, it is recommended that further breeding bird surveys are completed to assess the sites value for birds (see Section 5). The survey results will inform the required mitigation due to the loss of breeding habitat.

Hedgerow, tree, and woodland removal should be undertaken outside of the breeding bird season (March to September, inclusive). If this is not possible, a suitably experienced ecologist should check the habitat for breeding bird activity no more than 48 hours before clearance. If nesting activity is found, nests must be left in situ until the young have fledged.

4.4.5 Barn owl

Before demolition of B1 and the removal of any tree marked with barn owl potential an ecological walkover of the site should be conducted to look for barn owl activity by a suitably qualified ecologist. If nesting activity is found, nests must be left in situ until the young have fledged.

4.4.6 Bats

Roosting Bats

As stated in Section 3.3.8, a number of trees and one building were assessed as having bat roosting potential. Further bat surveys are recommended to confirm presence or absence of roosting bats within these structures, as detailed in 5.5.

It is also recommended that trees identified with **moderate** or **high** bat roosting potential undergo an aerial tree survey to further assess the PRFs identified for roosting bats and potential re-categorisation of bat roosting potential. As detailed in Section 2.4 the area of broadleaved woodland was unable to be subject to a detailed PRA survey for every tree comprising this habitat. As such, it is recommended that upon the completion of a tree removal scheme the site is revisited to assess the potential of the trees to be removed as part of the development.

After the updated aerial surveys any trees with Low roosting potential should undergo reasonable avoidance measures. This would involve being inspected by a licensed bat worker with an endoscope before felling or utilising a soft felling technique (which involves practises like removing limbs separately and lowering them to the ground and then leaving for 24 hours before clearing).

Any tree categorised as **Moderate** or **High** roost suitability after the updated aerial surveys will require further bat surveys as detailed in Section 5.5.

Foraging and Commuting Bats

Further transect surveys will be required to understand the use of the habitats on site by bats and inform mitigation requirements due to habitat loss.

Slow-flying species such as brown long-eared and Myotis species, which are known to be in the local area, are sensitive to lighting and may be impacted by the proposed development, should no mitigation for lighting be considered.

Lighting mitigation should follow the guidance outlined in the Institute for Lighting Engineers document “Guidance for the Reduction of Obtrusive Lighting” (2005) and BCT’s “Bats and Artificial Lighting in the UK” (2018).

Construction lighting should not be directed towards retained and surrounding habitats including the broadleaved woodland and grassland. The construction lighting may impact bats which are sensitive to light. Directional lighting will be achieved by angle and orientation of beam, use of a cowl, louvre or other light shield, or a combination of these.

An External Lighting Scheme had not been produced on the writing of this report. As such, the following recommendations are to be considered within the scheme during its condition, to minimise impacts of lighting. The recommendations are as follows:

- Keep site lighting to minimum levels.
- Luminaries should lack UV elements and preferably LED lighting with a warm white light should be used over cool white light (ideally <2700Kelvin).
- Lighting should feature peak wavelengths greater than 550nm.
- Internal lighting should be positioned away from windows to minimise light spill, where appropriate.
- Light placement should be downward facing to prevent excess horizontal or vertical light spill.
- The use of integrated fittings such as cowls, shields, louvres, and hoods, that effectively contain light spill from unintended areas, where appropriate.
- The use of hard landscaping features to block light and create dark corridors.
- Avoid illuminating any suitable retained bat habitats, particularly the hedgerows and broadleaved woodland, that are potentially high value commuting and foraging habitat for bats.
- Use of timed security lights should be set on motion-sensors and using short, 1-minute timers, to minimise light use, where appropriate.
- Column heights of lighting can be considered to minimise light spill.

4.4.7 Hedgehog

Hedgehog may be present on site, as such checks for hedgehogs should be carried out prior to hedgerow removal to avoid harming this species during works.

4.4.8 Otter and Water Vole

There is the potential for impacts to Pendleton Brook to occur although the implementation of a CEMP as outlined in Section 4.3 will control any indirect impacts to the watercourse.

Otter and water vole may use the watercourse on site and the watercourse bounding the southern border of the site for commuting and foraging purposes. Both species are sensitive to disturbance and if otter or water vole are found to use the vegetation present along Pendleton Brook, then it may be necessary to obtain a licence from Natural England before works can proceed.

The following Reasonable Avoidance Measures should be followed throughout the construction phase:

- Prior to construction starting, a walkover survey for otter along Pendleton brook will be conducted to assess for the presence of otter and water vole.
- All site personnel are to be inducted through use of a toolbox talk, on the presence of otters and water vole, their legal protection and working limits.
- Regular inspections of the watercourse and its banks for any sign of otter holts or activity, and water vole burrows or activity. These should be undertaken by an ecologist at regular intervals during the operation of the site.
- Any man-made excavations, trenches or pits relating to the development that must remain open overnight, will either be securely fenced off or covered up overnight to avoid entrapment of otters and water vole, if left open, access ramps (e.g., mammal ladders, a roughened plank or even a ramp of earth) will be placed within the excavation each night near to crossing points to allow any animals that accidentally fall into the excavation a means of climbing out.
- Any temporarily exposed open pipe system will be capped in such a way as to prevent otters or water vole gaining access, as this may happen when contractors are off-site.
- A 10m buffer zone should be maintained around Pendleton Brook to limit impacts to this watercourse.
- Nocturnal lighting should be directed away from Pendleton Brook.

If in the unlikely chance an otter is discovered on site, the project ecologist is to be contact immediately and Natural England are to be informed.

4.4.9 Badgers

No evidence of badger activity was observed on site, including badger setts, latrines, guard hairs, or prints. However, suitable habitats are present on site for badger sett construction and records of this species were returned during the desk study.

Therefore, the following Precautionary Working Methods will be adhered to during construction phase to ensure that no badgers are impacted by the proposed development:

- All site operatives will be inducted to the potential presence of the species and the species legal protection.
- All site operatives will be inducted as to identifying potential badger setts and should be vigilant if they suspect they locate a new sett during works and inform the site manager immediately. A minimum 20m buffer will be maintained from the potential sett until an ecologist has been to site.
- All excavations will be battened at a 45-degree angle or ramps to be positioned to allow escape should animals become trapped.
- All site machinery and materials will be appropriately stored to avoid harm to the species, notably between July and November each year when extra care is needed to avoid potential impacts on pregnant females.

5 Further Surveys

5.1 Invertebrates

5.1.1 Preliminary Survey

The site should be subject to a Preliminary Invertebrate survey by invertebrate specialist ecologists. Any areas of the site that exhibited features of potential value to support key species (including NERC Act Section 41 (S41), RDB or Nationally Scarce and species of interest) or rich assemblages of invertebrates will be photographed and used as evidence in the evaluation. The site should be appraised based on the quality, frequency, and footprint of the existing key features or juxtaposition of any features to one another (mosaics).

5.1.2 Further Survey (if necessary)

If there is habitat on site with potentially high suitability to support a diversity of invertebrate species which may be impacted upon by the proposed development. The site would therefore be subjected to a series of invertebrate surveys using traditional techniques such as beating, capture using nets, sweep samples, spot sampling, hand search, vacuum sampling, vane traps, pitfall traps etc, to determine the diversity of the invertebrate assemblage present on site and to determine the presence of rare or notable species.

5.2 Reptiles

The surveys will follow the standard guidance as detailed within the Herpetofauna Workers' Manual (Gent & Gibson, 2003) and relevant reptile survey guidance (Froglife, 1999; Sewell et al., 2013).

Artificial refugia should be placed within suitable habitat on site and left to "bed down" for at least 20 days before the first survey. The recommended minimum number of surveys is seven visits. Each session should be planned to take less than 2 hours. A suggested pattern is:

- Visit 1 – 2: Mid-March – early April
- Visit 3 – 4: April – May
- Visit 5 – 6: Late May – end June
- Visit 7: Late August – Late September

Surveys should aim to incorporate both walkabout searches and refugia searches. Walking a predetermined route slowly and looking for evidence of reptiles basking in the sunlight or under refugia. Surveys should take place between 8:30am – 11:00am and/or 4:00pm – 6:30pm in optimal weather conditions of 9-20°C, bright sunshine. Surveys should not be conducted in rainy or windy weather.

5.3 Breeding Birds

The surveys will be based on the methodology for the Common Bird Census (CBC) Survey methodology and will consist of two surveys to be completed between April and September with at least ten days between each visit (due to seasonal constraints).

Survey visits will be undertaken on dry days with no more than moderate wind. Survey during dawn mist is acceptable but survey during dense fog will be avoided. Site visits would commence no later than

one hour after sunrise. In order to avoid confusion and reduce survey bias in areas with high densities of birds the survey would be commenced towards the end of this window. In addition, the starting position would be varied between visits in order to reduce survey bias. In all cases survey would ideally be completed by 11am (12 noon at the latest).

All areas will be approached within 50m unless this is not practicable. In large expanses of open grassland or arable fields the boundaries will be walked and all birds within the field recorded. In other habitat where access and views allow, efforts will be made to record all bird activity within 50m of the survey route. Where no access is available, Public Rights of Way (PRoW) and local roads (where it is deemed safe to do so) will be utilised.

In all cases all birds seen or heard will be identified and recorded on a suitable scale map of the site to allow the information to be clearly recorded using standard British Trust for Ornithology (BTO) species and activity codes.

5.4 Barn Owl

As B1 and T10 offer suitable nesting opportunities for barn owls further vantage point surveys are required to confirm the presence or likely absence of nesting barn owl on site. These surveys will aim to determine the potential use of the site by barn owls as potential nesting or roosting sites.

Three separate survey visits between mid-June and July will be required and should be undertaken at either dusk or dawn.

If nesting activity is found, nests must be left in situ until the young have fledged.

5.5 Bats

5.5.1 Nocturnal Emergence/Re-entry Surveys

As various structures were identified as having bat roosting potential, further surveys in the form of emergence and/or re-entry surveys are recommended to confirm presence or absence of roosting bats. All surveys should be undertaken in accordance with the current BCT guidance (Collins, 2016).

The surveys would involve situating a number of suitably qualified surveyors around the structure/s to monitor for bats emerging from potential roost locations (dusk emergence survey) or entering potential roost locations (dawn re-entry survey) for a specified amount of time. The surveys should be completed between May – September (inclusive). It is recommended at least one survey is completed during the bat maternity season which is generally defined as June to July.

It should be noted that low potential trees do not require further surveys as long as the recommended soft felling techniques are adhered to. No further surveys will be required for any trees that are not being impacted by the development.

The number of surveys recommended, and surveyors needed, are detailed in Table 7.

Table 7 – Summary of Recommended Further Bat Survey Requirement for the Site

Structure Reference	Category of Suitability	Minimum Survey Effort	Recommended Number of Surveyors
B1, T4, and T5	High	Three separate survey visits. One dusk emergence and a separate dawn re-entry survey. And a further	B1 = 5

Structure Reference	Category of Suitability	Minimum Survey Effort	Recommended Number of Surveyors
		dusk emergence or dawn re-entry survey. Surveys can be undertaken between May and September with at least one survey between May and August.	T4 and T5 = 2 Both trees to be surveyed together
T7, T8, T12, T15, T16, and T18	Moderate	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey. Surveys can be undertaken between May and September with at least one survey between May and August.	T7 and T8 = 2 T12, T15, T16, and T18 = 1 each

If bats are identified roosting within the buildings or trees on site, a minimum of three surveys will be required to inform a Natural England EPSL. The surveys will identify what bat roosts are present and will in turn clarify what mitigation will be required as part of the ESPL. Roost provision, lighting and timescales will be considered as part of the licence.

An EPSL can only be submitted once full planning permission has been granted and all wildlife conditions have been discharged.

5.5.2 Transect and Static Surveys

The site was assessed as having **High** suitability for foraging and commuting bats, and as such the sites require a series of night-time transect and static surveys prior to determination of the application. These activity surveys are required on site to determine how bats are using the site and to inform any mitigation proposals.

This will involve surveyors walking a pre-determined transect route recording any signs of bat activity they encounter, using the appropriate monitoring equipment. In accordance with the Bat Conservation Trust survey guidelines 3rd Edition (Collins, 2016). We have allowed five separate activity surveys to be undertaken, one per month.

Monthly transect surveys are required on warm, dry nights between April and October inclusive, and will be carried out in full accordance with the latest Bat Conservation Trust guidelines.

Each transect survey will also include the deployment of two static detectors which will be left on site for five consecutive nights, in optimal weather conditions. The data collected on the static detector will be later analysed to provide further evidence of the site's use by foraging and commuting bats. The static is to be positioned on site once per month over the surveying season.

5.6 Water Vole

Two surveys need to be undertaken, and will involve a direct hand search for burrows, feeding signs, pathways, latrines, footprints etc. in accordance with the current survey guidance (Dean *et al.* 2016). The first survey must be carried out between **April and June** and the second between **July to September**, with at least 2 months between the two surveys. The survey should aim to encompass 500m both upstream and downstream of the site where possible.

If evidence of water vole is found then a camera trap should be deployed within suitable habitat to monitor the use by water vole.

The results will then be used to confirm presence/absence and inform mitigation measures, necessary to minimise impact on these species, if present.

Please note that a licence cannot be issued for the specific purpose of development, and rather Natural England will only consider issuing a licence in relation to a development proposal if the licensed action is going to provide a positive conservation benefit for water voles. This is extremely hard to achieve and therefore, it is strongly advised that a 10m no works buffer is implemented on site to reduce the need for any licensing.

5.7 Otter

A single visual survey should be undertaken at any time of the year to search for holts/couches, tracks, and spraints. The survey should involve two surveyors walking 500m upstream and downstream where possible searching for evidence of otter on the banks and surrounding vegetation, as well as within the watercourse itself. The survey should follow good practice guidelines as set out by Chanin (2003).

If a holt or resting place is found then a European Protected Species Licence may be required to inform the planning application.

6 Opportunities for Enhancement

The National Planning Policy Framework (NPPF) (2021) highlights the requirement for planning policies and decisions to conserve and enhance the natural environment.

Paragraph 174 states that this should be achieved by (in terms of this assessment only):

- a) *protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*
- d) *minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*

Specific enhancement recommendations for the site include the following:

- Bat and bird boxes could be placed on the new buildings / retained trees. A plan to show the locations of these boxes and the specifications should be produced by a suitably qualified ecologist once the layout is finalised.
- A barn owl box could be affixed to a retained tree in an area of retained broadleaved woodland.
- Planting of linear features such as hedgerows and trees between garden plots where possible, to add commuting features within the site.
- The inclusion of 'hedgehog highways' to facilitate movement across the site. This includes holes of 13 x 13cm at the bases of fence panels, leaving a sufficient gap beneath gates and/or leaving brick spaces at the bases of brick walls.
- Amphibian gully ladders could be implemented within the proposed development.
- An ecologically sensitive planting scheme could be incorporated on the site to promote invertebrate use of the site, which could benefit local bat and bird species.

7 Conclusion

The PEA has met the objectives of the report, by demonstrating the following:

- The major habitats identified on site included improved grassland, broadleaved woodland, scattered trees, hedgerows, watercourse, and building.
- Potential ecological constraints identified invertebrates, common amphibians, reptiles, birds, barn owl, bats, hedgehog, water vole, otter, and badgers and are detailed in Section 4.
- Mitigation recommendations to be completed prior and during the construction phase for invertebrates, common amphibians, reptiles, birds, barn owl, bats, hedgehog, water vole, otter, and badgers and are detailed in Section 4.
- Further invertebrate, reptile, breeding bird, barn owl, bat, water vole, and otter surveys are required to determine presence or absence and inform relevant mitigation requirements.
- General ecological enhancements are listed within Section 6.

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Appendix 1 – Relevant Legislation

Legislation relating to European Protected Species (e.g. bats, otter, great crested newt)

European Protected Species and their resting places (e.g. bat roosts) are protected under the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way (CROW) Act 2000, and the Conservation of Habitats and Species Regulations 2017.

The Conservation of Habitats and Species Regulations 2017 transpose the European Union’s ‘Habitats Directive’ (Council Directive 92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora (EC Habitats Directive) into UK law. The Regulations provide for the designation and protection of ‘European Sites’, the protection of ‘European Protected Species’ (EPS), and the adaptation of planning and other controls for the protection of European Sites. EPS are listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017.

Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to:

- Intentionally kill, injure or take certain animals listed in Schedule 5;
- Intentionally or recklessly damage or destroy any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;
- Intentionally or recklessly disturb any such animal while it is occupying a structure or place which it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any structure or place which any such animal uses for shelter or protection.

In addition, under this legislation there are offences relating to sale, possession and control of wild animals listed in Schedule 5.

- Under the Conservation of Habitats and Species Regulations 2017 it is an offence to:
- Deliberately capture, injure or kill any wild animal listed as a European Protected Species;
- Deliberately disturb wild animals of any such species in such a way as to be likely:
- to impair their ability:
 - to survive, to breed or reproduce, or to rear or nurture their young, or;
 - in the case of animals of a hibernating or migratory species, to hibernate or migrate, or;
- to affect significantly the local distribution or abundance of the species to which they belong.
- Deliberately take or destroy the eggs of such an animal, or;
- Damage or destroy a breeding site or resting place of such an animal.

In addition, under this legislation there are offences relating to possession, control sale and exchange of an EPS.

Great crested newt, otter and several species of bat are listed as a SoPI under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

Legislation for amphibians (other than great crested newt)

Under the Wildlife and Countryside Act 1981 (as amended) the four widespread amphibian species, smooth newt (*Triturus vulgaris*), palmate newt (*Triturus helveticus*), common toad (*Bufo bufo*) and common frog (*Rana temporaria*) receive limited protection through section 9(5) only which makes selling, offering for sale, possessing or transporting for the purpose of sale (live or dead animal, part or derivative) an offence.

Common toad is listed as a SoPI under Section 41 of the NERC Act 2006.

Legislation relating to breeding birds

All birds, their nests and eggs are protected by the Wildlife and Countryside Act 1981 (as amended) and it is an offence, with certain exceptions, to:

- Intentionally kill, injure or take any wild bird;
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built;
- Intentionally take or destroy the egg of any wild bird; and
- Intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building or is in, on or near a nest with eggs or young; or disturb the dependent young of such a bird.

Schedule 1 of the Wildlife and Countryside Act 1981 provides further protection for selected species (including peregrine falcon (*Falco peregrinus*), barn owl (*Tyto alba*), little ringed plover (*Charadrius dubius*) and black redstart (*Phoenicurus ochruros*) during the breeding season. If any person intentionally or recklessly disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or disturb dependent young of such a bird. That person shall be guilty of an offence.

A number of bird species are listed as SoPI under Section 41 of the NERC Act 2006.

Conservation status - Birds of Conservation Concern (Eaton et al. 2015)

The UK's leading bird conservation organisations have worked together on the third quantitative review of the status of the birds that occur regularly in the UK, updating the last review in 2011. The status of birds within the UK have been regularly monitored through a series of surveys, including the national Breeding Bird Survey, Common Bird Census, sea bird monitoring programs and wetland monitoring programs. The result of this review and continued monitoring is The Population Status of Birds in the UK, Birds of Conservation Concern 4: 2015.

Birds are assessed against criteria to place each species on one of three alert lists, red, amber or green. Red list species are considered to be of high conservation concern, being either globally threatened, having historical UK population declines, having a rapid population decline or breeding range contraction of 50% or more in the last 25 years.

Amber list species are considered to be of medium conservation concern as they meet one or more of the following criteria (but none of the red list criteria): Red listed for historical decline in a previous review but with substantial recent recovery (more than doubled in the last 25 years), a UK breeding range contraction of between 25% and 49%, a reduction of breeding or non-breeding population of 25-49% in the last 25 years, a 5-year mean of 1-300 breeding pairs in the UK, an unfavourable European conservation status, at least 50% of the UK breeding population found in 10 or fewer sites, or where the breeding population in the UK represents 20% or more of the European breeding populations.

Green list species are considered to be of low conservation concern. They include all regularly occurring species that do not qualify under any of the red or amber criteria are green listed. The green list also includes those species listed as recovering from Historical Decline in the last review that have continued to recover and do not qualify under any of the other criteria.

Legislation relating to badger

Badgers are protected under the Protection of Badgers Act 1992 (as amended) which makes it an offence to:

- wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so;
- intentionally or recklessly damage, destroy or obstruct access to a badger sett; and
- disturb a badger when it is occupying a sett.

These provisions have implications for construction or preparation works undertaken in the vicinity of an active sett and may be confounded by distance from the sett entrance. Any works resulting in ground penetration, vibration or noise near an identified badger sett entrance/s have the potential to disturb badgers and advice should be sought from a suitably experienced ecologist under such circumstances. If disturbance to an active sett is probable, then a licence may need to be obtained from Natural England before any works commence.

The Hedgerows Regulations 1997

The Hedgerows Regulations 1997 were introduced to protect hedgerows of importance from destruction. However, the legislation does not apply to any hedgerow (even if it is within the list above) which is within or marking the boundary of the curtilage of a dwelling house.

For the Regulations to be applicable, the hedgerow must be at least 20 metres in length or, if less than 20 metres, it must meet another hedgerow at each end. A hedgerow is deemed to be important if it is more than thirty years old and meets at least one of the criteria listed in Part II of Schedule 1 of the Regulations.

If a hedgerow which qualifies under the Regulations is to be removed, the landowner must contact the Local Planning Authority (LPA) in writing by submitting a hedgerow removal notice. The LPA then has a period of 42 days to decide whether or not the hedgerow meets the importance criteria of the regulations.