

Plot 11 at Land off Chatburn Old Road, Chatburn, Lancashire BB7 4AB

ECOLOGICAL SURVEY AND ASSESSMENT

March 2022

[ERAP (Consultant Ecologists) Ltd ref: 2022-071]

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Document Control

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SUMMARY

- i. This ecological survey and assessment presents the ecological, biodiversity and nature conservation status of Plot 11 at land off Chatburn Old Road, Chatburn, Lancashire BB7 4AB. The assessment was requested in connection with proposals to develop the site to a single residential unit (Ribble Valley Borough Council Planning Application reference 3/2021/1153).
- ii. This report presents the results of a desktop study, data search and extended Phase 1 Habitat Survey carried out in March 2022. The scope of survey undertaken is appropriate to identify potential ecological constraints, the remit of mitigation required and opportunities for biodiversity associated with the development proposals.
- iii. The site comprises a wall with Hawthorn scrub at its northern elevation, and a field of poor semi-improved grassland adjacent to recently constructed residential dwellings at its western boundary and established housing at its eastern boundary. An area of Bramble scrub is also present.
- iv. The proposals will have no adverse effect on statutory or non-statutory designated sites for nature conservation.
- v. A small 1m² area of plant species indicative of calcareous conditions is present (i.e. Salad Burnet) beyond the south-eastern end of the site. It is recommended that this area is protected during the construction phase of the proposed development. Measures for the protection of the grassland are presented at **Section 5.2**. It is recommended that, in the long term, this area is translocated to form part of the 900m² area of calcareous grassland proposed to the south-west of the site.
- vi. Only common and widespread plant species were found. None of the habitats present are representative of semi-natural habitat. No Priority Habitats are present within the site. The shrubs and grassland habitats are not considered to be of importance in terms of a geographical context.
- vii. No invasive plant species listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) were detected within the site.
- viii. The shrubs are suitable for use by nesting birds; measures for the protection of nesting birds during works and to ensure that nocturnal wildlife are not impacted by lighting as a consequence of the proposals are presented at **Section 5.2**. Badger activity has been noted within the wider area; the proposals will not impact upon any badger setts or areas of core or important habitat for badger however. Measures to ensure the protection of badger during the construction phase of the proposed development are presented at **Section 5.2**, with further measures for the protection of other wildlife, including hedgehog (a Priority Species) during works. No other protected species have been detected.
- ix. The recommendations in **Section 5.0** outline all the mandatory measures and additional actions to be applied to ensure compliance with wildlife legislation, the National Planning Policy Framework (NPPF) and best practice.
- x. The proposals will secure an opportunity to implement beneficial measures such as habitat creation that will safeguard habitats for wildlife such as birds and bats, with the aim of providing a net gain in biodiversity in accordance with the principles of the NPPF. Recommendations for ecological enhancements are presented at **Sections 5.3** and **5.4**.
- xi. It is concluded that the proposals are feasible and acceptable in accordance with ecological considerations and relevant planning policy. Development at the site will provide an opportunity to secure ecological enhancement for wildlife associated with residential development.

1.0 INTRODUCTION

1.1 Background and Rationale

- 1.1.1 ERAP (Consultant Ecologists) Ltd was commissioned by JJ Construction NW Ltd to carry out an ecological assessment of Plot 11 at land off Chatburn Old Road, Chatburn, Lancashire BB7 4AB (hereafter referred to as the 'site'). The Ordnance Survey (OS) grid reference at the centre of the site is SD 76613 44052. An aerial image of the site and its surrounding habitats is appended at **Figure 1** (source image: ESRI World Imagery).
- 1.1.2 The assessment was requested in connection with a planning application to develop the site to a single residential unit (Ribbles Valley Borough Council Planning Application reference 3/2021/1153).

1.2 Scope of Works

- 1.2.1 The scope of ecological works undertaken in March 2022 comprised:
- A desktop study and data search for known ecological information at the site and the local area;
 - An Extended Phase 1 Habitat Survey and assessment;
 - Assessment of the ecological value of the habitats within the site with the use of the National Vegetation Classification (NVC) and the Ratcliffe criteria, as presented in *A Nature Conservation Review* (Ratcliffe, 1977);
 - Survey and assessment of all habitats for relevant statutorily protected species¹ and other wildlife including badger (*Meles meles*), bird species and reptiles;
 - A daylight bat survey of the trees;
 - The identification of any potential ecological constraints on the proposals and the specification of the scope of mitigation and ecological enhancement required in accordance with wildlife legislation, planning policy guidance and other relevant guidance; and
 - The identification of any further surveys or precautionary actions that may be required to inform the progression of the site through the planning process, and/or prior to the commencement of any construction activities.

2.0 METHOD OF SURVEY

2.1 Desktop Study and Data Search

- 2.1.1 The following sources of information and ecological records were consulted:
- MAGiC: A web-based interactive map which brings together geographic information on key environmental schemes and designations, including details of statutory nature conservation sites;
 - Lancashire Environment Record Network (LERN);
 - Lancashire Badger Group;
 - Lancashire Biodiversity Action Plan (BAP); and

¹ In accordance with *Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and Their Impact on the Planning System* (Ministry of Housing, Communities & Local Government, 2005) developers should not be required to undertake surveys for protected species unless there is reasonable likelihood of the species being present and affected by the development. In this instance (for example) there are no ditches or watercourses within or in proximity to the site; there has therefore been no requirement to consider water vole (*Arvicola amphibius*) or otter (*Lutra lutra*) as part of this assessment.

- e. Previous ecological studies completed at the site, namely:
- 2010-175 *Land at Chatburn Old Road, Clitheroe: Ecological Survey and Assessment* (ERAP Ltd, 2010);
 - 2014-119 *Land at Chatburn Old Road, Clitheroe: Ecological Survey and Assessment* (ERAP Ltd, 2014)
 - 2017-432 *Letter in Relation to LCC/2017/0087 Ecology Response Dated 28th November 2017, Land off Old Road, Chatburn, BB7 4AB* (ERAP (Consultant Ecologists) Ltd, 2017); and
 - 2019-133 *Land off Chatburn Old road, Chatburn, Lancashire BB7 4AB: Ecological Survey and Assessment* (ERAP (Consultant Ecologists) Ltd, 2019) hereafter the '2010, 2014, 2017 and 2019 ecology reports'

2.1.2 Note that the 2010, 2014, 2017 and 2019 ecology reports all covered a wider area than the site. The site boundary presented at the 2019 ecology report has been reduced to avoid a 1m² area of calcareous grassland identified in the 2019 ecology report; this area now lies outside the site.

2.2 Vegetation and Habitats

2.2.1 An Extended Phase 1 Habitat Survey of the site was carried out by Brian Robinson on 1st March 2022. The weather was dry and sunny, with a light air (Beaufort scale 1) and an air temperature of 4°C at 9 am.

2.2.2 A habitat and vegetation map was produced for the site and the immediate surrounding area at a scale of 1:500 (refer to **Figure 2**). The mapping is based on the Joint Nature Conservation Committee Phase 1 Habitat Survey methodology (JNCC, 2010) with minor adjustments to illustrate and examine the habitats with greater precision.

2.2.3 On site habitat mapping was assisted via use of GPS technology and QField on-site mapping software, using *Landscape Strategy – 1 Plot Dwg. No. 6791.01* (TBA Landscape Architecture, 2022) and *ESRI World Imagery* as base plans.

2.2.4 The plant species within the site boundary were determined with estimates of the distribution, ground cover, abundance and constancy of individual species. The estimation of abundance was based on the DAFOR system, where D = Dominant, A = Abundant, F = Frequent, O = Occasional and R = Rare, this being a widely used and accepted system employed by ecological surveyors. The terms L = Locally and V = Very were additionally used to describe the plant species distributions with greater precision.

2.2.5 Stands of vegetation and habitats were described and evaluated using the National Vegetation Classification (NVC). The NVC provides a systematic and comprehensive analysis of British vegetation and is a reliable framework for nature conservation and land-use planning.

2.2.6 Habitats within the site were assessed in accordance with the UK Habitats Classification / UKHab (Butcher, et al., 2020). The UKHab has been designed to function at two scales: fine scale (25m² or 5 metres length) and large scale (400m² or 20 metres length). It has been considered for the purposes of this survey that the fine scale of 25m² or 5 metres length is appropriate.

2.2.7 Searches were made for uncommon, rare and statutorily protected plant species, those species listed as protected in the *Wildlife and Countryside Act 1981* (as amended) and species which are indicators of important and uncommon plant communities. Plant nomenclature follows *New Flora of the British Isles 3rd Edition* (Stace, 2010).

2.2.8 Searches were carried out for the presence of invasive species, including those listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), including Japanese Knotweed (*Fallopia japonica*), Indian Balsam (*Impatiens glandulifera*) and Giant Hogweed (*Heracleum mantegazzianum*).

2.3 Animal Life

Badger

- 2.3.1 The survey area for badger covered the site (as annotated on **Figure 2**) and extended to accessible land within a radius of 50 metres from the site boundary. Private gardens / land were excluded from the survey.
- 2.3.2 The survey was conducted in accordance with guidance presented within *Badgers and Development* (Natural England, 2007) and *Badgers: surveys and mitigation for development projects* (Natural England, 2015).
- 2.3.3 The following signs of badger activity were searched for:
- Sett entrances, e.g. entrances that are normally 25 to 35cm in diameter and shaped like a 'D' on its side;
 - Large spoil heaps outside sett entrances;
 - Bedding outside sett entrances;
 - Badger footprints;
 - Badger paths;
 - Latrines;
 - Badger hairs on fences or bushes;
 - Scratching posts; and
 - Signs of digging for food.
- 2.3.4 Habitats within and surrounding the site were assessed in terms of their suitability for use by foraging and sheltering badger in accordance with their known habitat preferences as detailed in current guidance and *Badger* (Roper, 2010).

Bat Species

Daylight Survey

- 2.3.5 The site was assessed for its suitability to support roosting bats by Brian Robinson, Natural England Class Survey Licence WML CL18 (Bat Survey Level 2), Registration Number 2015-13161-CLS-CLS.
- 2.3.6 The surveyor's qualifications and experience meet the criteria as defined in the *Technical Guidance Series Competencies for Species Survey: Bats* (CIEEM, 2013).
- 2.3.7 A list of equipment used is detailed at **Table 2.1**, below:

Table 2.1: Survey Equipment used during Daylight Bat Survey

Ladders
LED Lenser P14 torch
Canon Ixus digital camera
8x20 binoculars
Ridgid Micro Inspection Camera Borescope CA-100

- 2.3.8 A preliminary assessment of any trees or shrubs within the site was conducted to assess their suitability for use by roosting bats, and to inform whether further surveys or precautionary measures were required.
- 2.3.9 Trees and shrubs were assessed from the ground using binoculars and a high-powered torch. Each tree was searched for the presence of the following features:

Woodpecker holes, rot holes, hazard beams, other vertical or horizontal cracks or splits in stems and branches, partially decayed platey bark, knot holes, man-made holes, tear-outs, cankers in which cavities have developed, other hollows or cavities, including butt-rots, double-leaders forming compression forks with included bark, gaps between overlapping stems or branches, partially detached Ivy (*Hedera helix*) with stem diameters in excess of 50mm and bat, bird or dormouse (*Muscardinus avellanarius*) boxes.

- 2.3.10 Terms used to describe any features present follow (where possible) those outlined and described in *Bat Tree Habitat Key, 2nd Edition* (Andrews, H (ed), 2013) and *Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-care and Ecology Professionals* (BTHK, 2018).

Habitat Assessment for Commuting / Foraging Bats

- 2.3.11 Habitats within and adjacent to the site were assessed for their value and suitability for commuting and foraging bats in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*, (Collins, J. (ed), 2016). Reference has been made to the categories and descriptions / examples, presented at **Table 2.2**, below.

Table 2.2: Consideration of Suitability of Foraging and Commuting Habitat for Bats

Suitability	Commuting Habitat	Foraging Habitat
Negligible	Negligible habitat features on site likely to be used by commuting bats.	Negligible habitat features on site likely to be used by foraging bats.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated i.e. not very well connected to the surrounding landscape by other habitat.	Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree or patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.	Habitat that is linked to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	Continuous, high-quality habitat that is well connected to the wider landscape and is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. Habitats close to and connected to known roosts.	High-quality habitat that is well-connected to the wider landscape and is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Habitats close to and connected to known roosts.

Bird Species

- 2.3.12 Bird species observed and heard during the survey were recorded.
- 2.3.13 Habitats throughout the site and in the immediate surrounding area were assessed for their value to roosting, feeding and nesting birds, as indicated by the amount of shelter, feeding value, woody vegetation structure and species diversity of tree and shrub species in the site.

Great Crested Newt

Desktop Search for Ponds

- 2.3.14 In accordance with *Great crested newts: advice for local planning authorities* (Natural England, 2020) all ponds within an unobstructed 500 metres of a site should be considered for their suitability to support breeding great crested newts. The potential of the proposed development to impact upon any great crested newt population(s) whose breeding ponds are within 500 metres must be considered.
- 2.3.15 The search of habitats in the wider area up to a distance of 500 metres from the site boundary revealed the presence of a pond (Pond 1), located 175 metres to the south of the site (at SD 76621 43865) within Chatburn Wildlife Garden. The small (approx. 20m²) plastic lined pond is not shown on any Ordnance

Survey map and is likely to have been created to increase the biodiversity at the woodland area within Chatburn Wildlife Garden.

Consideration of Requirement for Further Survey

- 2.3.16 The requirement for further survey at the pond was then assessed using the following criteria:
- Presence of dispersal barriers to great crested newt movements between ponds and the site, as detected during the walkover survey;
 - Distance of ponds from the site, and the potential influence of the proposed development of the site on any populations of great crested newt (if present at ponds), using the Natural England rapid risk assessment tool; and
 - Presence of other ponds which may form metapopulations and / or alter the influence of the site on ponds at greater distances.

Presence of Dispersal Barriers

- 2.3.17 A mortared wall lies on the southern site boundary, between the majority of the site and the pond. The wall does not extend along the full length of the southern site boundary and ends to the west. Although the wall will present a dispersal barrier between the site and the pond, amphibian dispersal from the pond to the site may be possible.

Consideration of Distance of Ponds from Site and Relative Size of Site

- 2.3.18 To inform the requirement for further surveys, the Natural England Rapid Risk Assessment tool from *GCN Method Statement WML-A14-2 (Version April 2020)* (Natural England, 2020) has been completed, as presented at **Table 2.3**, below.
- 2.3.19 The tool has been completed based on the distances of the ponds from the site, and the size of the development site (0.09 hectares or 'Ha'). The rapid risk assessment tool assumes that great crested newt are present.

Table 2.3: Rapid Risk Assessment Result

Component	Likely Effect	Notional Offence Probability Score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	No effect	0
Land 100-250m from any breeding pond(s)	0.01 - 0.1 ha lost or damaged	0.01
Land >250m from any breeding pond(s)	0.01 - 0.1 ha lost or damaged	0
Individual great crested newts	No effect	0
	Maximum:	0.01
Rapid risk assessment result:	Green: Offence Highly Unlikely	

- 2.3.20 The rapid risk assessment indicates that the site is sufficiently small and distant from the pond that no impacts to any breeding population of great crested newt are likely as a consequence of the proposed development.
- 2.3.21 No further assessment in respect of great crested newt has been required.

Reptile Species

- 2.3.22 The site and its surroundings were assessed in terms of their suitability for use by reptile species using the important characteristics for reptiles outlined in the draft document '*Reptile Mitigation Guidelines*' (Natural England, 2011), and the *Reptile Habitat Management Handbook* (Edgar, et al., 2010). These habitat characteristics are outlined in **Table 2.4**, below.

Table 2.4: Important Habitat Characteristics for Reptiles

1. Location (in relation to species range)	7. Connectivity to nearby good quality habitat
2. Vegetation Structure	8. Prey abundance
3. Insolation	9. Refuge opportunity
4. Aspect	10. Hibernation habitat potential
5. Topography	11. Disturbance regime
6. Surface geology	12. Egg-laying site potential

Other Wildlife

2.3.23 Evidence of other wildlife (including Priority Species) observed whilst on site (but for which specific surveys were not made) was recorded and has been included in this report where it is considered of relevance to the planning application.

2.4 Survey and Reporting Limitations

2.4.1 The survey was completed in early March, when many plant species remain in a dormant state; the surveyor is experienced in identifying plant species from their vegetative characteristics however, and it is considered that a reliable assessment of the habitats present was possible.

2.4.2 All measurements within this report are approximate only, and have been either measured (using QField) or estimated whilst on site or calculated using mapping software (QGIS) or internet-based mapping services such as MAGiC and Google Earth.

2.4.3 A photograph of the wall at the northern site boundary has been reproduced from the 2019 report after the 2022 photograph corrupted on the camera's SD card. The condition of the wall remains as shown on the photograph.

2.5 Evaluation Methods

2.5.1 The habitats, vegetation and animal life were evaluated with reference to standard nature conservation criteria as described in *A Nature Conservation Review* (Ratcliffe, 1977) and *Guidelines for the Selection of Biological SSSIs* (Bainbridge, et al., 2013). These are size (extent), diversity, naturalness, rarity, fragility, typicality, recorded history, position in an ecological or geographical unit, potential value and intrinsic appeal.

2.5.2 Habitats have been assessed to determine whether they meet those described in *UK Biodiversity Action Plan: Priority Habitat Descriptions* (Maddock, A (ed), 2008); these lists are used to help draw up the statutory lists of Priority Habitats, as required under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006*. Where suitable, the ecological value of the habitats present has been assessed using the terms outlined in *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018).

2.5.3 Government advice on wildlife, as set out in the *National Planning Policy Framework* (Ministry of Housing, Communities and Local Government, 2021) and associated government circulars has been taken into consideration. Legislation relating to protected species, such as those listed under Schedules 1, 5, 6 and 8 of the *Wildlife and Countryside Act 1981* (as amended) and *The Conservation of Habitats and Species Regulations 2017*, is referenced where applicable, and any impacts to protected species are evaluated in accordance with current guidance.

2.5.4 The presence of any Priority Species, as listed under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006* is noted, and habitats are assessed in terms of their suitability and value for these species. The presence of habitats and/or species listed by the Lancashire BAP Provisional Long List has been taken into account in the evaluation of the site.

3.0 SURVEY RESULTS

3.1 Desktop Study and Data Search

Designated Sites for Nature Conservation

Statutory Designated Sites for Nature Conservation and SSSI Impact Risk Zones

- 3.1.1 The site is not and does not form part of any statutory designated site for nature conservation.
- 3.1.2 The site lies within a Site of Special Scientific Interest (SSSI) Impact Risk Zone for Little Mearley Clough SSSI, located 2.8 kilometres to the south-east of the site and designated for its geological interest. The SSSI Impact Risk Zone requires the Local Planning Authority to consult with Natural England on likely risks from the following development categories (Ordnance Survey, 2022):
- Planning applications for quarries, including: new proposals, Review of Minerals Permissions, extensions, variations to conditions etc. Oil and gas exploration / extraction.
 - Livestock and poultry units with a floorspace greater than 500m², slurry lagoons and digestate stores greater than 4000m².
 - General combustion processes greater than 50 megawatts energy input including energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis / gasification, anaerobic digestion, sewage treatment works and other incineration / combustion.
- 3.1.3 The proposals do not match any of the development categories which would require further consultation with Natural England.

Non-statutory Designated Sites for Nature Conservation

- 3.1.4 The site is not and does not form part of any non-designated site for nature conservation.
- 3.1.5 13 non-statutory designated sites for nature conservation (called Biological Heritage Sites, or BHS within Lancashire) are present within 2 kilometres of the site; these are summarised at **Table 3.1** below.

Table 3.1: BHS Within 2 Kilometres of the Site

BHS Name	Distance and Direction from Site	Reason for Designation
A59 Road Cutting, Worston to Chatburn	0.59 kilometres to the east	The BHS description is incomplete, however it is noted that the BHS has been selected for its artificial habitats (Ar2) and its flowering plants and ferns (Ff4b).
Bean Hill Wood and Grassland	0.63 kilometres to the north	The site comprises a north and northeast facing bluff slope to the south of the River Ribble between Ribble Lane and Chatburn Brook. The habitats on the site comprise two blocks of deciduous woodland separated by field slope of species-rich grassland.
River Ribble from London Road Bridge Preston, in West, to County Boundary, in East	0.67 kilometres to the south-west	The site comprises the River Ribble and associated semi-natural habitats from the county boundary at Paythorne (SD856836) downstream to London Road Bridge, Walton-le-Dale, Preston (SD553287). The Ribble rises high in the Pennines at Newby Head Moss at an altitude of 422m and is one of the largest rivers in North West England. Collectively, the river and its associated habitats support a rich assemblage of plants and animals. Throughout the length of the River Ribble the General Quality Assessment is Very Good and Good (A and B) with a localised section with the Fairy Good (C) classification.
Bellman Farm Marsh	0.69 kilometres to the south-west	The site comprises the land adjoining Pimlico Brook from near Pimlico Link Road to the wet fields associated with Bellman Farm. The site also includes the area around the old kiln and the adjacent embankment.

BHS Name	Distance and Direction from Site	Reason for Designation
		The wet fields have an underlying peaty soil, indicative of a historical wetland habitat. Their situation between slightly elevated limestone formations to the north west and south east indicates a former valley mire. Formerly managed as meadowland, their vegetation is essentially fen meadow.
Worsaw Hill, Warren Hill, Crow Hill and The Ridge	0.70 kilometres to the south-east	The site comprises a cluster of limestone knolls between Worston and Downham and includes Crow Hill, The Ridge, Warren Hill and Worsaw Hill. The cluster of limestone knolls is also notified as a Geological Site of Special Scientific Interest. The site is of particular importance for its species-rich limestone grassland.
Bellman Park Quarry	1.15 kilometres to the south	Bellman Park Quarry is cut into one of a series of limestone hills, and is a link in a chain of calcareous habitats and features between Clitheroe and Downham. To the west are Clitheroe Castle knoll and Salthill and to the east Crow hill, Worsaw Hill and the A59(T) road cutting. It forms part of the Salthill and Bellmanpark geological SSSI.
Swanside Beck and Smithies Brook Valley	1.27 kilometres to the north-east	The site comprises a mosaic of semi-natural habitats along the valley of Swanside Beck and Smithies Brook. It extends for approximately 2.5 km upstream from the confluence of Smithies Brook with the river Ribble near Smithies Bridge, Chatburn. Within the site are a complex of habitats including woodland, scrub, grassland, flushes, marsh, riverbank and running water. The site is noted for the occurrence of the freshwater crayfish, a species listed in Schedule 5 of the <i>Wildlife and Countryside Act 1981</i> , and as a spawning ground for salmon and brown trout.
Worston Common	1.35 kilometres to the south	The site comprises species-rich grassland situated on the edge of the village of Worston. Two species occurring at the site, namely Green Figwort (<i>Scrophularia umbrosa</i>) and Melancholy Thistle (<i>Cirsium heterophyllum</i>), are included in the <i>Provisional Lancashire Red Data List of Vascular Plants</i> .
Salthill Quarry	1.42 kilometres to the south-west	The site comprises of a mosaic of habitats including limestone grassland, scrub and developing woodland surrounding a former limestone quarry which has been developed as an industrial estate. The main areas of interest are the exposed outcrops and stony ground which have been colonised by a diverse flora.
Coplow Quarry and Pimlico Road Grasslands	1.46 kilometres to the south-west	The site comprises of areas of species-rich, semi-natural calcareous grassland and developing scrub at Coplow Quarry. The site includes Coplow Quarry geological SSSI.
West Clough Wood	1.65 kilometres to the north-west	The site comprises ancient, semi-natural woodland occupying the steep sides of West Clough Brook, located between the villages of West Bradford and Grindleton. The woodland is listed in the Lancashire Inventory of Ancient Woodland (Provisional), (English Nature, 1994).
Town End Croft Wood	1.74 kilometres to the east	The site comprises a block of woodland situated near the junction of Chatburn Road and Green Lane on a ridge immediately to the north west of Downham. The woodland supports a diversity of species characteristic of semi-natural woodland.
Cross Hill Quarry	1.94 kilometres to the west	The site comprises the disused Cross Hill limestone quarries and the adjoining Brungerley Park and supports a mosaic of semi-natural habitats including limestone grassland, scrub and woodland. The site includes Cross Hill Quarry Local Nature Reserve. The main quarry supports a diversity flora.

3.1.6 The presence of the BHS is considered further at **Section 4.2** below.

Priority Habitats Inventory and Soilscape Information

- 3.1.7 The Priority Habitats Inventory² was checked via MAGiC map. No Priority Habitats are reported for the site.
- 3.1.8 In accordance with *Soilscape (England)* as presented on MAGiC Map (National Soil Resources Institute, 2005), the site supports 'freely draining slightly acid loamy soils', and the characteristic semi-natural habitats associated with the soils comprise 'base-rich pastures and deciduous woodlands'.

Protected and Notable Species

- 3.1.9 LERN hold no records of protected and notable species for the site.
- 3.1.10 Records of protected and notable species for a 2 kilometre radius of the site are summarised at **Table 3.2** below.

Table 3.2: Records of Protected Species Within a 2 Kilometre Radius of the Site

Taxon Group	Species Name and Designations ¹ and Notes
Amphibians	Common toad (<i>Bufo bufo</i>): PS & LBAP. 1 record from 2019, located 1980 metres to the west of the site.
	Common frog (<i>Rana temporaria</i>): LBAP. 13 records, dated between 1970 and 2010. The closest record is 875 metres to the south-west of the site, and from 1992.
	Palmate newt (<i>Lissotriton helveticus</i>): 5 records, dated between 1881 and 2010. The closest record is 1355 metres to the south of the site, and from 1995.
	Smooth newt (<i>Lissotriton vulgaris</i>): 2 records, dated 1992 and 1995. The closest record is 1355 metres to the south of the site, and from 1995.
Birds	Peregrine (<i>Falco peregrinus</i>): WCAs1 & LBAP. 3 records, dated between 1978 and 1999. The closest record is 875 metres to the south-west of the site, and from 1978.
	Fieldfare (<i>Turdus pilaris</i>): WCAs1. 1 record from 1978, located 875 metres to the south-west of the site.
	Kingfisher (<i>Alcedo atthis</i>): WCAs1. 4 records, dated between 1998 and 1999. The closest record is to the north-east of the site; an accurate estimation of distance of the record to the site cannot be made due to the locational data being less than a six figure grid reference
	Redwing (<i>Turdus iliacus</i>): WCAs1. 2 records, dated 1978 and 1992. The closest record is 875 metres to the south-west of the site, and from 1978.
Birds – Priority and LBAP Species	<p>PS & LBAP</p> <p>Cuckoo (<i>Cuculus canorus</i>), curlew (<i>Numenius arquata</i>), grey partridge (<i>Perdix perdix</i>), house sparrow (<i>Passer domesticus</i>), lapwing (<i>Vanellus vanellus</i>), reed bunting (<i>Emberiza schoeniclus</i>), skylark (<i>Alauda arvensis</i>), spotted flycatcher (<i>Muscicapa striata</i>), tree pipit (<i>Anthus trivialis</i>), tree sparrow (<i>Passer montanus</i>), bullfinch (<i>Pyrrhula pyrrhula</i>), dunnock (<i>Prunella modularis</i>), herring gull (<i>Larus argentatus</i>), song thrush (<i>Turdus philomelos</i>) and starling (<i>Sturnus vulgaris</i>).</p> <p>PS Only</p> <p>Lesser redpoll (<i>Acanthis cabaret</i>).</p> <p>LBAP Only</p> <p>Black-headed gull (<i>Chroicocephalus ridibundus</i>), common sandpiper (<i>Actitis hypoleucos</i>), grey heron (<i>Ardea cinerea</i>), kestrel (<i>Falco tinnunculus</i>), long-eared owl (<i>Asio otus</i>), meadow pipit (<i>Anthus pratensis</i>), northern golden plover (<i>Pluvialis apricaria</i> subsp. <i>albifrons</i>), oystercatcher (<i>Haematopus ostralegus</i>), raven (<i>Corvus corax</i>), redshank (<i>Tringa totanus</i>), snipe (<i>Gallinago gallinago</i>), swift (<i>Apus apus</i>), teal (<i>Anas crecca</i>) and willow warbler (<i>Phylloscopus trochilus</i>).</p>
Bony Fish	<p>PS & LBAP</p> <p>Atlantic salmon (<i>Salmo salar</i>), brown / sea trout (<i>Salmo trutta</i>) and European eel (<i>Anguilla anguilla</i>).</p> <p>LBAP Only</p> <p>Bullhead (<i>Cottus gobio</i>).</p>
Crustaceans	White-clawed freshwater crayfish (<i>Austropotamobius pallipes</i>): WCAs5, PS & LBAP. 2 records, both from 2012; the closest record is 1625 metres to the north-east of the site

² A spatial dataset that describes the geographic extent and location of Natural Environment and Rural Communities Act (2006) Section 41 habitats of principal importance.

Taxon Group	Species Name and Designations ¹ and Notes
Flowering Plants	<p>PS & LBAP Field Gentian (<i>Gentianella campestris</i>).</p> <p>PS Only Darnel (<i>Lolium temulentum</i>), Field Eryngo (<i>Eryngium campestre</i>) and Thorow-wax (<i>Bupleurum rotundifolium</i>).</p> <p>LBAP Only Autumn Gentian (<i>Gentianella amarella</i>), Barberry (<i>Berberis vulgaris</i>), Bird's-eye Primrose (<i>Primula farinosa</i>), Blue Moor-grass (<i>Sesleria caerulea</i>), Blue Water-speedwell (<i>Veronica anagallis-aquatica</i>), Buckthorn (<i>Rhamnus cathartica</i>), Cloudberry (<i>Rubus chamaemorus</i>), Common Gromwell (<i>Lithospermum officinale</i>), Common Rock-rose (<i>Helianthemum nummularium</i>), Cowberry (<i>Vaccinium vitis-idaea</i>), Field Mouse-ear (<i>Cerastium arvense</i>), Field Pepperwort (<i>Lepidium campestre</i>), Fragrant Orchid (<i>Gymnadenia conopsea</i>), Globeflower (<i>Trollius europaeus</i>), Grass-of-Parnassus (<i>Parnassia palustris</i>), Greater Pond-sedge (<i>Carex riparia</i>), Green Hellebore (<i>Helleborus viridis</i>), Hairy Violet (<i>Viola hirta</i>), Heath Dog-violet (<i>Viola canina</i>), Heath Spotted-orchid (<i>Dactylorhiza maculata</i> subsp. <i>ericetorum</i>), Henbane (<i>Hyoscyamus niger</i>), Herb-paris (<i>Paris quadrifolia</i>), Knotted Clover (<i>Trifolium striatum</i>), Lesser Twayblade (<i>Neottia cordata</i>), Lily-of-the-valley (<i>Convallaria majalis</i>), Limestone Bedstraw (<i>Galium sternerii</i>), Marsh Fragrant-orchid (<i>Gymnadenia densiflora</i>), Mountain Everlasting (<i>Antennaria dioica</i>), Narrow-leaved Bitter-cress (<i>Cardamine impatiens</i>), Northern Spike-rush (<i>Eleocharis mamillata</i> subsp. <i>austriaca</i>), Northern Yellow-cress (<i>Rorippa islandica</i>), Opposite-leaved Pondweed (<i>Groenlandia densa</i>), Red Pondweed (<i>Potamogeton alpinus</i>), Round-leaved Dog-rose (<i>Rosa obtusifolia</i>), Round-leaved Wintergreen (<i>Pyrola rotundifolia</i>), Shepherd's Cress (<i>Teesdalia nudicaulis</i>), Shining Pondweed (<i>Potamogeton lucens</i>), Slender Tufted-sedge (<i>Carex acuta</i>), Small Scabious (<i>Scabiosa columbaria</i>), Stinking Hellebore (<i>Helleborus foetidus</i>), Thread-leaved Water-crowfoot (<i>Ranunculus trichophyllus</i>), White Bryony (<i>Bryonia dioica</i>), Wild Service-tree (<i>Sorbus torminalis</i>), Wintergreen (<i>Pyrola rotundifolia</i> subsp. <i>maritima</i>) and Wood Crane's-bill (<i>Geranium sylvaticum</i>).</p>
Invertebrates – butterflies	<p>PS & LBAP White-letter hairstreak (<i>Satyrrium w-album</i>), small heath (<i>Coenonympha pamphilus</i>) and wall (<i>Lasiommata megera</i>).</p> <p>LBAP Only Ringlet (<i>Aphantopus hyperantus</i>).</p>
Invertebrates – moths	<p>PS & LBAP August thorn (<i>Ennomos quercinaria</i>), double dart (<i>Graphiphora augur</i>), garden tiger (<i>Arctia caja</i>) and v-moth (<i>Macaria wauaria</i>).</p> <p>PS Only Anomalous (<i>Stilbia anomala</i>), autumnal rustic (<i>Eugnorisma glareosa</i>), brindled ochre (<i>Dasypolia templi</i>), centre-barred sallow (<i>Atethmia centrago</i>), cinnabar (<i>Tyria jacobaeae</i>), dark-barred twin-spot carpet (<i>Xanthorhoe ferrugata</i>), ghost moth (<i>Hepialus humuli</i>), Haworth's minor (<i>Celaena haworthii</i>), heath rustic (<i>Xestia agathina</i>), knot grass (<i>Acronicta rumicis</i>), latticed heath (<i>Chiasmia clathrata</i>), mottled rustic (<i>Caradrina morpheus</i>), mouse moth (<i>Amphipyra tragopoginis</i>), neglected rustic (<i>Xestia castanea</i>), red carpet (<i>Xanthorhoe decoloraria</i>), rosy rustic (<i>Hydraecia micacea</i>), shaded broad-bar (<i>Scotopteryx chenopodiata</i>), small phoenix (<i>Ecliptopera silaceata</i>), small square-spot (<i>Diarsia rubi</i>) and white ermine (<i>Spilosoma lubricipeda</i>).</p> <p>LBAP Only Dusky-lemon sallow (<i>Cirrhia gilvago</i>), brown rustic (<i>Rusina ferruginea</i>), butterbur (<i>Hydraecia petasitis</i>), chimney sweeper (<i>Odezia atrata</i>), golden-rod brindle (<i>Xylena solidaginis</i>), lunar hornet moth (<i>Sesia bembeciformis</i>), northern drab (<i>Orthosia opima</i>), northern rustic (<i>Standfussiana lucerneae</i>), puss moth (<i>Cerura vinula</i>) and wood tiger (<i>Parasemia plantaginis</i>).</p>
Jawless Fish	<p>PS & LBAP River lamprey (<i>Lampetra fluviatilis</i>).</p> <p>LBAP Only Brook lamprey (<i>Lampetra planeri</i>).</p>
Reptiles	<p>Adder (<i>Vipera berus</i>): WCAs5, PS & LBAP. 2 records, dated 1956 and 1968; the closest record is 1765 metres to the north-west of the site, and from 1968.</p> <p>Common lizard (<i>Zootoca vivipara</i>): WCAs5, PS & LBAP. 1 record, 1765 metres to the north-west of the site, and from 1974.</p> <p>Grass snake (<i>Natrix helvetica</i>): LBAP. 2 records, dated 1956 and 1968; the closest record is 1765 metres to the north-west of the site, and from 1968.</p>

Taxon Group	Species Name and Designations ¹ and Notes
Spiders (Araneae)	Labyrinth spider (<i>Agelena labyrinthica</i>): LBAP. 1 record, 1485 metres to the south-west of the site, and from 1989.
Terrestrial mammals	Bats (<i>Chiroptera</i>): EPS, WCAs5, PS & LBAP. 6 records, dated between 1994 and 2006. The closest record is 530 metres to the east of the site, and from 2003.
	Noctule bat (<i>Nyctalus noctula</i>): EPS, WCAs5, PS & LBAP. 1 record from 2019, located 65 metres to the east of the site.
	Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>): EPS, WCAs5, PS & LBAP. 7 records, all from 2019. The closest record is 65 metres to the east of the site.
	Unidentified Myotis bat (<i>Myotis</i> sp.): EPS, WCAs5, PS & LBAP. 2 records, dated 2010 and 2015. The closest record is 1905 metres to the north of the site, and from 2015.
	Daubenton's bat (<i>Myotis daubentonii</i>): EPS, WCAs5 & LBAP. 4 records, all from 2006. The closest record is 1770 metres to the west of the site.
	Common pipistrelle (<i>Pipistrellus pipistrellus</i>): EPS, WCAs5 & LBAP. 15 records, dated between 1986 and 2019. The closest record is 65 metres to the east of the site, and from 2019.
	Whiskered bat (<i>Myotis mystacinus</i>): EPS, WCAs5 & LBAP. 3 records, dated between 2010 and 2019. The closest record is 955 metres to the south-west of the site, and from 2019.
	Eurasian red squirrel (<i>Sciurus vulgaris</i>): WCAs5, PS & LBAP. 3 records, dated between 1945 and 1959. The closest record is 1765 metres to the north-west of the site, and from 1959.
	European water vole (<i>Arvicola amphibius</i>): WCAs5, PS & LBAP. 3 records, dated between 1909 and 1964. The closest record is 1765 metres to the north-west of the site, and from 1964.
	Brown hare (<i>Lepus europaeus</i>): PS & LBAP. 13 records, dated between 1996 and 2020. The closest record is 960 metres to the south-east of the site and from 2005.
	Polecat (<i>Mustela putorius</i>): PS & LBAP. 2 records, both from 2020. The closest record is 1610 metres to the north-east of the site.
	West European hedgehog (<i>Erinaceus europaeus</i>): PS & LBAP. 3 records, dated between 2015 and 2019. The closest record is 1535 metres to the south-west of the site, and from 2016.
	Badger (<i>Meles meles</i>) PBA: % records, dated between 1969 and 2017. The closest record if over 800 metres from the site.
¹Key to Designation Codes: EPS = European Protected Species under the <i>Conservation of Habitats and Species Regulations 2017</i> . WCAs1 = Species receives full protection under Schedule 1 of the <i>Wildlife and Countryside Act 1981</i> (as amended). WCAs5 = Species receives full protection under Schedule 5 of the <i>Wildlife and Countryside Act 1981</i> (as amended). PBA = Protection of Badger Act 1992 PS = Priority Species listed under Section 41 of the NERC Act 2006 LBAP = Species listed on the Lancashire Biodiversity Action Plan Provisional Long List	

3.1.11 Lancashire Badger Group hold no records of badger for the site. Records are held for five badger setts within 2 kilometres of the site; all are between 1 and 1.4 kilometres from the site boundary.

3.1.12 The presence of these protected and notable species within the wider area has been taken into account throughout this report.

Previous Ecology Reports

3.1.13 The 2010, 2014, 2017 and 2019 ecology reports all covered a wider area than that covered by this application; a portion of this area has now been developed as residential dwellings and another is in use as a temporary works area.

3.1.14 Areas of the wider site (in 2010 and 2014) were detected to support calcareous grassland; this had been removed in 2017 due to construction on the site and due to infilling with soil at the housing site's margins. On 21st December 2017 (the date of the 2017 survey) no areas of remaining calcareous grassland could be detected.

3.1.15 It is understood that all matters relating to the removal and any compensation for the removal of the calcareous grassland prior to this report will be dealt with separately to this application; the site has been evaluated in this report in terms of the habitats currently present.

3.1.16 A single plant of Salad Burnet (*Sanguisorba minor*) was detected beyond the south-eastern corner of the site in the 2019 ecology report, with locally frequent Springy Turf-moss (*Rhytidiadelphus squarrosus*), Red Fescue (*Festuca rubra*) and Hawkweed species (*Hieracium* sp.). It is considered this 1m² area, which remains present in 2022 (refer to **Photo 3**) is a remnant of the former larger area of calcareous grassland detected at the site.

3.1.17 The presence of this area is considered further at **Section 4.3** below.

3.2 Vegetation and Habitats

3.2.1 A Phase 1 Habitat Survey map is appended at **Figure 2**, and can be referred to for all habitat descriptions. Photographs are appended at **Section 8.2**.

3.2.2 The approximately 0.09 hectare site is located in a largely rural area to the east of Chatburn village. The northern site boundary is defined by a mortared stone wall and shrubs, beyond which lies Chatburn Old Road and plantation woodland. The eastern site boundary is defined by fencing, beyond which lies residential housing. The southern site boundary is not defined by any landscape feature but lies within a field of grassland. The western site boundary is defined by fencing, beyond which lies residential housing and an ongoing construction site.

3.2.3 Refer to **Photo 4**. A mortared stone wall and row of Hawthorn (*Crataegus monogyna*) shrubs and Bramble (*Rubus fruticosus* agg.) scrub is present at the northern site boundary. The wall supports very locally frequent Garlic Mustard (*Alliaria petiolata*), Herb-Robert (*Geranium robertianum*), Ash (*Fraxinus excelsior*) saplings, Ivy (*Hedera helix*), Common Nettle (*Urtica dioica*), Ramsons (*Allium ursinum*), Ivy-leaved Toadflax (*Cymbalaria muralis*) and Lords-and-Ladies (*Arum maculatum*). This habitat remains as described by the 2019 ecology report.

3.2.4 The vegetation is indicative of the *W21 Hawthorn - Ivy scrub* and *W24 Bramble – Yorkshire-fog* underscrub communities of the NVC (Rodwell, 1991) and is described by the UKHab as h3f Hawthorn scrub and h3d Bramble scrub.

3.2.5 Refer to **Photos 1** and **2**. The majority of the site supports grassland described as 'improved and infrequently mown' in 2019. At the time of the survey the irregular mowing regime has caused the grassland to support a greater frequency of coarse grasses and is now more indicative of poor semi-improved grassland.

3.2.6 The grassland is characterised by constant and frequent Yorkshire-fog (*Holcus lanatus*) with occasional and locally abundant False Oat-grass (*Arrhenatherum elatius*) and occasional and locally frequent Cock's-foot (*Dactylis glomerata*), Common Sorrel (*Rumex acetosa*), Creeping Buttercup (*Ranunculus repens*) and Tufted Hair-grass (*Deschampsia cespitosa*) and occasional Hard Rush (*Juncus inflexus*).

3.2.7 A plant species list is appended at **Table 8.1**. The vegetation is indicative of an *MG7 Perennial Rye-grass* ley in a state of succession towards an *MG1 False Oat-grass* grassland (Rodwell, 1992) due to lack of regular management and described as g3c other neutral grassland with the following secondary codes: 14 scattered rushes and 77 neglected (unmanaged for 3 to 10 years).

Invasive Plant Species

3.2.8 No invasive plant species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) were detected within the site.

3.3 Animal Life

Badger

3.3.1 Badger tracks were noted in the woodland to the south of the site and to the west of the site (along the eastern edge of the quarry to the west of the site). ERAP (Consultant Ecologists) Ltd is aware that badger

have been noted feeding within gardens to the east of the site (via communication between the neighbouring householders and the client).

- 3.3.2 No signs of foraging badger or pit latrines were noted within the site during the survey. No badger setts were noted within the site or within 50 metres of the site.
- 3.3.3 The grassland habitats within the site are suitable for foraging badger although is unlikely to provide core or important foraging habitat; similar (and better quality) habitats are present throughout the wider area, and the site is small in size.
- 3.3.4 Impacts to badger as a consequence of development and during the construction phase of the proposed development are considered further at **Section 4.4** below.

Bat Species

Shrubs

- 3.3.5 No trees are present within the site. None of the shrubs within the site support any features suitable for use by roosting bats. The presence of roosting bats is reasonably discounted at the site.

Habitat Assessment for Commuting and Foraging Bats

- 3.3.6 The trees and scrub within the site and at site margins are suitable for use by foraging bats and will provide habitat connectivity across the site. The grassland within the site is unlikely to provide an abundance or diversity of invertebrate prey, and is therefore considered to be of low suitability for use by foraging bats.
- 3.3.7 The habitats present are suitable for and are likely to contribute to the wider foraging area of low numbers of common species of edge-feeding foraging bats, such as common pipistrelle (*Pipistrellus pipistrellus*), and also low numbers of species known to forage over open habitats and over wide areas, such as noctule (*Nyctalus noctula*).
- 3.3.8 A diverse range of species and / or a large number of bats are considered unlikely at the site owing to the absence of habitats such as woodland or tree-lined watercourses within the site.

Bird Species

- 3.3.9 Birds detected in the site on 21st May 2019 and 1st March 2022 are listed in **Table 3.3**, below.

Table 3.3: Bird species Detected on 21st May 2019 and 1st March 2022

Scientific Name	Common Name	BOCC Status ¹
<i>Aegithalos caudatus</i>	Long-tailed tit	Green
<i>Columba livia</i>	Feral pigeon	Green
<i>Columba palumbus</i>	Wood pigeon	Green
<i>Corvus monedula</i>	Jackdaw	Green
<i>Cyanistes caeruleus</i>	Blue tit	Green
<i>Erithacus rubecula</i>	Robin	Green
<i>Fringilla coelebs</i>	Chaffinch	Green
<i>Parus major</i>	Great tit	Green
<i>Passer domesticus</i>	House sparrow	Red
<i>Phasianus colchicus</i>	Pheasant	Green
<i>Sturnus vulgaris</i>	Starling	Red
<i>Troglodytes troglodytes</i>	Wren	Amber
<i>Turdus merula</i>	Blackbird	Green

¹BOCC: Birds of Conservation Concern (Stanbury, et al., 2021).
Priority Species are presented in **bold**.

- 3.3.10 The shrubs are scrub are suitable for use by nesting passerine (i.e. perching) species, including those detected within the site during the survey. This is considered further at **Section 4.4**, below.

Reptiles

- 3.3.11 Debris suitable for sheltering and basking reptiles was examined during the survey; no reptile species were detected.
- 3.3.12 Large areas of the site have been regularly disturbed and the site provides poor quality habitat for sheltering, basking and hibernating reptiles. The site is not adjacent or linked to any areas of favourable habitat for reptile species, and there are no records of reptile for the site. Records held for the wider area are distant from the site, and old (the most recent is from 1974). The presence of reptiles within the site is reasonably discounted.

Other Wildlife

- 3.3.13 The site supports suitable habitat for foraging hedgehog (*Erinaceus europaeus*), a Priority Species; the site is considered to be too small to provide core or important habitat for this species.
- 3.3.14 Pond 1, located 175 metres to the south of the site, may be suitable for use by other breeding amphibian species such as common frog (*Rana temporaria*), a Lancashire BAP species, or common toad (*Bufo bufo*), a Priority and Lancashire BAP Species. Both species are known to disperse over wider areas from breeding ponds than great crested newt, and therefore the potential for these species to have colonised the pond must be considered. The wall at the southern end of the site will remain a partial barrier to amphibian dispersal, however it is possible that common frog and common toad may be present within the site. It is considered that the site is reasonably unlikely to provide 'core' or 'important' habitat for foraging or sheltering amphibian species however. The site provides habitat of poorer quality than that of the woodland surrounding the pond, and is not extensive in terms of the terrestrial habitat it provides.
- 3.3.15 The potential presence of hedgehog, common frog and common toad at the site is considered further at **Section 4.4**.

4.0 EVALUATION AND ASSESSMENT

4.1 Introduction and Description of Proposals

- 4.1.1 In accordance with *Landscape Strategy – 1 Plot Dwg. No. 6791.01* (TBA Landscape Architecture, 2022), hereafter the 'landscape strategy', it is proposed to develop the site to a residential dwelling with associated access road and garden. In accordance with the landscape strategy the client has committed to install one sparrow terrace and one bat box as part of the proposed development and plant native shrubs along the western site boundary.
- 4.1.2 **Section 4.2** provides an assessment of any impacts of the proposed development on the designated sites for nature conservation present in the wider area. The ecological value of habitats within the site is evaluated at **Section 4.3**, and protected and notable species are considered at **Section 4.4**.

4.2 Designated Sites for Nature Conservation

- 4.2.1 It is considered that the site is sufficiently small and distant from all designated sites for nature conservation that the proposed development will have no impact upon them.

4.3 Vegetation and Habitats

- 4.3.1 Only common and widespread plant species were found. None of the habitats present are representative of semi-natural habitat. No Priority Habitats are present within the site. The shrubs and grassland habitats are not considered to be of importance in terms of a geographical context³.
- 4.3.2 A 1m² area of grassland which supports Sala Burnet is located beyond the southern site boundary. Although this area lies outside the site boundary there is the potential for it to be damaged during the construction phase of the proposed development. Measures to ensure the protection of this area during the construction phase of the proposed development are presented at **Section 5.2**. It is recommended that, in the long term, this area is translocated to the 900m² area of calcareous grassland proposed to the south-west of the site in order that it forms part of a wider coherent habitat unit and does not degrade through lack of regular management to (for example) Bramble scrub.
- 4.3.3 The proposal will plant an area of native shrubs along the western site boundary; this will (once established) create additional suitable habitat within the site for foraging and sheltering hedgehog, foraging and nesting birds and foraging bats.

4.4 Protected Species and Other Wildlife

- 4.4.1 The habitats within and surrounding the site are suitable for use by foraging and commuting bats; recommendations to ensure that they are not impacted by artificial lighting are presented at **Section 5.2**.
- 4.4.2 Recommended features to include within the proposals to enhance habitats for roosting bats at the site are presented at **Section 5.3**.
- 4.4.3 The shrubs provide suitable foraging and nesting habitat for the species of birds detected within the site and the wider area via the records search (including house sparrow, a Priority Species). Recommendations for the protection of birds during works are presented at **Section 5.2**. Recommendations for enhancements for nesting birds to include within the site design are presented at **Section 5.3**.
- 4.4.4 Badger are known to be present in the wider area and forage in gardens to the east of the site. Pond 1 supports suitable habitat for breeding common frog and common toad. It is considered that the proposed development will not remove any core or important foraging or sheltering habitat for these species, and that no badger setts will be impacted by the works. The proposals have the potential to harm wildlife during the construction phase of the proposed development however; recommendations for the protection of hedgehog, badger, common frog, common toad and other wildlife during works are presented at **Section 5.2**.
- 4.4.5 Measures to ensure that hedgehog can access to the proposed garden habitats (and to ensure habitat connectivity is maintained across the site) are presented at **Section 5.3**. It is considered that the provision of native shrubs along the western site boundary will, once they are established, create additional habitat for sheltering and foraging hedgehog and nesting and foraging birds.

³ Using the terms presented at Section 4.7 of *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018), i.e. International and European, National, Regional, Local Authority-wide area, River Basin District, Estuarine system / Coastal cell or Local. The term 'site' value is additionally used to highlight ecological features considered to be of importance in the context of the wider site habitats, but which are of negligible value in the context of the local area.

5.0 RECOMMENDATIONS AND ECOLOGICAL ENHANCEMENT

5.1 Introduction

5.1.1 These recommendations aim to ensure that the development is implemented in accordance with relevant wildlife legislation, Natural England guidance, the principles of the National Planning Policy Framework (NPPF), local planning policy and best practice.

5.1.2 In accordance with Chapter 15, paragraph 180(d) of the NPPF:

'opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate'.

5.1.3 Where possible, opportunities to enhance the ecological interest and habitat connectivity and seek biodiversity gain through appropriate landscape planting and habitat creation have been identified.

5.1.4 All recommendations are appropriate to the geographical area, the habitats in the wider area, the wildlife present in the local area (and likely to use the site post-construction) and take into consideration the end use of the site as a residential development.

5.2 Protection of Vegetation and Wildlife

Protection of Shrubs and Area of Calcareous Grassland

5.2.1 During the construction phase, temporary protective demarcation fencing will be used to protect any shrubs to be retained within the site and the area of calcareous grassland located outside the site boundary. The fencing must extend outside the canopy of the retained trees and must remain in position until all areas have been developed to ensure protection is provided throughout the construction phase.

5.2.2 The fencing will be in accordance with BS5837:2012 *Trees in Relation to Design, Demolition and Construction: Recommendations* (BSI, 2012).

5.2.3 It is recommended that, in the long term, the 1m² area supporting Salad Burnet is translocated to the 900m² area of calcareous grassland proposed to the south-west of the site in order that it forms part of a wider coherent habitat unit and does not degrade through lack of regular management to (for example) Bramble scrub. This should be undertaken once the soils for the compensatory area have been fully prepared in accordance with Table 5.1 of *2019-133b Land off Chatburn Old road, Chatburn Lancashire BB7 4AB: Calcareous Grassland Establishment and Management Plan* (ERAP (Consultant Ecologists) Ltd, 2019).

5.2.4 The turf supporting the Salad Burnet and all adjacent plants should be carefully excavated by hand to a depth of at least 0.3 metres (or to the depth of the soils above the bedrock) and moved directly to the calcareous grassland area. If the area cannot form turfs, the top soil will be scraped off (including roots and vegetation) and transported directly to the receptor site. The soil will be re-spread to the same depth and extent as the donor site.

5.2.5 The translocation will be undertaken in spring or early autumn, when it is relatively warm and damp. The translocation works will avoid periods of heavy rain, to avoid waterlogged conditions or cold weather when the soil may be frozen.

Protection of Bats

Lighting

5.2.6 Paragraph 185(c) in Chapter 15 (conserving and enhancing the natural environment) of the NPPF states that development should:

'limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'

- 5.2.7 The lighting scheme to be implemented at the developed site must involve the use of appropriate products and screening, where necessary, to ensure no excessive artificial lighting shines over the woodland to the north of the site, areas of ecological enhancement and any landscape planting, as lighting overspill may deter use by wildlife such as foraging bats.
- 5.2.8 The lighting scheme will be designed with reference to current guidance, namely:
- a. *Guidance Note 8: Bats and Artificial Lighting in the UK* (Institution of Lighting Professionals & Bat Conservation Trust, 2018); and
 - b. *Bats and lighting: Overview of current evidence and mitigation guidance* (Stone, 2014).

Protection of Birds During Works

- 5.2.9 All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended) while they are breeding. It is advised that any works such as vegetation clearance that will affect habitats suitable for use by nesting birds are scheduled to commence outside the bird nesting season. Commencement of works in the nesting season must be informed by a pre-works nesting bird survey, carried out by a suitably experienced ecologist. The bird breeding season typically extends between March to August inclusive (Natural England, 2015).
- 5.2.10 If breeding birds are detected the ecologist will issue guidance in relation to the protection of the nesting birds in conjunction with the scheduled works. This may involve cordoning off an area of the site until the young birds have fledged.

Protection of Other Wildlife During Works

- 5.2.11 It is recommended that the following Reasonable Avoidance Measures (RAMs) are adopted during the construction phase of the proposed development:
- a. All site personnel must be made aware of this RAMs;
 - b. Prior to any soil strip, vegetation will be strimmed to a height of no less than 0.15 metre and all arising removed;
 - c. During construction, any holes, trenches or other pits which wildlife could fall into will be covered overnight, or have sloped banks or ramps top allow escape;
 - d. All pipes will be covered overnight to prevent access by wildlife (such as badger);
 - e. The use of chemicals (such as fertilisers and herbicides) harmful to amphibians should be avoided wherever possible; and
 - f. If any wildlife species is detected within the site (such as a hedgehog or common toad), it must be carefully picked up, placed in a clean bucket and moved to an area of suitable habitat beyond the development area.

5.3 Enhancements for Wildlife to Include within the Proposed Development

Enhancing Habitats for Roosting Bats

- 5.3.1 It is recommended that the development incorporates the installation of one bat box at the new building.
- 5.3.2 The bat box should be sited at least 4 metres above ground level, ideally facing or close to areas of landscape planting or existing linear features. The access panels should not be positioned over windows or doorways where bat droppings may become a nuisance. Once the development layout has been finalised, an ecologist should advise on appropriate positions for the bat box. Suitable bat boxes are

available from NHBS Ecology (www.nhbs.com) or Wild Care (www.wildcare.co.uk) and are presented at **Insert 1**, below:



Insert 1: Examples of integrated bat access panels and an externally mounted box⁴

- 5.3.3 Note that the boxes illustrated are suggested models only; other makes of bat box will be considered appropriate provided they are suitably designed and intended to provide long-lasting features for roosting bats.

Enhancing Habitats for Nesting Birds

- 5.3.4 House sparrows are associated with suburban areas. Monitoring suggests a severe decline in the UK house sparrow population, estimated as halving in rural areas, and dropping by 60% in towns and cities since the mid-1970's (RSPB, 2018).
- 5.3.5 The installation of 2 house sparrow terrace nest boxes is recommended at the proposed new housing. The boxes will not be positioned over windows or doorways where droppings may become a nuisance. RSPB advice states that boxes should ideally be sited facing north to east, to avoid exposure to direct sunlight, which may cause overheating of chicks in the nest. An example of a suitable house sparrow bird box is given below at **Insert 2**:



Insert 2: Schwegler 1SP House Sparrow Nesting Terrace

- 5.3.6 Such bird boxes are available from the NHBS (www.nhbs.com) or Wild Care (www.wildcare.co.uk). ERAP (Consultant Ecologists) Ltd will advise on the siting of bird boxes.
- 5.3.7 Note that the box illustrated is a suggested model only; other makes of house sparrow terrace will be considered appropriate provided they are suitably designed and intended to provide long-lasting features for nesting birds.

Maintenance of Habitat Connectivity Throughout the Developed Site

- 5.3.8 To ensure habitat connectivity is maintained as part of the development proposals, gaps within the proposed fencing (see **Insert 3**, below, as reproduced from *Hedgehogs and Development* (British Hedgehog

⁴ Left to right: IBstock Enclosed Bat Box 'c' (left); Habibat Bat Access Panels (centre left and centre right) and Greenwood's Ecohabitat's two crevice bat box (right). Products with a brick face are illustrated, however the Habibat bat access panels can be supplied unfaced to enable the addition of matching material.

Preservation Society / PTES, 2019)) to allow access by other wildlife (including hedgehog) should be incorporated across the site. It is recommended that suitable wildlife gaps (at least 0.1 metre tall and 0.15 metre wide) are installed at suitable intervals around the base of the proposed fencing.



Insert 3: Showing wildlife access gap within fencing

5.4 Landscape Planting

- 5.4.1 It is recommended that the landscape planting within the residential site is composed from native species and species known to be of value for the attraction of wildlife.
- 5.4.2 It is recommended that trees which support blossom and fruit which will attract insects are incorporated into the landscape planting (note that the landscape proposals are in accordance with this recommendation). Suitable species are presented at **Table 5.1**, below.

Table 5.1: Suitable Native Species for Tree and Shrub Planting

Scientific Name	Common Name	Scientific Name	Common Name
<i>Acer campestre</i>	Field Maple	<i>Prunus spinosa</i>	Blackthorn
<i>Corylus avellana</i>	Hazel	<i>Rosa arvensis</i>	Field Rose
<i>Crataegus monogyna</i>	Hawthorn	<i>Rosa canina</i>	Dog-rose
<i>Ilex aquifolium</i>	Holly	<i>Sambucus nigra</i>	Elder
<i>Malus sylvestris</i>	Crab Apple	<i>Sorbus aucuparia</i>	Rowan
<i>Prunus avium</i>	Wild Cherry	<i>Ulmus glabra</i>	Wych Elm
<i>Prunus padus</i>	Bird Cherry	<i>Viburnum opulus</i>	Guelder Rose

- 5.4.3 The understorey and ground cover planting design should be prepared to optimise the attraction of invertebrates such as feeding bumblebees and butterflies. Where possible the use of native species should be maximised but where necessary non-native species known to be attractive to invertebrates should be used.
- 5.4.4 Planting schemes that include flowering species such as *Viburnum*, *Ceanothus*, *Hebe*, *Lavandula*, *Lonicera*, *Potentilla*, *Rosmarinus* and *Vinca* can maximise opportunities for feeding invertebrates and for the attraction of foraging bats and birds.
- 5.4.5 For further plants suitable for the attraction of pollinators please refer to the *Perfect for Pollinators Plant List* (Royal Horticultural Society, 2012). It is recommended that the selection of plant species at the site ensures that a variety of flowering species are available throughout the year.

6.0 CONCLUSION

- 6.1 This ecological assessment has demonstrated that a residential development at the site is feasible and acceptable in accordance with ecological considerations and the National Planning Policy Framework.
- 6.2 It is possible to implement reasonable actions for the protection and long-term conservation of fauna such as nesting birds and foraging bats associated with the site.

- 6.3 Measures to conserve the habitat connectivity through the site are entirely feasible.
- 6.4 Development at the site will provide an opportunity to secure ecological enhancement for fauna typically associated with residential areas such as breeding birds and roosting bats.

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8.0 APPENDIX: TABLES, PHOTOGRAPHS AND FIGURES

8.1 Plant Species Lists

Table 8.1: Plant Species List for Grassland

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
<i>Acer pseudoplatanus</i>	Sycamore (sapling)	R	<1%
<i>Crataegus monogyna</i>	Hawthorn	VLF	<1%
Herb Species			
<i>Agrostis stolonifera</i>	Creeping Bent	O	5%
<i>Alliaria petiolata</i>	Garlic Mustard	VLF	
<i>Anthriscus sylvestris</i>	Cow Parsley	VLF	<1%
<i>Arrhenatherum elatius</i>	False Oat-grass	O/LA*	30%
<i>Cardamine flexuosa</i>	Wavy Bitter-cress	R	<1%
<i>Cirsium arvense</i>	Creeping Thistle	O/LF	1%
<i>Dactylis glomerata</i>	Cock's-foot	O/LF	10%
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	O/LF	5%
<i>Epilobium hirsutum</i>	Great Willowherb	VLF	<1%
<i>Festuca rubra</i>	Red Fescue	O/LF	<1%
<i>Ficaria verna</i>	Lesser Celandine	O/LF	1%
<i>Galium aparine</i>	Cleavers	VLF	1%
<i>Geranium molle</i>	Dove's-foot Crane's-bill	VLF	<1%
<i>Geranium robertianum</i>	Herb-Robert	R	<1%
<i>Hedera helix</i>	Ivy	R	<1%
<i>Heracleum sphondylium</i>	Hogweed	O	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	F*	20%
<i>Juncus effusus</i>	Soft-rush	R	<1%
<i>Juncus inflexus</i>	Hard Rush	O	<1%
<i>Lolium perenne</i>	Perennial Rye-grass	O/LF	10%
<i>Poa annua</i>	Annual Meadow-grass	R	<1%
<i>Potentilla reptans</i>	Creeping Cinquefoil	R	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	O/LF*	5%
<i>Rubus fruticosus</i> agg.	Bramble	LA	10%
<i>Rumex acetosa</i>	Common Sorrel	O/LF	5%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O	1%
<i>Sisymbrium officinale</i>	Hedge Mustard	O	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	O/VLF	<1%
<i>Trifolium repens</i>	White Clover	O/VLF	<1%
<i>Urtica dioica</i>	Common Nettle	R	<1%
<i>Vicia cracca</i>	Tufted Vetch	VLF	<1%
¹ Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			

8.2 Photographs



Photo 1: Grassland and scrub within site



Photo 2: Grassland within site



Photo 3: Single plant of Salad Burnet to the south of the site boundary



Photo 4: Wall and Hawthorn shrubs at northern site boundary (photo taken May 2019)

8.3 Figures

Figure 1: Aerial Image of the Site and its Surroundings

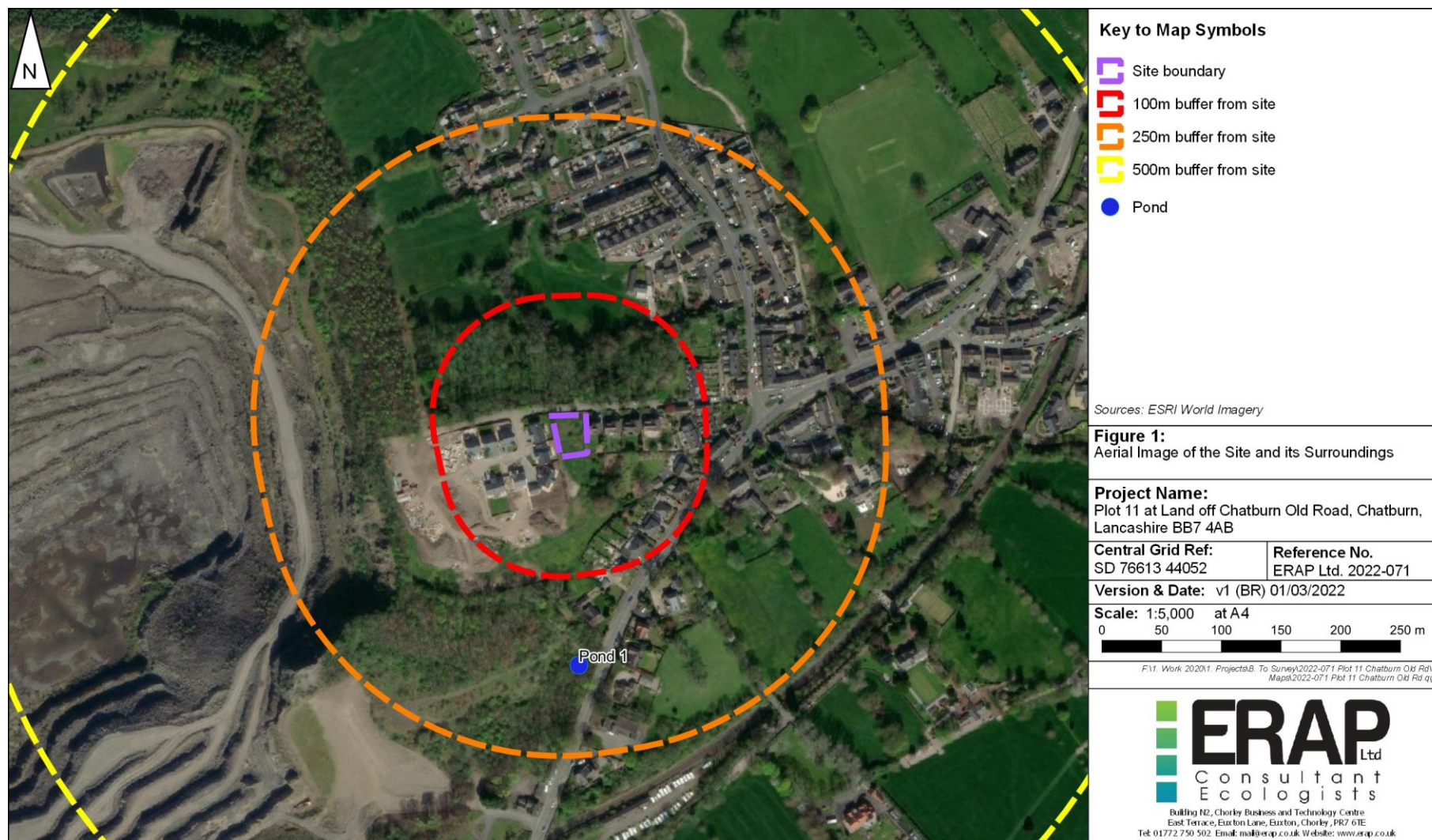


Figure 2: Phase 1 Habitat and Vegetation Map

