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Land at Chatburn Old Road, Chatburn, Clitheroe

ECOLOGICAL SURVEY AND ASSESSMENT

May 2014

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A. SUMMARY

- i. This Ecological Appraisal presents the ecological, biodiversity and nature conservation status of Land off Chatburn Old Road, Chatburn, Clitheroe, Lancashire. The appraisal was requested in connection with proposals to develop the site to 10 residential dwellings with an associated access road..
- ii. The appraisal presents the results of a desktop study and extended Phase 1 Habitat Survey carried out in May 2014. The scope of survey undertaken is appropriate to enable the identification of any potential ecological constraints, the remit of mitigation required and opportunities for biodiversity associated with the development proposals.
- iii. The site comprises one hedgerow, trees and shrubs, tall-herb vegetation and semi-improved and unimproved calcareous grassland.
- iv. The proposals will have no adverse direct effect on statutory or non-statutory designated sites.
- v. The hedgerow is 'important' in accordance with the *Hedgerows Regulations 1997* and both the hedgerow and the areas of unimproved calcareous grassland are UK BAP Priority Habitat/Habitats of Principal Importance of Conservation. The trees and shrubs are of local value as they provide structural diversity and are suitable for use by nesting birds.
- vi. The development proposes to remove approximately six metres of the hedgerow and all 390m² of the unimproved calcareous grassland within the site, and remove the trees and shrubs within the site. Recommendations for the protection of the retained features, and for the creation and long-term management of habitats to compensate for the loss of habitats associated with the proposed development, are presented at **Section 5.0** of this Report.
- vii. The proposals present an opportunity to secure the long-term management of the retained habitats within and adjacent to the proposed development, including 617m² of unimproved calcareous grassland present in the field which surrounds the western, southern and eastern site boundaries, as well as create and manage further complementary habitats to compensate for those lost.
- viii. Invasive species listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) are present within and close to the site, namely Montbretia (present within the site) and Wall Cotoneaster and Japanese Rose (present in the field which surrounds with site). It is an offence to cause the spread of these species in the wild. Guidance on the control and management of these species is described in the Report (**Section 5.0**).
- ix. Dunnock, a UK BAP Priority Species was noted within the site, and the habitats within the site are suitable for use by nesting birds and foraging bats. One tree supports a single features suitable for use by roosting bats, and three further trees are covered by dense Ivy. The current proposals will retain each of these trees, and measures to protect these trees in accordance with the site proposals are presented at **Section 5.2**.
- x. No other protected species have been detected.
- xi. The recommendations in **Section 5.0** address all the mandatory measures and ecological recommendations to be applied to ensure compliance with wildlife legislation, the National Planning Policy Framework (NPPF) and best practice.
- xii. The proposals will secure an opportunity to implement beneficial measures such as habitat management and 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.
- xiii. This ecological appraisal has demonstrated that, in principle, a residential development at the site is feasible and acceptable in accordance with ecological considerations and the National Planning Policy Framework. It is possible to implement reasonable actions to compensate for losses of UK BAP Priority Habitat, and for the protection and long-term conservation of fauna such as nesting birds and commuting/foraging bats associated with the site.
- xiv. The proposed development at the site will provide an opportunity to secure ecological enhancement for the flora and fauna identified within the site and immediate surrounding area.

1.0 INTRODUCTION

Background and Rationale

- 1.1 ERAP Ltd (Consultant Ecologists) was commissioned by Gary Hoerty Associates to carry out an updated ecological appraisal of land at Chatburn Old Road, Clitheroe, Lancashire (hereafter referred to as the 'site').
- 1.2 The appraisal was requested in connection with a planning application to develop the site to ten residential dwellings.
- 1.3 The site was originally surveyed in 2010 by ERAP Ltd. in connection with a Planning Application for the construction of housing¹. The updated survey was required as the 2010 Ecology Report is now four years old, and because the current proposals are for a different site boundary; the updated survey is required to ensure that an assessment is made based upon the current conditions present within the site, and to assess any impacts of the current proposed development at the site.
- 1.4 The grid reference at the centre of the site is SD 7659 4403.

Scope of Survey

- 1.5 The scope of ecological surveys undertaken in May 2014 comprised:-
 - a. Desktop study for known ecological information at the site and the local area;
 - b. An Extended Phase 1 Habitat Survey and assessment;
 - c. Survey and assessment of all habitats for statutorily protected species and other wildlife including Badger, bats, Great Crested Newt, Water Vole, bird species and invertebrates;
 - d. An assessment of the ecological value of the habitats within the site with the use of the National Vegetation Classification (NVC) and the Ratcliffe criteria (A Nature Conservation Review 1977);
 - e. 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,
 - f. The identification of any further surveys or precautionary actions that may be required prior to the commencement of any development activities.

2.0 METHOD OF SURVEY

2.1 Desktop Study

- 2.1.1 The following sources of information and ecological records were consulted for information:-
 - a. MAgiC: A web-based interactive map which brings together geographic information on key environmental schemes and designations, including details of statutory nature conservation sites;
 - b. the 2010 Ecology Report; and,
 - c. Lancashire Biodiversity Action Plan (BAP)

¹ ERAP Report Ref 2010_175 *Land at Chatburn Old Road, Clitheroe: Ecological Survey and Assessment* (September 2010), hereafter referred to as the '2010 Ecology Report'. The 2010 Ecology Report was written as part of an outline planning application for 'residential development (ten dwellings) at Chatburn Old Road, Chatburn, Lancashire', Ribble Valley Borough Council Planning Reference 3/2011.0025, hereafter 'the 2011 Application'.

2.2 Vegetation and Habitats

- 2.2.1 An Extended Phase 1 Habitat Survey of the site was carried out by Mr. Brian Robinson B.Sc. (Hons) MCIEEM on the 21st May 2014. The weather was dry and sunny intervals, calm (Beaufort Scale 1) and 17°C at midday. The conditions and time of year were favourable for the ecological survey.
- 2.2.2 A vegetation and habitat map was produced for the site and the immediate surrounding area at a scale of 1 in 1000 (refer to **Figure 1**). 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 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, R = Rare, this being a widely used and accepted system employed by ecological surveyors. The terms L=Local or Locally and V=Very were additionally used to describe the frequency of vegetation with greater accuracy.
- 2.2.4 All 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 provides a reliable framework for nature conservation and land-use planning.
- 2.2.5 The hedgerow was assessed in accordance with the *Hedgerows Regulations 1997* Wildlife Criteria.
- 2.2.6 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. All plant nomenclature follows Stace (1991).
- 2.2.7 Searches were carried out for the presence of invasive species, including those listed on the revised (April 2010) Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), including Japanese Knotweed (*Fallopia japonica*), Himalayan Balsam (*Impatiens glandulifera*) and Giant Hogweed (*Heracleum mantegazzianum*).

2.3 Animal Life

Badger

- 2.3.1 A thorough search for Badger (*Meles meles*) activity was carried out. The survey area covered the site (as annotated on **Figure 1**) and extended to the accessible land within a radius of 50 metres from the site boundary. Private gardens were excluded from the survey.
- 2.3.2 The following signs of Badger activity were searched for: -
- 'D' shaped sett entrances at least 0.25 metre wide and wider than they are high with large spoil mounds
 - Discarded bedding at sett entrances (this includes grass and leaves)
 - Scratching posts on shrubs and trees close to a sett entrance
 - The presence of Badger hairs which are coarse, up to 0.1 metre long with a long black section and a white tip
 - Dung pit latrines and footprints
 - Trampled pathways through vegetation and beneath fences.
- 2.3.3 All habitats within and surrounding the site were assessed in terms of their suitability for use by foraging and sheltering Badger.

Bat species

- 2.3.4 No buildings are present within the site. The trees within and adjacent to the site were assessed for their suitability to support roosting bats by Mr. Brian Robinson. Mr. Robinson holds a Natural England Class Survey Licence WML CL18 (Bat Survey Level 2), Registration Number CLSO 2887.
- 2.3.5 The surveyor's qualifications and experience meet the criteria as defined in the *Technical Guidance Series Competencies for Species Survey: Bats*, prepared by the CIEEM (April 2013).
- 2.3.6 The survey was carried in accordance with standard methodology including the *Bat Mitigation Guidelines (2004)*, the *Bat Workers Manual (2004)* and the *Bat Surveys: Good Practice Guidelines, 2nd Edition (Hundt, 2012)*.
- 2.3.7 A list of equipment used is detailed below: -

Table 2.1: Survey Equipment used during Daylight Bat Survey

Ladders
5W 25000 LUX LED Mining Light Headlight
Clulite CB2 hand lamps
Canon Ixus digital camera
8x20 binoculars
Video Borescope

- 2.3.8 Trees were assessed for their suitability for use by roosting bats (i.e. presence of crevices, cracks, woodpecker holes, dense ivy cover and splits in the trunks and branches that could be accessed by bats). The criteria detailed at Table 2.2 were referred to during the assessment of the trees suitability for use by roosting bats.

Table 2.2: Tree Category Definition

Tree Category	Description
Known or confirmed roost	Tree has a known roost or a roost is determined by further survey.
Category 1*	Trees with multiple, highly suitable features capable of support larger roosts
Category 1	Trees with low numbers of features suitable for supporting roosting bats; or, with multiple features suitable for low numbers of bats
Category 2	Trees with no obvious features suitable for roosting bats, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or, Tree supports a low number of features suitable for low numbers of roosting bats.
Category 3	Trees with no features suitable for roosting bats

Bird species

- 2.3.9 Bird species observed and heard during the walkover survey were recorded.
- 2.3.10 Habitats throughout the site and immediate surrounding area were assessed for their value for 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

- 2.3.11 In accordance with the current Natural England guidance all ponds within an unobstructed 500 metres of a site should be considered for their potential presence to support Great Crested Newts, and the potential of the proposed development to impact upon any Great Crested Newt population(s) within 500 metres of a proposed development. There are no ponds within an unobstructed 500 metres radius from the site boundary; the presence of Great Crested Newt is reasonably discounted.
- 2.3.12 No further surveys for amphibian species are necessary.

Reptile species

- 2.3.13 The site was assessed in terms of its suitability for use by reptile species using the important characteristics for reptiles outlined in the draft document 'Reptile Mitigation Guidelines' (Natural England, September 2011), and reproduced in Table 2.3, below.

Table 2.3: 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

Water Vole/Other Riparian Fauna

- 2.3.14 There are no ditches or other watercourses within or adjacent to the site. The presence of riparian fauna is reasonably discounted.

2.4 Survey Limitations

- 2.4.1 The entire site was accessible and the survey was conducted at a suitable time of year. No survey limitations were experienced.

2.5 Evaluation Methodology

- 2.5.1 The habitats, vegetation and animal life were evaluated with reference to standard nature conservation criteria as described by Ratcliffe (1977) and the Nature Conservancy Council (1989). 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 Government advice on wildlife, as set out in the *National Planning Policy Framework* (2012) and associated government circulars has been taken into consideration. The UK and Lancashire Biodiversity Action Plans (BAPs) have been taken into account in the evaluation of the site.

3.0 SURVEY RESULTS

3.1 Desktop Study

Site Designations and Allocations

- 3.1.1 There are no national or statutorily designated areas within the site or the immediate surrounding area.
- 3.1.2 Two statutory designated sites, comprising one Site of Special Scientific Interest (SSSI) and one Important Bird Area (IBA) are present within one kilometre of the site boundary. A further locally designated (non-statutory) site, named a Biological Heritage Site in Lancashire, is present within one kilometre of the site boundary. The details of each of these site are given at Table 3.1, below.

Table 3.1: Designated Sites within One Kilometre of the Site.

Name and Designation	Distance and direction from Site	Grid reference	Description/Reason for Designation
Clitheroe Knoll Reefs SSSI	700 metres east and 650 metres south	SD 778 435	A road cutting and series of small hills which are important examples of early Carboniferous 'knoll-reefs'.
Forest of Bowland IBA	600 metres east	SD 774 438	Forms a western outlier to the Pennines, with gentle slopes and level ground on ridges. Fast-flowing streams drain an extensive area of upland moorland and blanket mire and Bracken may dominate on lower ground. The IBA supports a typical range of breeding upland birds, and is a breeding stronghold of Hen Harrier. The site holds 12,000 pairs of breeding waterbirds on a regular basis, and is nationally important for breeding Lapwing (3,570 pairs, 1993, 2%) and Curlew (895 pairs, 1993, 2%).
Bellman Farm Marsh	690 metres south-west	SD 759 434	Woodland, scrub, grassland, swamp and fen and artificial habitats.

3.1.3 The presence of designated sites within one kilometre of the site is considered further within this Report at Section 4.1, below.

Protected and Notable species

3.1.4 No records of protected species were reported for the site by Lancashire Ecological Records Network (LERN) in 2010. The Lancashire Biodiversity Action Plan (BAP) provisional long list species Fragrant Orchid and White Bryony have been recorded within 500 metres of the site. A single record of a Pipistrelle bat species has been recorded within 500 metres of the site.

3.1.5 No protected species were detected by the surveys described in the 2010 Ecology Report.

3.2 Vegetation and Habitats

General Description and Wider Area

3.2.1 The site is located to the immediate west of Chatburn, which is itself approximately three kilometres to the north-east of Clitheroe. Although the wider area is predominantly rural, the land use surrounding the site is mixed, with broadleaf woodland to the north, housing associated with Chatburn to the east, broadleaf woodland to the south and a working quarry (Bold Venture Limestone Quarry) to the west.

3.2.2 Examination of the British Geological Society's *Geology of Britain Viewer* web-based map reveals the site is situated on a substrate of Chatburn Limestone Formation limestone.

Site Description

3.2.3 The site covers an area of approximately 0.725 hectares and supports a varied topography as a consequence of former mining activity at the site, with areas of bare stone and rock faces evident. Otherwise the site is composed of brown earth soils which support a mixture of broadleaf trees and shrubs, tall herb vegetation and pasture grassland (the site is grazed by ponies and sheep).

3.2.4 The site's northern boundary is defined by a defunct hedgerow (Hedgerow 1) which is supported by a post and wire fence. The site's western, eastern and southern boundaries are not defined, but lie within a larger unit of similar habitats (see Figure 1), with housing present to the east and south, an area of woodland to the south and an active quarry to the west.

3.2.5 The vegetation within the site are described in more detail below. For all habitat descriptions refer to Figure 1. All photographs are appended at Table 7.7.

Broadleaf Trees and Shrubs

- 3.2.6 The broadleaf trees and shrubs are locally abundant within the site and are composed of constant, frequent and locally abundant Hawthorn (*Crataegus monogyna*), occasional and locally frequent Ash (*Fraxinus excelsior*), very locally frequent Field Rose (*Rosa arvensis*) and very occasional Sycamore (*Acer pseudoplatanus*). The ground flora beneath the trees and shrubs is composed of constant, frequent and locally abundant Common Nettle (*Urtica dioica*), Cleavers (*Galium aparine*), locally abundant Bramble (*Rubus fruticosus* agg.) and locally frequent Creeping Buttercup (*Ranunculus repens*), Germander Speedwell (*Veronica chamaedrys*) and Pignut (*Conopodium majus*). Woodland herbs are present and comprise Wood Avens (*Geum urbanum*), Dog's Mercury (*Mercurialis perennis*), Lord's-and-Ladies (*Arum maculatum*), Primrose (*Primula vulgaris*) and Herb-robert (*Geranium robertianum*).
- 3.2.7 A full species list is appended at **Table 7.1**. The vegetation remains as described in 2010; an example of the *W21 Hawthorn – Ivy* scrub community of the NVC, with areas of the *W21b Hawthorn – Dog's Mercury* sub-community.

Hedgerow 1

- 3.2.8 Hedgerow 1 lies along the northern site boundary and is unmanaged and approximately 150 metres in length. It is characterised by constant and frequent Hawthorn and Wych Elm (*Ulmus glabra*) and constant, frequent and locally abundant Ash. Holly (*Ilex aquifolium*) is locally frequent.
- 3.2.9 The ground flora is characterised by constant and abundant Ramsons (*Allium ursinum*), constant and frequent Ivy (*Hedera helix*) and Cleavers, and frequent and locally abundant Dog's Mercury and Wood Avens.
- 3.2.10 A full species list is presented at **Table 7.2**. The hedgerow is characteristic of the *W21b Hawthorn – Dog's Mercury* scrub community of the NVC. An assessment of the importance of the hedgerow in accordance with the *Hedgerows Regulations 1997* is presented at **Table 7.3**; Hedgerow 1 is 'important' in accordance with these Regulations.

Pasture Grassland

- 3.2.11 The pasture grassland within the site is only lightly grazed, and was relatively log (approximately 0.1 metres) at the time of the survey. A small flock of sheep (around 20) was present in the field to the south of the site.
- 3.2.12 The grassland is characterised by constant, frequent and locally abundant Red Fescue (*Festuca rubra*), constant and frequent Cock's-foot (*Dactylis glomerata*) and Pignut, frequent and locally abundant Meadow Foxtail (*Alopecurus pratensis*), Rough Meadow-grass (*Poa trivialis*) and locally frequent Yellow Oat-grass (*Trisetum flavescens*), Germander Speedwell, Creeping Buttercup, Perennial Rye-grass (*Lolium perenne*), Common Bent (*Agrostis capillaris*), Lesser Celandine (*Ranunculus ficaria*), Tufted Hair-grass (*Deschampsia cespitosa*) and Yorkshire-fog (*Holcus lanatus*).
- 3.2.13 The grassland remains as described in 2010, as indicative of calcareous grassland which has undergone some degree of agricultural improvement and now holds characteristics of the *MG6 Perennial Rye-grass – Crested Dog's-tail* NVC grassland community. A full species list is appended at **Table 7.4**.

Unimproved Calcareous Grassland and Vegetation Adjacent to Outcrops of Bare Rock

- 3.2.14 The vegetation present at the thin soils on south and south-west facing slopes within the site and adjacent to areas of bare rock is composed of occasional and locally frequent Barren Strawberry (*Potentilla sterilis*), occasional and locally frequent Red Fescue, Common Bent, Glaucous Sedge (*Carex flacca*), Germander Speedwell, and Field Wood-rush (*Luzula campestris*) and occasional Ribwort Plantain (*Plantago lanceolata*) and occasional and very locally abundant Lesser Trefoil (*Trifolium dubium*). A full species list is appended at **Table 7.5**.
- 3.2.15 The vegetation holds characteristics of the *CG1 Sheep's-fescue – Carline Thistle* grassland, a vegetation type associated with steep and rocky slopes over hard limestone with a southerly to westerly aspect.

3.2.16 At the southern end of the site a vertical former quarry face supports locally abundant Maidenhair Spleenwort (*Asplenium trichomanes*) and very locally abundant Ivy. The vegetation is characteristic of the OV39 Maidenhair Spleenwort – Wall-rue open community of the NVC, a widespread community of sunny crevices in lime-rich bedrocks and wall-mortar at low to moderate altitudes.

Invasive Species

3.2.17 No Japanese Knotweed is present at the site. As illustrated on **Figure 1**, one stand of Montbretia (*Crocsmia x crocosmiiflora*) is present within the site, and individual stands of Wall Cotoneaster and Japanese Rose (*Rosa rugosa*) were detected within the wider area. Each species is listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) and, as such, it is an offence to spread or cause the spread of these species in the wild. Further guidance is described in **Section 5.5**.

3.3 Animal Life

Badger

3.3.1 No evidence of Badger activity was detected within the site or the land surrounding the site. The presence of Badger is reasonably discounted from the site.

Bat species

3.3.2 Four trees were identified as supporting features of some suitability for use by roosting bats. Tree Fe1 (refer to **Figure 1** for locations of each tree) is a mature Ash which supports a single tear-out hole at a side-branch at its southern face, approximately eight metres from the ground. The tree is therefore considered to be 'Category 2' in accordance with **Table 2.1**, above.

3.3.3 Trees Fe3, Fe4 and Ac2 all support a dense cover of Ivy; it is not possible therefore to determine whether they support fissures, holes or gaps suitable for use by roosting bats from the ground. An assessment of the proposed development's impact on these trees is presented at **Section 4.4**.

Foraging and Commuting Bats

3.3.4 Hedgerow 1 and the broadleaf trees and shrubs provide suitable foraging habitat for use by edge-feeding species such as Common Pipistrelle (*Pipistrellus pipistrellus*). The broadleaf woodland to the north and south of the site is favourable habitats for foraging and commuting bats.

Birds

3.3.5 Birds detected in the site in May 2014 are listed in **Table 3.1**, below: -

Table 3.2: Bird species Detected in May 2014

Common Name	Scientific name	BOCC Status ¹	UK BAP Priority Species?
<i>Parus caeruleus</i>	Blue Tit	Green	
<i>Fringilla coelebs</i>	Chaffinch	Green	
<i>Phylloscopus collybita</i>	Chiffchaff	Green	
<i>Prunella modularis</i>	Dunnock	Amber	UK BAP
<i>Parus major</i>	Great Tit	Green	
<i>Erithacus rubecula</i>	Robin	Green	
<i>Corvus monedula</i>	Jackdaw	Green	
<i>Troglodytes troglodytes</i>	Wren	Green	

¹BOCC: Birds of Conservation Concern 2009.

3.3.6 Other bird species detected in 2010 included Carrion Crow (*Corvus corone*), Wood Pigeon (*Columba palumbus*), Coal Tit (*Parus ater*) and Swallow (*Hirundo rustica*)

- 3.3.7 Hedgerow 1 and the mature trees and scrub across within the site are suitable for use by nesting birds. All breeding birds are protected under the *Wildlife and Countryside Act 1981* (as amended). Guidance in relation to the potential presence of breeding birds is detailed in **Section 5.4** of this Report.
- 3.3.8 Areas of grassland within and surrounding the site are suitable for use by ground nesting birds such as Skylark (a UK BAP Priority Species), however no ground nesting birds were detected by either the 2010 or the 2014 survey.

Reptiles

- 3.3.9 No reptiles were observed during the walkover surveys conducted in 2010 and 2014. The areas of bare stone which support a varied topography hold some suitability for use by foraging and basking reptile species, as there is a diverse vegetative physiognomy with areas of short and tall grassland, areas of scrub and areas of bare rock suitable for basking. These habitats are small in size, however, and relatively isolated in terms of the wider landscape, with housing, woodland and a quarry all surrounding the site. There are no records of reptiles within the wider area; the presence of reptile species within the site is reasonably discounted.

Other Wildlife

- 3.3.10 Red-tailed Bumblebee (*Bombus lapidarius*) and Common Carder-bee (*Bombus pascuorum*) were noted during the 2014 survey. The 2010 survey also detected the presence of Speckled Wood (*Pararge aegeria*), Small White (*Pieris rapae*), Small Tortoiseshell (*Aglais urticae*) and Meadow Brown (*Maniola jurtina*) butterflies and the White or Buff-tailed worker Bumblebee (*Bombus lucorum/terrestris*); all are listed as common and widespread species.
- 3.3.11 The site and the immediate surrounding area support favourable habitats for a variety of nectaring invertebrate species.

4.0 EVALUATION AND ASSESSMENT

4.1 Designated Sites

- 4.1.1 It is considered that the site is sufficiently small and sufficiently distant from the Forest of Bowland IBA and Bellman Harm Marsh BHS that any impact from the proposed development can be reasonably discounted.

4.2 Vegetation and Habitats

- 4.2.1 None of the habitats within the site are semi-natural in character. The hedgerow and areas² of calcareous grassland are UK and Lancashire BAP Priority Habitat. The remainder of the grassland within the site is not indicative of any UK BAP Priority Habitat. Hedgerow 1 is also 'important' in accordance with the *Hedgerows Regulations 1997*.
- 4.2.2 The trees and shrubs within the site are of local value as they provide structural diversity and are suitable for use by foraging birds and bats and by nesting birds.
- 4.2.3 The habitats present within the site were similar to those detected within the site by the 2010 Ecology Survey. It is considered likely that differences in the presence, frequency and abundance of plant species between the two surveys is more a consequence of the altered site boundary, and the two surveys being conducted at different times of year (18th August 2010 and 15th May 2014), rather than changes in the composition of the vegetation itself.

²390m² within the site, and a further 617m² at habitats surrounding the site, all marked on **Figure 1**

4.2.4 Measures to retain and protected (where possible) any areas of UK BAP Priority Habitat, and measures to incorporate into the landscape design to compensate for the loss of Priority Habitat are presented at **Section 5.0**, below.

4.2.5 The presence of Montbretia within the site, and Wall Cotoneaster and Japanese Rose near to the site, all invasive species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) was detected. Recommendations for the eradication of these species are presented at **Section 5.5**.

4.3 Protected Species and Other Wildlife

4.3.1 Habitats within and adjacent to the site are suitable for foraging and commuting bats. Recommendations relating to the retention of features suitable for use by roosting, foraging and commuting bats, and features to enhance habitats for roosting bats at the site are presented at **Section 5.3**.

4.3.2 The trees, shrubs and buildings provide favourable foraging and nesting habitat for the species of birds detected within the site and the wider area via the records search (including Dunnock, a UK BAP Priority Species). Consideration of birds (including protection of breeding birds and recommended enhancements for UK BAP Priority Species) are presented at **Section 5.4** of this report.

4.3.3 Measures to retain and enhance features suitable for use by invertebrate species are presented at **Section 5.6**.

4.4 Assessment of Impacts

4.4.1 The assessment of the potential impacts of the proposed development has been conducted in accordance with Gary Hoerty Associates Plan *Planning Drawings – Proposed Site Plan* (March 2014), hereafter the 'Site Plan'.

4.4.2 The proposals involve the creation of ten residential dwellings with associated gardens and an access road.

4.4.3 The proposals will require the removal of an approximately six metre wide section of Hedgerow 1, and will remove 390m² of unimproved calcareous grassland within the site (38% of the total amount of unimproved calcareous grassland detected within the site and the field unit which surrounds the site to the west, south and east in 2014).

4.4.4 Recommendations to mitigate for the loss of these UK BAP Priority Habitats as part of the site proposals, and for the losses of the other habitats identified to be of local value within the site (i.e. the young trees and shrubs) is presented within **Section 5.0** of this Report.

4.4.5 The proposals will retain all of the trees identified as either supporting features suitable for use by roosting bats or being too densely covered by Ivy to reliably assess for the presence of features suitable for use by roosting bats. Provided the measures presented at **Section 5.2**, below for the protection of these features are complied with, the proposals will not impact upon any roosting bats.

4.4.6 Recommendations for the compensation for the loss of trees and shrubs within the site are presented at **Sections 5.2** and **5.6** of this report.

5.0 RECOMMENDATIONS AND ECOLOGICAL ENHANCEMENT

5.1 Introduction

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

5.1.2 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 and recommended in **Section 5.0** (in accordance with the principles of the NPPF and associated documents).

5.2 Compensation for the Loss of UK BAP Priority Habitat, Protection of Existing Vegetation and Recommendations in Relation to Site Layout

5.2.1 The proposed development will retain approximately 62% of the unimproved calcareous grassland within the field unit, of which the site forms a part. It is recommended that an area of unimproved calcareous grassland, larger than the 390m² lost at the site as a consequence of the proposed development, is created within the field unit which surrounds the proposed development site.

5.2.2 The loss of approximately six metres of hedgerow will be compensated for by the planting of further sections of native species-rich hedgerow either within the site or within the field which surrounds the site. Suitable species to incorporate into the compensatory hedgerow planting are presented at **Table 5.1**, below.

5.2.3 The management of the retained and created areas of unimproved calcareous grassland, hedgerow and other habitats created via the landscape planting scheme of the site, will be secured in the long-term by a Habitat Management Plan. Further recommendations relating a Habitat Management Plan for the site are presented at **Section 5.6**, below.

Protection of Vegetation

5.2.4 During the construction phase, temporary protective demarcation fencing will be used to protect the trees and shrubs that are to be retained and the habitats adjacent to the proposed development site. 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.

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

5.2.6 Any trees and shrubs scheduled for removal can be felled in accordance with general arboricultural practice and taking into consideration the protection afforded to nesting birds see below.

5.3 Bats

Enhancing Habitats for Roosting Bats

5.3.1 It is recommended that the development incorporates the installation of two commercially available bat access panels at the new buildings.

5.3.2 The bat access panels should be sited above four metres from 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 access panels. Suitable bat access panels are available from NHBS Ecology (www.nhbs.com), IBStock or Bioquip (www.bioquip.net) and are presented at **Insert 1**:-



Insert 1: Example of a commercially available bat access panel.

Consideration of Lighting

- 5.3.3 No external lighting may shine directly upon Hedgerow 1 or the broadleaf woodland to the north and south of the site, or over the retained shrubs within the field (of which the proposed development forms a part), as excessive lighting may deter foraging bats and disturb nesting birds and other wildlife.

5.4 Birds

Protection of Breeding Birds

- 5.4.1 All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended) while they are breeding. It is mandatory that the trees, shrubs, Bramble scrub or other suitable breeding bird habitat which are to be removed as part of the proposals are only removed outside the bird breeding season. The bird breeding season typically extends between March to August inclusive.
- 5.4.2 If any vegetation is scheduled for removal in the bird breeding season it is advised that advice from an ecologist is sought. It may be necessary to carry out a walkover survey to demonstrate satisfactorily that no breeding birds, active nests, eggs or fledglings are present in the area to be cleared.
- 5.4.3 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.

Enhancing Habitats for Nesting Birds

- 5.4.4 The installation of a variety of bird boxes, including those suitable for use by UK BAP Priority Species associated with residential developments such as House Sparrow and Starling, is recommended at the proposed new housing, avoiding areas such as directly above any windows or doors. This will create further suitable habitat for nesting birds at the site.
- 5.4.5 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, Starling bird box, general small bird box and Wren nesting pouch (suitable for installation on a tree or within a hedgerow) are given below, in **Inserts 2, 3, 4, and 5:**



Inserts 2, 3, 4, and 5: House Sparrow Nesting Terrace, Starling nest box, small bird box and Wren nesting pouch

- 5.4.6 Such bird boxes are available from the NHBS (www.nhbs.com) or Bioquip (www.bioquip.net). ERAP Ltd will advise on the siting of bird boxes.
- 5.4.7 The provision of landscape planting and a further section of hedgerow as part of the scheme (as recommended at **Section 5.6**, below) will ensure that the site remains suitable for use by nesting Dunnock, a UK BAP Priority Species detected at the site.

5.5 Invasive Species

- 5.5.1 Montbretia was noted within the site, and Wall Cotoneaster and Japanese Rose were noted outside the site but within the field unit of which the site forms a part. It is an offence under the *Wildlife and Countryside Act 1981* (as amended) to cause the spread of these species in the wild. It is concluded that the management and eradication of these species should be included in the proposed Habitat Management Plan for the site and the habitats surrounding the site, in accordance with the recommendations presented at **Section 5.2** and **5.6** of this Report.

5.6 Enhancement for Biodiversity

- 5.6.1 As required by the NPPF and other relevant planning documents, opportunities for the enhancement of biodiversity at the site have been explored with the overall objective of increasing the biodiversity value (i.e. the nature conservation interests at the site).
- 5.6.2 The implementation of the specifications/recommendations described below is of relevance at this site.
- 5.6.3 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.

Enhancement and Management of the Retained Habitats and Creation of Further UK BAP Priority Habitats

- 5.6.4 It is recommended that the retained belts of trees and shrubs are brought into active management for biodiversity and to promote the longevity of the habitat. A Habitat Management Plan would be prepared to include the following: -
- a. Specification of the removal/control and safe disposal of invasive species such as Wall Cotoneaster, Montbretia and Japanese Rose;
 - b. Installation of bird boxes and bat boxes at the proposed new buildings and retained habitats within the site;
 - c. Creation of new section of native-species rich hedgerow and subsequent management to compensate for the loss of hedgerow due to the proposed access into the site; and,
 - d. Secured long-term management of existing areas of calcareous grassland, and creation of further, new areas of unimproved calcareous grassland within the field unit which surrounds the site to the east, south and west.
- 5.6.5 Any new planting/seeding should be sourced from local providence where-ever possible. Flora Locale should be consulted to establish suppliers of locally-sourced plants and seed mixtures. Emorsgate Seeds, for example, are able to collect seed from anywhere within Britain.

Landscape Planting within the Residential Site

- 5.6.6 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
- 5.6.7 It is recommended that trees which support blossom and fruit which will attract insects are incorporated into the landscape planting. Suitable species are presented at **Table 5.1**.

Table 5.1: Suitable Native Species for Tree and Shrub Planting

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

5.6.8 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.

5.6.9 Planting schemes that include flowering species such as Lavender, Rosemary, Hebe, *Potentilla*, *Calluna*, *Ceanothus* and *Vinca* can maximise opportunities for feeding invertebrates.

5.7 Conclusion

5.7.1 This ecological appraisal has demonstrated that, in principle, a residential development at the site is feasible and acceptable in accordance with ecological considerations and the National Planning Policy Framework.

5.7.2 It is possible to implement reasonable actions to compensate for losses of UK BAP Priority Habitat, and for the protection and long-term conservation of fauna such as nesting birds and commuting/foraging bats associated with the site.

5.7.3 The proposed development at the site will provide an opportunity to secure ecological enhancement for the flora and fauna identified within the site and immediate surrounding area.

6.0 REFERENCES

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7.0 APPENDICES: TABLES AND FIGURE

Table 7.1: Plant Species Composition, Frequency and Abundance for Trees and Shrubs

Scientific Name	Common Name	DAFOR ¹	Cover
Woody species			
<i>Acer campestre</i>	Field Maple	R	<1%
<i>Crataegus monogyna</i>	Hawthorn	F/LA	70%
<i>Fraxinus excelsior</i>	Ash	O/LF	5%
<i>Prunus</i> sp.	Cherry species	R	<1%
<i>Rosa arvensis</i>	Field Rose	VLF	<1%
<i>Tilia</i> sp.	Lime species	R	<1%
Herb Species			
<i>Arum maculatum</i>	Lord's-and-Ladies	VLF	<1%
<i>Conopodium majus</i>	Pignut	LF	<1%
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	VLF	<1%
<i>Galium aparine</i>	Cleavers	F/LA*	5%
<i>Geranium robertianum</i>	Herb-robert	O/LF	<1%
<i>Geum urbanum</i>	Wood Avens	O/LF*	1%
<i>Hedera helix</i>	Ivy	VLF	<1%
<i>Mercurialis perennis</i>	Dog's Mercury	VLA	<1%
<i>Primula vulgare</i>	Primrose	VLF	<1%
<i>Ranunculus ficaria</i>	Lesser Celandine	O/LF*	5%
<i>Ranunculus repens</i>	Creeping Buttercup	LF	<1%
<i>Rubus fruticosus</i> agg.	Bramble	LA	5%
<i>Stachys sylvatica</i>	Hedge Woundwort	VLF	<1%
<i>Urtica dioica</i>	Common Nettle	F/LA*	20%
<i>Veronica chamaedrys</i>	Germander Speedwell	LF	<1%

¹Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

Table 7.2: Plant Species Composition, Frequency and Abundance for Hedgerow 1

Scientific Name	Common Name	DAFOR ¹	Cover
Woody species			
<i>Acer campestre</i>	Field Maple	R	<1%
<i>Acer pseudoplatanus</i>	Sycamore	VLA	3%
<i>Corylus avellana</i>	Hazel	VLF	<1%
<i>Crataegus monogyna</i>	Hawthorn	F*	40%
<i>Fraxinus excelsior</i>	Ash	F/LA*	10%
<i>Ilex aquifolium</i>	Holly	LF	<1%
<i>Malus</i> sp.	Apple species	R	<1%
<i>Rosa canina</i>	Dog-rose	R	<1%
<i>Ulmus glabra</i>	Wych Elm	F*	30%
Herb Species			
<i>Alliaria petiolata</i>	Garlic Mustard	VLF	<1%
<i>Allium ursinum</i>	Ramsons	A*	50%
<i>Arum maculatum</i>	Lord's-and-Ladies	VLF	<1%
<i>Brachypodium sylvaticum</i>	False Brome	R	<1%
<i>Cardamine flexuosa</i>	Wavy Bitter-cress	R	<1%
<i>Cirsium arvense</i>	Creeping Thistle	VLF	<1%
<i>Conopodium majus</i>	Pignut	VLF	<1%
<i>Dactylis glomerata</i>	Cock's-foot	VLF	<1%
<i>Dryopteris dilatata</i>	Broad Buckler-fern	R	<1%
<i>Galium aparine</i>	Cleavers	F*	<1%
<i>Geranium robertianum</i>	Herb-robert	F	<1%
<i>Geum urbanum</i>	Wood Avens	F/LA	1%
<i>Hedera helix</i>	Ivy	F*	5%
<i>Heracleum sphondylium</i>	Hogweed	VLF	<1%

Continued overleaf

Scientific Name	Common Name	DAFOR ¹	Cover
<i>Table 7.2 continued</i>			
<i>Lapsana communis</i>	Nipplewort	R	<1%
<i>Mercurialis perennis</i>	Dog's Mercury	F/LA	3%
<i>Primula vulgare</i>	Primrose		
<i>Ranunculus ficaria</i>	Lesser Celandine	F	<1%
<i>Ranunculus repens</i>	Creeping Buttercup		
<i>Rubus fruticosus</i> agg.	Bramble		
<i>Rumex crispus</i>	Curled Dock	LF	<1%
<i>Stachys sylvatica</i>	Hedge Woundwort		
<i>Taraxacum officinale</i> agg.	Dandelion	VLF	<1%
<i>Urtica dioica</i>	Common Nettle	LF	<1%
<i>Veronica chamaedrys</i>	Germander Speedwell	LF	<1%

¹Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

Table 7.3: Assessment of Hedgerow 1 in accordance with the Hedgerows Regulations 1997

General Description			
Height x width x length (metres)	4 to 7 x 2 x 150		
Continuity	70%		
Management	Infrequently cut at roadside		
Number of Qualifying Woody Species			
Section number	1	2	3
Qualifying woody species	4	6	N/A
Average number	5		
Number of Features Present:			
(a) Bank or wall along at least ½ length	Yes		
(b) Gaps which in aggregate do not exceed 10%	Yes		
(c)-(e) 1 standard tree per 50m	Yes (11 trees)		
(f) At least 3 woodland species	Yes (6, see Table 7.2)		
(g) Ditch along at least 1/2 its length	No		
(h) Connections scoring 4 points or more	No		
(i) Parallel hedge within 15m	No		
Total Features	4		
Criteria for Hedgerow Importance 1: Hedgerow contains species listed as:			
(1) Part 1 of Schedule 1, Schedule 5 or Schedule 8 of W&C Act 1981	No		
(2) Declining breeders in 'Red Data Birds of Britain'	No		
(3) Categorized as 'endangered', 'extinct' or 'vulnerable'	No		
Criteria for Hedgerow Importance 2: Hedgerow Includes (all woody species mentioned in (i)-(iv), with each number reduced by one in Lancashire (for this criteria only)):			
(i) At least 7 Woody Species	No		
(ii) At least 6 woody species and at least 3 features	Yes		
(iii) At least 6 woody species, inc. one of: Black poplar, L-leaved Lime, S-leaved Lime or Wild Service Tree	No		
(iv) At least 5 woody species, and has 4 features	Yes		
Criteria for Hedgerow Importance 3: Is adjacent to is adjacent to a bridleway, footpath or byway and includes at least 4 woody species on average and 2 features from (a) to (g):			
Qualifies:	Yes		
Hedgerow Classed as Important?	Yes		

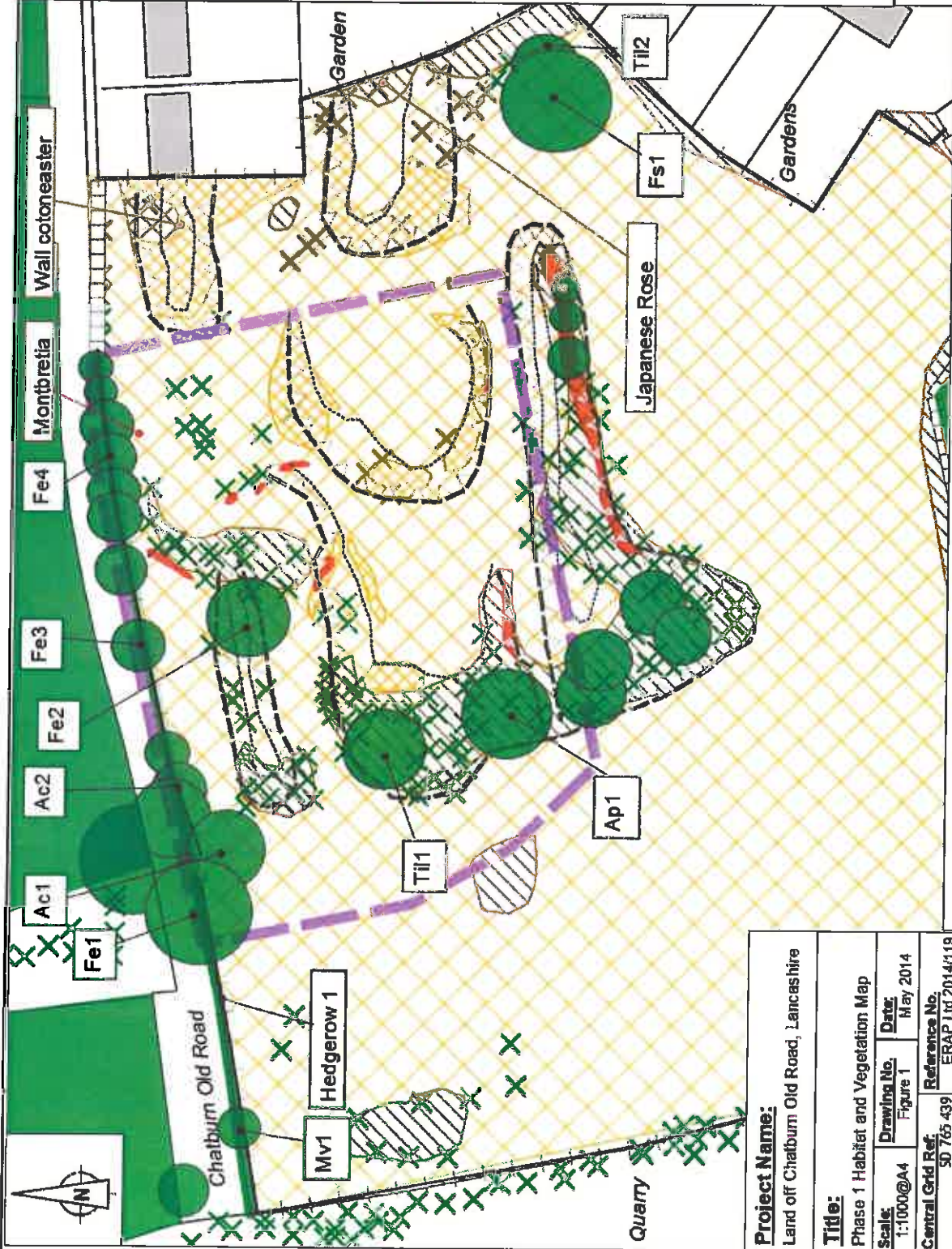
Table 7.4: Plant Species Composition, Frequency and Abundance for Semi-improved Calcareous Grassland

Scientific Name	Common Name	DAFOR ¹	Cover
Woody species			
<i>Acer pseudoplatanus</i>	Sycamore (sapling)	VO	<1%
<i>Crataegus monogyna</i>	Hawthorn (sapling)	VO	<1%
<i>Rosa arvensis</i>	Field Rose	VLF	<1%
Herb Species			
	Mosses	VLF	<1%
<i>Agrostis capillaris</i>	Common Bent	LF	1%
<i>Allium ursinum</i>	Ramsons	R	<1%
<i>Alopecurus pratensis</i>	Meadow Foxtail	F/LLA	10%
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	VO	<1%
<i>Arrhenatherum elatius</i>	False Oat-grass	LF	<1%
<i>Arum maculatum</i>	Lord's-and-Ladies	R	<1%
<i>Bellis perennis</i>	Daisy	VO	<1%
<i>Bromus hordeaceus</i>	Soft-brome	R	<1%
<i>Carex flacca</i>	Glaucous Sedge	VLF	<1%
<i>Cerastium fontanum</i>	Common Mouse-ear	R	<1%
<i>Cirsium arvense</i>	Creeping Thistle	VO/VLF	<1%
<i>Cirsium vulgare</i>	Spear Thistle	R	<1%
<i>Conopodium majus</i>	Pignut	F*	3%
<i>Crococsmia x crocosmiiflora</i>	Montbretia	R	<1%
<i>Dactylis glomerata</i>	Cock's-foot	F*	10%
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	LF	1%
<i>Festuca rubra</i>	Red Fescue	F/LA*	10%
<i>Filipendula ulmaria</i>	Meadowsweet	VLF	<1%
<i>Galium aparine</i>	Cleavers	VLF	<1%
<i>Galium aparine</i>	Cleavers	LF	<1%
<i>Geranium robertianum</i>	Herb-robert	O/VLF	<1%
<i>Geum urbanum</i>	Wood Avens	VLF	<1%
<i>Hedera helix</i>	Ivy	VLF	<1%
<i>Heracleum sphondylium</i>	Hogweed	VO/VLF	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	LF	<1%
<i>Lapsana communis</i>	Nipplewort	R	<1%
<i>Leontodon autumnalis</i>	Autumn Hawkbit	VLF	<1%
<i>Lolium perenne</i>	Perennial Rye-grass	LF	5%
<i>Lotus corniculatus</i>	Lesser Bird's-foot-trefoil	VO/VLF	<1%
<i>Luzula campestris</i>	Field Wood-rush	O/LF	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	O/LF	1%
<i>Poa annua</i>	Annual Meadow-grass	R	<1%
<i>Poa trivialis</i>	Rough Meadow-grass	F/LA	10%
<i>Potentilla sterilis</i>	Barren Strawberry	O/LF	<1%
<i>Ranunculus acris</i>	Meadow Buttercup	O/LF	1%
<i>Ranunculus ficaria</i>	Lesser Celandine	LF	1%
<i>Ranunculus repens</i>	Creeping Buttercup	LF	2%
<i>Rubus fruticosus</i> agg.	Bramble	VLA	<1%
<i>Rumex crispus</i>	Curled Dock	VO	<1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O/LF	<1%
<i>Senecio jacobaea</i>	Common Ragwort	VO	<1%
<i>Stachys sylvatica</i>	Hedge Woundwort	VLF	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	O/LF	<1%
<i>Trifolium dubium</i>	Lesser Trefoil	VLF	<1%
<i>Trifolium pratense</i>	Red Clover	VLF	<1%
<i>Trifolium repens</i>	White Clover	O/LF	<1%
<i>Trisetum flavescens</i>	Yellow Oat-grass	LF	<1%
<i>Urtica dioica</i>	Common Nettle	VLF	<1%
Continued overleaf			

Scientific Name	Common Name	DAFOR ¹	Cover
<i>Table 7.4 continued</i>			
<i>Veronica chamaedrys</i>	Germander Speedwell	LF	<1%
<i>Vicia sativa</i>	Common Vetch	O	<1%
¹ Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			

Table 7.5: Plant Species Composition, Frequency and Abundance for Unimproved Calcareous Grassland and Vegetation Adjacent to Outcrops of Bare Rock

Scientific Name	Common Name	DAFOR ¹	Cover
<i>Agrostis capillaris</i>	Common Bent	LF	<1%
<i>Bellis perennis</i>	Daisy	VO	<1%
<i>Bromus hordeaceus</i>	Soft-brome	R	<1%
<i>Carex flacca</i>	Glaucous Sedge	O/LF	<1%
<i>Achillea millefolium</i>	Yarrow	VLF	<1%
<i>Geranium robertianum</i>	Herb-robert	VLF	<1%
<i>Dactylis glomerata</i>	Cock's-foot	O/LF	<1%
<i>Festuca rubra</i>	Red Fescue	O/LF	<1%
<i>Hieracium pilosella</i>	Mouse-ear Hawkweed	O/LF/LA*	3%
<i>Linum catharticum</i>	Fairy Flax	VO	<1%
<i>Lapsana communis</i>	Nipplewort	R	<1%
<i>Leontodon autumnalis</i>	Autumn Hawkbit	VLF	<1%
<i>Luzula campestris</i>	Field Wood-rush	O/LF	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	O	<1%
<i>Leontodon hispidus</i>	Rough Hawkbit	VLF	<1%
<i>Potentilla sterilis</i>	Barren Strawberry	O/LF*	1%
<i>Senecio jacobaea</i>	Common Ragwort	VO	<1%
<i>Sonchus oleraceus</i>	Smooth Sow-thistle	VLF	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	VO	<1%
<i>Trifolium dubium</i>	Lesser Trefoil	O/LA*	1%
<i>Veronica chamaedrys</i>	Germander Speedwell	O/LF	<1%
¹ Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			



Key to Map Symbols

- Broadleaf woodland
- Broadleaf trees
- Hedgerows
- Young trees and shrubs
- Bramble scrub
- Tall herb vegetation
- Semi-improved calcareous grassland
- Unimproved calcareous grassland
- Bare rock face
- Gradient indication (top and bottom of slope)
- Wall
- Fence
- Gate
- Buildings
- Site boundary

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Key to Tree Species Codes
 Ac=Acer campestre; Field Maple Fe=Fraxinus excelsior, Ash Mv=Malvus sp.; Apple species
 Ap=Acer pseudoplatanus; Sycamore Fs=Fagus sylvatica; Beech Til=Tilia sp; Lime species

Project Name:
 Land off Chatburn Old Road, Lancashire

Title:
 Phase 1 Habitat and Vegetation Map

Scale: 1:1000@A4 **Drawing No.:** Figure 1 **Date:** May 2014

Central Grid Ref.: SD 765 439 **Reference No.:** ERAP Ltd 2014/119

Scale Bar:
 0m 50m