

Application for Residential Development at  
Mitton Road, Whalley

**Ecological Survey  
and Assessment**

July 2012



*Where quality lives*



**David Wilson Homes**

## CONTENTS

<b>SUMMARY</b> .....	<b>2</b>
<b>1.0 INTRODUCTION</b> .....	<b>3</b>
1.1 Background and Scope of Survey .....	3
1.2 Site Description .....	3
<b>2.0 METHODOLOGY</b> .....	<b>4</b>
2.1 Desktop Study and Data Search .....	4
2.2 Vegetation and Habitats .....	4
2.3 Animal Life .....	5
2.4 Survey Limitations .....	7
2.5 Evaluation Methodology .....	7
<b>3.0 SURVEY RESULTS</b> .....	<b>7</b>
3.1 Desktop Study .....	7
3.2 Vegetation and Habitats .....	8
3.3 Animal Life .....	11
<b>4.0 EVALUATION</b> .....	<b>14</b>
4.1 Vegetation and Habitats .....	14
4.2 Protected Species and Other Wildlife .....	15
<b>5.0 RECOMMENDATIONS</b> .....	<b>15</b>
5.1 Introduction .....	15
5.2 Existing Vegetation and Habitats and Use of Demarcation Fencing .....	16
5.3 Japanese Knotweed .....	16
5.4 Badger .....	16
5.5 Bats .....	17
5.6 Birds .....	17
5.7 Brown Hare .....	18
5.8 Hedgehog and Other Wildlife .....	18
5.9 Lighting .....	18
5.10 Ecological Enhancement and Landscape Planting .....	19
<b>6.0 CONCLUSION</b> .....	<b>20</b>
<b>7.0 REFERENCES</b> .....	<b>21</b>
<b>8.0 TABLES AND FIGURES</b> .....	<b>22</b>

## LIST OF TABLES

Table 2.1: Summary of Tree Categories and Descriptions .....	5
Table 2.2: Important Habitat Characteristics for Reptiles .....	6
Table 3.1: Protected, UK BAP and Other Notable Wildlife Species of Flora and Fauna Present in the Wider Area Outside the Site Boundary .....	8
Table 3.2: Summary Information of Trees with Roosting Potential .....	12
Table 3.3: A Record of the Bird Species Detected Within the Site .....	12
Table 3.4: Habitat Assessment of the Site for Reptiles .....	13
Table 5.1: Suitable Native Species for Planting Near Housing .....	19
Table 8.1: Species Composition, DAFOR and Percentage Cover for Sheep Grazed Pasture .....	22
Table 8.2: Species Composition, DAFOR and Percentage Cover for Unmanaged Grassland .....	22
Table 8.3: Species Composition, DAFOR and Percentage Cover for Hedgerows 1, 2 & 3 .....	23
Table 8.4: Hedgerow Description and Importance In Accord With <i>The Hedgerows Regulations 1997</i> .....	24

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## SUMMARY

- a. ERAP Ltd (Consultant Ecologists) was commissioned by David Wilson Homes North West to carry out an Ecological Appraisal of land off Broad Lane, Whalley, Lancashire (hereafter called the 'site'). The appraisal was requested in connection with a planning submission for development of the land for housing.
- b. The appraisal presents the results of a desktop study and comprehensive ecological survey of the site was carried out in February 2012. The scope of survey undertaken is appropriate to enable the identification and accurate assessment of any potential ecological constraints and biodiversity enhancement including creative opportunities associated with the development proposals in accord with the National Planning Policy Framework (NPPF)
- b. The site is approximately 375 metres (m) to the west of Whalley town centre. The land contains semi-improved mesotrophic (neutral) grassland, hedgerows, mature trees, young trees and shrubs, bramble scrub and a dry ditch. The habitats of the site were assessed for their suitability to support protected and UK Biodiversity Action Plan (UK BAP) species.
- c. No rare or uncommon plant species were detected. The hedgerows at the site boundaries are UK BAP (Biodiversity Action Plan) Priority Habitat. None of the hedgerows meet the criteria to be assessed as 'important' in accordance with *The Hedgerows Regulations 1997* wildlife criteria. No other UK BAP Priority Habitats are present. The hedgerows and tree lines, being linear habitats, have some function as wildlife links for bat, bird and small mammal movements. The mature trees are of local value.
- d. A small stand of Japanese Knotweed is present within the site. It is recommended that this species is eradicated from the site. No other invasive weed species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* were detected within the site.
- e. No evidence of the presence of protected species was detected at the site or in the immediate surrounding area. A UK BAP species, namely Dunnock, was detected at the site.
- f. Six trees support features highly suitable for roosting bats and the trees, scrub and hedgerows are suitable for use by nesting birds. Guidance in relation to the retention and conservation of trees, protection of features suitable for roosting bats and nesting birds is presented in the report.
- g. Section 5 of the report describes the mandatory and precautionary measures to be applied to ensure compliance with all EU and UK wildlife legislation, Natural England guidance, the NPPF, local planning policy and best practice. Where possible, practicable and reasonable opportunities to achieve biodiversity gain by appropriate management, habitat creation and landscape planting have been identified and incorporated in the development proposals.
- h. Based on the survey information presented in this assessment, the principle of residential development at the site at Land off Broad Lane, Whalley, Lancashire, is feasible from ecological and nature conservation standpoints, and development is feasible in accord with biodiversity considerations. This conclusion is valid provided that guidance detailed in **Section 5.0** of this assessment is applied throughout the design and construction of the site.

## 1.0 INTRODUCTION

### 1.1 Background and Scope of Survey

1.1.1 ERAP Ltd (Consultant Ecologists) was commissioned by David Wilson Homes North West to carry out an Ecological Appraisal of land off Broad Lane, Whalley, Lancashire (hereafter called the 'site'). The appraisal was requested in connection with a planning submission for development of the land for housing.

### 1.2 Site Description

1.2.1 The site is approximately 375 metres (m) to the west of Whalley town centre. The central grid reference of the site is SD 7274 3641 and its approximate area is 6.2ha.

1.2.2 The site is situated in a rural area with agricultural fields to the west and south and housing to the north and east. The site and its surrounds are shown at **Insert 1**, below: -



**Insert 1:** Site location and surrounding land use. The site boundary is shown via the purple line.  
(source image: Google Earth)

1.2.3 The site supports brown earth soils which, at the time of the survey, were muddy and saturated with water. The site supports a level gradient, apart from a slope situated to the north of a tree line, which rises at approximately 45<sup>0</sup> for two metres (see **Insert 1**, above and **Figure 1**, appended).

1.2.4 The scope of the ecological study carried out in February 2012 is detailed below: -

- a. A desktop study of existing survey information and known ecological records;
- b. An Extended Phase 1 Habitat Survey, assessment and preparation of a report describing the survey methodology applied and the habitats/wildlife present;
- c. An assessment of all hedgerows in accordance with the wildlife criteria of *The Hedgerows Regulations 1997*;

- d. An assessment of the ecological value of the habitats within the site using the National Vegetation Classification (NVC) as the scientific basis for the description and assessment of ecological condition and value, and the Ratcliffe criteria (A Nature Conservation Review 1977) as the basis for the sites overall evaluation, and with reference to the UK Biodiversity Action Plan (BAP) and Lancashire BAP for the conservation of biodiversity.
- e. An assessment of the site and surrounds for protected species, namely Badger, bats, Water Vole and Great Crested Newt;
- f. Identification of any ecological constraints to the proposed development, and;
- g. Specification of the scope of mitigation and enhancement required in accord with wildlife legislation, the National Planning Policy Framework, and other relevant guidance.

## 2.0 METHODOLOGY

### 2.1 Desktop Study and Data Search

- 2.1.1 A data search was carried out to obtain existing information on designated statutory and non-statutory wildlife sites and the occurrence of protected species and protected habitats in the locality. The following sources of information were consulted:-
  - a. The Multi-Agency Geographic Information for the Countryside (MAGIC).
  - b. The National Biodiversity Network (NBN) Gateway.
  - c. The Lancashire Environmental Record Network (LERN).

### 2.2 Vegetation and Habitats

- 2.2.1 The vegetation at the Site and surrounding land was surveyed on 29<sup>th</sup> of February 2012 by Mr. Brian Robinson B.Sc. (Hons) AIEEM. The prevailing weather was dry with sunny spells interspersed with cloudy intervals, low wind (Beaufort scale 1) and a maximum air temperature of 10°C. Conditions were favourable for an ecological survey of this type.
- 2.2.2 A vegetation and habitat map was produced for the Site and the immediate surrounding areas at a scale of approximately 1:1,000 (**Figure 1**). The mapping is based on the Joint Nature Conservation Committee Phase 1 Habitat Survey methodology (JNCC 2010) with minor revisions to illustrate and examine the habitats with greater precision and to conform to current good practice.
- 2.2.3 The principal and constant plant species within the Site boundaries were identified with estimates of the distribution, ground cover, abundance, frequency and constancy of occurrence 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 application of the DAFOR system was qualified as follows:- L=local or locally, and V=very.
- 2.2.4 Species with a high constancy of occurrence were also identified in order the sites vegetation could be assigned to NVC plant communities.
- 2.2.5 Searches were made for uncommon, rare and statutorily protected plant species, those species listed as protected in the *Wildlife and Countryside Act 1981* and indicators of important and uncommon plant communities. All higher plant nomenclature follows Stace (1991).
- 2.2.6 All hedgerows were assessed in accord with *The Hedgerows Regulations 1997 wildlife criteria* to determine their importance.

2.2.7 Searches were carried out for the presence of invasive species, including those listed in the revised (April 2010) Schedule 9 Section 14(2) of the *Wildlife and Countryside Act 1981*, including Japanese Knotweed (*Fallopia japonica*), Indian Balsam (*Impatiens glandulifera*) and Giant Hogweed (*Heracleum mantegazzianum*).

## 2.3 Animal Life

### Terrestrial Fauna

#### **Badger**

2.3.1 An intensive search for Badger activity was carried out within the site and in adjacent habitats for up to 30 metres where access was possible.

2.3.2 Evidence of Badger includes:-

- a. 'D' shaped sett entrances at least 25cms wide and wider than they are high with large spoil mounds;
- b. Discarded bedding at sett entrances (this includes grass and leaves);
- c. Scratching posts on shrubs and trees close to a sett entrance;
- d. Presence of Badger hairs which are coarse, up to 100mm long with a long black section and a white tip;
- e. Dung pit latrines and footprints; and,
- f. Trampled pathways through vegetation and beneath fences.

#### **Bats**

2.3.3 There are no buildings in the site that could provide suitable roosting and breeding habitats for bats.

2.3.4 A survey of all trees within the site and trees adjacent to the site boundary was conducted for features suitable for roosting bats. This survey was conducted by Mr. Brian Robinson, a Natural England licensed bat surveyor (licence number 20113323, valid until 18<sup>th</sup> July 2012). Mr. Robinson has over 5 years of experience of surveying for bats.

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 IEEM (August 2011).

2.3.6 All trees were accessible and were examined from the ground for features such as cracks, holes, splits and lifted bark which may be suitable for use by roosting bats.

2.3.7 The value of any feature was assessed in accord with the protocol described in *Bat Surveys: Good Practice Guidelines* (L. Hundt, 2012). A description of the assessment criteria is given in **Table 2.1**, below:

**Table 2.1: Summary of Tree Categories and Descriptions**

Category	Description
	Confirmed roost
1*	Trees with multiple, highly suitable features capable of supporting larger roosts
1	Trees with definite suitability for bats, supporting fewer suitable features than category 1* trees or with suitability for use by single bats.

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

2.3.8 An appraisal of habitat value for foraging and commuting bats was conducted during the walkover survey.

***Birds***

2.3.9 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.

2.3.10 All visible and audible birds were recorded during the site survey.

***Reptiles***

2.3.11 An assessment of habitat suitability and potential habitat value of the site for reptiles was made with consideration of its suitability for sheltering, basking, breeding and hibernating reptiles.

2.3.12 The assessment of the site was based upon the following important characteristics as for reptiles as outlined in the draft document ‘*Reptile Mitigation Guidelines*’ (Natural England, September 2011) and reproduced in **Table 2.2** below:

**Table 2.2: 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 Terrestrial Fauna***

2.3.13 A habitat assessment has been carried out in respect of small mammal species and invertebrate species such as bees, butterflies and dragonflies. Species detected during the walkover surveys were identified and recorded.

**Aquatic and Riparian Fauna**

2.3.14 The desk study and subsequent walkover surveys were used for determination of the presence or absence of water bodies or water-courses within the site and within an unobstructed 250 metre radius around the site boundary.

***Great Crested Newt***

2.3.15 There are no ponds within the site and therefore no possible breeding habitat for Great Crested Newts and other amphibians

- 2.3.16 No ponds were detected within a 250 metre radius of the site. Barriers to the movement of terrestrial Great Crested Newt are present at each side of the site in the form of roads and housing and the River Calder, as confirmed by the walkover survey. The presence of breeding or terrestrial Great Crested Newt is discounted at the site.

#### ***Other Aquatic and Riparian Fauna***

- 2.3.17 The River Calder runs close to the southern boundary of the site. Whilst the river does not form part of the site, it does lie at its closest approximately 6 metres from the southern boundary of the site. Searches were made for protected and notable species associated with aquatic and riparian habitats and the river was examined for its suitability for species such as Water Vole, Bullhead (a fish), Common Frog, Common Toad, Otter and White Clawed Crayfish.

### **2.4 Survey Limitations**

- 2.4.1 The entire site was accessible during all survey visits; there were no visibility or access constraints.
- 2.4.2 The walkover surveys were conducted at a time when not all plant species are evident, however due to the limited habitats present on site and the experience of Mr. Brian Robinson of identifying plants by their vegetative characteristics it is concluded that this does not represent a significant survey limitation. Phase 1 and NVC methodology give a robust means of identifying the ecological value of habitats, and the suitability of those habitats to support rare or protected species.
- 2.4.3 The survey was conducted at a suitable time of year to identify field signs of protected species and assess habitat suitability within the site for protected species.
- 2.4.4 No significant access or other survey limitations were experienced within the site. The bed of the River Calder could not be directly accessed and searched for protected or notable species such as Water Vole or Bullhead. The River will not be directly affected by the proposed development however, and this is not considered a significant limitation.

### **2.5 Evaluation Methodology**

- 2.5.1 The habitats, vegetation and animal life were evaluated with reference to standard and accepted nature conservation criteria as described by Ratcliffe (1977) and the Nature Conservancy Council (1989). These are; size (extent), diversity, naturalness, rarity, fragility, typicalness, 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 (NPPF) has been taken into consideration. The UK Biodiversity Action Plan (UK BAP) and the Lancashire Biodiversity Action Plan (LBAP) have been taken into account in the evaluation of the site.

## **3.0 SURVEY RESULTS**

### **3.1 Desktop Study**

#### ***Designated Sites***

- 3.1.1 This site has no statutory or non statutory designation. There are no statutory or non statutory designated sites within one kilometre of the Site.

### Protected and Notable Species

- 3.1.2 No records of protected species or notable species are reported for the site. Protected and notable species are present in the wider area; records within a one kilometre radius of the site between 1990 and the present time are given at **Table 3.1** below : -

**Table 3.1: Protected, UK BAP and Other Notable Wildlife Species of Flora and Fauna Present in the Wider Area Outside the Site Boundary**

Group	Species
Amphibians and Reptiles	Common Frog, Great Crested Newt <sup>1,2,3</sup> (500m to north west of site)
Birds	Wren, House Martin <sup>3</sup> , Long-tailed Tit, Meadow Pipit <sup>3</sup> , Great Spotted Woodpecker, Bullfinch <sup>2,3</sup> , Reed Bunting <sup>2,3</sup> , Song Thrush <sup>2,3</sup> , House Sparrow <sup>2,3</sup> , Cuckoo <sup>2,3</sup> , Oystercatcher <sup>3</sup> , Dunnock <sup>2,3</sup> , Kestrel <sup>3</sup> , Linnet <sup>2,3</sup> , Skylark <sup>2,3</sup> , Willow Warbler <sup>3</sup> , Lapwing <sup>2,3</sup> , Snipe <sup>3</sup> , Sand Martin <sup>3</sup> .
Crustaceans	Freshwater White-clawed Crayfish <sup>1</sup>
Fish	Bullhead <sup>3</sup>
Plants	Black Poplar <sup>3</sup> , Common Meadow-rue <sup>3</sup>
Insects	<i>Ilybius guttiger</i> (A water beetle) <sup>3</sup>
Terrestrial mammals	Common Pipistrelle <sup>1</sup>
<sup>1</sup> Species Protected under The Conservation of Habitats and Species Regulations 2010 <sup>2</sup> Species listed as UK BAP Priority Species <sup>3</sup> Species listed as Lancashire BAP Priority Species	

- 3.1.3 The site has been assessed in terms of suitability for these species and recommendations have been made, where necessary or appropriate, in **Section 5.0**.

## 3.2 Vegetation and Habitats

### Site Description

#### **Overview**

- 3.2.1 A Phase 1 Habitat Survey plan is appended at **Figure 1**.
- 3.2.2 The northern boundary of the site is marked by housing associated with Station Road (B6426), beyond which lies further housing and playing fields. The eastern boundary of the site is marked by Broad Lane, beyond which lies a railway viaduct and housing associated with Whalley. The southern boundary is marked by Ridding Lane, beyond which lies a field, a construction site and the River Calder. The western boundary is marked by a fenceline, beyond which lies a grass verge associated with the A59, beyond which lies further grassland fields
- 3.2.3 The vegetation within the site is composed of sheep grazed pasture grassland located throughout the site, unmanaged coarse grassland located along the site boundaries, boundary hedgerows located along the eastern and southern site boundaries, scattered broadleaf trees and shrubs located in a line bisecting the site and locally at the northern and western site boundaries and an ephemeral pool located at roughly the sites centre.

3.2.4 The habitats and features present within and, where appropriate, near and adjacent to the site are described in detail below. Reference should be made to **Figure 1**.

### **Habitats Within the Site Boundary**

#### ***Grassland***

##### ***Sheep Grazed Pasture***

3.2.5 The grassland present within the main body of the site is sheep grazed. It attains a homogenous cover of approximately 70%.

3.2.6 The grassland is characterised by constant and abundant Perennial Rye-grass (*Lolium perenne*); constant and frequent Yorkshire-fog (*Holcus lanatus*), Creeping Bent (*Agrostis stolonifera*) and Creeping buttercup (*Ranunculus repens*); and constant, occasional and locally frequent Cock's-foot (*Dactylis glomerata*). A full species list is appended at **Table 8.1**.

3.2.7 The grassland is mesotrophic (neutral) and is species-poor semi-improved, as determined by the number of species within the sward and the vigour of the Perennial Rye-grass growth.

3.2.8 The grassland is an MG7 Perennial Rye-grass ley of the NVC.

##### ***Unmanaged Grassland***

3.2.9 This grassland type is present in one metre wide strips along the northern and southern boundaries of the site and in a larger area at the western boundary of the site (see **Figure 1**).

3.2.10 The grassland is characterised by constant and frequent Cock's-foot, Yorkshire-fog and Creeping Bent; constant, frequent and locally abundant Common Nettle (*Urtica dioica*); and frequent False Oat-grass (*Arrhenatherum elatius*). A full species list is appended at **Table 8.2**.

3.2.11 The grassland is species-poor mesotrophic semi-improved grassland. The grassland is characteristic of a MG7 Perennial Rye-grass ley becoming colonised by coarser grasses and ruderal herbs due to lack of management and/or disturbance, and is becoming characteristic of MG1 False Oat-grass grassland and the OV24 Common Nettle - Creeping Thistle community of the NVC.

##### ***Mature Trees and Shrubs***

3.2.12 This description includes the mature trees present within the boundary hedgerows; the boundary hedgerows themselves are described in detail further on.

3.2.13 There are a total of 20 mature trees within the site boundary. They typically attain a height of 15 to 20 metres and Diameter at Breast Heights (DBH) of 1 to 1.3 metres, indicative of tree greater than 100 years age.<sup>1</sup>

3.2.14 The trees are composed of: locally frequent Sycamore (*Acer pseudoplatanus*), Occasional Ash (*Fraxinus excelsior*) and very local Pedunculate Oak (*Quercus robur*). All mature trees are noted on **Figure 1**.

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<sup>1</sup> Using *Mitchell's Rule*, where it is assumed that broadleaved trees in UK woodlands put on about 1.5 to 2cm in circumference or girth per year, so by measuring the trunk circumference and dividing by 1.5 to 2.5 an informed estimate of age can be derived.

- 3.2.15 The shrubs present within the site, but not associated with the boundary hedgerows, are composed of: locally frequent Hawthorn (*Crataegus monogyna*); very locally abundant Blackthorn (*Prunus spinosa*); and very locally frequent Elder (*Sambucus nigra*) and young Ash. Hazel (*Corylus avellana*) and Dog-rose (*Rosa canina*) are only rarely present.
- 3.2.16 The trees and shrubs associated with the site do not form a distinct NVC community. The value of the mature trees locally to wildlife is discussed in **section 4.0** and **5.0** of this report.

### ***Hedgerows***

- 3.2.17 There are three hedgerows within the site. Hedgerows 1 and 2 are present along the eastern boundary of the site and hedgerow 3 is present along the southern boundary of the site.
- 3.2.18 The three hedgerows are characterised by: constant, dominant or abundant Hawthorn (*Crataegus monogyna*); locally abundant Blackthorn (*Prunus spinosa*) and Elder (*Sambucus nigra*); very locally abundant Elm species (*Ulmus* sp.) and locally frequent Dog Rose (*Rosa canina*). Also present, but of rare occurrence, are Ash (*Fraxinus excelsior*), Holly (*Ilex aquifolium*) and Pedunculate Oak (*Quercus robur*).
- 3.2.19 The herb vegetation associated with the three hedgerows is characterised by: constant and frequent or abundant Ivy (*Hedera helix*); constant and frequent Wood Avens (*Geum urbanum*), Lord's-and-Ladies (*Arum maculatum*) and locally abundant Dog's Mercury (*Mercurialis perennis*) and Garlic Mustard (*Alliaria petiolata*). A full species list for each hedgerow is appended at **Table 8.3**.
- 3.2.20 The hedgerows are the W21 Hawthorn - Ivy scrub community of the NVC.
- 3.2.21 Each Hedgerow was assessed in terms of its 'importance' in accord with *The Hedgerows Regulations 1997* wildlife criteria. The assessment is appended at **Table 8.4**. None of the hedgerows qualify as important.
- 3.2.22 All hedgerows within the site are UK BAP habitat. This is discussed in **section 4.0** and **5.0** of this report.

### ***Ephemeral Pool and Dry Ditch***

- 3.2.23 A shallow ephemeral pool was present during the walkover survey. The pool is approximately 30 metres wide (west to east) and 10 metres long (north to south). It is 0.2 metres deep. No vegetation associated with aquatic habitats or indicative of permanently wet or boggy ground is present within or around the pool. It is therefore concluded that the pool dries regularly and is a consequence of recent rain saturating the ground, but not of a permanent or semi-permanent water feature.
- 3.2.24 The presence of a dry ditch was noted at the western boundary of the site. The former ditch did not hold any water during the walkover survey despite high rainfall previous to the survey and the damp conditions throughout the rest of the site. The dry ditch does not support any vegetation indicative of aquatic or damp conditions.

### ***Invasive Species***

- 3.2.25 There is an approximately 25m<sup>2</sup> stand of Japanese Knotweed near the middle of the western boundary of the site (grid reference SD 72633 36468).
- 3.2.26 There is a further 35m<sup>2</sup> stand of Japanese Knotweed outside the but within 3 metres of the sites southern boundary along the banks of the River Calder (grid reference SD 72578 36359).
- 3.2.27 No other stands of any invasive weed are present within or near to the site. The presence of Japanese Knotweed is discussed in **sections 4.0** and **5.0** of this report.

## Habitats Outside the Site Boundary

### *River Calder*

- 3.2.28 The River Calder lies, at its closest, within 10 metres of the site boundary, across the 3 metre wide asphalt Ridding Lane and with a 7 metre wide bank which drops approximately 5 metres at 60° from the adjacent land.
- 3.2.29 The bank at this point supports scrub and Bramble (*Rubus fruticosus* agg.). Further east the bank supports semi-improved and coarse mesotrophic grassland.
- 3.2.30 The far (southern) bank of the Calder is approximately 3 metres high, rising from the base of the river at approximately 45°. Both banks support brown earth soils.
- 3.2.31 The River is approximately 15 metres wide and varies in depth from deeper 0.5 metre sections to 0.2 metres. The bed is a mixture of earth, silt and stone. The River at the time of survey was fast-flowing. No aquatic or emergent vegetation was detected on either bank. The presence of the River Calder is discussed in **Sections 4.0** and **5.0** of this report.

### *Overhanging Trees*

- 3.2.32 Mature trees overhang the site along its northern, western and southern boundaries to a height of approximately 4 metres. The presence of overhanging trees is marked on **Figure 1**, appended, and discussed in **sections 4.0** and **5.0** of this report.

## **3.3 Animal Life**

### Terrestrial Fauna

#### *Badger*

- 3.3.1 No sign of Badger activity, such as the presence of setts, bedding, runs, latrines or hairs was detected within the site or in the surrounding area. The site, like many other parts of the wider area, is suitable for foraging Badger.
- 3.3.2 The presence of Badger at the site is reasonably discounted although the sites suitability for foraging Badger means the possibility of Badger to move into the site in the future cannot be discounted. For this reason, precautionary measures are recommended in **Section 5.0** of this report.

#### *Bat species*

##### *Roosting bats*

- 3.3.3 There are no buildings within the site boundary and therefore no suitable roosting habitats for bats in built structures.

##### *Roosting bats - Trees*

- 3.3.4 Several of the trees support features for roosting bats. Each tree has been assessed in terms of its suitability for roosting bats and is labelled at **Figure 1** (appended).
- 3.3.5 Six trees were identified as having potential for roosting bats. The trees, their reference numbers and suitability for roosting bats is summarised in **Table 3.2**, below and are discussed in **sections 4.0** and **5.0** of this report. All other trees within the site are 'category 3' trees, which support no features for roosting bats.

**Table 3.2: Summary Information of Trees with Roosting Potential**

Tree Ref.	Species	Category	Description
Fe3	Ash	1	Mature tree with features highly suitable for roosting bats
Fe4	Ash	1	Mature tree with features highly suitable for roosting bats
Fe5	Ash	1	Mature tree with features highly suitable for roosting bats
Qr3	Pedunculate Oak	2	Mature tree with features of moderate suitability for roosting bats
Q4r	Pedunculate Oak	2	Mature tree with features of moderate suitability for roosting bats
Qr5	Pedunculate Oak	1	Mature tree with features highly suitable for roosting bats

**Foraging and Commuting**

- 3.3.6 Habitats within the site are suitable for foraging and commuting bats. The boundary hedgerows and the line of trees and shrubs which bisects the site all provide suitable foraging habitat for edge-feeding species such as Common Pipistrelle.
- 3.3.7 The site contains no substantial water bodies, ponds or areas of mature woodland which would greatly increase its habitat potential for foraging bats. Habitats suitable for foraging bats similar to those found within the site are present in the wider area and the site does not offer superior foraging habitat than the surrounding land.
- 3.3.8 The sites proximity to the River Calder at its southern boundary and to housing and the railway viaduct are suitable features for commuting bats and may be used as wildlife links by commuting bats roosting in the local area.
- 3.3.9 Possible bat use of the site is discussed in sections 4.0 and 5.0 of this report.

**Bird species**

- 3.3.10 The birds recorded within the site are associated with the trees, scrub and boundary hedgerows. A list of birds recorded during the survey is present at Table 3.3, below, with reference to their conservation status and legal protection: -

**Table 3.3: A Record of the Bird Species Detected Within the Site**

Scientific Name	Common Name	Conservation Status <sup>1</sup>	UK BAP Priority Species?
<i>Parus caeruleus</i>	Blue Tit	Green	Yes
<i>Turdus merula</i>	Blackbird	Green	
<i>Fringilla coelebs</i>	Chaffinch	Green	
<i>Prunella modularis</i>	Dunnock	Amber	
<i>Parus major</i>	Great Tit	Green	
<i>Pica pica</i>	Magpie	Green	
<i>Erithacus rubecula</i>	Robin	Green	
<i>Columba palumbus</i>	Wood Pigeon	Green	
<i>Troglodytes troglodytes</i>	Wren	Green	
<i>Corvus corone</i>	Carrion Crow	Green	
<i>Anas platyrhynchos</i>	Mallard	Amber	
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Amber	

<sup>1</sup>As listed by Birds of Conservation Concern (BOCC) 2009.

- 3.3.11 It is likely that some of the species listed in Table 3.5, such as Blackbird, nest within habitats within the site. The hedgerows, mature trees and shrubs found within the site all are suitable habitat for foraging and nesting bird species.
- 3.3.12 No ground nesting birds were detected using the site during the walkover survey. The site does, however, offer suitable nesting habitat for species such as Skylark, Lapwing and Oystercatcher (UK BAP Priority Species).
- 3.3.13 Dunnock, a UK BAP Priority Species was detected. This is further considered in sections 4.0 and 5.0 of this report.

### Reptiles

- 3.3.14 The habitat suitability of the site was assessed during the surveys. A description of the site in relation to the listed important habitats characteristics for reptiles is given in Table 3.4, below: -

**Table 3.4: Habitat Assessment of the Site for Reptiles**

Characteristic	Site Description
1. Location (in relation to species range)	No records for reptiles in the wider area.
2. Vegetation Structure	Limited. Site supports a largely homogeneous vegetation of short-grazed mesotrophic (neutral) grassland with localised shrubs, mature trees and hedgerows which offer some variation in physiognomy.
3. Insolation	The site is not shaded by its boundaries and is open.
4. Aspect	The site has a 3 metre long southern slope of approximately 2 metres height but otherwise is level.
5. Topography	The site supports a level topography.
6. Surface geology	The site supports brown earth soils.
7. Connectivity to nearby good quality habitat	No habitats are identified as good quality adjacent to the site. The River Calder, to the south of the site, is farmed to its banks and is not regarded as a suitable habitat corridor. The railway to the east is over a viaduct and does not offer connecting habitat; the verges adjacent to the A59 are broken by bridges to the immediate north and south of the site.
8. Prey abundance	The site supports suitable habitats for a variety of invertebrates including spiders, grasshoppers, crickets, bugs, flies, slugs, worms, amphibians (Common Frog has been confirmed at the site) and small mammals (the presence of which is confirmed by the walkover survey and the presence of mammal holes and runs).
9. Refuge opportunity	Small mammal holes are evident at the hedgerows and refuges may be present at the bases of the mature trees. Overall the site supports very limited refuges opportunities for reptiles.
10. Hibernation habitat potential	The presence of small mammal holes offers some hibernation potential but no other habitat is present.
11. Disturbance regime	Some disturbance from dog walkers, but otherwise low.
12. Egg-laying site potential (Grass snake and Sand lizard only)	None.
<b>Summary</b>	
The site represents poor quality habitat for reptiles. The site is composed of short grasses which afford little cover. There is a limited physiognomy, the site does not support features such as extensive sloping or uneven ground, sandy soils, ponds, wetland areas or areas which are good quality habitat for hibernating reptiles.	

- 3.3.15 There are no records of reptiles for the site or the wider area and the site supports poor habitats for reptiles. The presence of reptiles within the site can be reasonably discounted.

### ***Other Terrestrial Wildlife***

#### ***Mammals***

- 3.3.16 Small mammal holes were noted along the boundary hedgerows. A Fox den was noted at the base of Fe3 (see **Figure 1**). Areas of extensive Mole activity were noted within the main field units.
- 3.3.17 The habitats within the site also offer habitat value for foraging Hedgehog and sheltering Brown Hare, both UK BAP Priority Species. This is discussed in **sections 4.0** and **5.0** of this report.

### **Aquatic and Riparian Fauna**

#### ***Water Vole***

- 3.3.18 The River Calder offers poor habitats for Water Vole; the River is fast flowing, and supports no aquatic or emergent vegetation suitable for forage and cover. There are no records of Water Vole in the local area.
- 3.3.19 The presence of Water Vole at the site, which lies seven metres from the River Calder at its closest point across an asphalt road and does not support any permanent water bodies, can be reasonably discounted.

#### ***Other Aquatic/Riparian Fauna***

- 3.3.20 Two clumps of Common Frog spawn were detected in the ephemeral pool at the centre of the site. Although the pool is ephemeral and the frogs will not be successful, the presence of Common Frog is noted and recommendations are made in **section 5.0** of this report.
- 3.3.21 The River Calder appears to offer suitable habitat for Otter, although no signs of Otter were detected and there are no records of Otter for the River. The presence or of White-claw Crayfish and Bullhead could not be directly searched for during the walkover survey due to access constraints. The river supports suitable habitats for these species, with shallower areas of small to medium sized stones. Recommendations regarding the preservation of habitats at the River for these species during and after the proposed development are made in **section 5.0** of this report.

## **4.0 EVALUATION**

### **4.1 Vegetation and Habitats**

- 4.1.1 The site contains only common and widespread species. The hedgerows within the site are representative of UK BAP Priority Habitat. None of the hedgerows is 'important' in accord with the wildlife criteria of *The Hedgerows Regulations 1997*. The mature trees and shrubs are of local value as they add structural diversity and support breeding birds.
- 4.1.2 The hedgerows are suitable as wildlife links or corridors for the movement of common species.
- 4.1.3 For the remainder of the site the limited range of species-poor NVC plant communities present represent habitats of widespread occurrence in the UK and the local area. No semi-features with a high degree of naturalness such as agriculturally unimproved and species-rich grasslands are present within the site.
- 4.1.4 A small area of the non-native and invasive Japanese Knotweed is present within the site. Recommendations are made in **Section 5.0** of this report. No other invasive weed species are present within the site.

## 4.2 Protected Species and Other Wildlife

- 4.2.1 No evidence of Badger was recorded within the site but the site is suitable for foraging Badger.
- 4.2.2 There are trees suitable for roosting bats within the site (see **Figure 1**). The site supports suitable habitat for edge-feeding foraging bats. The site boundaries are suitable as flyways for commuting bats.
- 4.2.3 A UK BAP Priority Species (Dunnock) was detected in the site. Other passerine bird species were detected and the trees and shrubs provide favourable nesting habitat for most of the species recorded.
- 4.2.4 The site supports suitable habitat for ground nesting birds such as Lapwing and Skylark. It does not support habitats which are greater than those present in the surrounding area however, and will not be core habitat for any ground nesting species of bird.
- 4.2.5 The site offers suitable foraging habitat for foraging Hedgehog and sheltering Brown Hare (UK BAP priority species). The site does not support better habitats than those present in the wider area for both species however, and will not form a core habitat for either species.
- 4.2.6 Habitats near to the site, in particular the River Calder, offer suitable habitat for foraging bats, Otter, Bullhead and White-claw Crayfish.

## 5.0 RECOMMENDATIONS

### 5.1 Introduction

- 5.1.1 The comprehensive ecological surveys carried out at the site have provided a reliable account of the ecological considerations to be made in connection with the proposed residential development.
- 5.1.2 The evaluation of the features identified as being of higher ecological worth at the site has informed the proposed site layout '*Whalley Sketch Masterplan ref: NW-09-03D*'. The recommendations of this report are feasible in accord with this masterplan.
- 5.1.3 The recommendations given in this Report seek to ensure any future development of the site is implemented in accordance with all wildlife legislation, Natural England guidance, the National Planning Policy Framework (NPPF) and local planning policy.
- 5.1.4 Where possible, opportunities to enhance the ecological interest of the site and seek biodiversity gains through appropriate landscape planting, appropriate management and habitat creation have been identified and recommended in accord with the guidance in the NPPF, which states:

*'The planning system should contribute to and enhance the natural and local environment by...minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity'*

- 5.1.5 It is suggested that the recommendations given in this section may be used to inform planning conditions to ensure the features of ecological value are protected or improved at the site during and after the development process.

## 5.2 Existing Vegetation and Habitats and Use of Demarcation Fencing

### *Retention and protection of hedgerows*

- 5.2.1 The hedgerows along the field unit boundaries will be incorporated into the site layout. The removal of any hedgerow or length of hedgerow should be avoided or compensated for by incorporating native-species hedgerows in linear belts throughout the site to increase wildlife habitat connectivity within the site. Suitable native species to include in planting are given in **Table 5.1, section 5.10**.
- 5.2.2 During the construction phase hedgerows should be protected with the use of fencing. The fencing should be in accord with BS5837: 2005 *Trees in Relation to Construction*.

### *Protection of existing trees and shrubs (including those which Overhang the Site)*

- 5.2.3 It is confirmed that the layout given in the figure 'Whalley Sketch Masterplan ref: NW-09-03D' confirms the retention of the existing mature trees. If removal of trees is subsequently found to be necessary, any tree removal should be compensated for by the planting of native species during landscape planting, as recommended in **Section 5.10**.
- 5.2.4 During the construction phase, temporary protective demarcation fencing should be used to protect the roots and canopies of any retained trees within and on the margins of the site. The fencing must remain in position until all construction works have been completed to ensure protection is provided throughout the construction phase.
- 5.2.5 The fencing should be in accord with BS5837: 2005 *Trees in Relation to Construction*.

### *Protection of the River Calder*

- 5.2.6 The site lies, at its closest, 7 metres from the River Calder. In order that the River is not disturbed during the construction of the site a management plan is necessary in order that the River is protected against spillage incidents and pollution during the course of the proposed development, and the Environment Agency should be contacted and advice sought with respect to protection of the River.
- 5.2.7 The recommendations given above regarding the retention of boundary hedgerows within the site, and in **section 5.10** regarding the consideration of light spill onto the River will ensure the proposed development is not detrimental to the ecological and wildlife value of the River.

## 5.3 Japanese Knotweed

- 5.3.1 Japanese Knotweed occurs near the middle of the western boundary of the site. This species is listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) and, as such, it is illegal to cause its spread in the wild. It is also listed under the Environmental Protection Act (EPA) 1994. As such it is regarded as 'controlled waste'.
- 5.3.2 A management plan is necessary for the eradication and control of this species at the site.

## 5.4 Badger

- 5.4.1 There is no evidence of Badger presence or activity within or adjacent to the site.
- 5.4.2 The site supports suitable habitat for future colonisation by sheltering and foraging Badger. If development is not commenced before July 2013, the Badger survey should be updated prior to the commencement of any site vegetation clearance or development activities.

## 5.5 Bats

### *Trees*

- 5.5.1 The site contains 6 trees with features suitable for roosting bats. The retention of all mature trees as part of the site layout is recommended in paragraph 5.2.3 and the site layout as described in 'Whalley Sketch Masterplan ref: NW-09-03D' confirms the retention of the mature trees. The following recommendations will be observed if works are required at any of the mature trees identified as being suitable for roosting bats.

#### *Category 1 trees*

- 5.5.2 If any trees labelled as category 1 (see **Table 3.2** and **Figure 1**) cannot be retained, or are to be subjected to disturbance, pruning or other arboricultural works, further surveys are recommended. These should include dusk and dawn bat emergence and bat re-entry surveys conducted during the bat active season (typically regarded as May to August inclusive; the bat activity season may also extend into early September if conditions are suitable).
- 5.5.3 If surveys are required outside of this time period, detailed assessment using rope and harness climbing techniques and boroscopes may be able to discount features as potential bat roosts.
- 5.5.4 Category 1 trees without confirmed roosts, following these further surveys, should be felled using the reasonable avoidance measures detailed for category 2 trees, described below.

#### *Category 2 trees*

- 5.5.5 Category 2 trees, with low or moderate potential for bat roosts, should be felled using reasonable avoidance measures considered to be good practice. Tree should be 'soft felled', lowering and cushioning limbs or sections of the trunk which may have bats within cavities, and avoiding cutting directly through holes, cavities, split bark or other features which may be suitable for roosting bats.
- 5.5.6 Any trees with confirmed roosts can only be felled following the preparation of a mitigation scheme and method statement, and successful application to Natural England for a Bat Mitigation Licence.
- 5.5.7 If any bats are discovered during any trees works on site, then all work should cease and ERAP Ltd. should be contacted immediately.

#### ***Maintenance and Enhancement of Habitats for Bats***

- 5.5.8 The site supports habitats of value for foraging and commuting bats along the areas of mature tree and shrubs and the boundary hedgerows. The value of the boundary hedgerows as commuting routes for bats is recognised.
- 5.5.9 The recommendations outlined in **Section 5.1**, which apply to the protection of hedgerows, in **Section 5.9** which apply to consideration of lighting at the site, and in **Section 5.10** on the use of native species in landscape planting of the site will maintain and potentially improve bat foraging habitat value of the site.

## 5.6 Birds

### ***Protection of Breeding Birds***

- 5.6.1 As identified earlier, trees and shrubs in the site have potential for use by nesting birds.
- 5.6.2 All wild birds are protected under the *Wildlife and Countryside Act 1981* whilst they are breeding. It is mandatory that any trees, shrubs or other suitable breeding bird habitat

which are to be removed as part of the proposals are only removed outside the bird breeding season, unless it can be adequately demonstrated by an ecologist that no breeding birds, active nests, eggs or fledglings are present in the area to be cleared. The bird breeding season typically extends between March to August inclusive.

- 5.6.3 Whilst habitats present at the site are currently suitable for ground nesting birds it is not feasible to incorporate the needs of ground nesting species such as Lapwing or Skylark into the proposed development. Abundant habitat in the wider area will remain suitable for these species and the loss of the site will not represent loss of core or important habitat for ground nesting birds.

#### ***Maintenance and Enhancement of Habitats for Birds***

- 5.6.4 The use of native trees and shrubs in the landscape planting and the retention of the mature trees and boundary hedgerows within the site, as recommended in **Sections 5.2** and **5.10**, will maintain and improve features within the site for breeding birds including Dunnock, a UK BAP Priority Species detected at the site.

#### **5.7 Brown Hare**

- 5.7.1 The boundary hedgerows are suitable habitat for use by sheltering Brown Hare and the fields are suitable habitat for foraging Brown Hare.
- 5.7.2 The site is unlikely to represent important or core habitat for Brown Hare, however the commencement of development activities at the site has the potential to disturb Brown Hare and injure or kill young Brown Hare (leverets) which are unable to escape.
- 5.7.3 The main Brown Hare breeding season is recognised as between February and September. The removal of any hedgerow, shrub vegetation or tall grass should be timed to avoid this critical period.
- 5.7.4 If this period cannot be avoided then the area should be surveyed by a suitably experienced Ecologist for the presence or absence of Brown Hare and their young four weeks prior to the commencement of activities. If the survey demonstrates their absence then development may commence. If the survey determines their presence then the area must be avoided and further surveys conducted at four week intervals until their absence can be demonstrated.

#### **5.8 Hedgehog and Other Wildlife**

- 5.8.1 The ecological assessment has concluded that Hedgehog, a UK BAP Priority Species, is likely to be present at the site, and Common Frog is confirmed as present within the site. In conjunction with the development of parts of the site it is recommended that actions are carried out to minimise the physical barriers that can be created by garden boundary fencing and encourage habitat connectivity. The garden boundary fencing should be installed to permit access beneath by raising the base of the fencing from ground level for part, if not all, of the fencings length by approximately 0.15 metres.

#### **5.9 Lighting**

- 5.9.1 Any lighting to be used at the site during the construction and operation phases should be directional and screened where possible.
- 5.9.2 No excessive lighting must shine over boundary trees and shrubs or the recognised wildlife links (hedgerows) and avoid shining onto the River Calder as lighting overspill may deter wildlife such as foraging bats.

## 5.10 Ecological Enhancement and Landscape Planting

- 5.10.1 The development proposals provide an opportunity to enhance the ecological and biodiversity value of the Sites through appropriate landscape planting and long-term management.
- 5.10.2 All recommendations detailed below are complementary to the type and style of development, the geographical area and the habitats in the local area. Their main function is to contribute to and enhance the nature conservation and biodiversity value of the Site.

### *Enhancement of Habitats and Habitat Connectivity within the Site*

- 5.10.3 Native trees, shrubs and hedgerows should be incorporated into the landscape planting to improve the habitat connectivity within and around the site and to provide additional habitats for use by nesting and feeding birds, such as Dunnock and House Sparrow.

### *Landscape Planting*

#### *Trees*

- 5.10.4 In an article published by Land (2004) which detailed the results of transect surveys of garden habitats and the abundance and diversity of bird species present, trees were confirmed to be important features for birds within street landscapes. The importance of the trees was indicated in the field study as the highest percentage of registrations of birds was recorded in gardens with trees. The article demonstrated the importance of the provision of a range of features within a landscape scheme for the attraction of bird species. At this site it is recommended that small native trees are incorporated into the landscape planting.
- 5.10.5 It is recommended that trees which support blossom and fruit which will attract insects are incorporated into the landscape planting. This will aim to encourage foraging bats and birds. Suitable species include those listed in Table 5.1, below: -

**Table 5.1: Suitable Native Species for Planting Near Housing**

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

### *Understorey, Ground Cover Planting and Wildflower Grassland*

- 5.10.6 The understorey and ground cover planting design can 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.
- 5.10.7 Planting schemes that include flowering species such as Lavender, Rosemary, Hebe, *Potentilla*, *Calluna*, *Ceanothus* and *Vinca* can maximise opportunities for feeding invertebrates.
- 5.10.8 It is recommended that plant species that produce berries such as *Berberis*, *Pyracantha* and *Cotoneaster* (NOT the invasive cotoneaster species *C.horizontalis*, *C. integrifolius*, *C. simonsii*, or *C. microphyllus*), are planted to attract feeding birds.

- 5.10.9 The incorporation of wildflower grassland into the site design will benefit the overall ecology of the site, establishing foraging areas for birds and nectaring insects as well as providing attractive colourful areas within the landscape design. The potential for creating open areas of wildflower grassland, or wildflower grassland strips as linear features within the site should be examined and incorporated in the landscape design. The area identified as a 'flood zone' at 'Whalley Sketch Masterplan ref: NW-09-03D' may be suitable for the creation of low maintenance wildflower grassland.
- 5.10.10 The species composition of the grassland should be based on the important and species-rich MG5 Crested Dog's-tail-Common Knapweed NVC community and its species content informed by the NVC floristic table for the MG5 community.

#### ***Creation of a Pond***

- 5.10.11 The establishment of a settling pond as part of the proposed development represents a significant opportunity to create a habitat of considerable ecological value currently absent from the surrounding area.
- 5.10.12 It is recommended that the pond is designed for wildlife and seeks to encourage species associated with ponds, including amphibian species such as Common Frog and insects such as Dragonfly via the establishment of native aquatic and emergent species and the long-term management of the pond for wildlife.
- 5.10.13 ERAP Ltd. are able to produce a management plan for the enhancement of wildlife at such a pond.

## **6.0 CONCLUSION**

- 6.1.1 Based on the survey information presented in this assessment, the principle of residential development at the site at Land off Broad Lane, Whalley, Lancashire, is feasible from ecological and nature conservation standpoints and development is feasible in accord with biodiversity considerations. This conclusion is valid provided that guidance detailed in **Section 5.0** of this assessment is applied throughout the design and construction of the site.

## 7.0 REFERENCES

- Anon. (2007) *The Population Status of Birds in the UK: Birds of conservation concern: 2002-2007*.
- Atheron, I, Bosanquet, S & Lawley, M (2010) *Mosses and Liverworts of Britain and Ireland: A Field Guide* British Bryological Society.
- Harris, S., Jefferies, D., Cheeseman, C. and Booty. C. (1994). *Problems with Badgers?*. RSPCA. Sussex.
- Joint Nature Conservancy Council (2010). *Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit*. JNCC, Peterborough.
- Land, K. (2004). *What features should be included in new urban residential developments to maximise the opportunity for a diversity of breeding birds?*. Ecology and Environmental Management - In Practice No. 43.
- Marchant, J.H. (1983) *Common Birds Census instructions*. BTO, Tring.
- L. Hundt (2012) *Bat Surveys: Good Practice Guidelines*. BCT
- Mitchell-Jones A.J. and McLeish A.P. (Eds). (2004). *Bat Workers' Manual*. 3rd Edition. Joint Nature Conservancy Committee. Peterborough.
- Mitchell-Jones, A.J. (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough
- Natural England (2007) *Plants for Wildlife-friendly gardens*. Natural England. Peterborough
- Department for Communities and Local Government (2012) *National Planning Policy Framework* H.M.S.O.
- Ratcliffe, D. A. (ed.) (1977). *A Nature Conservation Review*. Cambridge University Press, Cambridge.
- Renals, T. and Rene, P. (2001) *The Environment Agency Code of Practice for the Management, Destruction and Disposal of Japanese Knotweed*. The Environment Agency.
- Rodwell, J. S. (ed.) (1991). *British Plant Communities. Volume 1. Woodlands and Scrub*. Cambridge University Press.
- Rodwell, J. S. (ed.) (1992) *British Plant Communities. Volume 3. Grasslands and Montane Communities*. Cambridge University Press.
- Rodwell. J. S. (ed.) (2000) *British Plant Communities. Volume 5. Maritime communities and vegetation of open habitats*. Cambridge University Press.
- Rose, F & O'Reilly, C (2006) *The Wild Flower Key* Warne
- Stace, C. A. (1991). *New Flora of the British Isles*. Cambridge University Press, Cambridge.
- Strachan, R. and Moorhouse, T. (2006). *Water Vole Conservation Handbook* (2nd edition). Wildlife Conservation Research Unit, University of Oxford.
- The UK Biodiversity Steering Group Report. Volume 2. Action Plans*. H.M.S.O. (1995), London.
- Town and Country Planning Association (September 2004). *Biodiversity by Design: A guide for sustainable communities*. TCPA. Manchester.
- Wildlife and Countryside Act* (1981). H.M.S.O., London.

## 8.0 TABLES AND FIGURES

**Table 8.1: Species Composition, DAFOR and Percentage Cover for Sheep Grazed Pasture**

Scientific Name	Common Name	DAFOR <sup>1</sup>	% Cover
-	Mosses	LA	<1%
<i>Agrostis capillaris</i>	Common Bent	LA	<1%
<i>Agrostis stolonifera</i>	Creeping bent	F*	10%
<i>Dactylis glomerata</i>	Cock's-foot	O/LF*	3%
<i>Festuca rubra</i>	Red Fescue	F/LA	3%
<i>Fraxinus excelsior</i>	Ash (sapling)	R	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	F*	10%
<i>Lolium perenne</i>	Perennial Rye-grass	A*	60%
<i>Prunus spinosa</i>	Blackthorn (sapling)	R	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	F*	5%
<i>Ranunculus ficaria</i>	Lesser Celandine	LF	1%
<i>Rumex acetosa</i>	Common Sorrel	O/LF	<1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O/LF	1%
<i>Taraxacum officinale</i>	Dandelion	O/LF	1%
<i>Trifolium repens</i>	White Clover	LF	<1%
<i>Urtica dioica</i>	Common Nettle	LA	<1%

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

**Table 8.2: Species Composition, DAFOR and Percentage Cover for Unmanaged Grassland**

Scientific Name	Common Name	DAFOR <sup>1</sup>	% Cover
<i>Agrostis stolonifera</i>	Creeping bent	F*	5%
<i>Arrhenatherum elatius</i>	False Oat-grass	F	3%
<i>Crataegus monogyna</i>	Hawthorn (sapling)	R	<1%
<i>Dactylis glomerata</i>	Cock's-foot	F*	10%
<i>Fraxinus excelsior</i>	Ash (sapling)	LF	<1%
<i>Galium aparine</i>	Cleavers	R	<1%
<i>Heracleum sphondylium</i>	Hogweed	LF	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	F*	3%
<i>Lolium perenne</i>	Perennial Rye-grass	LF	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	F*	1%
<i>Ranunculus ficaria</i>	Lesser Celandine	LA	1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	LF	<1%
<i>Taraxacum officinale</i>	Dandelion	O	<1%
<i>Urtica dioica</i>	Common Nettle	F/LA*	5%

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

**Table 8.3: Species Composition, DAFOR and Percentage Cover for Hedgerows 1, 2 & 3**

Scientific Name	Common Name	Hedgerow 1		Hedgerow 2		Hedgerow 3	
		DAFOR <sup>1</sup>	% <sup>2</sup>	DAFOR <sup>1</sup>	% <sup>2</sup>	DAFOR <sup>1</sup>	% <sup>2</sup>
<b>Woody Species</b>							
<i>Crataegus monogyna</i>	Hawthorn	D*	99%	D*	100%	A*	90%
<i>Fraxinus excelsior</i>	Ash	-	-	R	<1%	-	-
<i>Ilex aquifolium</i>	Holly	-	-	-	-	R	<1%
<i>Prunus spinosa</i>	Blackthorn	-	-	-	-	LA	5%
<i>Quercus robur</i>	Pedunculate Oak	-	-	-	-	R	<1%
<i>Rosa canina</i>	Dog Rose	-	-	R	<1%	LF	<1%
<i>Sambucus nigra</i>	Elder	R	<1%	-	-	LA	<1%
<i>Ulmus</i> sp.	Elm species	-	-	-	-	VLA	<1%
<b>Understorey</b>							
-	Mosses	-	-	LF	<1%	-	-
<i>Alliaria petiolata</i>	Garlic Mustard	VLF	<1%	LF	<1%	LA	<1%
<i>Anthriscus sylvestris</i>	Cow Parsley	O	<1%	F	<1%	O	<1%
<i>Arrhenatherum elatius</i>	False Oat-grass	-	-	R	<1%	-	-
<i>Arum maculatum</i>	Lord's-and-Ladies	F*	1%	F*	1%	F*	<1%
<i>Dactylis glomerata</i>	Cock's-foot	R	<1%	O	<1%	O	<1%
<i>Galium aparine</i>	Cleavers	R	<1%	VLF	<1%	F	<1%
<i>Geranium robertianum</i>	Herb-robert	-	-	R	<1%	-	-
<i>Geum urbanum</i>	Wood Avens	F*	1%	F*	<1%	LF	<1%
<i>Hedera helix</i>	Ivy	F*	1%	A*	<1%	F/LA*	1%
<i>Holcus lanatus</i>	Yorkshire-fog	-	-	-	-	R	<1%
<i>Lolium perenne</i>	Perennial Rye-grass	-	-	-	-	VLF	<1%
<i>Mercurialis perennis</i>	Dog's Mercury	-	-	LA	<1%	R	<1%
<i>Ranunculus ficaria</i>	Lesser Celandine	LF	<1%	-	-	VLA	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	-	-	-	-	VLF	<1%
<i>Rubus fruticosus</i> agg.	Bramble	VLF	<1%	R	<1%	VLF	<1%
<i>Taraxacum officinale</i>	Dandelion	O	<1%	R	<1%	O	<1%
<i>Urtica dioica</i>	Common Nettle	-	-	-	-	R	<1%
Species shaded grey are those listed as either woody or woodland species in <i>The Hedgerows Regulations 1997</i>							
<sup>1</sup> Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species.							
<sup>2</sup> %=Percentage Cover.							

**Table 8.4: Hedgerow Description and Importance in Accord With *The Hedgerows Regulations 1997***

Hedgerow Reference:		Hedgerow 1			Hedgerow 2			Hedgerow 3		
Dimensions	Height x Width	1.5m x 2m			1.5m x 1.5m			1m x 1m		
	Length	30m			105m			240m		
	Continuity	100%			95%			99%		
	Management	Trimmed on top and eastern face			Trimmed all sides			Trimmed all sides		
Woody species	Section No.	1	2	3	1	2	3	1	2	3
	No. of Qualifying woody species	2	N/A	N/A	2	2	N/A	2	3	4
	Average No. of woody species	2			2			3		
Features	(a) Bank or wall along at least ½ length	No			No			No		
	(b) Gaps which in agg. do not exceed 10%	Yes			Yes			Yes		
	l-(e) 1 standard tree per 50m	No			No (2)			No (2)		
	(f) At least 3 woodland species within 1m	Yes (3)			Yes (4)			Yes (3)		
	(g) Ditch along at least ½ its length	No			No			No		
	(h) Connections scoring 4 points or more	No (2 points)			No (2 points)			No (0 points)		
	(i) Parallel hedge within 15m	Yes			Yes			Yes		
	<b>Total Number of Features</b>	<b>3</b>			<b>3</b>			<b>3</b>		
<b>Hedgerow Important under Criteria 1, 2 or 3?</b>		<b>No</b>			<b>No</b>			<b>No</b>		
<p><b>Criteria for Hedgerow Importance 1:</b> Hedgerow contains species listed as:            (1)Part 1 of Schedule 1, 5 or 8 of Wildlife &amp; Countryside Act 1981; (2)Declining breeders in ‘Red Data Birds of Britain; (3)Categorised as ‘endangered’, ‘extinct’ or ‘vulnerable’.</p>										
<p><b>Criteria for Hedgerow Importance 2:</b> Hedgerow Includes (all woody species mentioned in (i)-(iv) reduced by one Lancashire for this criteria only):            (i)At least 7 Woody Species; (ii)At least 6 woody species &amp; at least 3 features; (iii)At least 6 woody species (including one of: Black Poplar, Large or small-leaved Lime, or Wild Service Tree); (iv)At least 5 woody species &amp; has 4 features</p>										
<p><b>Criteria for hedgerow importance 3:</b>            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)</p>										



**Project Name:**  
Land off Broad Lane, Whalley

**Title:**  
Phase 1 Habitat Map

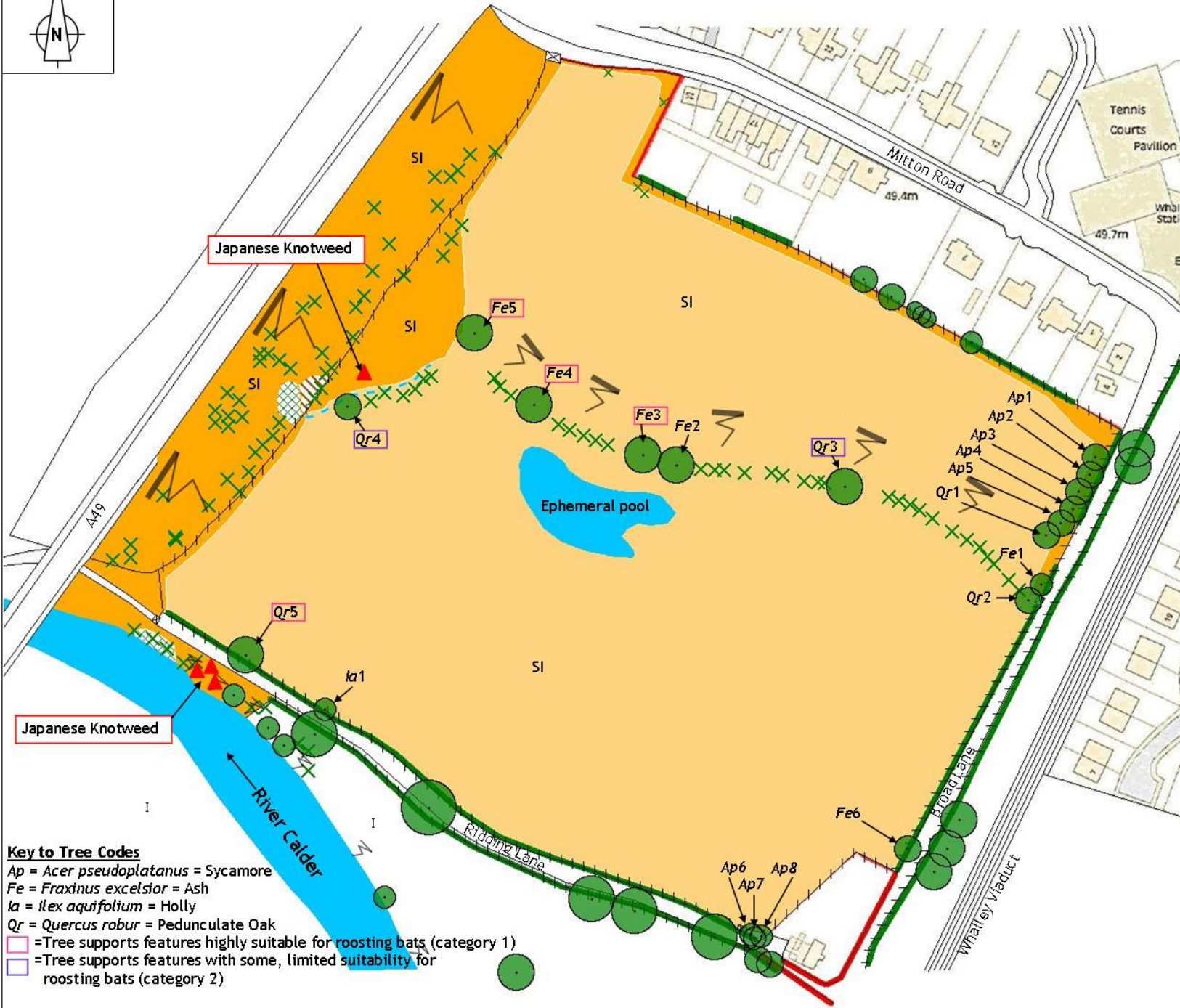
**Scale:** 1:1,000@A4  
**Drawing No.:** Figure 1  
**Date:** May 2012

**Central Grid Ref.:** SD 7274 3641  
**Reference No.:** ERAP Ltd.2012/044



**Key to Map Symbols**

- Broadleaf trees
- Young trees and shrubs
- Hedgerows
- Hedgerows
- Tall-herb vegetation
- Japanese Knotweed
- Unmanaged semi-improved mesotrophic (neutral) grassland
- Sheep grazed semi-improved mesotrophic (neutral) grassland
- Improved grassland
- Water (including River Calder and ephemeral pool)
- Dry ditch
- Wall
- Gate
- Fence
- Gradient indication



**Key to Tree Codes**

Ap = *Acer pseudoplatanus* = Sycamore  
 Fe = *Fraxinus excelsior* = Ash  
 Ia = *Ilex aquifolium* = Holly  
 Qr = *Quercus robur* = Pedunculate Oak

= Tree supports features highly suitable for roosting bats (category 1)  
 = Tree supports features with some, limited suitability for roosting bats (category 2)

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