

**Proposed Capitol Park, Dodworth, Barnsley S75 3TZ**

## **ECOLOGICAL SURVEY AND ASSESSMENT**

**May 2016**

**[ERAP Ltd ref: 2016-93]**

ERAP Ltd (Consultant Ecologists)  
49a Manor Lane  
Penwortham  
Preston  
Lancashire  
PR1 0TA

Tel: 01772 750502

[mail@erap.co.uk](mailto:mail@erap.co.uk)  
[www.erap.co.uk](http://www.erap.co.uk)



## CONTENTS

|                                                                                           |           |
|-------------------------------------------------------------------------------------------|-----------|
| <b>Summary .....</b>                                                                      | <b>3</b>  |
| <b>1.0 Introduction .....</b>                                                             | <b>4</b>  |
| <b>2.0 Method of Survey.....</b>                                                          | <b>4</b>  |
| 2.1 Desktop Study.....                                                                    | 4         |
| 2.2 Vegetation and Habitats.....                                                          | 4         |
| 2.3 Animal Life .....                                                                     | 5         |
| 2.4 Survey Limitations.....                                                               | 8         |
| 2.5 Evaluation Methodology .....                                                          | 8         |
| <b>3.0 Survey Results .....</b>                                                           | <b>9</b>  |
| 3.1 Desktop Study.....                                                                    | 9         |
| 3.2 Vegetation and Habitats.....                                                          | 10        |
| 3.3 Animal Life .....                                                                     | 11        |
| <b>4.0 Evaluation and Assessment .....</b>                                                | <b>13</b> |
| 4.1 Introduction and Description of Proposals.....                                        | 13        |
| 4.2 Designated Sites.....                                                                 | 13        |
| 4.3 Vegetation and Habitats.....                                                          | 13        |
| 4.4 Protected Species and Other Wildlife.....                                             | 14        |
| 4.5 Assessment of Impacts.....                                                            | 14        |
| <b>5.0 Recommendations and Ecological Enhancement .....</b>                               | <b>14</b> |
| 5.1 Introduction .....                                                                    | 14        |
| 5.2 Protection of Existing Vegetation and Recommendations in Relation to Site Layout..... | 14        |
| 5.3 Invasive Species .....                                                                | 15        |
| 5.4 Bats .....                                                                            | 15        |
| 5.5 Birds.....                                                                            | 16        |
| 5.6 Wood and Stone Piles .....                                                            | 16        |
| 5.7 Landscape Planting.....                                                               | 17        |
| <b>6.0 Conclusion .....</b>                                                               | <b>17</b> |
| <b>7.0 References .....</b>                                                               | <b>18</b> |
| <b>8.0 Appendix 1: Tables and Figures .....</b>                                           | <b>20</b> |

### List of Tables

|                                                                                                               |    |
|---------------------------------------------------------------------------------------------------------------|----|
| Table 2.2.1: Consideration of Suitability of Foraging and Commuting Habitat for Bats .....                    | 6  |
| Table 2.2: Rapid Risk Assessment Result .....                                                                 | 7  |
| Table 2.3: Important Habitat Characteristics for Reptiles.....                                                | 8  |
| Table 3.1: Records of Protected and Notable Species within a One Kilometre Radius of the Site .....           | 9  |
| Table 3.2: Bird species Detected in April 2016 .....                                                          | 12 |
| Table 5.1: Suitable Native Species for Tree and Shrub Planting .....                                          | 17 |
| Table 8.1: Plant Species Composition, Frequency and Abundance for vegetation colonising the site .....        | 20 |
| Table 8.2: Plant Species Composition, Frequency and Abundance for Hedgerow 1 .....                            | 21 |
| Table 8.3: Hedgerow Description and Assessment in Accordance with <i>The Hedgerows Regulations 1997</i> ..... | 22 |

### List of Figures

|                                    |    |
|------------------------------------|----|
| Figure 1: Phase 1 Habitat Map..... | 25 |
|------------------------------------|----|

## Document Control

|                              |                                                                                   |                             |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------|
| <b>Survey type:</b>          | <b>Surveyors<sup>1</sup></b>                                                      | <b>Survey date(s)</b>       |
| Phase 1 Habitat              | Chris Schofield B.Sc. (Hons) M.Sc. GradCIEEM                                      | 28 <sup>th</sup> April 2016 |
| <b>Reporting</b>             | <b>Personnel</b>                                                                  | <b>Date</b>                 |
| <b>Author</b>                | Chris Schofield B.Sc. (Hons). M.Sc. GradCIEEM<br>Graduate Ecologist               | 5 <sup>th</sup> May 2016    |
| <b>Signature(s)</b>          |  |                             |
| <b>Checked by</b>            | Brian Robinson B.Sc. (Hons), MCIEEM<br>Senior Ecologist                           | 6 <sup>th</sup> May 2016    |
| <b>Revised and issued by</b> | Chris Schofield B.Sc. (Hons). M.Sc. GradCIEEM<br>Graduate Ecologist               | 9 <sup>th</sup> May 2016    |
| <b>Report issued to</b>      | CDP                                                                               |                             |
| <b>Copy Number</b>           | 1                                                                                 |                             |

## SUMMARY

### Introduction and Scope

- i. This Ecological Appraisal presents the ecological, biodiversity and nature conservation status of the proposed Capitol Park, Dodworth, Barnsley. The appraisal was requested in connection with proposals to develop the site to industrial units.
- ii. The appraisal presents the results of a desktop study and extended Phase 1 Habitat Survey carried out in April 2016. 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 is characterised by cleared and levelled ground which has become colonised by self-seeded shrubs, grasses and ruderal vegetation. Young planted saplings are present at the perimeter of the site, and a hedgerow with occasional mature trees is located at the western boundary.

### Results of Survey and Assessment

- iv. The proposals will have no adverse effect on statutory or non-statutory designated sites.
- v. The boundary hedgerow and trees are of local value as they provide habitat connectivity and structural diversity in a landscape dominated by built development and farmland. The hedgerow also represents Priority Habitat.
- vi. No other habitats within or adjacent to the site are Priority Habitat. All habitats are common and widespread across lowland Britain and are typical of the local area and the conditions present.
- vii. Rhododendron, an invasive species, as listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), is present within the hedgerow at the west of the site.
- viii. The boundary hedgerow, trees and planted saplings are suitable habitat for nesting passerine birds. The open undisturbed habitat within the centre of the site is suitable for ground-nesting bird species. Guidance on the protection afforded to nesting birds is presented at **Section 5.5**.
- ix. The boundary hedgerow, trees and saplings also provide suitable habitat for foraging birds and bats. Recommendations for the retention and protection of these features is described at **Section 5.2**.
- x. No other protected species have been detected. Any impacts of the proposed redevelopment on badger, roosting bats, water vole, great crested newt, reptiles and barn owl are reasonably discounted.

### Recommendations

- 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 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.

### Conclusion

- xiii. It is considered that the proposals are feasible and acceptable in accordance with ecological considerations and relevant planning policy. The proposed development at the site will provide an opportunity to secure ecological enhancement for wildlife.

## 1.0 INTRODUCTION

### Background and Rationale

- 1.1 ERAP Ltd (Consultant Ecologists) was commissioned by CDP to carry out an ecological appraisal of land at the proposed Capitol Park, Dodworth, Barnsley (hereafter referred to as the 'site'). The Ordnance Survey (OS) grid reference at the centre of the site is SE 3170 0599.
- 1.2 The appraisal was requested in connection with a planning application to develop the site to industrial units.

### Scope of Survey

- 1.3 The scope of ecological surveys undertaken in April 2016 comprised:
  - a. A desktop study for known ecological information at the site and the local area;
  - b. An Extended Phase 1 Habitat Survey and assessment;
  - c. 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, as presented in *A Nature Conservation Review* (Ratcliffe, 1977);
  - d. Survey and assessment of all habitats for statutorily protected species and other wildlife including badger (*Meles meles*), barn owl (*Tyto alba*), great crested newt (*Triturus cristatus*), water vole (*Arvicola amphibius*), bats, birds and reptiles;
  - 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. Barnsley Biological Records Centre (BBRC); and
  - c. Barnsley Biodiversity Action Plan (BAP).

### 2.2 Vegetation and Habitats

- 2.2.1 An Extended Phase 1 Habitat Survey of the site was carried out by Chris Schofield B.Sc. (Hons) M.Sc. GradCIEEM on the 28<sup>th</sup> April 2016. The weather was partly cloudy, with a light breeze (Beaufort Scale 2) and 1°C at 8am rising to 7°C at midday. The conditions and time of year were suitable 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 1:2500 (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 and R = Rare, this being a widely used and accepted system employed by ecological surveyors. The terms L = Locally and V = Very were additionally used to describe the plant species distributions with greater 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 Hedgerows were assessed in accordance with *The Hedgerows Regulations 1997* Wildlife and Landscape Criteria (H.M.S.O., 1997).
- 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. Plant nomenclature follows *New Flora of the British Isles 3<sup>rd</sup> Edition* (Stace, 2010).
- 2.2.7 Searches were carried out for the presence of invasive species, including those listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), including Japanese Knotweed (*Fallopia japonica*), Indian Balsam (*Impatiens glandulifera*) and Giant Hogweed (*Heracleum mantegazzianum*).

## 2.3 Animal Life

### Badger

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

## Bat species

### Roosting Bats

- 2.3.5 A preliminary assessment trees within the site was conducted to assess their suitability for use by roosting bats, and to inform whether further surveys or precautionary measures were required at the site in respect of roosting bats.
- 2.3.6 Trees were assessed for their suitability for use by roosting bats from the ground using binoculars and a high-powered torch. Each tree was searched for the presence of any of the following features:
- woodpecker holes, rot holes, hazard beams, other vertical or horizontal cracks or splits in stems and branches, partially decayed platey bark, knot holes, man-made holes, tear-outs, cankers in which cavities have developed, other hollows or cavities, including butt-rots, double-leaders forming compression forks with included bark, gaps between overlapping stems or branches, partially detached Ivy (Hedera helix) with stem diameters in excess of 50mm and bat, bird or dormouse (Muscardinus avellanarius) boxes.*
- 2.3.7 Terms used to describe any features present follow (where possible) those outlined and described in *Bat Tree Habitat Key, 2<sup>nd</sup> Edition* (Andrews, H (ed), 2013).

### Habitat Assessment for Commuting / Foraging Bats

- 2.3.8 Habitats within and adjacent to the site were assessed for their value and suitability for commuting and foraging bats in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*, (Collins, 2016). Reference has been made using the following categories and descriptions / examples, presented at **Table 2.1**, below

**Table 2.1: Consideration of Suitability of Foraging and Commuting Habitat for Bats**

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

## Bird species

- 2.3.9 Bird species observed and heard during the 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

### Initial Desktop Search for Ponds

- 2.3.11 In accordance with current Natural England guidance (English Nature, 2001) the potential of the proposed development to impact upon any great crested newt population(s) whose breeding ponds are within 500 metres must be considered.
- 2.3.12 The search of the wider area revealed the presence of one pond, located approximately 495 metres to the north-west of the site (OS grid reference SE 313 065).

### Consideration of Requirements for Further Survey

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

#### Presence of Dispersal Barriers

- 2.3.14 Higham Lane to the immediate west of the site forms a partial barrier to the dispersal of great crested newt and other amphibians. The road has a 90° kerb along its west side and there is a steady flow of traffic.

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

- 2.3.15 No pond is within 250 metres of the site. One pond, is between 250 and 500 metres from the site (495 to the north-west). **Table 2.2**, below provides the results of the Natural England Rapid Risk Assessment tool from *Template for Method Statement to support application for licence under Regulation 53(2)(e) in respect of great crested newts Triturus cristatus. Form WML-A14-2* (Natural England, 2015).
- 2.3.16 The tool has been completed based on the single pond at this distance, and the size of the development site (4.5 hectare, or 'Ha'). The rapid risk assessment tool assumes that great crested newt are present.

**Table 2.2: Rapid Risk Assessment Result**

| Component                                | Likely effect                         | Notional offence probability score |
|------------------------------------------|---------------------------------------|------------------------------------|
| Great crested newt breeding pond(s)      | No effect                             | 0                                  |
| Land within 100m of any breeding pond(s) | No effect                             | 0                                  |
| Land 100-250m from any breeding pond(s)  | No effect                             | 0                                  |
| Land >250m from any breeding pond(s)     | 1 – 5 ha lost or damaged              | 0.04                               |
| Individual great crested newts           | No effect                             | 0                                  |
| Maximum:                                 |                                       | 0.04                               |
| Rapid risk assessment result:            | <b>GREEN: OFFENCE HIGHLY UNLIKELY</b> |                                    |

- 2.3.17 The result of the Natural England Rapid Risk Assessment indicates that the site is sufficiently small and distant from the pond that any proposed development is *highly unlikely* to impact upon great crested newt populations (if present).

### *Presence of other ponds*

- 2.3.18 There are no ponds in the wider area to the south and east of the site to which great crested newts would be attracted to cross the proposed development site to reach.

### *Conclusion*

- 2.3.19 As a result of the combination of the above factors, namely the relative large distance between the site and the pond, the relatively small size of the site, the barrier of Higham Lane to the west of the site, and the lack of ponds in the wider area, it is considered any impact of the proposed development is highly unlikely (as confirmed by the risk assessment at **Table 2.2**).
- 2.3.20 Any impact of the proposed development on great crested newt is reasonably discounted; no further survey in respect of great crested newt is necessary.

### **Reptile species**

- 2.3.21 The site and its surroundings were assessed in terms of their suitability for use by reptile species using the important characteristics for reptiles outlined in the draft document 'Reptile Mitigation Guidelines' (Natural England, 2011), and the *Reptile Habitat Management Handbook* (Edgar, et al., 2010). These habitat characteristics are outlined in **Table 2.3**, 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 and other Riparian Fauna**

- 2.3.22 The site and the immediate surroundings do not contain any suitable habitat for water vole and other riparian fauna, such as otter (*Lutra lutra*). No further assessment for these species is required.

### **Other Wildlife**

- 2.3.23 The habitats within and adjacent to the site were assessed for further Priority Species as informed by the site conditions and the data search, notably common toad (*Bufo bufo*) and hedgehog (*Erinaceus europaeus*), through identification of foraging, refuge and corridor habitat.

## **2.4 Survey Limitations**

- 2.4.1 All areas of the site were fully accessible.
- 2.4.2 April is within the ideal timeframe for a Phase 1 Habitat Survey (April to October inclusive).
- 2.4.3 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 in *A Nature Conservation Review* (Ratcliffe, 1977) and *Guidelines for the Selection of Biological SSSIs* (Bainbridge, et al., 2013). These are size (extent), diversity, naturalness, rarity, fragility, typicality, recorded history, position in an ecological or geographical unit, potential value and intrinsic appeal.

- 2.5.2 Habitats have been assessed to determine whether they meet those described in *UK Biodiversity Action Plan: Priority Habitat Descriptions* (Maddock, A (ed), 2008); these lists are used to help draw up the statutory lists of Priority Habitats, as required under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006*. Where suitable, the ecological value of the habitats present have been assessed using the terms outlined in *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd Edition* (CIEEM, 2016).
- 2.5.3 Government advice on wildlife, as set out in the *National Planning Policy Framework* (Great Britain Department for Communities and Local Government, 2012) and associated government circulars has been taken into consideration. Legislation relating to protected species, such as those listed under Schedule 1 and Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and *The Conservation of Habitats and Species Regulations 2010* (as amended), is referenced where applicable, and any impacts to protected species are evaluated in accordance with current guidance.
- 2.5.4 The presence of any Priority Species, as listed under Section 41 of the *NERC Act 2006* is noted, and habitats are assessed in terms of their suitability and value for these species. The presence of habitats and/or species listed by the Barnsley Biodiversity Action Plan has been taken into account in the evaluation of the site.

## 3.0 SURVEY RESULTS

### 3.1 Desktop Study

#### Site Designations

- 3.1.1 The proposed development site has no statutory or non-statutory designation for nature conservation. There are no statutory designated sites within a one kilometre radius of the proposed development.
- 3.1.2 The site lies within the Site of Special Scientific Interest (SSSI) Impact Risk Zone of Pye Flatts Meadows SSSI which lies approximately four kilometres west of the site. The Impact Risk Zone at this distance indicates local planning authorities should consult with Natural England for development types including aviation proposals and pig and poultry units. The proposed development of industrial units does not fall into the above categories; no further consultation with Natural England is required in respect of the proposals and impacts upon the SSSI. It is considered that the site is sufficiently distant from the SSSI that any impact from the proposals can be reasonably discounted.
- 3.1.3 There are no non-statutory Local Wildlife Sites (LWS) within a one kilometre radius of the proposed development site.

#### Protected and Notable species

- 3.1.4 There are no records of protected or notable species for the site.
- 3.1.5 The local records centre has records of protected and notable species for the one kilometre radius surrounding the site. These records are summarised in **Table 3.1**.

**Table 3.1: Records of Protected and Notable Species within a One Kilometre Radius of the Site**

| Group              | Species                                      | Notes                                                                          |
|--------------------|----------------------------------------------|--------------------------------------------------------------------------------|
| Amphibian          | Great crested newt (EPS, WCAs5, PS & LBAP)   | 1 record from 1995, within the one kilometre OS grid square of the site.       |
|                    | Common toad (PS)                             | 1 record from 2012, approximately 10 metres west of the site.                  |
| Terrestrial Mammal | Brown long-eared bat (EPS, WCAs5, PS & LBAP) | 2 records, both from 2001 and approximately 330 metres north-east of the site. |

|               |                                                                                                                       |                                                                          |
|---------------|-----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
|               | Noctule<br>(EPS, WCAs5 & LBAP)                                                                                        | 1 record from 1981, within the OS one kilometre grid square of the site. |
|               | Hedgehog<br>(PS & LBAP)                                                                                               | 1 record from 1983, within the one kilometre OS grid square of the site. |
| <b>Insect</b> | White letter hairstreak (PS), small heath (PS), dingy skipper (PS & LBAP).                                            |                                                                          |
| <b>Bird</b>   | House sparrow (PS), kestrel (LBAP), starling (PS), song thrush (PS), dunnock (PS), bullfinch (PS) and marsh tit (PS). |                                                                          |

EPS = European Protected Species under *The Conservation of Habitats and Species Regulations 2010* (as amended).

WCAs5 = Listed on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended).

PS = Priority Species listed under Section 41 of the NERC Act (2006).

LBAP = Barnsley Biodiversity Action Plan Priority Species.

- 3.1.6 The presence of protected species, Priority Species and Barnsley BAP species in the local area is recognised in this report and the site has been evaluated for its habitat suitability in respect of these species.

## 3.2 Vegetation and Habitats

### General Description

- 3.2.1 The approximately 4.5 hectare site is located at the northern extent of the village of Dodworth approximately 2.5 kilometres west of the town of Barnsley.
- 3.2.2 The site comprises a triangular shaped area which has been cleared in the last 10 years and is in the process of colonising to unmanaged grassland and marshy grassland with scattered self-seeded shrubs. Young planted saplings are present at the site boundaries, and a hedgerow with occasional mature trees is present at the western boundary.
- 3.2.3 The north-eastern boundary is demarcated by a knee rail timber fence adjacent to Capitol Close, beyond which is industrial units. The south-eastern boundary is also defined by a knee rail fence beyond which is Whinby Road, a railway line, and residential housing. The western boundary is demarcated by hedgerow, beyond which is Higham Lane and woodland.
- 3.2.4 A Phase 1 Habitat Survey map is appended at **Figure 1**. Photographs are appended at **Table 8.4**.

### Colonising Vegetation and Planted Saplings

- 3.2.5 The central area of the site has previously been cleared and undergone earthworks to level the site (**Photo 1**), with two large mounds of earth remaining, at the southern and eastern ends of the site (**Photo 2**). The site is in a process of colonisation to unmanaged grassland with marshy areas (**Photos 3 and 4**) and self-seeded shrubs.
- 3.2.6 Herb species within the cleared area of the site comprises abundant Red Fescue (*Festuca rubra*) and mosses, frequent and locally abundant Yorkshire-fog (*Holcus lanatus*), Creeping Buttercup (*Ranunculus repens*), Soft Rush (*Juncus effusus*), with occasional and locally abundant Glaucous Sedge (*Carex flacca*), Cock's-foot (*Dactylis glomerata*), Compact Rush (*Juncus conglomeratus*), Hard Rush (*Juncus inflexus*), Perennial Rye-grass (*Lolium perenne*) and Common Bird's-foot Trefoil (*Lotus corniculatus*).
- 3.2.7 The self-seeded shrubs within the site comprise occasional and locally abundant Silver Birch (*Betula pendula*) and Common Gorse (*Ulex europaeus*), with occasional and locally frequent Alder (*Alnus glutinosa*) and Goat Willow (*Salix caprea*). Young planted saplings at the site boundaries comprise occasional and locally frequent Dogwood (*Cornus sanguinea*) and Hazel (*Corylus avellana*), with

occasional Field Maple (*Acer campestre*), Sycamore (*Acer pseudoplatanus*), Ash (*Fraxinus excelsior*), Flowering Currant (*Ribes sanguineum*), Grey Willow (*Salix cinerea*) and Rowan (*Sorbus aucuparia*).

- 3.2.8 These areas are characteristic of the *MG1a Red Fescue* sub-community of the *MG1 False Oat-grass grassland* and also hold characteristics of the *MG10 Yorkshire-fog – Soft Rush* rush pasture community of the NVC (Rodwell, 1992).
- 3.2.9 Ornamentally planted species at the north-eastern boundary (**Photo 5**) include *Hebe*, *Euonymus*, Box-leaf Honeysuckle (*Lonicera nitida*) and Creeping Bramble (*Rubus tricolor*). These areas do not conform to any community of the NVC.
- 3.2.10 A plant species list is appended at **Table 8.1**.

### **Hedgerow**

- 3.2.11 The hedgerow forming the western boundary (**Photo 6**) is approximately 240 metres long and on average four metres high and two metres wide. It is unmanaged and has no bank, wall or ditch associated with it.
- 3.2.12 Woody species comprise constant abundant and locally dominant Hawthorn (*Crataegus monogyna*), occasional and locally frequent Sycamore, Dog Rose (*Rosa canina*) and Elder (*Sambucus nigra*), and occasional Ash, Rowan and Field Maple. A single mature Horse Chestnut (*Aesculus hippocastanum*) tree and a mature Ash are present within the hedgerow.
- 3.2.13 The ground flora associated with the hedgerow comprises constant and abundant Ivy (*Hedera helix*), constant, frequent and locally abundant Common Nettle (*Urtica dioica*), frequent Yorkshire-fog and Cow Parsley (*Anthriscus sylvestris*), with occasional and locally abundant Cock's-foot and Bramble (*Rubus fruticosus* agg.) and occasional Hogweed (*Heracleum sphondylium*), Broad-leaved Dock (*Rumex obtusifolius*), Common Ragwort (*Senecio jacobaea*) and Dandelion (*Taraxacum officinale* agg.).
- 3.2.14 The hedgerow is characteristic of a *W21 Hawthorn – Ivy* scrub community of the NVC (Rodwell, 1991).
- 3.2.15 A plant species list is appended at **Table 8.2**.
- 3.2.16 The hedgerow does not meet the criteria to be assessed as 'important' in accordance with *The Hedgerows Regulations 1997* wildlife and landscape criteria. The full assessment is appended at **Table 8.3**.

### **Invasive Species**

- 3.2.17 As illustrated on **Figure 1** very local frequent Rhododendron were detected within the hedgerow at the western site boundary. This species is listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) and it is therefore an offence to spread or cause the spread of these species in the wild. Further guidance is described in **Section 5.3**.
- 3.2.18 No further invasive species were detected within the site.

## **3.3 Animal Life**

### **Badger**

- 3.3.1 No evidence of badger was detected within the site or within the accessible 50 metres of the site boundary.
- 3.3.2 The unmanaged grassland areas may provide suitable foraging habitat for badger, however the site does not support any favourable habitats for badger such as woodland or extensive scrubland. Further, there are no records of badger in the wider area.
- 3.3.3 The presence of badger is reasonably discounted.

## Bat species

### Roosting Bats

- 3.3.4 No trees at the site support any features suitable for roosting bats. The presence of roosting bats at the boundary trees is reasonably discounted.

### Foraging and Commuting Bats

- 3.3.5 The trees, shrubs and hedgerow along the site margins are suitable for use by foraging bats, particularly edge-feeding species, such as common pipistrelle (*Pipistrelle pipistrellus*). There are no habitats at the site which are likely to attract an abundance or diversity of foraging or commuting bats

## Bird species

- 3.3.6 Birds detected in the site in April 2016 are listed in
- 3.3.7 **Table 3.2**, below.

**Table 3.2: Bird species Detected in April 2016**

| Scientific name                | Common Name   | BOCC Status <sup>1</sup> | UK BAP Priority Species? |
|--------------------------------|---------------|--------------------------|--------------------------|
| <i>Columba palumbus</i>        | Wood pigeon   | Green                    | No                       |
| <i>Corvus corone</i>           | Carrion crow  | Green                    | No                       |
| <i>Cyanistes caeruleus</i>     | Blue tit      | Green                    | No                       |
| <i>Erithacus rubecula</i>      | Robin         | Green                    | No                       |
| <i>Parus major</i>             | Great tit     | Green                    | No                       |
| <i>Phylloscopus collybita</i>  | Chiffchaff    | Green                    | No                       |
| <i>Pica pica</i>               | Magpie        | Green                    | No                       |
| <i>Streptopelia decaocto</i>   | Collared dove | Green                    | No                       |
| <i>Troglodytes troglodytes</i> | Wren          | Green                    | No                       |
| <i>Turdus merula</i>           | Blackbird     | Green                    | No                       |

<sup>1</sup>BOCC: Birds of Conservation Concern (Eaton, et al., 2015)

- 3.3.8 The boundary trees, hedgerow and saplings are suitable habitat for nesting and foraging passerine birds.
- 3.3.9 No ground-nesting bird species, such as lapwing (*Vanellus vanellus*) or curlew (*Numenius arquata*) were detected at the site. The open, undisturbed habitats within the site are suitable habitat for ground-nesting bird species such as skylark (*Alauda arvensis*).
- 3.3.10 There are no habitats within the site suitable for nesting or roosting barn owl (*Tyto alba*). Further, the colonising grassland and marshy grassland do not represent favourable foraging habitat for barn owl as it is unlikely to support an abundance of small mammal prey species.

## Reptiles

- 3.3.11 No records of reptile are reported for the site or the wider area.
- 3.3.12 The site is largely homogenous in terms of its surface geology and vegetation structure, being dominated by colonising grassland, and is unlikely to support an abundance or diversity of invertebrate prey for reptiles.
- 3.3.13 Furthermore, significant site clearance and earthworks was conducted at the site within the last decade; it is considered unlikely the site will have become colonised by reptile species since this time, as there are no favourable habitats within or adjacent to the site, such as heathland or moorland, which are likely to attract reptiles.
- 3.3.14 The presence of reptiles within the site is reasonably discounted.

## Other Wildlife

- 3.3.15 Occasional wood and stone piles (**Photo 7**) within the site will provide suitable refuge habitat for wildlife, including hedgehog and common toad (both Priority Species and recorded in the wider area). Precautionary measures to be adopted during the clearance of these piles are described at **Section 5.6**.
- 3.3.16 Localised areas within the marshy grassland at the site supported seasonal and ephemeral pools of water. At the time of survey, these pools were a maximum of 5cm in depth. It is considered these pools are unsuitable habitat for breeding amphibians, including common toad and newt species, as they are likely to dry regularly.

## 4.0 EVALUATION AND ASSESSMENT

### 4.1 Introduction and Description of Proposals

- 4.1.1 In accordance with the *Proposed Site Plan* drawing number 14120-14 (Harris Partnership Architects, 2016), it is proposed to develop four large industrial units within the central areas of the site, with associated car parking and service yards.
- 4.1.2 In accordance with the plans it is proposed to retain the hedgerow, trees and saplings at the site boundaries.
- 4.1.3 Impacts of these proposals are considered on the designated sites in the wider area are considered at **Section 4.2**. The ecological value of habitats within the site are evaluated at **Section 4.3**, and the presence of protected and notable species is considered at **Section 4.4**.
- 4.1.4 Impacts upon the habitats within the site, and upon the protected and notable species associated with the site, are quantified and assessed at **Section 4.5**.

### 4.2 Designated Sites

- 4.2.1 The site is sufficiently distant to avoid any direct or indirect impact on designated site for nature conservation in the wider area and their features of interest.

### 4.3 Vegetation and Habitats

- 4.3.1 None of the habitats within the site are of significant interest in terms of their plant species composition or are representative of semi-natural habitat. The site supports only common and widespread plant species. The NVC communities present are typical of the geographical area and conditions present.
- 4.3.2 The hedgerow at the western boundary qualifies as Priority Habitat, as it consists of at least 80% native woody species and is greater than 20 metres long. The hedgerow, however, is considered a poor example of the habitat as it is dominated by Hawthorn and has a very limited assemblage of woodland ground flora species. The hedgerow does not meet the criteria to be considered as 'important' in accordance with *The Hedgerows Regulations 1997*.
- 4.3.3 The boundary hedgerow, trees and saplings are of local value as they provide structural diversity and habitat connectivity across a landscape with significant industrial and residential development. Recommendations to protect the hedgerow and trees are presented at **Section 5.2**, below.
- 4.3.4 Rhododendron, an invasive species as listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), is present within the hedgerow at the western boundary. Guidance for the removal of this species is described at **Section 5.3**.

## 4.4 Protected Species and Other Wildlife

- 4.4.1 The presence of badger, roosting bats, water vole, barn owl, great crested newt and reptiles is reasonably discounted.
- 4.4.2 The boundary trees, hedgerow and saplings are suitable habitat for use by nesting passerine bird species, and the open undisturbed habitats within the centre of the site are suitable for ground-nesting bird species. Guidance on the protection afforded to nesting birds is described at **Section 5.5**.
- 4.4.3 Wood and stone piles within the site provide suitable refuge habitat for wildlife, including common toad and hedgehog. Guidance for measures to be observed during the clearance of these piles is described at **Section 5.6**.

## 4.5 Assessment of Impacts

- 4.5.1 In the absence of suitable precautionary measures, the proposed development at the site may negatively impact the ecological value of the site, through harm to nesting birds damage to habitats used by foraging birds and bats.
- 4.5.2 Recommendations for the protection of habitats and species are presented at **Section 5.0**.
- 4.5.3 The proposals present the opportunity to enhance the ecological value of the site for wildlife such as nesting birds and foraging bats through appropriate landscape planting and provision of nest/roost boxes; these recommendations are presented within **Section 5.0**, below.

## 5.0 RECOMMENDATIONS AND ECOLOGICAL ENHANCEMENT

### 5.1 Introduction

- 5.1.1 The recommendations in this section 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 below, as required by the NPPF and other relevant planning documents.
- 5.1.3 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 industrial units.

### 5.2 Protection of Existing Vegetation and Recommendations in Relation to Site Layout

#### Trees, Shrubs and Hedgerow

- 5.2.1 The site layout has been designed to ensure the new buildings and hard standing areas lie within the central areas of the site, minimising any requirement for tree, hedgerow or sapling clearance at the boundaries.
- 5.2.2 During the construction phase, temporary protective demarcation fencing will be used to protect the trees and shrubs that are to be retained. 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.
- 5.2.3 The fencing will be in accordance with BS5837:2012 *Trees in Relation to Design, Demolition and Construction: Recommendations* (BSI, 2012).

### 5.3 Invasive Species

- 5.3.1 It is an offence under the *Wildlife and Countryside Act 1981* (as amended) to cause the spread of *Rhododendron* in the wild. It is recommended that the stands of *Rhododendron* within the western boundary hedgerow should be grubbed out by the roots and either buried on-site or otherwise disposed of responsibly. It is considered that the preparation of an Invasive Species Management Plan is not necessary.

### 5.4 Bats

#### Protection

- 5.4.1 The recommendations detailed above for the protection of the boundary trees, hedgerow and shrubs will ensure habitats suitable for use by foraging bats are protected.
- 5.4.2 In addition, the lighting scheme to be implemented at the developed site must involve the use of appropriate products and screening, where necessary, to ensure no excessive artificial lighting shines over the boundary vegetation, as lighting overspill may deter use by wildlife such as foraging bats.
- 5.4.3 The lighting scheme will be designed with reference to current guidance, namely:
- Artificial lighting and wildlife. Interim Guidance: Recommendations to help minimise the impact of artificial lighting.* (Bat Conservation Trust, 2014); and
  - Bats and lighting: Overview of current evidence and mitigation guidance* (Stone, 2014).

#### Enhancing Habitats for Roosting Bats

- 5.4.4 It is recommended that the development incorporates the installation of two commercially available bat boxes at the retained mature trees at the western boundary.
- 5.4.5 The bat boxes should be sited at least four metres above ground level against the main stem of the tree and positioned so that they are not cluttered by branches, allowing bats clear access to them. Once the development layout has been finalised, an Ecologist should advise on appropriate positions for the bat boxes. Suitable bat boxes are available from NHBS Ecology ([www.nhbs.com](http://www.nhbs.com)) or Wild Care Shop ([www.wildcareshop.com](http://www.wildcareshop.com)) and are presented at **Insert 1**:



**Insert 1:** Schwegler 1FF Bat Box and 2F Schwegler Bat Box (from left to right).

## 5.5 Birds

### Protection

- 5.5.1 All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended) while they are breeding. It is mandatory that any site clearance within central areas of the site, or any necessary removal of trees, shrubs or saplings is only conducted outside of the bird breeding season. The bird breeding season typically extends between March to August inclusive.
- 5.5.2 If any site clearance or vegetation removal is scheduled 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.
- 5.5.3 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

- 5.5.4 It is recommended that the development incorporates provision of bird nest boxes to provide additional habitat for nesting birds.
- 5.5.5 The installation of four bird nest boxes at trees and larger saplings at the western boundary of the site is recommended. RSPB advice states that boxes should face north to east, avoiding exposure to direct sunlight and overheating or chicks in the nest which can occur with south and south-west facing boxes. It is recommended that the boxes are positioned ensuring that they are not cluttered by branches or leaves, allowing birds clear access. Examples of suitable commercially available boxes are given at **Insert 2**, below.



**Insert 2:** 1B Schwegler Nest Box, 2H Schwegler Robin Box and 3H Schwegler Starling Box (from left to right)

- 5.5.6 Such bird boxes are available from the NHBS ([www.nhbs.com](http://www.nhbs.com)) or Wild Care Shop ([www.wildcareshop.com](http://www.wildcareshop.com)). ERAP Ltd will advise on the siting of bird boxes.

## 5.6 Wood and Stone Piles

- 5.6.1 It is recommended that the piles of wood and stone which are present within the site are cleared with precaution, avoiding the winter months (November to March) when wildlife such as hedgehog are hibernating. The wood piles should be removed carefully and by hand, and any wildlife found (such as hedgehog or common toad) should be carefully transported in a clean bucket to the woodland area west of Higham Lane.
- 5.6.2 Where possible, the wood piles within the site should be reconstructed near to the retained trees and shrubs at the site boundaries. Any necessary removal of trees and shrubs can also be utilised to create

further deadwood piles which provide favourable habitat for sheltering wildlife, including small mammals and invertebrates.

- 5.6.3 The piles of stone should be removed with due caution, ensuring where possible materials are lifted upwards and not dragged, protecting any sheltering wildlife from crushing. Again any wildlife found should be carefully transported in a clean bucket to the woodland west of Higham Lane.

## 5.7 Landscape Planting

- 5.7.1 It is recommended that the landscape planting within the site is composed from native species and species known to be of value for the attraction of wildlife.
- 5.7.2 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>Acer campestre</i>     | Field Maple | <i>Prunus spinosa</i>   | Blackthorn   |
| <i>Corylus avellana</i>   | Hazel       | <i>Rosa arvensis</i>    | Field Rose   |
| <i>Crataegus monogyna</i> | Hawthorn    | <i>Rosa canina</i>      | Dog-rose     |
| <i>Ilex aquifolium</i>    | Holly       | <i>Sambucus nigra</i>   | Elder        |
| <i>Malus sylvestris</i>   | Crab Apple  | <i>Sorbus aucuparia</i> | Rowan        |
| <i>Prunus avium</i>       | Wild Cherry | <i>Ulmus glabra</i>     | Wych Elm     |
| <i>Prunus padus</i>       | Bird Cherry | <i>Viburnum opulus</i>  | Guelder Rose |

- 5.7.3 The understorey and ground cover planting design should be prepared to optimise the attraction of invertebrates such as feeding bumblebees and butterflies. Where possible the use of native species should be maximised but where necessary non-native species known to be attractive to invertebrates should be used.
- 5.7.4 Planting schemes that include flowering species such as *Calluna*, *Ceanothus*, *Hebe*, *Lavendula*, *Lonicera*, *Potentilla*, *Rosemarinus* and *Vinca* can maximise opportunities for feeding invertebrates and for the attraction of foraging bats and birds.
- 5.7.5 For further plants suitable for the attraction of pollinators please refer to the *Perfect for Pollinators Plant List* (Royal Horticultural Society, 2012). It is recommended that the selection of plant species at the site ensures that a variety of flowering species are available throughout the year.
- 5.7.6 It is recommended that suitable wildflower grassland is seeded and appropriately managed at the site. Seed mixes such as the *EM2 Standard General Purpose Meadow Mixture* and the *EM3 Special General Purpose Meadow Mixture* available from [www.wildseed.co.uk](http://www.wildseed.co.uk) are suitable.

## 6.0 CONCLUSION

- 6.1 This ecological appraisal has demonstrated that the development of industrial units at the site is feasible and acceptable in accordance with ecological considerations and the National Planning Policy Framework.
- 6.2 It is possible to implement reasonable actions for the protection of habitats suitable for use by nesting birds and foraging bats associated with the site, and ensure all works are conducted in accordance with relevant wildlife legislation.
- 6.3 Development at the site will provide an opportunity to secure ecological enhancement for fauna in local area such as breeding birds and roosting bats.

## 7.0 REFERENCES

- Andrews, H (ed), 2013. *Bat Tree Habitat Key, 3rd Edition*. Bridgewater: AEcol Ltd.
- Bainbridge, I. et al., 2013. *Guidelines for the Selection of Biological SSSIs*. Peterborough: Joint Nature Conservancy Council.
- Bat Conservation Trust, 2014. *Artificial Lighting and Wildlife: Interim Guidance: Recommendations to help minimise the impact of artificial lighting*. [Online]  
Available at: [http://www.bats.org.uk/pages/bats\\_and\\_lighting.html](http://www.bats.org.uk/pages/bats_and_lighting.html)
- BSI, 2012. *Trees in relation to design, demolition and construction. Recommendations*. London: BSI Standards Limited.
- CIEEM, 2016. *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd Edition*. Winchester: Chartered Institute of Ecology and Environmental Management.
- Collins, J. (.), 2016. *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. London: The Bat Conservation Trust.
- Eaton, M. A. et al., 2015. Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds*, Issue 108, pp. 708-746.
- Edgar, P., Foster, P & Baker, J., 2010. *Reptile Habitat Management Handbook*. Bournemouth: Amphibian and Reptile Conservation.
- English Nature, 2001. *Great Crested Newt Mitigation Guidelines*. Peterborough: English Nature.
- Great Britain Department for Communities and Local Government, 2012. *National Planning Policy Framework*. London: H.M.S.O.
- Great Britain, 1981. *Wildlife and Countryside Act*. London: H.M.S.O.
- Great Britain, 2006. *Natural Environment and Rural Communities Act*. London: H.M.S.O.
- Great Britain, 2010. *The Conservation of Habitats and Species Regulations*. London: H.M.S.O.
- H.M.S.O., 1997. *The Hedgerows Regulations 1997, SI 1997/1160*. London: H.M.S.O.
- Harris Partnership Architects, 2016. *Proposed Site Plan (drawing number 14120-14)*, Reading: Harris Partnership Architects.
- JNCC, 1995. *The UK Biodiversity Steering Group Report, Volume 2, Action Plans*. London: H.M.S.O.
- JNCC, 2010. *Handbook for Phase 1 Habitat Survey: A technique for Environmental Audit*. Peterborough: NCC.
- Maddock, A (ed), 2008. *UK Biodiversity Action Plan: Priority Habitat Descriptions*. [Online]  
Available at: <http://jncc.defra.gov.uk/page-5718>
- Maddock, A., 2008. *UK Biodiversity Action Plan; Priority Habitat Descriptions (Updated Dec 2011)*. [Online]  
Available at: <http://jncc.defra.gov.uk/page-5706>
- Marchant, J., 1983. *Common Birds Census Instructions*. Tring: BTO.
- Natural England, 2007. *Badgers and Development*, Peterborough: Natural England.
- Natural England, 2011. *The Reptile Mitigation Guidelines*. Peterborough: Natural England.
- Natural England, 2015. *Badgers: Surveys and mitigation for development projects*. [Online]  
Available at: <https://www.gov.uk/guidance/badgers-surveys-and-mitigation-for-development-projects>  
[Accessed 3 December 2015].
- Natural England, 2015. *Template for Method Statement to Support Application for Licence Under Regulation 53(2)(e) of the Conservation of Habitats and Species Regulations 2010 (as amended) In Respect of Great Crested Newts Triturus cristatus: Form WML-A14-2*. [Online]  
Available at: <https://www.gov.uk/government/publications/great-crested-newts-apply-for-a-mitigation-licence>
- Ratcliffe, D. A., 1977. *A Nature Conservation Review*. Cambridge: Cambridge University Press.
- Rodwell, J. S., 1991. *British Plant Communities: Volume 1, Woodlands and Scrub*. Cambridge: Cambridge University Press.
- Rodwell, J. S., 1992. *British Plant Communities: Volume 3, Grasslands and Montane Communities*. Cambridge: Cambridge University Press.
- Roper, T., 2010. *Badger (Collins New Naturalist Library, Book 114)*. Glasgow: Harper Collins.

---

Royal Horticultural Society, 2012. *Perfect for Pollinators, Garden Plants*. [Online]  
Available at: <https://www.rhs.org.uk/science/conservation-biodiversity/wildlife/encourage-wildlife-to-your-garden/plants-for-pollinators>

Stace, C. A., 2010. *New Flora of the British Isles 3rd Edition*. Cambridge: Cambridge University Press.

Stone, E. L., 2014. *Bats and Lighting: Overview of current evidence and mitigation guidance*. Bristol: University of Bristol.

## 8.0 APPENDIX 1: TABLES AND FIGURES

**Table 8.1: Plant Species Composition, Frequency and Abundance for vegetation colonising the site**

| Scientific Name               | Common Name                   | DAFOR <sup>1</sup> | Cover |
|-------------------------------|-------------------------------|--------------------|-------|
| <b>Woody species</b>          |                               |                    |       |
| <i>Acer campestre</i>         | Field Maple                   | O                  | <1%   |
| <i>Acer pseudoplatanus</i>    | Sycamore                      | O                  | <1%   |
| <i>Aesculus hippocastanum</i> | Horse Chestnut                | R                  | <1%   |
| <i>Alnus glutinosa</i>        | Alder                         | O/LF               | 2%    |
| <i>Betula pendula</i>         | Silver Birch                  | O/LA               | 2%    |
| <i>Cornus sanguinea</i>       | Dogwood                       | O/LF               | <1%   |
| <i>Corylus avellana</i>       | Hazel                         | O/LF               | <1%   |
| <i>Crataegus monogyna</i>     | Hawthorn                      | VLF                | <1%   |
| <i>Fagus sylvatica</i>        | Beech                         | R                  | <1%   |
| <i>Fraxinus excelsior</i>     | Ash                           | O                  | <1%   |
| <i>Larix</i> sp.              | Larch                         | VLF                | <1%   |
| <i>Pinus sylvestris</i>       | Scots Pine                    | VLF                | <1%   |
| <i>Prunus avium</i>           | Wild Cherry                   | R                  | <1%   |
| <i>Prunus spinose</i>         | Blackthorn                    | VLF                | <1%   |
| <i>Ribes sanguineum</i>       | Flowering Currant             | O                  | <1%   |
| <i>Rosa canina</i>            | Dog Rose                      | VLF                | <1%   |
| <i>Salix caprea</i>           | Goat Willow                   | O/LF               | 2%    |
| <i>Salix cinerea</i>          | Grey Willow                   | O                  | <1%   |
| <i>Sorbus aucuparia</i>       | Rowan                         | O                  | <1%   |
| <i>Ulex europaeus</i>         | Common Gorse                  | O/LA               | 2%    |
| <b>Herb Species</b>           |                               |                    |       |
|                               | Mosses                        | A                  | 25%   |
| <i>Agrostis stolonifera</i>   | Creeping Bent                 | LA                 | <1%   |
| <i>Arrhenatherum elatius</i>  | False Oat-grass               | O/VLA              | <1%   |
| <i>Bellis perennis</i>        | Daisy                         | LF                 | <1%   |
| <i>Cardamine flexuosa</i>     | Wavy Bittercress              | VLF                | <1%   |
| <i>Carex flacca</i>           | Glaucous Sedge                | O/LA               | 1%    |
| <i>Carex pendula</i>          | Pendulous Sedge               | O/VLA              | <1%   |
| <i>Cerastium fontanum</i>     | Common Mouse-ear              | VLF                | <1%   |
| <i>Cirsium arvense</i>        | Creeping Thistle              | O/LF               | <1%   |
| <i>Cirsium vulgare</i>        | Spear Thistle                 | O/LF               | <1%   |
| <i>Dactylis glomerata</i>     | Cock's-foot                   | O/LA               | 2%    |
| <i>Deschampsia cespitosa</i>  | Tufted Hair-grass             | O/LF               | <1%   |
| <i>Epilobium hirsutum</i>     | Great Willowherb              | VLA                | <1%   |
| <i>Festuca rubra</i>          | Red Fescue                    | A                  | 25%   |
| <i>Galium aparine</i>         | Cleavers                      | VLF                | <1%   |
| <i>Geranium molle</i>         | Dove's-foot Crane's-bill      | O/LF               | <1%   |
| <i>Hedera helix</i>           | Ivy                           | VLA                | <1%   |
| <i>Heracleum sphondylium</i>  | Hogweed                       | VLF                | <1%   |
| <i>Holcus lanatus</i>         | Yorkshire-fog                 | F/LA               | 10%   |
| <i>Juncus conglomeratus</i>   | Compact Rush                  | O/LA               | <1%   |
| <i>Juncus effusus</i>         | Soft-rush                     | F/LA               | 10%   |
| <i>Juncus inflexus</i>        | Hard-rush                     | O/LA               | 2%    |
| <i>Lolium perenne</i>         | Perennial Rye-grass           | O/LA               | <1%   |
| <i>Lotus corniculatus</i>     | Common Bird's-foot<br>Trefoil | O/LA               | 2%    |
| <i>Narcissus</i> sp.          | Daffodil                      | VLF                | <1%   |
| <i>Plantago lanceolata</i>    | Ribwort Plantain              | LA                 | <1%   |
| <i>Poa trivialis</i>          | Rough Meadow-grass            | VLA                | <1%   |
| <i>Ranunculus acris</i>       | Meadow Buttercup              | LF                 | <1%   |

| Scientific Name                  | Common Name        | DAFOR <sup>1</sup> | Cover |
|----------------------------------|--------------------|--------------------|-------|
| <i>Ranunculus repens</i>         | Creeping Buttercup | F/LA               | 5%    |
| <i>Rubus fruticosus</i> agg.     | Bramble            | VLA                | <1%   |
| <i>Rumex crispus</i>             | Curled Dock        | VLF                | <1%   |
| <i>Rumex obtusifolius</i>        | Broad-leaved Dock  | O                  | <1%   |
| <i>Senecio jacobaea</i>          | Common Ragwort     | O/LF               | <1%   |
| <i>Senecio vulgaris</i>          | Groundsel          | VLF                | <1%   |
| <i>Taraxacum officinale</i> agg. | Dandelion          | LF                 | <1%   |
| <i>Trifolium repens</i>          | White Clover       | LA                 | <1%   |
| <i>Tussilago farfara</i>         | Colt's-foot        | LF                 | <1%   |
| <i>Typha latifolia</i>           | Bulrush            | VLA                | <1%   |
| <i>Urtica dioica</i>             | Common Nettle      | VLA                | <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: Plant Species Composition, Frequency and Abundance for Hedgerow 1**

| Scientific Name                  | Common Name        | DAFOR <sup>1</sup> | Cover |
|----------------------------------|--------------------|--------------------|-------|
| <b>Woody species</b>             |                    |                    |       |
| <i>Crataegus monogyna</i>        | Hawthorn           | A/LD*              | 90%   |
| <i>Fraxinus excelsior</i>        | Ash                | O                  | <1%   |
| <i>Sorbus aucuparia</i>          | Rowan              | O                  | <1%   |
| <i>Acer pseudoplatanus</i>       | Sycamore           | O/LF               | 2%    |
| <i>Rosa canina</i>               | Dog Rose           | O/LF               | 2%    |
| <i>Acer campestre</i>            | Field Maple        | O                  | <1%   |
| <i>Ulex europaeus</i>            | Common Gorse       | VLF                | <1%   |
| <i>Ribes sanguineum</i>          | Flowering Currant  | VLF                | <1%   |
| <i>Ilex aquifolium</i>           | Holly              | VLF                | <1%   |
| <i>Aesculus hippocastanum</i>    | Horse Chestnut     | R                  | <1%   |
| <i>Rhododendron ponticum</i>     | Rhododendron       | VLF                | <1%   |
| <i>Sambucus nigra</i>            | Elder              | O/LF               | 5%    |
| <b>Herb Species</b>              |                    |                    |       |
| <i>Agrostis capillaris</i>       | Common Bent        | LF                 | <1%   |
| <i>Alliaria petiolate</i>        | Garlic Mustard     | VLF                | <1%   |
| <i>Anthriscus sylvestris</i>     | Cow Parsley        | F                  | 1%    |
| <i>Cirsium arvense</i>           | Creeping Thistle   | VLF                | <1%   |
| <i>Dactylis glomerata</i>        | Cock's-foot        | O/LA               | 5%    |
| <i>Digitalis purpurea</i>        | Foxglove           | R                  | <1%   |
| <i>Galium aparine</i>            | Cleavers           | VLF                | <1%   |
| <i>Hedera helix</i>              | Ivy                | A*                 | 30%   |
| <i>Heracleum sphondylium</i>     | Hogweed            | O                  | <1%   |
| <i>Holcus lanatus</i>            | Yorkshire-fog      | F                  | 5%    |
| <i>Mercurialis perennis</i>      | Dog's Mercury      | VLA                | <1%   |
| <i>Narcissus</i> sp.             | Daffodil           | VLF                | <1%   |
| <i>Ranunculus repens</i>         | Creeping Buttercup | LF                 | <1%   |
| <i>Rubus fruticosus</i> agg.     | Bramble            | O/LA               | 2%    |
| <i>Rumex obtusifolius</i>        | Broad-leaved Dock  | O                  | <1%   |
| <i>Senecio jacobaea</i>          | Common Ragwort     | O                  | <1%   |
| <i>Silene dioica</i>             | Red Campion        | R                  | <1%   |
| <i>Taraxacum officinale</i> agg. | Dandelion          | O                  | <1%   |
| <i>Urtica dioica</i>             | Common Nettle      | F/LA*              | 25%   |

<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  
Species shaded grey are listed as woody or woodland species in *The Hedgerows Regulations 1997* (refer to Table 8.3 below).

**Table 8.3: Hedgerow Description and Assessment in Accordance with *The Hedgerows Regulations 1997***

| Hedgerow name                                                                                                                                                                     |  | Hedgerow    |   |   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------|---|---|
| Height x width x length (metres)                                                                                                                                                  |  | 4 x 2 x 240 |   |   |
| Continuity                                                                                                                                                                        |  | 100%        |   |   |
| Management                                                                                                                                                                        |  | Unmanaged   |   |   |
| Average Number of Qualifying Woody Species:                                                                                                                                       |  |             |   |   |
| Section number                                                                                                                                                                    |  | 1           | 2 | 3 |
| Qualifying woody species                                                                                                                                                          |  | 5           | 4 | 2 |
| Average number                                                                                                                                                                    |  | 4           |   |   |
| Number of Features Present:                                                                                                                                                       |  |             |   |   |
| (a) Bank or wall along at least ½ length                                                                                                                                          |  | No          |   |   |
| (b) Gaps which in agg. do not exceed 10%                                                                                                                                          |  | Yes         |   |   |
| (c)-(e) 1 standard tree per 50m                                                                                                                                                   |  | No          |   |   |
| (f) At least 3 woodland species within 1m                                                                                                                                         |  | No          |   |   |
| (g) Ditch along at least ½ its length                                                                                                                                             |  | No          |   |   |
| (h) Connections scoring 4 points or more                                                                                                                                          |  | No          |   |   |
| (i) Parallel hedge within 15m                                                                                                                                                     |  | No          |   |   |
| Total Features                                                                                                                                                                    |  | 1           |   |   |
| Criteria for Hedgerow Importance 1: Hedgerow contains species listed as:                                                                                                          |  |             |   |   |
| (1) Part 1 of Schedule 1, Schedule 5 or Schedule 8 of WCA 1981                                                                                                                    |  | No          |   |   |
| (2) Declining breeders in 'Red Data Birds of Britain'                                                                                                                             |  | No          |   |   |
| (3 ) Categorised as 'endangered', 'extinct' or 'vulnerable'                                                                                                                       |  | No          |   |   |
| Criteria for Hedgerow Importance 2: Hedgerow includes:                                                                                                                            |  |             |   |   |
| (i) At least 7 woody species                                                                                                                                                      |  | No          |   |   |
| (ii) At least 6 woody species and at least 3 features                                                                                                                             |  | No          |   |   |
| (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                                                                                                                                 |  | No          |   |   |
| 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:                                                                                                                                                                        |  | No          |   |   |
| Hedgerow Classed as Important?                                                                                                                                                    |  | No          |   |   |

**Table 8.4: Table of Photographs**

|                                                                                     |                                                                                      |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|    |    |
| <p><b>Photo 1:</b> View of the site facing southwards</p>                           | <p><b>Photo 2:</b> Mound within the site colonised by vegetation</p>                 |
|   |   |
| <p><b>Photo 3:</b> Areas colonising to unmanaged grassland</p>                      | <p><b>Photo 4:</b> Areas colonising to marshy grassland</p>                          |
|  |  |
| <p><b>Photo 5:</b> Ornamental planting at the north-eastern boundary</p>            | <p><b>Photo 6:</b> Western boundary hedgerow</p>                                     |



**Photo 7:** Wood pile within the site

Figure 1: Phase 1 Habitat Map

