Wakefield Rd, Mapplewell - Ecological Assessment

Pipestone Ltd

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1. Introduction

1.1.1 Ecus Ltd were commissioned by Pipestone on 10th July 2013 to undertake an update ecological assessment of 9.2 ha of land adjacent to Wakefield Road, Staincross, Barnsley (Ordnance Survey Grid Reference: SE 336 101), ahead of an application for outline planning permission to redevelop the site for predominantly residential use. An ecological assessment of a wider area encompassing the current application area was originally undertaken by Ecus in February 2011 (Ecus 2011).

1.1.2 Current proposals for the site include residential re-development comprising detatched and semi-detatched houses, together with short terrace buildings and associated garden areas. Proposals include the retention of the majority of hedgerows, creation of a length of linear greenspace and creation of a new Sustainable Urban Drainage Systems (SUDS) pond.

1.1.3 The purpose of ecological survey work at the site was to identify potential ecological constraints to the proposed development plans, by carrying out an extended Phase 1 habitat & protected species survey and reviewing the potential for the site to contain, or be used by, species protected under both UK and European nature conservation legislation, namely the Wildlife & Countryside Act 1981 (as amended) the Conservation of Habitats and Species Regulations 2010 (as amended). Potential impacts upon these habitats or species, likely to result from the proposed development were then identified and assessed.

1.1.4 This report details the findings of the ecological survey work and provides the subsequent ecological evaluation and assessment of potential impacts of the proposed development work. Methodologies for the site surveys and ecological evaluation process employed are described, and the need for any further survey work and/or mitigation measures is identified where appropriate.

2. Methodology

2.1 Data Consultation

2.1.1 Data consultation was undertaken by Ecus Ltd in July 2013 with the Barnsley Biological Records Centre (BBRC), to determine whether there were any existing records of biological interest, including designated sites of nature conservation importance within 1 km of the application area.

2.1.2 In addition to records obtained from BBRC, bird records collected from the garden of a property adjoining the application area were supplied by a local resident. Where these records provide additional information they are referred to within the later sections this report.

2.1.3 The Multi-Agency Geographical Information system for the Countryside (MAGIC) was consulted for information on statutory designated sites of nature conservation interest within 1 km of the application area, as of July 2013. Information obtained from MAGIC is included within this report as appropriate.

2.2 Extended Phase 1 Habitat Survey

2.2.1 The application area was surveyed on the 1st July 2013 using extended Phase 1 habitat survey methodology (JNCC, 2010) by Robert Bell (MCIEEM). Robert Bell has worked as a practicing ecologist for five years and has extensive experience of undertaking extended Phase 1 surveys across a wide range sites. Robert is a licensed bat surveyor (20123649), who has held a bat survey licence for three years and is involved in designing bat activity survey programs for a range of renewable energy and building development projects.

2.2.2 The habitats and vegetation types present were recorded on to a site map. This survey method aims to characterise habitats and plant communities present and is not intended to provide a complete list of all plant species occurring across the site. Target notes (TN) were used to identify any particular features of interest occurring on site.

2.2.3 Notable, rare or scarce plant species were highlighted if present. Evidence of protected species or species of nature conservation importance was recorded if and where present at the time of survey. Information is presented in Figure 1.

2.2.4 Habitats present that are listed within Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 or the local BAP for Barnsley were noted if present.

2.2.5 Invasive plant or animal species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded if seen.

2.2.6 The value and sensitivity of ecological features present on site were determined based on the guidance given in 'Guidelines on Ecological Impact Assessment' (IEEM, 2006). Individual ecological receptors (habitats and species that could be affected by the development) for the scheme were assigned levels of importance for nature conservation. The highest level is International, decreasing in order of importance through UK, national, county, district, local to lastly, zone of immediate influence only.

2.3 Protected and Key Species

2.3.1 Any evidence of protected species or species groups encountered during the survey was recorded. This included observations of field signs and an assessment of the suitability of the habitats present to support protected species. For full details of legislation relating to all habitats and species discussed within this report visit http://www.legislation.gov.uk.

Invertebrates

2.3.2 Based on the plant species, plant communities and habitat types present on site, a general assessment was made of the potential for the site to support protected or notable/important species or assemblages of invertebrates.

Amphibians

2.3.3 Habitats within the application area were assessed for their potential to support British amphibian species that have a known distribution within the local area.

2.3.4 Ponds within 500 m of the application form were identified using aerial photography and Ordnance Survey mapping.

Reptiles

2.3.5 Habitats within the application area were assessed for their potential to support British reptile species that have a known distribution within the local area.

Birds

2.3.6 The breeding bird survey method followed an abridged version of the Common Bird Census (CBC) originally set up by the British Trust for Ornithology (BTO) (Marchant, 1983) and described by Gilbert *et al*., (1998). The CBC was designed to gather a large amount of detailed data to assess the number of territories for bird species breeding within a study area. To provide a rapid assessment of the avifauna of the site, two surveys were undertaken by Chris Routh and Kim Leyland. Chris Routh has been an avid bird watcher for 35 years and is a licensed bird ringer, member of the British Union of Ornithologists (BUO), Chartered Biologist (CBiol) and has undertaken professional bird surveys for approximately 15 years. Kim Leyland has been involved in bird watching for approximately 15 years, is a trainee bird ringer and has undertaken professional bird surveys for approximately two years. Kim has undertaken extensive sea bird surveys and is heavily involved in conservation bird survey programs undertaken in the Peak District National Park.

2.3.7 The surveys were undertaken on the 12th and 15th July 2013. In addition to the transect methodology, two hours were spent observing the site from two vantage points. While surveys over the whole breeding season would have been ideal, this methodology was considered to provide the most robust assessment of the species present within the time available and is considered to provide a good understanding of breeding bird usage of the site. Visits were timetabled to record bird activity within the best weather conditions avoiding strong winds, heavy rain, fog and low cloud.

Table 1. Summary Breeding Bird Survey Methodology

Survey Methodology	CBC
Survey Season	Summer 2013
Survey Period	July
Survey Timing	c. 05:30 – 09:30 h
Survey Duration	c. 3.0 h transect; 1.0 h vantage point (x2)
Survey Route	Alternate direction

2.3.8 The exact dates and field conditions are shown in Table 2 below.

Table 2. Breeding Bird Surveys Summary

Survey Visit	Date	Time	Weather
A	12/07/13	05:30 – 09:30	SW 0; 12 - 24^{o}C; 0-4/8; Dry
B	15/07/13	05:30 – 09:30	SW 0; 11 - 24^{o}C; 0/8; Dry

2.3.9 Standard BTO notation was used to record the birds' activities. Breeding activity was assessed as detailed below in Table 3. Each registration was then marked on a site map during the field survey.

Table 3. Breeding Activity Assessment

Breeding Status	Activity in the field
Possible	Birds active in suitable nesting habitat, and/or A male bird singing in the breeding season.
Probable	A pair of birds in suitable nesting habitat; Defensive or agitated behaviour indicating an established territory; Courtship and display; Adults visiting a probable nest site, or Actual nest building
Confirmed	Adult bird performing a distraction display; Carrying faecal sacs or food for young; Entering or leaving a nest-site in circumstances indicating an occupied nest; Presence of a nest containing eggs or young; Presence of a used nest or eggshells found from this season, and Recently fledged young*
* Some bird species can move significant distances from the nest shortly after fledging therefore the presence of juvenile birds from highly dispersive species with no records of previous signs of breeding within the study area would be treated as a likely breeding record only.	

2.3.10 The survey route taken involved following field and habitat boundaries to cover all habitats within an audible and sight range whilst not creating disturbance which would be detrimental to the survey. The repeat survey

reversed the route taken on the previous visit to avoid bias in data recording.

Bats

Visual Inspection

2.3.11 The trees on site were individually inspected to search for features with potential to support roosting bats, in accordance with current best practice guidelines (Hundt, 2012).

2.3.12 An individual tree may have several features of potential interest to roosting bats associated with it. It is not always possible to confirm usage of a feature by bats, as often the animals may be present with no firm evidence of occupation found. Consequently it is customary when undertaking such surveys to assign each feature a defined category of roosting potential as follows:

Negligible: This category is usually used where a feature appears initially to have some bat roost potential, but is considered on closer inspection to have negligible potential to support roosting bats. It is usually used during surveys to confirm that inspection of a feature has been carried out and has found that the feature is not considered to comprise suitable habitat for roosting bats.

Low: This category is used to describe a feature that may have some superficial interest to roosting bats, but is considered sub-optimal to the extent that bats are not considered likely to use the feature for shelter. A cavity that is open at the top allowing access to wind and rain may be considered to be of low bat roost potential.

Moderate: This category is used to describe a feature that has some potential to support roosting bats, but is considered to be less than ideal in some way. For example the feature may be occupied by other animals, e.g. birds or squirrels, and might be subject to disturbance or have sub-optimal connectivity with navigational features used by bats. A surveyor would be neither surprised nor expect to find a bat using such a feature. Features considered to be of moderate roosting potential would not automatically be subject to an activity survey unless otherwise highlighted.

High: This category is used to describe an optimal feature considered to be ideally suitable for use by roosting bats, but where no evidence of occupation by bats has been found. Features considered to be of high bat roost potential may include upwards-leading cavities of appropriate dimensions and height from the ground, with no obstructions below the cavity entrance. A good example would be a tree that is particularly prominent within the landscape, and has good connectivity with navigational features and sufficient suitable foraging habitat in the vicinity. Features with high bat roost potential are likely to be subject to activity surveys to assist confirmation of their status, and may be subject to a watching brief during works that have the potential to disturb them.

Confirmed: This category is used where positive evidence of bat usage has been recorded from a feature. For example, bats or bat droppings are present. Existing bat records may be associated with the feature. A licence from Natural England is likely to be required if the bat roost is to be disturbed by the development.

Bat Survey Transect

2.3.13 A single bat survey transect was undertaken by Robert Bell and Sean Davey on 17th July 2013. Survey start and end times and weather conditions are as

presented for this survey date within Table 4. This transect was undertaken to obtain information on assemblage of bat species using the site, the spatial and temporal distribution of bat activity across the site and the relative frequency with which different bat species use the site.

Table 4. Bat Survey Transect Details

Date/Time	Surveyors	Weather conditions
17.07.13 Bat Survey Transect 21:14 – 23:27 h Sunset: 19:43 h	Robert Bell Sean Davey	23°C, 10% hazy cloud, dry, light wind (Beaufort Scale (BS) : 2)

2.3.14 During the bat activity transect, the surveyors, equipped with a Wildlife Acoustics EM3 bat detector walked a pre-determined route including 13 five minute static point counts undertaken at locations spread across the transect route. The transect was walked at a constant speed of approximately 4 km per hour between point counts. Soundfiles were analysed using BatSound software. Species identification was confirmed with reference to bat call parameters presented in Russ (2012). Where identification of bat calls to species level was not possible, calls were identified to genus level only.

Badger

2.3.15 Signs of badger (*Meles meles*) activity were searched for within the application area as part of the extended Phase 1 survey. Survey followed standard methodology detailed in Surveying Badgers (Harris *et al*., 1989). This included survey for badger setts, along with survey of linear features and boundaries for signs of badger activity including dung pits, foraging marks and feeding signs and pathways.

Other protected or notable pecies

2.3.16 The opportunity was taken whilst on site to assess habitats for the potential to support other protected species, in addition to searching for signs of any other nationally or locally scarce or notable species, or any species protected under national or international nature conservation law.

3. Findings and Evaluation

3.1 Site Description

3.1.1 The site is located adjacent to the A61, approximately 3.5 km to the north of Barnsley in north-east Mapplewell. The application area is mainly enclosed by residential housing along the southern and south-eastern boundary and the A61 along the north-eastern boundary, with arable farmland present on the opposite side of this major road. A narrow belt of allotments is present along the application area's western boundary, with a farmstead present adjacent to the northern corner. The only direct connectivity to semi-natural habitats is present in the north-west corner of the application area, which connects to a smaller area of semi-improved grassland to the west of the application area. A belt of greenspace including grassland and a small wooded area approximately 85 m wide and 850 m long is present to the west of the application area, with this greenspace enclosed by residential housing and other built developments.

3.1.2 The application area comprises mainly semi-improved grassland, with areas of marshy grassland, undergoing extensive and on-going succession to scrub habitats. The boundary features comprise mainly intact native hedgerow, with three additional hedgerows dividing historic fields within the application area. A ditch network follows hedge lines within the western section of the site.

3.2 Designated Sites

3.2.1 No records of statutory sites of nature conservation importance were found to occur within the site or within 1 km of the boundary. No records of any other designated sites of importance to nature conservation were provided by BBRC within 1 km of the site.

3.3 Habitats

Semi-improved neutral grassland

3.3.1 An extensive list of mainly common and widespread plant species was received from BBRC, with the majority of records identified as originating from a location in north-east Mapplewell, likely to be on or close to the application area. This species list has been taken into account during the assessment of habitats on site and it is provided in full in Appendix 3.

3.3.2 The majority of the site supports tall sward, unmanaged, semi-improved neutral grassland comprising mainly coarse grasses. Species recorded include abundant false oat grass (*Arrhenatherum elatius*) and Yorkshire fog (*Holcus lanatus*), frequent meadow foxtail (*Alopecus pratensis*), red fescue (*Festuca rubra*) and occasional cock's foot (*Dactylis glomerata*), rough meadow grass (*Poa trivialis*), creeping bent (*Agrostis stolonifera*) and timothy (*Phleum pratensis*). Herbs present include frequent cow parsley (*Anthriscus sylvestris*) and white clover (*Trifolium repens*), occasional nettle (*Urtica dioica*), red clover (*Trifolium pratense*), common sorrel (*Rumex acetosa*), rosebay willow herb (*Chamaenerion angustifolium*), common cinquefoil (*Potentilla repens*), creeping thistle (*Cirsium arvense*), creeping buttercup (*Ranunculus repens*), common ragwort (*Senecio jacobaea*), hogweed (*Heracleum sphondylium*), yarrow (*Achillea millefolium*) and meadow vetchling (*Lathyrus pratensis*). A full list of plant species recorded during the

field survey is provided in Appendix 3.

3.3.3 The main footpath across the site runs from an entrance to site from Wakefield Rd at the south-western end of H1 (Figure 1), approximately westwards through the application area and south of H9. This path comprises a trampled section of vegetation approximately 1 m in width, with some limited areas of bare soil exposed in place. Within the semi-improved grassland a circular patch of ground, with a diameter of approximately 2 m is present where fire has scorched the surrounding vegetation near the south-east corner of the application area (TN3, Figure 1). No notable species were recorded in this area. In addition, an electricity pylon is present towards the southern end of H8 (TN4, Figure 1).

3.3.4 Within both semi-improved grassland and marshy grassland areas, orchids were recorded on the day of survey. Based upon identifying features present at the time, these orchids were identified as a mix of locally frequent southern marsh orchids (*Dactylorhiza praetermissa*) and occasional common spotted orchids (*Dactylorhiza fuchsia*), with orchid flower spike numbers noted and mapped using a GPS (Figure 2). On the basis of the number and spread of orchids across grassland habitats, this site is considered to be of up to local importance for its orchid populations.

3.3.5 The wider semi-improved grassland habitat type comprises a mix of common grass and occasional herb species of limited intrinsic botanical value and is a habitat which occurs frequently within the local area and throughout the UK. It is not listed as a principal/priority habitat in either Section 41 of the NERC Act or the Local BAP. Semi-improved neutral grassland is not considered to be of importance for nature conservation outwith the zone of immediate influence.

Marshy grassland

3.3.6 There are three areas of marshy grassland present within the site, two of which are located in the south east corner of the site and the other in a central location at a junction where two drainage ditches meet. Marshy grassland on site was dry underfoot, however the species present indicate a high water table in these areas for at least part of the year. The ground was uneven underfoot, with waist-high vegetation. Marshy grassland vegetation present comprises mainly abundant and locally frequent herbs, including greater willowherb (*Epilobium hirsutum*), marsh thistle (*Cirsium palustre*), hoary ragwort (*Senecio erucifolius*) and common fleabane (*Pulicaria dysenterica*), with frequent grasses including Yorkshire fog and locally frequent tufted hair grass (*Deschamspia cespitosa*). Rushes including frequent hard rush (*Juncus inflexus*) and occasional soft rush (*Juncus effusus*) are present, with sedges (*Carex* spp.) and horsetails (*Equisetum* spp.) locally frequent across limited areas. Occasional herb species include yellow flag iris (*Iris pseudacorus*) and yellow loosestrife (*Lysimachia vulgaris*).

3.3.7 This habitat supports a moderate diversity of species, although it comprises mainly common and widespread species with less common species of low abundance only and no rarities noted. Marshy grassland across the site is confined to limited wetter areas and grades into the surrounding semi-improved grassland. The marshy grassland present on site does not fall within any of the priority/principal importance habitats included on either Section 41 of the NERC Act or the Local BAP, however this habitat is

considered to be of up to local importance to nature conservation given the combination of species recorded from this habitat.

Scattered trees and scrub

3.3.8 Several scattered trees exist across the site. Tree species include rowan (*Sorbus aucuparia*), ash (*Fraxinus excelsior*), and crack-willow (*Salix fragilis*). The scattered trees range from immature through to semi-mature and mature in age and comprise a mix of native species which commonly occur throughout the UK.

3.3.9 Throughout the fields that comprise the majority of the application area, scattered scrub has developed, which is continuous in places and most extensive within the south-western field. Species present include ash, silver birch (*Betula pendula*), goat willow (Salix capraea), elder (*Sambucus nigra*), dogwood (*Cornus sanguinea*), dog rose (*Rosa canina*), common hawthorn (*Crataegus monogyna*) and whitebeam (*Sorbus aria*), with bramble (*Rubus fruticosus* agg.) growing widely and comprising the first stage of scrub encroachment.

3.3.10 Neither scattered broad-leaved trees or scrub are included on Section 41 of the NERC Act or the local BAP and both are common within the wider landscape and across the UK. The habitat within the application area is considered to be of importance to nature conservation within the zone of immediate influence only.

Hedgerow

3.3.11 All hedgerows within the application area were assessed under the Wildlife and Landscape criteria of The Hedgerow Regulations 1997.

3.3.12 There are eleven lengths of intact native hedgerow on site (H1-11), with all interior hedgerows and most boundary hedgerows found to be tall (2 - 6 m), displaying dense growth and currently unmanaged. The locations of hedgerows within the application area are shown in Figure 1 and a breakdown of characteristics for each hedgerow can be found in Appendix 4. Species within hedgerows on site include common hawthorn, dog-rose, elder, wild cherry (*Prunus avium*) and holly (*Ilex aquifolium*). A defunct hedgerow is also present in the north of the site. Species present in the defunct hedge are predominantly hawthorn and elder. All hedges on site are classed as species-poor as they lack the required species richness and/or associated features as stated in The Hedgerow Regulations 1997.

3.3.13 Hedgerows comprised predominantly (>80%) of one or more native woody species qualify as habitats of principal importance under Section 41 of the NERC Act. None of the hedgerows surveyed were found to contain more than four woody species, and therefore these hedgerows are not included as priority habitats under the Barnsley LBAP.

3.3.14 Whilst hedgerows within the site are species-poor, the majority are mature and well established and contribute to the overall biodiversity of the site, as well as the connectivity of the wider hedgerow network present in the local area. They will provide habitat for a range of species including invertebrates, birds and small mammalsand taken as a whole is likely to be of up to local importance to nature conservation.

Bracken

3.3.15 There are some scattered individual bracken (*Pteridium aquilinum*) plants throughout the site, with larger stands situated on the western boundary of the site adjacent to Wakefield Road.

3.3.16 Bracken is a successful coloniser and can readily outcompete native plant species, becoming dominant under the right conditions. As a habitat type it offers limited opportunities for other species and is poisonous for a wide range of animals. Bracken is common both locally and throughout the UK and is not included on Section 41 of the NERC Act or the local BAP. This habitat is considered to be of interest to nature conservation within the zone of immediate influence only and is not considered further within this report.

Ditches

3.3.17 Two drainage ditches are present within the application and follow the lines of H8 and H9 (Figure 1). The ditch following the line of H9 was dry at the time of survey, approximately 1 m wide and 0.5 m deep and is heavily shaded by the hedgerow, with terrestrial vegetation including extensive bramble growing within much of the channel.

3.3.18 A second ditch follows the line of H8 and is approximately 0.5 m deep. This ditch is dry in its northern half. Where water is present in the southern half of the ditch this was less than 10 mm deep at the time of survey and is likely to dry out completely during the driest periods. The ditch is heavily shaded by H8 and contains no aquatic plants. At the southern boundary of the site, this ditch joins a small brook which enters a culvert and exits through the housing estate to the south. The brook is indicated on Figure 2 by T1. The junction between the ditch and the brook is steep sided and heavily shaded by a hedge. It contains no aquatic vegetation and has a large amount of urban debris.

3.3.19 The ditches within the site appear to be unmanaged and are considered to be of low ecological value. They are not considered to fall under habitats included on Section 41 of the NERC Act or the local BAP and are considered to be of value to nature conservation within their immediate zones of influence only.

3.4 Species

Invertebrates

3.4.1 A record of a speckled wood (*Pararge aegeria*) butterfly, made in 2011 from a location more than 2 km south of the site was provided by BBRC. Casual invertebrate records made during the field survey are included in Table 5.

Table 5. Invertebrate observations made during field survey

Common name	Latin name
Meadow Brown	*Maniola jurtina*
Small Skipper	*Thymelicus sylvestris*

3.4.2 The grassland habitat present across the majority of the site is unmanaged and is likely to support a range of common butterfly species, however this habitat is common within the local and wider area and thus the grassland habitat on site is unlikely to be of importance to invertebrates outwith the zone

of immediate influence.

Amphibians

3.4.3 A single record of common frog (*Rana temporaria*) was provided by BBRC, , recorded in 2011 from a location approximately 700 m south-west of the application area.

3.4.4 No ponds are present on site and a search of Ordnance Survey mapping and aerial imagery highlighted only one pond within a 1 km radius of the site. This pond is located within a disused tip approximately 640 m south-west of the application area and is separated from the site by a belt of residential and industrial development posing a major barrier to amphibian movement, including great crested newts (*Tritusus cristatus*). The marshy grassland within the application area held no standing water at the time of survey, with no boggy areas noted. No potential amphibian breeding areas were noted within the marshy grassland on site.

3.4.5 There are two drainage ditches within the application area that join a slow flowing brook at the southern boundary of the site, indicated on Figure 2 by T1. These drainage ditches follow the line of H8 and H9. These ditches may be used by common amphibians from time to time, however frogs and toads and particularly great crested newts are not typically associated with flowing water, being more often found in ponds. In addition, water is only present within the southern half of the ditch that follows hedge eight. Where water is present within the ditch it was less than 10 mm deep at the time of survey and due to the shallow nature of this ditch it is likely to dry out during the summer. It is also heavily shaded and lacks any aquatic vegetation suitable for great crested newts to lay their eggs on. Consequently it is considered highly unlikely that great crested newt use the ditches on site. Given the absence of potential great crested newt breeding habitat on site, or within the local area, this species is not considered to be a receptor for the proposed scheme.

3.4.6 Whilst it cannot be ruled out that common amphibians, such as common frog and common toad (*Bufo bufo*), included as a species of principal importance under Section 41 of the NERC Act, may potentially use the habitats on site from time to time, given the lack of waterbodies within the local area it is considered unlikely these species use the site and the application area is not considered to be of importance to these species outwith the zone of immediate influence.

Reptiles

3.4.7 No reptile records were provided by BBRC and no reptiles were recorded during the field survey. An old stone wall runs perpendicular to Wakefield Road at the east of the site indicated on Figure 2 by T2. This wall has collapsed in several places and could provide refugia/hibernacula opportunities. However, this wall is heavily shaded by surrounding vegetation in the summer reducing it's suitability for basking reptiles.

3.4.8 The tall sward grassland across the remainder of the site supports few open/bare ground areas with suitability for basking reducing the suitability of this site to support common reptile species, including common lizard (*Lacerta vivipara*), slow worm (*Anguis fragilis*) and grass snake (*Natrix natrix*). In addition, the lack of potential amphibian breeding ponds further reduces the likelihood of grass snake being present on site, as this species typically feeds

on amphibians such as frogs and toads.

3.4.9 Taking into account the absence of local records, the lack of basking areas and the absence of water bodies, it is considered reptiles are likely to be absent from the application area.

Birds

A full bird species list compiled from the Phase 1 habitat survey and bird surveys is provided in Appendix 5. Each species is provided with its European and UK conservation and protection status.

Species Conservation Status

3.4.10 The conservation status of the avian receptors is reflected in a tiered system of international, national and local, regulatory and conservation designations currently applicable to Europe's bird population. They take into account the species status in terms of threat and vulnerability, their distribution and rarity. This structure is presented in Table 6

Table 6. Relevant Regulatory and Conservation Designations

EC Directive 2009/147/EC on the Conservation of Wild Birds	**Annex 1 Species**
• These are rare breeding European birds, which are afforded special protection under Annex 1 of the EC 'Birds Directive'.	
Wildlife and Countryside Act 1981 (as Amended)	**Schedule 1 Species**
• These are rare breeding UK birds, which are afforded special protection under Schedule 1 of the Wildlife and Countryside Act 1981 (as Amended).	
Birds of Conservation Concern (BoCC)	**Red List Species**
These are listed by the RSPB/BTO ((Eaton *et al*., 2009)) as species of high national conservation concern. Species are included on the list if they meet one or more of the following criteria; • Globally threatened; • Historical population decline in UK during 1800-1995; • Severe (>50 %) decline in UK breeding population over the last 25 years; • Severe (>50 %) decline in the UK non-breeding population over the last 25 years and • Severe (>50 %) contraction of the UK breeding range over last 25 years.	
Birds of Conservation Concern (BoCC)	**Amber List Species**
These are listed by the RSPB/BTO as species of medium national conservation concern. Species are included on this list if they meet one or more of the following criteria: • Species of European Conservation Concern; • Historical population decline during 1800-1995, but now recovering with population size having more than doubled over the last 25 years; • Moderate (25-49 %) decline in UK breeding population over the last 25 years; • Moderate (25-49 %) contraction of UK breeding range over the last 25 years; • Moderate (25-49 %) decline in UK non-breeding population over the last 25 years; • Five year mean of between only 1 and 300 breeding pairs in the UK; • Five year mean of less than 900 non-breeding individuals; • >50 % of the UK breeding population in 10 or fewer sites; • >50 % of the UK non-breeding population in 10 or fewer sites; • >20 % of the European breeding population in the UK, and	

• >20 % of the NW European (wildfowl), East Atlantic Flyway (waders) or European (others) non-breeding populations in the UK.	
Natural Environment & Rural Communities (NERC) Act 2006	**England Biodiversity List Species**
The England Biodiversity List is developed under Section 41 of the NERC Act to guide authorities in conserving biodiversity. Forty-nine bird species and sub-species are included on the List that is largely based on the pre-existing UK Biodiversity Action Plan list.	

1.1.1 No species included on Schedule 1 of the Wildlife and Countryside Act (1981) (as amended) or within Annex 1 of the European Birds Directive were identified on the site. All those species with Red or Amber Birds of Conservation Concern status observed during the field surveys or included within records provided by BBRC are included in Table 7 below. A full list of bird species observed during the field survey is provided in Appendix 5.

Table 7. Birds of Conservation Concern

English Vernacular name	Scientific name	BoCC Status	W&CA 1981 Schedule 1	England Biodiversity List Species	Birds Directive Annex 1 Species	Record Source
Linnet	*Carduelis cannabina*			EBL		Field survey
Corn bunting	*Miliaria calandra*			EBL		BBRC
House Sparrow	*Passer domesticus*			EBL		Field survey
Willow Tit	*Poecile montana*			EBL		Field survey
Starling	*Sturnus vulgaris*			EBL		Field survey
Song Thrush	*Turdus philomelos*			EBL		Field survey
Redwing	*Turdus iliacus*		• ①•			BBRC
Dunnock	*Prunella modularis*			EBL		Field survey
Bullfinch	*Pyrrhula pyrrhula*			EBL		Field survey
Swift	*Apus apus*					Field survey
House Martin	*Delichon urbicum*					Field survey
Reed bunting	*Emberiza schoeniclus*			EBL		Field survey
Swallow	*Hirundo rustica*					Field survey
Red kite	*Milvus milvus*		•		A1	BBRC
Willow Warbler	*Phylloscopus trochilus*					Field survey
Whitethroat	*Sylvia communis*					Field survey
Mistle Thrush	*Turdus viscivorus*					Field survey

3.4.11 In addition to bird records obtained from BBRC and bird species observed during the field survey, bird records submitted by the local resident, whose

garden adjoins the application area included tree sparrow (*Passer montanus*), yellow hammer (*Emberiza citrinella*) and fieldfare (*Turdus pilaris*), all included as Red List species under the Birds of Conservation Concern classification and kestrel (*Falco tinnunculus*), included on the Amber List. Of these additional bird species, tree sparrow, yellow hammer and kestrel are included on the England Biodiversity List developed under Section 41 of the NERC Act. A complete list of bird records submitted by the local resident is provided in Appendix 6.

3.4.12 During the field survey work, swift, swallow, house martin and starling were only seen as flyovers and are not breeding on site but are associated with local residences and farms in and around Staincross. House sparrows were seen feeding on the site but always close to residences where they are likely to breed.

3.4.13 The scrub and hedgerows support the majority of breeding species on the site, with widely occurring species including whitethroat, dunnock, linnet, willow warbler and bullfinch. Whitethroats were confirmed breeders preferring the dense nettles and brambles. Linnet and bullfinch were confirmed as breeding species, the former using the hedges and hawthorn scrub, the latter using the hedges and brambles. Dunnocks were found in most understorey habitats and were confirmed breeders. Willow warbler are most frequently ground nesting birds and were recorded across the site.

3.4.14 Song and mistle thrush are possible breeders and would favour the dense hedgerows and mature trees for nest sites.

3.4.15 A single willow tit was heard calling in a hedge close to the road and a single reed bunting was only observed on a single occasion resulting in both being considered to be only possible breeding species.

3.4.16 Habitats within the application area support good numbers of a number of widespread Amber and Red listed birds of conservation concern, particularly linnet (Red) and whitethroat (Amber) although exact numbers of breeding pairs could not be ascertained from this survey. Examining the species and numbers of birds present in the context of the suburban setting, close to extensive areas of cultivated land with hedges, woods, golf courses and the Dearne valley corridor, the site is considered to be of local importance with respect to its breeding bird population.

Bats

3.4.17 No bat records were provided by BBRC, no buildings are present within the application area and no trees were recorded within the site which displayed greater than negligible potential to be of interest to roosting bats.

3.4.18 During the single bat activity transect low levels of commuting and foraging activity by common pipistrelle (*Pipistrellus pipistrellus*) and a single noctule (*Nyctalus noctula*) pass was recorded. The highest level of activity recorded during the survey was recorded from a location towards the northern end of H7 (Figure 1).

3.4.19 The habitats within the application are suitable for use by foraging and commuting bats, however the application area lacks connectivity to areas of woodland or riparian habitat, with these habitats most strongly associated with bat foraging activity. In addition, the application area is largely

surrounded by sub-urban development, with these built areas and the A61 road, which is present along the north-east boundary of the application area, considered to represent at least a partial barrier to dispersal of less common woodland bat species, such as the brown long eared bats (*Plecotus auritus*) and several bats of the *Myotis* genus. Hedgerows most likely to be used by pipistrelle bats commuting to and from areas of housing.

3.4.20 The field survey work undertaken suggests this site is not used extensively during the activity season for foraging or commuting by local bat populations. The common pipistrelle was the only bat species recorded using the site for foraging and this species is widespread within the local and wider area, with this species making extensive use of suburban areas. Based upon the survey information collected the application area does not appear to be of importance to bat outwith the zone of immediate influence.

Badger

3.4.21 No badger records were received from BBRC and no positive confirmation of badger presence was recorded during the field survey. Large mammal tracks were noted within grassland, notably in the north-east corner of the site, however these tracks were considered to be too narrow for badger and rabbit (*Oryctolagus cuniculus*) presence was noted during the field survey. No badger setts, dung pits or badger hair could be found within the application area.

3.4.22 It cannot be entirely ruled out that badgers may use the site for foraging from time to time, given the presence of suitable badger habitat in the local area. However, given the alternative suitable foraging habitat within the local area and the limited extent of the site, the application area is not considered to be of importance to foraging badgers outwith the zone of immediate influence.

Water vole and otter

3.4.23 No records of water vole (*Arvicola amphibious*) or otter (*Lutra lutra*) were received from BBRC. Given the largely dry and shaded nature of the ditches, shallow water depth and lack of aquatic or marginal vegetation, the site is considered unsuitable to support water vole and this species is not considered to be a receptor to the proposed development.

3.4.24 The lack of water flow within ditches, absence of water bodies or substantial water courses in the local area and lack of connectivity to surrounding water features makes the ditches on unsuitable for use by otter and this species is not considered a receptor to the proposed development.

Other key and notable species

3.4.25 During the survey, the site was checked for suitability for and signs of use by other protected species. No signs of other protected species were recorded during field survey works.

Invasive plant species

3.4.26 No invasive species listed on Part II of Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), were recorded within the application area and none were recorded on site on the day of survey.

4. Ecological Assessment and Mitigation

4.1 Proposals

4.1.1 Current proposals for the site include re-development as a new residential development comprising detatched unit, semi-detatched units and short terrace buildings, together with associated garden areas. Proposals include the retention of the majority of hedgerows, creation of a wide belt linear greenspace through the centre of the site and creation of a new Sustainable Urban Drainage systems (SUDs) pond. Impacts have been assessed based upon consideration of the most recent proposed plan (Drawing No: DO9 4198 100). It should be noted however, that the client is applying for outline permission only at this stage.

4.2 Designated Sites

4.2.1 There are no known sites of nature conservation importance within 1km of the site and therefore no potential impacts to any local sites have been identified.

4.3 Habitats

Semi-improved grassland

4.3.1 It is anticipated that landtake of the majority of grassland within the application area will be required to accommodate the proposed development, however retention of approximately 15 % of grassland will be possible within the proposed landscaping scheme.

4.3.2 This semi-improved grassland habitat is comprised mainly of common species with limited intrinsic botanical value and landtake of grassland in general is not considered to be of importance to nature conservation outwith the zone of immediate effect.

4.3.3 However the resident orchid population is considered to be of importance to nature conservation at up to a local level. , It is recommended that consideration is given to the retention orchid-rich sections of grassland within the proposed site layout. Should this not be possible then it is recommended that consideration is given to the translocation of grass turfs from areas with dense orchid stands to new locations on the proposed site. The methodology for these works should be determined by a suitably experienced ecologist in advance of works commencing on site. An appropriate management plan should be produced for the green space on site to ensure that it is managed for biodiversity, as well as amenity purposes, where practicable. In particular, any areas of orchids should be managed in an appropriate way, to include cutting at a suitable time of year, after flowering.

4.3.4 It is recommended that an ecologically sensitive planting plan is developed for the scheme. The landscaping plan should utilise native plant species, and non-native species of known wildlife benefit, in order to provide a foraging resource for invertebrates and birds. Inclusion of native tree and shrub species within the site will also provide potential resting and habitat for a variety of wildlife including birds, mammal and insects. The creation of a wildlife friendly landscaping scheme complies with the National Planning Policy Framework aim that "opportunities to incorporate biodiversity in and around developments should be encouraged" (NPPF, 2012).

4.3.5 5.3.3 Several species often used in landscaping are now listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) due to their non-native and invasive nature. Care should be taken to avoid incorporation of any Schedule 9 species in the landscaping plan as causing them to grow or spread in the wild constitutes an offence under current legislation.

Marshy grassland

4.3.6 Landtake of the majority of marshy grassland within the application area is likely to be required on order to accommodate the proposed development.

4.3.7 This habitat supports a moderate diversity of species, comprising mainly common and widespread species, with lower proportions of less common species. Areas of this habitat comprise a small proportion of the overall grassland on site, however the marshy grassland habitat is less frequently occurring in the local area, landtake of this habitat is considered to be of up to local importance. However it should be noted that this habitat is changing to scrub through succession, resulting from the lack of a current management regime. As the habitat becomes scrub-dominated, the botanical appeal of areas currently comprising marshy grassland will decrease.

4.3.8 Current proposals indicate that a new SUDS pond will be incorporated at the southern end of the proposed development. There is potential to mitigate for the loss of the marshy grassland habitat on site through translocation of turfs from marshy grassland area to the marginal edges of the SUDS pond. In addition, these areas could be seeded with an appropriate native seed mix for marshy habitats. As mentioned above, an appropriate management plan should be produced for the green space on site to ensure that it is managed for biodiversity, as well as amenity purposes, to include the SUDS pond and surrounding habitat.

Scattered trees and scrub

4.3.9 Landtake of the majority of scrub habitat within the application area will be required, however the proposed landscape plan includes several areas of new planting of shrubs and scattered trees within the proposed site, which will partly compensate for loss of existing habitat.

4.3.10 Existing scattered trees within the application area are low in number, comprise common species and are generally immature to semi-mature age with no trees of a notable age or growth form present on site. The encroaching scrub present on site contains a range of common species, with this habitat considered to be of limited botanical interest and landtake not considered to be of importance to nature conservation outwith the zone of immediate effect.

4.3.11 It is recommended that new tree planting within the landscaping scheme for the proposed development comprises native trees, typical of the local area and of UK provenance. Where practicable, like for like numbers of replacement trees should be planted as a minimum and heavy standards should be used to reduce the time required for establishment Where shrubs/structure planting is to be incorporated, native fruiting and berry-producing species should also be favoured, where practicable.

4.3.12 In line with British Standard 5837 (2012), all trees to be retained within and adjacent to the application area should have Root Protection Zones (RPZs)

implemented to prevent harm to, and possible subsequent failure of, the tree through root and soil compaction.

Hedgerow

4.3.13 The current scheme proposals allow for retention of all hedgerows within the application area, although a limited number of sections will need to be removed at several locations to allow access roads to pass through. Given that the majority of hedgerows are to be retained, landtake of small sections of hedgerow within the application area is not considered to be of importance to nature conservation outwith the zone of immediate influence.

4.3.14 Should more substantial or total removal of hedgerows be required at later date for any reason, then this would be considered of importance to nature conservation at up to a local level, as the hedgerow network provides habitat connectivity across the site. Should this be the case, new hedgerows should be provided elsewhere within the scheme, where feasible, using native species, typical of the local area and of UK provenance.

4.3.15 In line with British Standard 5837 (2012), all hedgrows to be retained within and adjacent to the application area should have Root Protection Zones (RPZs) implemented to prevent harm to, and possible subsequent failure of,

Ditches

4.3.16 The capacity to retain ditches within the proposed development is currently unknown. These ditches were dry along much of their length during the field survey, and were heavily shaded with no aquatic vegetation noted. Consequently these ditches are considered to be of low ecological value and should landtake of these features be required, it would not be considered to be of importance to nature conservation outwith the zone of immediate effect.

4.3.17 Should the ditches be retained, there is the potential for indirect impacts on riparian habitats downstream should any pollution incidents occur within the drainage ditches on site. Taking a best practice approach, consideration should be given to avoiding potential indirect impacts as a result of the works. It is recommended that best practice guidelines (CIRIA, 2001, Environment Agency, 2007 & 2010) are followed during all proposed works to ensure that no indirect adverse effects on downstream habitats. This requires proper storage and transport of chemicals and management of any waste controlled by waste regulations. Procedures should also be implemented to prevent run-off entering the ditches during works and contingency plans in place to deal with accidental spillages. In addition, the advice set out in the relevant Environment Agency Pollution Prevention Guidelines should be applied (Environment Agency, 2010). Taking a best practice approach, should the ditches be retained, fencing should be erected along the bank tops to prevent damage to the ditches and encroachment of contractors, machinery or materials.

4.4 Species

Invertebrates

4.4.1 The grassland habitat, which is present across the majority of the site, is unmanaged and supports a number of common butterfly species. The semi-improved grassland habitat within which butterflies were noted is frequently occurring both locally and throughout the UK and the application area is

unlikely to be of importance to invertebrates outside the zone of immediate effect. However retention and enhancement of sections of grassland habitat is encouraged, where possible. Consideration could also be given to creation of species rich wildflower grassland within the scheme's soft landscaping.

Amphibians

4.4.2 Smooth newt, common frog and common toad are included in Section 9(5) of the Wildlife and Countryside Act (1981) (as amended) which prohibits sale, barter, exchange, transporting for sale and advertising to sell or to buy these species.

4.4.3 Given the absence of ponds within the application area and the presence of alternative terrestrial habitat within the local area, landtake of habitats within the application area is not considered to be of importance to common amphibian species outwith the immediate zone of effect.

4.4.4 In the unlikely event that any common amphibians are found during works, they should be carefully moved by gloved hand to a suitable area of cover away from the footprint of works, such as beneath a boundary hedgerow.

Reptiles

4.4.5 Grass snakes, slow worms and common lizards are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) against intentional killing and injuring.

4.4.6 It is considered unlikely the site supports common reptiles due to the lack of potential basking areas and waterbodies, and the lack of connectivity to wider semi-natural habitats within the wider area. Landtake of habitats on site is considered unlikely to impact reptiles. However the survey area has some limited potential be used by common reptile species and their presence or likely absence should be confirmed prior to any site clearance works.

4.4.7 It is recommended that presence/absence survey is undertaken for these species, with reptile mats placed in areas of highest suitability for these species. These mats are then checked for a minimum of seven visits, during suitable temperatures (typically between 10oC and 18oC). Reptiles are active between March and October, with the optimal months for survey being April, May and September. It is considered that given the low potential of reptiles being present on site and the level of legal protection that common reptile species are subject to, it should be acceptable to include the requirement for a reptile survey within the Reserved Matters of an outline planning permission.

4.4.8 A suitable amount of time should be given to allow a receptor site to be found, should reptiles be found and translocation necessary. Should translocation be required, this does not require a licence but a detailed Method Statement should be prepared by an experienced ecologist.

Birds

4.4.9 All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended) against disturbance and destruction of the nest during the bird nesting season, which falls between March and August, inclusive.

4.4.10 The grassland, scrub and hedgerow habitats on site provide shelter, nesting

sites and foraging resources for local bird populations. These habitats currently support good numbers of a number of widespread Amber and Red listed birds of conservation concern, particularly linnet (Red) and whitethroat (Amber). Given the species and numbers of birds present in the context of the suburban setting, close to extensive areas of cultivated land with hedges, woods, golf courses and the Dearne valley corridor, landtake of suitable habitats within the application area is considered to be of up to local importance with respect to its resident breeding bird population.

4.4.11 The current scheme incorporates the retention of boundary hedgerows, which is a positive measure for nesting and foraging bird species. Should plans alter at any point in the future, removal of boundary hedgerows and scattered trees should be avoided, where practicable. The currently unmanaged character of the site benefits nesting and foraging bird species. Whilst it is appreciated that this cannot be maintained within the proposed development, it is recommended that areas of green open space within the scheme be managed for wildlife, as well as amenity purposes, with areas of scrub/structure planting to provide cover and foraging opportunity.

4.4.12 Retention of hedgerows and grassland habitat on site and inclusion of a new SUDS pond will ensure retention of much of the bird breeding and foraging habitat currently present within the application area. The most significant loss of habitat within the application area will be of scrub habitats, scattered within fields, which provide suitable safe nesting habitat for whitethroat, linnet and a number of other species. Loss of these habitats will be difficult to compensate for however new shrub planting, where possible and non-intensive grassland management, leaving areas of longer grass and wildflowers in quieter areas, would benefit both breeding and wintering birds.

4.4.13 Taking a best practice approach, inclusion of a range of bird nesting provision on any new structures or retained mature trees would be considered a positive enhancement for nature conservation and would comply with the NPPF aims for biodiversity (2012). Suitable provision may include general bird boxes with 26 mm and 32 mm entrance holes suitable for a range of garden bird species and/or a sparrow terraces for house sparrows and/or swift boxes on any buildings more than two storeys high. The bird boxes should be placed in a number of locations facing different aspects to maximise the chances of occupation. However, full south aspects which receive full sun all day during the summer months present a risk of overheating and should therefore be avoided.

Bats

4.4.14 All bats are European Protected Species. All species of bat are protected under the EC Habitats Directive 1992, which is implemented by the Habitat Regulations 2010, and the Wildlife and Countryside Act 1981 (as amended), which provides protection to certain animals included in Schedule 5 of the Act. Under the Act (as amended) it is an offence to intentionally or recklessly kill, injure, capture or disturb bats or to damage, destroy or obstruct access to any place used by bats for shelter or protection. This is irrespective of whether or not the animals are present.

4.4.15 Survey work undertaken suggests this site is not used extensively during the activity season for foraging or commuting by local bat populations. The common pipistrelle was the only bat species recorded using the site for

foraging. The common pipistrelle forages mainly along edge habitats, such as roadside hedges and is relatively tolerant of light spill across foraging areas. Consequently whilst landtake of site habitats is not considered to be of importance to bats outwith the immediate zone of effect, it is considered retention of hedgerows within the proposed scheme will constitute retention of the most important foraging areas on site.

4.4.16 To benefit bats, it may be suitable to consider installation of a small number of bat brick/boxes e.g. Schwegler 1FR bat tube, within/on the new building to provide roosting opportunities on site. Internal bat bricks/boxes installed within the fabric of buildings offer discreet and secure self-contained units, without providing access into cavity walls. Alternatively an external box can be mounted securely on an external wall. Bat brick/boxes should be placed ideally on southern aspects for optimal temperature conditions and/or to face suitable foraging habitat, at a minimum of 3.5 m high (or preferably at eaves level) to maximise the chances of occupation. Heavily lit areas should be avoided. Final choice and positioning should be discussed with an ecologist.

Badger

4.4.17 Badgers and their setts are protected under the Protection of Badgers Act 1992. It is an offence under the act to kill, injure or take a badger. It is also an offence to destroy, damage or obstruct a currently active badger sett, or to disturb animals within the sett.

4.4.18 There are no badger setts on site to be affected by works, however badgers can establish new setts quickly and should works commence more than 12 months after the latest Phase 1 habitat survey then it is recommended a precautionary pre-works badger survey is undertaken by a suitably qualified ecologist.

4.4.19 Whilst badgers are not considered to be resident within the application area, the site may occasionally be used by foraging badgers. As such, taking a best practice approach, it is recommended that all deep excavations should be covered overnight, unless completely and securely fenced off. Any unfenced/uncovered shallow excavations should have scaffold boards or equivalent placed in them to act as a ramp to allow any badgers to exit should they fall in.

5. References

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Harris, S.; Cresswell, P. and Jefferies, D. (1989).*Surveying Badgers*. Mammal Society (Occasional Publication No 9).

Hundt, L. (2012) *Bat Surveys – Good Practice Guidelines Version 2*. Bat Conservation Trust, London.

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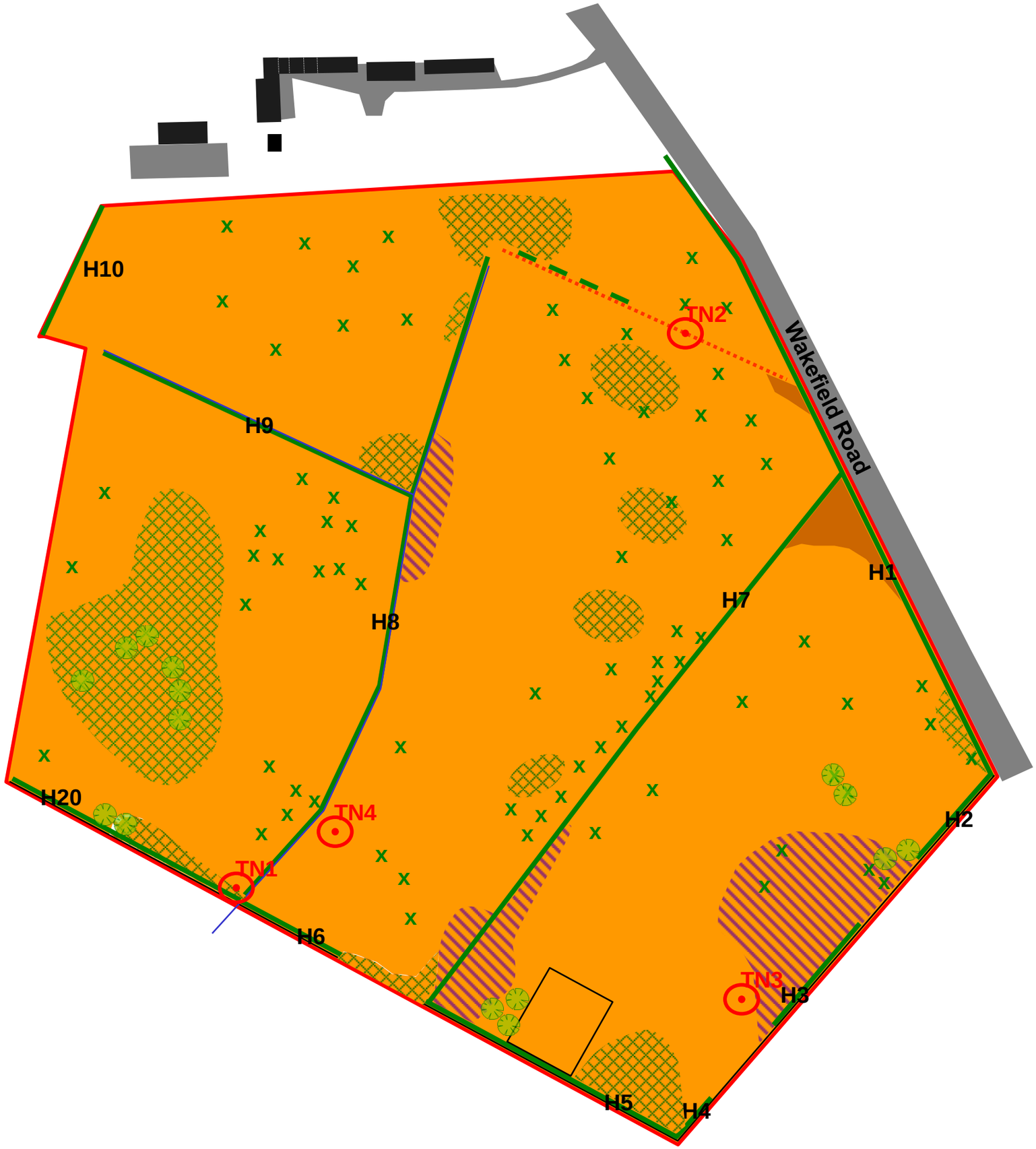
Strachan, R. and Moorhouse, T. (2006) *Water Vole Conservation Handbook second edition*. Wildlife Conservation Research Unit, Oxford University.

Figure 1. Survey Findings



Legend:

- Site boundary
- Semi-improved grassland
- Continuous scrub
- Marshy grassland
- Bracken
- Native intact hedgerow
- Defunct hedgerow
- Derelict stone wall
- Post and wire fence
- Scattered tree
- X Scattered shrub (indicative)
- TN Target Note

N

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Figure 1: Survey Findings	**Date:** **August 2013**
Schematic	**ECUS Ref: 4639**

Figure 2. Aerial Image

ecus
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0 50 100
Meters

Wakefield Road, Mapplewell

Aerial Image

Brook Holt, 3 Blackburn Road, Sheffield
S61 2DW, Tel: 0114 266 9292

Date: August 2013 | Scale: 1:1,500 @A3 | Drg. Ref: FT/4639/AI

Figure 3. Orchid Distribution Plan

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Brook Holt, 3 Blackburn Road, Sheffield
S61 2DW, Tel: 0114 266 9292

Legend

Approximate number of Orchid Spikes

- 0 - 5
- 5 - 10
- 10 - 20
- 20 - 30
- 50 - 100
- 100 +

0 50 100
Meters

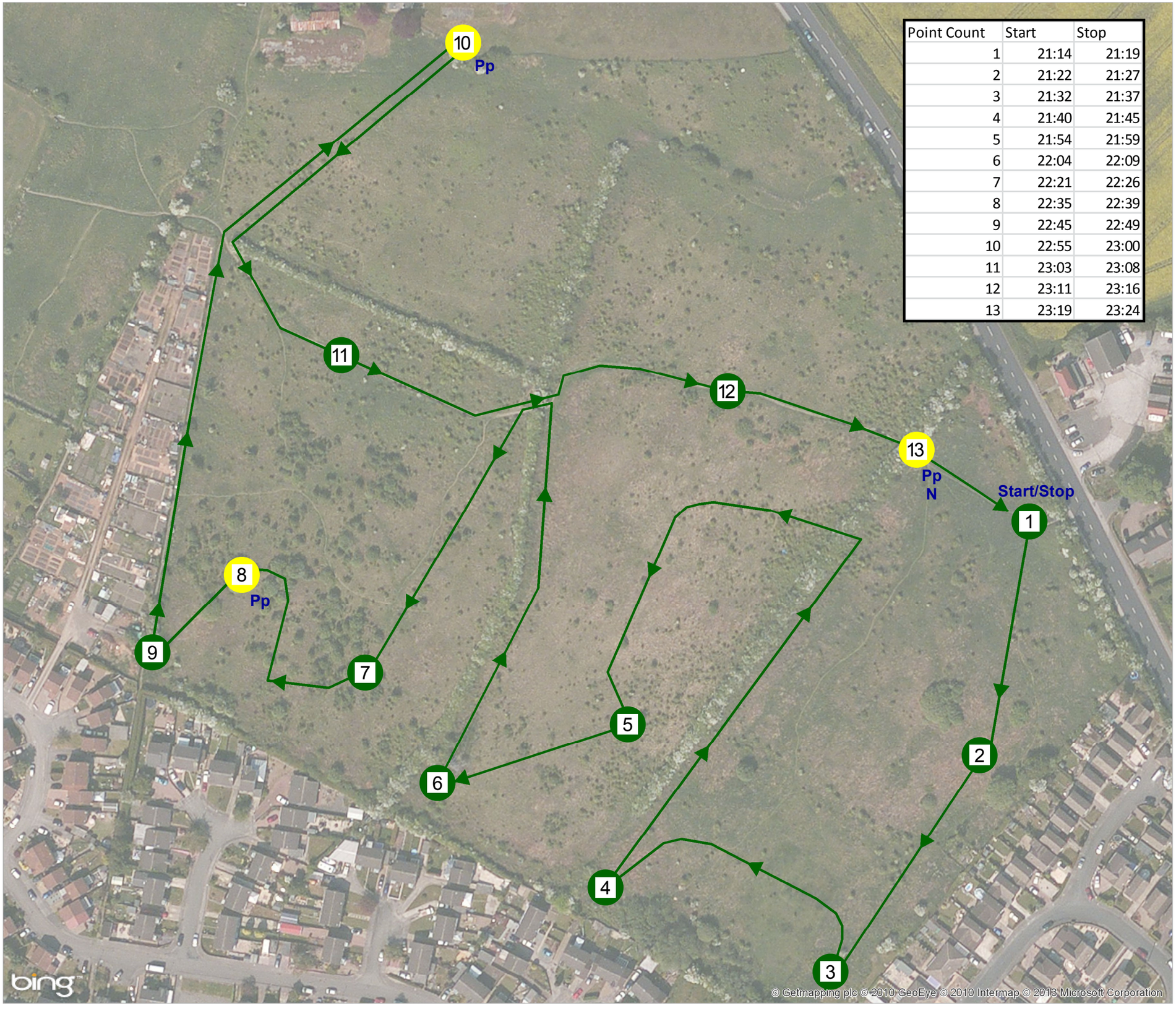
N

Wakefield Road, Mapplewell

Orchid Distribution Map

Date: July 2013 | Scale: 1:1,452 @A3 | Drg. Ref: SD/4639/OM

Figure 4. Bat Survey Transect Plan



Point Count	Start	Stop
1	21:14	21:19
2	21:22	21:27
3	21:32	21:37
4	21:40	21:45
5	21:54	21:59
6	22:04	22:09
7	22:21	22:26
8	22:35	22:39
9	22:45	22:49
10	22:55	23:00
11	23:03	23:08
12	23:11	23:16
13	23:19	23:24

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Legend

- No passes
- 1-5 passes
- 5-10 passes
- 10+ passes

Species Codes

Pp	Common pipistrelle
N	Unidentified noctule bat

Transect Times

Start: 21:14 Stop: 23:27
Sunset: 21:09

0 50 100
Meters

N

Wakefield Road, Mapplewell

Bat Transect Survey 17.07.2013

Date: August 2013 | Scale: 1:1,452 @A3 | Drg. Ref: SD/4639/BT

Appendix 1. Site Photographs

Photo 1 . Looking south over site from outside application area at north end of site

Photo 2. North-east site boundary with H1 on right of image

Photo 3. Section of semi-improved grassland

Photo 4. Section of marshy grassland

Photo 5. Cluster of orchid spikes

Photo 6. Scattered scrub

Photo 7. Section of drain near TN1, Figure 1

Photo 8. Vegetation filled drain north of TN1

Photo 9. Path running east to west through centre of site

Photo 10. Bracken

Appendix 2. Target Notes

Map key	Description
TN1	Area where drainage ditch converges with brook. The ditch from the field within the application area joins a brook forming a steep sided narrow channel. There is no vegetation present within the channel, it contains urban debris and is covered by mature elder. This brook then exits through a culvert through a housing estate to the south.
TN2	Dry stone wall marking old field boundary. The wall is in a state of disrepair and has started to collapse.
TN3	2 m diameter wide patch of scorched vegetation resulting from past fire
TN4	Electricity pylon

Appendix 3. Botanical Species Lists

Semi improved neutral grassland

Common name	Scientific name	Abundance (DAFOR)
Cock's foot	*Dactylis glomerata*	O
Common cinquefoil	*Potentilla repens*	O
Common ragwort	*Senecio jacobaea*	O
Common sorrel	*Rumex acetosa*	O
Common spotted orchid	*Dactylorhiza fuchsia*	O
Cow parsley	*Anthriscus sylvestris*	F
Creeping bent	*Agrostis stolonifera*	O
Creeping buttercup	*Ranunculus repens*	O
Creeping thistle	*Cirsium arvense*	O
False oat grass	*Arrhenatherum elatius*	A
Hogweed	*Heracleum sphondylium*	O
Meadow foxtail	*Alopecus pratensis*	F
Meadow vetchling	*Lathyrus pratensis*	O
Nettle	*Urtica dioica*	O
Red clover	*Trifolium pratense*	O
Red fescue	*Festuca rubra*	F
Rosebay willow herb	*Chamaenerion angustifolium*	O
Rough meadow grass	*Poa trivialis*	O
Southern marsh orchid	*Dactylorhiza praetermissa*	F
Timothy	*Phleum pratensis*	O
White clover	*Trifolium repens*	F
Yarrow	*Achillea millefolium*	O
Yorkshire fog	*Holcus lanatus*	A
Sweet vernal grass	*Anthoxanthum odoratum*	R
Broad leaved plantain	*Plantago major*	R

Marshy grassland

Common name	Scientific name	Abundance (DAFOR)
Common fleabane	*Pulicaria dysenterica*	F
Common spotted orchid	*Dactylorhiza fuchsia*	O
Greater willowherb	*Epilobium hirsutum*	A
Hard rush	*Juncus inflexus*	F
Hoary ragwort	*Senecio erucifolius*	Check
Horsetail	*Equisetum* spp.	F
Marsh thistle	*Cirsium palustre*	O
Sedge	*Carex* spp.	F

Soft rush	*Juncus effusus*	O
Southern marsh orchid	*Dactylorhiza praetermissa*	F
Tufted hair grass	*Deschamspia cespitosa*	F
Yellow flag iris	*Iris pseudacorus*	O
Yellow loosestrife	*Lysimachia vulgaris*	O
Yorkshire fog	*Holcus lanatus*	F
Bullrush	*Typha* spp.	R
Bittersweet	*Solanum dulcamara*	R

Scattered trees and scrub

Common name	Scientific name	Abundance (DAFOR)
Ash	*Fraxinus excelsior*	R
Bramble	*Rubus fruticosus* agg.	R
Common hawthorn	*Crataegus monogyna*	O
Crack-willow	*Salix fragilis*	R
Dog rose	*Rosa canina*	R
Dogwood	*Cornus sanguinea*	R
Elder	*Sambucus nigra*	R
Goat willow	*Salix capraea*	O
Rowan	*Sorbus aucuparia*	R
Silver birch	*Betula pendula*	O
Whitebeam	*Sorbus aria*	R

Hedgerow

Common name	Scientific name	Abundance (DAFOR)
Common hawthorn	*Crataegus monogyna*	A
Dog-rose	*Rosa canina*	O
Elder	*Sambucus nigra*	O
Holly	*Ilex aquifolium*	O
Wild cherry	*Prunus avium*	R

Bracken

Common name	Scientific name	Abundance (DAFOR)
Bracken	*Pteridium aquilinum*	D

Botanical records received from BBRC

Grid Ref	Location Name	Date	Common Name	Scientific Name
SE3310	North-east Mapplewell	18/07/2006	Wall-Rue	Asplenium ruta-muraria

Grid Ref	Location Name	Date	Common Name	Scientific Name
SE3310	North-east Mapplewell	18/07/2006	Maidenhair Spleenwort	Asplenium trichomanes
SE3310	North-east Mapplewell	18/07/2006	Common Male Fern	Dryopteris filix-mas
SE3310	North-east Mapplewell	04/05/2006	Hart's-Tongue	Phyllitis scolopendrium
SE3310	North-east Mapplewell	18/07/2006	Polypody	Polypodium vulgare
SE3310	North-east Mapplewell	18/07/2006	Bracken	Pteridium aquilinum
SE3310	North-east Mapplewell	04/05/2006	Field Maple	Acer campestre
SE3310	North-east Mapplewell	04/05/2006	Sycamore	Acer pseudoplatanus
SE3310	North-east Mapplewell	04/05/2006	Yarrow	Achillea millefolium
SE3310	North-east Mapplewell	04/05/2006	Ground-Elder	Aegopodium podagraria
SE3310	North-east Mapplewell	18/07/2006	Horse-Chestnut	Aesculus hippocastanum
SE3310	North-east Mapplewell	17/06/2006	Common Bent	Agrostis capillaris
SE3310	North-east Mapplewell	17/06/2006	Creeping Bent	Agrostis stolonifera
SE3310	North-east Mapplewell	04/05/2006	Early Hair-Grass	Aira praecox
SE3310	North-east Mapplewell	17/06/2006	Bugle	Ajuga reptans
SE3310	North-east Mapplewell	17/06/2006	Lady's-Mantle	Alchemilla mollis
SE3310	North-east Mapplewell	17/06/2006	Garlic Mustard	Alliaria petiolata
SE3310	North-east Mapplewell	17/06/2006	Marsh Foxtail	Alopecurus geniculatus
SE3310	North-east Mapplewell	17/06/2006	Black-Grass	Alopecurus myosuroides
SE3310	North-east Mapplewell	17/06/2006	Meadow Foxtail	Alopecurus pratensis
SE3310	North-east Mapplewell	17/06/2006	Scarlet Pimpernel	Anagallis arvensis
SE3310	North-east Mapplewell	17/06/2006	Barren Brome	Anisantha sterilis
SE3310	North-east Mapplewell	04/05/2006	Sweet Vernal Grass	Anthoxanthum odoratum
SE3310	North-east Mapplewell	04/05/2006	Cow Parsley	Anthriscus sylvestris
SE3310	North-east Mapplewell	17/06/2006	Columbine	Aquilegia vulgaris
SE3310	North-east Mapplewell	17/06/2006	Lesser Burdock	Arctium minus
SE3310	North-east Mapplewell	17/06/2006	Thyme-Leaved Sandwort	Arenaria serpyllifolia
SE3310	North-east Mapplewell	18/07/2006	False Oat-Grass	Arrhenatherum elatius
SE3310	North-east Mapplewell	18/07/2006	Wormwood	Artemisia absinthium
SE3310	North-east Mapplewell	17/06/2006	Mugwort	Artemisia vulgaris
SE3310	North-east Mapplewell	04/05/2006	Lords-And-Ladies	Arum maculatum
SE3310	North-east Mapplewell	04/05/2006	Common Orache	Atriplex patula
SE3310	North-east Mapplewell	04/05/2006	Atriplex prostrata agg.	Atriplex prostrata agg.
SE3310	North-east Mapplewell	04/05/2006	Winter-Cress	Barbarea vulgaris
SE3310	North-east Mapplewell	04/05/2006	Daisy	Bellis perennis
SE3310	North-east Mapplewell	04/05/2006	Silver Birch	Betula pendula
SE3310	North-east Mapplewell	17/06/2006	Soft-Brome	Bromus hordeaceus

Grid Ref	Location Name	Date	Common Name	Scientific Name
SE3310	North-east Mapplewell	17/06/2006	Butterfly-Bush	Buddleja davidii
SE3310	North-east Mapplewell	17/06/2006	Hedge Bindweed	Calystegia sepium
SE3310	North-east Mapplewell	17/06/2006	Large Bindweed	Calystegia silvatica
SE3310	North-east Mapplewell	18/07/2006	Shepherd's-Purse	Capsella bursa-pastoris
SE3310	North-east Mapplewell	17/06/2006	Wavy Bitter-Cress	Cardamine flexuosa
SE3310	North-east Mapplewell	04/05/2006	Hairy Bitter-Cress	Cardamine hirsuta
SE3310	North-east Mapplewell	04/05/2006	Cuckooflower	Cardamine pratensis
SE3310	North-east Mapplewell	18/07/2006	Green-Ribbed Sedge	Carex binervis
SE3310	North-east Mapplewell	18/07/2006	Glaucous Sedge	Carex flacca
SE3310	North-east Mapplewell	18/07/2006	Common Sedge	Carex nigra
SE3310	North-east Mapplewell	17/06/2006	Common Knapweed	Centaurea nigra
SE3310	North-east Mapplewell	17/06/2006	Red Valerian	Centranthus ruber
SE3310	North-east Mapplewell	17/06/2006	Common Mouse-Ear	Cerastium fontanum
SE3310	North-east Mapplewell	17/06/2006	Rough Chervil	Chaerophyllum temulum
SE3310	North-east Mapplewell	17/06/2006	Rosebay Willowherb	Chamerion angustifolium
SE3310	North-east Mapplewell	17/06/2006	Fat Hen	Chenopodium album agg.
SE3310	North-east Mapplewell	17/06/2006	Creeping Thistle	Cirsium arvense
SE3310	North-east Mapplewell	17/06/2006	Marsh Thistle	Cirsium palustre
SE3310	North-east Mapplewell	17/06/2006	Spear Thistle	Cirsium vulgare
SE3310	North-east Mapplewell	17/06/2006	Pignut	Conopodium majus
SE3310	North-east Mapplewell	17/06/2006	Field Bindweed	Convolvulus arvensis
SE3310	North-east Mapplewell	04/05/2006	Hazel	Corylus avellana
SE3310	North-east Mapplewell	04/05/2006	Hawthorn	Crataegus monogyna
SE3310	North-east Mapplewell	17/06/2006	Smooth Hawk's-Beard	Crepis capillaris
SE3310	North-east Mapplewell	17/06/2006	Crosswort	Cruciata laevipes
SE3310	North-east Mapplewell	18/07/2006	Ivy-Leaved Toadflax	Cymbalaria muralis
SE3310	North-east Mapplewell	17/06/2006	Crested Dog's-Tail	Cynosurus cristatus
SE3310	North-east Mapplewell	17/06/2006	Cock's-Foot	Dactylis glomerata
SE3310	North-east Mapplewell	04/05/2006	Common Spotted-Orchid	Dactylorhiza fuchsii
SE3310	North-east Mapplewell	04/05/2006	Southern Marsh-Orchid	Dactylorhiza praetermissa
SE3310	North-east Mapplewell	17/06/2006	Tufted Hair-Grass	Deschampsia caespitosa
SE3310	North-east Mapplewell	17/06/2006	Wavy Hair-Grass	Deschampsia flexuosa
SE3310	North-east Mapplewell	18/07/2006	Foxglove	Digitalis purpurea
SE3310	North-east Mapplewell	18/07/2006	Wild Teasel	Dipsacus fullonum
SE3310	North-east Mapplewell	17/06/2006	Bearded Couch	Elymus caninus
SE3310	North-east Mapplewell	17/06/2006	Common Couch	Elytrigia repens
SE3310	North-east Mapplewell	17/06/2006	American Willowherb	Epilobium ciliatum

Grid Ref	Location Name	Date	Common Name	Scientific Name
SE3310	North-east Mapplewell	17/06/2006	Great Willowherb	Epilobium hirsutum
SE3310	North-east Mapplewell	17/06/2006	Broad-Leaved Willowherb	Epilobium montanum
SE3310	North-east Mapplewell	17/06/2006	Marsh Willowherb	Epilobium palustre
SE3310	North-east Mapplewell	17/06/2006	Hoary Willowherb	Epilobium parviflorum
SE3310	North-east Mapplewell	04/05/2006	Common Whitlowgrass	Erophila verna
SE3310	North-east Mapplewell	18/07/2006	Sun Spurge	Euphorbia helioscopia
SE3310	North-east Mapplewell	18/07/2006	Petty Spurge	Euphorbia peplus
SE3310	North-east Mapplewell	17/06/2006	Red Fescue	Festuca rubra agg.
SE3310	North-east Mapplewell	18/07/2006	Wild Strawberry	Fragaria vesca
SE3310	North-east Mapplewell	04/05/2006	Ash	Fraxinus excelsior
SE3310	North-east Mapplewell	17/06/2006	Common Fumitory	Fumaria officinalis
SE3310	North-east Mapplewell	04/05/2006	Cleavers	Galium aparine
SE3310	North-east Mapplewell	17/06/2006	Cut-Leaved Crane's-Bill	Geranium dissectum
SE3310	North-east Mapplewell	17/06/2006	Dove's-Foot Crane's-Bill	Geranium molle
SE3310	North-east Mapplewell	17/06/2006	Small-Flowered Crane's-Bill	Geranium pusillum
SE3310	North-east Mapplewell	17/06/2006	Herb-Robert	Geranium robertianum
SE3310	North-east Mapplewell	04/05/2006	Ground-Ivy	Glechoma hederacea
SE3310	North-east Mapplewell	04/05/2006	Ivy	Hedera helix
SE3310	North-east Mapplewell	04/05/2006	Hogweed	Heracleum sphondylium
SE3310	North-east Mapplewell	17/06/2006	Hawkweed	Hieracium aggregatum
SE3310	North-east Mapplewell	17/06/2006	Yorkshire-Fog	Holcus lanatus
SE3310	North-east Mapplewell	17/06/2006	Creeping Soft-Grass	Holcus mollis
SE3310	North-east Mapplewell	18/07/2006	Wall Barley	Hordeum murinum
SE3310	North-east Mapplewell	04/05/2006	Hyacinthoides	Hyacinthoides
SE3310	North-east Mapplewell	04/05/2006	Spanish Bluebell	Hyacinthoides hispanica
SE3310	North-east Mapplewell	04/05/2006	Bluebell	Hyacinthoides non-scripta
SE3310	North-east Mapplewell	18/07/2006	Perforate St. John's-Wort	Hypericum perforatum
SE3310	North-east Mapplewell	18/07/2006	Square-Stalked St. John's-Wort	Hypericum tetrapterum
SE3310	North-east Mapplewell	17/06/2006	Cat's-Ear	Hypochaeris radicata
SE3310	North-east Mapplewell	04/05/2006	Holly	Ilex aquifolium
SE3310	North-east Mapplewell	17/06/2006	Compact Rush	Juncus conglomeratus
SE3310	North-east Mapplewell	17/06/2006	Soft Rush	Juncus effusus
SE3310	North-east Mapplewell	17/06/2006	Hard Rush	Juncus inflexus
SE3310	North-east Mapplewell	04/05/2006	White Dead-Nettle	Lamium album
SE3310	North-east Mapplewell	04/05/2006	Red Dead-Nettle	Lamium purpureum

Grid Ref	Location Name	Date	Common Name	Scientific Name
SE3310	North-east Mapplewell	17/06/2006	Nipplewort	Lapsana communis
SE3310	North-east Mapplewell	17/06/2006	Meadow Vetchling	Lathyrus pratensis
SE3310	North-east Mapplewell	18/07/2006	Autumnal Hawkbit	Leontodon autumnalis
SE3310	North-east Mapplewell	17/06/2006	Oxeye Daisy	Leucanthemum vulgare
SE3310	North-east Mapplewell	17/06/2006	Garden Privet	Ligustrum ovalifolium
SE3310	North-east Mapplewell	18/07/2006	Purple Toadflax	Linaria purpurea
SE3310	North-east Mapplewell	17/06/2006	Common Toadflax	Linaria vulgaris
SE3310	North-east Mapplewell	17/06/2006	Perennial Rye-Grass	Lolium perenne
SE3310	North-east Mapplewell	17/06/2006	Honeysuckle	Lonicera periclymenum
SE3310	North-east Mapplewell	17/06/2006	Common Bird's-Foot-Trefoil	Lotus corniculatus
SE3310	North-east Mapplewell	17/06/2006	Honesty	Lunaria annua
SE3310	North-east Mapplewell	17/06/2006	Apple	Malus domestica
SE3310	North-east Mapplewell	18/07/2006	Common Mallow	Malva sylvestris
SE3310	North-east Mapplewell	04/05/2006	Pineapple Weed	Matricaria discoidea
SE3310	North-east Mapplewell	04/05/2006	Welsh Poppy	Meconopsis cambrica
SE3310	North-east Mapplewell	18/07/2006	Black Medick	Medicago lupulina
SE3310	North-east Mapplewell	04/05/2006	Dog's Mercury	Mercurialis perennis
SE3310	North-east Mapplewell	17/06/2006	Wall Lettuce	Mycelis muralis
SE3310	North-east Mapplewell	17/06/2006	Field Forget-Me-Not	Myosotis arvensis
SE3310	North-east Mapplewell	17/06/2006	Red Bartsia	Odontites vernus
SE3310	North-east Mapplewell	17/06/2006	Common Poppy	Papaver rhoeas
SE3310	North-east Mapplewell	17/06/2006	Opium Poppy	Papaver somniferum
SE3310	North-east Mapplewell	17/06/2006	Green Alkanet	Pentaglottis sempervirens
SE3310	North-east Mapplewell	17/06/2006	Redshank	Persicaria maculosa
SE3310	North-east Mapplewell	17/06/2006	Himalayan Knotweed	Persicaria wallichii
SE3310	North-east Mapplewell	17/06/2006	Smaller Cat's-Tail	Phleum bertolonii
SE3310	North-east Mapplewell	18/07/2006	Timothy	Phleum pratense
SE3310	North-east Mapplewell	18/07/2006	Fox-And-Cubs	Pilosella aurantiaca
SE3310	North-east Mapplewell	17/06/2006	Mouse-Ear-Hawkweed	Pilosella officinarum
SE3310	North-east Mapplewell	04/05/2006	Ribwort Plantain	Plantago lanceolata
SE3310	North-east Mapplewell	04/05/2006	Greater Plantain	Plantago major
SE3310	North-east Mapplewell	04/05/2006	Annual Meadow-Grass	Poa annua
SE3310	North-east Mapplewell	17/06/2006	Flattened Meadow-Grass	Poa compressa
SE3310	North-east Mapplewell	17/06/2006	Smooth Meadow-Grass	Poa pratensis
SE3310	North-east Mapplewell	17/06/2006	Rough Meadow-Grass	Poa trivialis
SE3310	North-east Mapplewell	18/07/2006	Equal-Leaved Knotgrass	Polygonum arenastrum
SE3310	North-east Mapplewell	17/06/2006	Knotgrass agg.	Polygonum aviculare agg.
SE3310	North-east Mapplewell	04/05/2006	Silverweed	Potentilla anserina

Grid Ref	Location Name	Date	Common Name	Scientific Name
SE3310	North-east Mapplewell	04/05/2006	Tormentil	Potentilla erecta
SE3310	North-east Mapplewell	18/07/2006	Creeping Cinquefoil	Potentilla reptans
SE3310	North-east Mapplewell	04/05/2006	Wild Cherry	Prunus avium
SE3310	North-east Mapplewell	04/05/2006	Blackthorn	Prunus spinosa
SE3310	North-east Mapplewell	18/07/2006	Common Fleabane	Pulicaria dysenterica
SE3310	North-east Mapplewell	17/06/2006	Sessile Oak	Quercus petraea
SE3310	North-east Mapplewell	17/06/2006	Pedunculate Oak	Quercus robur
SE3310	North-east Mapplewell	17/06/2006	Meadow Buttercup	Ranunculus acris
SE3310	North-east Mapplewell	04/05/2006	Bulbous Buttercup	Ranunculus bulbosus
SE3310	North-east Mapplewell	04/05/2006	Lesser Celandine	Ranunculus ficaria
SE3310	North-east Mapplewell	17/06/2006	Creeping Buttercup	Ranunculus repens
SE3310	North-east Mapplewell	17/06/2006	Dog Rose	Rosa canina agg.
SE3310	North-east Mapplewell	17/06/2006	Bramble	Rubus fruticosus agg.
SE3310	North-east Mapplewell	17/06/2006	Raspberry	Rubus idaeus
SE3310	North-east Mapplewell	17/06/2006	Common Sorrel	Rumex acetosa
SE3310	North-east Mapplewell	17/06/2006	Curled Dock	Rumex crispus
SE3310	North-east Mapplewell	18/07/2006	Broad-Leaved Dock	Rumex obtusifolius
SE3310	North-east Mapplewell	04/05/2006	Sea Pearlwort	Sagina maritima
SE3310	North-east Mapplewell	17/06/2006	Procumbent Pearlwort	Sagina procumbens
SE3310	North-east Mapplewell	04/05/2006	Goat Willow	Salix caprea
SE3310	North-east Mapplewell	17/06/2006	Crack Willow	Salix fragilis
SE3310	North-east Mapplewell	17/06/2006	Osier	Salix viminalis
SE3310	North-east Mapplewell	04/05/2006	Elder	Sambucus nigra
SE3310	North-east Mapplewell	17/06/2006	Biting Stonecrop	Sedum acre
SE3310	North-east Mapplewell	18/07/2006	White Stonecrop	Sedum album
SE3310	North-east Mapplewell	17/06/2006	Common Ragwort	Senecio jacobaea
SE3310	North-east Mapplewell	17/06/2006	Groundsel	Senecio vulgaris
SE3310	North-east Mapplewell	04/05/2006	Red Campion	Silene dioica
SE3310	North-east Mapplewell	17/06/2006	White Campion	Silene latifolia
SE3310	North-east Mapplewell	17/06/2006	Charlock	Sinapis arvensis
SE3310	North-east Mapplewell	17/06/2006	Hedge Mustard	Sisymbrium officinale
SE3310	North-east Mapplewell	18/07/2006	Bittersweet	Solanum dulcamara
SE3310	North-east Mapplewell	18/07/2006	Perennial Sow-Thistle	Sonchus arvensis
SE3310	North-east Mapplewell	17/06/2006	Prickly Sow-Thistle	Sonchus asper
SE3310	North-east Mapplewell	17/06/2006	Smooth Sow-Thistle	Sonchus oleraceus
SE3310	North-east Mapplewell	04/05/2006	Rowan	Sorbus aucuparia
SE3310	North-east Mapplewell	17/06/2006	Hedge Woundwort	Stachys sylvatica
SE3310	North-east Mapplewell	17/06/2006	Greater Stitchwort	Stellaria holostea
SE3310	North-east Mapplewell	04/05/2006	Common Chickweed	Stellaria media
SE3310	North-east Mapplewell	18/07/2006	Snowberry	Symphoricarpos albus
SE3310	North-east Mapplewell	17/06/2006	Russian Comfrey	Symphytum x uplandicum
SE3310	North-east Mapplewell	17/06/2006	Lilac	Syringa vulgaris

Grid Ref	Location Name	Date	Common Name	Scientific Name
SE3310	North-east Mapplewell	18/07/2006	Black Bryony	Tamus communis
SE3310	North-east Mapplewell	18/07/2006	Feverfew	Tanacetum parthenium
SE3310	North-east Mapplewell	18/07/2006	Tansy	Tanacetum vulgare
SE3310	North-east Mapplewell	04/05/2006	Dandelion	Taraxacum officinale agg.
SE3310	North-east Mapplewell	17/06/2006	Wood Sage	Teucrium scorodonia
SE3310	North-east Mapplewell	17/06/2006	Goat's-Beard	Tragopogon pratensis
SE3310	North-east Mapplewell	17/06/2006	Alsike Clover	Trifolium hybridum
SE3310	North-east Mapplewell	17/06/2006	Red Clover	Trifolium pratense
SE3310	North-east Mapplewell	17/06/2006	White Clover	Trifolium repens
SE3310	North-east Mapplewell	17/06/2006	Scentless Mayweed	Tripleurospermum inodorum
SE3310	North-east Mapplewell	18/07/2006	Yellow Oat-Grass	Trisetum flavescens
SE3310	North-east Mapplewell	04/05/2006	Colt's-Foot	Tussilago farfara
SE3310	North-east Mapplewell	18/07/2006	Lesser Bulrush	Typha angustifolia
SE3310	North-east Mapplewell	17/06/2006	Bulrush	Typha latifolia
SE3310	North-east Mapplewell	17/06/2006	Gorse	Ulex europaeus
SE3310	North-east Mapplewell	17/06/2006	Wych Elm	Ulmus glabra
SE3310	North-east Mapplewell	04/05/2006	Common Nettle	Urtica dioica
SE3310	North-east Mapplewell	17/06/2006	Common Valerian	Valeriana officinalis
SE3310	North-east Mapplewell	17/06/2006	Germander Speedwell	Veronica chamaedrys
SE3310	North-east Mapplewell	04/05/2006	Slender Speedwell	Veronica filiformis
SE3310	North-east Mapplewell	17/06/2006	Wood Speedwell	Veronica montana
SE3310	North-east Mapplewell	17/06/2006	Common Field-Speedwell	Veronica persica
SE3310	North-east Mapplewell	18/07/2006	Guelder-Rose	Viburnum opulus
SE3310	North-east Mapplewell	17/06/2006	Tufted Vetch	Vicia cracca
SE3310	North-east Mapplewell	18/07/2006	Hairy Tare	Vicia hirsuta
SE3310	North-east Mapplewell	17/06/2006	Vetch	Vicia sativa subsp. segetalis
SE3310	North-east Mapplewell	17/06/2006	Bush Vetch	Vicia sepium
SE3310	North-east Mapplewell	04/05/2006	Common Dog-Violet	Viola riviniana
SE3310	North-east Mapplewell	17/06/2006	Field Horsetail	Equisetum arvense

Appendix 4. Hedgerow Characteristics

Hedge No.	Species	Height x width (m)	Notes
1	Common hawthorn, holly, elder	4 x 1.5	
2	Common hawthorn	2 x 1	
3	Common hawthorn	3 x 1	
4	Common hawthorn	3 x 1	
5	Common hawthorn, willow	6 x 6	
6	Common hawthorn, elder	2 x 1	
7	Common hawrthorn, dog rose	5 x 2	
8	Common hawthorn	4 x 3	Adjacent to ditch
9	Common hawthorn, wild cherry	5 x 4	Adjacent to ditch
10	Common hawthorn, elder	7 x 5	
11	Common hawthorn	3 x 2	

Appendix 5. Full Bird Survey Species List

2013 Bird Survey – Full Species List

English Vernacular name	Scientific name	BoCC Status	W&CA 1981 Schedule 1	England Biodiversity List Species	Birds Directive Annex 1 Species
Pheasant	*Phasianus colchicus*				
Sparrowhawk	*Accipiter nisus*	●			
Woodpigeon	*Columba palumbus*	●			
Collared Dove	*Streptopelia decaocto*	●			
Swift	*Apus apus*	■			
Magpie	*Pica pica*	●			
Jackdaw	*Corvus monedula*	●			
Rook	*Corvus frugilegus*	●			
Carrion Crow	*Corvus corone*	●			
Goldcrest	*Regulus regulus*	●			
Blue Tit	*Cyanistes caeruleus*	●			
Great Tit	*Parus major*	●			
Willow Tit	*Poecile montana*	◆		EBL	
Swallow	*Hirundo rustica*	■			
House Martin	*Delichon urbicum*	■			
Long-tailed Tit	*Aegithalos caudatus*	●			
Chiffchaff	*Phylloscopus collybita*	●			
Willow Warbler	*Phylloscopus trochilus*	■			
Blackcap	*Sylvia atricapilla*	●			
Garden Warbler	*Sylvia borin*	●			
Whitethroat	*Sylvia communis*	■			
Wren	*Troglodytes troglodytes*	●			
Starling	*Sturnus vulgaris*	◆		EBL	
Blackbird	*Turdus merula*	●			
Song Thrush	*Turdus philomelos*	◆		EBL	
Mistle Thrush	*Turdus viscivorus*	■			
Robin	*Erithacus rubecula*	●			
Dunnock	*Prunella modularis*	■		EBL	
House Sparrow	*Passer domesticus*	◆		EBL	
Pied Wagtail	*Motacilla alba*	●			
Chaffinch	*Fringilla coelebs*	●			
Greenfinch	*Chloris chloris*	●			
Goldfinch	*Carduelis carduelis*	●			
Linnet	*Carduelis cannabina*	◆		EBL	
Bullfinch	*Pyrrhula pyrrhula*	■		EBL	

1. Eaton MA, Brown AF, Noble DG, Musgrove AJ, Hearn R, Aebischer NJ, Gibbons DW, Evans A and Gregory RD (2009) Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. British Birds 102, pp296-341.

2. Wildlife and Countryside Act 1981 (as amended); Schedule 1 Part 1
3. Natural Environment & Rural Communities (NERC) Act 2006 Section 41: Species of Principal Importance in England (EBL)
4. Report on the Species and Habitat Review by the Biodiversity Reporting and Information Group (BRIG) to the UK Standing Committee (June 2007) (UKBAP)
5. EC Directive 2009/147/EC on the conservation of wild birds - Annex 1

Appendix 6. Bird List for Adjacent Property

E-mail from neighbour whose property backs onto site – received on 18.07.13

Hello,

Following our conversation at the village hall this evening here is the list of birds seen in my garden or immediately to the rear, in the field concerned.

As I stated most of these sightings can be verified with photographs taken in my garden. All have been seen or heard in recent years with all but three of them in 2013.

Black birds, Song thrush, Magpie, Jay, Starling, Wood pigeon, Collared dove, Sparrow hawk, House sparrow, Tree sparrow, Dunnock, Robin, Wren, Reed bunting, Yellow hammer, Blue tit, Great tit, Long tailed tit, Coal tit, Willow tit, Green finch, Bull finch, Gold finch, Chaffinch, Siskin, Mealy redpoll, Redwing, Fieldfare, Nuthatch, Wax wings and Pheasant. A Short eared owl was recently seen by a neighbour three doors away and the following I have heard but not actually seen Chiffchaff, Willow warbler and finally Grass hopper warbler. All these birds have actually visited the garden or have sung within just a few yards of the fence, in the field that is earmarked for building. It does not include birds seen passing over the area however low they are. A Kestrel (a bird in serious decline due to possible loss of habitat) hunts the field quite often.

As you can see this list is quite a large one for a garden and surely points to the importance of this are to local wildlife. This field has not been sprayed by any chemicals as far as I know, at least since 1972 when we moved here another very desirable feature for wildlife, particularly insects.

Yours sincerely,