



**ENVIRONMENTAL STATEMENT**  
**VOLUME 2**  
**APPENDIX 9.1 – DESK STUDY AND EXTENDED**  
**PHASE 1 HABITAT SURVEY**





Great Wolf Resorts

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# DESK STUDY AND EXTENDED PHASE 1 HABITAT SURVEY

Bicester Golf Course





**Great Wolf Resorts**

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**DESK STUDY AND EXTENDED PHASE 1  
HABITAT SURVEY**

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**TYPE OF DOCUMENT (VERSION) PUBLIC**

**PROJECT NO. 70042711**

**OUR REF. NO. 70042711-003**

**DATE: NOVEMBER 2019**

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**Great Wolf Resorts**

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# **DESK STUDY AND EXTENDED PHASE 1 HABITAT SURVEY**

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# QUALITY CONTROL

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Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Final- PEA	Update to factual report		
Date	February 2018	November 2019		
Prepared by	B Williams	R Pope		
Signature				
Checked by	L Roberts	L Roberts		
Signature				
Authorised by	A Hutchings	L Roberts		
Signature				
Project number	70042711			
Report number	70042711-003			
File reference	PEA	V2.0		



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# 1. EXECUTIVE SUMMARY

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- 1.1.1. WSP UK Ltd was instructed by Great Wolf Resorts (GWR) to undertake a desk study and extended Phase 1 habitat survey of land to the north-west of Bicester Golf Course, referred to as the 'Development Site' or 'the Site'. The scheme is referred to hereafter as the 'Proposed Development'.
- 1.1.2. The Site comprises 9 of the existing 18-hole golf course which forms part of the wider site also occupied by the Bicester Hotel Golf and Spa. This report refers to the wider site ('the Survey Area) for context.
- 1.1.3. The Proposed Development is understood to include:
- the creation of a 500 bed all-inclusive resort hotel, with an indoor pool and leisure complex, targeted at families; and
  - access to be taken from A4095, which runs along the northern boundary of the Survey Area.
- 1.1.4. Habitat within the existing Bicester Golf Course and along its associated boundaries was the focus of a Preliminary Ecological Appraisal (PEA), hereafter referred to as the 'Survey Area'.
- 1.1.5. A desk study completed for the Proposed Development revealed neither European designated sites to be located within 10km nor statutory and non-statutory designated sites within 2km of the Survey Area. Species records returned by Thames Valley Environmental Record Centre (TVERC) revealed a number of protected and notable species records including bats, birds, reptiles and amphibians.
- 1.1.6. The Survey Area contains a variety of habitat types of ecological value including ponds, plantation and semi-natural woodland and species rich hedgerow, of which some are listed as Habitats of Principal Importance (HPI) under the NERC Act 2006. Other habitat present included a variety of grasslands, dense scrub and tall ruderal.
- 1.1.7. Ecological survey data from a planning application (The Paddocks, Chesterton, Planning Ref. 14/01737/OUT) for a development currently being constructed to the east of the Survey Area, revealed a large population of great crested newts within the golf course ponds. Two ponds within the east of Survey Area are therefore known to support great crested newt. As such it is considered likely that great crested newts will be breeding within all other ponds identified during the Phase 1 habitat survey.
- 1.1.8. Habitats within the Survey Area are considered to be suitable to support the following notable and protected fauna: bats (foraging, commuting and roosting), ██████████ hazel dormouse *Muscardinus avellanarius*, birds, common reptiles, amphibians (including great crested newt *Triturus cristatus*) and invertebrates.

## 2. INTRODUCTION

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### 2.1. BACKGROUND

#### PROJECT BACKGROUND

- 2.1.1. It is understood that Great Wolf Resorts (GWR) are planning the redevelopment of land to the north-west of the Bicester Golf Hotel and Spa off the A4095 ('the Site') and as such has appointed WSP to undertake a Preliminary Ecological Appraisal (PEA) to understand the ecological issues pertaining to the Site and to accommodate ecological mitigation and enhancement measures into the early design stages, where feasible.
- 2.1.2. The Site comprises 9 of the existing 18-hole golf course which forms part of the wider site also occupied by the Bicester Hotel Golf and Spa. This report refers to the wider site for context and study area for the purposes of the pre-application considerations.
- 2.1.3. The redevelopment of land at Bicester Health Club is understood to include:
- the creation of a 500 bed all-inclusive resort hotel, with an indoor pool and leisure complex, targeted at families and golf enthusiasts; and
  - the creation of an access road to be taken from A4095, which runs along the northern boundary of the Site.
- 2.1.4. This scheme will hereafter be referred to as the 'Proposed Development'.

#### ECOLOGICAL BACKGROUND

- 2.1.5. The Site is located within the boundary of the Bicester Golf Course, Bicester, Oxfordshire, OX26 1TH, within the authority of Cherwell District Council (CDC). A 'Survey Area' was defined comprising the golf course and associated buildings, see Figure 1. The Survey Area is approximately 52ha in area and located at GR SP551214. The golf course was designed and built in 1973, having previously been arable land (Bicester Hotel 2017 & Google Earth Pro 2018). Habitats within the Survey Area are therefore considered to be around 40 years old, with the likely exception of the boundary features such as hedgerows. Habitats within the Survey Area are predominately woodland, grassland, hedgerow and scrub with intermittent ponds.
- 2.1.6. Land use surrounding the Survey Area is mixed with the village of Chesterton to the east, Bignell Park Farm to the north and predominately arable land to the west and south. The M40 runs along the west boundary of the Survey Area. Land to the east of the Survey Area is currently under development.

### 2.2. SCOPE OF REPORT

- 2.2.1. This report describes the methods and results of the desk study and extended Phase 1 habitat surveys. It thereby summarises baseline ecological information about the Survey Area and a surrounding study area with particular reference to whether legally protected and/or notable sites, species or habitats are present or likely to be present.

## 3. METHODS

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### 3.1. OVERVIEW

3.1.1. This appraisal has been prepared with reference to current good practice guidance published by the Chartered Institute for Ecology and Environmental Management (CIEEM, 2017), and Joint Nature Conservation Committee (JNCC, 2010); and guidance contained in the British Standard - Code of Practice for Biodiversity and Development BS42020:2013 (British Standards Institute (2013)).

### 3.2. DESK STUDY

3.2.1. The desk study was undertaken in February 2018 to review existing ecological baseline information available in the public domain and to obtain information held by relevant third parties. For the purpose of the desk study exercise, records were collated within various radii around the Survey Area. This approach is consistent with current good practice guidance published by the CIEEM, 2017 and 2015. To provide the baseline data for the ecological desk study, the following information was requested from Thames Valley Environmental Record Centre:

- Records of legally protected and notable species within 2 km of the Survey Area.
- Records of non-statutory sites designated for nature conservation value within 2km of the Survey Area.

3.2.2. Freely downloadable datasets (available from Natural England) were consulted for information regarding the presence of statutory designated habitats<sup>1</sup> within 2km of the Survey Area. This search was extended to 10km for Natura 2000 sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)) of European importance and internationally designated Ramsar sites.

3.2.3. Freely downloadable datasets (available from Natural England) were consulted for information regarding Habitats of Principal Importance (HPI)<sup>2</sup> within 2km and woodland listed on the Ancient Woodland Inventory<sup>3</sup>.

3.2.4. In addition, open source 1:25,000 Ordnance Survey mapping was used to identify any mapped water bodies and watercourses within 500m of the Survey Area.

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<sup>1</sup> Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR).

<sup>2</sup> Mapped locations of HPI are usually not available, but HPI aligns in the most part with UKBAP habitats. Inventories of UKBAP habitat have been prepared by a variety of organisations and at a national (Natural England priority habitat inventory) and local scale (e.g. by local records centres). In some instances these are primarily based on aerial photograph analysis rather than field survey.

<sup>3</sup> The ancient woodland inventory in England lists areas over two hectares in size which have been continuously wooded since at least 1600. The ancient woodland inventory in Scotland lists areas which are currently wooded and have been continuously wooded since at least 1750.

- 3.2.5. The CDC planning portal was searched for nearby planning applications. The ecological surveys and findings undertaken for one planning application to the east of the Survey Area (14/01737/OUT) have subsequently been discussed within this report.
- 3.2.6. The findings of the desk study have been incorporated within Section 3 and Appendix B of this report, and are shown on Figures 1-5.
- 3.2.7. The ecological desk study was carried out by an experienced ecologist, who has completed numerous ecological desk studies within the last year.

### **3.3. HABITAT SURVEY**

- 3.3.1. A Phase 1 habitat survey of the Survey Area was carried out on the 31 January 2018 in mild weather conditions (Wind 1, Rain 2, Temperature 8, and Cloud 6/8). The survey covered the entire Survey Area including boundary features. The Phase 1 habitat survey was carried out by an associate member of CIEEM who is experienced in undertaking Phase 1 habitat surveys and ecological appraisals.
- 3.3.2. As the original Phase 1 habitat survey was undertaken outside of the optimal survey season for botanical identification, an additional botanical walkover was undertaken in the summer of 2019 during the flowering period. The update botanical site visit was made on the 24<sup>th</sup> August 2018 by a competent botanist who is a Full member of the Chartered institute of Ecology and Environmental Management. Weather in warm and sunny conditions in August 2018. Those habitats within the Site which could have been misclassified during the January survey were revisited. These comprise areas of less managed grassland that were classified as semi-improved grassland: PBW/SI(P)1, PBW/SI(P)2 and SNG 4 in WSP 2018. A species list was collated within each of these parcels with species cover estimated using the DAFOR scale<sup>4</sup>.
- 3.3.3. It was not deemed necessary to revisit amenity grasslands and plantation woodlands for which sufficient data is presented in WSP (2018) to enable habitat evaluation.
- 3.3.4. Habitats were described and mapped following the standard Phase 1 habitat survey methodology (JNCC, 2010). Phase 1 habitat survey is a standard technique for classifying and mapping British habitats. The dominant plant species are recorded and habitats are classified according to their vegetation types. Where appropriate, consideration was given to whether habitats qualify, or could qualify, as a Habitat of Principal Importance following habitat descriptions published by the Joint Nature Conservation Committee (JNCC, 2008).

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<sup>4</sup> Dominant (D) - >75% cover, Abundant (A) – 51-75% cover, Frequent (F) – 26-50% cover, Occasional (O) – 11-25% cover, Rare

(R) – 1-10% cover., The term 'Locally' (L) is also used where the frequency and distribution of a species are patchy and 'Edge' (E) is also used where a species only occurs on the edge of a habitat type.



- 3.3.5. A list of plant species was compiled (Appendix C); with relative plant species abundance estimated using the DAFOR scale<sup>5</sup>. The scientific names for plant species follow those in the New Flora of the British Isles (Stace, 2010) and are also listed in Appendix C.
- 3.3.6. Habitats were marked on a paper base map and were subsequently digitised using a Geographical Information System (GIS). The smallest area to be mapped was approximately 0.02Ha, which was selected as a suitable scale to sample the range of different vegetation types present.
- 3.3.7. Target notes were made to provide information on specific features of ecological interest or habitat features too small to be mapped. These are included in Appendix D.
- 3.3.8. Any invasive plant species listed on Schedule 9 of the WCA 1981 (as amended) which were evident during the Phase 1 habitat survey were also target noted. Detailed mapping of such species; or a full survey of the Survey Area for all invasive plant species is beyond the scope of this commission.
- 3.3.9. Data collected as part of this Phase 1 Habitat survey is suitable for use in retrospective biodiversity unit calculations, if required.

### **3.4. PROTECTED SPECIES ASSESSMENT**

- 3.4.1. The potential for the Survey Area to support legally protected and notable species was assessed using the desk study results and combined with field observations during the habitat survey. The assessment of habitat suitability for protected and notable species was based on professional experience and judgement. This was supplemented by standard sources of guidance on habitat suitability assessment for key faunal groups including: birds (Gilbert et al, 1998 and Bibby et al, 2000), great crested newt (Gent and Gibson, 2003 and English Nature, 2001); reptiles (Froglife, 1999 and Gent and Gibson, 2003); bats (Collins, 2016 and Mitchell-Jones, 2004); badger (Harris et al, 1991 and Roper, 2010); hazel dormouse (English Nature, 2006); water vole (Dean et al, 2016) and invertebrates (Drake et al, 2007 and Kirby, P, 2001).

### **3.5. NOTES AND LIMITATIONS**

- 3.5.1. Every effort has been made to provide a comprehensive description of the Survey Area; however, the following specific limitations apply to this assessment:
- Ecological survey data is typically valid for two years unless otherwise specified, for example if conditions are likely to change more quickly due to ecological processes or anticipated changes in management’.

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<sup>5</sup> The DAFOR scale has been used to estimate the frequency and cover of the different plant species as follows: Dominant (D) - >75% cover, Abundant (A) – 51-75% cover, Frequent (F) – 26-50% cover, Occasional (O) – 11-25% cover, Rare (R) – 1-10% cover., The term ‘Locally’ (L) is also used where the frequency and distribution of a species are patchy and ‘Edge’ (E) is also used where a species only occurs on the edge of a habitat type.

- Records held by local biological record centres and local recording groups are generally collected on a voluntary basis; therefore, the absence of records does not demonstrate the absence of species, it may simply indicate a gap in recording coverage.
- Thames Valley Environmental Record Centre (TVERC) does not hold all existing biodiversity records for Oxfordshire. Additional records of protected and notable species are held by other local recording groups.
- The absence of records returned by TVERC should not be taken as indication of absence of a protected species.
- One location within the Survey Area could not be accessed, comprising a buildings and associated courtyard areas as shown on Figure 4. Aerial imagery was used to identify which habitats were present in these areas. It is, therefore, considered that the Phase 1 habitat types were accurately identified.
- The Phase 1 Habitat survey and botanical walkover were carried out over the period of a single day each, as such only a selection of all species that occur within the Survey Area will have been recorded. However, through use of desk study information to supplement site survey data, it is considered that an accurate assessment of the potential for the Site to support protected species or those of conservation concern was possible.
- The extended Phase 1 habitat map (Figure 4) has been reproduced from field notes and plans. Whilst this provides a sufficient level of detail to fulfil the requirements of a PEA, the maps are not intended to provide exact locations of key habitats.
- A number of ornamental plant species were present within the Survey Area. These have been identified to species level where possible; however, owing to the large number of horticultural varieties some plants could not be identified. Ornamental plants may be of value to wildlife; however, none are characterised as rare or notable from a native biodiversity conservation perspective. Thus, this limitation does not affect the overall conclusions of this appraisal.

## 4. RESULTS

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### 4.1. DESIGNATED SITES

#### EUROPEAN DESIGNATED SITES

- 4.1.1. The desk study identified no statutory European designated nature conservation sites within 10km of the centre of the Survey Area.

#### STATUTORY SITES

- 4.1.2. The desk study identified no statutory nature conservation sites within 2km of the Survey Area. The closest statutory designated site is Weston Fen Site of Special Scientific Interest (SSSI), located 2.6km south west of the Survey Area. One Local Nature Reserve (LNR), Bure Park, was also identified 2.8km north east.

#### NON-STATUTORY SITES

- 4.1.3. The records received from TVERC identified no non-statutory nature conservation sites within 2 km of the Survey Area.

#### OTHER HABITATS OF CONSERVATION IMPORTANCE

- 4.1.4. Deciduous woodland, a Habitat of Principal Importance (HPI) was identified within the Survey Area. In total, 57 parcels were identified, 51 parcels of which are deciduous woodland, 5 which have no main habitat and one parcel of traditional orchard, within 2km of the Survey Area. Other habitats that qualify as Habitats of Principal Importance not mapped by the Natural England priority habitat inventory are likely to be present within the Survey Area, including hedgerows and running water.
- 4.1.5. Two parcels of ancient woodland were identified 1.5km south of the Survey Area. The HPI and ancient woodland parcels are shown in Figure 2.

#### WATERBODIES

- 4.1.6. The desk study revealed a number of static and running waterbodies within 500m of the Survey Area (see Figure 3). Eleven waterbodies were identified within the Survey Area, along with one small stream, Gagle Brook. The Gagle Brook is part of the Langford Brook catchment (EA, 2017).
- 4.1.7. The Phase 1 Habitat survey identified a further 6 waterbodies within the Survey Area.

### 4.2. HABITAT SURVEY

#### OVERVIEW

- 4.2.1. The following account summarises the findings of the Phase 1 Habitat survey. In total, 23 habitat types were identified in the Survey Area. They are mapped on Figure 4 and are listed in Table 1 along with areas in hectares (or length for linear features). A description of the dominant and notable species, the composition and management of each habitat is provided below and an indicative species list is provided in Appendix C. Target notes are provided in Appendix D and photographs in Appendix E. Alpha-numeric codes used in this section cross-refer to the JNCC Phase 1 habitat survey classification (JNCC, 2010). The order of the habitat descriptions below

reflects their ordering in the Phase 1 habitat survey manual and does not reflect habitat importance.

#### **A1.1.1 SEMI-NATURAL BROADLEAVED WOODLAND**

- 4.2.2. One parcel of broadleaved semi-natural woodland (BW1) was identified to the north east of the Survey Area. The parcel is on the boundary of the Survey Area, and contains mature white poplar *Populus alba* with an elm *Ulmus* sp. dominated understorey and ivy *Hedera helix* dominated ground flora. The woodland structure was diverse with varying tree ages and height.

#### **A1.1.2 PLANTATION BROADLEAVED WOODLAND**

- 4.2.3. Four plantation broadleaved woodland parcels are located within the Survey Area (see PBW1-4 in Figure 4). Larger parcels of plantation woodland were identified within the north west of the Survey Area. PBW1 is dominated by semi-mature white poplar *Populus alba* all of similar age and structure. PBW 2 and 3 form boundaries to the Survey Area to the north and south and contain a variety of species including field maple *Acer campestre* and hawthorn *Crataegus monogyna*.

#### **A1.1.2 PLANTATION BROADLEAVED WOODLAND/ B6 POOR SEMI-IMPROVED GRASSLAND MOSAIC**

- 4.2.4. The remaining parcels of plantation broadleaved woodland are mosaic habitats with poor semi-improved grassland (PBW/SI (P) 1-3). These parcels are comprised of younger trees predominately silver birch *Betula pendula*, white poplar and ash *Fraxinus excelsior*. They have coarse grassland ground cover, typically dominated by cock's foot *Dactylis glomerata*.

#### **A1.1.2 PLANTATION BROADLEAVED WOODLAND/ B2.2 SEMI-IMPROVED NEUTRAL GRASSLAND MOSAIC**

- 4.2.5. One parcel of plantation broadleaved woodland was identified as being in mosaic with semi-improved neutral grassland. This is shown at Figure 4 as PBW/SNG. The habitat includes younger trees predominately silver birch, white poplar and ash *Fraxinus excelsior*. It has coarse sward, with abundant red fescue *Festuca rubra* and Yorkshire fog *Holcus lanatus*. Herbaceous forbs were relatively infrequent but included pyramidal orchid *Anacamptis pyramidalis* and perforate St. John's wort *Hypericum perforatum*.

#### **A1.2.2 PLANTATION MIXED WOODLAND**

- 4.2.6. There are two parcels of plantation mixed woodland within the Survey Area (PMW1-2 on Figure 4). One parcel of mixed plantation (PMW1) was identified between the amenity grasslands of the golf course. PMW1 has some taller sward grassland and tall ruderal edges, and has a uniform age and height structure, but is noticeably denser than PMW1. PMW2 is located in the west of the Survey Area and is uniform in age and structure. It forms a boundary with the M40 motorway but also encroaches into the golf course. The dominant species within the woodland are Cypress species *Cypressus* sp., ash and field maple *Acer campestre*.

#### **A2.1 DENSE SCRUB**

- 4.2.7. One parcel of dense scrub was identified between Building 5 (B5) and PMW1, joining the adjacent hedgerow RHT2. This parcel of scrub was approximately 1.5m in height and was dominated by bramble *Rubus fruticosus* agg. A second parcel of dense scrub was identified in the

east of the Survey Area (DS2). This parcel was dominated by bramble with a coarse grass edge. Japanese knotweed *Fallopia japonica* was also noted to be present within DS2.

## **A2.2 SCATTERED SCRUB**

- 4.2.8. Scattered scrub was identified across the Survey Area in a number of different habitat types including; poor semi-improved grassland, semi-improved neutral grassland, amenity grassland, plantation woodland and on the banks of standing water. Scattered scrub was dominated by bramble, but also included species such as rose *Rosa* sp. and gorse *Ulex europaeus*.

## **A3.1 - A3.3 BROADLEAVED/CONIFEROUS/MIXED PARKLAND & SCATTERED TREES**

- 4.2.9. Scattered broadleaved, coniferous and mixed trees were located throughout the golf course as part of the landscape design. These trees were planted to give the golf course structure and subsequently formed parcels of varying sizes and structure. A number of tree species were recorded within these parcels as listed in Appendix A.

## **B2.2 SEMI-IMPROVED NEUTRAL GRASSLAND**

- 4.2.10. Four parcels of semi-improved neutral grassland are located in the south and west of the Survey Area (SNG 1-4 on Figure 4). The sward within these parcels appeared to have little management and was approximately 10-20cm in height at time of survey. The grasslands exhibited a moderate diversity of grass and forb species including selfheal *Prunella vulgaris*, carrot *Daucus carota* and creeping cinquefoil *Potentilla reptans*. SNG1-3 were located to the south of the Survey Area had some encroaching scrub, predominately bramble and rose species. SNG4 is located on the boundary of the Survey Area and the M40 verge to the west of standing water. Within SNG4 there were a number of scattered trees and scrub parcels.

## **B6 POOR SEMI-IMPROVED GRASSLAND**

- 4.2.11. Five small parcels of poor semi-improved grassland were identified within the Survey Area (SI (P) 1-5 on Figure 4). These grassland parcels were located adjacent to the amenity grassland of the golf course and were identified by their increased sward height and abundance of coarse grass species including Yorkshire fog and cock's foot *Dactylis glomerata*. Scattered scrub, predominately bramble, was identified across the grasslands on occasion.

## **G1 STANDING WATER**

- 4.2.13. Standing water is located throughout the Survey Area. 17 waterbodies of a variety of shapes and sizes were identified during the Phase 1 habitat survey.
- 4.2.14. The first body of standing water recorded (SW1), is rectangular in shape and is deep. It has been recently excavated, identified by the spoil heap built to its east. The waterbody appears to be a drainage feature.



- 4.2.15. One waterbody (SW10) was identified within a group of trees in the south of the Survey Area. This waterbody is shallow with some marginal vegetation (rush species *Juncus* sp.) and may be ephemeral in nature.
- 4.2.16. The remaining ponds appear to have been engineered as part of the golf course landscaping design (SW3-17). These ponds are deep, with good water quality and have with some marginal and emergent vegetation (including bulrush *Typhus latifolia* and rush species *Juncus* sp.). The marginal vegetation had been cut prior to the survey, indicating the regular management. SW9 is densely choked by bulrush but does contain water. No fish were observed in the ponds at the time of survey.
- 4.2.17. Many of the ponds have shallow grassland banks with occasional trees (alder *Alnus* sp., willow *Salix* sp. and silver birch *Betulus pendula*). The grasslands immediately surrounding the waterbodies and their banks are managed.

## **G2 RUNNING WATER**

- 4.2.18. Running water was identified within the Survey Area. Two small streams were identified, one within the east of the Survey Area (RW1) and one within the west (RW2). RW1 is a narrow and shallow stream running from PBW1 south east towards the main club house (B1), where it flows underneath and to the south. The amenity grassland banks of RW1 are very steep.
- 4.2.19. RW2 is also a shallow and narrow stream running along the golf course boundary amongst a hedgerow (RHT3) and across the amenity grassland in the east of the Survey Area.

## **J1.2 AMENITY GRASSLAND**

- 4.2.20. Amenity grassland is the dominant habitat type identified within the Survey Area. The grassland has been landscaped for the purpose of the gold course and has a very short sward height. Management does however vary between the sections of each golf hole, to form the different playing areas.
- 4.2.21. The amenity grassland is dominated by perennial rye *Lolium perenne*, with locally abundant red fescue *Festuca rubra* and occasional common daisy *Bellis perennis*.
- 4.2.22. The 'rough' areas of the golf course may develop into a taller and more species rich sward during the spring and summer months.

## **J1.3 EPHEMERAL SHORT PERENNIAL & J4 BARE GROUND**

- 4.2.23. Bare ground and ephemeral short perennial grassland were located in the south of the Survey Area. Bare ground was identified around the periphery of the golf clubhouse and hotel, with bare ground tracks and pathways leading across the golf course. One large area of bare ground was located to the west of the car park, formed of crushed aggregate.
- 4.2.24. Bare ground and ephemeral short perennial mosaic was identified south of Building 5. The habitat parcel has been formed through the excavation of the standing water (SW1) and associated spoil heaps. The species present include Yorkshire fog and geranium species *Geranium* sp.

### **J2.1.2 INTACT SPECIES POOR HEDGEROW**

- 4.2.25. One species poor hedgerow (PH1) was identified adjacent a bare ground track leading to the main clubhouse from the north. The hedgerow is dominated by blackthorn *Prunus spinosa* and is approximately 2 metres in height and 2m in width.

### **J2.2.2 DEFUNCT SPECIES POOR HEDGEROW**

- 4.2.26. Two defunct species poor hedgerows were identified within the Survey Area (PH-1 and PH-2). PH-1 is a hawthorn *Crataegus monogyna* dominated hedgerow connecting to the scattered trees and pond within the south of the Survey Area. PH-2 is a defunct, gappy hedge located on the east end of the car park and is dominated by beech.

### **J2.3.1 SPECIES RICH HEDGEROW WITH TREES**

- 4.2.27. Three species rich hedgerows with trees were identified within the Survey Area, all of which are located along the boundaries (RHT1-3 on Figure 4). All three of the hedgerows are unmanaged and are associated with either a dry ditch or running water. The height of the hedgerows range from 3m to 8m, with an average width of approximately 4m. The hedgerows are diverse, typically containing abundant hawthorn *Crataegus monogyna* as well as crab apple *Malus sylvestris*, rose *Rosa* sp., hazel *Corylus avellana*, field maple *Acer campestre* and mature ash *Fraxinus excelsior*.

### **J2.3.2 SPECIES POOR HEDGEROW WITH TREES**

- 4.2.28. Three species poor hedgerows with trees were identified within the Survey Area (PHT1-3). PHT1 is located to the east of the main car park, forming a boundary between the golf course and area of bare ground. PHT2 and PHT3 are located along the boundary of the Survey Area over wet ditches. They are approximately 5m in height and 4m in width, both dominated by hawthorn.

### **J3.6 BUILDING**

- 4.2.29. Eleven buildings were located within the Survey Area. Building 1 (B1) is the main golf clubhouse and has a number of wings to the building, including wings for restaurants, hotel rooms and fitness suites. The building has a small courtyard at its entrance with some landscaping including introduced shrub. B1 has a tiled and pitched roofed. Building 2 (B2) is the group of utility structures for the hotel, including generators. Building 3 (B3) is an agricultural building with a pitched metal roof. B3 has two smaller structures adjacent including a water/chemical storage structure and small storage unit with pitched tiled roof (B10& B11). Building 4 (B4) is a caravan on a hardstanding pitch located next to amenity grassland. B4 has a small introduced shrub garden surrounding it. Building 5 (B5) is a newly constructed/unfinished industrial structure with a pitched metal roof. Building 6 (B6) is the old foundation for a building, most likely forming part of a driving range. Building 7 & 8 (B7 & B8) are two small storage structures, one with a pitched tiled roof and made of fibreglass. Building 9 (B9) is a small concrete bridge that crosses and divides standing water (SW16).

### **J5 OTHER HABITAT**

- 4.2.30. Other habitat located within the Survey Area include the sand bunkers, spoil heaps and compost/vegetation cuttings. Sand bunkers are located throughout the golf course. Large spoil heaps/bunds (S1 & S2) have been created through the excavation of SW16 in the south of the Survey Area.

4.2.31. A large pile of vegetation cuttings and composted material was identified within PBW4. The vegetation cuttings were placed on top of a small spoil heap, out of which a stand of Japanese knotweed was identified.

### 4.3. PROTECTED AND NOTABLE SPECIES ASSESSMENT

4.3.1. The potential for the Survey Area to support legally protected species and notable species has been assessed using the results of the desk study and observations made during the site survey of habitats within and immediately surrounding the Survey Area. A summary of desk study information is included within Appendix B and shown in Figure 5. Desk study records have only been considered below if they are recent (from the last 10 years) and/or if they relate to species that may be supported by habitats at the Survey Area. Habitats present within the Survey Area are suitable for the following species; further consideration is given below to the likelihood for these species to be present within the Survey Area:

- Bats
- Hazel dormouse
- Water vole
- Hedgehog
- Birds
- Reptiles
- Amphibians
- Invertebrates

4.3.2. The Survey Area does not provide suitable habitat for other protected or notable species and other species, beyond those listed above, will not be considered further in this PEA.

#### BATS

- 4.3.3. The desk study and data search identified two species of bats within 2km of the Survey Area, common pipistrelle *Pipistrellus pipistrellus* and brown long-eared bat *Plecotus auritus*. Both of these species have been recorded roosting within Building 1, with a second common pipistrelle roost identified approximately 150m north of the Survey Area.
- 4.3.4. Planning application documents for nearby a development, immediately east of the Survey Area, revealed a moderate diversity of bat species to the east of the Survey Area, which included soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula* and barbastelle *Barbastella barabstellus*.
- 4.3.5. Habitat within the Survey Area and along its boundary provides suitable habitat for foraging and commuting bat species. This includes the plantation woodlands, scattered trees, hedgerows and waterbodies.
- 4.3.6. Structures, semi-mature and mature trees located throughout the Survey Area and within the woodlands, hedgerows and scattered trees may also provide suitable roosting opportunities for bat species.



## HAZEL DORMICE

- 4.3.9. No records of hazel dormouse *Muscardinus avellanarius* were returned in the biological data requested from TVERC.
- 4.3.10. Habitat within the Survey Area and along the boundaries does provide suitable habitat for hazel dormouse. The species rich hedgerows and plantation broadleaved and mixed woodlands provide suitable foraging and nesting opportunities for this species.

## HEDGEHOG

- 4.3.11. No records of hedgehog *Erinaceus europaeus* were returned in the biological data requested from TVERC.
- 4.3.12. Habitat within the boundaries of the Survey is considered suitable to support hedgehog, providing foraging, shelter and hibernation opportunities.

## BIRDS

- 4.3.13. The data search identified records of nine notable bird species within 2km of the Survey Area. These records included the notable and protected species including kestrel *Falco tinnunculus*, swift *Apus apus*, marsh tit *Poecile palustris* and corn bunting *Emberiza calandra* and Schedule 1 barn owl *Tyto alba*. Many of these records were however found to be older than 10 years; they are presented in Appendix A for reference.
- 4.3.14. An incidental list of birds sighted during the Phase 1 habitat survey is also given in Table 5 of Appendix B. This included red kite *Milvus milvus*, bullfinch *Pyrrhula pyrrhula* and redwing *Turdus illiacus*, fieldfare *Turdus pilaris*, lapwing *Vanellus vanellus*.
- 4.3.15. The Survey Area offers suitable nesting, foraging and roosting habitat for a range of bird species including species of conservation concern. Hedgerows present provide good habitat for nesting and provide an abundance of fruits for forage.

## REPTILES

- 4.3.16. Two species of reptile were identified within 2km of the Survey Area in the records returned by TVERC, for slow worm *Anguis fragilis* and grass snake *Natrix helvetica Helvetica* (formerly *Natrix natrix*). All records for reptiles were over 10 years old.
- 4.3.17. Planning application documents for nearby a development revealed a small population of slow worm to the east of the Survey Area.
- 4.3.18. Less managed habitat predominately around the boundary of the Survey Area and woodland, hedgerow and scrub edges provides suitable habitat for common reptile species including slow worm, grass snake, common lizard *Zootoca vivipara* and adder *Vipera berus*. Rubble and log piles identified would also provide suitable refugia/hibernacula to common reptile species. Waterbodies within the Survey Area provide opportunities for grass snake.

## AMPHIBIANS

- 4.3.19. Three species of amphibian were identified within 2km of the Survey Area. These included records for smooth newt *Lissotriton vulgaris*, common frog *Rana temporaria* and common toad *Bufo bufo*. All records provided by TVERC were older than 10 years.
- 4.3.20. Planning application documents for nearby a development (14/01737/OUT) revealed large populations of great crested newt within the waterbodies in the east of the Survey Area. These populations were identified through presence/absence and population class estimate surveys on SW14, SW16 and SW17, carried out in 2014. It is therefore considered likely that great crested newts are present within all other waterbodies within the Survey Area.
- 4.3.21. The habitat, both aquatic and terrestrial, within the Survey Area is suitable for all amphibian species including palmate *Lissitriton helveticus* and great crested newt *Triturus cristatus*. Waterbodies within the Survey Area have good water quality, marginal and emergent vegetation and did not appear to be stocked with fish, making them suitable for breeding amphibian species. Scrub, hedgerow and woodland surrounding the waterbodies provides suitable habitat during terrestrial phases of the amphibian lifecycle.

## INVERTEBRATES

- 4.3.22. A number of invertebrate (butterfly and moth) records were returned by TVERC, however these were over 20 years old. One record for cinnabar moth *Tyria jacobaeae*, a Species of Principal Importance (SPI) was returned from 2004.
- 4.3.23. The mosaic of habitats within the Survey Area are likely to provide opportunities for a range of common and widespread invertebrates. The waterbodies and less managed areas of grassland are likely to be of greatest invertebrate interest. Furthermore, the presence of blackthorn, the larval food plant of brown hairstreak *Thecla betulae* means that consideration should be given to the potential presence of this rare species known to be prevalent in this broad area.

## NON-NATIVE INVASIVE PLANT SPECIES

- 4.3.24. Two stands of Japanese knotweed *Fallopia japonica* were identified within the Survey Area during the Phase 1 habitat survey. These stands were located within dense scrub and a compost/vegetation cutting pile, see TN11 on Figure 4.

## 5. CONCLUSIONS

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- 5.1.1. The Survey Area contains a variety of habitat types of ecological value including ponds, plantation and semi-natural woodland and species rich hedgerow, of which some are listed as Habitats of Principal Importance (HPI) under the NERC Act 2006. Other habitat present included a variety of grasslands, dense scrub and tall ruderal.
- 5.1.2. Habitats within the Survey Area are considered to be suitable to support the following notable and protected fauna: bats (foraging, commuting and roosting) [REDACTED] hazel dormouse, birds, common reptiles, amphibians (including great crested newt) and invertebrates.

## 6. REFERENCES

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- Amphibian and Reptile Groups of the United Kingdom (2010) ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. ARG UK, UK
- The Bat Conservation Trust (BCT) (2012a) Encouraging Bat – A Guide for Bat-friendly Gardening and Living. BCT, London.
- BCT (2014b) Artificial Lighting and Wildlife – Interim Guidance: Recommendations to help minimise the impact of artificial lighting. BCT, London.
- British Standards Institution (2012) BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. BSI, London.
- BSI (2013) Biodiversity code of practice for planning and development: BS42020. BSI. London.
- BSI (2015) Surveying for bats in trees and woodland – Guide: BS8596:2015. BSI, London.
- Barn Owl Trust (2012) Barn Owl Conservation Handbook, Pelagic Publishing, Exeter.
- Bibby C.J, Burgess N.D, Hill D.A, Mustoe S.H. (2000) Bird Census Techniques. Second Edition. Elsevier Ltd.
- Bicester Hotel (2017). Available at <http://www.bicesterhotelgolfandspa.com/golf/>. Accessed 14/02/18.
- Chanin P (2003). Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough
- Chartered Institute of Ecology and Environmental Management (CIEEM) (2013). Guidelines for Preliminary Ecological Appraisal. CIEEM, Winchester.
- CIEEM (2015). Guidelines for Ecological Report Writing. CIEEM, Winchester.
- CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater and Coastal. CIEEM, Winchester.
- CIRIA (2015) Environmental good practice on site (fourth edition) (C741) Charles, P., Edwards, P (eds). CIRIA, London.
- Collins J. (ed.) (2016) Bat Surveys for Professional Ecologists, Good Practice Guidelines (3rd Edition). The Bat Conservation Trust, London.
- Department for Environment, Food and Rural Affairs (Defra) (2007) Hedgerow Survey Handbook: A Standard Procedure for Local Surveys in the UK, 2nd edition. Defra, London. Available at: <http://www.defra.gov.uk/publications/files/pb11951-hedgerow-survey-handbook-070314.pdf>
- Department for Environment, Food and Rural Affairs (2011). A strategy for England's wildlife and ecosystem services. DEFRA, London.
- Department for Communities and Local Government (DCLG) (2012). The National Planning Policy Framework. DCLG, London.
- Drake CM, Lott DA, Alexander KNA and Webb J (2007). Surveying terrestrial and freshwater invertebrates for conservation evaluation. Natural England Research Report NERR005. Natural England, Peterborough.
- Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746. [Available online: [britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf](http://britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf)]

- Environment Agency (2017). Catchment Data Explorer. <http://environment.data.gov.uk/catchment-planning/WaterBody/GB106039030140> [Last accessed 06/02/2018]
- English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough.
- English Nature (2006). The Dormouse Conservation Handbook. 2nd Edition. Natural England. Peterborough
- Environment Agency (2014) Pollution Prevention Guidance. Available online: <https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg> [accessed July 2014].
- Froglife (1999) Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice sheet 10. Froglife, Halesworth
- Gent, A. and Gibson, S. (2003). Herpetofauna Workers Manual. JNCC. Peterborough
- Gilbert , G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods: A Manual of Techniques for Key UK Species. RSPB
- Google Earth Pro (2018). Google Earth Pro version 7.3.1. Google Inc.
- Harris S, Cresswell P and Jefferies D (1991) (Report) Surveying Badgers. The Mammal Society, Bristol.
- Highways Agency (1997) Design Manual for Roads and Bridges, Volume 10, Section 4, Part 7: Nature Conservation Advice in Relation to Reptiles and Roads.
- Highways Agency (1997) Design Manual for Roads and Bridges, Volume 10, Part 5, Mitigating against effects on badgers.
- HMSO (Her Majesty's Stationary Office) (1981). Wildlife and Countryside Act (as amended by the Countryside and Rights of Way Act 2000). HMSO, Norwich.
- HMSO (1992) The Badgers Act.
- HMSO (1996) The Wild Mammals (Protection) Act. HMSO, London.
- HMSO (1997) The Hedgerows Regulations, SI 1997/1160. HMSO, London.
- HMSO (2006) Natural Environment and Rural Communities Act. HMSO, Norwich.
- HMSO (2010). The Conservation of Habitats and Species Regulations 2010 as amended (the Habitat Regulations)
- Joint Nature Conservation Committee (JNCC) (2010). Handbook for Phase 1 habitat survey – a technique for environmental audit. JNCC, Peterborough.
- JNCC Biodiversity Reporting and Information Group (2008). UK Biodiversity Action Plan
- JNCC and DEFRA (2012) UK Post 2010 Biodiversity Framework. Available online: <http://jncc.defra.gov.uk/page-6189>. [Accessed July 2014].
- Kirby, P. (2001). Habitat Management for Invertebrates: A Practical Handbook. RSPB Management Guides
- Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001). Great Crested Newt Conservation Handbook, Froglife, Halesworth
- Mitchell- Jones, A.J (2004) Bat Mitigation Guidelines. English Nature.
- Office of the Deputy Prime Minister (ODPM) (2005). Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impacts within the Planning System.
- Oldham R.S., Keeble J., Swan M.J.S., and Jeffcote M. (2000) Evaluating the suitability of habitat for the great crested newt. Herpetological Journal 10: 143-155
- Roper, T.J. (2010). Badger. Harper Collins.

## **FIGURES**

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**Figure 1 – Site Location Plan**

**Figure 2 – Habitats of Principal Importance and Ancient Woodland within 2km of the Survey Area**

**Figure 3 – Waterbodies within 500m of the Survey Area**

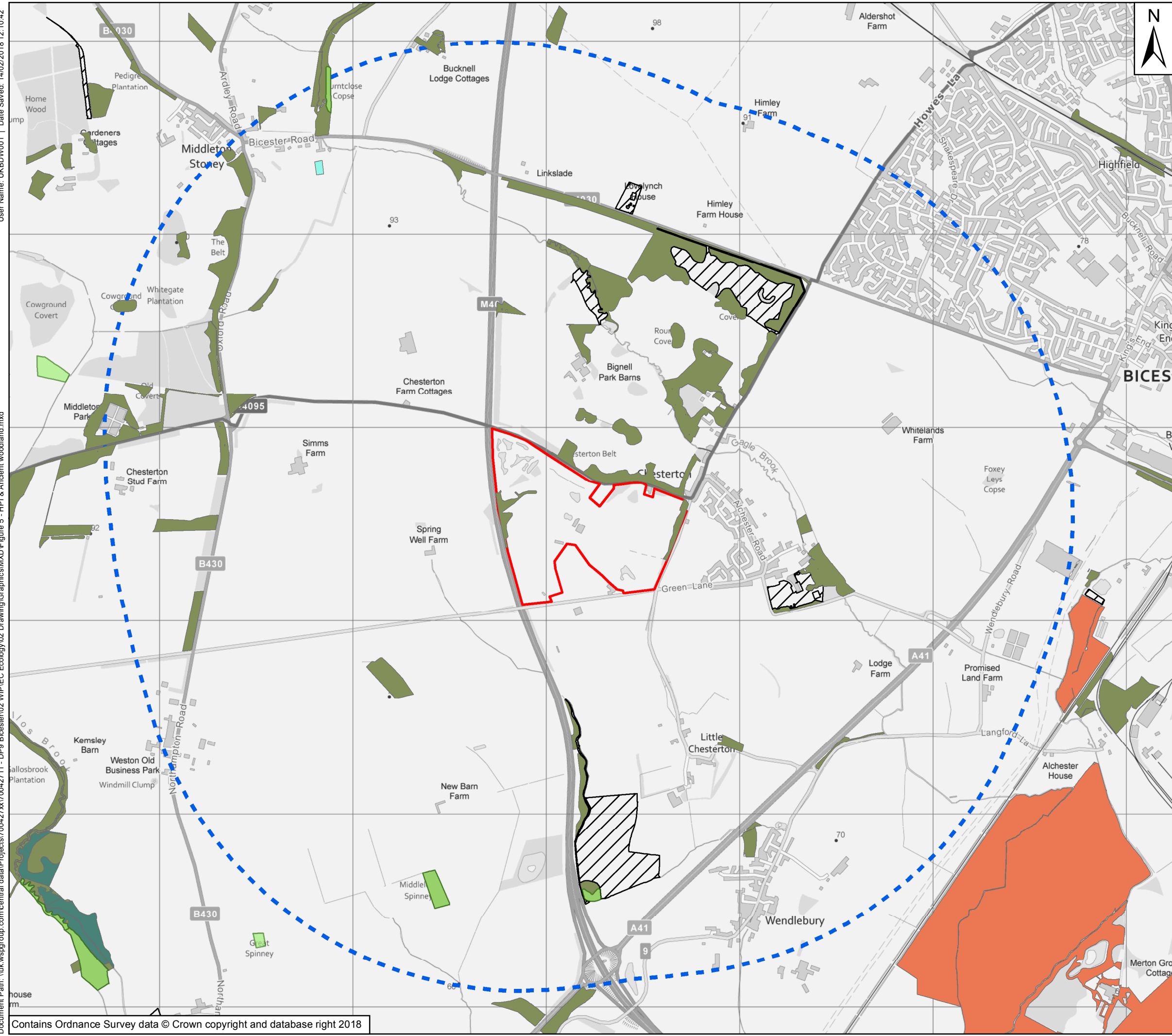
**Figure 4 – Phase 1 Habitat Survey Results**

**Figure 5 – Protected Species Records**

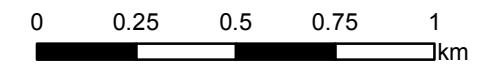






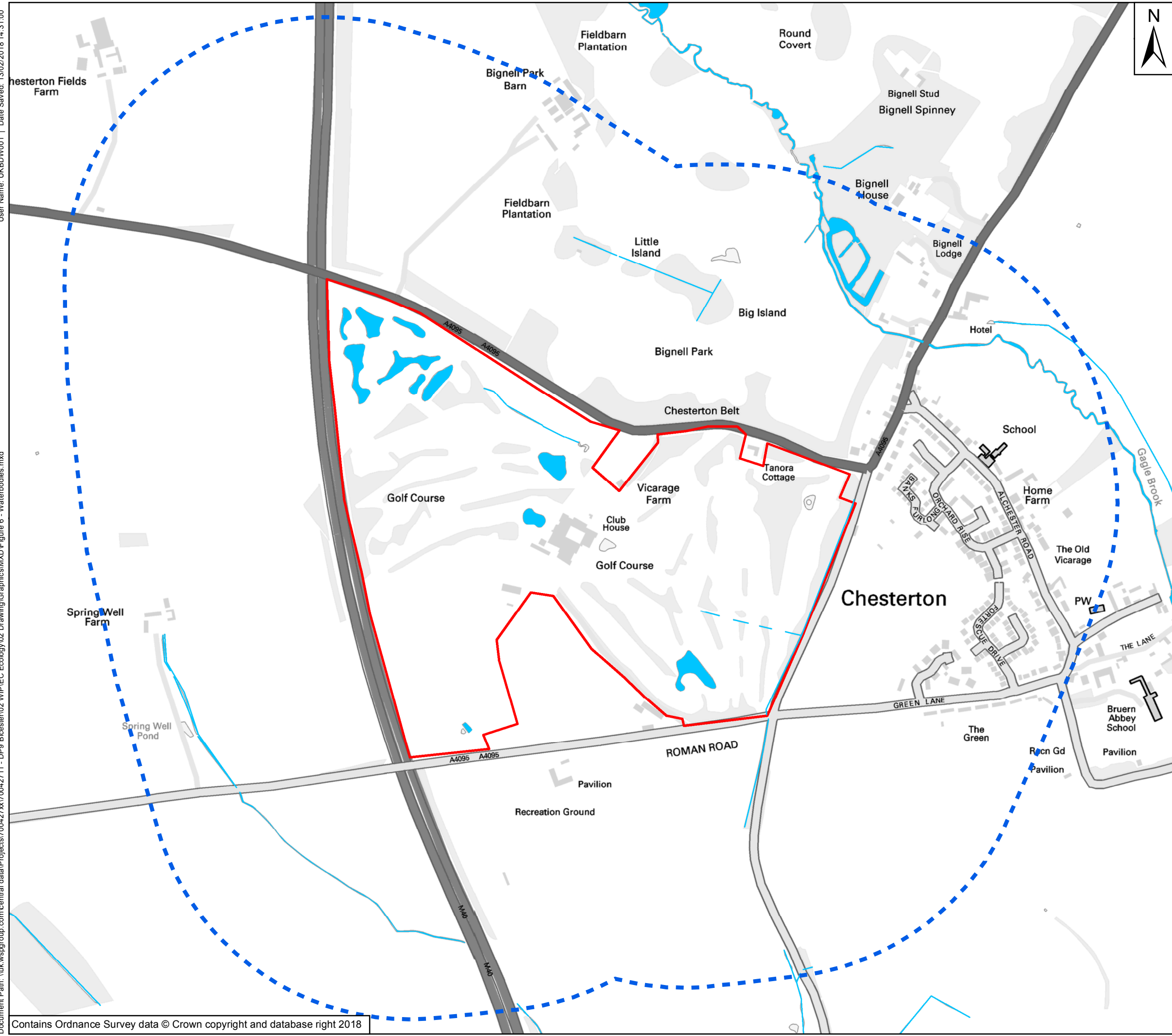


- Key**
- Survey Area
  - 2km Search
  - Ancient Woodland Inventory (Eng)
- Priority Habitats Inventory (Eng)**
- Coastal and floodplain grazing marsh
  - Deciduous woodland
  - Lowland fens
  - Traditional orchard
  - No main habitat but additional habitats



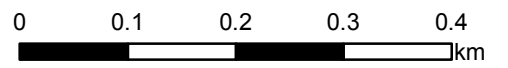
<b>Client:</b>	DP9	
<b>Project:</b>	Bicester	
<b>Title:</b>	Habitats of Principal Importance (HPI) and Ancient Woodland	
<b>Drawing No:</b>	Figure 2	<b>Drawn:</b> BW
<b>Date:</b>	February 2018	<b>Checked:</b> LR
<b>Scale:</b>	19,000 @ A3	<b>Approved:</b> AH





Key

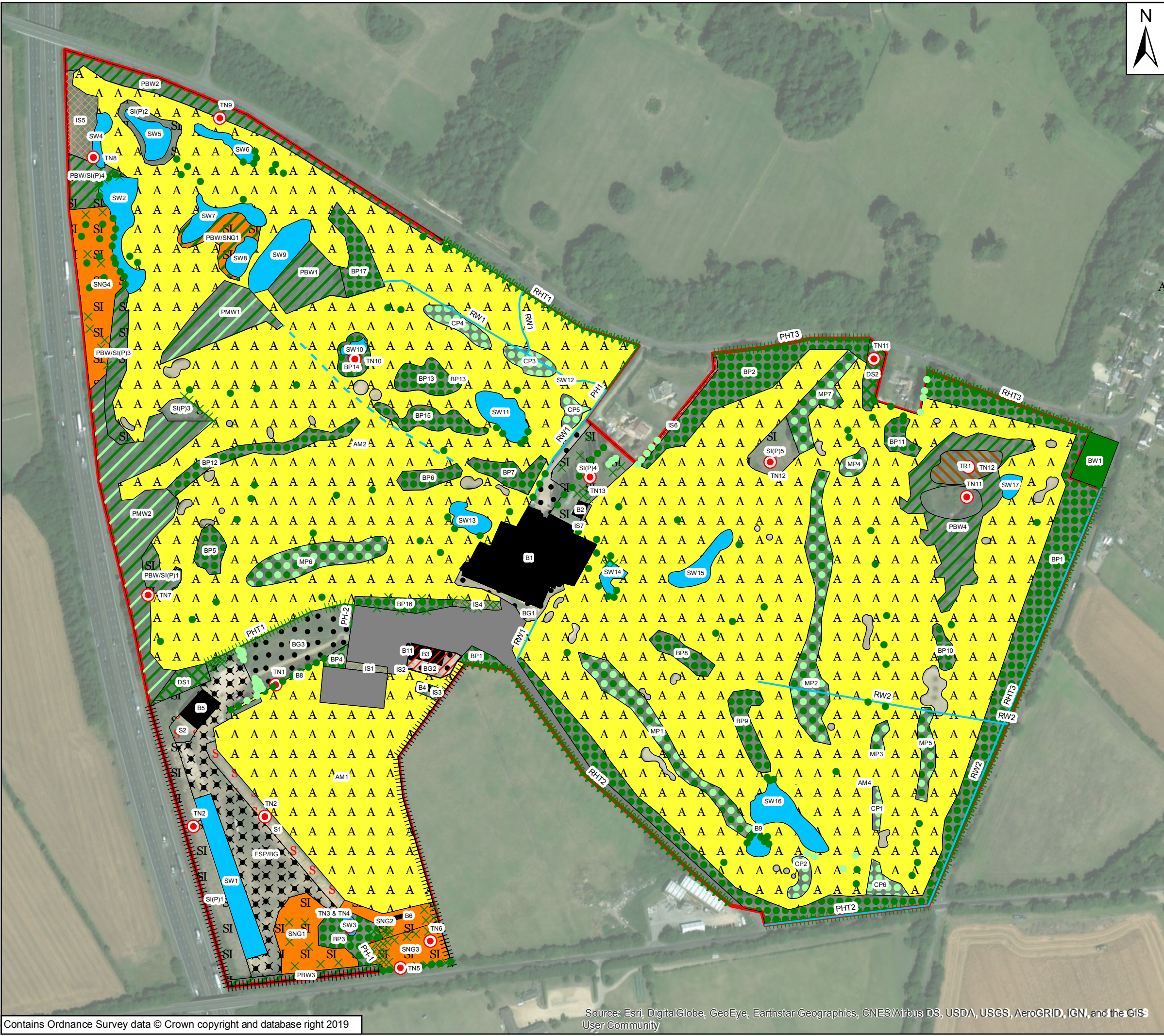
- Survey Area
- 500m Search Area
- River Lines
- Water



Client:	DP9
Project:	Bicester
Title:	Waterbodies within 500m of the Survey Area

Drawing No: Figure 3	Drawn: BW
Date: February 2018	Checked: LR
Scale: 7,000 @ A3	Approved: AH





**Key**

- Survey Area
- Scattered Broadleaved Trees
- Scattered Coniferous Trees
- × Scattered Scrub
- ⊙ Target Note
- Defunct Hedge - Species-Poor
- Dry Ditch
- Fence
- Hedge with Trees - Species-Poor
- Hedge with Trees - Species-Rich
- Intact Hedge - Species-Poor
- Running Water
- Amenity Grassland
- Bare Ground
- Broadleaved Parkland/Scattered Trees
- Broadleaved Woodland - Plantation
- Broadleaved Woodland - Semi-Natural
- Buildings
- Coniferous Parkland/Scattered Trees
- Ephemeral/Short Perennial
- Introduced Shrub
- Mixed Parkland/Scattered Trees
- Mixed Woodland - Plantation
- Neutral Grassland - Semi-Improved
- Other Habitat
- Other Tall Herb and Fern - Ruderal
- Poor Semi-Improved Grassland
- Scrub - Dense/Continuous
- Spoil
- Standing Water
- Hardstanding
- No Access

0    0.05    0.1    0.15    0.2  
km



Client:	DP9
Project:	Bicester
Title:	Phase 1 Habitat Survey

Drawing No:	Figure 4	Drawn:	BW
Date:	October 2019	Checked:	LR
Scale:	3,570 @ A3	Approved:	AH