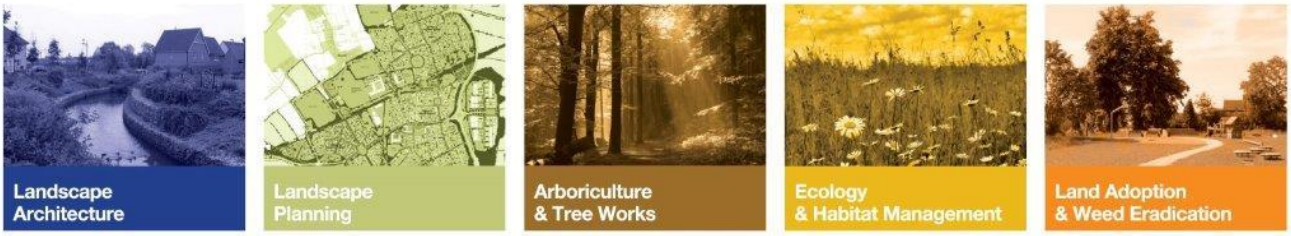

James Blake Associates Ltd

Updated Phase 1 Habitat Survey

of

Gresley Park, Hertfordshire

on behalf of

Pigeon Land Ltd and Hythe Ltd

September 2016

Revision A: December 2016
Revision B: January 2017

25 Years of Service, Value and Innovation

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Revision	Purpose	Originated	Checked	Authorised	Date
		EC	AK	CA	September 2016
A	Minor amendments	EC	MD	CX	December 2016
B	Client comments	EC	MD	CX	January 2017
Job Number: JBA 14/171		James Blake Associates **Title:** Updated Phase 1 Habitat Survey of Gresley Park, Hertfordshire			

Disclaimer

James Blake Associates Ltd have made every effort to meet the client's brief. However, no survey ensures complete and absolute assessment of the changeable natural environment. The findings in this report were based on evidence from thorough survey: It is important to remember that evidence can be limited, hard to detect or concealed by site use and disturbance. When it is stated that no evidence was found or was evident at that point in time, it does not mean that species are not present or could not be present at a later date: The survey was required because habitats are suitable for a given protected species, and such species could colonise areas following completion of the survey.

This report was instructed by Pigeon Land Ltd and Hythe Ltd. Neither James Blake Associates Ltd nor any associated company, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use of the report.

CONTENTS

Non-technical Summary

Site:	Gresley Park, Hertfordshire
Grid Reference (from the centre of the site)	TL 271 251
Report Commissioned by:	Pigeon Land Ltd and Hythe Ltd
Date of Survey:	6th September 2016

Considerations	Description	Timings and potential impacts
Statutory and non-statutory sites within 2km:	One SSSI and twenty one Local Wildlife Sites, one of which is also a Wildlife Trust Nature Reserve	No impacts to any statutory or non-statutory sites are predicted
SPA, SAC and Ramsar sites within 7km:	There are no SPAs, SACs or Ramsar sites within 7km of the site	N/A
Phase 2 surveys:	Bird surveys	April to July, one survey per month
	Reptile surveys	Mid-March to October
	Bat activity surveys	May to September
	Tree inspections for bat roost potential	Year round
	Badger survey	Year round (optimal between February and April)
	Dormice survey	April to October, one survey per month
	GCN eDNA survey	15th April to 30th June
Precautionary Measures:	Removal of arable vegetation, trees, woodland and hedgerows	Outside of the nesting bird season (March to September) or following a nesting bird survey. Destructive search of any hedgerows and trees to be removed for hedgehog
Habitat types:	Arable land, plantation woodland, hedgerows, tall ruderal, semi-improved grassland, woodland and a pond.	

1 Introduction

Background

1.1 James Blake Associates Ltd (formerly JBA Consultancy Services Ltd) was commissioned by Pigeon Land Ltd and Hythe Ltd to undertake an Updated Phase 1 Habitat Survey and Protected Species Scoping Survey of Gresley Park, in Hertfordshire (grid reference: TL 271 251, taken from the centre of the site).

1.2 The assessment was required to inform the design of plans to develop the site for residential use with associated infrastructure and public open space, and to provide an update to the Phase 1 Habitat Survey carried out in July 2014 (JBA, 2014).

1.3 For the purposes of this report, protected species are taken to be those which are protected under European Legislation (Conservation of Habitats and Species Regulations 2010, as amended) and UK legislation (Wildlife and Countryside Act 1981; Protection of Badgers Act 1992); and species and habitats of principle importance which are listed in Section 41 of the NERC Act (2006).

1.4 There is a general biodiversity duty in the National Planning Policy Framework (NPPF) 2012, placing responsibility on Local Planning Authorities to aim to conserve, enhance and encourage biodiversity in and around developments. Section 40 of the NERC Act requires every public body in the exercising of its functions to 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'. Biodiversity, as covered by the Section 40 duty, includes all biodiversity, not just the habitats and species of principal importance. However, there is an expectation that public bodies would refer to the S41 list when complying with the Section 40 duty.

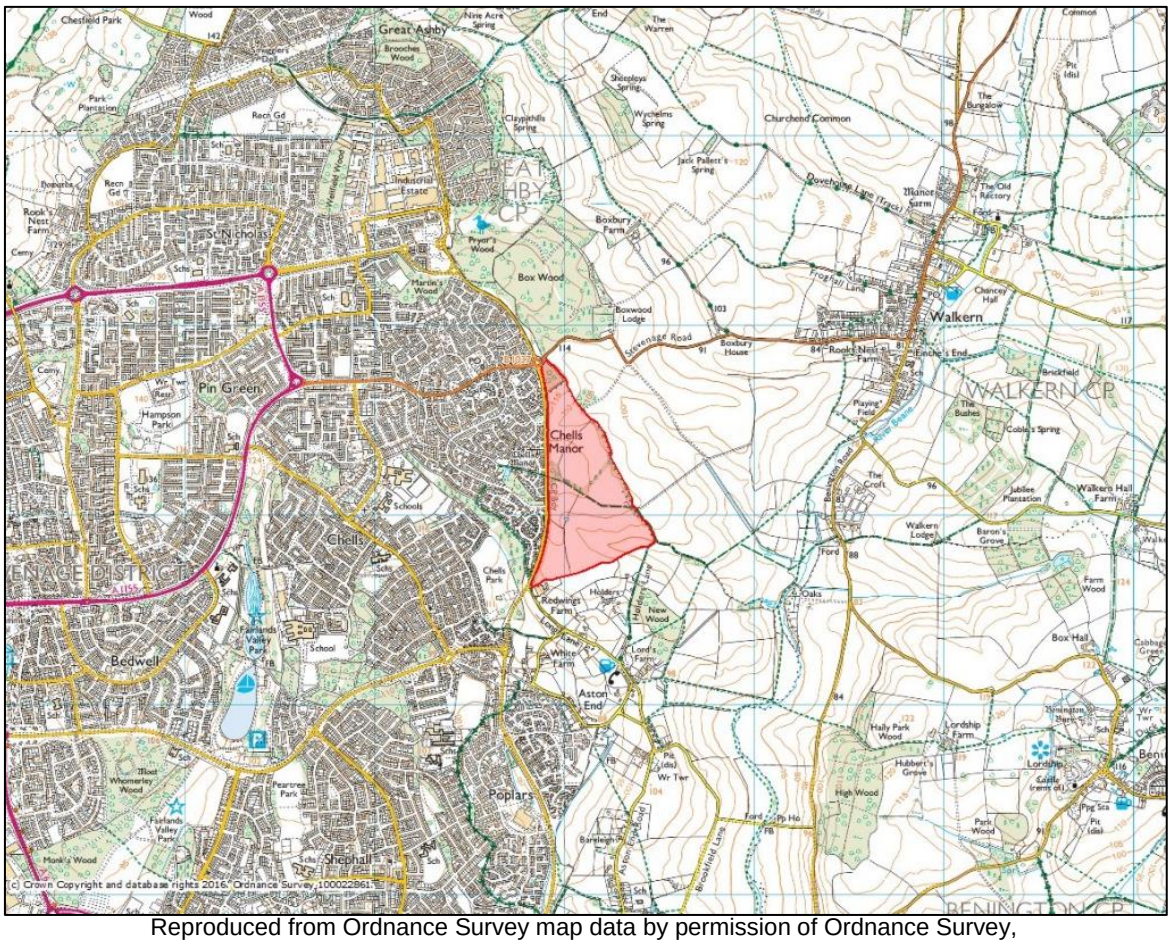
Site Description

1.5 The site was located to the east of Gresley Way, Stevenage. Box Wood (ancient woodland) lies approximately 20m to the north, beyond Stevenage Road. To the west was a residential area and a small woodland with a large duck pond on its western edge (225m from site). Two other waterbodies lie approximately 340m to the south. The wider landscape was dominated by arable land with boundary hedgerows and scattered woodland (see Figure 1).

1.6 The site itself consisted of five arable fields with a public right of way bisecting the middle of the site west to east. Semi-mature deciduous and mixed plantation

woodland strips were present along the northern, western and eastern boundaries and throughout the site. Hedgerows with occasional standards were present to the southern and western boundaries and between fields.

Figure 1: Site location



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Aims and objectives

1.7 The aim of the survey was to:

- Identify the presence, or potential presence, of any protected or notable species or habitats on, or adjacent to, the site at the time of the survey;
- assess the potential impact of the proposed works on any protected or notable species and/or habitats present including nature conservation sites on, or adjacent to, the site; and,
- make recommendations for further surveys and/or mitigation following the survey (if necessary) and provide suggestions to enhance the wildlife value of the site post-development.

2 Methods

Desk study

2.1 A 2km radius search for statutory designated sites, excluding Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites, either on the proposed development site or in the surrounding area, was conducted using "MAGIC", the Multi-Agency Geographic Information system for the Countryside.

2.2 A 7km search for SACs, SPAs and Ramsar sites was also conducted using MAGIC.

2.3 The Hertfordshire Environmental Records Centre (HERC) was consulted for records of non-statutory sites and protected and rare species within a 2km search radius (HERC data provided on the 4th June 2014).

2.4 The site is covered by the Local Biodiversity Action Plan (BAP) for Hertfordshire (www.hef.org.uk).

Phase 1 Habitat Survey

2.5 The survey was undertaken by Emily Costello BSc (Hons) MSc Grad CIEEM (great crested newt class licence WML-CL08), on the 6th of September 2016, with the original survey carried out by Crystal Acquaviva BSc (Hons) MSc MCIEEM (great crested newt class licence WML-CL08 and bat class licence WML-CL19 and WML-CL20) on the 4th June 2014. During the survey, the temperature was 22°C, there was a light air (Beaufort scale 0 to 1), 100% cloud cover and good visibility.

2.6 The survey methodology followed JNCC (Joint Nature Conservation Committee) Guidelines (JNCC, 2010) and included mapping habitat types and identifying all plant species observed on the site, including Wildlife and Countryside Act Schedule 9 invasive plant species such as Japanese knotweed (*Fallopia japonica*) and giant hogweed (*Heracleum mantegazzianum*).

2.7 The site was also assessed for signs and evidence of protected, principally important and rare species in accordance with approved guidelines, as follows:

2.8 **Amphibians**: Where accessible, known ponds within 500m of the site (unless ecologically separated from the site by significant barriers, such as major roads or rivers) were assessed for potential to support breeding protected amphibians, such as great crested newts.

2.9 **Bats**: Mature trees within the site boundary, and adjacent to the site boundary, were surveyed externally, from the ground, for their potential to support roosting bats, under the following criteria, taken from recommendations made by the Bat

Conservation Trust in the 'Bat Surveys for Professional Ecologists Good Practice Guidelines' (BCT, 2016).

Table 1: Bat survey protocol for trees (potential bat roosting features were identified in order to categorise trees, as below):

Bat Roost Potential	Field signs
Roost **Confirmed**	Confirmed bat roost in tree: field evidence of the past or current presence of bats, e.g. droppings, staining.
High roost potential	Splits or cracks in major limbs which develop upwards, smooth surface or flies around entry point, medium to dense ivy-covering particularly on mature trees, woodpecker/rot holes, hollow stem or limb, significant lifting bark, snagged branches, artificial bird or bat boxes, tightly forked branch unions, hole between roots leading into a hollow stem, dense epicormic growth, deadwood in canopy or stem, Ancient or over mature trees where the canopy cannot be fully inspected from the ground.
Medium roost potential	Splits in branches, low - medium ivy-covering on trees in healthy condition, small cavities and small areas of deadwood in canopy or stem.
Low roost potential	Splits in minor branches, sparse ivy, and limited loose bark.
No roost potential	Trees with good visibility to the top of the canopy (particularly young and semi-mature trees) not supporting any of the above features or trees with a negligible potential to support bat roosts (may display minor features but considered highly unlikely to be suitable for bats).

2.10 **Dormice**: A visual survey for the presence of suitable habitat (woodland/suitable hedges with good under-storey/shrub layer and a range of food plant species, such as hazel, bramble and honeysuckle) was carried out, to assess if dormice were likely to be present.

2.11 **Reptiles**: A visual survey for the presence of suitable habitat was carried out according to the criteria given in the Herpetofauna Workers' Manual (Gent and Gibson1998).

2.12 **Otters and water voles**: A visual survey for the presence of field signs was carried out to assess if water voles and otters were likely to be present. The survey was based on the methods described within the 'Water Vole Conservation Handbook, 3rd Edition' (Strachan, Moorhouse and Gelling 2011) and Essex Otter Survey, 2009-2010 (Darren Tansley 2011).

2.13 **Invertebrates**: The site was scoped for significant rotting deadwood, and high quality aquatic or other habitats, which could be used by significant assemblages of

invertebrates, or by any of the invertebrates highlighted in the data search.

2.14 **Flora and habitats**: All habitats and plant species that were identifiable at the time of the survey were recorded.

2.15 **Badgers:** A visual survey for setts, hair, latrines, prints, snuffle marks or other signs of badgers was undertaken within the site boundary, following guidelines set out by the Mammal Society (1989).

2.16 **Birds:** A visual survey of bird activity and suitable nesting habitat was carried out, to determine if any areas would be suitable for WCA Schedule 1 birds, Birds of Conservation Concern or other common and widespread nesting birds.

2.17 **Adjacent Habitat**: Habitats close to the site were identified, using aerial maps and field observation, so that the ecological impact of the proposed works on the wider landscape could be assessed.

3 Results

Desk Study

Statutory Nature Conservation Sites within 2km of the site and Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites within 7km

3.1 There was one statutory designated site within 2km of the site: Benington High Wood Site of Special Scientific Interest (SSSI). This is detailed in Table 2 and shown in Figure 2.

3.2 In addition, a 7km radius search was carried out for SPAs, SACs and Ramsar sites. No SPAs, SACs or Ramsar sites were found within the search area.

Table 2: Statutory conservation sites within 2km

Site Name	Designation	Distance from Site	Description
Benington High Wood	SSSI	1.4km south east	This site comprises ancient woodland, and is one of the best remaining examples in the county of the pedunculate oak-hornbeam woodland of the ash-maple variant, which is restricted nationally to south and east England.

Non-Statutory Nature Conservation Sites

3.3 There were 21 non-statutory conservation sites within 2km of the site: all of which are Local Wildlife Sites (LWS), including one which was also Herts and Middlesex Wildlife Trust Nature Reserve. These are listed in Table 3 and shown in Figures 3a and 3b.

Table 3: Non-statutory conservation sites within 2km of the site

Site Name	Designation	Distance from Site	Description
Box Wood & Pryor's Wood 22/006	LWS Pryor's Wood 22/006/02 Local Wildlife Trust Nature Reserve	20m north	Ancient Hornbeam coppice with Pedunculate Oak standards woodland plus some Ash, Wild Cherry and Hawthorn. The wood has been extensively cleared and replanted. Pryor's Wood is the nature reserve consisting of mostly old secondary woodland. Other records include the nationally notable beetle *Platycis minutus* and the local White-Letter Hairstreak. The bird fauna is particularly rich with numerous breeding species including past records for Hawfinch and Wood Warbler. 17 species of mammal have been recorded including the Hazel Dormouse.
Elm Green Pastures 30/052	LWS	50m south	Pastures of semi-improved neutral grassland partly surrounded with substantial hedgerows supporting a good range of woody species. The grasslands support a good range of commoner indicator species including Common Knapweed, Oxeye Daisy and Meadow Buttercup.
New Wood (E. of Stevenage) 30/010	LWS	150m south	Ancient semi-natural coppice-with-standards woodland. There are extensive areas of Hornbeam coppice with Ash standards and coppice. The ground flora supports numerous ancient woodland indicators.
Martins Wood 22/004	LWS	650m north west	Ancient Pedunculate Oak/Hornbeam woodland, mainly mature Oak standards with sparse Hornbeam coppice as at Sishes Wood
Pestcotts Spring & Wood 30/045	LWS	850m west	Ancient semi-natural woodland substantially altered by replanting throughout the wood, except at the very edges and to the far north.
Great Collens Wood 30/043	LWS	900m south west	Ancient semi-natural broadleaf woodland replanted in places.
Ashtree Wood 30/028/01	LWS	900m south west	Ancient semi-natural coppiced woodland composed of Hornbeam, Pedunculate Oak, Ash, Hazel, Wild Cherry and Field Maple. The central areas have been replanted with species such as Beech and conifers. The ground flora supports ancient woodland indicators, which is particularly rich below the

			semi-natural canopy around the edges.
Claypithills Spring Wood (Stevenage) 22/007	LWS	950m north	Ancient semi-natural Pedunculate Oak/Hornbeam coppice woodland with a high frequency of other planted species. A well-developed hedge borders the wood in places.
Blacknells Spring 30/046	LWS	1km west	Thin strip of scrubby, ancient semi-natural woodland with a canopy typically of Hornbeam, Ash, Field Maple and Hawthorn.
Poplars Meadow and Pond South 30/009/01	LWS	1km south	Remnant of an ancient hay meadow with an old pond in the south. The meadow supports a diverse ground flora.
Benington Road Verge (near Walkern) 30/014	LWS	1km east	Roadside verges with chalky banks supporting discontinuous old hedges and scrub. There is a good ancient hedge on the west side of the road and a very small triangular piece of chalk grassland occurs at the road junction to the south, where Knapweed Broomrape has been recorded
Exeter Close 22/036	LWS	1.3km north west	Buildings and environs important for protected species.
Wellfield Wood 22/005	LWS	1.3km north west	Ancient semi-natural Pedunculate Oak Hornbeam coppice woodland replanted with mainly Beech, Sycamore, Birch, Poplar, Field Maple and various conifers. Wild Service-tree has been recorded. The wood supports a reasonably diverse ground flora including typical woodland indicators.
Walkern Road Verge 30/027	LWS	1.3km south east	Road verges on chalk overlain by varying depths of Boulder Clay, which supports a rich mixture of shrubs, herbs and invertebrates reflecting the calcareous nature of the soil. The high calcareous bank below High Wood, along the eastern verge, is part of an ancient line of scrub along an old lynchet. The road banks support many calcareous-loving species of snails including the Round-mouthed Snail which here is at the northern edge of its range in the British Isles. Wildlife Site criteria: Grassland indicators; species-rich hedge and scrub.
Abbot's Grove 30/028/02	LWS	1.3km south west	Ancient semi-natural coppiced woodland composed of Hornbeam, Pedunculate Oak, Ash, Hazel, Wild Cherry and Field Maple as at Ashtree wood
Hanginghill Wood (Stevenage) 22/041	LWS	1.4km west	Ancient semi-natural Pedunculate Oak/Hornbeam coppice-with-standards woodland fragment. The canopy is typically Wild Cherry, Hornbeam and Ash with some Pedunculate Oak.
Sishes Wood 22/002	LWS	1.7km west	Ancient Pedunculate Oak/Hornbeam woodland, mainly mature Oak standards with sparse Hornbeam coppice. Woodbanks present. The ground flora supports ancient

			woodland indicators including, mainly Bluebell with other species recorded such as Wood Anemone, Yellow Archangel, Pignut and Wood Melick.

The sites above are located within 2km from a grid reference point (centre of site); therefore there are additional sites that are within 2km from the site boundary. These have been listed below, with distances from the site boundary and likely habitats that they contain.

Site Number	Designation	Distance from Site	Likely habitats within the site
30/47	LWS	1.6km south west	Deciduous woodland
22/049	LWS	1.6km east	Deciduous woodland
22/008	LWS	1.7km north	Ancient woodland
30/015	LWS	1.8km east	Deciduous woodland

Figure 2: Statutory sites within 2km

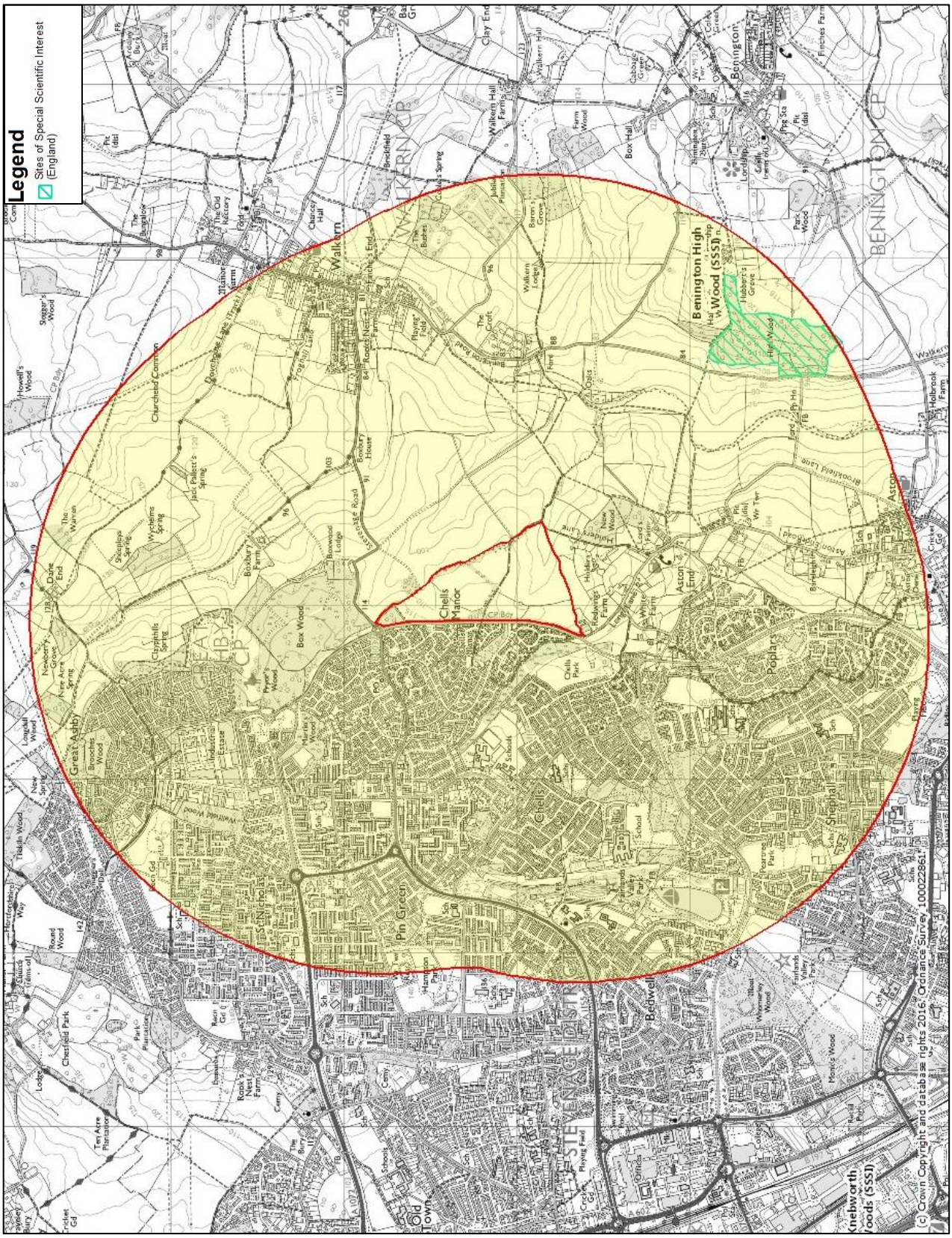


Figure 3a: Non statutory sites within 2km (Local Wildlife Site)

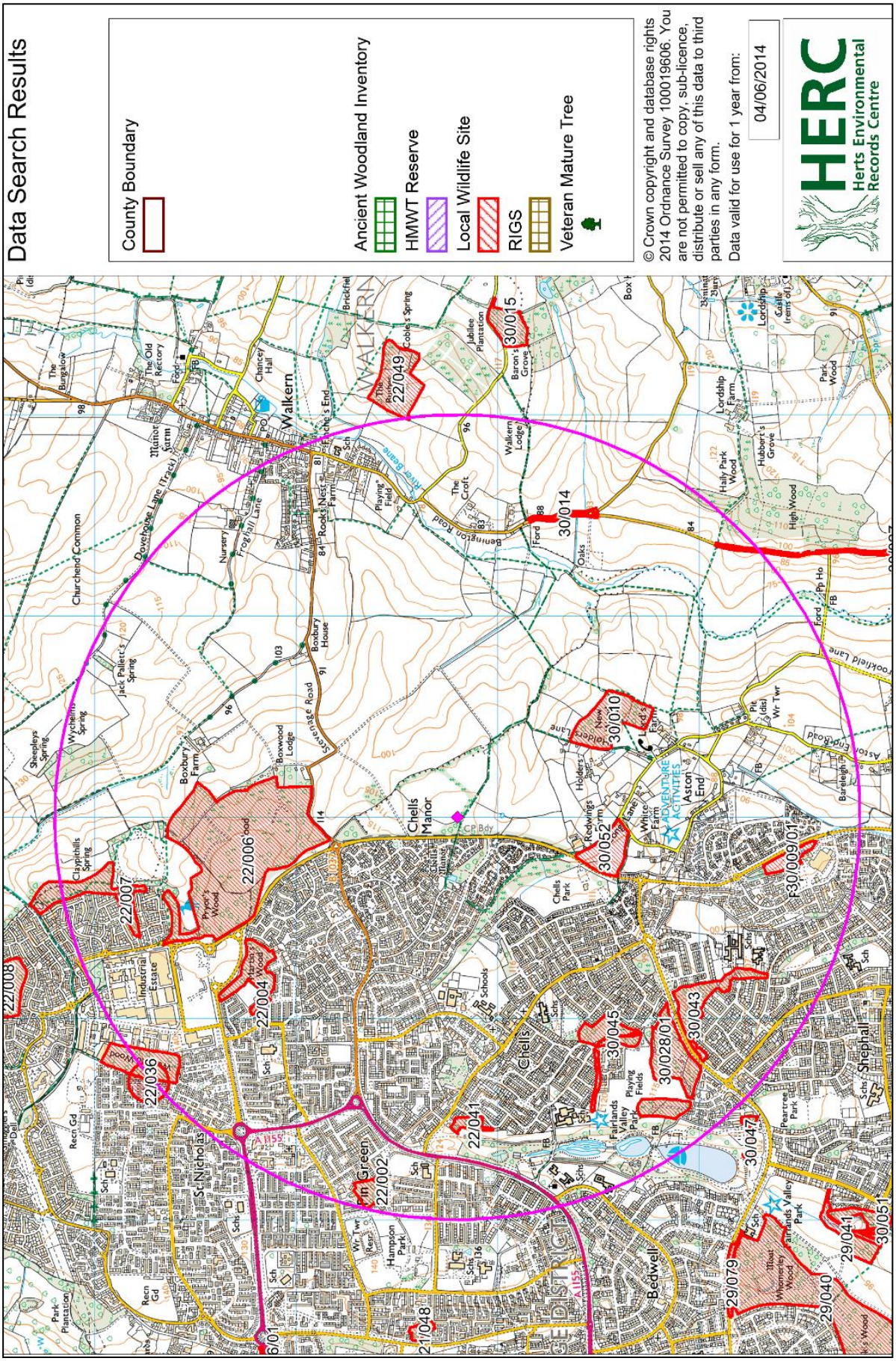
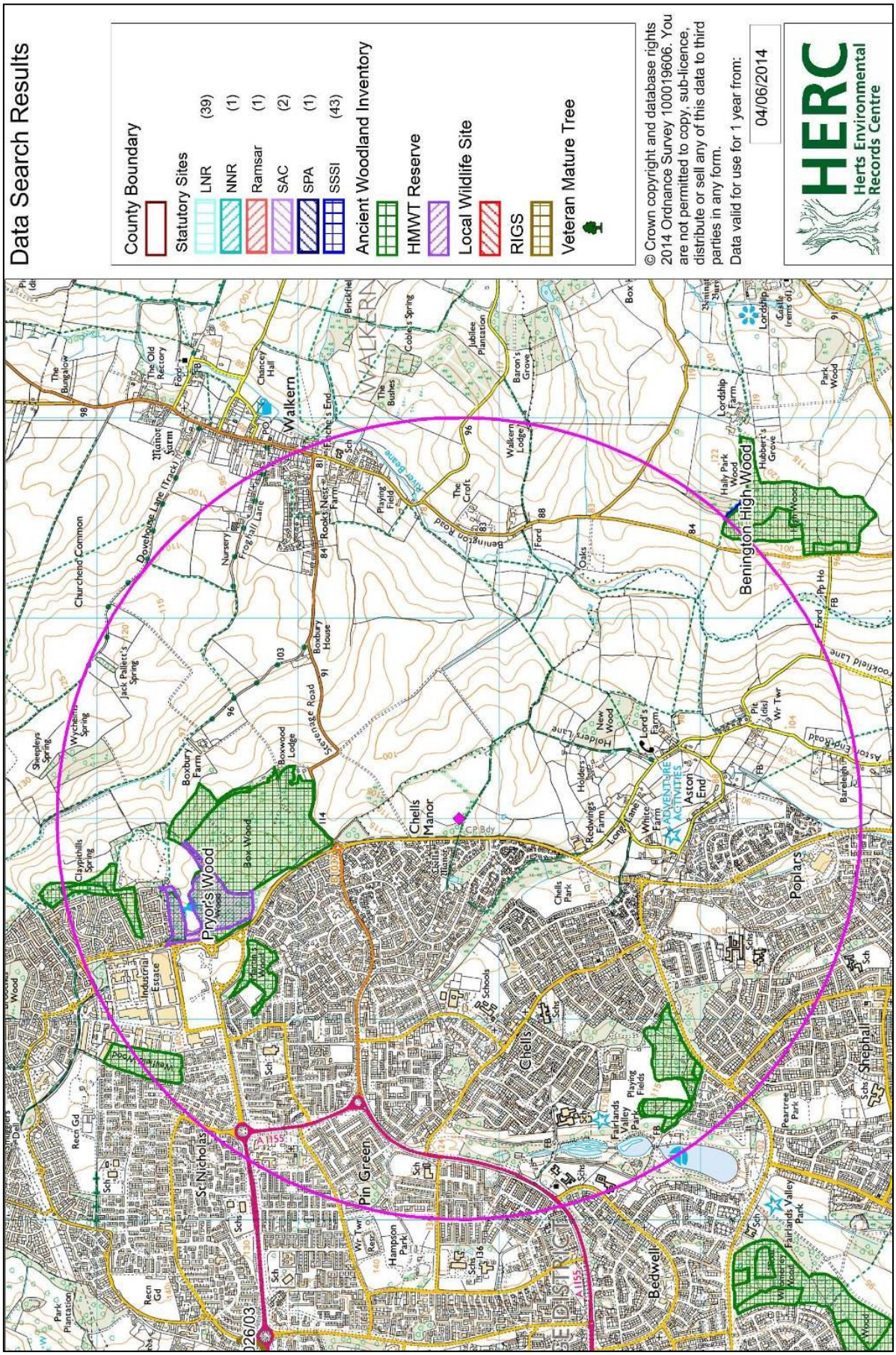


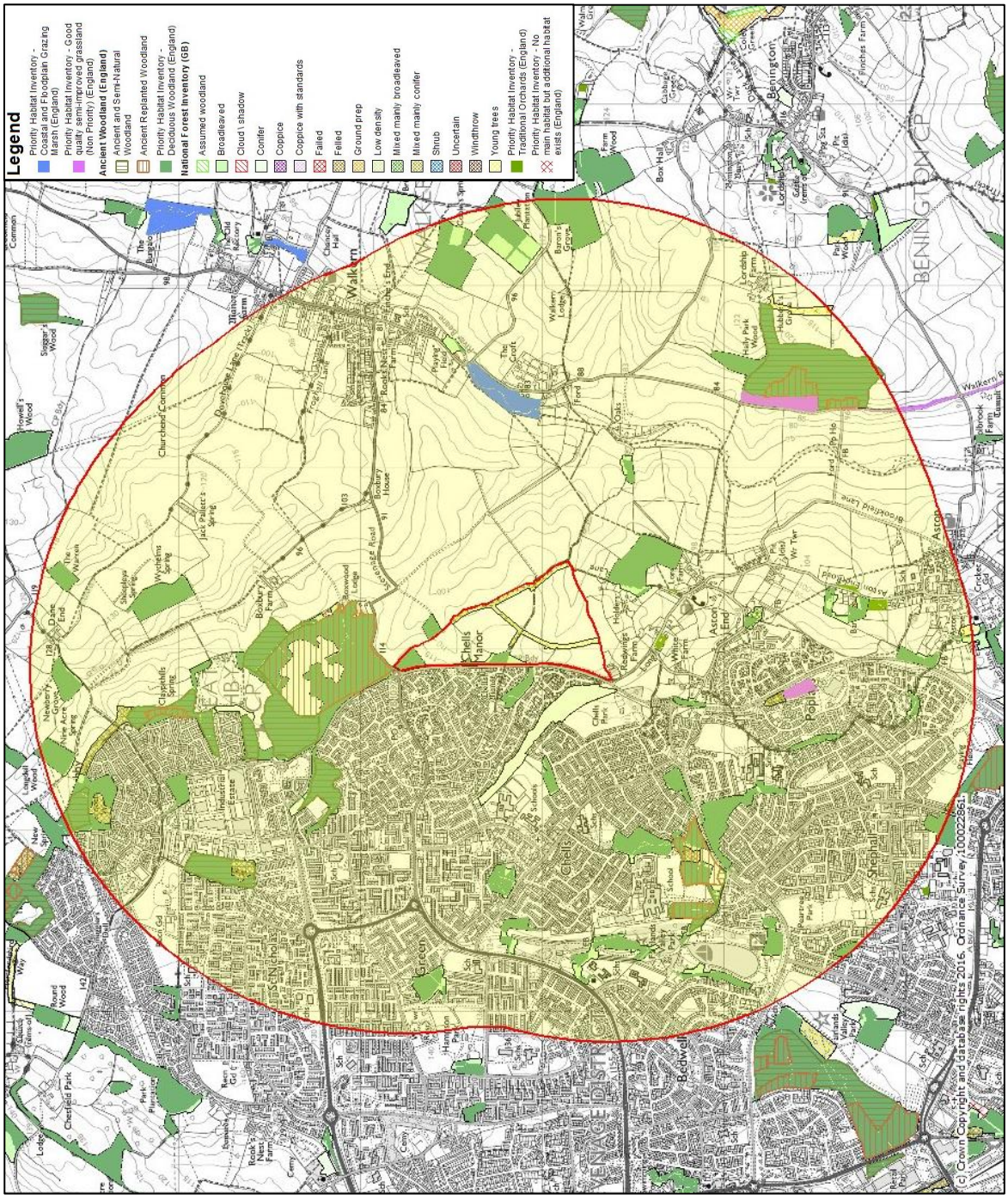
Figure 3b: Non statutory sites within 2km (Ancient Woodland & Wildlife Trust Reserve)



Habitat Types within 2km

3.4 Habitat types within the area included ancient woodlands, deciduous woodland, good quality semi-improved grassland and floodplain grazing marsh. Deciduous woodland was present on site, with the closest area of ancient woodland approximately 20m north as part of Box Wood LWS. The nearest area of good quality semi-improved grassland lay approximately 950m south and the floodplain grazing marsh was approximately 800m east. Four traditional orchards were also identified within the search area.

Figure 4: Habitat types within 2km



Protected, priority and rare species

3.5 The Birds of Conservation Concern (BoCC) are split into three criteria. The red list is the highest conservation priority (species needing urgent action). The amber list is the next most critical group, followed by green. Red listed species are those that are globally threatened according to IUCN (International Union of Conservation of Nature) criteria, species with populations or ranges that have declined rapidly in recent years, and those that have declined historically and have not shown a substantial recent recovery.

3.6 Full lists of UK principally important and protected amphibians, plants, reptiles and mammals are shown below. A reduced list of UK principally important and protected birds and invertebrates is shown; these have been selected based on their likelihood of being recorded at the site given the habitats types present.

3.7 Pre-1980 records are considered historical records and have been omitted from the desk study results.

WCA = Wildlife and Countryside Act 1981 as amended; SPI = Species of Principle Importance; LBAP = Local Biodiversity Action Plan; BoCC = Birds of Conservation Concern 4

Birds	Protection	Approximate distance from site	Recent year within 2km
Black redstart	BoCC red list; WCA 1	1.3km west	2003
Brambling	WCA 1	750m north	1983
Bullfinch	BoCC amber list; SPI	1km south	2013
		750m north	1983
Corn bunting	BoCC red list; SPI	750m north	1983
Cuckoo	BoCC red list; SPI	750m north	1983
		Within a 1km square 200m north	2010
Dunnock	BoCC amber list; SPI	750m north	1996
Fieldfare	BoCC red list; WCA 1	750m north	1997
Firecrest	WCA 1	750m north west	2010
Grey partridge	BoCC red list; SPI	750m north	1983
Grey wagtail	BoCC red list	1.6km south west	2003
Hawfinch	BoCC red list; SPI	750m north	1983
Herring gull	BoCC red list; SPI	750m north	1983
Hobby	WCA 1	1.3km west	2003
House sparrow	BoCC red list; SPI	750m north	1983
Lapwing	BoCC red list; SPI	1.3km west	2003

		750m north	1983
Lesser spotted woodpecker	BoCC red list; SPI	1.3km west	2003
		750m north	1983
Linnet	BoCC red list; SPI	750m north	1997
Marsh tit	BoCC red list; SPI	750m north east	2010
Mistle thrush	BoCC red list	750m north east	1983
Quail	BoCC amber; WCA 1	1.3km west	2003
Red kite	WCA1	750m north west	2011
		1.3km west	2003
Redwing	BoCC red list; WCA 1	750m north	1996
Reed bunting	BoCC amber list; SPI	750m north	1983
Skylark	BoCC red list; SPI	750m north	1983
Song thrush	BoCC red list; SPI; LBAP	600m north	2008
Spotted flycatcher	BoCC red list; SPI	100m west	2003
Starling	BoCC red list; SPI	750m north	1983
Tree pipit	BoCC red list; SPI	750m north	1983
Tree sparrow	BoCC red list; SPI; LBAP	750m north	1983
Turtle dove	BoCC red list; SPI	750m north	1983
Wood warbler	BoCC red list; SPI	750m north east	1983
Yellow wagtail	BoCC red list; SPI	100m west	2003
Yellowhammer	BoCC red list; SPI	750m north	1983

Mammals	**Protection**	**Approximate distance from site**	**Year of Record**
Badger	Protection of Badgers Act 1992	Within the 2km search area	2013
Brown hare	SPI	Within same 2km square as site	1985
		750m north west	1997
Harvest mouse	SPI	Within same 2km square	1985
		200m north east	1983
Hazel dormouse	WCA 5; SPI; LBAP	Within a 1km square 1.1km north	2008
		400m north east	1994
Hedgehog	SPI	Within a 2km square 400m north	1996
		750m north west	1983

Water vole	WCA5; SPI; LBAP	Within a 2km square 1km south west	1987
Bat (Chiroptera)	European protected	Within same 2km square as site	1994
		Within a 1km square 600m south	2000
		Within a 1km square 900m north west	2005 & 1997*
Serotine bat	European protected	Within a 2km square 800m south east	2006
Daubenton's bat	European protected	Within a 1km square 750m west	1998
		Within a 2km square 800m south east	2006
Natterer's bat	European protected; LBAP	Within a 2km square 800m south east	2006
		Within same 1km square as site	1994
Long eared species (*Plecotus* sp.)	European protected	Within a 1km square 600m south	2013
Brown long-eared	European protected; SPI	Within a 1km square 1km north east	2006
		Within same 1km square as site	1988*
		Within a 1km square 550m east	2004*
		Within a 1km square 200m north	2004
Noctule bat	European protected; SPI	Within a 1km square 750m west	1998
Pipistrellus species	European protected	Within a 1km square 1km south west	2002 & 1992*
		Within a 1km square 750m west	1998
Common pipistrelle	European protected	Within a 1km square 850m west	2006
		1.5km north west	2004
		Within a 1km square 550m east	
		500m north east	1983
		Within same 1km square as site	1997*
Nathusius' pipistrelle	European protected	Within a 2km square	2006

		800m south east	
Soprano pipistrelle	European protected; SPI	Within a 2km square 800m south east	2006

**Roost recorded*

Invertebrates	Protection	Approximate distance from site	Year of Record
Stag beetle	WCA5; SPI; LBAP	1.4km east	1998
Wall butterfly	SPI; Red list *Near threatened*	850m north west	2007
White-letter hairstreak butterfly	SPI; Red list *Endangered*	800m north west	2007
		1.2km north	2009
Small heath butterfly	SPI; Red List *Near Threatened*	300m north west	1997
		1.2km north	2009
14 Moth species were identified within 2km of the site all of which were SPI			

Plants	IUCN England Red Data list	Approximate distance from site	Year of Record
Bluebell *(Hyacinthoides non-scripta)*	*Least concern* WCA 8	Within same 2km square as site	1999
		850m north west	2013
Common rock-rose *(Helianthemum nummularium)*	*Near threatened*	Within a 2km square 400m north	1999
Dwarf spurge *(Euphorbia exigua)*	*Vulnerable*	Within a 2km square 400m north	1999
		850m north west	1992
Field mouse-ear *(Cerastium arvense)*	*Near threatened*	1.2km east	1990
Water-soldier *(Stratiotes aloides)*	*Least concern* GB list: *Near threatened*	1.2km south	1993
Stinking chamomile *(Anthemis cotula)*	*Vulnerable*	Within a 2km square 1km south west	1999

Amphibians	Protection	Approximate distance from site	Year of Record
Toad	SPI	Within same 2km square as site	1988
Great crested newt	European protected, SPI; LBAP	1km north west	2008

Reptiles	Protection	Approximate distance	Year of

		from site	Record
Grass snake	Partially protected under the WCA Schedule 5	Within a 1km square 1.8km east	1996
Slow worm		Within a 1km square 1.8km east	1996
		Within a 2km square 800m south east	1985

Phase 1 Habitat Survey

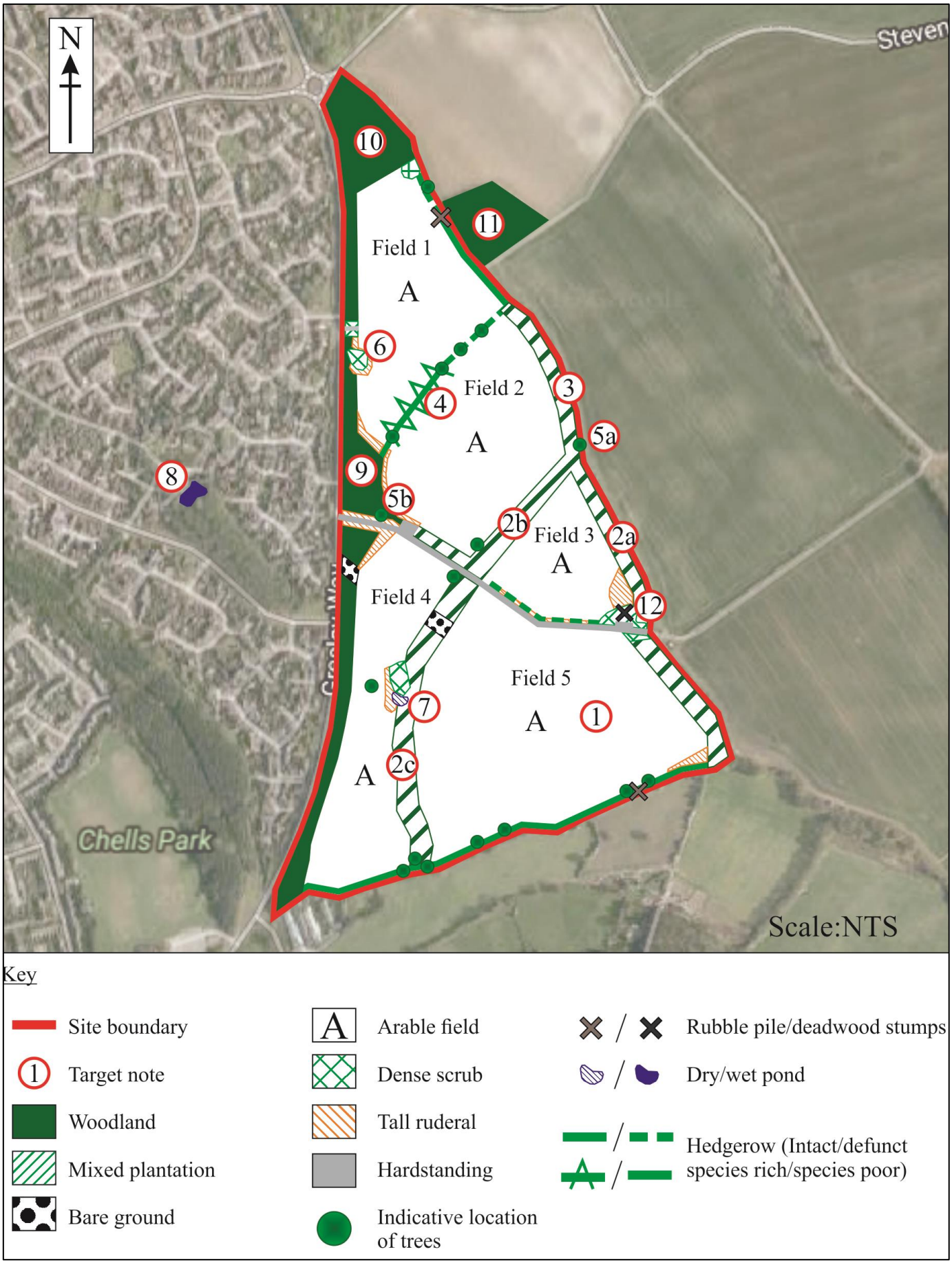
3.8 Figure 5 shows a Phase 1 habitat map of the site, with Target Notes. A list of plant species identified on the site is included in Appendix A.

Limitations and Assumptions

3.9 The baseline conditions reported and assessed in this document represent those identified at the time of the survey on the 6th September 2016. Although a reasonable assessment of habitats present can be made during a single walkover survey, seasonal variations are not observed. The full plant species list (Appendix A) was based on the current site visit. The survey was conducted in September, which is in the optimal season for Phase 1 habitat surveys. All areas of the site were accessible on the day of the survey.

3.10 The desk study used available records and historical data from the local area. However, this does not provide a reliable indication of species present since records depend entirely on survey effort in the area, which is highly variable. The data are useful as a general guide to supplement the site visit, but absence of records does not reflect absence of species.

Figure 5: Phase 1 Habitat Map



Target Notes

Target Note	Habitat description	Photo
1	Five arable fields (recently harvested) with tall ruderal, semi-improved grassland and/or bare earth comprising the margins Field margins, approximately 0.5 to 1.5m wide, contained coarse species which included cleavers (*Galium aparine*), nettle (*Urtica dioica*), cock's-foot (*Dactylis glomerata*) and false oat grass (*Arrhenatherum elatius*).	

2	Mixed plantation wooded strips were present along the eastern boundary and divided Fields 2 and 3, and Fields 4 and 5. These wooded strips were dominated by young Norway spruce (*Picea abies*), with hornbeam (*Carpinus betulus*), ash (*Fraxinus execelsior*), oak (*Quercus robur*), hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*). This habitat varied in composition and density and with fewer species (2a), younger centre sections being slightly less dense but with a higher species diversity (2b) and the strip towards the southern end of the site being dominated by semi-mature and early mature oak and ash with an open understory (2c). Plantation wooded strips all had a sparse ground flora due to dense canopy cover.	*2a*  *2b*  *2c* 
3	Areas of more recent plantation comprised semi-mature trees on semi-improved grassland.	

4	Hedgerows, separating Fields 1 and 2 and along the southern site boundary, were discontinuous and species poor. Species included hawthorn, blackthorn and elder (*Sambucus nigra*). There were areas of denser hedgerow with a higher species composition that additionally included hazel (*Corylus avellana*), bramble (*Rubus fruticosa*) and white bryony (*Bryonia dioica*).	
5	Mature trees, including oak, ash and beech (*Fagus sylvatica*) within hedgerows and plantations on site had cracks, crevices and deadwood and appeared to be of medium to high bat roost potential. An over mature oak along the eastern boundary (5a) (pictured) and an oak near the western site entrance (5b) were considered high and moderate bat potential trees.	

6	A disused pit was present along the western boundary. The pit was dry and dominated by nettle. Scrub and tall ruderal vegetation surrounded the pit including species such as white bryony (*Bryonia dioica*), woody nightshade (*Solanum dulcamara*) and bramble (*Rubus fruticosus* agg.). One tree within this area was considered to have low to medium bat roost potential.	 
7	A pond, Pond 1, was dry at the time of the survey, however was previously described as a shallow irregularly shaded pond, approximately 260m^2, with muddy banks within an area of scrub. Semi-mature and mature trees, including oak, were present within the pond.	
8	A large offsite pond, Pond 2, was approximately 700m^2, had poor water quality and minimal aquatic vegetation. The banks were shaded and dominated by dog-rose (*Rosa canina*) and bramble scrub. Waterfowl were present on this pond.	

9	A wooded plantation strip formed the western site boundary and varied in width along its length (ranging from 8m to 70m). The canopy was dense and included species such as field maple (*Acer campestre*), hawthorn and blackthorn, with a sparse shrub layer. Ground flora was limited and mainly covered in leaf litter and debris. A strip of amenity and semi-improved grassland, approximately 0.5m in width, separated the wooded strip from Gresley Way.	 
10	A deciduous wooded plantation, approximately 5m tall, was situated at the north of the site and was connected to the wooded strip and hedgerows within the site boundary. This woodland was located on top of a bank, with immature ash, dogwood (*Cornus sanguinea*) and sycamore (*Acer pseudoplatanus*) dominating these banks. Field maple dominated the canopy, with a sparse understory comprising hawthorn and blackthorn. The ground layer was limited and consisted of leaf litter and debris.	
11	An offsite mature woodland lay adjacent to the eastern boundary. The canopy was dominated by ash, with elder and blackthorn.	

12	A patch of scrub within Field 3, had remnants of an old building. Rubble piles were present within this area providing suitable sheltering and hibernating opportunities for reptiles and amphibians.	

4 Protected Species – Results and Evaluation

Flora and habitats

4.1 The site comprised five arable fields. Field edges, typically less than 1m wide, were dominated by grasses and ruderal weeds, with occasional patches of semi-improved grassland and bare ground. Grass species included creeping bent (*Agrostis stolonifera*) and meadow foxtail (*Alopecurus pratensis*), both indicators of neutral grassland.

4.2 Hedgerows formed the southern and part of the northern boundaries and divided Fields 1 and 2. The majority of the hedgerows on site were species poor and discontinuous; however a small section of hedgerow between Fields 1 and 2 had higher species diversity, with mature oak standards. None of the hedgerows on the site, including the species rich hedgerow, were considered likely to be classified as 'important' under the Hedgerow Regulations 1997, as they lack species diversity to qualify and other qualifying features to be classified as 'important'.

4.3 Early mature, mixed plantation woodland strips formed the majority of the field boundaries. Semi to early mature plantation woodland was situated to the north of the site. The canopy was dense and therefore the understory and ground flora were lacking in species. The woodland continued along the western boundary, herein called the wooded strip, and comprised similar species to the plantation woodland. Mature trees were situated within fields and field boundaries and were considered to have ecological value such as bat roost potential.

4.4 The woodland to the north of the site (Target Note 10) and the wooded strip along the western boundary (Target Note 9) were highlighted as Deciduous Woodland HPI (habitat of principle importance) under Section 41 of the NERC Act 2006. Some areas of the woodland and wooded strip will need to be removed to facilitate the development, however it is anticipated that no-net loss can be achieved across the site by incorporating tree planting into design plans, for example along the main spine road and within areas of public open space. The wooded areas should not be hard to re-create as they are generally early mature, and can be readily replaced with new planting of native species across the site.

4.5 No rare, species of principle importance or protected plant species were recorded at the site during the survey.

4.6 The desk study highlighted records of two arable species, stinking chamomile and dwarf spurge, within the 2km search area in 1999. The site provided suitable habitat for these species, however they were not recorded during the survey or during the original survey (JBA, 2014). There were records of bluebell in the area as recently as 2013, this species is associated with ancient woodland and is unlikely to be found within the site habitats, as the wooded areas on site were immature and lacked ground flora due to dense canopy cover. Other plant species noted in the desk study were chalk grassland species or aquatic species, which would not be found in habitats such as those within the site boundary.

4.7 No further survey is necessary.

Bats

4.8 There were no buildings on the site. There were several mature trees within the site which were considered to provide moderate to high roosting opportunities for bats (Target Note 5). The majority of which were situated within the hedgerows and plantations on site.

4.9 The site was dominated by arable land, which provides poor quality foraging habitat for bats. However, the field margins, hedgerows and wooded areas provided good quality foraging and commuting opportunities for bats.

4.10 The desk study highlighted a variety of bat species within 2km of the site boundary including serotine, Daubenton's, Natterer's, long-eared bat species (including brown long-eared bat), noctule and pipistrelle species (including common, soprano and Nathusius'). There were historic and more recent records of roosting colonies within 2 -3km^2 of site. The area around the site has multiple woodlands connected via hedgerows and it is probable that bats recorded at these distances could commute, forage, or roost on site.

4.11 In current design plans the majority of the development will be confined to the arable land and the wooded strip and field margins are being retained, with only small sections being removed for access roads and footpaths. It is therefore considered unlikely that bats in the local area would be significantly impacted by the removal of small sections of the wooded strip and hedgerows. Additional tree and hedgerow planting within the development, particularly along the main spine road, will provide additional linear commuting and foraging routes through the site.

4.12 To minimise risk of disturbance to foraging and commuting bats on the site, it is recommended that the development should follow lighting minimisation precautions, including the following:

- No works on site should be conducted after sunset and if security lighting is required then this should be kept to the minimal level (as necessary for safety and security)
- Post development lighting should be directed away from boundary trees and vegetation, and away from trees with bat roost potential.
- Installation of lighting columns at the lowest practical height level with box shield fittings will minimise glare and light spillage
- Lux level of lamps should be as low possible and be high pressure sodium (rather than metal halide, or other) with covers made from glass rather than plastic as this minimises the amount of UV light, reducing the attraction effects of lights on insects
- Security lights should be set on short timers, and be sensitive to large moving objects only

4.13 A full tree assessment for roosting opportunities for bats was undertaken as part of the Phase 2 surveys and bat activity surveys are ongoing to determine the level of bat activity within the site.

Reptiles

4.14 The majority of the site comprised arable field which did not provide suitable habitat for reptiles. However, areas of semi-improved grassland and tall ruderal provided suitable basking and foraging opportunities for reptiles on site. Scrub, hedgerow and the wooded habitats provided suitable sheltering habitat. Rubble piles (Target Note 10), provided additional sheltering and hibernation opportunities.

4.15 Records of grass snakes and slow worms within the surrounding area were highlighted within the desk study. It was considered that grass snakes were the most likely species to be present, given the suitable structure of vegetation and ponds on and near site.

4.16 Reptile surveys were undertaken in 2015 by JBA Consultancy Services (JBA, 2015) and no reptile species were recorded

Birds

4.17 Trees, scrub, hedgerow and wooded habitats on site provided potential nesting and foraging opportunities for birds. The areas of grassland were scattered and of limited extent, therefore were not considered suitable for ground nesting birds. However the arable fields provided suitable nesting habitat for ground nesting birds, such as skylarks. The arable fields also provided suitable habitat for foraging birds.

4.18 Bird species observed during the field survey are shown in the table below alongside their local and national status.

Species	BTO code	LBAP	SPI	WCA Schedule 1	BoCC
Blackbird	B.				
Blue tit	BT				
Carrion crow	C.				
Great tit	GT				
Green woodpecker	G.				
Jay	J.				
Magpie	MG				
Robin	R.				
Song thrush	ST	✓	✓		Red
Tawny owl	*TO*				*Amber*
Woodpigeon	WP				
Wren	WR				

Italics: Birds observed during the bat survey undertaken on the 5th September.

4.19 The site provided potential habitat for a range of nesting widespread and common species. Protected and BoCC red listed species such as song thrush (recorded during survey), skylark, yellowhammer and grey partridge were identified within the desk study and the site provides suitable nesting and foraging habitat for these species.

4.20 Bird surveys have been carried out on site and the report is currently in progress. Recommendations within this report will be detailed and these should be adhered to.

4.21 Any trees/hedgerows proposed for retention should be suitably protected from harm during the construction works following British Standard: BS5837 (2012).

4.22 Site clearance and works proposed to any wooded habitat, trees, scrub or hedgerows should be conducted outside the main bird breeding season (which is March until September). If vegetation removal is unavoidable between these dates, an ecologist should survey the site for active bird nests immediately prior to works. If

nests are identified, there may be a delay in the clearance of some vegetation until all young birds have fledged.

Amphibians

4.23 There was one pond (Pond 1) on site enclosed within scrub. This pond was dry at the time of the survey so could not be assessed for its suitability for breeding great crested newts (GCN). However, during the original survey a habitat suitability assessment (HSI) was carried out and this pond was considered to provide poor quality breeding habitat for GCN.

4.24 A further four ponds were identified within 500m of the site, one of which was not accessible on the day. Three ponds were therefore visited; one pond (Pond 5) was dry and two ponds (Pond 2 and 4) were assessed for their suitability to support breeding GCN. The suitability of both the ponds was 0.48 (poor), full results and a pond map can be found in Appendix B.

4.25 Areas of coarse grassland, scrub and woodland on site comprised moderate quality habitat for amphibians, such as toads and GCN, during their terrestrial phase. Log and rubble piles provided additional sheltering and hibernating habitat.

4.26 There are records of GCN from 1km north west of the site in 2008.

4.27 GCN eDNA surveys were carried out in 2015 (James Blake Associates, 2015) and found that GCN were not present within Ponds 1 and 2. The habitats on site have not altered since the GCN surveys were undertaken and considering that GCN were not recorded within the local area, it is unlikely that GCN will colonise the site in the interim. It may be necessary to update GCN surveys in the future to ensure that this species is still absent from the local area.

4.28 GCN eDNA surveys involve a single visit to the ponds to collect water samples and should be undertaken between 15th April and 30th June. It should be noted that GCN eDNA surveys only determine a presence or absence of the species and not a population estimate required for a Natural England licence, therefore if GCN are present then full GCN surveys will be required.

Invertebrates

4.29 The arable field was unlikely to support a large number of invertebrates due to the likely use of insecticides. However, the hedgerows, wooded habitats and grassland provided potential habitat for common invertebrates. These habitats were of limited

extent and minimal clearance is scheduled to create gaps for the access roads and footpaths. Therefore the proposed development is unlikely to impact a significant assemblage of protected or rare invertebrates.

4.30 The data search highlighted records of wall, small heath and white-letter hairstreak butterflies as well as the cinnabar moth within 2km of the site. The caterpillar food plant of the small heath and wall butterflies is grasses, while the white-letter hairstreak prefers elms (*Ulmus* sp.) and the cinnabar moth prefers ragwort and grounsel (*Senecio* sp.). Grasses and *Senecio* species were recorded on site, therefore it is recommended that areas of public open space are planted with a seed mix that contains grasses and *Senecio* species.

4.31 Deadwood stumps recorded within the wooded habitats provided suitable foraging habitat for stag beetle larvae. Records of stag beetles were highlighted in the desk study approximately 1.4km east in 1998. It is therefore recommended that wooded habitats are retained and that deadwood stumps remain *in situ*. The wooded habitats and suitable stag beetle larvae habitat should also be protected from disturbance during and post construction. If this cannot be achieved, the deadwood stumps should be translocated, under the supervision of a suitability experienced ecologist, to suitable woodland and two stag beetle loggeries should be incorporated into design plans as compensation for the loss of any suitable habitat.

4.32 No further survey is necessary.

Hedgehogs and badgers

4.33 The site and field margins provided suitable habitat for foraging badgers and hedgehogs, although no evidence of hedgehogs was recorded during the survey. The wooded strips and hedgerows throughout the site provided suitable cover for sett creation and evidence for badgers was recorded during the survey.

4.34 There are records of badgers and hedgehogs within the surrounding area from 2013 and 1996, respectively.

4.35 A badger survey was undertaken by JBA (JBA 2016) to determine the extent and nature of badger activity within the site. The full findings from this survey are contained in the report entitled *Badger Survey of Gresley Park* produced by JBA.

4.36 It is recommended that areas of hedgerow vegetation at the boundaries of the site are retained or hedgerow planting included in designs to provide foraging and commuting routes for badgers and hedgehogs.

Dormice

4.37 The majority of the site was sub-optimal for dormice. Managed hedgerows were discontinuous and plantation woodlands were largely lacking shrub layers decreasing the value of the woodland for dormice as dormice would be unable to gain access into the canopy. However, the wooded habitats along the western boundary and towards the north of the site had good structure and the edges of the wooded areas had high species diversity, including dormice food plants such as hazel and bramble. The site was linked to wider areas of woodland suitable for dormice.

4.38 Dormice have been recorded at Brooches Wood, approximately 1.7km north west of the site, in 2008 and within Box Wood and Pryor's Wood, approximately 20m north, in 1994.

4.39 Dormice surveys are currently ongoing at site and recommendations will be detailed within the report.

Other Protected, BAP or Rare Species

4.40 There was one pond within the site, however due to frequent drying, it does not provide suitable habitat for water voles or otters. No watercourses were present within the site or within 50m of the site boundary. It was therefore considered unlikely that species such as otter and/or water vole would be impacted by the proposed development.

4.41 The site provided suitable habitat for brown hare and harvest mice, both species of principal importance in England, which were highlighted within the desk study. No evidence indicating the presence of either species was recorded during the site visit, or on previous site visits. Given that arable land with hedgerow and woodland dominated the surrounding landscape to the north, south and east it was considered unlikely that either species would be significantly impacted by the proposed development. However, it is recommended that hedgerows and the wooded habitat are protected and adjacent areas are managed to ensure that foraging habitat still persists on site for brown hare and harvest mice, as well as hedgehogs and badgers, and so connectivity around the site remains.

4.42 The proposed development was considered unlikely to impact on any other protected, SPI or rare species.

Potential Impacts to Conservation Sites

4.43 There were no European protected sites within 7km of the development area.

4.44 The Benington High Wood SSSI was located approximately 1.4km south east and was designated for its ancient woodland. The development site does not support ancient woodland and the woodland currently on site is being retained with very limited clearance taking place for access roads. While the site is within easy commuting distance (approximately 2km), the increase in population to the area from the development is not significant in comparison to the current population of Stevenage that already has access to the SSSI. It is not considered likely that the ancient woodland for which Benington Wood SSSI has been designated will be significantly impacted by a relatively small increase in visitor numbers.

4.45 The table below shows SSSIs that were highlighted in the desk study as being within potential impact distance of the site.

Table 4: SSSI Impact Risk Zones which lay within the development site

SSSI Site	Distance	Public Accessibility
Benington High Wood*	1.4km south east	Public footpaths along northern boundary
Knebworth Woods	3.9km south west	Public footpaths
Moor Hall Meadows	5.5km north east	Public footpaths

**Detailed in Table 2*

5 Key Recommendations: Legal Requirements

5.1. Updated surveys are recommended for great crested newts if works have not started before 2017. This species is protected under EU and UK law and loss of habitat or disturbance to this species should be adequately mitigated.

5.2. Updated surveys for reptiles are recommended if works have not started before 2018, as these species are protected under UK law and should not be intentionally or recklessly killed or injured.

5.3. An updated badger survey is recommended 6 months prior to the start of works on site, as this species is protected under UK law and it is an offence to intentionally or recklessly damage, destroy, obstruct, harm or disturb a badger sett and/or badgers within.

5.4. Recommendations made in the Phase 2 reports for bats, dormice and birds should be adhered to.

5.5. Deciduous woodland habitat of principle importance (HPI) is protected under Section 41 of the NERC Act 2006, so any loss will be adequately compensated for in design plans.

5.6. Precautionary clearance of the site, woodland, scrub, hedgerows and trees will be necessary, as detailed in Section 4, to avoid infringing legislation, which protects all nesting birds.

6 Additional and Enhancement Recommendations

6.1 The following are suggestions that will enhance the value of the site for wildlife. However, it should be noted that these suggestions are not legally required for compensation of habitats or mitigation, and may be revised depending on the outcome of the further surveys for reptiles, badgers, bats, dormice, birds and great crested newts.

6.2 Where possible, hedgerows at the boundaries of the site should be retained and enhanced to create corridors and shelter/foraging areas for wildlife including birds, badgers, bats and hedgehogs. Planting of native hedgerow species in gaps, for example along the southern and parts of the northern boundaries will provide further opportunities for these species.

6.3 The addition of bat boxes on the proposed buildings and retained trees within the site would provide additional roosting opportunities. Schwegler bat boxes are recognised as being suitable for roosting bats and long lasting. Bat boxes should be located south facing (between south east and south west), above 5m and away from artificial light sources. Boxes such as Schwegler 1FF or integral bat tubes Schwegler 1FR suitable for pipistrelles would be suitable for this site.

6.4 The addition of bird boxes on the new buildings and retained trees on site to provide additional nesting opportunities for birds in the local area. Boxes should include a variety of designs including a range of hole sizes and open fronted designs, this will attract a greater diversity of birds to nest. Boxes should be located out of direct sunlight and close to, but not restricted by, vegetation.

6.5 Landscaping could incorporate native or wildlife attracting trees, shrubs, and wildflower areas as these would likely be of benefit to a variety of wildlife including, birds, bats and invertebrates. Trees and shrubs, such as hawthorn, field maple, hazel, cherry plum, guelder rose and blackthorn should be planted to encourage movement, enhancing the existing connections associated with the site.

6.6 The incorporation of reptile hibernacula into the landscape design will enhance the area for reptiles in the future. Hibernacula can be created by partially burying piles of wood/rubble and covering with earth.

6.7 If existing deadwood stumps are to be disturbed, stag beetle loggeries should be incorporated into design plans ideally translocating rotten deadwood stumps. Loggeries can be created by partially burying logs (vertically) into the ground.

6.8 Log piles or rockeries could be created to provide habitat for small mammals, invertebrates and other wildlife. Ideally wood from broadleaved trees would be used for log piles, particularly oak, beech or fruiting trees with bark still attached. These should be partially buried, vertically, in the soil in shaded areas and plants should be allowed to grow over them to retain the moisture.

7 Conclusion

7.1 The site consisted of five arable fields with mixed plantation woodland strip and hedgerows along the site and field boundaries. Woodland was present to the north of the site, with a continuation of wooded habitat along the western boundary. A pond and mature trees were also present on site.

7.2 Surveys have been undertaken for badgers, GCN, reptiles, birds, bats and dormice and recommendations within these reports should be adhered to.

7.3 Deciduous woodland (HPI) was present on site and some of this habitat will require removal to facilitate the development. Therefore, adequate tree planting will be incorporated into design plans to compensate for any sections of this habitat that requires removal.

7.4 If any mitigation or compensation recommended following these further surveys is carried out, and if the precautionary measures for birds detailed in this report are followed, it was considered that the development could proceed with minimal impact on the local conservation status of any protected, principally important or rare species within the area.

7.5 It is also considered that with a sensitive landscape scheme, and by including some, or all, of the additional recommendations, the site could be enhanced for local wildlife post development.

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9 Appendices

Appendix A: Plant species list

Forbs

Common Name	Scientific Name	Tall ruderal	Semi-improved grassland	Scrub	Plantation woodland	Hedgerow	Wooded strip	Woodland
Yarrow	*Achillea millefolium*	✓						
Garlic mustard	*Alliaria petiolata*	✓						
Cow parsley	*Anthriscus sylvestris*	✓	✓			✓	✓	
Greater burdock	*Arctium lappa*	✓	✓			✓	✓	
Lesser burdock	*Arctium minus*	✓	✓			✓	✓	
Mugwort	*Artemisia vulgaris*	✓		✓				
Black horehound	*Ballota nigra*	✓						
White bryony	*Bryonia dioica*	✓				✓		
Hedge bindweed	*Calystegia sepium*	✓				✓		
Shepherd's-purse	*Capsella bursa-pastoris*	✓						
Common knapweed	*Centaurea nigra*	✓	✓					
Rosebay willowherb	*Chamerion angustifolium*	✓	✓					
Creeping thistle	*Cirsium arvense*	✓	✓			✓		
Spear thistle	*Cirsium vulgare*	✓	✓					
Hemlock	*Conium maculatum*	✓						
Field bindweed	*Convolvulus arvensis*	✓	✓					
Great willowherb	*Epilobium hirsutum*		✓					
Square-stalked willowherb	*Epilobium tetragonum*	✓	✓					
Fennel	*Foeniculum vulgare*	✓						
Cleavers	*Galium aparine*	✓	✓			✓		
Hedge bedstraw	*Galium mollugo*	✓						
Cut-leaved crane's-bill	*Geranium dissectum*	✓	✓					
Dove's-foot crane's-bill	*Geranium molle*	✓						
Herb-Robert	*Geranium robertianum*		✓		✓			
Wood avens	*Geum urbanum*				✓			
Ground-ivy	*Glechoma hederacea*				✓			
Bristly ox-tongue	*Helminthotheca echioides*	✓	✓					
Hogweed	*Heracleum sphondylium*	✓	✓				✓	
Nipplewort	*Lapsana communis*	✓						
Common mallow	*Malva sylvestris*	✓	✓					
Scented mayweed	*Matricaria recutita*	✓						
Field forget-me-not	*Myosotis arvensis*	✓	✓					
Corn poppy	*Papaver rhoeas*		✓					
Pale persicaria	*Persicaria lapathifolia*	✓						
Ribwort plantain	*Plantago lanceolata*	✓	✓					

Greater plantain	*Plantago major*	✓	✓					
Knotgrass	*Polygonum aviculare*	✓						
Creeping buttercup	*Ranunculus repens*	✓						
Curled dock	*Rumex crispus*	✓	✓					
Broad leaved dock	*Rumex obtusifolius*	✓						
Hoary ragwort	*Senecio erucifolius*	✓	✓					
Common ragwort	*Senecio jacobaea*	✓	✓					
Field madder	*Sherardia arvensis*	✓						
Red campion	*Silene dioica*	✓						
White campion	*Silene latafolia*	✓	✓					
Hedge mustard	*Sisymbrium officinale*	✓	✓					
Woody nightshade	*Solanum dulcamara*	✓				✓	✓	
Prickly sow-thistle	*Sonchus asper*	✓						
Dandelion	*Taraxacum officinale* agg.	✓	✓					
Upright hedge-parsley	*Torilis japonica*	✓						
Goat's beard	*Tragopogon pratensis*	✓	✓					
Red clover	*Trifolium pratense*	✓	✓					
Scentless mayweed	*Tripleurospermum inodorum*	✓						
Nettle	*Urtica dioica*	✓	✓	✓	✓	✓	✓	✓
Common field speedwell	*Veronica persica*	✓						
Smooth tare	*Vicia tetrasperma*	✓						

Black text = recorded during 2016 survey, blue text = recorded only during 2014 survey

Grasses, sedges, rushes and ferns

Common Name	Scientific Name	Tall ruderal	Semi-improved grassland	Plantation woodland
Creeping bent	*Agrostis stolonifera*	✓	✓	
Meadow foxtail	*Alopecurus pratensis*		✓	
False oat grass	*Arrhenatherum elatius*	✓	✓	
Barren brome	*Anisantha sterilis*	✓	✓	
Cock's foot	*Dactylis glomerata*	✓	✓	
Couch grass	*Elymus repens*	✓	✓	
Red fescue	*Festuca rubra*		✓	
Yorkshire fog	*Holcus lanatus*	✓	✓	
Wall barley	*Hordeum murinum*	✓		
Annual meadow grass	*Poa annua*			✓

Trees and shrubs

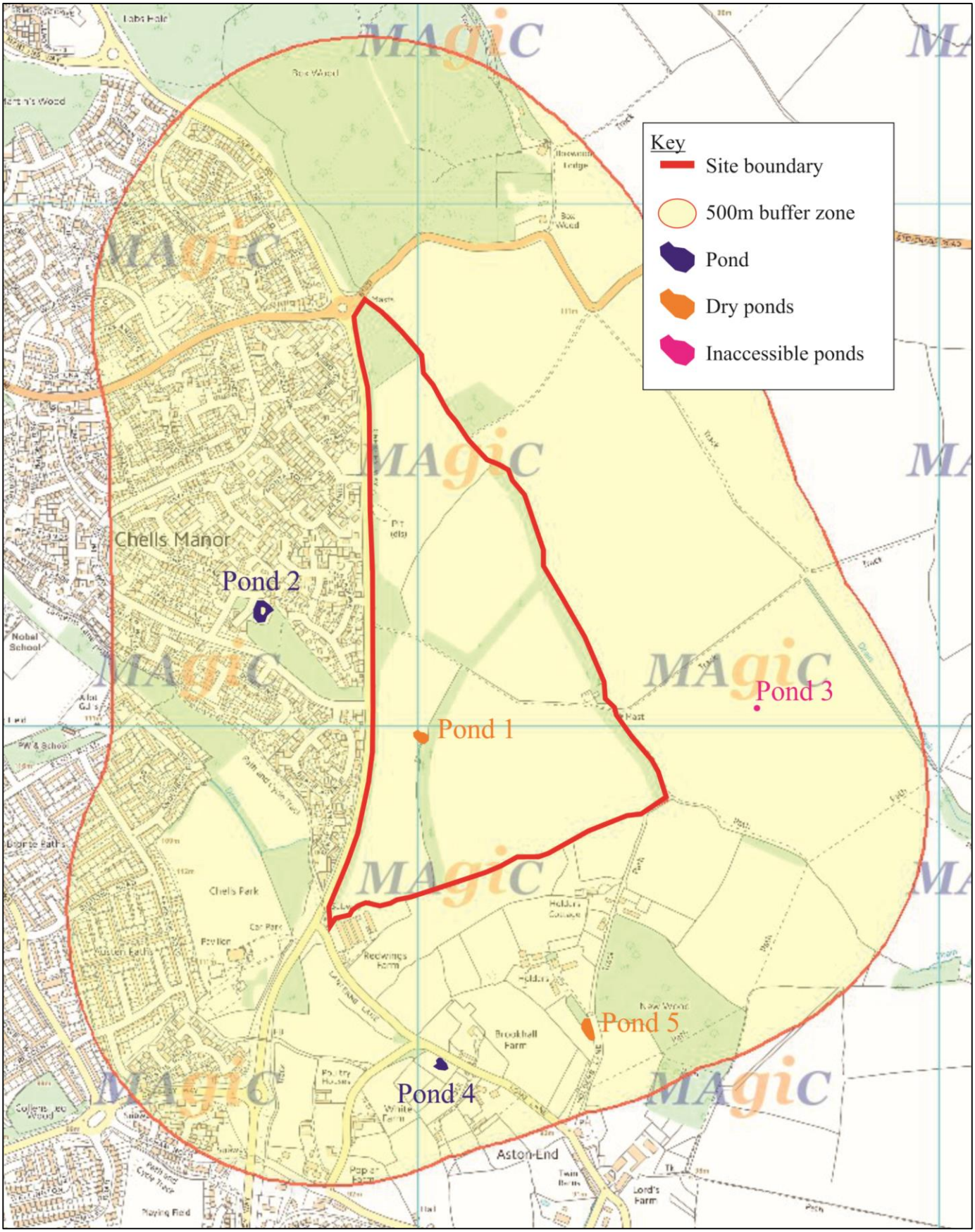
Common Name	Scientific Name	Tall ruderal	Semi-improved grassland	Scrub	Plantation woodland	Hedgerow	Wooded strip	Woodland
Field maple	*Acer campestre*				✓	✓	✓	✓
Sycamore	*Acer pseudoplatanus*			✓		✓	✓	
Horse chestnut	*Aesculus hippocastanum*						✓	
Silver birch	*Betula pendula*				✓			
Hornbeam	*Carpinus betulus*				✓	✓	✓	✓
Old man's beard	*Clematis vitalba*				✓	✓	✓	✓
Dogwood	*Cornus sp.*		✓	✓	✓		✓	✓
Hazel	*Corylus avellana*				✓	✓	✓	✓
Hawthorn	*Crataegus monogyna*		✓	✓	✓	✓	✓	✓
Spindle	*Euonymus europaeus*						✓	✓
Beech	*Fagus sylvatica*			✓	✓	✓		
Ash	*Fraxinus excelsior*			✓	✓	✓	✓	✓
Ivy	*Hedera helix*	✓				✓	✓	✓
Holly	*Ilex aquifolium*			✓	✓	✓		
Crab apple	*Malus sylvestris*				✓	✓		
Norway spruce	*Picea abies*		✓		✓	✓		
Cherry	*Prunus avium*				✓		✓	
Pissard's plum	*Prunus cerasifera* 'Pissardii'						✓	
Plum	*Prunus* sp.						✓	
Blackthorn	*Prunus spinosa*			✓	✓	✓	✓	✓
Oak	*Quercus robur*		✓		✓	✓	✓	✓
Dog rose	*Rosa canina*	✓	✓	✓	✓	✓	✓	
Bramble	*Rubus fruticosus* agg.	✓	✓	✓	✓	✓	✓	✓
Goat willow	*Salix caprea*		✓					
Willow	*Salix sp.*			✓				
Elder	*Sambucus nigra*		✓	✓	✓	✓	✓	
Lime	*Tilia sp.*			✓				
Wayfaring Tree	*Viburnum lantana*			✓				
Guelder rose	*Viburnum opulus*				✓	✓		

Black text = recorded during 2016 survey, blue text = recorded only during 2014 survey

Appendix B: Habitat Suitability Index (HSI) and Pond Map

	Pond 1	Pond 2		Pond 4		Pond 5
		Field Score	**SI Value**	**Field Score**	**SI Value**	
Location		A	1	A	1	
Pond Area		692	1	180	0.4	
Permanence		Rarely	1	Sometimes	0.5	
Water Quality		Poor	0.33	Moderate	0.67	
Shade (%)		60	1	10	1	
Waterfowl		Major	0.01	Major	0.01	
Fish	**Dry**	Possible	0.67	Possible	0.67	**Dry**
Pond count		5	0.75	8	0.9	
Terrestrial Habitat		Good	1	Moderate to good	0.85	
Macrophytes		10	0.4	60	0.9	
HSI Score		**0.48**		**0.48**		
Suitability to support breeding GCN		**Poor**		**Poor**		

Pond 3 was not visited as access had not been granted.


Key
Site boundary
500m buffer zone
Pond
Dry ponds
Inaccessible ponds
Chells Manor
Pond 2
Pond 1
Pond 3
Pond 5
Pond 4
Aston End
Chells Park
Nobel School
Redwings Farm
Brookhall Farm
White Farm
Lord's Farm

Appendix C: Relevant protected species legislation

Species	Relevant Legislation	Level of Protection
Badgers	○ Protection of Badgers Act 1992 ○ Badgers are also protected by the Wild Mammals (Protection) Act 1996	The Protection of Badgers Act (1992) makes it an offence to intentionally or recklessly: • Damage a badger sett or any part of it • Destroy a badger sett • Obstruct access to, or any entrance of a badger sett • Disturb a badger whilst it is occupying a badger sett
Bats	○ Full protection under the Wildlife and Countryside Act (WCA) (1981) (Listed on Schedule 5) - as amended ○ Classified as European protected species under Conservation of Habitats and Species Regulations 2010, as amended ○ Also protected by the Wild Mammals (Protection) Act 1996	Under the WCA (1981), it is an offence to: • intentionally kill, injure, or take any species of bat • intentionally or recklessly disturb bats • intentionally or recklessly damage destroy or obstruct access to bat roosts
Birds	○ Protection under the Wildlife and Countryside Act (1981) as amended	Under the WCA (1981), it is an offence to: (with exceptions for certain species): • Intentionally kill, injure or take any wild bird • Intentionally take, damage or destroy nests in use or being built (including ground nesting birds) • Intentionally take, damage or destroy eggs Species listed on Schedule 1 of the WCA or their dependant young are afforded additional protection from disturbance whilst nesting
Dormice	○ Full protection under the Wildlife and Countryside Act (WCA) (1981) (Listed on Schedule 5) - as amended ○ Classified as European protected species under Conservation of Habitats and Species Regulations 2010, as amended	Under the WCA (1981), it is an offence to: • intentionally kill, injure, or take dormice • intentionally or recklessly disturb dormice • intentionally or recklessly damage destroy or obstruct access to any place used by the animal for shelter or protection
Great crested newts	○ Full protection under the Wildlife and Countryside Act (WCA) (1981) (Listed on Schedule 5) - as amended ○ Classified as European protected species under Conservation of Habitats and Species Regulations 2010, as amended	Under the WCA (1981), it is an offence to: • intentionally kill, injure, or take great crested newts • intentionally or recklessly disturb great crested newts • intentionally or recklessly damage destroy or obstruct access to any place used by the animal for shelter or protection
Widespread reptiles	○ Partially protected under Schedule 5 of the Wildlife and Countryside Act (1981) as amended.	Under the WCA (1981), it is an offence to: • intentionally kill or injure these animals • sell, offer for sale, advertise for sale, possess or transport for the purposes of selling any live or dead animals or part of these animals