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Brookfield

Wildlife Site Review and Habitat Survey of Land at Brookfield

Final Report

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Originated	Niall Lusby	Senior Ecologist	24 August 2015
Reviewed	James Gillespie	Partner	25 August 2015
Issued to client as a draft	James Gillespie	Partner	04 September 2015
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Contents

1 Summary

1.1 BSG Ecology (BSG) was commissioned by Broxbourne Borough Council (BBC) in 2015 to undertake an ecological study of an area of land at Brookfield as part of the Development Plan process. The area of land surveyed is centred on Ordnance Survey grid reference TL 35047 05154 and is referred to as “the Site”.

1.2 A Phase 1 survey of the Site was carried out [in April and June 2015 along with targeted botanical survey of four Local Wildlife Sites (LWS) identified by BBC. Wooded areas were surveyed in April and grassland sites were surveyed in June.

1.3 The Phase 1 survey recorded habitats with the potential to support great crested newt, common reptiles, breeding birds, bats, badger and dormouse.

1.4 The results of the LWS survey suggest that each LWS is still likely to qualify as such, although one LWS (Doggett Hill Wood N.W. of Cromwell Wood) was found to have degraded in its southern end and it is recommended that consideration is given to bringing this area back under favourable management or removing it from the LWS designation.

1.5 Further survey for amphibians and reptiles have been recommended in order to help determine whether other areas of the Site would be likely to qualify as LWS.

1.6 The following members of staff input to this project:

- James Gillespie BSc (Hons) MSc MCIEEM, James’ role in this project was Project Director and technical reviewer of this report.
- Dr Tom Flynn BSc PhD MCIEEM, Tom’s role in this project was to complete the botanical field work and Phase 1 Survey of the Site.
- Niall Lusby BSc (Hons) MCIEEM, Niall’s role in this project was to assist in undertaking the Phase 1 survey of the Site and to write the report.

1.7 A summary of each BSG staff member’s experience and competence as a professional ecologist is provided at http://www.bsg-ecology.com/index.php/people/.

2 Introduction

Background to commission

2.1 BSG Ecology (BSG) was commissioned by Broxbourne Borough Council (BBC) in 2015 to undertake an ecological study of an area of land within the Borough as part of the Development Plan process. The area of land surveyed is centred on Ordnance Survey grid reference TL 35047 05154 and is referred to as "the Site".

2.2 In 2012, BSG undertook a similar study that included four Areas of Search for future development and one Strategic Site in the Borough of Broxbourne.

2.3 The current commission is to undertake a study of an additional area of land known as the Brookfield Site and four LWS that are present within it, to ensure that all areas of land within the Council's ownership have been subject to the same level of assessment and appraisal.

2.4 The 2015 study area boundary is shown on Figure 1. Figures 2 - 5 show the extent and location of the LWS surveyed. No other LWS were surveyed as part of this study.

2.5 This study will be used to inform BBC's preparatory work for analysing and allocating sites for future development and for shaping policies within the Local Plan. It will also be material in the determination of planning applications and will help inform Section 106 (Town and Country Planning Act 1990) contributions and the Community Infrastructure Levy charging scheduling. The study will also provide data to help BBC maintain and improve the natural landscape and ecological interest of the borough.

Objectives of the Study

2.6 The objectives of the study were as follows:

- Assess whether each site identified as a LWS by BBC still meets the criteria for selection as a LWS.
- Identify features of ecological value, protected species or Priority[1] habitats and species.
- Examine the impact of potential development on LWS and habitats and species of ecological value identified during the habitat survey of the Site.
- Identify measures to protect, mitigate or strengthen the LWS and habitats and species of ecological value.

Survey Areas

2.7 The Site and the LWS within it that were surveyed are illustrated in Figures 1 – 5 in Appendix 1. Appendix 3 lists the LWS that were surveyed.

[1] The NPPF (paragraph 117) indicates that local authorities should take measures to "promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species" linking to national and local targets through local planning policies. Priority habitats and species are shown on the UK Biodiversity List. The content of this list broadly accords with the content of the lists published in response to Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (species and habitats of principal importance for biodiversity). Planning authorities have a duty under Section 40 of the NERC Act to have regard to species and habitats of principal importance, in the exercise of their functions including development control and planning.

3 Methods

Review of Existing Data

3.1 The following information was requested from Hertfordshire Biological Records Centre (HBRC):

- Records of all protected and Priority species information within the boundaries of the study area.
- Previous survey data (where available) for the LWS.

3.2 This information was reviewed prior to carrying out the field surveys, and was used to inform subsequent assessments of the Site and LWS.

Site Access

3.3 The land within the survey area had been recently purchased by BBC. On attending Site it was clear that parts of the Site are being used for horse livery and that residential properties and gardens are present within the survey boundary. BBC were contacted and it was agreed that these areas did not require detailed survey (Personal communication with Vicky Forgione). The areas not subject to detailed survey are indicated on Figure 1.

Field Survey

Timing

3.4 The study was commissioned in January 2015. In order to meet the requirements of BBC and provide robust data, the field survey programme was planned as follows.

3.5 Three of the four LWS identified within the Site are designated for woodland interest and the surveys were undertaken in April 2015. This is the optimum time of year to survey woodland sites as it coincides with the flowering period of most woodland ground flora species.

3.6 The fourth LWS is designated for its grassland interest and was surveyed in June which coincides with the main flowering period for the majority of grassland species. The Phase 1 habitat survey of the Site was carried out at the same time, which is an appropriate time of year for grassland survey.

The Brookfield Site

3.7 A Phase 1 habitat survey was carried out according to standard methodology (JNCC, 2010). This involved walking over all semi-natural (undeveloped) parts of the Brookfield Site, where access was available, and assigning habitat types to a map based on the descriptions provided in JNCC 2010 (for example, habitat descriptions can include agriculturally improved, semi-improved or unimproved neutral, acidic or calcareous grassland; woodland is divided into broadleaved/broadleaved plantation/mixed plantation/conifer plantation and so on). More detailed information was recorded, where appropriate, and annotated on the map as 'target notes'. During the survey, note was also taken of any evidence of protected faunal species (or habitats with the potential to support them). This information was mapped in the field using standard Phase 1 codes and then transferred to a GIS (see 'Mapping' section below).

3.8 Land outside of the LWS that was identified during the Phase 1 survey as having potential to qualify as a LWS was noted, and surveyed according to the LWS protocol detailed in the 'Local Wildlife Sites' Section below.

Local Wildlife Sites

3.9 Local Wildlife Sites were surveyed according to the protocol produced by the Hertfordshire Wildlife Sites Partnership for Local Wildlife Sites in Hertfordshire (HWSP, 2014). This involves the completion of a detailed pro-forma and an Excel spreadsheet 'tick list' of botanical species, both of which were completed following a visit to each site. As well as a site description, the HWSP (2014) protocol requires information to be collected on the condition and current management of each site, and prompts for recommendations for additional surveys and future management. Clarification of how these sections were dealt with is provided below.

3.10 Further surveys were only recommended where it was considered that additional information was necessary to complete the assessment of whether a site meets the relevant LWS selection criteria. For example a site designated for its great crested newt *Triturus cristatus* interest would generally require that a dedicated great crested newt survey be carried out; or a habitat that is so closely mown that a representative botanical survey could not be carried out might require a further survey after the sward has been left to grow longer.

3.11 The condition of each site was assessed with reference to the methods and terminology used by Natural England for assessing Sites of Special Scientific Interest (EN 2000) and summarised in Table 1 below. Sites that are termed 'favourable' are those that appear to be managed in such a way that the qualifying interest of the site is being conserved. Those that are termed 'unfavourable' may still narrowly meet the selection criteria or they may have lost their qualifying interest. As well as considering whether a site still meets the selection criteria, a number of factors (described below) were taken into consideration depending on the habitat in question. If these factors were likely to continue or to worsen under present management then the site would be classed as 'declining'. Some examples are given below.

3.12 For grasslands, factors that would contribute to the site being judged 'unfavourable' include: more than 5% bare ground, a large proportion of agricultural weed species, a thick layer of thatch indicating lack of management for a period of time, or scrub encroachment.

3.13 For woodland, factors that would contribute to the site to being judged unfavourable include: a dense canopy shading out ground flora, the presence of a large proportion of invasive exotic species, or extensive fly tipping.

3.14 For a LWS selected for its great crested newt interest, a pond with poor water quality, heavily shaded by trees, or that has clearly been dry for some years, would be classed as 'unfavourable'.

3.15 Note was made of the current management of the site based on on-site observations, but no discussions with the owner/occupiers of the site were undertaken.

3.16 Brief recommendations were made for the future management of the site.

Table 1: Condition Assessment

Condition	Explanation
Favourable - stable	Site meets the qualifying criteria and with current management is likely to remain unchanged.
Favourable – declining	Site meets its qualifying criteria but with current management there is a risk this may be lost.
Unfavourable - stable	Site still meets the criteria or has lost its qualifying interest but with current management it is likely to remain in this state.
Unfavourable - declining	Site meets the criteria or has lost its qualifying interest and is likely to decline further if management is not adjusted.

3.17 In addition to collecting the information necessary to complete the proforma and 'tick list' for each LWS, a Phase 1 habitat map (see paragraph 3.7 above) was also completed for each LWS to illustrate the habitats present.

3.18 The information gathered during the surveys for each LWS was used to inform an appraisal of whether each site should retain its LWS designation or be considered for de-notification, either in part or as a whole. The appraisal was based on HLWSP (2014). The rationale for this is provided in the pro-forma for each LWS.

3.19 In addition to surveying the LWS, sites that had been identified during the Site Phase 1 habitat survey as having potential to qualify as a LWS were appraised according to the methodology above. Those sites that meet the LWS criteria for selection are discussed in paragraphs 4.15 – 4.18 below.

Assessment of Ecological Value

3.20 The 2015 work followed the same assessment approach as set out in the 2012 work carried out by BSG on behalf of BBC, as detailed below.

3.21 Once the data from the field surveys were mapped, an assessment of the ecological value of the habitats present was made. Habitats or areas of land were graded according to a four-colour system as described below, this has been provided to BBC as a GIS layer only.

3.22 Sites or areas that are coloured red are considered to be of high ecological value at the time of survey and are likely to present a reasonable constraint to development or the design of development proposals. The degree of constraint will depend on the nature of the ecological interest.

3.23 Those coloured amber are of some ecological value based on the surveys undertaken in this study. They possess a degree of interest or potential interest, and are still likely to require careful design and mitigation measures to offset impacts on the particular ecological interest of that area, if development is to take place. Although their apparent ecological value might be lower, some areas have potential to support protected species, which will need investigation in due course. If further surveys reveal that an area supports protected species then the implications for development may become more onerous. Amber areas may present good opportunities for habitat and connectivity enhancement and some are amber by virtue of their connectivity.

3.24 Areas coloured green have generally low ecological value and should present accordingly fewer constraints to development based on the surveys undertaken in this study. Although no evidence of protected species has been located during the course of this study, further study may reveal their presence although the risk of this is currently considered to be relatively low. Green sites may also present opportunities for enhancement of local habitat networks.

3.25 The red-amber-green approach is intended as a guide only, to help those involved in the forward planning process. It does not provide a replacement for appropriately targeted and detailed ecological surveys that should inform the proper assessment of potential ecological constraints and opportunities, should proposals for development on a particular site be brought forward.

3.26 The fourth colour used is purple, to denote land that could not be accessed or surveyed properly.

3.27 The following sets out the considerations that were made in characterising land as red, amber or green for the purposes of this study.

Red

Intrinsic Value

a. Site designated as a LWS and meets the selection criteria.

b. Land not a LWS but it meets the selection criteria.

Protected Species

a. Protected species evidence recorded on site.

Connectivity / Complementary Habitats

a. Linear feature that links LWS via similar habitat. For example a hedgerow connecting two woodland LWS.

b. Linear feature that links Priority habitats (see footnote 1, above).

Amber

Intrinsic Value

a. Land just falls short of threshold for qualification as a LWS.

b. Presence of a Priority habitat.

c. Veteran trees.

Protected Species

a. Land with potential to support protected species (apart from breeding birds).

Connectivity / Complementary Habitats

a. Land adjacent to a LWS.

b. Linear feature adjacent to a LWS, of similar habitat that provides a link to other land of similar habitat. For example a line of scrub and trees linking a woodland LWS to another block of undesignated woodland.

c. A group of linear features that form a cohesive network linking to similar habitats. For example a network of hedgerows, scrub and tree-lines linking blocks of woodland in the wider area.

d. An assemblage of diverse habitats that individually may have low ecological value but together form an ecologically diverse mosaic. For example, a group of semi-natural grasslands interconnected with patches of scrub, hedgerows and blocks of woodland.

Green

Intrinsic Value

a. Land does not meet LWS selection criteria.

b. Land does not support a Priority habitat.

Protected Species

a. No obvious evidence or obvious potential for protected species.

Connectivity / Complementary Habitats

a. Land not adjacent to LWS.

b. Land does not form part of a network of linear features or a mosaic of varied habitats.

Purple

3.28 Land not surveyed. This included built up areas, private gardens and areas that could not be accessed because ownership could not be established. See Constraints section (paragraph4.27) for further detail.

Mapping

3.29 At the outset of the project, GIS shapefiles of the Site and LWS and Ordnance Survey Landline basemaps were supplied by BBC.

3.30 The following GIS map layers were produced and have been provided to BBC in MapInfo format.

a. Phase 1 habitat map of the Brookfield Site including target notes.

b. Phase 1 habitat map of the LWS surveyed.

c. Ecological Value map of the Site and LWS showing habitats as purple, red, amber or green.

Consideration of Impacts of Potential Development

3.31 The study takes into account the impact of potential future development on the Site. The information gathered during the surveys was used to make a preliminary assessment of the potential impacts on ecological receptors within the Site, and to identify opportunities to mitigate for these impacts and to provide ecological enhancements.

4 Results and Interpretation

Phase 1 Habitat Survey of the Site and Survey of Local Wildlife Sites

4.1 The Local Wildlife Sites within the Site are all designated for their woodland interest with the exception of Turnfield Junction which is designated for its grassland indicator species. The woodland LWS survey was undertaken by Dr Tom Flynn 21 April 2015. During this visit other areas of woodland within the Site were surveyed at the same time.

4.2 The Phase 1 survey of the Site was carried out on 10 June 2015 by Dr Tom Flynn MCIEEM and Niall Lusby MCIEEM. During this later visit the Turnfield Junction LWS was surveyed by Dr Tom Flynn.

4.3 The results of the survey have been provided in GIS MapInfo format and as Figures 1-5 in Appendix 1. Target Notes to accompany the Figures can be found in Appendix 2. The Priority habitats present are summarised below in Table 2. Table 3 lists protected and Priority species (see footnote 1, above) for which records have been provided by HBRC or BBC on the surveyed areas, or for which habitat was identified during the Phase 1 surveys.

Table 2: Priority Habitats Present in the Site

Habitat	Location	Extent (Approx.)	Notes
Hedgerows	Within the Site	6735 m	Both species-rich and species-poor present.
Lowland mixed deciduous woodland	Within the Site	50.42ha	Small patches – more extensive areas are LWS.
Unimproved neutral grassland	Turnfield Junction LWS	1.37ha	Within LWS only.

Table 3: Protected, Priority and Rare Species Records recorded from the Site

Species	Scientific Name	Status Code (see key below)	Location and Latest Record
Great crested newt	*Triturus cristatus*	1,5	Record at 1km resolution for SW corner of the Site. 1999
Dormouse	*Muscardinus avellanarius*	1,5	Record at 10km resolution 1972
Nathusius' pipistrelle	*Pipistrellus nathusii*	1	Record at 1km resolution for NE corner of the Site 1978
Brown long eared bat	*Plecotus auritus*	1,5	Record at 1km resolution for NE corner of the Site 1985
Serotine bat	*Eptesicus serotinus*	1	Record at 1km resolution for NE corner of the Site 1978
Daubenton's bat	*Myotis daubentonii*	1	10 records at 1km resolution for NW and NE of Site from 1990 and 1978 respectively.
Whiskered bat	*Myotis mystacinus*	1	Two records at 1km resolution for NE corner of the Site. latest record 1978
Natterer's bat	*Myotis natteri*	1	11 records at 1km resolution for NW corner of the Site Latest record 1979
Pipistrelle species	*Pipistrellus pipistrellus*	1	Record at 1km resolution for NE corner of the Site 1978
Grass snake	*Natrix natrix*	4,5	Recorded at a 1km resolution in the grid square covering the SW corner of the Site. 1999
Cinnabar moth	*Tyria jacobaeae*	5	Recorded at a 1km resolution in the grid square covering the NW corner of the Site. 1996
Buff ermine	*Spilosoma luteum*	5	Recorded at a 1km resolution in the grid square covering the NW corner of the Site. 2004
White ermine	*Spilosoma lubricipeda*	5	Recorded at a 1km resolution in the grid square covering the NW corner of the Site. 2004
Rustic	*Hoplodrina blanda*	5	Recorded at a 1km resolution in the grid square covering the NW corner of the Site. 2003
Knot grass	*Acronicta rumicis*	5	Recorded at a 1km resolution in the grid square covering the NW corner of the Site. 2003
Grey dagger	*Acronicta psi*	5	Recorded at a 1km resolution in the grid square covering the NW corner of the Site. 2003
Sprawler	*Asteroscopus sphinx*	5	Recorded at a 1km resolution in the grid square covering the NW corner of the Site. 2004
Figure of eight	*Diloba caeruleocephala*	5	Recorded at a 1km resolution in the grid square covering the NW corner of the Site. 2003
Dusky thorn	*Ennomos fuscantaria*	5	Recorded at a 1km resolution in the grid square covering the NW corner of the Site. 2003
Small phoenix	*Ecliptopera silaceata*	5	Recorded at a 1km resolution in the grid square covering the NW corner of the Site. 2003
Blood-Vein	*Timandra comae*	5	Recorded at a 1km resolution in the grid square covering the NW corner of the Site. 2003
Oak lutestring	*Cymatophorima diluta subsp. hartwiegi*	5	Recorded at a 1km resolution in the grid square covering the NW corner of the Site. 2004

Species	Scientific Name	Status Code (see key below)	Location and Latest Record
Small heath	*Coenonympha pamphilus*	5	Recorded at a 1km resolution in the grid square covering the NW corner of the Site. 1997
Song thrush	*Turdus philomelos*	5	Recorded at a 10km resolution
Stag beetle	*Lucanus cervus*	5,6	Recorded at a 10km resolution
River water-dropwort	*Oenanthe fluviatilis*	6	Adjacent to Southern Site boundary (New River) 2003

Key to Status Codes

1. Schedule 2 of the Conservation of Habitats and Species Regulations 2010.
2. Annex 1 Birds Directive
3. Wildlife and Countryside Act 1981 (as amended)
4. Wildlife and Countryside Act 1981 (as amended) - intentional killing and injuring only.
5. Priority species (see footnote above)
6. Local Biodiversity Action Plan species
7. Listed as 'Vulnerable' on GB Red Data List (Cheffings and Farrell 2005)

4.4 The Site is approximately 220 ha in extent. It is a large block of land to the west of the A10, with its southern boundary formed by Cheshunt Golf Course and the New River. The Site's western boundary is formed by a minor road and its northern boundary is formed by Wormleybury House and Gardens.

4.5 The Site is dominated by pasture fields bounded by hedgerows with blocks of woodland, small streams and scattered ponds. The Site has historically been used in part for sand and gravel extraction, with the large lake in the north of the Site a remnant of this.

4.6 The Site was purchased by BBC in 2014 and has not been under regular agricultural management since its purchase, with the exception of the south-eastern part of the Site which was being used at the time of survey for stabling and livery. The fields used in this way have been separated into paddocks and support tightly cropped weedy grassland.

4.7 The remainder of the grassland resource within the Site is semi-improved neutral grassland with some areas being more species-rich.

4.8 Some lengths of species-rich and species-poor hedgerow are present in the northern portion of the Site with the hedgerows in the south of the Site being largely defunct, not having been actively managed for some time. The hedgerows are not typically stock proof, with post and wire barbed wire fences supplementing them for this purpose. In places the hedges have developed as semi-mature trees which have had their bases grazed by livestock meaning they are no longer stock proof. Many of the field boundaries are delineated by post and wire stock fences.

4.9 Standard trees are abundant in the hedgerows and occasionally in the centre of fields. These trees are often large and clearly old, and many support potential roost features for bats and species of Schedule 1 bird[2].

4.10 The woodland in the Site is typically dominated by pedunculate oak *Quercus robur* with frequent hornbean *Carpinus betula* with an understorey of bramble *Rubus fruticosus*. In places rhododendron *Rhododendron ponticum* and small balsam *Impatiens parviflora* are present. The

[2] Schedule 1 of the Wildlife and Countryside Act 1881 (as amended) protects certain species of bird from being taken by any means and from disturbance while nesting.

central block of woodland contains several earth works and a moat which is flooded and is potential amphibian breeding habitat.

4.11 A small block of wet woodland in present in the centre of the Site with willows dominating the canopy and a dense understorey of bramble beneath.

4.12 Several farms are present in the Site along with residential properties. These are on the western edge of the Site and were not accessed as part of the survey.

Review of Local Wildlife Sites

4.13 The survey of existing and proposed LWS was carried out by Dr Tom Flynn MCIEEM in April 2015.

Existing Local Wildlife Sites

4.14 Four LWS were surveyed for this study. These are listed in Appendix 3. The completed survey pro-forma for each LWS is included in Appendix 4 along with a Phase 1 habitat map of the site. A GIS layer showing the results of the Phase 1 habitat survey has been provided separately to BBC.

4.15 Three of the LWS surveyed (namely Woods E. of Park Lane Paradise (71/100), Watercress Trot (81/002) and Turnford Junction Meadow W. (81/003) meet the selection criteria set out in HLWSP (2014) with no adjustment to their boundaries proposed, and no additional survey work recommended.

4.16 One LWS (Doggett Hill Wood N.W. of Cromwell Wood LWS ref: 80/007) still satisfies the selection criteria in large part, but has been subject to clearance of trees and the storage of various materials that have reduced its woodland cover and interest in the southern portion of the site. A pond indicated on Ordnance survey data in this portion of the Site was not found during the survey. If this portion of the site cannot be brought back into favourable management, then consideration should be given to deleting this portion from the LWS.

Doggett Hill Wood N.W. of Cromwell Wood 80/007

4.17 The area referred to as being in unfavourable condition is highlighted by a blue dashed line above and on the survey sheet in Appendix 4.

Potential new Local Wildlife Sites

4.18 An area of the Site was identified as having potential to qualify as LWS during the Phase 1 survey based on habitat criteria. Priest Osier woodland is located at grid reference TL346049 within the Site. It is a wet woodland dominated by crack willow. It meets the selection criteria for wet woodland because it is over 0.25 ha in area and supports an NVC community indicative of W6.

4.19 In addition to Priest Osier Wood, several ponds with potential to support great crested newts and other amphibians were identified, and this could lead them to qualify as LWS for their species interest. The Site was also found to support large numbers of mature trees with potential to support bats and a tree with a possible barn owl nest was recorded within the Site (see Target Note 80 on Figure 1).

Priest Osier Woodland

Summary Assessment of Ecological Value

4.20 The results of the assessment can be viewed on the GIS layers that accompany this report. A summary is provided here.

4.21 All of the existing LWS that were surveyed as part of this study have been coloured as Red.

4.22 Priest Osiers Woodland which has been identified as a potential LWS is also coloured as Red. The tree identified as containing an active barn owl roost (possible nest) has been coloured as red.

4.23 The majority of hedgerows have been coloured Amber, based on the JNCC UK BAP Priority habitat (Maddock 2008) definition of hedgerows, being composed of at least 80% native woody species. Where a hedgerow is also species-rich, or has other value, for example as a connecting habitat, this is detailed in the GIS attribute table. Similarly the majority of the woodland that lies within the study area falls within the UKBAP Priority habitat 'Lowland mixed deciduous woodland' and has therefore been coloured Amber.

4.24 Ponds that have potential to support great crested newts have been coloured Amber based on their potential to support a protected species. In these cases the immediate surrounding terrestrial habitat is included within the classification, if it is considered likely to be suitable for the species.

4.25 Trees that have been noted as having high roosting potential for bats have been coloured amber.

Impact of Potential Development within the Site

4.26 A preliminary assessment of the potential impacts of development on the ecology of the Site using the habitat survey data alongside records received from HBRC, has been made below. As well as the features described above, the Site supports the following:

- Twenty-one ponds that have some potential to support great crested newts and other amphibians. The grassland habitats also have potential to support common reptile species.
- Woodland blocks that could support protected species such as breeding birds, bats, hazel dormouse or stag beetle.
- Mature trees that offer potential to bats and breeding birds.
- A large expanse of grassland that was found to support nesting skylark *Alauda arvensis* (males displaying during the phase 1 survey).

4.27 The following list includes some of the negative impacts that could potentially occur, without mitigation and/or compensation, depending on the nature of future development on this area. No indicative development proposals were provided for the Site, so comments are of a general nature only.

Threats

- Loss of aquatic or terrestrial great crested newt habitat, killing or injury of great crested newts during construction.
- Loss of bat roosts if trees supporting roosting bats are felled. Killing or injury of bats.
- Loss of woodland and hedgerow habitat suitable for supporting dormouse and possible death or injury of dormouse during construction and degradation of habitat quality though habitat fragmentation, increased human disturbance and increased predation by domestic cats.
- Loss of bird nesting habitat or destruction of nests if scrub/tree/grassland clearance carried out at an inappropriate time of year.

- Disturbance of Wildlife and Countryside Act Schedule 1 species of bird and loss of nesting habitat if trees supporting Schedule 1 species are felled.
- Killing of, or injury to, reptiles during construction phase, and resulting loss of habitat.
- Disturbance of, or damage to, badger *Meles meles* setts and death of, or injury to, badgers could occur during site clearance works.

Opportunities

- Development on the Site could be used as a mechanism to fund targeted management of the LWS within the Site and other habitats identified as being of importance such as species-rich hedgerows.

Potential Constraints on the Study

4.28 Private residences and a livery yard are present within the Site boundary provided by BBC. Following discussion with BBC (Personal Communication with Vicky Forgione) these areas were not included in the detailed survey. Where it was possible to view these areas from the boundary, or where their habitats were clear from viewing aerial photographs, these were included in the survey results. Where this information was not available, the land has been marked as 'unsurveyed' on the GIS layers. Built up areas and private gardens were not surveyed. The private areas are assumed not to be subject to the same potential development concerns as undeveloped areas of the Site, and the access constraint is not considered to be significant.

5 Recommendations for Further Work

5.1 The following recommendations for further work are based on the findings of the Site habitat survey and LWS appraisal.

The Site

5.2 An assessment of potential ecological issues and opportunities is set out above. This is not a substitute for detailed species-specific ecology surveys that are likely to be required for individual plans and projects that are brought forward within the Site. Such future studies should be carefully scoped depending on the extent and nature of the development proposed and taking into account the latest available data and information relating to the Site.

Local Wildlife Sites

5.3 Notes on biodiversity management that could be considered for each LWS are provided in the survey proforma for each site in Appendix 4.

5.4 It is recommended that amphibian surveys are carried out on all ponds within the Site to establish whether any of them would qualify as LWS, or whether they support protected species.

5.5 The tree identified as supporting a barn owl roost and possible nest site should be subject to further survey to establish whether it is a nesting site.

5.6 All mature trees within the site should be subject to an arboriculture assessment to determine their cultural value and to record the presence of veteran trees. Any mature tree subject to impact by future development should undergo survey to provide assessment of the potential to support bat roosts.

5.7 The surveys recommended above should be carried out according to the relevant best practice guidelines and by an appropriately qualified personnel.

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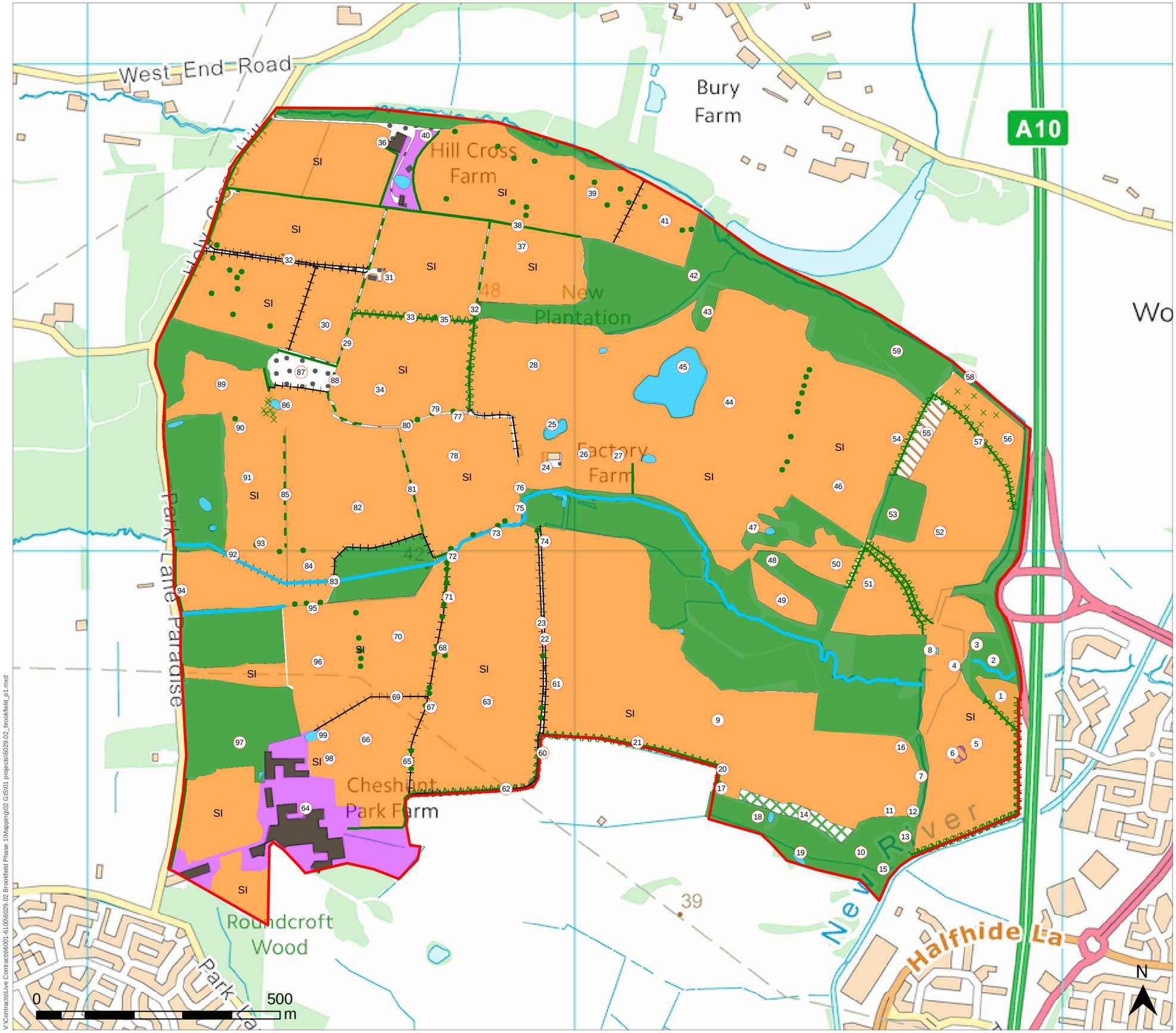
Appendix 1: Figures



LEGEND

- Site boundary
- Target notes
- Broadleaved semi-natural woodland
- Dense bramble scrub
- Semi-improved neutral grassland
- Marshy grassland
- Tall ruderal vegetation
- Open water
- Arable
- Building
- Bare ground
- Area not surveyed
- Running water
- Species-rich intact hedge
- Species-poor intact
- Species-poor defunct hedge
- Fence
- Scattered scrub
- Broadleaved tree

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PROJECT TITLE
BROOKFIELD

DRAWING TITLE
Figure 1: Phase 1 Habitat Map

DATE: 11.09.2015 CHECKED: NL SCALE: 1:7,500
DRAWN: COH APPROVED: JG STATUS: FINAL

Sources: BSG Ecology survey data

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LEGEND

- Wood E. of Park Lane Paradise LWS
- Broadleaved semi-natural woodland
- SI — Semi-improved neutral grassland
- Open water

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PROJECT TITLE
BROOKFIELD

DRAWING TITLE
Figure 2: Woods E. of Park Lane Paradise LWS

DATE: 11.09.2015 CHECKED: NL SCALE: 1:2,000
DRAWN: COH APPROVED: JG STATUS: FINAL

Sources: BSG Ecology survey data

LEGEND

- Doggett Hill Wood N.W. of Cromwell Wood LWS
- Area of LWS in unfavourable condition
- Running water
- Species-poor intact hedge
- Broadleaved semi-natural woodland
- SI — Semi-improved neutral grassland
- Open water
- Building
- Area not surveyed

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DRAWING TITLE
Figure 3: Doggett Hill Wood N.W. of Cromwell Wood LWS

DATE: 11.09.2015 CHECKED: NL SCALE: 1:2,000
DRAWN: COH APPROVED: JG STATUS: FINAL

Sources: BSG Ecology survey data

LEGEND

- Watercress Trot LWS
- Broadleaved semi-natural woodland
- SI — Semi-improved neutral grassland
- Open water
- Bare ground
- Running water

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PROJECT TITLE
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DRAWING TITLE
Figure 4: Watercress Trot LWS

DATE: 11.09.2015 CHECKED: NL SCALE: 1:3,000

DRAWN: COH APPROVED: JG STATUS: FINAL

Sources: BSG Ecology survey data

LEGEND

- Turnford Junction Meadow W. LWS
- Broadleaved semi-natural woodland
- SI — Semi-improved neutral grassland
- Running water
- Species-rich intact hedge

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PROJECT TITLE
BROOKFIELD

DRAWING TITLE
Figure 5: Turnford Junction Meadow W. LWS

DATE: 11.09.2015 CHECKED: NL SCALE: 1:1,000
DRAWN: COH APPROVED: JG STATUS: FINAL

Sources: BSG Ecology survey data

LEGEND

- Priest Osiers Wood Proposed LWS
- Broadleaved semi-natural woodland
- SI — Semi-improved neutral grassland
- Bare ground
- Running water
- Fence

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JOB REF: 6029.02

PROJECT TITLE
BROOKFIELD

DRAWING TITLE
Figure 6: Priest Osiers Woodland Proposed LWS

DATE: 11.09.2015 | CHECKED: NL | SCALE: 1:1,000
DRAWN: COH | APPROVED: JG | STATUS: FINAL

Sources: BSG Ecology survey data

Appendix 2: Target Notes

Target Note	Description
1	Turnford Junction Meadow west (LWS) Semi-improved neutral grassland (SING). Dominated by Yorkshire fog *Holcus lanatus* with abundant red fescue *Festuca rubra* and creeping buttercup *Ranunculus repens*. Present frequently were selfheal *Prunella vulgaris*, bird's foot-trefoil *Lotus corniculatus* and smooth meadow grass *Poa pratensis*. Occasionally present in the sward were field horsetail *Equisetum arvense*, meadow buttercup *Ranunculus acris*, cuckoo flower *Cardamine pratensis*, ragwort *Senecio jacobaea*, common mouse-ear *Cerastium fontanum*, lesser chickweed *Stellaria graminea,* hogweed *Heracleum sphondylium*, sweet vernal grass *Anthraxantum odoratum* and creeping bent *Agrostis stolonifera*. Also present rarely were yarrow *Achillea millefolium*, germander speedwell *Veronica chamaedrys*, white clover *Trifolium pratense*, common sorrel *Rumex acetosella* and meadow vetchling *Lathyris pratensis*.
2	An area of blackthorn scrub *Prunus spinosa* with abundant small balsam *Impatiens parviflora*. Adjacent areas of woodland are dominated by mature pedunculate oak *Quercus robur* and also have small balsam present. Many of the trees support features with potential to support roosting bats.
3	Semi-improved neutral grassland with abundant smooth meadow grass, Yorkshire fog, white clover, occasional greater plantain *Plantago major*, yarrow, ragwort, cock's foot *Dactylis glomerata*, common mouse-ear and creeping buttercup. Present rarely were common vetch *Vicia sativa*, creeping thistle *Cirsium arvense*, cut-leaved geranium *Geranium dissectum* and bird's foot trefoil.
4	A small stream supporting a natural channel morphology with meanders and a "riffle - pool" flow pattern over a gravel substrate. Marginal vegetation comprised pendulous sedge *Carex pendula* and remote sedge *Carex remota*.
5	SING dominated by creeping bent with occasional white clover. Present frequently were Yorkshire fog, creeping buttercup and meadow buttercup. Present rarely were creeping thistle, false oat grass *Arrhenatherum elatius* and yarrow.
6	Field pond – dry at the time of survey with only bare mud evident. Fringed by soft rush *Juncus effusus* with glaucous sweet grass *Glyceria declinata*, marsh bedstraw *Galium palustre* and gypsywort *Lycopus europaeus*.
7	Large dry ditch / earth work with mature pedunculate oaks and hornbeams, some with bat potential. Bracken *Pteridium aquifolium* and wood sage *Teucrium scorodonia* on opposite bank indicating acid soil conditions.
8	A mosaic of tall ruderal, scrub and SING around the site entrance. Common nettle *Urtica dioica* and false oat grass are abundant with frequent bramble *Rubus fruticosa* agg. and occasional creeping thistle. A weigh bridge is present from the Sites former use which supports two small ponds within its structure with aquatic plants present.
9	SING with frequent Soft brome *Bromus hordeaceus*, white clover, smooth meadow grass, creeping bent, creeping buttercup and white clover. Abundant Yorkshire fog, lesser trefoil *Trifolium dubium*, hairy tare *Vicia hirsuta*, cut-leaved geranium, lesser chickweed and cock's foot are also present. Occasional common mouse-ear, curled dock *Rumex crispus*, red clover *Trifolium pratense*, meadow fescue *Festuca pratensis* and Timothy *Phleum pratense* were present. Present rarely were false oat grass, common vetch, perennial rye *Lolium perenne*, cat's-ear *Hypochaeris radicata* and sweet vernal grass. Skylark *Alauda arvensis* were observed displaying over the field which provides ideal nesting habitat for this species.
10	Semi-natural woodland dominated by pedunculate oak with occasional silver birch *Betula pendula*, sycamore *Acer pseudoplatanus*, bird cherry *Prunus avium*, and hornbeam. Ground-flora is dense and comprises a mix of tall ruderal, with woodland species and scrub. Frequent bracken, bramble and common nettle occur along with occasional remote sedge, white poplar seedlings *Populus alba*, wood sage, bluebell *Hyacinthoides non-scripta*, pendulous sedge, betony *Stachys officinalis*, enchanter's-nightshade *Circaea lutetiana*, honeysuckle *Lonicera periclymenum*, cleavers *Galium aparine* and foxglove *Digitalis purpure*a. Present rarely were Male fern *Dryopteris felix-mas*, hairy brome *Bromopsis ramosa* and red campion *Silene dioica*.
11	Dry pond dominated by common spike rush *Eleocharis palustris* with frequent soft rush and glaucous sweet grass on its margins with occasional creeping buttercup and rare gypsywort.
12	Deep dry ditch.
13	Marshy area within woodland with frequent water mint *Mentha aquatica*, occasional purple loosestrife *Lythrum salicaria*, creeping buttercup, pendulous sedge, remote sedge, common figwort *Scrophularia nodosa*, and rare woody nightshade *Solanum dulcamara*. Small deer slots thought to be muntjac *Muntiacus reevesi* were observed in soft mud.
14	Earth bank with tall ruderal, scrub and SING. With frequent European gorse *Ulex europaeus* and abundant common nettle and bramble present. The dry grassland is species rich and numerous invertebrates were present. The steep bank with scrub cover also offers good potential to sett construction for badger *Meles meles*. The grassland comprises abundant bird's foot trefoil, frequent Yorkshire fog and ribwort plantain *Plantago lanceolata*, perfoliate St John's-wort *Hypericum perfoliatum* with occasional curled dock, lesser chickweed, hairy tare, common vetch, yarrow, heath speedwell *Veronica officinalis*, cut-leaved geranium and smooth meadow grass. Rare creeping thistle and meadow buttercup and cock's-foot are also present.
15	Burrow under a log, shape and size indicative of a disused fox *Vulpes vulpes* earth.
16	Fox observed.
17	Dry pond with dominant common reed mace *Typha latifolia* and abundant soft rush and frequent *Alisma plantago-aquatica*.
18	Pond within woodland with limited aquatic or marginal vegetation due to shading by crack willow *Salix fragilis* and grey willow *Salix cinerea*. A moorhen *Gallinula chloropus* was observed on the pond.
19	Pond (possibly a moat) on southern edge of the woodland. No marginal vegetation present. Moor hen recorded.
20	Area of tall ruderal of spoil heaps with dominant common nettle and white campion *Silene latifolia*.

Target Note	Description
21	Species rich hedge unmanaged with hawthorn *Crataegus monogyna*, hornbeam, English elm *Ulmus procera*, blackthorn and rowan *Sorbus aucuparia* with mature pedunculate oak and hornbeam as standards.
22	Strip of tall ruderal adjacent to east of track
23	Strip of tall ruderal and scrub adjacent to west of track with occasional small pedunculate oaks, damson *Prunus domestica*, blackthorn and cherry plum *Prunus cerasifera*.
24	Bare ground on the footprint of a former barn building that had been observed from afar during the April LWS survey but in the July visit had been demolished. Surrounded by species poor neural grassland with patches of tall ruderal dominated by common nettle. Grassland with reptile potential.
25	Pond with central white willows *Salix alba* (possibly on an island), few marginal plants and very turbid water.
26	Old dung heap with potential for reptiles.
27	Old dung heap with potential for reptiles.
28	Species poor SING with abundant Yorkshire fog, perennial rye grass, occasional creeping and meadow buttercup, common mouse-ear, red clover, Timothy and rare dandelion *Taraxacum officinalis*.
29	Mature pedunculate oak with high bat potential.
30	SING with abundant Yorkshire fog, frequent meadow buttercup, occasional sweet vernal grass, meadow vetchling, soft brome, creeping buttercup, common mouse-ear, creeping bent, meadow fescue, ragwort and cock's foot. Common vetch is present rarely. Grassland has not been mown or grazed in some time with some scrub developing in places including blackthorn, hawthorn and cherry plum.
31	Modern metal barns with concrete bonded corrugated sheet roofing assessed as offering negligible potential for bats. House and garden nearby with a large pond.
32	Wooden stable and sheds with some limited bat potential.
33	Overgrown species rich hedgerow with frequent hawthorn, blackthorn, ash *Fraxinus excelsior* and field maple *Acer campestre*.
34	Species poor SING managed as horse paddocks with a species composition similar to TN 28. Some meadow buttercup and a species poor hedgerow dominated by hawthorn along its southern boundary.
35	Mammal path along northern edge of field.
36	Mature pedunculate oak woodland lacking an understorey, ground flora dominated by tall ruderal and grasses with abundant common nettle, red clover, bramble, false oat grass and red campion. Frequent barren brome *Bromus sterilis,* occasional cock's foot and cow parsley *Anthriscus sylvestris* also occur.
37	Species poor SING grazed field, species composition the same as TN28 with the addition of meadow foxtail *Alopecurus pratensis*, smooth meadow grass and perennial rye. Various sheds and stable buildings are present in the south western corner of the field along with a caravan.
38	Species poor hawthorn dominated hedge.
39	Species poor SING hay field. With abundant smooth meadow grass, perennial rye grass, Yorkshire fog and cock's foot. Occasional creeping buttercup, yarrow and white clover also occur along with rarely occurring creeping thistle and sweet vernal grass. Mature pedunculate oak and sweet chestnut trees *Castanea sativa* with bat potential. The grassland along the woodland edge is more diverse with a greater proportion of sweet vernal in the sward.
40	Mature pedunculate oaks and area of tipped rubbish / digging.
41	SING with abundant Yorkshire fog and sweet vernal with occasional red fescue *Festuca rubra*, common sorrel, cock's foot, meadow foxtail, lesser chickweed and perennial rye.
42	Mature pedunculate oak woodland (typical of NVC W10). The understorey with holly *Ilex aquifolium*, common nettle and bramble and abundant sycamore seedlings.
43	Mature pedunculate oak in grassland.
44	Species poor SING with abundant smooth meadow grass, perennial rye, Yorkshire fog, frequent meadow buttercup, and occasional cock's foot.
45	Lake with island, fringed with willow scrub and with a flock of Canada goose *Branta canadensis* present. The margins are grazed and support little vegetation. Grey heron *Ardea cinerea* was also observed.
46	SING with meadow vetchling present.
47	Pond with dead oak surrounded by soft rush and gypsywort.
48	Parkland type habitat with mature oaks over species poor SING with patches of common nettle.
49	SING with frequent Yorkshire fog, meadow buttercup, abundant smooth meadow grass, occasional white clover and meadow foxtail.
50	Mature oak woodland over a hawthorn understorey and a grass dominated ground flora with smooth meadow grass, ground ivy *glechoma hederacea*, common nettle and red campion.
51	Defunct species rich hedgerow.
52	SING as TN49 with selfheal and lesser chickweed present occasionally.
53	Mature oak and silver birch woodland with occasional ash with an understorey of blackthorn and common nettle.
54	Defunct species poor hedgerow with hawthorn and blackthorn.
55	Tall ruderal dominated by creeping thistle in places.
56	SING with a tight sward indicating grazing in previous years with some hawthorn and dog rose *Rosa canina* scrub.
57	Defunct species rich hedgerow with hawthorn, bramble, ash and blackthorn.
58	Stream with stickleback present. Fringed by pendulous sedge, remote sedge and crack willow.
59	Semi-natural oak woodland with mature ash. Ground flora dominated by common nettle, with wild garlic *Allium ursinum,* lesser burdock *Arctium minus*, false brome *Brachypodium sylvaticum*, wood dock *Rumex sanguineum*, betony, lesser stitchwort, red campion, pendulous sedge, cleavers, elder *Sambucus nigra* and rare meadow buttercup, English elm, male fern and dog rose.
60	Defunct species rich hedgerow with hawthorn, blackthorn, bramble, pedunculate oak, dog rose and ash.

Target Note	Description
61	Gravel track with post and wire fences on either side. Western edge with occasional English elm, pedunculate oak, bramble, field rose *Rosa arvensis* and hawthorn scrub. Verges of track with tall ruderal grassland with frequent common nettle, cow parsley, cleavers and occasional woody nightshade, white bryony *Bryonia dioica*, soft brome, false oat grass, cock's-foot, curled dock and rough meadow grass *Poa trivialis*.
62	Species poor hedgerow with English elm dominant abundant hawthorn and occasional elder. Common nettle dominates the base with false oat grass and cock's-foot frequent, occasional creeping thistle hogweed, cut leaved geranium, creeping buttercup and smooth meadow grass also present.
63	SING with abundant Yorkshire fog and smooth meadow grass with frequent mouse-eared chickweed and white clover. Also present occasionally were meadow buttercup, perennial rye, dandelion, curled dock, sweet vernal and meadow foxtail.
64	Residential house and livery yard. Collection of steel frames and concrete sheet material clad agricultural buildings and wooden fenced exercise areas.
65	Group of three mature pedunculate oaks with high bat potential. One with wood pecker hole at 3m of east facing branch, one with dead branches in the canopy and the third as standing dead wood with desiccation fissures and loose plates of bark.
66	SING Horse grazed paddocks – wooden post and rail fences. Species composition as per TN63 but with frequent common nettle and creeping thistle.
67	Mature oak tree with bat potential. Epicormic growth and rot holes.
68	Species poor blackthorn dominated hedgerow with occasional hawthorn, along a dry ditch and post and wire fence. Three mature oaks present all in excess of 1m Diameter at breast height (DBH), none with bat potential, one having been pollarded in the past..
69	Recently planted hedge with whips still in tree guards. Fenced on both sides.
70	SING dominated by Yorkshire fog, meadow fescue frequent along with meadow buttercup and perennial rye. Present occasionally were white clover, creeping thistle and meadow foxtail. Wall barley *Hordeum muralis is* frequent under oak trees in hedgerow.
71	Cluster of three mature oaks along hedgeline, the northern most tree supporting features with low to moderate bat potential. Hedgerow with frequent hornbeam, sessile oak *Quercus petraea*, hawthorn and ash trees present as semi-mature trees along a dry ditch.
72	Three mature oaks, central tree with a broken branch at 6m with Ramshorn regrowth and desiccation fissures on exposed heartwood. Brocken branches and rot holes also present.
73	Defunct hedgerow and post and wire fence alongside a small brook along northern boundary of TN70. Dry at the time of survey channel width varies from 40cm to 100cm in width and has a gravel bed. A loose hedgerow of blackthorn and hawthorn is present along its northern bank with a post and wire fence making it stock proof. The banks are dominated by smooth meadow grass with occasional water mint *Mentha aquatica,* water pepper *Persicaria hydropiper* and remote sedge present along the damp mud on the margins.
74	Dry stream in open habitat with water mint frequent, occasional water figwort *Scrophularia auriculata*, wild angelica *Angelica sylvestris*, field horsetail, creeping buttercup, fools water cress *Apium nodiflorum*, sweet float grass *Glyceria fluitans*, greater stitchwort *Stellaria holostea*, lesser stitchwort, common sorrel, great willowherb, cow parsley and red campion present on its banks. Farm track alongside stream, bare ground with occasional knotgrass *Polygonum aviculare*, ribwort plantain and annual meadow grass *Poa annua*.
75	Two mature oaks with bat potential in the form of hollow branch scars, rot holes and broken branches.
76	Hornbeam tree line (up to 40 cm DBH with occasional oaks, running alongside the stream covered by TN 73 and 74. The stream is wider at this point but still dry, with steep earth banks up to 1.5 m tall. Water is present in deeper pools which were stagnant due to a lack of flow. Wood sedge *Carex sylvatica* and pendulous sedge are present along its banks. A farm track crosses the stream at this point over a concrete bridge. The bridge is a simple concrete slab spanning the stream between poured concrete piers. The slab is supported on steel girders with corrugated steel shuttering in between. The bridge does not offer opportunities for bats but several old birds' nests were found on the girder on either side of the opening.
77	Pedunculate oak with wood pecker holes and lots of dead wood in canopy with high bat potential.
78	SING dominated by Yorkshire fog and soft brome, with abundant smooth meadow grass and occasional perennial rye, couch grass *Elytrigia repens,* cocks foot, red clover, creeping buttercup, mouse-eared chickweed, dandelion, creeping thistle, white clover, grey field speedwell *Veronica polita* and curled dock, beaked hawk's-beard *Crepis vesicaria* and pineapple weed *Matricaria discoidea.*
79	Row of mature standard oaks with bat potential along a dry ditch.
80	Barn owl *Tyto alba* roost in mature oak tree. Flushed from tree by surveyor and 30 plus pellets found around the base of tree and white staining down the trunk from a rot hole in a branch scar. Grid ref TL 34670 05259.
81	Species poor hedge with gaps and post and wire fence. Dominated by English elm with occasional elder, bramble and blackthorn.
82	SING dominated by rough meadow grass and soft brome with abundant meadow buttercup, creeping thistle, mouse-eared chickweed, common sorrel, Yorkshire fog, white clover, sweet vernal, meadow foxtail, perennial rye, yellow oat grass *Trisetum flavescens* and creeping buttercup.
83	Veteran white willow with a DBH of 3 m where the stream enters small woodland. Hollow trunk in the process of collapsing. Stream dry with munjac slots in mud. The banks of the stream are very well vegetated with smooth tare *Vicia tetrasperma*, pendulous sedge, water figwort, water cress *Rorippa nasturtium-aquaticum*, brooklime *Veronica beccabunga,* water horsetail, hard rush *juncus inflexus*, floating sweet grass, creeping buttercup, wild angelica, great willowherb and marsh foxtail *Alopecurus geniculatus*.
84	SING with crested dog's-tail *Cynosurus cristatus*, black medic *Medicago lupulina* and common vetch.

Target Note	Description
85	Unmanaged hedgerow reverting to a tree line of semi-mature oaks with blackthorn and English elm dominant. Up to 6 m tall and 5 m wide. Gappy with a post and wire fence along its length.
86	A circular pond 10 m in diameter with a post and wire fence around it and dense bramble scrub around its margins. Blackthorn, white willow and English elm scrub are also present. The pond is very turbid and supports hard rush, branched bur-reed *Sparganium erectum* and false fox sedge *Carex otrubae*.
87	Pheasant coop with bare weedy ground in enclosure. No birds present at time of survey. Creeping thistle and Yorkshire fog are present as a patchy sward over bare ground.
88	Species poor hedgerow dominated by English elm, with occasional hawthorn, unmanaged up to 5 m tall and gappy with a post and wire fence along its length. Occasional standard ash trees are present.
89	SING with rough meadow grass dominating, frequent Yorkshire fog and occasional sheep's fescue *Festuca ovina*, meadow vetchling, meadow and creeping buttercup. Creeping thistle and common nettle are present in locally dominant patches possibly on old dung heaps. Oak woodland on margins of field with lots of trees supporting feature of potential value for roosting bats.
90	Mature oak 1.3 m DBH, with hollows in main trunk and a hazard beam formed on a main branch both at 5m height. The large size of both features means that the potential value for bats is reduced as birds and squirrels could compete for the same space.
91	Species poor SING dominated by Yorkshire fog with abundant soft brome, smooth meadow grass, mouse-eared chickweed and creeping buttercup. Present occasionally were white clover, meadow foxtail, perennial rye, curled dock, creeping thistle and meadow buttercup. Common nettle and greater burdock are locally dominant under the drip line of the adjacent woodland possibly as a response of livestock trampling / dunging.
92	Small patch of English elm scrub with bramble and common nettle.
93	Hollow ash tree possibly with a hornets nest and evidence of nesting birds. Part of a former field boundary now only evident due to a slight bank in the field and line of occasional tree stumps. Tree stumps represent potential habitat for stag beetle.
94	Species poor SING dominated by Yorkshire fog, with abundant meadow fescue and rough meadow grass, creeping buttercup, bird's foot trefoil, lesser stitchwort, fools watercress meadow buttercup, white clover and mouse-eared chickweed. Mature oaks along road dominated by pedunculate but one sessile present, all with bat potential. Grassland very damp along southern edge of field near woodland with compact rush *Juncus conglomeratus*, crested dog's tail, marsh foxtail and glaucous sweet grass locally dominant suggesting season inundation.
95	Treeline / overgrown hedge with oak, hornbeam and ash. One mature ash tree is in a state of decline with a large amount of heart wood exposed on the main trunk exhibiting extensive invertebrate damage. Moderate potential for bats and stag beetle.
96	SING with dominant Yorkshire fog and smooth meadow grass, occasional crested dog' tail, meadow buttercup, frequent white clover, red clover, creeping thistle, common bent and rare welted thistle *Cardus crispus*. Line of mature oaks in the field and foxglove present under the woodland edge.
97	Woodland in poor condition, lots of evidence of tipped materials and clearance with ruderal grassland dominating between piles of tipped aggregates with no shrub layer present. Western edge of the woodland less heavily damaged with large leaved lime present *Tilia platyphyllos*, sycamore, pedunculate oak, occasional holly and bramble scrub.
98	SING split into paddocks and tightly grazed by horses. Dominated by rough meadow grass with frequent Yorkshire fog, white clover, creeping thistle and perennial rye bordered by a species rich hedgerow with hornbeam, sycamore, hawthorn and bramble. Scatter mature oaks and sycamore are present in the north-western corner of the field over bramble and elder scrub with occasional foxglove. A large log has been used to block an old gateway in the north-western corner of the field and provides opportunities for wood boring insects.
99	Large oval pond 30 m x 20 m, shallow with poached margins the pond is infested with New Zealand pygmyweed *Crassula helmsii* with a dense carpet of this species present on the entire margin of the pond and up into the draw down zone. Common pond weed *potamogeton natans* and water-crowfoot *Ranunculus* sp. are dominant on the pond surface and Water plantain and yellow iris *Iris pseudacorus* also present occasionally.

Appendix 3: Local Wildlife Sites Surveyed

Site Code	Site Name	Wildlife Site Criteria Habitat
71/100	Woods E. of Park Lane Paradise	Old secondary woodland with a semi-natural canopy and varied structure, >2 ha; woodland indicators.
80/007	Doggett Hill Wood N.W. of Cromwell Wood	Old secondary woodland with a semi-natural canopy and varied structure, >2 ha; woodland indicators.
81/002	Watercress Trot	Woodland – Ancient, woodland indicators.
81/003	Turnford Junction Meadow W.	Grassland – neutral, Grassland indicators.

Appendix 4: LWS Survey Forms

LWS Field Survey Form 2010									
Site Name Woods East of Park Lane Paradise		**Grid Reference**							
		T	L	3	4	2	5	0	1
Site Number/ID 71/100		**Date** 21/04/16							
Recorder(s) Tom Flynn		**Time on Site** 15:15-16:00							
Site Size	4.68								
Site Ownership notes	Not known								

Boundary of LWS				
Is the boundary shown on the map correct/sensible?	**Yes**	✓	**No**	
Comments/Amendments				

Site survey information	
Main biodiversity interest of site	Mature oak-hornbeam woodland, containing three mature ponds.
Habitat – please indicate extent of habitats on site map (the primary habitat is that for which the site is recognised for)	
Primary habitat	Semi-natural broadleaved woodland
Secondary Habitat	Ponds
Other Habitats	Wet ditch (along southern boundary)
Comments	

Interest Features – please indicate location on site map					
Veteran trees			**Bare ground**		
Pollarded trees	✓	hornbeam	**Steep slopes**		
Standing/fallen dead wood	✓		**Invasive species**		
Sap runs/holes in trees			**Public access**		
Tussocky vegetation			**Areas with frequent/ prolonged flooding**		

Abundant nectar source			**Seasonally wet/damp areas**	✓	
Varied sward height			**Earthworks /hummocky ground**		
Anthills			**Ridge and furrow**		
Rock outcrops			**Other**		

Site Description

If there is an existing site description is it still accurate? *Please outline significant changes*

Yes

Brief summary of habitats and site context

Mature woodland on south-facing slope, with pedunculate oak *Quercus robur* and hornbeam *Carpinus betulus* dominating the canopy. Holly and bramble are locally abundant and the ground flora is generally rather sparse but richer towards the south of the southern woodland block.

Habitat detail (including notable species)

The woodland canopy is dominated by oak and hornbeam, with a well-developed shrub-layer (generally sparse, but dense in parts of the site, particularly the north) containing holly *Ilex aquifolium*, hawthorn *Crataegus monogyna* and English elm *Ulmus procera*. The ground flora is generally rather sparse, presumably due to dry ground conditions (male fern *Dryopteris filix-mas* and broad buckler fern *Dryopteris dilatata* are occasionally present, and bramble forms dense stands in some areas, particularly the northeast). The ground flora is relatively well-developed in the south of the site, towards a ditch of standing water, where ground conditions are presumably more moist. This area supports lords-and-ladies *Arum maculatum*, yellow archangel *Lamiastrum galeobdolon*, lesser stitchwort *Stellaria holostea* and red campion *Silene dioica*.

Three ponds are present in the southern block of woodland. Generally there is little marginal vegetation, presumably due to shading (all ponds have pendulous sedge *Carex pendula*, and the northern pond has creeping buttercup *Ranunculus repens*, soft rush *Juncus effusus*, gypsywort *Lycopus europaeus*, and bittersweet *Solanum dulcamara*), no aquatic or floating plant species were noted. Abundant leaf litter forms substrate.

Deep wet ditch along southern boundary of site. Deep standing water present. Few marginal plants (some pendulous sedge and creeping bent *Agrostis stolonifera*), no aquatic plants noted.

Non-botanical interest

Badger activity noted.

Abundant deer activity (muntjac deer seen and heard).

Site Condition (favourable/unfavourable, and stable/declining/recovering where possible) Compared to previous descriptions	
Primary habitat	Favourable
Secondary habitat	Favourable
Other habitat	Favourable
Comments/Explanation of Condition No evidence of deterioration or significant invasion by invasive non-native species. No significant evidence of disturbance.	

Is this site a good example of its habitat type in Hertfordshire?	**Yes**	✓	**No**	
Will the current management retain the biodiversity value of the site?	**Yes**	✓	**No**	
Does the site have potential to improve with different management?	**Yes**		**No**	✓
Is further survey work required? E.g invertebrates, birds	**Yes**		**No**	✓

Site Management						
Type of management/Condition					**Tick Box**	**Details/Comments**
Grassland/Wetland						
Unmanaged						
Grazed	**cattle**		**sheep**			
	horse		**mixed**			
	Over-grazed					
	Under-grazed					
Cut	**Mown**					
	Hay cut		**Silage cut**			
	Frequent mowing					
	Hay cut & aftermath grazing					
Scrub Encroachment	**Scattered**					
	<5%					
	5-20%					
	>20%					
Herbicide/pesticide/fertiliser use						
Planting of trees						
Other						
Woodland						
Unmanaged Woodland					✓	No evidence of management noted.

High Forest			
Active coppice	**some standards**		
	no standards		
Abandoned coppice			
Managed wood pasture/parkland			
Relic wood pasture/parkland			
Pollarded Woodland			
Exotics / Ornamentals			
Game management		✓	Pheasant feeding/shelter in northwest corner.
Woodland clearing			
Woodland rides			
Recently planted trees			
Dead wood			
Other			
Hedgerows			
Cut Hedge	**With standards**		
	Without standards		
Uncut Hedge	**With standards**		
	Without standards		
Overgrown Hedge	**With standards**		
	Without standards		
Rivers/Water Bodies			
Fishing	**Heavy**		
	Light (not obvious)		
Bank management	**Fenced off**		
	Unmanaged	✓	
	Grazed		
	Cut		
Disturbance, Damage & Dumping			
Invasive aliens			
Heavy amenity use			
Heavily disturbed			
Dumping impact			
Vehicular impact			
Fly tipping			
Other			

Management	
What is the current management of the site? None observed.	
What management is recommended to maintain / improve the biodiversity of the site?	
Primary Habitat	Non-intervention.
Secondary Habitat	Non-intervention.
Other Habitats	Non-intervention.
Is grazing appropriate for this site? No	
Is the site stockproof?	No
Does the site have water for stock?	No
Is the site accessible to a vehicle?	**Yes**
Was any management discussed with the land owner, and if so, what? No	
Other Comments regarding site management N/A	

LWS Field Survey Form 2010									
Site Name Watercress Trot		**Grid Reference**	T	L	3	5	3	0	4	8
Site Number/ID 81/002		**Date** 21/04/2015								
Recorder(s) Dr Tom Flynn, BSG Ecology		**Time on Site** 10:45–12:45								
Site Size	12.25 ha									
Site Ownership notes	Not known									

Boundary of LWS				
Is the boundary shown on the map correct/sensible?	**Yes**	✓	**No**	
Comments/Amendments **N/A**				

Site survey information	
Main biodiversity interest of site	Ancient semi-natural woodland with mature pedunculate oak *Quercus robur* and pollarded hornbeam *Carpinus betulus*; woodland ground flora, marshy areas, and a length of the Turnford Brook which has natural channel features.
Habitat – please indicate extent of habitats on site map (the primary habitat is that for which the site is recognised for)	
Primary habitat	Semi-natural broadleaved woodland
Secondary Habitat	Flowing water
Other Habitats	Standing water (large wet moat at west side)
Comments	

Interest Features – please indicate location on site map					
Veteran trees			**Bare ground**		
Pollarded trees	✓		**Steep slopes**	✓	
Standing/fallen dead wood	✓		**Invasive species**	✓	
Sap runs/holes in trees			**Public access**		
Tussocky			**Areas with frequent/**		

vegetation			**prolonged flooding**		
Abundant nectar source			**Seasonally wet/damp areas**		
Varied sward height			**Earthworks /hummocky ground**	✓	
Anthills			**Ridge and furrow**		
Rock outcrops			**Other**		

Site Description

If there is an existing site description is it still accurate? *Please outline significant changes*
Yes
Relatively open woodland (understorey/shrub layer generally sparse).
Well-developed ground flora.
Wet areas present, dominated by remote sedge *Carex remota.*

Brief summary of habitats and site context
Ancient semi-natural pedunculate oak *Quercus robur* and hornbeam *Carpinus betulus* woodland in a shallow valley following the Turnford Brook. Mature oak and pollarded hornbeam trees. Well-developed woodland ground flora, marshy areas, and a wet moat in the west.

Habitat detail (including notable species)
Mature semi-natural broadleaved woodland dominated by pedunculate oak and hornbeam, with some semi-mature or immature sycamore *Acer pseudoplatanus*, silver birch *Betula pendula* and some English elm *Ulmus procera*. Relatively sparse understorey with hazel *Corylus avellana*, hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa*. Field layer with bramble *Rubus fruticosus* agg. and occasional bracken *Pteridium aquilinum*; woodland ground flora well-developed in places, including bluebell *Hyacinthoides non-scripta*, yellow archangel *Lamiastrum galeobdolon*, red campion *Silene dioica* and wood meadow-grass *Poa nemoralis*. Damp areas contain remote sedge, soft rush *Juncus effusus*, wild angelica *Angelica sylvestris* and lesser celandine *Ranunculus ficaria*. Pendulous sedge *Carex pendula* is present along the Turnford Brook. Abundant growth of two non-native invasive plant species: rhododendron *Rhododendron ponticum* (mainly on the ancient earthworks in the southeast), and small balsam *Impatiens parviflora* (abundant throughout the centre of the site).

Non-botanical interest
Natural channel features along Turnford Brook (meanders, coarse gravel beds). Badger activity in woodland. Soils appear to be slightly acid gravels.

Site Condition (favourable/unfavourable, and stable/declining/recovering where possible) Compared to previous descriptions	
Primary habitat	Declining (due to presence of small balsam and rhododendron).
Secondary habitat	Favourable
Other habitat	Favourable
Comments/Explanation of Condition The semi-natural broadleaf woodland is of high structural and floristic quality. However, small balsam is widely present (seedlings of this species formed a dense carpet during the survey visit) abundant and may be having a negative impact on the ground flora.	

Is this site a good example of its habitat type in Hertfordshire?	**Yes**	✓	**No**	
Will the current management retain the biodiversity value of the site?	**Yes**	✓	**No**	
Does the site have potential to improve with different management?	**Yes**	✓	**No**	Control of non-native invasive plant species
Is further survey work required? E.g invertebrates, birds	**Yes**		**No**	✓

Site Management						
Type of management/Condition					**Tick Box**	**Details/Comments**
Grassland/Wetland						
Unmanaged						
Grazed	**cattle**		**sheep**			
	horse		**mixed**			
	Over-grazed					
	Under-grazed					
Cut	**Mown**					
	Hay cut		**Silage cut**			
	Frequent mowing					
	Hay cut & aftermath grazing					
Scrub Encroachment	**Scattered**					
	<5%					
	5-20%					
	>20%					
Herbicide/pesticide/fertiliser use						
Planting of trees						
Other						
Woodland						

Unmanaged Woodland		✓	No apparent management.
High Forest			
Active coppice	**some standards**		
	no standards		
Abandoned coppice			
Managed wood pasture/parkland			
Relic wood pasture/parkland			
Pollarded Woodland			
Exotics / Ornamentals			
Game management			
Woodland clearing			
Woodland rides			
Recently planted trees			
Dead wood			
Other			
Hedgerows			
Cut Hedge	**With standards**		
	Without standards		
Uncut Hedge	**With standards**		
	Without standards		
Overgrown Hedge	**With standards**		
	Without standards		
Rivers/Water Bodies			
Fishing	**Heavy**		
	Light (not obvious)		
Bank management	**Fenced off**		
	Unmanaged	✓	
	Grazed		
	Cut		
Disturbance, Damage & Dumping			
Invasive aliens		✓	
Heavy amenity use			
Heavily disturbed			
Dumping impact			
Vehicular impact		✓	
Fly tipping		✓	
Other			

Management	
What is the current management of the site? No apparent management. The site appears to be in multiple ownership/management due to the presence of a fence running north-south through the centre of the site.	
What management is recommended to maintain / improve the biodiversity of the site?	
Primary Habitat	Control of small balsam and rhododendron. Steps to prevent off-road motorbike access. Clear-up of minor litter problem.
Secondary Habitat	N/A
Other Habitats	N/A
Is grazing appropriate for this site? **No**	
Is the site stockproof?	No
Does the site have water for stock?	N/A
Is the site accessible to a vehicle?	Y
Was any management discussed with the land owner, and if so, what? No	
Other Comments regarding site management None	

LWS Field Survey Form 2010									
Site Name Doggett Hill Wood		**Grid Reference**							
		T	L	3	4	2	0	4	6
Site Number/ID 80/007		**Date** 21/04/2015							
Recorder(s) Tom Flynn, BSG Ecology		**Time on Site** 14:00–15:00							
Site Size	6.08 ha								
Site Ownership notes	Not known								

Boundary of LWS				
Is the boundary shown on the map correct/sensible?	**Yes**	✓	**No**	
Comments/Amendments				

Site survey information	
Main biodiversity interest of site	Mature oak and hornbeam woodland.
Habitat – please indicate extent of habitats on site map (the primary habitat is that for which the site is recognised for)	
Primary habitat	Semi-natural broadleaf woodland.
Secondary Habitat	Scrub at margins and under power line.
Other Habitats	Stream (Turnford Brook) along northern margin
Comments	

Interest Features – please indicate location on site map					
Veteran trees			**Bare ground**	✓	Some areas of bare mud
Pollarded trees			**Steep slopes**		
Standing/fallen dead wood	✓		**Invasive species**	✓	Sycamore seedlings in many areas
Sap runs/holes in trees			**Public access**		
Tussocky vegetation			**Areas with frequent/ prolonged flooding**		

Abundant nectar source			**Seasonally wet/damp areas**		
Varied sward height			**Earthworks /hummocky ground**		
Anthills			**Ridge and furrow**		
Rock outcrops			**Other**		

Site Description

If there is an existing site description is it still accurate? *Please outline significant changes*
Yes

Brief summary of habitats and site context
Open mature woodland dominated by pedunculate oak *Quercus robur* with a sparse shrub layer and a sparse field layer dominated by bramble *Rubus fruticosus* agg.

Habitat detail (including notable species)

Area of open woodland on north facing slope with a canopy dominated by pedunculate oak *Quercus robur* with hornbeam *Carpinus betulus* and silver birch *Betula pendula*. Other canopy trees occasionally present include Scots pine *Pinus sylvestris*, sweet chestnut *Castanea sativa*, and ash *Fraxinus excelsior*. Generally little shrub layer (but abundant scrub present on some of the woodland margins), occasional hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa*. Field layer dominated by bramble *Rubus fruticosus* agg. with woodland ground flora species present in some areas, but many areas rather bare. Abundant sycamore seedlings in some areas.

Along the southern boundary, the woodland is relatively open, with abundant bramble and other scrub and a sparse canopy of silver birch. Some evidence of grazing here.

Non-botanical interest
Wood banks and ancient layered hornbeam hedges present (west side), and stream (Turnford Brook) forming northern boundary with abundant floating sweet-grass *Glyceria fluitans* and brooklime *Veronica beccabunga*.

Site Condition (favourable/unfavourable, and stable/declining/recovering where possible) Compared to previous descriptions	
Primary habitat	Favourable
Secondary habitat	Favourable
Other habitat	Favourable
Comments/Explanation of Condition Woodland ground flora relatively poor (possibly due to heavy deer-grazing), and abundant sycamore seedlings are present.	

Is this site a good example of its habitat type in Hertfordshire?	**Yes**		**No**	✓
Will the current management retain the biodiversity value of the site?	**Yes**		**No**	✓
Does the site have potential to improve with different management?	**Yes**	✓	**No**	Sycamore
Is further survey work required? E.g invertebrates, birds	**Yes**		**No**	✓

Site Management						
Type of management/Condition					**Tick Box**	**Details/Comments**
Grassland/Wetland						
Unmanaged						
Grazed	**cattle**		**sheep**			
	horse		**mixed**			
	Over-grazed					
	Under-grazed					
Cut	**Mown**					
	Hay cut		**Silage cut**			
	Frequent mowing					
	Hay cut & aftermath grazing					
Scrub Encroachment	**Scattered**					
	<5%					
	5-20%				✓	
	>20%					
Herbicide/pesticide/fertiliser use						
Planting of trees						
Other						
Woodland						
Unmanaged Woodland					✓	

High Forest			
Active coppice	**some standards**		
	no standards		
Abandoned coppice			
Managed wood pasture/parkland			
Relic wood pasture/parkland			
Pollarded Woodland			
Exotics / Ornamentals			
Game management		✓	Rearing pens present under power lines.
Woodland clearing			
Woodland rides		✓	
Recently planted trees			
Dead wood		✓	
Other			
Hedgerows			
Cut Hedge	**With standards**		
	Without standards		
Uncut Hedge	**With standards**		
	Without standards		
Overgrown Hedge	**With standards**		
	Without standards		
Rivers/Water Bodies			
Fishing	**Heavy**		
	Light (not obvious)		
Bank management	**Fenced off**		
	Unmanaged		
	Grazed		
	Cut		
Disturbance, Damage & Dumping			
Invasive aliens		✓	Sycamore seedlings, presumed grazing/disturbance by deer
Heavy amenity use			
Heavily disturbed		✓	
Dumping impact			
Vehicular impact			
Fly tipping			
Other			

Management	
What is the current management of the site? The majority of the woodland appears to be unmanaged, although there is some grazing/disturbance by deer. Towards the west of the site there is evidence of more intensive wood-cutting, with stacked timer and areas of ground flora trampled and smothered by wood chippings.	
What management is recommended to maintain / improve the biodiversity of the site?	
Primary Habitat	Non-intervention other than deer management and removal of sycamore seedlings.
Secondary Habitat	None. Open ride will presumably be maintained by national grid.
Other Habitats	None.
Is grazing appropriate for this site? No	
Is the site stockproof?	No
Does the site have water for stock?	No
Is the site accessible to a vehicle?	Yes
Was any management discussed with the land owner, and if so, what? No	
Other Comments regarding site management N/A	

LWS Field Survey Form 2010									
Site Name Turnford Junction Meadow West		**Grid Reference**							
		T	**L**	**3**	**5**	**8**	**0**	**4**	**7**
Site Number/ID 81/001		**Date** 21/04/15 and 10/06/15							
Recorder(s) Dr Tom Flynn, BSG Ecology		**Time on Site** 21/04/15: 6:30–17:15 10/06/15: 10:00-10:30							
Site Size	1.37 ha								
Site Ownership notes	Not known								

Boundary of LWS				
Is the boundary shown on the map correct/sensible?	**Yes**	✓	**No**	
Comments/Amendments N/A				

Site survey information	
Main biodiversity interest of site	Semi-improved neutral grassland, mature oak and hornbeam woodland, Turnford Brook
Habitat – please indicate extent of habitats on site map (the primary habitat is that for which the site is recognised for)	
Primary habitat	Semi-improved neutral grassland
Secondary Habitat	Semi-natural broadleaved woodland
Other Habitats	Flowing water
	Species-rich hedgerow and deep boundary ditch
Comments N/A	

Interest Features – please indicate location on site map					
Veteran trees			**Bare ground**	✓	Adjacent to stream
Pollarded trees			**Steep slopes**	✓	Adjacent to stream
Standing/fallen dead wood			**Invasive species**	✓	Small balsam in woodland
Sap runs/holes in trees			**Public access**		
Tussocky			**Areas with frequent/**		

vegetation			**prolonged flooding**		
Abundant nectar source			**Seasonally wet/damp areas**	✓	Surrounding ditch
Varied sward height	✓	Around scrub	**Earthworks /hummocky ground**		
Anthills	✓	Occasional	**Ridge and furrow**		
Rock outcrops			**Other**		

Site Description

If there is an existing site description is it still accurate? *Please outline significant changes*
Yes

Brief summary of habitats and site context
Meadow of semi-improved neutral grassland, with some scrub. Also includes a species rich hedge and deep ditch along the western boundary, and mature oak and hornbeam woodland in the north. Includes a section a section of the Turnford Brook that has natural channel features, (gravel beds, steep eroded banks) before it is culverted under the A10.

Habitat detail (including notable species)
The site includes a small meadow of semi-improved neutral grassland containing a range of grasses (including cocks-foot *Dactylis glomerata*, perennial rye-grass *Lolium perenne*, creeping bent *Agrostis stolonifera*, Yorkshire fog *Holcus lanatus*, sweet vernal grass *Anthoxanthum odoratum*, smooth meadow-grass *Poa pratensis* and red fescue *Festuca rubra*) and broad-leaved herbs (including bird's-foot trefoil *Lotus corniculatus*, creeping buttercup *Ranunculus repens*, meadow buttercup *Ranunculus acris*, cuckoo flower *Cardamine pratensis*, lesser stitchwort *Stellaria graminea*, germander speedwell *Veronica chamaedrys* meadow vetchling *Lathyrus pratensis,* ribwort plantain *Plantago lanceolata,* and common sorrel *Rumex acetosa)*. The scrub includes hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa* and dog rose *Rosa canina.* The mature woodland has a field layer containing false brome *Brachypodium sylvaticum*, ground ivy *Glechoma hederacea*, lords-and-ladies *Arum maculatum*, common nettle *Urtica dioica*, dog violet *Viola riviniana*, garlic mustard *Alliaria petiolata*, and moschatel *Adoxa moschatellina*. There is abundant small balsam *Impatiens parviflora* (an invasive non-native species) which dominates the ground vegetation in many areas of the woodland.

Non-botanical interest
Turnford brook, having natural channel features. Site likely to be of value to tree and scrub nesting birds. Hedgerow and deep boundary ditch likely to be ancient features.

Site Condition (favourable/unfavourable, and stable/declining/recovering where possible) Compared to previous descriptions	
Primary habitat	favourable
Secondary habitat	declining
Other habitat	favourable

Comments/Explanation of Condition

The grassland supports a range of species and has ant hills, there is no evidence of decline. Turnford Brook appears to be in favourable condition. The mature woodland contains abundant small balsam *Impatiens parviflora* which in many areas dominates the vegetation and is assumed to be having a negative impact on the native woodland ground flora.

Is this site a good example of its habitat type in Hertfordshire?	**Yes**	✓	**No**	
Will the current management retain the biodiversity value of the site?	**Yes**		**No**	✓
Does the site have potential to improve with different management?	**Yes**	✓	**No**	
Is further survey work required? E.g invertebrates, birds	**Yes**		**No**	✓

Site Management						
Type of management/Condition					**Tick Box**	**Details/Comments**
Grassland/Wetland						
Unmanaged						
Grazed	**cattle**		**sheep**			
	horse		**mixed**			
	Over-grazed					
	Under-grazed					
Cut	**Mown**				**?**	From the short sward present on 21/04/15, the site appears to have been strimmed or grazed in the previous year (although no dung was noted).
	Hay cut		**Silage cut**			
	Frequent mowing					
	Hay cut & aftermath grazing					

Management
What is the current management of the site?
The grassland is presumably being maintained by strimming or grazing.

What management is recommended to maintain / improve the biodiversity of the site?

Conservation grazing of grassland (avoiding the period May to August). Or mowing (strimming would be best in some areas to avoid anthills) in July/August. Scrub management will become necessary in in several years as the scrub cover nears 10%. Scrub cutting should avoid the bird nesting season (March to August inclusive) and should leave 2-4% scrub cover.

Note that mowing without due care could endanger the ant hills which are valuable invertebrate and botanical features of the site and add to its habitat structure and plant diversity.

Woodland and stream should be subject to non-intervention, except for the removal of small balsam and any management necessary for reasons of health and safety, stock-proofing etc.

Primary Habitat	Grassland: grazing, mowing or strimming.
Secondary Habitat	Woodland: removal of small balsam, otherwise non-intervention.
Other Habitats	Turnford Brook: non-intervention.

Is grazing appropriate for this site?
Yes, if it can be arranged on this small a scale. Stock-proofing could be an issue.

Is the site stockproof?	No
Does the site have water for stock?	No
Is the site accessible to a vehicle?	Unknown

Was any management discussed with the land owner, and if so, what?
No

Other Comments regarding site management
N/A

Appendix 5: Summaries of Relevant Policy, Legislation and Other Instruments

This section briefly summarises the legislation, policy and related issues that are relevant to the main text of the report. The following text does not constitute legal or planning advice.

National Planning Policy Framework (England)

6.1 The Government published the National Planning Policy Framework (NPPF) on 27th March 2012. Text excerpts from the NPPF are shown where they may be relevant to planning applications and biodiversity including protected sites, habitats and species.

6.2 In conserving and enhancing the natural environment, the NPPF (Paragraph 109) states that 'the planning system should contribute to and enhance the natural and local environment' by:

a. Recognising the wider benefits of ecosystem services;

b. Minimising impacts on biodiversity and providing net gains in biodiversity, where possible contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

c. Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

6.3 In paragraph 111, the NPPF refers to brownfield land as follows: 'planning policies and decisions should encourage the effective use of land by re-using land that has been previously developed (brownfield land), provided that it is not of high environmental value.'

6.4 Paragraph 117 refers to how planning policies should aim to minimise impacts on biodiversity, to: 'identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation;' and to 'promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan.'

6.5 Paragraph 118 of the National Planning Policy Framework advises how, when determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the mitigation hierarchy. The mitigation hierarchy advises that if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.

6.6 Where proposals or activities require planning permission, the NPPF states that '…local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

d. Proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest;

e. Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;

f. Opportunities to incorporate biodiversity in and around developments should be encouraged;

g. Planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss; and

h. The following wildlife sites should be given the same protection as European sites:

i. potential Special Protection Areas and possible Special Areas of Conservation

ii. listed or proposed Ramsar sites; and

iii. sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.'

6.7 In respect of protected sites, the NPPF requires local planning authorities to make 'distinctions…between the hierarchy of international, national and locally designated sites so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks.'

6.8 In paragraph 125 the NPPF states that 'by encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.' This applies to protected species that are a material consideration in the planning process including bats and may also apply to other light sensitive species.

Natural Environment and Rural Communities (NERC) Act 2006 – Habitats and species of principal importance (England and Wales)

6.9 The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Sections 41 and 42 (S41 and S42) of the Act require the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England and Wales respectively. The list has been drawn up in consultation with Natural England and Countryside Council for Wales (now NRW), as required by the Act. In accordance with the Act the Secretary of State keeps this list under review and will publish a revised list if necessary, in consultation with Natural England and NRW.

6.10 The S41 and S42 lists are used to guide decision-makers such as public bodies, including local authorities and utilities companies, in implementing their duty under Section 40 of the NERC Act 2006, to have regard to the conservation of biodiversity in England and Wales, when carrying out their normal functions, including development control and planning. This is commonly referred to as the 'Biodiversity Duty.'

6.11 Guidance for public authorities on implementing the Biodiversity Duty[3] has been jointly published by Defra and the Welsh Assembly Government. One of the key messages in this document is that 'conserving biodiversity includes restoring and enhancing species populations and habitats, as well as protecting them.' In England and Wales, the administration of the planning system and licensing schemes are highlighted as having a 'profound influence on biodiversity conservation.' Local authorities are required to take measures to "promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species. The guidance states that 'the duty aims to raise the profile and visibility of biodiversity, clarify existing commitments with regard to biodiversity, and to make it a natural and integral part of policy and decision making.'

6.12 In 2007, the UK Biodiversity Action Plan (BAP) Partnership published an updated list of priority UK species and habitats covering terrestrial, freshwater and marine biodiversity to focus conservation action for rarer species and habitats in the UK. The UK Post-2010 Biodiversity Framework[4], which

[3] Defra, 2007. *Guidance for Public Authorities on Implementing The Biodiversity Duty*. (http://www.defra.gov.uk/publications/files/pb12585-pa-guid-english-070516.pdf)
[4] JNCC and Defra (on behalf of the Four Countries' Biodiversity Group). 2012. *UK Post-2010 Biodiversity Framework*. July 2012. (http://jncc.defra.gov.uk/page-6189)

covers the period from 2011 to 2020, now succeeds the UK BAP. The UK priority list contained 1150 species and 65 habitats requiring special protection and has been used as a reference to draw up the lists of species and habitats of principal importance in England and Wales.

6.13 In England, there are 56 habitats of principal importance and 943 species of principal importance on the S41 list. These are all the habitats and species found in England that were identified as requiring action in the UK BAP and which continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework.

6.14 In Wales, there are 54 habitats of principal importance and 557 species of principal importance on the S42 list. This includes three marine habitats and 53 species which were not on the list of UK BAP priorities, but which are recognised as of principal importance for Wales.

European protected species (Animals)

6.15 The Conservation of Habitats and Species Regulations 2010 (as amended) consolidates the various amendments that have been made to the original (1994) Regulations which transposed the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC) into national law.

6.16 "European protected species" (EPS) of animal are those which are present on Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (as amended). They are subject to the provisions of Regulation 41 of those Regulations. All EPS are also protected under the Wildlife and Countryside Act 1981 (as amended). Taken together, these pieces of legislation make it an offence to:

a. Intentionally or deliberately capture, injure or kill any wild animal included amongst these species

b. Possess or control any live or dead specimens or any part of, or anything derived from a these species

c. deliberately disturb wild animals of any such species

d. deliberately take or destroy the eggs of such an animal, or

e. intentionally, deliberately or recklessly damage or destroy a breeding site or resting place of such an animal, or obstruct access to such a place

6.17 For the purposes of paragraph (c), disturbance of animals includes in particular any disturbance which is likely—

a. to impair their ability—

   i. to survive, to breed or reproduce, or to rear or nurture their young, or

   ii. in the case of animals of a hibernating or migratory species, to hibernate or migrate; or

b. to affect significantly the local distribution or abundance of the species to which they belong.

6.18 Although the law provides strict protection to these species, it also allows this protection to be set aside (derogated) through the issuing of licences. The licences in England are currently determined by Natural England (NE) for development works and by Natural Resources Wales in Wales. In accordance with the requirements of the Regulations (2010), a licence can only be issued where the following requirements are satisfied:

a. The proposal is necessary 'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'

b. 'There is no satisfactory alternative'

c. The proposals 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

Definition of breeding sites and resting places

6.19 Guidance for all European Protected Species of animal, including bats and great crested newt, regarding the definition of breeding and of breeding and resting places is provided by The European Council (EC) which has prepared specific guidance in respect of the interpretation of various Articles of the EC Habitats Directive.[5] Section II.3.4.b) provides definitions and examples of both breeding and resting places at paragraphs 57 and 59 respectively. This guidance states that 'The provision in Article 12(1)(d) [of the EC Habitats Directive] should therefore be understood as aiming to safeguard the ecological functionality of breeding sites and resting places.' Further the guidance states: 'It thus follows from Article 12(1)(d) that such breeding sites and resting places also need to be protected when they are not being used, but where there is a reasonably high probability that the species concerned will return to these sites and places. If for example a certain cave is used every year by a number of bats for hibernation (because the species has the habit of returning to the same winter roost every year), the functionality of this cave as a hibernating site should be protected in summer as well so that the bats can re-use it in winter. On the other hand, if a certain cave is used only occasionally for breeding or resting purposes, it is very likely that the site does not qualify as a breeding site or resting place.'

Birds

6.20 All nesting birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to disturb them whilst they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

6.21 The Conservation of Habitats and Species (Amendment) Regulations 2012 has placed new duties on competent authorities (including Local Authorities and National Park Authorities) in relation to wild bird habitat. These provisions relate back to Articles 1, 2 and 3 of the EC Directive on the conservation of wild birds (2009/147/EC, 'Birds Directive'[6]) (Regulation 9A(2) & (3) require that 'in the exercise of their functions as they consider appropriate' these authorities must take steps to contribute to the 'preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of upkeep, management and creation of such habitat…'

6.22 In relation to the duties placed on competent authorities under the 2012 amendment Regulation 9A (8) states: 'So far as lies within their powers, a competent authority in exercising any function [including in relation to town and country planning] in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds (except habitats beyond the outer limits of the area to which the new Wild Birds Directive applies).'

Badger

6.23 Badger is protected under the Protection of Badgers Act 1992. This makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. A badger sett is defined in the legislation as "a structure or place, which displays signs indicating current use by a badger".

6.24 ODPM Circular 06/2005[7] provides further guidance on statutory obligations towards badger within the planning system. Of particular note is paragraph 124, which states that "The likelihood of disturbing a badger sett, or adversely affecting badgers' foraging territory, or links between them, or

[5] Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. (February 2007), EC.
[6] 2009/147/EC Birds Directive (30 November 2009. European Parliament and the Council of the European Union.
[7] *ODPM Circular 06/2005. Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impacts within the Planning System* (2005). HMSO Norwich.

significantly increasing the likelihood of road or rail casualties amongst badger populations, are capable of being material considerations in planning decisions."

6.25 Natural England provides Standing Advice[8], which is capable of being a material consideration in planning decisions. Natural England recommends mitigation to avoid impacts on badger setts, which includes maintaining or creating new foraging areas and maintaining or creating access (commuting routes) between setts and foraging/watering areas.

Reptiles

6.26 All native reptile species receive legal protection in Great Britain under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Viviparous lizard, slow-worm, grass snake and adder are protected against killing, injuring and unlicensed trade only. Sand lizard and smooth snake receive additional protection as "European Protected species" under the provisions of the Conservation of Habitats and Species Regulations 2010 (as amended) and are fully protected under the Wildlife and Countryside Act 1981 (as amended).

6.27 All six native species of reptile are included as 'species of principal importance' for the purpose of conserving biodiversity under Sections 41 (England) and 42 (Wales) of the NERC Act 2006.

6.28 Current Natural England Guidelines for Developers[9] states that 'where it is predictable that reptiles are likely to be killed or injured by activities such as site clearance, this could legally constitute intentional killing or injuring.' Further the guidance states: 'Normally prohibited activities may not be illegal if 'the act was the incidental result of a lawful operation and could not reasonably have been avoided'. Natural England 'would expect reasonable avoidance to include measures such as altering development layouts to avoid key areas, as well as capture and exclusion of reptiles.'

6.29 The Natural England Guidelines for Developers state that 'planning must incorporate two aims where reptiles are present:

- To protect reptiles from any harm that might arise during development work;
- To ensure that sufficient quality, quantity and connectivity of habitat is provided to accommodate the reptile population, either on-site or at an alternative site, with no net loss of local reptile conservation status.'

Water vole

6.30 Water vole is protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to kill, injure or take any water vole, damage, destroy or obstruct access to any place of shelter or protection that the animals are using, or disturb voles while they are using such a place. Water vole is listed as a Species of Principal Importance under the provisions of the NERC Act 2006.

Invasive non-native species

6.31 An invasive non-native species is any non-native animal or plant that has the ability to spread causing damage to the environment.

6.32 Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to release, or to allow to escape into the wild, any animal which is not ordinarily resident in and is not a regular visitor to Great Britain in a wild state or is listed under Schedule 9 of the Act. Strictly speaking, this makes it an offence to return to the wild any animal listed on Schedule 9, even if inadvertently captured.

6.33 It is an offence to plant or otherwise cause to grow in the wild invasive non-native plants listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). This effectively means that it is an offence to cause the spread of such plants as a result of development operations.

[8] http://www.naturalengland.org.uk/ourwork/planningdevelopment/spatialplanning/standingadvice/specieslinks.aspx
[9] English Nature, 2004. *Reptiles: guidelines for developers.* English Nature, Peterborough. http://publications.naturalengland.org.uk/publication/76006?category=31018