wardell-armstrong.com

ENERGY AND CLIMATE CHANGE
ENVIRONMENT AND SUSTAINABILITY
INFRASTRUCTURE AND UTILITIES
LAND AND PROPERTY
MINING, QUARRYING AND MINERAL ESTATES
WASTE RESOURCE MANAGEMENT

JOHN LEWIS PARTNERSHIP PENSIONS TRUST

VANGUARD WAY, BATTLEFIELD ENTERPRISE PARK

PRELIMINARY ECOLOGICAL APPRAISAL

FEBRUARY 2015

your earth our world

wardell armstrong

Wardell Armstrong
Sir Henry Doulton House, Forge Lane, Etruria, Stoke-on-Trent, ST1 5BD, United Kingdom
Telephone: +44 (0)845 111 7777 Facsimile: +44 (0)845 111 8888 www.wardell-armstrong.com

your earth our world

DATE ISSUED: **FEBRUARY 2015**
JOB NUMBER: **ST14586**
REPORT NUMBER: **002**

JOHN LEWIS PARTNERSHIP PENSIONS TRUST

VANGUARD WAY, BATTLEFIELD ENTERPRISE PARK

PRELIMINARY ECOLOGICAL APPRAISAL

FEBRUARY 2015

PREPARED BY:

Emily Macfarlan — Ecologist

CHECKED BY:

Caroline Mellor — Associate Director

APPROVED BY:

Kevin Onions — Technical Director

ENERGY AND CLIMATE CHANGE
ENVIRONMENT AND SUSTAINABILITY
INFRASTRUCTURE AND UTILITIES
LAND AND PROPERTY
MINING AND MINERAL PROCESSING
MINERAL ESTATES AND QUARRYING
WASTE RESOURCE MANAGEMENT

CONTENTS

APPENDICES

DRAWINGS		**SCALE**
ST14264/001	Extended Phase 1 Habitat Survey Results	1:2,500@A3
ST14264/002	Waterbodies Location Map	1:2,500@A3

EXECUTIVE SUMMARY

Wardell Armstrong LLP (WA) was commissioned by John Lewis Partnership Pensions Trust (JLPPT) to undertake a Preliminary Ecological Appraisal of a proposed commercial development scheme for Vanguard Way, Battlefield Enterprise Park, Shrewsbury.

The site of approximately 9.7 hectares consisting predominantly of rank grassland with Battlefield Brook running from west to east along the south of the survey area. It is bordered to the north by the Battlefield Link Road (A5124), beyond which is arable and pastoral farmland. To the east, the site is bordered by an active train line, running north to south. To the south of the site is Vanguard Way and Battlefield Enterprise Park. The site is bordered to the west by Battlefield Way, beyond which lies Battlefield Enterprise Park.

Two nationally significant sites, Hencott Pool (SSSI/Ramsar) and Old River Bed, Shrewsbury (SSSI) are located within 2km of the site. Five other locally important sites are located within 2km of the site boundaries.

Habitats within the site comprise mixed grassland, linear plantation woodland, dense scrub, open water and a running brook.

Previous surveys have found that habitats within the survey area have been known to support great crested newts (GCN) and foraging badger. Otter footprints were recorded on the bankside of the brook and a potential holt was located close by. Evidence of badger is present in a separate confidential annex report. It is also considered likely that habitats within the survey area support foraging and roosting bat, reptiles, hedgehog, nesting birds, water vole and white-clawed crayfish. No invasive species were found within the site at the time of survey.

Development proposals are unknown and therefore further survey requirements, mitigation and ecological enhancements have been recommended on the assumption that those habitats/species will be lost/disturbed by development.

1 INTRODUCTION

1.1 Terms of Reference

1.1.1 Wardell Armstrong LLP (WA) was commissioned by John Lewis Pensions Partnership Trust to undertake an Preliminary Ecological Appraisal of a proposed commercial development scheme at Vanguard Way, Battlefield Enterprise Park, Shrewsbury (approximate National Grid Reference: SJ 5089 1655). This report has been produced with reference to current guidelines for a Preliminary Ecological Appraisal (Chartered Institute of Ecology and Environmental Management (CIEEM 2012)) and British Standard BS 42020:2013 (BSI 2013) which involves the evaluation of potential ecological constraints based on Extended Phase 1 (Joint Nature Conservation Committee (JNCC 2010)) survey data and background desk study.

1.1.2 The purpose of the appraisal is to satisfy the requirements of the National Planning Policy Framework (NPPF), identifying the likely presence of ecological features within or near the application site that could potentially pose a constraint to the proposed development. The following ecological features have been considered:

- Statutory and non-statutory designated conservation areas;
- UK and local Biodiversity Action Plan (BAP) habitats;
- Areas of Ancient Woodland;
- Legally protected species;
- UK and local BAP species; and
- Invasive species.

1.1.3 This report also seeks to identify any requirement for further specialist survey where the initial assessment cannot be relied upon to adequately determine presence or reliably infer absence of protected species/taxa. Mitigation and enhancement opportunities are also discussed.

1.2 Site Context

1.2.1 The site of approximately 9.7 hectares consisting predominantly of rank grassland with Battlefield Brook running from west to east along the south of the survey area. It is bordered to the north by the Battlefield Link Road (A5124), beyond which is arable and pastoral farmland. To the east, the site is bordered by an active train line, running north to south and to the south of the site is Vanguard Way and Battlefield Enterprise

Park. The site is bordered to the west by Battlefield Way, beyond which lies Battlefield Enterprise Park.

2 METHODOLOGY

2.1 Desk Study

2.1.1 The desktop study was informed by review of existing available information provided by Shropshire Ecological Data Network (SEDN) for a 2km search radius from the sites central grid reference. Ordnance Survey (OS) and satellite mapping was also used to gain contextual habitat information.

2.1.2 Specific information was sought for:

- Statutory designated sites;
- Locally designated sites;
- Ancient woodland;
- Protected and priority species; and
- Local BAP priority species.

2.1.3 Previous ecological surveys have been undertaken at the site to inform evidence to support a waste facility to generate energy planning application. This information has contributed to the assessment of the ecological value of the site and supported further recommendations.

2.2 Extended Phase 1 Habitat Survey

2.2.1 A suitably qualified Ecologist from (WA carried out an Extended Phase 1 Habitat Survey of the site on 4th February 2015. The weather conditions during the survey were 3°C with 20% cloud cover, and force 2 wind.

2.2.2 The survey followed the 'Extended Phase 1' methodology (Institute of Environmental Assessment (IEA), 1995 and JNCC 2010). Each of the main habitats were classified according to the relevant criteria including vegetation composition expressed according to the DAFOR[1] system.

2.2.3 In addition to the mapping and description of habitats, incidental observations of protected and/or BAP priority species and the potential for such species to occur on site (and in the surrounding landscape where relevant) were also noted.

[1] D – Dominant, A – Abundant, F – Frequent, O- Occasional, R-Rare.

2.2.4 Specific habitat features are mapped on Drawing ST14586/001 with appropriate reference numbers identifying waterbodies, buildings and trees of particular note.

2.3 Nomenclature

2.3.1 Vascular plant names follow '*New Flora of the British Isles*' (Stace 1997) with vernacular names as provided in the Botanical Society of the British Isles website (BSBI, 2013). All other flora and fauna names following the National Biodiversity Network (NBN) Gateway (NBN, 2013). The common and scientific name of species/taxa is provided (if available) when first mentioned in the text, with only the vernacular name referred to thereafter.

2.4 Assessment Limitations

2.4.1 Ecological surveys are limited by factors that affect the presence of plants and animals such as time of year, weather, migration patterns and behaviour. The survey was undertaken in February, a sub-optimal time of year, and therefore the survey data may not be representative of other times of year.

2.4.2 The absence of desk study records cannot be relied upon to reliably infer absence of a species/habitat. Often, the absence of records is a result of under-recording within the given search area.

2.5 Quality Assurance & Environmental Management

2.5.1 All Ecologists employed by WA are members of CIEEM, and are bound by its code of professional conduct. All surveys and assessments have been undertaken with reference to the recommendations given in BS 42020.

3 RESULTS AND EVALUATION

3.1 Statutory and Non- Statutory Designated Sites

3.1.1 Desk study results for designated sites within the 2km search radius are evaluated in Table 1, below. The ranking from the status of designated sites is listed highest-least. All measurements provided in the table are an approximation and distances are calculated from the central grid reference of the site unless stated otherwise. The table also provides an evaluation of their potential to constrain development, indicated with bold text.

3.1.2 Sites which are considered potentially sensitive to the development proposals by virtue of the sensitivity of supported species or habitat assemblages, the distance/ecological connectivity to the application site and the nature of the perceived impacts are highlighted in bold text and are discussed in detail in the final sections of the report.

3.1.3 Sites for which potential adverse effects are not anticipated are excluded from further assessment.

Table 1: Designated Sites Evaluation.

Site Name and Status[2]	Reason for Designation	Potential Constraint
Hencott Pool (SSSI, Ramsar) NGR: **SJ 489 160** 1400m south-west of site boundary	Hencott Pool is a wet peat-filled basin, dominated by swamp carr comprising of alder and common willow *Salix cinerea* with frequent crack willow *Salix fragilis*. The SSSI is notable for its population of elongated sedge *Carex elongate.* Other uncommon species include purple smallreed *Calamagrostis canescens*, cyperus sedge *Carex pseudocyperus,* cowbane *Cicuta virosa,* great spearwort *Ranunculus lingual* and fine-leaved water dropwort *Oenanthe aquatica.*	No – Due to the distance of the SSSI from the site, and lack of ecological connectivity, the proposed development of the site is unlikely to have any significant adverse impacts on the SSSI or the interest features for which it is designated.
Old River Bed, Shrewsbury (SSSI) NGR: **SJ 496 148** 1700m southwest of site boundary	The SSSI is a former bed of the River Severn, cut-off from the main course of the river. The Old River Bed holds particular value for the extensive sedge fen which now fills the cut-off meander. The majority of the SSSI is dominated by lesser pond sedge *Carex acutiformis*. Other species include common reed *Phragmites australis*, great reedmace and water horsetail *Equisetum fluviatile*.	No – Due to the distance of the SSSI from the site, and lack of ecological connectivity, the proposed development of the site is unlikely to have any significant adverse impacts on the SSSI or the interest features for which it is designated.
Allscott Settling Ponds (SSSI) NGR: **SJ 601 129**	Allscott Settling Ponds are a series of water-filled lagoons of various depths and sizes which receive water from the adjacent sugar factory. Supporting a countywide important population of birds. 57 species of birds regularly breed there, including: little grebe *Tachybaptus ruficollis,* shoveler *Anas clypeata,* little ringed plover *Charadrius dubius*, turtle dove *Streptopelia turtur,* sand martin	No – Due to the distance of the SSSI from the site, and lack of ecological connectivity, the proposed development of the site is unlikely to have any significant adverse impacts on the SSSI or the interest features for which it is designated.

[2] SPA – Specially Protected Area, SAC – Special Area for Conservation, Ramsar – site designated under the Ramsar Convention, SSSI – Site of Special Scientific Interest, NNR – National Nature Reserve, LNR – Local Nature Reserve.

Site Name and Status[2]	Reason for Designation	Potential Constraint
9000m southeast of the site boundary Site falls within the impact risk zones of the SSSI	*raparia riparia*, yellow wagtail *Motacilla flava* and six species of warbler. Regular winter visitors include 25 species of wader and 19 wildfowl.	
Balls Coppice (Ancient woodland) NGR: **SJ 518 175** 1100m north-east of site boundary	Designated for its ancient woodland status.	No – The application site lies wholly outside the designated area (all infrastructure will be at least 1000m distant), although there is some ecological connectivity it is unlikely that there will be any direct impact to the woodland from development of the site.
Kesters Coppice (Ancient woodland) NGR: **SJ 509 182** 1500m north of site boundary	Designated for its ancient woodland status.	No – The application site lies wholly outside the designated area (all infrastructure will be at least 1000m distant), although there is some ecological connectivity it is unlikely that there will be any adverse direct or indirect impacts to the woodland.
Sundorne Pool (LWS) NGR: **SJ 528 161** 1400m east of site boundary	Stream valley with two pools, wet habitats.	**Yes – There is ecological connectivity between the two sites via connecting water courses, the brook which runs through the site connects with a tributary which flows into Sundorne Pool. This pool is approximately 2km south east of the site boundary.**

Site Name and Status[2]	Reason for Designation	Potential Constraint
Old River Bed S'bury (Non SSSI – Hencott Section (LWS) NGR: **SJ 493 148** 2km southwest of site boundary	Peat filled old river bed. Marsh and damp grassland and sedge flora with unimproved pastures	No – Due to the distance of the LWS from the site, and lack of ecological connectivity, site developments are unlikely to have any significant adverse impacts on the LWS, with consideration for the reasons for the designation of the LWS.
River Severn (Shrewsbury to Emstrey) (LWS) NGR: **SJ 510 145** 2km south of site boundary	Riparian habitats with rich variety of species.	No – Due to the distance of the LWS from the site, and lack of ecological connectivity, site developments are unlikely to have any significant adverse impacts on the LWS, with consideration for the reasons for the designation of the LWS.
Sundorne Canal (LWS) NGR: **SJ 505 143** 2km south of site boundary	Great crested newt *Triturus cristatus* Site and Urban Wildlife Pond.	No – Due to the distance of the LWS from the site, and lack of ecological connectivity, site developments are unlikely to have any significant adverse impacts on the LWS, with consideration for the reasons for the designation of the LWS.
Table Notes: SAC – Special Area for Conservation, Ramsar – site designated under the Ramsar Convention, SSSI – Site of Special Scientific Interest, SBI – Site of Biological Importance, NNR – National Nature Reserve, LNR – Local Nature Reserve, LWS – Local Wildlife Site, Retained BAS – Retained Biodiversity Alert Site.		

3.2 Habitats

3.2.1 All habitats within the survey area are described in Table 2, below, together with an indication of their BAP status, according to the definitions given in *UK BAP Priority Habitat Descriptions* (Anon 2008 updated 2010) and within the Shropshire BAP[3]. The table also provides an evaluation of the potential issues which require future consideration in the development of a mitigation strategy, indicated with bold text.

3.2.2 Habitats for which potential adverse effects are not anticipated are excluded from further assessment.

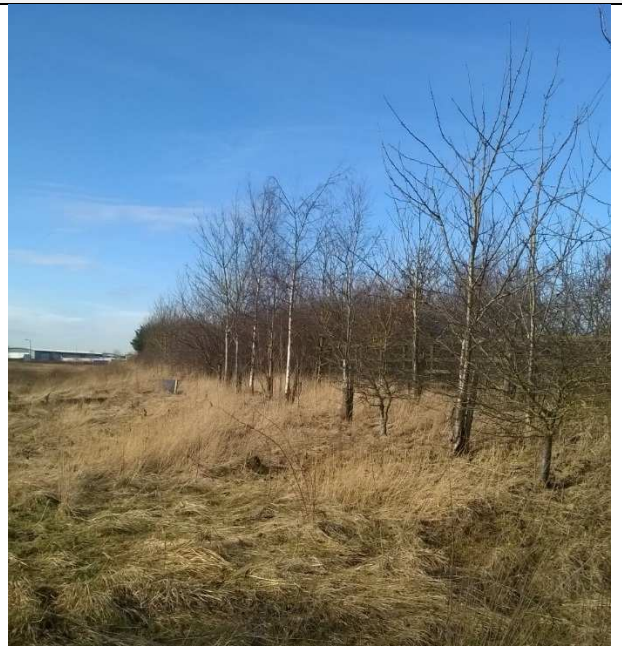
3.2.3 The location and extent of habitats is shown on Drawing ST14586/001, Extended Phase 1 Habitat Survey Results.

[3] https://www.shropshire.gov.uk/environment/biodiversity-and-ecology/shropshire-biodiversity-action-plan/

Table 2: Habitat Description and Evaluation

Phase 1 Habitats		UK BAP	LBAP	Potential Constraint
Semi-improved Neutral Grassland The dominant habitat within the survey area covering approximately 5.8 hectares. Most grassland is rank and has not been grazed or mown this season, areas close to the brook and to the east of the site have been mown short for access but the species composition remains the same. Abundant species include meadow foxtail *Alopecurus pratensis*, false oat-grass *Arrhenatherum elatius* and cock's foot D*actylis glomerata* with broad-leaved dock *Rumex obtusifolius*, cleavers *Galium aparine*, nettle *Urtica dioica*, creeping thistle *Cirsium arvense* and daisy *Bellis perennis* occurring occasionally towards the peripheries of the grassland.		**X**	**X**	No – floral species recorded are common and widespread throughout lowland habitats in Britain. Works within such habitats can be undertaken without the risk of significantly affecting the conservation status of this habitat type.
Marsh/Marshy Grassland An area of marsh/marshy grassland is situated south of the pond to the east of the site. The area approximately comprises 1ha. The abundant species within this area is soft rush *Juncus efflusus.* Frequent species include hard rush, compact rush, sorrel *Rumex acetosa,* broad-leaved dock, creeping buttercup *Ranunculus repens* and reed canary grass *Phalaris arundinacea.* Bulrush *Typha latifolia* occurs occasionally within this habitat. Several species of willow *Salix spp.* are becoming established within the area, approximately 1-2 years growth.		**X**	**X**	No – floral species recorded are common and widespread throughout lowland habitats in Britain. Works within such habitats can be undertaken without the risk of significantly affecting the conservation status of this habitat type. However, this habitat is suitable for reptiles and amphibians which is discussed in detail in Section 4.

Phase 1 Habitats		UK BAP	LBAP	Potential Constraint
Hard Standing To the south of the survey area is an access road, footpath and an ovular building comprising approximately 0.4 ha. No floral species are present within this habitat.	 	X	X	No – habitat has no intrinsic conservation value. Removal of this habitat will not have an adverse impact on site ecology.

Phase 1 Habitats		UK BAP	LBAP	Potential Constraint
Broad-leaved Plantation Woodland A linear area of newly planted broad-leaved woodland is located along the northern boundary line of the survey area. Silver birch *Betula pendula*, willow sp., wild cherry *Prunus avium* and hazel *Corylus avellana* are frequent within this habitat. Pedunculate oak *Quercus robur*, ash *Fraxinus excelsior* and hawthorn *Crataegus monogyna* occur occasionally while pine *Pinus sp.* and holly *Ilex aquifolium* occur in rare abundance.		X	X	No – not a BAP habitat. Trees are young so have limited ecological value and therefore this habitat will not be a constraint to development.
Intact species-poor hedgerow A dominant hawthorn hedgerow runs north-south towards the eastern extent of the survey area. The hedgerow is largely intact with a gap where felled trees have been placed, marked as Target Note 1 on Drawing ST14586/001. Ground flora is as per neutral semi-improved grassland with a rare abundance of snowdrop *Galanthus nivalis.*		✓	✓	**Yes – UK and LBAP habitat. Hedgerow is likely to be disturbed/removed.**

Phase 1 Habitats		UK BAP	LBAP	Potential Constraint
Dense/continuous and Scattered Scrub Scrub is located across the site, in areas the scrub is dense and continuous, particularly surrounding the pond. Elsewhere within the survey area it is sparse/intermittent and often integrated with tall ruderals (see below). The dominant species is hawthorn and bramble *Rubus fruticosus* agg.		**X**	**X**	No – not a BAP habitat. Removal of this habitat will not have a significant impact to floristic diversity within the site.
Tall ruderals Patches of tall ruderals are located adjacent to the pond and the brook, these locations are shown on drawing ST14586/001. Abundant species in these areas include great willowherb *Epilobium hirsutum,* broad-leaved dock, cleavers and nettle. Occasional species include creeping thistle, common hogweed *Heracleum sphondylium* and great burdock *Arctium lappa.*		**X**	**X**	No – not a BAP habitat. Removal of this habitat will not have a significant impact to floristic diversity within the site.
Running Water A narrow brook with fast flowing water runs across the south of the survey area from west to east. The earth banksides are steep, some of which are colonised with tall ruderals and scrub. The substrate of the brook is earth/silt with numerous small pebbles and occasional larger rocks.		✓	**X**	**Yes – the brook supports species of high conservation importance and therefore qualifies as a UKBAP habitat and will require protected species surveys and mitigation prior to disturbance / alteration.**

Phase 1 Habitats		UK BAP	LBAP	Potential Constraint
Open Water A large irregular sized pond surrounded by hawthorn shrubs and young willow species. Great willowherb, bramble and reed canary grass are abundant around the peripheries of the pond. There is a large mature pedunculate oak tree situated to the north-west bank.		✓	**X**	**Yes – the pond supports species of high conservation importance and therefore qualifies as a UKBAP habitat and will require protected species surveys and mitigation prior to disturbance /removal.**
Dry Ditch A small ditch, approximately 30m in length and >1m at the base, is situated north of the brook. The ditch is bounded with a wooden fence and it is likely that it was created to alleviate flooding. The ditch was dry at the time of survey.		**X**	**X**	No – habitat appears to be of recent origin with no aquatic plant species present. This habitat currently has limited conservation value. However, due to the location of the ditch it does have potential to support water vole and great crested newts. These species are discussed in Table 4 and Section 4 where appropriate measures are considered which would encompass the value of the ditch to protected species known/likely to be found on site.

3.3 Species

3.3.1 Recorded protected and/or invasive species from the field survey or evidence of the presence of protected or BAP priority species are described below. A full evidence base is provided in Appendix 4.

Badger *Meles meles*

3.3.2 All information on badger is provided in a separate Confidential Badger Annex.

Bats *Chiroptera*

3.3.3 Several mature pedunculate oak trees were noted during the survey as having good bat roost potential, positions of these trees are marked on Drawing ST14586/001-001 as 'individual trees'.

Otter *Lutra lutra*

3.3.4 An otter footprint was found to the western extent of the brook within the site boundary (noted as Target Note 2 on Drawing ST14586-001). Numerous slides were observed along the stretch of brook between the two western culverts. A potential holt with strong tracks leading to and from the entrance was also observed in the same stretch of brook (noted as Target Note 3 on Drawing ST14586-001). No spraints were observed which could be due to recent wet and snowy weather conditions washing away further evidence of otter.

Water vole *Arvicola amphibius*

3.3.5 Numerous small mammal burrows were identified along the stretch of brook. Recent wet and snowy weather conditions could have washed away further evidence of water vole, such as foot prints, droppings and feeding remains. Therefore, no conclusive evidence of water vole was found during the survey.

Invasive species

3.3.6 No invasive species were recorded during the field survey.

3.4 Ecological Evaluation

3.4.1 Protected, UK & Local Biodiversity Action Plan species are evaluated in order to identify potential ecological constraints in Table 4 below, based on the desk study records, presence extent and viability of supporting habitat, ecological connectivity and perceived nature and extent of effects.

3.4.2 Species/taxa for which potential adverse effects are not anticipated are excluded from further assessment.

Table 4: Protected Species Evaluation

Species/Taxa	Desk Study Record	Number of records	Status[4]	Supporting Habitat	Potential Constraint
Bats *Chiroptera*	**Brown long-eared** *Plecotus auritus* **Common pipistrelle** *Pipistrellus pipistrellus* **Noctule** *Nyctalus noctula* **Soprano pipistrelle** *Pipistrellus pygmaeus*	1 5 5 1	EPS, WCA, UKBAP	**Yes – there is a variety of foraging habitats within the site including mixed grassland and open water. Linear features within the site consist of a brook, hedgerow and a woodland block which could provide commuting habitat for bats. There are also several mature trees which have suitable features for roosting bats.**	**Yes – removal of commuting routes could reduce connectivity of habitats within the site and surrounding land.** **Removal of mature trees within the site could disturb/destroy potential bat roosts.**
Badger *Meles meles*	✓	9	BA	**Yes – Mixed grassland and scrub within the survey area provides suitable foraging habitat. Hedgerows and dense scrub also provide suitable sett creation habitat.**	**Information provided in Confidential Badger Annex Report.**
Birds	**See Appendix 3 for a full species list.**		A range of UKBAP, WCA and/or BoCC species.	**Yes – there is a variety of foraging habitats within the site to support a diverse range of birds. Hedgerows, trees, scrub and grassland also provide suitable nesting habitats.**	**Yes – Potential breeding and foraging habitat may be reduced/lost/disturbed by development.**

[4] EPS – European Protected Species, WCA – Wildlife and Countryside Act, A1 – Annex 1 (Birds Directive),BA – Protection of Badgers Act, BAP – Biodiversity Action Plan Priority Species, SBAP – Shropshire Biodiversity Action Plan

Species/Taxa	Desk Study Record	Number of records	Status[4]	Supporting Habitat	Potential Constraint
Brown hare *Lepus europaeus*	✓	2	UKBAP, SBAP	Yes – some supporting foraging habitat in the form of grassland.	No - The development proposals would only impact of a negligible amount of foraging habitat in relation to surrounding land and connectivity to the site for brown hair is limited.
Common toad *Bufo bufo*	✓	3	UKBAP	**Yes – suitable terrestrial and aquatic habitat within the survey area.**	**Yes – development within the site could disturb potential terrestrial and aquatic habitat.**
Dormouse *Muscardinus avellanarius*	X		EPS, WCA, UKBAP, SBAP	No – no supporting foraging habitat within the site or peripheries.	No - no populations recorded within the 2km search and no supporting habitats within, or near, the site.
European hedgehog *Erinaceus europaeus*	✓	10	UKBAP	**Yes – dense scrub, grassland and log piles located within the survey area provide good foraging and hibernation opportunities for hedgehogs.**	**Yes – removal of log piles and scrub could disturb and harm potential nesting hedgehogs.**
Great crested newt *Triturus cristatus*	✓	11	EPS, WCA, UKBAP, SBAP	**Yes – suitable terrestrial and aquatic habitat on site. Breeding habitat and records of GCN within the site.**	**Yes – suitable supporting habitats within the survey area are likely to be lost/disturbed by proposals.**
Otter *Lutra lutra*	✓	5	EPS, WCA, UKBAP	**Yes – the brook provides good foraging habitat which connects to an extensive watercourse, including the River Severn where previous records have been recorded.**	**Yes – evidence of otter has been found within the site. Removal and disturbance of supporting habitats within the survey area could reduce connectivity between habitats and disturb resting locations.**
Reptiles	X		WCA, UKBAP	**Yes – Scrub, mixed grassland, of varying vegetation heights, provide suitable habitat for several species of reptiles.**	**Yes – suitable habitats are likely to be lost/disturbed by proposals.**

Species/Taxa	Desk Study Record	Number of records	Status[4]	Supporting Habitat	Potential Constraint
Water vole *Arvicola amphibius*	✓	2	WCA, UKBAP, SBAP	**Yes – the brook provides good foraging and nesting habitat, connecting to an extensive watercourse.**	**Yes – Numerous burrows recorded in the banks along the course of the brook within the survey area could be potential water vole burrows. Removal and disturbance of supporting habitats within the survey area could reduce connectivity between habitats and disturb resting locations.**
White-clawed crayfish *Austropotamobius pallipes*	X		EPS, WCA, UKBAP	**Yes – the brook provides suitable habitat to support white-clawed crayfish with a pebbly substrate and good quality water. The brook connects to an extensive watercourse, including the River Severn where existing records have been provided..**	**Yes - Removal and disturbance of supporting habitats within the survey area could reduce connectivity between habitats.**

4 DISCUSSION AND RECOMMENDATIONS

4.1 Potential Constraints

4.1.1 The following designated sites, habitats and species (receptors) have been evaluated as being potential ecological constraints:

- Designated sites;
- UK BAP running water;
- UK BAP pond;
- UK & LBAP hedgerows;
- Bats;
- Badger;
- Hedgehog;
- GCN (and common toad);
- Otter;
- Reptile;
- Water vole;
- White-clawed Crayfish; and
- Nesting birds (general).

4.1.2 Potential effects, requirements for further survey, and mitigation are discussed below for each of the identified potential constraints.

Designated Sites

4.1.3 None of the SSSI sites within a 2km search are likely to be adversely affected by development of the site as per Table 1.

Sundorne Pool (LWS)

Sundorne Pool is a Local Wildlife Site approximately 1.4km east of the site. It is designated for a stream valley, two connecting pools and associated wetland habitats. Battlefield Brook connects with a tributary which flows into Sundorne Pool. This pool is approximately 2km south east of the site boundary. Due to the distance and urban context between the brook on site and Sundorne Pool it is considered unlikely that there will be a direct adverse impact to the LWS.

Discussion of Designated Sites

4.1.4 Overall, it is considered unlikely that works within the proposed development site will have an adverse impact upon the nature conservation value to any of the designated sites. In order to avoid adverse impacts upon the nature conservation value of the designated sites from development of the site, the following measures should be implemented:

- Surface water drainage during clearance, construction and operation must be directed away from the sites;
- All waste material should be disposed of appropriately;
- Re-fuelling of vehicles should be carried out within designated areas and appropriate spill kits must be available; and
- Where excessive dust production is likely, appropriate measures to control settlement within the sites should be designed and implemented.

UK BAP Running Water

4.1.5 Battlefield Brook is designated as a BAP habitat as a result of supporting protected and notable species and has been confirmed to support otter and has good potential to support water vole and white-clawed crayfish. The brook is part of an extensive water system which connects to the River Severn where records of otter and white-clawed crayfish have also been documented. It is recommended that a buffer of >15 metres is maintained from the bankside of the brook to protect these species and maintain ecological connectivity to surrounding habitats in accordance with previous recommendations for the site (URS Scott Wilson Ecology Summary Proof for Planning Permission Appeal). If development requires disturbance to the brook then a suitable mitigation strategy will be required to protect the species which the brook supports and maintain connectivity within the local landscape.

UK BAP Pond

4.1.6 The pond within the survey area is a mitigation pond from a previous development scheme and is known to support GCN. Further surveys and mitigation for GCN and supporting habitat is provided in Section 4.1.20- 4.1.25.

UK and LBAP hedgerows

4.1.7 Where hedgerow removal cannot be avoided, any losses should, where possible, be compensated for by the provision of a new hedgerow elsewhere on site of at least

equivalent length using appropriate woody species of local provenance. Works should be undertaken outside of the nesting bird season discussed in Section 4.1.39.

Bats

4.1.8 A total of 12 records of bat were provided in the data search for a 2km radius from the site boundary, the majority of the records were of common pipistrelle. Other species within the search area included noctule, soprano pipistrelle and brown long-eared bat. Four common pipistrelle calls were recorded along Battlefield Link Road, two of which recordings were adjacent to the northern boundary of the survey area. Bat activity surveys undertaken in 2008 showed that Battlefield Brook was used for commuting and foraging.

4.1.9 Potential foraging, commuting and roosting habitats within the site would require bat activity transects and bat roost potential surveys. The survey area is classed as a 'medium' sized site with 'medium' quality habitat for bats; as outlined in *Bat Surveys – Good Practice Guidelines* 2nd Edition (Hundt, 2012).

4.1.10 Bat activity surveys would involve three walked transects around the site boundary and following linear physical landscape features such as the hedgerow, brook and mixed plantation woodland. Three surveys are to be undertaken; one in each of the appropriate seasons; spring, summer and autumn in accordance with current best practice guidelines.

4.1.11 Automated bat detector surveys would also be implemented to acquire further supporting data. A single static detector would be deployed on three occasions at suitable locations across the site and left in-situ for three consecutive nights in each of the appropriate seasons; spring, summer and autumn.

Badger

4.1.12 Full details are provided within the Confidential Badger Annex Report.

Hedgehog

4.1.13 Ten records of hedgehog were returned from the data search; six of the records were mortalities while the remaining four were sightings.

4.1.14 No hedgehogs or nests were observed during the site visit; however numerous suitable habitats for nesting, foraging and hibernation were noted. A log pile, marked as Target Note 1 on Drawing ST14586, along a hedgerow provides suitable nesting habitat for hedgehog.

4.1.15 Removal of suitable habitat should be undertaken carefully by hand in order to minimise risk to any hedgehog using the site.

GCN (and common toad)

4.1.16 Nine waterbodies were identified within 500m of the site, see Drawing ST14586/002. Two are brooks, one is a ditch and the remaining waterbodies were ponds. Five out of the nine water bodies were accessible for assessment, descriptions and assessments of waterbodies can be found in Appendix 5.

4.1.17 Numerous records of GCN were provided in the data search for a 2km radius from the site boundary during the desk study. The closest record is located at the pond within the survey area, therefore the site is known to support GCN. Three records of common toad were also provided.

4.1.18 Previous surveys of the site and surrounding waterbodies recorded GCN to be present. However, updated presence/absence surveys are now required on all ponds within 500m of the site, followed by population size class assessment surveys within ponds where GCN are present.

4.1.19 The presence/absence survey effort would involve four visits to each pond, in suitable weather conditions, between mid-March to mid-June with at least two of these between mid-April to mid-May. The population size class assessment surveys would require a further two surveys with at least one of these visits between mid-April to mid-May.

4.1.20 Depending on the results of the surveys, a Natural England rapid risk assessment will be required to assess the likely impact of the development upon GCN. GCN are already known to be present within the survey area and therefore it is likely that a Natural England disturbance licence would be required for the site which would include the translocation of GCN.

Otter

4.1.21 Five records of otter were provided in the data search for a 2km radius from the survey area during the desk study. Two of the records were field records and three were sightings of otter. The majority of records were at the River Severn.

4.1.22 During the field survey evidence of otter was documented along the brook (see Appendix 4). Therefore, it is recommended that an otter survey is undertaken to

establish the activity levels of otter at the brook. This survey can be undertaken at any time of year.

Reptiles

4.1.23 No records of reptiles within a 2km radius of the survey area were returned in the data search. This however is not an appropriate representation of the potential reptile population as a lack of records is often due to an under-recording of a species or an area.

4.1.24 Due to a combination of hedgerow, grassland, scrub habitats, open water and log piles; there is the potential for reptiles to occur within the site.

4.1.25 Seven initial survey visits in suitable weather conditions during April and May or September are required in order to determine the presence/likely absence of reptiles in accordance with current guidelines in the Herpertofauna Workers' Manual (Gent & Gibson, 2003). If reptiles are found it is likely a population assessment will be required to assess the relative population size and to identify key areas of reptile activity within the site. A population assessment requires 13 additional survey visits to be undertaken.

4.1.26 Appropriate mitigation and remediation works can then be informed from the findings of the surveys.

Water vole

4.1.27 Two records of water vole were returned from the data search. A field record of a water vole was recorded at Hencott Pool in 1983. In 2007, a water vole was recorded approximately 95 metres south of the site. Water voles surveys along the Battlefield Brook were undertaken in 2007, 2008 and 2011 but no conclusive evidence of the species was recorded.

4.1.28 Numerous small mammal burrows were identified along the banks of the brook during the site survey; however no latrines, feeding remains or footprints were noted.

4.1.29 It is recommended that a full water vole survey is undertaken, in conjunction with the otter survey to establish the presence/ likely absence of water vole along the brook. This survey should be undertaken between April and September.

White-clawed crayfish

4.1.30 No records of white-clawed crayfish were provided in the data search for a 2km radius from the site boundary during the desk study.

4.1.31 The brook is suitable to support white-clawed crayfish with a pebble substrate with larger rocks which act as refuges.

4.1.32 It is recommended that a full survey is undertaken which would require hand searching, torching and setting traps over 1 visit between July-October to confirm presence/likely absence of white-clawed crayfish.

Nesting Birds

4.1.33 In addition, due to the potential presence of ground nesting bird species within the site, it is recommended that initial development works are undertaken outside of the usual bird breeding season (normally taken to be March – August inclusive). If such timescales cannot be accommodated, it is recommended that a check for the presence of active nests, and nesting birds should be undertaken by a suitably qualified ecologist prior to the commencement of works. Any active nests should be identified and protected subject to the relevant legal provisions until the nesting attempt is complete.

5 ECOLOGICAL ENHANCEMENTS

5.1 Introduction

5.1.1 In accordance with the requirements of the NPPF and BSI 42020:2013 ecological enhancements should be proposed which will result in a net gain in biodiversity. The following measures are considered appropriate for the scale of the development and the magnitude of perceived impacts.

5.2 Habitats

5.2.1 It is recommended that development proposals for the site aim to retain existing trees where possible, if this is not feasible then any trees removed should be replaced with native species of wildlife value.

5.2.2 Where hedgerow removal cannot be avoided, any losses should, where possible, be compensated for by the provision of a new hedgerow elsewhere on site of at least equivalent length using appropriate woody species of local provenance.

5.2.3 It is recommended that current access across the brook is maintained and used as a primary access point. Due to the ecological value of the brook it is recommended that a >15 metre buffer is retained either side of the bank. This riparian buffer would benefit from planting new herbs and shrubs to increase floristic biodiversity and provide enhanced shelter and food resources for animals.

5.3 Species

The ecological compensation area has the potential to support a greater abundance and diversity of invertebrates which would in turn be favourable to foraging bats and birds; similarly, enhancing/replacing hedgerows, creating quality green spaces will also be beneficial for bats and birds, amongst other species.

6 REFERENCES

6.1.1 Botanical Society of the British Isles (2013) *Online atlas of the British and Irish Flora* http://www.brc.ac.uk/plantatlas/index.php?q=title_page

6.1.2 British Standards Institute (2013) Biodiversity – Code of Practice for Planning and Development.

6.1.3 Chartered Institute of Ecological and Environmental Management. (2012). *Guidelines for Preliminary Ecological Appraisal*.

6.1.4 Gent A. H. & Gibson S. D. (2003). *Herpetofauna Workers' Manual 2nd Edition*, Peterborough, Joint Nature Conservation Committee.

6.1.5 Hundt (2012). *Bat Surveys – Good Practice Guidelines (2nd Edition)*. Bat Conservation Trust: London.

6.1.6 Institute of Environmental Assessment, (1995) *Guidelines for Baseline Ecological Assessment*.

6.1.7 Joint Nature Conservation Committee, *Handbook for Phase 1 habitat survey: A technique for environmental audit* (2007), English Field Unit, Nature Conservancy Council.

6.1.8 National Biodiversity Network (2013) NBN Gateway

http://data.nbn.org.uk/

6.1.9 Stace. C. A, '*New Flora of the British Isles*' (1997), Cambridge University Press.

Appendix 1

Legislation and Policy Summary

Appendix 1 – Legislation and Policy Summary

Legislation for Habitats/Sites

Designated Site/Habitat	Status
Ramsar Sites	Ramsar Sites are wetlands of international importance designated following The Ramsar Convention. RAMSAR sites have the same level of protection as SSSIs under the Wildlife and Countryside Act 1981 (as amended).
SPA (Special Protection Areas)	SPAs are classified in accordance with Article 4 of the EC Directive on the Conservation of Wild Birds (79/409/EEC), the Birds Directive. They are they seek to protect the habitats of rare and vulnerable birds, listed in Annex I of the Birds Directive, and for regularly occurring migratory species. The Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010 implement the Birds Directive in the UK.
SAC (Special Areas for Conservation)	SACs are strictly protected areas which represent typical European Union of habitats and (non-bird) species listed in Annexes I and II of the EC Habitats Directive. The Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010 implement the Habitats Directive in the UK.
SSSI (Sites of Special Scientific Interest)	SSSIs protect the best examples of the UK's flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were renotified under the Wildlife and Countryside Act 1981 (as amended). Modified provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000.
NNR (National Nature Reserves)	NNRs are examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. NNRs are declared by the statutory country conservation agencies under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981 (as amended). Legal protection of NNRs is provided under The Wildlife and Countryside Act 1981 (as amended).
Hedgerows	All hedgerows are protected by the Hedgerows Regulations 1997, under which it is an offence to remove or destroy certain hedgerows without planning consent or permission from the Local Planning Authority. These regulations do not apply to any hedgerow within the curtilage of, or marking the boundary of the curtilage of, a dwelling house.

Designated Site/Habitat	Status
LNR (Local Nature Reserves)	Designated by the National Parks and Access to the Countryside Act 1949, LNRs may be declared for nature conservation by local authorities after consultation with the relevant statutory nature conservation agency. Legal protection of LNRs is provided under The Wildlife and Countryside Act 1981 (as amended).

Legislation for Species

Species	Legal Status
European Legislation	
Creeping Marshwort, Early Gentian, Fen Orchid, Floating-leaved Water Plantain, Killarney Fern, Lady's Slipper, Shore Dock, Slender Naiad, Yellow Marsh Saxifrage	Under the Conservation of Habitats and Species Regulations 2010 (and as amended), it is illegal to deliberately pick, collect, uproot or destroy any such species.
Bats, Dormouse, Otter, Wild Cat, Great Crested Newt, Natterjack Toad, Sand Lizard, Smooth Snake, Large Blue Butterfly	These animals and their breeding sites or resting places are protected under Regulation 41 of the Conservation of Habitats and Species Regulations 2010 (and as amended), which makes it illegal to: • Deliberately capture, injure or kill any such animal or to deliberately take or destroy their eggs; • Deliberately disturb[5] such an animal; and • Damage or destroy a breeding site or resting place of such an animal. European Protected Species (EPS) licenses can be granted by Natural England in respect of development to permit activities that would otherwise be unlawful under the Conservation Regulations, providing that the following 3 tests (set out in the EC Habitats Directive) are passed, namely: • The development is for reasons of overriding public interest; • There is no satisfactory alternative; and • The favourable conservation status of the species concerned will be maintained and/or enhanced.

[5] Under the Conservation Regulations, disturbance of protected animals includes in particular any disturbance which is likely to: (i) impair their ability to survive, breed or reproduce, or to rear or nurture their young or to hibernate or migrate; (ii) significantly affect the local distribution or abundance of the species in question.

Species	Legal Status
	Under Regulation 9(5) of the Conservation Regulations, Planning Authorities have a duty to 'have regard to the requirements of the EC Habitats Directive' i.e. LPA's must consider the above 3 'tests' when determining whether Planning Permission should be granted for developments likely to cause an offence under the Conservation Regulations.
Domestic (UK) Legislations	
Bats, Dormouse, Great Crested Newt, Heath Fritillary, High Brown Fritillary, Large Blue, Marsh Fritillary, Natterjack Toad, Pine Martin, Otter, Red Squirrel, Sand Lizard, Smooth Snake, Swallowtail, Water Vole, Wildcat	These animals receive full protection under the Wildlife and Countryside Act 1981 (and as amended), which makes it illegal (subject to certain exceptions) to: • Intentionally kill, injure or take any such animal; • Intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any such animal; and • Intentionally or recklessly disturb such animals while they occupy a place used for shelter or protection.
Adder, Common Lizard, Grass Snake, Slow Worm, White-clawed Crayfish	These animals receive partial protection under The Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000), which provide protection against intentional killing or injury of any such animal.
Nesting Birds	All wild birds (as defined by the act) are protected under the Wildlife and Countryside Act 1981 (and as amended), which makes it illegal (subject to exceptions) to: • Intentionally kill, injure or take any wild bird; • Take, damage or destroy the nest (whilst being built or in use) or eggs of any wild bird.
WCA Schedule 1 listed Birds	Additional protection is provided to birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (and as amended). In addition to the offences detailed above relating to all wild birds, it is illegal to: • Intentionally or recklessly disturb any bird listed on Schedule 1, or their dependent young while nesting.
Badgers	The Protection of Badgers Act 1992 makes it illegal to wilfully kill or injure a Badger, or attempt to do so and to intentionally or recklessly interfere with a Badger sett. This includes: • damaging or destroying an active sett; • obstructing access to a sett; and • disturbing a Badger while it is occupying a sett. Licences can be granted to permit sett closure and/or disturbance between July and November inclusive (i.e. outside the sow pregnancy/birth period).

Species	Legal Status
Wild Mammals	The Wild Mammals (Protection) Act 1996 provides legal protection to all wild mammals (as defined by the act) against the following actions: mutilate, kick, beat, nail, or otherwise impale, stab, burn, stone, drown, crush, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.
Invasive Species	
WCA Schedule 9 listed animals (Part 1) and plants (part 2)	Certain species of plants and animals that do not naturally occur in Great Britain have become established in the wild and represent a threat to the natural fauna and flora. Section 14 of the Wildlife & Countryside Act prohibits the release of any animal species that are: "*not ordinarily resident in and is not a regular visitor to Great Britain in a wild state*"

Policy Summary

Section 40 of the Natural Environment and Rural Communities (NERC) Act imposes a legal duty on Planning Authorities to 'have regard' to the conservation of biodiversity when considering planning applications.

Section 41 of the NERC Act requires the Secretary of State to publish a list of species and habitats of principal importance for conserving biodiversity in the UK. Such Biodiversity Action Plan (BAP) Habitats and Species (2007) do not offer the species any specific protection but help to highlight the species importance at a national level. This list is used by Local Planning Authorities to identify the species and habitats that should be afforded priority when applying the requirements of the National Planning Policy Framework (NPPF).

The NPPF underpins the Government's planning policies for England and how these are to be applied. The central theme of the NPPF is a presumption in favour of sustainable development. This presumption does not apply where development requiring Appropriate Assessment under the Birds or Habitats Directives is being considered, planned or determined.

The NPPF states:

> *'When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:*

- *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;*
- *proposed development on land within or outside a Site of Special Scientific Interest (SSSI) likely to have an adverse effect on a SSSI (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 SSSIs;*
- *development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;*
- *opportunities to incorporate biodiversity in and around developments should be encouraged;*
- *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*
- *the following wildlife sites should be given the same protection as European sites: potential Special Protection Areas (SPA) and possible Special Areas of Conservation (SAC); listed or proposed Ramsar sites; and sites identified, or required, as compensatory measures for adverse effects on European sites, potential SPAs, possible SACs, and listed or proposed Ramsar sites.'*

The NPPF requires the Planning Authority to have a responsibility 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. In addition, the planning system should contribute to and enhance the natural and local environment by 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.

The National Planning Policy Guidelines (NPPG) provides information on the implementation of the policies set out within the NPPF and how these policies are associated with supporting legislation, policies and supplementary guidelines.

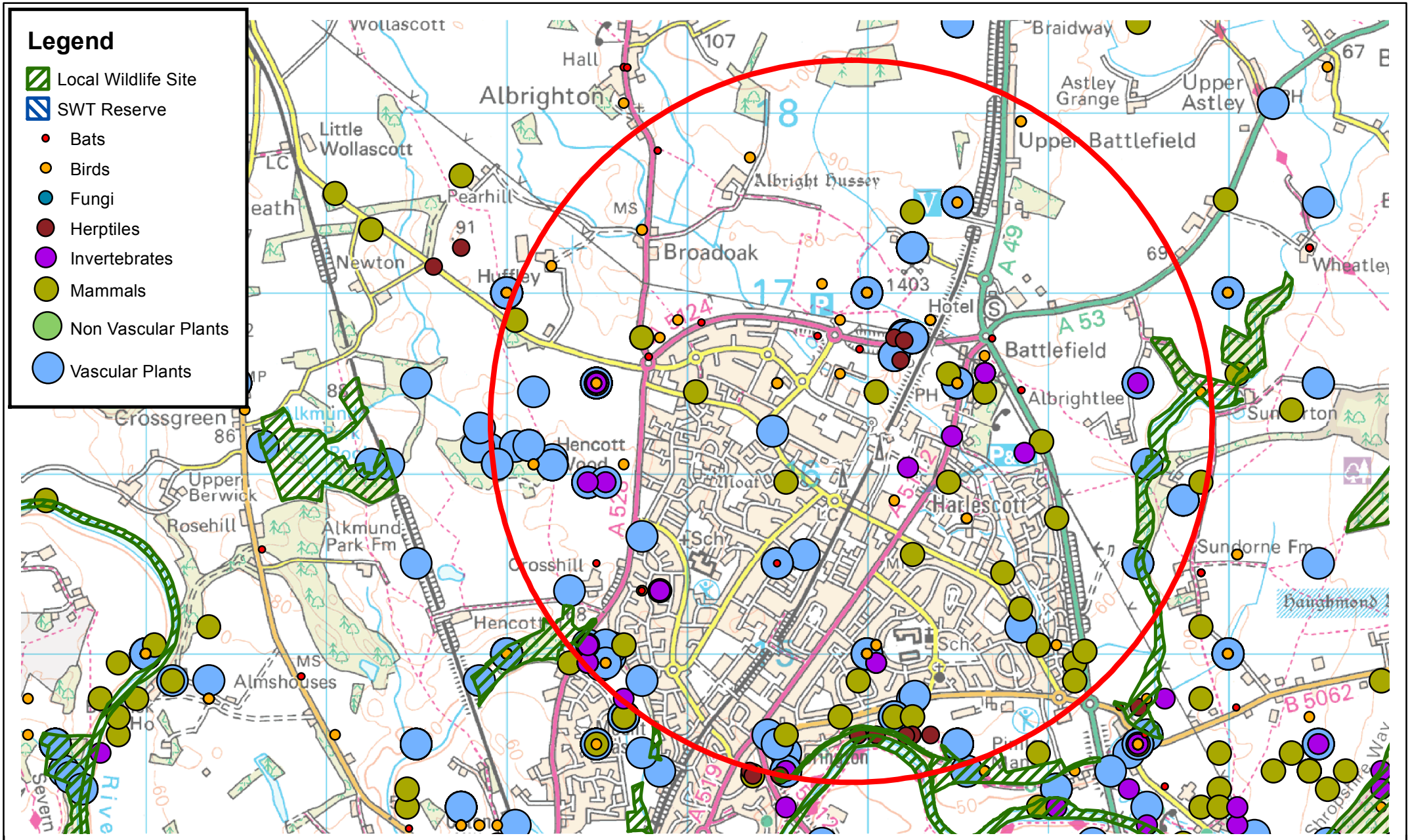
With regard to Schedule 1 and 2 projects, the NPPG explains the requirements of Town and Country Planning (EIA) Regulations 2011, including the legislation, stages and implementation of the act.

In terms of planning applications which fall outwith the EIA regulations the NPPG provides the following broad guidelines (extracts below):

> *Section 40 of the Natural Environment and Rural Communities Act 2006, places a duty on all public authorities in England and Wales to have regard, in the exercise of their functions, to the purpose of conserving biodiversity. A key purpose of this duty is to embed consideration of biodiversity as an integral part of policy and decision making throughout the public sector, which should be seeking to make a significant contribution to the achievement of the commitments made by Government in its Biodiversity 2020 strategy.*
>
> *Guidance on statutory obligations concerning designated sites and protected species is published separately …. Local planning authorities should take a pragmatic approach – the aim should be to fulfil statutory obligations in a way that minimises delays and burdens.*
>
> *The National Planning Policy Framework is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution.*

Appendix 2

Designated Sites and Species Map



Shropshire Ecological Data Network

Shropshire Wildlife Trust,193 Abbey Foregate, Shrewsbury SY2 6AH.
Tel: 01743 284280 www.shropshirewildlifetrust.org.uk

Data search for SJ50911629, Battlefield, Shrewsbury.

Date: 15/12/2014

N

Appendix 3

Protected/Priority Species List

Appendix 3: Evidence of Protected/Priority Species

Order	Species	Common
Bats	*Nyctalus noctula*	Noctule
Bats	*Pipistrellus pipistrellus*	Common Pipistrelle
Bats	*Pipistrellus pygmaeus*	Soprano Pipistrelle
Bats	*Plecotus auritus*	Brown Long-eared Bat
Birds	*Actitis hypoleucos*	Common Sandpiper
Birds	*Alauda arvensis*	Skylark
Birds	*Alcedo atthis*	Kingfisher
Birds	*Anas crecca*	Teal
Birds	*Anas platyrhynchos*	Mallard
Birds	*Anthus pratensis*	Meadow Pipit
Birds	*Apus apus*	Swift
Birds	*Aythya ferina*	Pochard
Birds	*Aythya fuligula*	Tufted Duck
Birds	*Branta canadensis*	Canada Goose
Birds	*Carduelis cabaret*	Lesser Redpoll
Birds	*Carduelis cannabina*	Linnet
Birds	*Charadrius dubius*	Little Ringed Plover
Birds	*Circus cyaneus*	Hen Harrier
Birds	*Columba oenas*	Stock Dove
Birds	*Cuculus canorus*	Cuckoo
Birds	*Delichon urbicum*	House Martin
Birds	*Dendrocopos minor*	Lesser Spotted Woodpecker
Birds	*Emberiza citrinella*	Yellowhammer
Birds	*Emberiza schoeniclus*	Reed Bunting
Birds	*Falco columbarius*	Merlin
Birds	*Falco peregrinus*	Peregrine Falcon
Birds	*Falco subbuteo*	Hobby
Birds	*Falco tinnunculus*	Kestrel
Birds	*Gallinago gallinago*	Snipe
Birds	*Larus argentatus*	Herring Gull
Birds	*Larus canus*	Common Gull
Birds	*Larus fuscus*	Lesser Black-backed Gull
Birds	*Larus ridibundus*	Black-headed Gull
Birds	*Limosa limosa*	Black-tailed Godwit
Birds	*Locustella naevia*	Grasshopper Warbler
Birds	*Milvus milvus*	Red Kite
Birds	*Motacilla cinerea*	Grey Wagtail
Birds	*Motacilla flava*	Yellow Wagtail
Birds	*Muscicapa striata*	Spotted Flycatcher
Birds	*Numenius arquata*	Curlew
Birds	*Oenanthe oenanthe*	Wheatear
Birds	*Passer domesticus*	House Sparrow
Birds	*Passer montanus*	Tree Sparrow
Birds	*Perdix perdix*	Grey Partridge
Birds	*Phoenicurus ochruros*	Black Redstart

Order	Species	Common
Birds	*Phylloscopus trochilus*	Willow Warbler
Birds	*Picus viridis*	Green Woodpecker
Birds	*Pluvialis apricaria*	Golden Plover
Birds	*Poecile montanus*	Willow Tit
Birds	*Poecile palustris*	Marsh Tit
Birds	*Prunella modularis*	Dunnock
Birds	*Psittacula krameri*	Ring-necked Parakeet
Birds	*Pyrrhula pyrrhula*	Bullfinch
Birds	*Riparia riparia*	Sand Martin
Birds	*Scolopax rusticola*	Woodcock
Birds	*Streptopelia turtur*	Turtle Dove
Birds	*Sturnus vulgaris*	Starling
Birds	*Sylvia communis*	Whitethroat
Birds	*Tadorna ferruginea*	Ruddy Shelduck
Birds	*Tadorna tadorna*	Shelduck
Birds	*Turdus philomelos*	Song Thrush
Birds	*Turdus viscivorus*	Mistle Thrush
Birds	*Tyto alba*	Barn Owl
Birds	*Vanellus vanellus*	Lapwing
Herptile	*Bufo bufo*	Common Toad
Herptile	*Triturus cristatus*	Great Crested Newt
Coleoptera	*Acilius canaliculatus*	a water beetle
Coleoptera	*Agabus uliginosus*	a water beetle
Coleoptera	*Anaspis thoracica*	a false flower beetle
Coleoptera	*Helochares lividus*	a water beetle
Coleoptera	*Hydaticus seminiger*	a water beetle
Coleoptera	*Hygrotus decoratus*	a water beetle
Coleoptera	*Ilybius guttiger*	a water beetle
Coleoptera	*Ischnomera cyanea*	a false blister beetle
Coleoptera	*Magdalis cerasi*	a weevil
Coleoptera	*Philonthus fumarius*	a rove beetle
Coleoptera	*Rhantus grapii*	a water beetle
Diptera	*Beris fuscipes*	a soldierfly
Diptera	*Beris morrisii*	a soldierfly
Diptera	*Cheilotrichia imbuta*	a cranefly
Diptera	*Dioctria linearis*	a robberfly
Diptera	*Dioctria rufipes*	a robberfly
Diptera	*Euphranta toxoneura*	a picture-winged fly
Diptera	*Hybomitra bimaculata*	a horse fly
Diptera	*Leopoldius signatus*	a conopid fly
Diptera	*Nemotelus pantherinus*	a soldierfly
Diptera	*Oxycera nigricornis*	a soldierfly
Diptera	*Oxycera nigricornis*	a soldierfly
Diptera	*Parhelophilus versicolor*	a hoverfly
Diptera	*Platycheirus granditarsus*	a hoverfly
Diptera	*Platycheirus occultus*	a hoverfly

Order	Species	Common
Diptera	*Platycheirus rosarum*	a hoverfly
Diptera	*Psacadina verbekei*	a snail-killing fly
Lepidoptera	*Acronicta psi*	Grey Dagger
Lepidoptera	*Acronicta rumicis*	Knot Grass
Lepidoptera	*Agrochola litura*	Brown-spot Pinion
Lepidoptera	*Allophyes oxyacanthae*	Green-brindled Crescent
Lepidoptera	*Apamea remissa*	Dusky Brocade
Lepidoptera	*Atethmia centrago*	Centre-barred Sallow
Lepidoptera	*Chesias rufata*	Broom-tip
Lepidoptera	*Cosmia diffinis*	White-spotted Pinion
Lepidoptera	*Diarsia rubi*	Small Square-spot
Lepidoptera	*Ecliptopera silaceata*	Small Phoenix
Lepidoptera	*Ennomos erosaria*	September Thorn
Lepidoptera	*Ennomos quercinaria*	August Thorn
Lepidoptera	*Hepialus humuli*	Ghost Moth
Lepidoptera	*Hydraecia micacea*	Rosy Rustic
Lepidoptera	*Melanchra persicariae*	Dot Moth
Lepidoptera	*Mesoligia literosa*	Rosy Minor
Lepidoptera	*Mythimna comma*	Shoulder-striped Wainscot
Lepidoptera	*Noctua orbona*	Lunar Yellow Underwing
Lepidoptera	*Orthosia gracilis*	Powdered Quaker
Lepidoptera	*Scopula emutaria*	Rosy Wave
Lepidoptera	*Scotopteryx chenopodiata*	Shaded Broad-bar
Lepidoptera	*Spilosoma lubricipeda*	White Ermine
Lepidoptera	*Spilosoma luteum*	Buff Ermine
Lepidoptera	*Timandra comae*	Blood-vein
Lepidoptera	*Trichiura crataegi*	Pale Eggar
Lepidoptera	*Tyria jacobaeae*	Cinnabar
Lepidoptera	*Xanthia icteritia*	Sallow
Lepidoptera	*Xanthorhoe ferrugata*	Dark-barred Twin-spot Carpet
Odonata	*Gomphus vulgatissimus*	Club-tailed Dragonfly
Odonata	*Platycnemis pennipes*	White-legged Damselfly
Mammal	*Arvicola amphibius*	Water Vole
Mammal	*Erinaceus europaeus*	Hedgehog
Mammal	*Lepus europaeus*	Brown Hare
Mammal	*Lutra lutra*	Otter
Mammal	*Meles meles*	Badger
Mammal	*Mustela putorius*	Polecat
Mammal	*Sciurus carolinensis*	Grey Squirrel
Vascular Plants	*Achillea ptarmica*	Sneezewort
Vascular Plants	*Adoxa moschatellina*	Moschatel
Vascular Plants	*Aira praecox*	Early Hair-grass
Vascular Plants	*Alisma lanceolatum*	Narrow-leaved Water-plantain
Vascular Plants	*Anchusa arvensis*	Bugloss
Vascular Plants	*Anemone nemorosa*	Wood Anemone
Vascular Plants	*Apium inundatum*	Lesser Marshwort

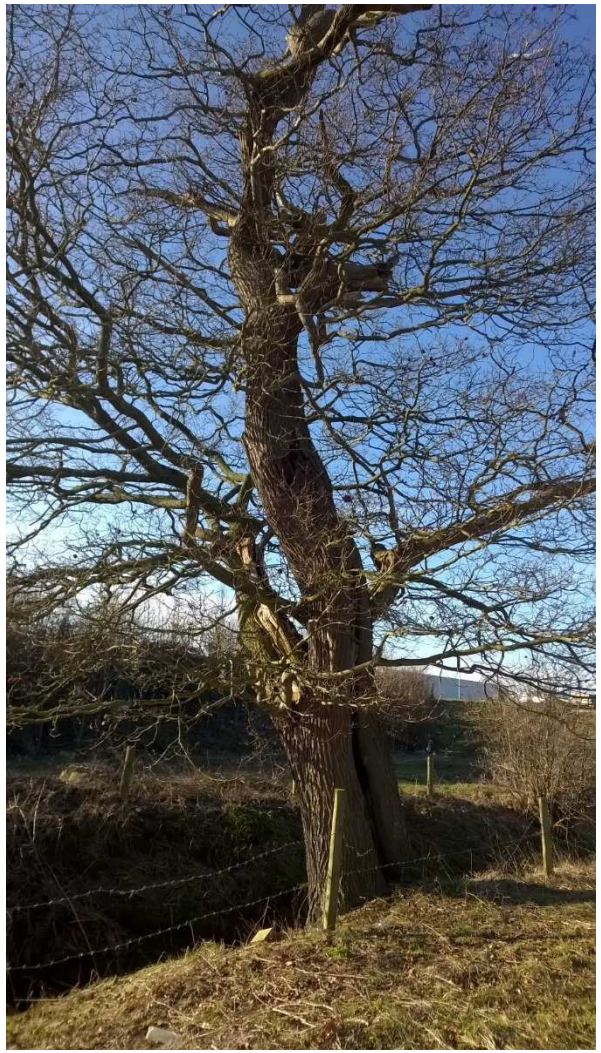
Order	Species	Common
Vascular Plants	*Azolla filiculoides*	Water Fern
Vascular Plants	*Berula erecta*	Lesser Water-parsnip
Vascular Plants	*Betonica officinalis*	Betony
Vascular Plants	*Bidens cernua*	Nodding Bur-marigold
Vascular Plants	*Bidens tripartita*	Trifid Bur-marigold
Vascular Plants	*Briza media*	Quaking-grass
Vascular Plants	*Bromopsis ramosa*	Hairy Brome
Vascular Plants	*Butomus umbellatus*	Flowering Rush
Vascular Plants	*Calamagrostis canescens*	Purple Small-reed
Vascular Plants	*Cardamine amara*	Large Bitter-cress
Vascular Plants	*Carex caryophyllea*	Spring Sedge
Vascular Plants	*Carex disticha*	Brown Sedge
Vascular Plants	*Carex elata*	Tufted Sedge
Vascular Plants	*Carex elongata*	Elongated Sedge
Vascular Plants	*Carex paniculata*	Greater Tussock-sedge
Vascular Plants	*Carex pseudocyperus*	Cyperus Sedge
Vascular Plants	*Carex rostrata*	Bottle Sedge
Vascular Plants	*Carex vesicaria*	Bladder Sedge
Vascular Plants	*Cicuta virosa*	Cowbane
Vascular Plants	*Comarum palustre*	Marsh Cinquefoil
Vascular Plants	*Crassula helmsii*	New Zealand Pigmyweed
Vascular Plants	*Dactylorhiza praetermissa*	Southern Marsh-orchid
Vascular Plants	*Deschampsia flexuosa*	Wavy Hair-grass
Vascular Plants	*Dryopteris affinis*	Golden-scaled Male-fern
Vascular Plants	*Dryopteris carthusiana*	Narrow Buckler-fern
Vascular Plants	*Echium vulgare*	Viper's Bugloss
Vascular Plants	*Elymus caninus*	Bearded Couch
Vascular Plants	*Equisetum fluviatile*	Water Horsetail
Vascular Plants	*Erodium moschatum*	Musk Stork's-bill
Vascular Plants	*Euonymus europaeus*	Spindle
Vascular Plants	*Fallopia japonica*	Japanese Knotweed
Vascular Plants	*Fumaria purpurea*	Purple Ramping-fumitory
Vascular Plants	*Galium odoratum*	Sweet Woodruff
Vascular Plants	*Galium uliginosum*	Fen Bedstraw
Vascular Plants	*Geum rivale*	Water Avens
Vascular Plants	*Hottonia palustris*	Water-violet
Vascular Plants	*Hyacinthoides non-scripta*	Bluebell
Vascular Plants	*Hydrocotyle vulgaris*	Marsh Pennywort
Vascular Plants	*Hypericum pulchrum*	Slender St John's-wort
Vascular Plants	*Impatiens glandulifera*	Indian Balsam
Vascular Plants	*Lagarosiphon major*	Curly Waterweed
Vascular Plants	*Lamiastrum galeobdolon*	Yellow Archangel
Vascular Plants	*Lathyrus linifolius*	Bitter-vetch
Vascular Plants	*Lathyrus sylvestris*	Narrow-leaved Everlasting-pea
Vascular Plants	*Luronium natans*	Floating Water-plantain
Vascular Plants	*Luzula multiflora*	Heath Wood-rush

Order	Species	Common
Vascular Plants	*Luzula pilosa*	Hairy Wood-rush
Vascular Plants	*Lysimachia vulgaris*	Yellow Loosestrife
Vascular Plants	*Melica uniflora*	Wood Melick
Vascular Plants	*Menyanthes trifoliata*	Bogbean
Vascular Plants	*Myosotis discolor*	Changing Forget-me-not
Vascular Plants	*Myosotis discolor*	Changing Forget-me-not
Vascular Plants	*Myriophyllum aquaticum*	Parrot's Feather
Vascular Plants	*Oenanthe aquatica*	Fine-leaved Water-dropwort
Vascular Plants	*Oenanthe fistulosa*	Tubular Water-dropwort
Vascular Plants	*Oxalis acetosella*	Wood-sorrel
Vascular Plants	*Phragmites australis*	Common Reed
Vascular Plants	*Plantago coronopus*	Buck's-horn Plantain
Vascular Plants	*Polystichum setiferum*	Soft Shield-fern
Vascular Plants	*Populus nigra*	Black Poplar
Vascular Plants	*Potamogeton polygonifolius*	Bog Pondweed
Vascular Plants	*Prunus padus*	Bird Cherry
Vascular Plants	*Pulicaria dysenterica*	Common Fleabane
Vascular Plants	*Ranunculus fluitans*	River Water-crowfoot
Vascular Plants	*Ranunculus lingua*	Greater Spearwort
Vascular Plants	*Ranunculus peltatus*	Pond Water-crowfoot
Vascular Plants	*Rhododendron ponticum*	Rhododendron
Vascular Plants	*Rhododendron ponticum*	Rhododendron
Vascular Plants	*Rumex hydrolapathum*	Water Dock
Vascular Plants	*Sagittaria sagittifolia*	Arrowhead
Vascular Plants	*Salix aurita*	Eared Willow
Vascular Plants	*Salix x multinervis*	Grey Eared-willow
Vascular Plants	*Sanicula europaea*	Sanicle
Vascular Plants	*Schoenoplectus lacustris*	Common Club-rush
Vascular Plants	*Sherardia arvensis*	Field Madder
Vascular Plants	*Spirodela polyrhiza*	Greater Duckweed
Vascular Plants	*Stachys arvensis*	Field Woundwort
Vascular Plants	*Stachys palustris*	Marsh Woundwort
Vascular Plants	*Stellaria neglecta*	Greater Chickweed
Vascular Plants	*Succisa pratensis*	Devil's-bit Scabious
Vascular Plants	*Trifolium campestre*	Hop Trefoil
Vascular Plants	*Trisetum flavescens*	Yellow Oat-grass
Vascular Plants	*Typha angustifolia*	Lesser Bulrush
Vascular Plants	*Vaccinium myrtillus*	Bilberry
Vascular Plants	*Valeriana dioica*	Marsh Valerian
Vascular Plants	*Veronica montana*	Wood Speedwell
Vascular Plants	*Veronica scutellata*	Marsh Speedwell

Appendix 4

Evidence of Protected/Priority Species

Species		Evidence
Badger *Meles meles*	 	Four potential badger setts were identified along the hedge to the eastern boundary of the site. Numerous mammal tracks lead to and from the setts and snuffle holes were found close by. No badger hairs or latrines were found to confirm the use of the setts by badgers. Additionally, rabbit droppings were abundant surrounding the sett entrances which suggests that either the setts are not currently used by badger or that rabbits coexist with the badgers.

Species		Evidence
Bats *Chiroptera*		Several mature pedunculate oak *Quercus robur* trees were noted during the survey as having good bat roost potential, positions of these trees are marked on Drawing ST14586/001 as 'individual trees'.

Species		Evidence
Otter *Lutra lutra*	  	An otter footprint was found to the western extent of the brook within the site boundary. Numerous slides were observed along the stretch of brook between the two culverts. A potential holt with strong tracks leading to and from the entrance was also observed in the same stretch of brook. No spraints were observed which could be due to recent wet and snowy weather conditions washing away further evidence of otter.

Species		Evidence
Water vole *Arvicola amphibius*		Numerous small mammal burrows were identified along the entire stretch of brook. Recent wet and snowy weather conditions could have washed away further evidence of water vole, such as foot prints, droppings and feeding remains. Therefore, no conclusive evidence of water vole was found during the survey.

Appendix 5

Waterbody Assessments

Appendix 5: Waterbody Assessments

There are nine waterbodies located within 500 metres of the site; five of these waterbodies were available to survey. See Drawing ST14586-002 for locations of waterbodies. Table 1 (below) describes the features of the waterbodies and surrounding habitats along with a Habitat Suitability Index (HSI) assessment score. The calculations of the HSI assessment is provided in Table 2.

Table 1: Waterbody descriptions and HSI scores		
Description	**HSI Score**	**Photograph**
Waterbody 1 **Grid reference: SJ 50886 16540** A narrow brook with fast flowing water runs across the south of the survey area from west to east. The earth banksides are steep, some of which are colonised with tall ruderals and scrub. The substrate of the brook is earth/silt with numerous small pebbles and occasional larger rocks.	N/A	
Waterbody 2 **Grid reference: SJ 51181 16631** A large irregular sized pond surrounded by hawthorn shrubs and young willow species. Great willowherb *Epilobium hirsutum*, bramble Rubus fruticosa *agg.* and reed canary grass *Phalaris arundinacea* are abundant around the peripheries of the pond. There is a large mature pedunculate oak *Quercus robur* tree situated to the north-west bank.	**0.77** **Good**	

Table 1: Waterbody descriptions and HSI scores		
Description	**HSI Score**	**Photograph**
Waterbody 3 **Grid reference: SJ 50648 16716** A large irregular sized waterbody which is situated adjacent to WB1 west of Battlefield Way. There is a heavy presence of water fowl and presence of fish is likely. The pond is surrounded with tall ruderals and short grass.	**0.49** **Poor**	
Waterbody 4 **Grid reference: SJ 50624 16074** WB4 is a small ovular pond situated south of commercial units and north of Harlescott Lane. It is surrounded by short amenity grassland with some scattered tree saplings. Bulrush *Typha latifolia* has dominated the pond.	**0.68** **Average**	
Waterbody 5 **Grid reference: SJ 51508 16353** WB5 is a small brook which runs adjacent to Battlefield Road north to south. The banksides are steep where broad-leaved trees are scattered. The understory layer is scattered scrub.	N/A	
Waterbody 6 **Grid reference: SJ 51666 16840** WB6 is a run-off pond situated north of Battlefield Roundabout adjacent to a service station. The pond is fenced off and densely surround by scrub.	-	**No image available**

Table 1: Waterbody descriptions and HSI scores		
Description	**HSI Score**	**Photograph**
Waterbody 7 **Grid reference: SJ 51211 16751** WB7 is a pond located on private land north of A5124 in an agricultural field. Permission was not granted to access this pond.	-	**No image available**
Waterbody 8 **Grid reference: SJ 511 169** WB7 is a ditch located on private land north of A5124 in an agricultural field running along a hedgerow. Permission was not granted to access this ditch.	N/A	**No image available**

Table 2: HSI Calculations							
Habitat Suitability Index		**Waterbody 2**		**Waterbody 3**		**Waterbody 4**	
			SI value		**SI value**		**SI value**
Map location	**A/B/C**	A	1.00	A	1.00	A	1.00
Surface area	**rectangle/ellipse/irregular**	Irregular		Irregular		Ellipse	
	area (m^2)	300	0.60	1700	0.84	100	0.20
Desiccation rate	**never/rarely/sometimes/frequently**	rarely	1.00	never	0.90	sometimes	0.50
Water quality	**good/moderate/poor/bad**	moderate	0.67	moderate	0.67	moderate	0.67
Shade	% of margin shaded 1m from bank	40	1.00	20	1.00	0	1.00
Waterfowl	**absent/major/minor**	absent	1.00	major	0.01	absent	1.00
Fish population	**absent/possible/minor/major**	possible	0.67	possible	0.67	absent	1.00
Pond density	number of ponds within 1km	15	1.00	15	1.00	10	1.00
Terrestrial habitat	**good/moderate/poor/isolated**	good	1.00	moderate	0.67	poor	0.33
Macrophyte cover	%	5	0.36	5	0.36	80	1.00
		HSI =	0.79	**HSI =**	**0.49**	**HSI =**	**0.68**
Use provisional HSI value if above 0.75		provisional HSI =	**0.77**	provisional HSI =	0.45	provisional HSI =	0.65
		Date	03.02.14	Date	03.02.14	Date	03.02.14

DRAWINGS

351000

316500

351000

KEY

- Survey area
- Scrub Scattered
- Scrub Dense/continuous
- Woodland Broad-leaved Plantation
- Tall ruderal
- Marsh/marshy grassland
- Neutral grassland Semi-improved
- Standing water
- Building
- Hardstanding
- Fence
- Earth bank
- Dry ditch
- Intact hedge Species-poor
- Running water
- Individual tree
- 1 Target note

Notes:

Boundaries are indicative. Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D

CLIENT

John Lewis Partnership Pensions Trust

PROJECT

Enterprise Park, Shrewsbury

DRAWING TITLE

Phase 1 Habitat Survey

DRG No	SCALE	DATE
ST14586-001	1:2,500 @ A3	10/02/2015

DRAWN BY	CHECKED BY	APPROVED BY
JP	SR	CM

■ STOKE-ON-TRENT (HEAD OFFICE)	TEL: 0845 111 7777	CARDIFF	TEL: 029 2072 9191
NEWCASTLE UPON TYNE	TEL: 0191 232 0943	LEIGH	TEL: 01942 260101
WEST BROMWICH	TEL: 0121 580 0909	SHEFFIELD	TEL: 0114 245 6244
LONDON	TEL: 020 7287 2872	EDINBURGH	TEL: 0131 555 3311
		LIVERPOOL	TEL: 08451 451 900

wardell armstrong

your earth our world

KEY

- Phase 1 habitat survey area
- Survey area buffer (500 m)
- Water body (WB)

No	Easting (m)	Northing (m)
WB1	350886	316540
WB2	351181	316631
WB3	350648	316716
WB4	350624	316074
WB5	351508	316353
WB6	351666	316840
WB7	351211	316751
WB8	351100	316900

Notes:

This plan has been produced using the Ordnance Survey National Grid map reference system.

Boundaries are indicative. Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D

CLIENT

John Lewis Partnership Pensions Trust

PROJECT

Enterprise Park, Shrewsbury

DRAWING TITLE

Water Body Location Plan

DRG No	SCALE	DATE
ST14586-002	1:6,000 @ A3	12/02/2015
DRAWN BY	CHECKED BY	APPROVED BY
JP	SR	CM

■ STOKE-ON-TRENT (HEAD OFFICE)	TEL: 0845 111 7777	☐ CARDIFF	TEL: 029 2072 9191
☐ NEWCASTLE UPON TYNE	TEL: 0191 232 0943	☐ LEIGH	TEL: 01942 260101
☐ WEST BROMWICH	TEL: 0121 580 0909	☐ SHEFFIELD	TEL: 0114 245 6244
☐ LONDON	TEL: 020 7287 2872	☐ EDINBURGH	TEL: 0131 555 3311
		☐ LIVERPOOL	TEL: 08451 451 900

wardell armstrong your earth our world

wardell-armstrong.com

STOKE-ON-TRENT
Sir Henry Doulton House
Forge Lane
Etruria
Stoke-on-Trent
ST1 5BD
Tel: +44 (0)845 111 7777

CARDIFF
22 Windsor Place
Cardiff
CF10 3BY
Tel: +44 (0)29 2072 9191

EDINBURGH
Suite 2/3, Great Michael House
14 Links Place
Edinburgh
EH6 7EZ
Tel: +44 (0)131 555 3311

GREATER MANCHESTER
2 The Avenue
Leigh
Greater Manchester
WN7 1ES
Tel: +44 (0)1942 260101

LONDON
Third Floor
46 Chancery Lane
London
WC2A 1JE
Tel: +44 (0)20 7242 3243

NEWCASTLE UPON TYNE
City Quadrant
11 Waterloo Square
Newcastle upon Tyne
NE1 4DP
Tel: +44 (0)191 232 0943

PENRYN
Tremough Innovation Centre
Tremough Campus
Penryn
Cornwall
TR10 9TA
Tel: +44 (0)1872 560738

SHEFFIELD
Unit 5
Newton Business Centre
Newton Chambers Road
Thorncliffe Park
Chapeltown
Sheffield
S35 2PH
Tel: +44 (0)114 245 6244

TRURO
Wheal Jane
Baldhu
Truro
Cornwall
TR3 6EH
Tel: +44 (0)1872 560738

WEST BROMWICH
Thynne Court
Thynne Street
West Bromwich
West Midlands
B70 6PH
Tel: +44 (0)121 580 0909

International offices:

ALMATY
29/6 Satpaev Avenue
Rakhat Palace Hotel
Office Tower, 7th Floor
Almaty
050040
Kazakhstan
Tel : +7-727-3341310

MOSCOW
Suite 2, Block 10,
Letnikovskaya St.
Moscow, Russia
115114
Tel: +7(495) 980 07 67

Wardell Armstrong Archaeology:

CUMBRIA
Cocklakes Yard
Carlisle
Cumbria
CA4 0BQ
Tel: +44 (0)1228 564820

your earth our world

wardell armstrong