



# PRELIMINARY ECOLOGICAL APPRAISAL

**Land at Longbridge  
Warwick  
Warwickshire**

**Final report**  
23 September 2014

**Client:**  
Severn Trent Water Ltd

© Swift Ecology Ltd  
Rose Cottage  
Market Square  
Kineton  
Warwick  
CV35 0LP

Tel 01926 642541

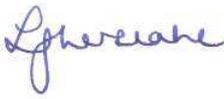
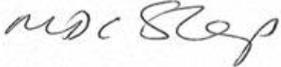
Email [swifteco@swiftecology.co.uk](mailto:swifteco@swiftecology.co.uk)  
Website [www.swiftecology.co.uk](http://www.swiftecology.co.uk)

Printed on recycled paper

# CONTENTS

<b>SUMMARY .....</b>	<b>3</b>
<b>1 INTRODUCTION.....</b>	<b>4</b>
1.1 BACKGROUND .....	4
1.2 ECOLOGICAL CONTEXT .....	4
1.3 PERSONNEL.....	4
<b>2 METHODS .....</b>	<b>5</b>
2.1 BACKGROUND DATA SEARCH.....	5
2.2 PRELIMINARY ECOLOGICAL APPRAISAL.....	5
2.3 CONSTRAINTS.....	6
<b>3 RESULTS .....</b>	<b>8</b>
3.1 GENERAL .....	8
3.2 BACKGROUND DATA SEARCH.....	8
3.3 HABITATS .....	10
3.4 PROTECTED ANIMAL SPECIES.....	24
<b>4 EVALUATION.....</b>	<b>29</b>
4.1 HABITATS .....	29
4.2 PROTECTED ANIMAL SPECIES.....	29
4.3 CUMULATIVE IMPACT.....	31
<b>5 RECOMMENDATIONS .....</b>	<b>32</b>
5.1 HABITATS .....	32
5.2 PROTECTED ANIMAL SPECIES.....	32
5.3 ECOLOGICAL ENHANCEMENT .....	35
<b>6 LEGISLATION .....</b>	<b>37</b>
6.1 INTRODUCTION .....	37
6.2 PROTECTED SPECIES.....	37
<b>7 RELEVANT LITERATURE .....</b>	<b>39</b>
<b>APPENDIX 1 – BACKGROUND DATA SEARCH.....</b>	<b>40</b>

**QUALITY CONTROL**

DATE	VERSION	NAME	SIGNATURE
19.9.14	Draft prepared	Becky May MA (Cantab) MCIEEM Senior Ecologist	
19.9.14	Checked by	Lisa Kerslake CEcol FCIEEM Principal Ecologist/Director	
22.9.14	Checked by	Mike Sharp BSc MCIEEM Principal Ecologist	
23.9.14	Reviewed and issued	Becky May MA (Cantab) MCIEEM Senior Ecologist	

The information which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Every reasonable attempt has been made to comply with BS42020 (Biodiversity: Code of practice for planning and development, the CIEEM Guidelines for Preliminary Ecological Appraisal (CIEEM, 2012). If compliance has not been achieved, justification/explanation has been given.

## SUMMARY

- A Preliminary Ecological Appraisal was carried out of an area of land at Longbridge, Warwick, in September 2014.
- The survey was required in connection with the potential development of the site, the details of which are currently unknown. An Environmental Impact Assessment (EIA) may be required for the development.
- One ungraded ecosite lies partly within the site boundary (52/26 Warwick Sewage Farm) and the site is bordered to the east by the River Avon Local Wildlife Site (site reference 26/26). It is possible that both these sites could be impacted by any development of the site, either directly through loss or disturbance or, in the case of the River Avon, indirectly through pollution incidents or increased surface run-off during or following construction. Other sites with nature conservation designations lie at a sufficient distance from the site to avoid direct impacts or significant indirect impacts.
- The majority of the habitats present are common and widespread locally, regionally and nationally. The habitats of most value within the site are the River Avon and a field of species-rich grassland towards the north of the site.
- Further botanical survey will be required to assess the botanical value of the species-rich grassland present (National Vegetation Classification).
- The site has some suitability to support protected species and for Biodiversity Action Plan (BAP) species such as hare, polecat and hedgehog. Four potential badger sett entrances were noted within the site. Further surveys will be required for badgers, bats, breeding and wintering birds, great crested newts, invertebrates, reptiles and water vole. Some of these may be a requirement of an EIA, if this is considered necessary for the proposed development. Mitigation and compensation measures are likely to be necessary for protected species.
- Mitigation and compensation measures are likely to be required for the loss of grassland, tall ruderal vegetation, scrub, trees and hedgerows. A record of net ecological losses and gains will need to be provided once the proposals have been finalised.

# **1 INTRODUCTION**

## **1.1 Background**

A Preliminary Ecological Appraisal was undertaken of an area of land at Longbridge, Warwick, centred at approximate OS grid reference SP272626. The survey was undertaken on 12<sup>th</sup> September 2014.

The survey was required in connection with a potential future development of the site, the details of which are currently unknown.

## **1.2 Ecological Context**

The site lies at the south-western edge of the town of Warwick. The site is bordered to the east by the River Avon, to the north by a large Severn Trent Water sewage treatment works and depot, to the west by the A429 road and to the south by the M40 motorway. Further afield are areas of large business units to the east, a residential area of Warwick to the north, Warwick Castle park with a habitat mosaic of broad-leaved woodland, open water and grassland to the east and agricultural fields (pasture and arable) connected by a network of mature hedgerows south of the M40. These habitats have the potential to support a range of protected species.

## **1.3 Personnel**

The survey was carried out by Becky May of Swift Ecology Ltd. Becky May has over eight years' experience of carrying out ecological surveys including Phase 1, botanical and protected species surveys.

## 2 METHODS

### 2.1 Background Data Search

A background data search was undertaken for designated sites and protected species records within 1 km of the site by the Worcestershire Biological Records Centre (WBRC) and within 2km of the site for bats.

### 2.2 Preliminary Ecological Appraisal

#### 2.2.1 General

A preliminary ecological appraisal, comprising a Phase 1 Habitat Survey and protected species assessment, was undertaken following standard methods as described in the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2013) and the Phase 1 Habitat Survey Methodology (JNCC, 2010).

The Phase 1 Habitat Survey comprised:

- habitat descriptions for each separate habitat type; and
- target notes to identify particular areas of interest or concern.

The suitability of habitats for any protected animal species was assessed at the same time as the Phase 1 Habitat Survey and any incidental evidence of such species was recorded if encountered. Species that might be expected to be present in the geographic location include bats, badger *Meles meles*, hazel dormouse *Muscardinus avellanarius*, nesting birds, great crested newt *Triturus cristatus*, otter *Lutra lutra*, reptiles and water vole *Arvicola amphibius*.

All information was mapped and recorded as target notes as appropriate.

Weather conditions during the site visit were good; sunny with a light breeze and an air temperature of 18°C. There was one light rain shower, which lasted for approximately five minutes.

#### 2.2.2 Badger

Habitat was assessed for its suitability for badger foraging and sett digging. Any incidental signs of badgers, such as setts, latrines, foraging signs, or footprints, were recorded if they were encountered. A full badger survey was not undertaken.

#### 2.2.3 Bats

The site was assessed for its suitability for roosting and foraging bats.

#### 2.2.4 Dormouse

Habitat was assessed for its suitability for dormouse based on vegetation structure, connectivity and species composition. A full dormouse survey was not undertaken.

### **2.2.5 Otter and water vole**

Where access was possible, the River Avon was assessed for its suitability for use by otter and water vole, based on vegetation cover and structure, and was briefly checked for signs of otter or water vole use including footprints, droppings and feeding remains. Full water vole and otter surveys were not undertaken.

### **2.2.6 Great crested newt**

Great crested newts use terrestrial habitat within 250-500 m of breeding ponds; such habitat is also protected. Terrestrial habitats on site were therefore assessed for their potential to support the species, based on factors including vegetation structure and composition, the availability of shelter and foraging resources. The proximity of ponds and intervening habitats are also an important factor in determining the likelihood of this species being present on site.

### **2.2.7 Reptiles**

Terrestrial habitats on site were assessed for their potential to support common reptile species, based on factors including vegetation structure and composition, and the availability of shelter and foraging resources.

### **2.2.8 Nesting and wintering birds**

Habitats on site were assessed for their suitability for breeding and over-wintering birds, including trees, scrub and grassland.

### **2.2.9 Invertebrates**

Habitats present were briefly assessed to identify areas of value to invertebrates according to the extent and quality of the microhabitats present.

### **2.2.10 Other species**

General habitat suitability and incidental sightings of other animal species, including UK and Local Biodiversity Action Plan species and invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), were noted.

## **2.3 Constraints**

September is a suitable month for Phase 1 survey, although some early-flowering species may be missed at this time of year. In addition, a single visit to a site at any time of year will only identify a proportion of the species present. Therefore the descriptions given in Section 3.3 should not be considered to be complete.

A pond marked on the base map was not able to be accessed due to dense bramble cover and the presence of livestock in the surrounding field. However, as this is a man-made reservoir constructed for irrigation purposes in association with part of the site's prior use as a commercial nursery, it is considered unlikely that it would hold high value for wildlife. Nevertheless, a recommendation has been made for future survey of this pond when access is possible.



## 3 RESULTS

### 3.1 General

The site occupies approximately 26 ha. It comprises a variety of habitats including semi-improved grassland, a number of improved grassland fields, buildings, hardstanding and disturbed areas (some with ephemeral short perennial vegetation), marginal tall ruderal and scrub vegetation along the River Avon, a small waterbody (not surveyed in detail) and small areas of dense scrub. Hedgerows, linear scrub and lines of planted trees divide up the different areas of the site.

The site has some potential to support protected species including reptiles, great crested newts, badgers, bats and nesting birds. Evidence of badger activity was found in one part of the site. No additional evidence of any protected species was found on the site, but no detailed protected species surveys were undertaken.

The extent and location of these habitats are shown on Drawing 3.1 and they are described in more detail below.

### 3.2 Background Data Search

Data were obtained from the Warwickshire Biological Records Centre (WBRC).

There are no statutory sites located within 1 km of the proposed development.

There are 14 non-statutory designated sites (ungraded ecosites and Local Wildlife Sites (LWS)) lying within approximately 1 km of the overall site boundary, one of which lies partly within the boundary of the surveyed area and one of which forms the surveyed site's eastern boundary. These are summarised in *Table 1*. A map is given in *Appendix 1*.

*Table 1: Non-statutory sites within 1 km of the study site*

Site reference/name	Status	Summary of habitat type(s)
11/26 Barford Quarry	Partly potential LWS	Habitat mosaic
15/26 Warwick Racecourse	Partly LWS, partly potential LWS	LWS area is neutral semi-improved grassland
20/26 River Avon and tributaries	LWS (NB forms site's eastern boundary)	Watercourse and marginal vegetation
26/26 Alderham Pasture and Osier Beds	LWS	Flood-plain improved and semi-improved grassland, wet woodland and swamp
33/26 Horse Brook and associated features	Partly potential LWS and part of the River Avon LWS runs through site	Semi-improved grassland, mixed woodland and a pool
35/26 Treebelt, Sherbourne Park and Manor	Ungraded	Mixed woodland and pool
46/26 Plestowes Stream	Partly deferred LWS	Watercourse, woodland and pools
52/26 Warwick Sewage Farm	Ungraded (NB partly lies	Semi-improved grassland, tall

Site reference/name	Status	Summary of habitat type(s)
	within site)	ruderal vegetation
109/26 Horse Brook	Ungraded, but included within River Avon LWS	Watercourse
112/26 Gog Brook	Included within River Avon LWS	Watercourse and marginal vegetation
120/26 Warwick Castle Park	Partly LWS	Habitat mosaic of woodland, wetland, scrub, open water and reedbeds, plus arable land.
149/26 Sherbourne Brook	Potential LWS	Watercourse
155/26 Ashbeds Wood and Lilacs	Ecosite, not LWS status	Broad-leaved semi-natural woodland
162/26 Com Brook tributary of River Avon	Forms part of the River Avon LWS	Watercourse

Relevant protected and notable species records within approximately 1 km of the overall site boundary are summarised below and a map is given in *Appendix 1*. Bat records were provided within a 2 km radius of the site. Badger records were given for within a 1 km radius of the site's central OS reference point, in line with the Warwickshire badger group guidelines. Records prior to 1980 or whose location is provided at a resolution of a larger area than 1 km<sup>2</sup> are not included in the summary.

### Bats

There are 94 bat records within 2 km of the site boundary, including 16 records for common pipistrelle *Pipistrellus pipistrellus*, six records for soprano pipistrelle *Pipistrellus pygmaeus*, 17 records for brown long-eared *Plecotus auritus*, seven records for noctule *Nyctalus noctula* and two records for Daubenton's bat *Myotis daubentonii*. There are also 13 records for unconfirmed pipistrelle *Pipistrellus* species, four records for unconfirmed myotis *Myotis* species, one record for an unconfirmed long-eared *Plecotus* species (this is likely to be brown long-eared, given the geographical distribution of long-eared species) and 28 records for indeterminate bat species. None of the records relate to the surveyed site itself, although three records (for common pipistrelle, brown long-eared and one indeterminate species) lie just within the overall proposed development site boundary.

### Otter

There are seven records of otter *Lutra lutra* within 1 km of the site boundary, all associated with Sherbourne Brook, which is a tributary of the River Avon.

### Other mammals

There are 14 records of hedgehog *Erinaceus europaeus*, mostly associated with road casualties on the adjacent A429 road. There are also six records of brown hare *Lepus europaeus* within 1 km of the site.

There are several records of badger *Meles meles* within 1 km of the site, most of which are road casualties. Badger records are confidential and dates and precise locations are not provided.

### **Amphibians and reptiles**

There are five records of grass snake *Natrix natrix*, six records of common frog *Rana temporaria*, one record of smooth newt *Lissotriton vulgaris* and one record of common toad *Bufo bufo* within 1 km of the site. None of these records relate to the site itself.

### **Birds**

There are four records of barn owl *Tyto alba* within 1 km of the site. There are also records of seven red-listed birds and/or birds fully protected under Schedule 1 of the Wildlife and Countryside Act 1981: skylark *Alauda arvensis* (two records), wryneck *Jynx torquilla*, kingfisher *Alcedo atthis* (two records), lapwing *Vanellus vanellus*, linnet *Carduelis cannabina*, song thrush *Turdus philomelos* and osprey *Pandion haliaetus*, although the latter record is highlighted as being doubtful. None of these records are associated with the site itself.

### **Other species**

One notable butterfly, white-letter hairstreak *Satyrrium w-album* has been recorded within 1 km of the site boundary. Over 1000 additional notable invertebrates have been recorded within 1 km of the site boundary, mostly moth *Lepidoptera* species recorded from one site in Warwick between 2003 and 2009. Five county-rare plant species have also been recorded within 1 km of the site boundary: harsh downy-rose *Rosa tomentosa*, monk's-hood *Aconitum napellus* ssp. *napellus*, white ramping-fumitory *Fumaria capreolata*, wild clary *Salvia verbenaca* and subterranean clover *Trifolium subterraneum*. None of these additional species are associated with the site itself.

An absence of records does not mean that a species is not present, merely that it has not been recorded. Some species records are not obtainable from the sources utilised and there may be further undetected records for such species on the study site or in the local area.

## **3.3 Habitats**

### **3.3.1 Semi-improved grassland**

There is a large field of semi-improved grassland located at the northern end of the site, adjacent to the sewage treatment works. The sward is dominated by common knapweed *Centaurea nigra*, false oat-grass *Arrhenatherum elatius*, Yorkshire fog *Holcus lanatus*, red fescue *Festuca rubra* and lady's bedstraw *Galium verum*. Two hoary plantain *Plantago media* plants were noted in this field, which is a plant of notable status for Warwickshire. Other species recorded include common centaury *Centaureum erythraea*, musk mallow *Malva moschata*, creeping cinquefoil *Potentilla reptans*, common mouse-ear *Cerastium fontanum*, common vetch *Vicia sativa*, hairy tare *Vicia hirsuta*, wild basil *Clinopodium vulgare*, perforate St John's wort *Hypericum perforatum*, common sedge *Carex nigra*, common nettle *Urtica dioica*, creeping buttercup *Ranunculus repens*, bent *Agrostis* sp., ribwort plantain *Plantago lanceolata*, wild carrot *Daucus carota*, creeping thistle *Cirsium arvense*, yarrow

*Achillea millefolium*, black medick *Medicago lupulina* and common ragwort *Senecio jacobaea*. The field becomes more damp towards the east, where common sedge is more frequent and where meadowsweet *Filipendula ulmaria*, great willowherb *Epilobium hirsutum*, tufted hair grass *Deschampsia cespitosa*, soft rush *Juncus effusus* and compact rush *Juncus conglomeratus* were recorded, and drier towards the west, where sedge and lady's bedstraw become less common and where common centaury was recorded. There are numerous ant-hills throughout the field, showing that it has been out of active management for some time.



*Semi-improved grassland field, looking north-west*

### 3.3.2 Species-poor semi-improved grassland

There is small area of species-poor semi-improved grassland located adjacent to a car park used by Warwick fishing club towards the north of the site, close to the River Avon. This area has been heavily rabbit-grazed, leading to a short sward, which is dominated by red fescue. Numerous forb species were recorded including autumn hawkbit *Leontodon autumnalis*, greater plantain *Plantago major*, white clover *Trifolium repens*, common sedge, creeping cinquefoil, field forget-me-not *Myosotis arvensis*, dove's-foot crane's-bill *Geranium molle*, broad-leaved willowherb *Epilobium montanum*, creeping thistle, broad-leaved dock *Rumex obtusifolius*, white campion *Silene latifolia*, perforate St John's wort and common ragwort. Several clumps of soft rush were also present.



*Species-poor semi-improved grassland adjacent to car-park, looking east*

Two areas of species-poor semi-improved grassland are also present either side of the driveway into the Severn Trent depot towards the centre of the site. These areas contain numerous anthills and molehills and have clearly been unmanaged for some time, which has led to a long sward dominated by rank grasses such as cock's-foot *Dactylis glomerata*, Yorkshire fog and false oat grass, with red fescue and common bent *Agrostis capillaris* and creeping bent *Agrostis stolonifera* also frequent amongst

the sward. To the west of the driveway, forb species include common bird's-foot trefoil *Lotus corniculatus*, white clover, germander speedwell *Veronica chamaedrys*, creeping cinquefoil, broad-leaved dock and field horsetail *Equisetum arvense*. Creeping thistle is also locally frequent towards the western edge of this area, forming a strip of tall ruderal vegetation, which has been target noted rather than mapped due to its small area. To the east of the driveway, additional forb species recorded include common sorrel *Rumex acetosa*, common ragwort, creeping buttercup, field forget-me-not, common mouseear, lesser burdock *Arctium minus*, selfheal *Prunella vulgaris*, autumn hawkbit and black medick.



*Species-poor semi-improved grassland east of driveway, looking east*

A strip of species-poor semi-improved grassland with numerous anthills lies just outside the Severn Trent Water depot's eastern fence, close to the River Avon. This area was not fully accessible, although was observed through the fence using binoculars. The sward is long and dominated by false oat grass, rough meadow-grass *Poa trivialis* and fescue *Festuca* sp. Other species recorded include common nettle, white campion, common mallow *Malva sylvestris*, creeping thistle, white dead-nettle *Lamium album*, goat's-beard *Tragopogon* sp. and prickly sowthistle *Sonchus asper*.



*Species-poor semi-improved grassland east of Severn Trent depot, looking east*

A field of ungrazed species-poor semi-improved grassland lies to the west of the Severn Trent Water depot. The sward is dominated by perennial rye-grass *Lolium perenne*, with cock's-foot, Yorkshire fog and red fescue and occasional crested dog's-tail *Cynosurus cristatus* and meadow foxtail *Alopecurus pratensis*. Other species recorded include red clover *Trifolium pratense*, autumn hawkbit, common cat's-ear *Hypochaeris radicata*, common ragwort, white clover, ribwort plantain, spear thistle *Cirsium vulgare*, smooth sowthistle *Sonchus oleraceus* and curled dock *Rumex crispus*.



*Species-poor semi-improved grassland field, looking north*

### 3.3.3 Dense continuous scrub

There is an area of dense bramble *Rubus fruticosus* agg. to the south of the Severn Trent Water depot. Other species recorded here include teasel *Dipsacus fullonum*, elder *Sambucus nigra*, creeping thistle, great willowherb and common nettle, with ground ivy *Glechoma hederacea*, creeping cinquefoil, creeping buttercup and autumn hawkbit at ground level around its perimeters.



*Dense scrub south of Severn Trent depot, looking west*

To the east of the Severn Trent depot, behind a strip of species-poor semi-improved grassland, lies a strip of bramble scrub on a steep bank. Other woody species recorded here include elder, willow *Salix* sp., crack willow *Salix fragilis*, oak *Quercus robur*, hawthorn *Crataegus monogyna*, silver birch *Betulus pendula*, blackthorn *Prunus spinosa*, sycamore *Acer pseudoplatanus* and horse chestnut *Aesculus hippocastanum*.



*Dense scrub east of Severn Trent Depot, looking south-east*

This area extends northwards into a larger area of scrub located close to the River Avon. This area is dominated by crack willow, goat willow *Salix caprea* and grey willow *Salix cinerea* with bramble and elder. Ash *Fraxinus excelsior* and maple *Acer*

sp. trees and saplings are also present, and alder *Alnus glutinosa* and grey poplar *Populus x canescens* are also present close to the river bank. Other species frequently recorded in this area include rosebay willowherb *Chamaerion angustifolium*, hedge bindweed *Calystegia sepium*, red campion *Silene dioica*, common nettle, ground ivy, common chickweed *Stellaria media* and wood avens *Geum urbanum*.



*Dense willow scrub towards north of site, looking south*

A similar strip of scrub is present on a steep bank adjacent to the River Avon towards the south of the site. Species recorded in this section include blackthorn, hazel *Corylus avellana*, alder, crack willow, elm *Ulmus* sp., common lime *Tilia x europaea* and white willow *Salix alba*.

A steep earth bund at the western boundary of the semi-improved field at the north of the site is covered with scrub, including bramble, elder and hawthorn.

There is also a small area of dense bramble scrub surrounding a small disused irrigation reservoir in the north-west corner of the westernmost field at the centre of the site.



*Bramble scrub surrounding waterbody enclosure, looking west*

### **3.3.4 Tall ruderal vegetation**

At the eastern end of the semi-improved grassland field at the north of the site is a steep bank covered in tall ruderal vegetation dominated by common nettle, with curled dock, hedge bindweed and rosebay willowherb.



*Tall ruderal vegetation, eastern end of northernmost field, looking north*

Also, in areas where access to the western bank of the River Avon was possible, a strip of tall ruderal vegetation was noted adjacent to the marginal bankside vegetation. Dominant species noted were common nettle, creeping thistle, hogweed *Heracleum sphondylium* and great willowherb.

### **3.3.5 Ephemeral short-perennial vegetation**

There is a small area to the south of the Severn Trent Water depot that has been flattened and covered with a sandy surface material. The area was not fully accessible due to barrier fencing, although an assessment was made from just outside the area, with the aid of binoculars. The area has been colonised at its periphery by a typical range of pioneering species such as elder, teasel, weld *Reseda luteola*, broad-leaved willowherb, St John's wort *Hypericum* sp., common nettle, rosebay willowherb, hemlock *Conium maculatum*, bramble, selfheal, ground ivy, creeping buttercup and cherry *Prunus* sp. saplings. The vegetation has largely been kept short by rabbit-grazing.

### **3.3.6 Disturbed ground**

There is an area of bare earth within the council recycling depot, which has been heavily disturbed to create a large bund around part of its perimeter. A typical range of pioneering and tall ruderal species have colonised the earth bund and peripheral areas of bare earth, including fat hen *Chenopodium album*, common nettle, broad-leaved willowherb, creeping thistle, hedge bindweed, broad-leaved dock, hemlock, common knotweed *Polygonum arenastrum*, black grass *Alopecurus myosuroides*, redshank *Persicaria maculosa*, scented mayweed *Matricaria recutita*, groundsel *Senecio vulgaris*, gypsywort *Lycopus europaeus*, bristly ox-tongue *Picris echioides* and black nightshade *Solanum nigrum*. In addition, a number of garden escapes have also colonised this area, for example ornamental versions of knapweed *Centaurea* sp., scabious *Knautia* sp. and purple loosestrife *Lythrum* sp. Much of this area is used for storage of recycling bins.



*Disturbed, bare earth, looking north*



*Disturbed ground used for storage*

### 3.3.7 Improved grassland

Towards the south of the site are three large improved grassland fields, two of which were being used for grazing livestock at the time of survey. The sward of the two grazed fields is close-cropped and dominated by perennial rye-grass with occasional clumps of common nettle, creeping thistle and broad-leaved dock. The easternmost field was ungrazed, with a longer sward and contained anthills, suggesting it is not under constant agricultural use. The easternmost field, and the south-east part of the southernmost field included a number of additional species including occasional crested dog's-tail, bent sp., common sorrel, common mouseear, dove's-foot crane's-bill, red fescue, curled dock and autumn hawkbit. These areas have been target noted in Figure 3.1.



*Sheep-grazed improved grassland field, looking south-west*

### 3.3.8 Amenity grassland

There are small areas of close-mown amenity grassland within the Severn Trent Water depot and the council recycling depot, dominated by perennial rye-grass with a typically limited range of additional species including white clover, ribwort plantain, black medick, dandelion *Taraxacum officinalis* agg., greater plantain, selfheal, common daisy *Bellis perennis* and creeping buttercup. There is also a small area of amenity grassland within the garden curtilage of a detached property adjacent to an access driveway towards the north of the site.



*Amenity grassland, Severn Trent Water Depot, looking north-east*

### 3.3.9 Hardstanding

There are areas of hardstanding throughout the Severn Trent Water and council recycling depots, within Home Farm to the south of the site, and throughout the site as access tracks.



*Hardstanding, Severn Trent Water depot, looking south-west*

### 3.3.10 Buildings

There are numerous buildings within the Severn Trent Water depot, the majority of which are of modern construction with either brick or metal walls and either shallow-pitched or flat corrugated metal roofs. There are also a number of portakabins within this area. The council recycling depot contains a detached brick house with a pitched, concrete-tiled roof of gable-end design as well as a large corrugated metal storage building and portakabins. Home Farm, to the south of the site, includes a number of brick-built agricultural buildings in a poor state of repair, most with open fronts and metal roofs. There is also a single detached dwelling adjacent to an access driveway to the north of the site, which is brick-built with a pitched roof of concrete tiles and gable-end design.



*Portakabins and brick/metal buildings, Severn Trent Water depot*



*Detached house and storage building, council recycling depot*



*Detached house, north of site*



*Agricultural buildings, Home Farm*

### 3.3.11 Linear scrub

The majority of the site's western border comprises planted woody shrubs, which have become overgrown with bramble to form a linear scrub corridor. Species planted include hawthorn, elder, ash, sycamore, elm sp., cypress *Cupressus* sp., blackthorn and oak. At ground level species typical of roadside edges were recorded, including hedge bedstraw *Galium mollugo*, common nettle, common ragwort, white campion, smooth sowthistle, ground elder *Aegopodium podagraria*, lesser burdock, hogweed and mugwort *Artemisia vulgaris*.



*Linear scrub along western boundary, looking south*

### 3.3.11 Scattered scrub

Two fence-lines along the northern and southern boundaries of the south-easternmost field within the site include patchy bramble scrub along their length.

### 3.3.12 Species-poor hedgerow

Most of the internal boundaries within the site comprise fences (either wire or wooden post and rail), which have not been mapped as they are not considered to

form valuable habitat for wildlife. However, there is also a small number of species-poor boundary hedgerows within the site:

- A wire fence and hedgerow runs along the northern boundary of the Severn Trent Water depot. This includes a mix of native and ornamental species including dogwood *Cornus sanguinea*, rose *Rosa* sp., cotoneaster *Cotoneaster* sp., bramble, snowberry *Symphoricarpos* sp. and ash.
- The western boundary of the Severn Trent Water depot comprises a wire fence with hawthorn, elder and damson *Prunus* sp. hedgerow behind, with mature common lime trees.
- A short privet *Ligustrum* sp. hedgerow internally divides sections of the council recycling depot.
- A hawthorn and blackthorn hedgerow with occasional oak trees lines both sides of the drive leading towards Longbridge Farm.



*Privet hedgerow, Council depot*



*Western boundary of Severn Trent Water*



*Hedgerow along drive to Longbridge Farm, looking south*

### 3.3.13 Running water

The River Avon forms the eastern boundary of the site. Access to the river was only possible in two locations, where the river was seen to be a wide, slow-flowing channel with a reasonable amount of aquatic vegetation. Identification of vegetation was not possible from the surveyor's bankside vantage point. Marginal vegetation largely comprised a fringe of greater pond sedge *Carex riparia*, reed sweet-grass *Glyceria maxima* and marsh woundwort *Stachys palustris* with occasional water hemlock-dropwort *Oenanthe crocata*.



*River Avon, northern end of site*



*River Avon, southern end of site*

In addition, a small fast-running stream from an unknown source (thought to be an outlet of a subterranean or culverted watercourse due to its abrupt appearance) was noted running into the River Avon within an area of scrub towards the north of the site. The stream was heavily shaded by overhanging scrub and trees and had shallow-sloped banks and a silty substrate. No aquatic or marginal vegetation was noted in association with this watercourse.



*Narrow watercourse, barely visible through overhanging vegetation*

A ditch, which was dry at the time of survey, bisects one of the large fields at the southern end of the site. The base of the ditch was bare earth, which had been heavily poached by cattle. Fool's watercress *Apium nodiflorum* was noted within the dry channel, and nettle, bramble, blackthorn and elder scrub was present on both banks.



*Dry ditch, looking south-east*

### **3.3.14 Planted trees**

There are numerous areas of planted trees throughout the site, often used to form boundary lines between different compartments:

- A line of young planted whitebeam *Sorbus aria*, apple *Malus* sp., rowan *Sorbus aucuparia* and cherry *Prunus* sp. trees is present within amenity grassland inside the Severn Trent Water depot.
- The boundaries of the council recycling depot include planted spruce *Picea* sp., cypress sp. and Lombardy poplar *Populus nigra 'Italica'* trees.
- A row of planted young ash trees partially divides the largest of the improved grassland fields.
- A row of mature red oak *Quercus rubra* trees lines the driveway towards houses at the southern end of the site.
- The southern and eastern boundaries of the south-easternmost field comprise planted trees and shrubs on the motorway embankment. Species recorded include hawthorn, blackthorn, cherry, sycamore, elm, silver birch and ash.
- The driveway towards Longbridge Farm is lined with mature trees including common lime, horse chestnut, beech *Fagus sylvatica*, sycamore and oak.

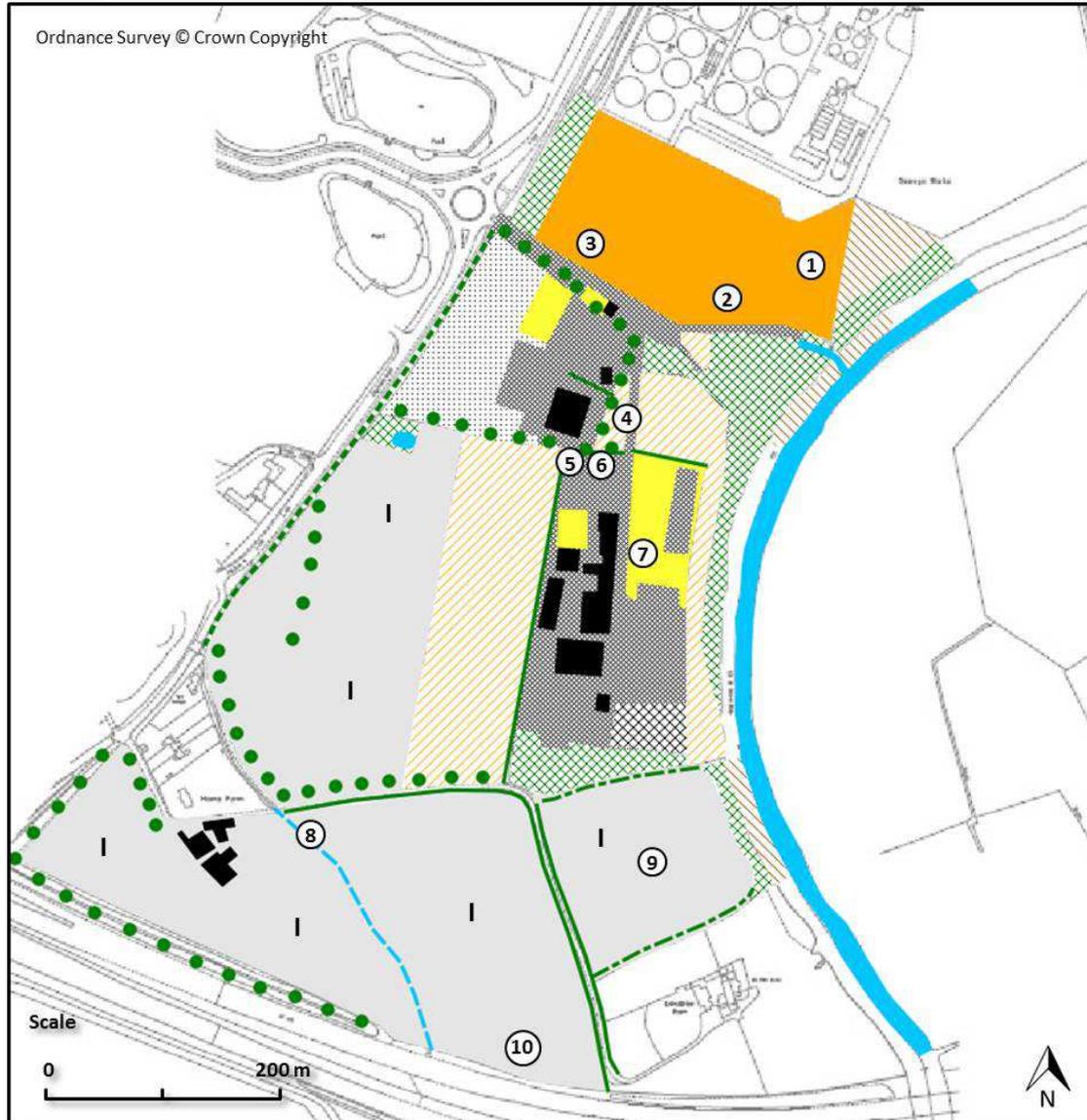


*Lombardy poplar trees, council depot*



*Planted trees along driveway to farm*

**Drawing 3.1 – Phase 1 Habitat Survey**



C1242 Longbridge, Warwick  
- Phase 1 Habitat Survey



**KEY**

- |                                      |                               |               |
|--------------------------------------|-------------------------------|---------------|
| Semi-improved grassland              | Bare earth / disturbed ground | Ditch         |
| Species-poor semi-improved grassland | Hardstanding                  | Planted trees |
| Improved grassland                   | Buildings                     | Target note   |
| Amenity grassland                    | Pond / watercourse            |               |
| Scrub                                | Species-poor hedgerow         |               |
| Tall ruderal vegetation              | Linear scrub                  |               |
| Ephemeral short perennial vegetation | Scattered scrub               |               |

*Table 2: Target notes*

Number	Description
1	Damper area of semi-improved grassland with additional species such as common sedge <i>Carex nigra</i> , soft rush <i>Juncus effusus</i> , compact rush <i>Juncus conglomeratus</i> and meadowsweet <i>Filipendula ulmaria</i> recorded (too small to map).
2	Indicative location of hoary plantain <i>Plantago media</i> .
3	Indicative location of hoary plantain <i>Plantago media</i> .
4	Narrow strip of tall ruderal vegetation dominated by creeping thistle <i>Cirsium arvense</i> (too small to map).
5	Potential badger sett entrance 1.
6	Potential badger sett entrance 2.
7	Potential badger sett entrance 3.
8	Potential badger sett entrance 4.
9	Ungrazed field of improved grassland with slightly higher species diversity than surrounding improved grassland fields
10	Southern edge of field with slightly higher species diversity including occasional crested dog's-tail <i>Cynosurus cristatus</i> .

### **3.4 Protected Animal Species**

#### **3.4.1 Badger**

Many areas of the site have suitability for sett building due to the presence of steep slopes (for example along the River Avon's western bank, around the perimeter of the council recycling depot and along parts of the site's western boundary) with dense vegetation cover. It also has good suitability for use by badgers for foraging.

Four possible badger sett entrances were noted during the survey, although no conclusive evidence of use by badger was found and at least two of the holes may have been made by a mammal other than badger:

Entrance 1 (Target note 5 on Figure 3.1) – A single entrance of a size and shape characteristic of badger was found at the north-west corner of the Severn Trent Water depot. The entrance is covered in leaf litter and there is no evidence of current or recent use by badger or other species.



*Entrance 1, north-west corner of Severn Trent depot*

Entrance 2 (Target note 6 on Figure 3.1) – A single entrance of a size and shape characteristic of badger was found along the northern boundary of the Severn Trent Water depot, just to the least of Entrance 1. Again, there was no evidence of current or recent use by badger or other species at the time of survey.



*Entrance 2, northern boundary of Severn Trent depot*

Entrance 3 (Target note 7 on Figure 3.1) – A single entrance was found within a flat area of amenity grassland, close to the Severn Trent Water office building. This is an unusual location for a badger sett and there was no noticeable spoil heap associated with the hole; therefore it is considered likely that the hole has been made by

another mammal such as fox or rabbit rather than badger although this cannot be confirmed on the basis of this survey, and the size of the hole is larger than usual for the two former species. The hole appears to be in current use by rabbits and the vegetation immediately surrounding the entrance appears to have been recently sprayed with herbicide.



*Entrance 3, centre of Severn Trent depot*

Entrance 4 (Target note 8 on Figure 3.1) – A single entrance was found on the northern bank of the dry ditch towards the south of the site. The size of the hole is probably too small for badger, although there was a large amount of spoil associated with the hole's excavation, which is characteristic of badger. The hole appears to be in current use, but no conclusive evidence of use by badger was found during the survey (e.g. footprints, hairs, latrines or discarded bedding).



*Entrance 4, northern bank of dry ditch*

No additional evidence of badger setts, latrines or footprints was noted but a full badger survey was not undertaken. There are several badger records within 1 km of the site centre.

### **3.4.2 Bats**

The majority of the buildings within the site are likely to have low potential to support roosting bats due to inappropriate construction materials and/or draughtiness, although a full bat survey was not carried out. The buildings likely to have the highest potential to support roosting bats are the two brick-built detached buildings with pitched, tiled roofs (one located within the council recycling depot and one located just to the north of the council recycling depot site).

The larger, more mature tree specimens within the site have the potential to be used by roosting bats, especially along the River Avon and lining the driveway towards Longbridge Farm to the south of the site. In addition, the site is likely to be used by

foraging and/or commuting bats, especially along the river corridor, linear scrub, hedgerows and areas of semi-improved grassland, tall ruderal vegetation and scrub. There are numerous records of at least five bat species within 2 km of the site boundary.

### 3.4.3 Dormouse

There are no woodland or species-rich hedgerow habitats on site that are suitable for dormice or within the surrounding area. The areas of scrub are considered too small and without the necessary structural diversity and feeding opportunities to support dormice. There are no dormouse records within 1 km of the site boundary and this species is considered unlikely to be present within the site.

### 3.4.4 Otter and water vole

#### **Otter**

The River Avon provides suitable foraging and commuting habitat for otter. It was not possible to access the whole stretch of the river corridor during the survey. However, from the two areas that were fully accessible, there appeared to be few areas of dense riparian cover likely to provide suitable habitat for breeding holts, although it is possible some areas of habitat could be suitable as 'lying-up' habitat, as the river corridor is largely free of human disturbance apart from monitored use by Warwick Fishing club. No evidence of otter was recorded although a full survey was not undertaken.

There are seven otter records within 1 km of the site boundary, from a nearby tributary of the River Avon, and it is likely that otters use the River Avon for foraging, shelter and commuting.

#### **Water Vole**

The two areas of River Avon that were viewed both provide suitable habitat for water vole as the banks are suitable for burrowing (being steep and of friable soil) and covered in dense vegetation with a good diversity of marginal and bankside species (providing cover and food). The small river tributary noted is more over-shaded and with shallow banks and no aquatic or marginal vegetation, making it less suitable for water vole. The dry ditch is considered unsuitable for this species due to the lack of permanent water and the lack of suitable riparian vegetation along its banks. No evidence of water vole was observed although a full survey was not undertaken.

There are no water vole records within 1 km of the site boundary. Also, there are two records of American mink *Mustela vison*, a significant predator of water voles, from within the wider proposed development site boundary, which could reduce the likelihood of water voles being present along this stretch of the River Avon.

### 3.4.5 Great crested newt

Certain areas of the site, such as long grassland, scrub, hedgerows and tall ruderal vegetation, make the site suitable as terrestrial habitat for great crested newts. In addition, there is a waterbody within the site boundary, which could potentially

support breeding great crested newts, although it was not possible to access this waterbody during the survey. In addition, there are at least three mapped ponds within 500 m of the site, which could potentially support breeding populations of great crested newts. There are no records for great crested newts within 1 km of the site boundary. However, it is considered likely that great crested newts would use the site as terrestrial and commuting habitat if present in nearby waterbodies.

### 3.4.6 Reptiles

The semi-improved grassland areas, disturbed ground, tall ruderal vegetation (especially along the river corridor), linear scrub, hedgerows and scrub perimeters all provide good opportunities for shelter, commuting and foraging for reptiles. In addition, a large heap of grass cuttings and other piles of woody debris were noted within the council storage depot, which could provide egg-laying sites for grass snakes or shelter for reptiles. There are five records for grass snake within 1 km of the site boundary. It is considered likely that reptiles are present in certain areas of the site.



*Piles of grass cuttings/brush – suitable habitat for reptiles, council depot*

### 3.4.7 Nesting and wintering birds

The buildings, scrub, long grassland, planted trees and hedgerows are potentially suitable for use by nesting birds. In addition, the long grassland areas towards the north of the site have the potential to be used as foraging grounds for barn owl, for which there are records within the surrounding area. There is also the possibility that barn owls could nest within the agricultural buildings within Home Farm, although a full barn owl survey was not undertaken. There are two records of kingfisher within 1 km of the site boundary and the River Avon's steep earth banks have the potential to provide nesting areas for this species.

Given the site's proximity to the River Avon, the grassland areas (both semi-improved and improved) have the potential to support over-wintering birds such as lapwings, especially if these areas are subjected to seasonal flooding. There are records of lapwing within 1 km of the site boundary.

### 3.4.8 Invertebrates

The site's habitat mosaic of semi-improved grassland, tall ruderal habitat, river corridor and areas of scrub is likely to support a wide range of invertebrates, especially towards the north of the site where these habitats form a connected

habitat mosaic. There are numerous records of notable invertebrates within the surrounding area.

It is unlikely that the native white-clawed crayfish *Austropotamobius pallipes* is present within the River Avon or small watercourse on site due to the lack of any known populations in the vicinity.

#### **3.4.9 Other species**

The site has the potential to support hedgehog *Erinaceus europaeus*, brown hare *Lepus europaeus*, harvest mouse *Micromys minutus* and polecat *Mustela putorius*. There are several records of hedgehog and three records of brown hare within 1 km of the site boundary. It is considered unlikely to support other protected or notable species.

No invasive species were noted within the site during the survey visit but full access to the length of the River Avon corridor was not possible and therefore there is a possibility that invasive species are present in those un-surveyed areas.

## 4 EVALUATION

### 4.1 Habitats

One non-statutory ecosite of ungraded ecological status lies within part of the site (52/26 Warwick Sewage Farm) and the site is bordered to the east by the River Avon Local Wildlife Site (site reference 20/26). It is possible that both these sites could be impacted by any development of the site, either directly or, in the case of the River Avon, indirectly through pollution incidents or increased surface run-off during or following construction. Other sites with nature conservation designations lie at a sufficient distance from the site to avoid direct impacts or significant indirect impacts.

The site is bordered to the east by the River Avon and supports areas of semi-improved grassland, one area of which is species-rich; improved grassland fields; tall ruderal and scrub vegetation (especially along the river corridor); disturbed ground; amenity grassland; hardstanding; and buildings. It also includes linear scrub, planted trees and scattered scrub along boundary features, plus a ditch and a short, narrow watercourse.

For the most part, the plants and habitats noted within the site are common and widespread in the UK. However, the field to the north of the site is relatively rich and includes hoary plantain *Plantago media*, which is a notable plant for Warwickshire and may make this area of the site of county value; further botanical survey is required in order to establish its nature conservation status.

The River Avon Local Wildlife Site is of county value, due to its value as a wildlife corridor and its potential to support numerous protected species including otters and water voles.

### 4.2 Protected Animal Species

#### 4.2.1 Badger

Four possible badger sett entrances were found on site, although no conclusive evidence of use by badgers was noted, and there are a number of badger records in the local area. The site provides suitable habitat for sett-building, commuting and foraging. A full badger survey was not undertaken and there may be other setts may be present in areas of dense vegetation. Therefore, there are likely to be impacts on badgers, both in terms of loss of foraging habitat and potentially impacts upon setts present on site. Also, badgers are mobile animals and can excavate new setts at any time.

#### 4.2.2 Bats

The site may be used by foraging/commuting bats, and the loss of this site could potentially be significant on a local scale due to its size and the presence of the River

Avon corridor and species-rich grassland, likely to be used by bats for commuting and foraging.

There is a possibility that bats may use the more mature trees and some of the buildings in the site for roosting. There may therefore be impacts on bats and their roosts, if present, if the trees or buildings are to be removed.

Indirect effects such as increased illumination of roosting, foraging and commuting habitats could also adversely impact on bat species.

#### **4.2.3 Dormouse**

Dormice are unlikely to be present and therefore no impacts are anticipated on this species.

#### **4.2.4 Otter and water vole**

Otter and water vole may be present and any works to (or in close proximity to) the River Avon have the potential to impact on these species. Indirect effects such as pollution, noise and increased illumination of suitable habitats could also adversely impact on these species.

#### **4.2.5 Great crested newt**

There is a waterbody within the site that has not yet been inspected and there are also a number of potentially suitable ponds for great crested newts within 500 m of the site. Therefore it is possible that great crested newts use terrestrial habitat on the site and possibly breed on site, and therefore could be impacted by the proposed works.

#### **4.2.6 Reptiles**

The site contains habitat that is suitable for reptiles. Any development or disturbance to this habitat might have an impact upon these species.

#### **4.2.7 Breeding and Wintering birds**

##### ***Breeding birds***

Breeding birds may use the buildings, trees, long grassland, scrub, river banks (kingfisher) and hedgerows. The removal or disturbance of such habitats might have an impact on birds while they are nesting and lead to permanent loss of nesting and foraging habitat. The removal of breeding and foraging habitat may also lead to displacement of birds into adjacent areas with consequent impacts on existing populations in those areas through increased competition for food and nesting resources.

##### ***Wintering birds***

Wintering birds such as lapwings may use the pasture for foraging or resting. The removal of such habitats might have an impact on birds while they are over-wintering, through direct habitat loss and displacement to other potentially less favourable habitats.

#### **4.2.8 Invertebrates**

The site contains habitats of potential value to invertebrates which could be lost as a result of the development. The majority of the habitats present are not rare and because there is similar habitat surrounding the site it is probably unlikely that there will be significant long-term impacts on local invertebrate populations; however, this cannot be fully assessed on the basis of this survey, especially given the large number of notable invertebrate species within the surrounding area.

#### **4.2.9 Other species**

The site is likely to be used by hedgehog, brown hare and possibly harvest mouse and polecat and therefore there is a possibility that a significant area of suitable habitat for these species will be lost, especially for brown hare. However, provided the river corridor is retained and wildlife corridors are maintained through the site, the impacts on hedgehog, harvest mouse and polecat are unlikely to be significant as there is suitable additional habitat for these species within the surrounding area. Given the scale and location of recent development in close proximity to this site, it is likely that the cumulative impacts on local brown hare populations could be significant.

No invasive species were noted within the site during the survey visit but full access to the length of the River Avon corridor was not possible and therefore there is a possibility that invasive species are present in those un-surveyed areas.

#### **4.3 Cumulative Impact**

Given the presence of a number of recent developments in the local area, it is likely the cumulative impact on ecological receptors will need to be addressed within the Environmental Statement, if an Environmental Impact Assessment is considered necessary for the development proposal.

## 5 RECOMMENDATIONS

### 5.1 Habitats

- **More detailed botanical surveys (to National Vegetation Classification level) will be carried out on the northernmost field of the site in order to establish its nature conservation value and to inform subsequent recommendations.** Such recommendations are likely to include retention of a minimum area of this habitat within the scheme and long-term enhancement through a sensitive management plan, where possible to do so. Any loss of such habitat would need to be compensated through appropriate habitat creation.
- **The River Avon will be protected from any impacts during and post-development.** This should be achieved by establishing an appropriate 'no-disturbance' buffer zone between development and the upper banks of the river. In addition, pollution prevention measures and a sensitive drainage scheme will need to be put in place to avoid any indirect impacts on the river corridor.
- **All mature trees will be retained and protected during and following any future development of the site, where possible to do so.** Where losses are unavoidable, an appropriate replacement planting scheme will be recommended.
- **Any new planting proposed for the site will use appropriate native, locally sourced species where possible.**
- **Additional compensation and mitigation will be required to offset any unavoidable loss of semi-improved grassland, scrub, tall ruderal vegetation, hedgerows and mature trees.**
- **An invasive species survey will be carried out for the site, including along the River Avon corridor.**

### 5.2 Protected Animal Species

#### 5.2.1 Badgers

Four potential badger sett entrances were noted within the site boundary and the site provides suitable foraging habitat. It is therefore likely that badgers are using the site, and the proposed development has the potential to disturb existing sett(s) and lead to loss of foraging and commuting habitat.

- **A detailed badger survey will be carried out across the site in order to confirm use of possible setts by badgers and to locate any additional setts and other field signs such as latrines and snuffle holes. The survey area**

**should be extended to include land within 50 m of the site boundary to inform potential constraints to the proposed development area.** This is needed to fully inform any necessary mitigation, which is likely to include retention and protection of any setts during construction where possible, and retention of commuting corridors and foraging areas within the site for badgers. If a sett needs to be closed down, a licence for this will be required from Natural England, which is likely to entail additional survey requirements for badgers such as a bait-marking survey in order to establish clan territories.

### 5.2.2 Bats

- **The buildings and all trees with a DBH of greater than 25 cm and where likely to be removed, pollarded or otherwise affected by the development will be inspected for their potential for bat roosting.** For trees, this would first entail a ground-level assessment of roosting potential, followed by a more detailed inspection of all trees found to exhibit medium to high potential to support roosting bats. The detailed inspection would include use of ladders, ropes and harness, high-powered torch and endoscope where appropriate, in order to investigate potential roosting opportunities in detail. For buildings, preliminary bat roost assessments should be carried out of all buildings to be affected by the development. Should evidence of roosting bats be found, or if the presence of bat roosts cannot be ruled out, further surveys and a European Protected Species licence may be needed.
- **Bat activity transects will be carried out across the site in order to establish the extent and nature of usage of the site by bats.** The number required will be determined in accordance with current best practice guidelines.
- **Where possible, features of the landscape important to bats will be retained and protected within the proposed development (e.g. roost sites, and major commuting and/or foraging habitats).** Where such features are to be lost, compensatory measures will be required.

### 5.2.3 Dormouse

The likelihood of dormouse presence is extremely low and there are no recommendations for further survey or mitigation in relation to this species.

### 5.2.4 Otter and water vole

- **Detailed water vole and otter surveys will be carried out along the River Avon where it passes through the site, as well as a buffer of at least 100 m beyond the site to the north and south (access and health and safety permitting).** The results of these surveys will inform any necessary mitigation, but this is likely to include protection of the River Avon throughout and following development, by establishing a 'no-disturbance' zone between the top of the western bank and the development area. There may also be a requirement for habitat enhancements along the river corridor.

### 5.2.5 Great crested newt

There is one waterbody within the site boundary that has not yet been inspected, there are also at least three ponds within 500 m of the site, and the site provides suitable terrestrial habitat for great crested newts. It is therefore likely that great crested newts use the site as terrestrial habitat and possibly breeding habitat.

- **A Habitat Suitability Index (HSI) assessment will be undertaken of the waterbody within the site and also of other waterbodies within 500 m of the site boundary (where access is permitted) in order to assess their current suitability for great crested newts.**
- **Following the results of the HSI, great crested newt presence/absence surveys will be undertaken on those ponds deemed to be suitable for great crested newt.** Additional surveys will be required of ponds where great crested newts are confirmed, in order to establish the population size. The results of these surveys will inform subsequent mitigation for great crested newts, but this is likely to include retention of areas of suitable terrestrial habitat and possibly habitat enhancement in order to offset loss of habitat (for example through creation of a waterbody). Sensitive working methods are also likely to be required.
- It is possible that some works will need to be conducted under a European Protected Species licence from Natural England which permits otherwise unlawful actions (such as the destruction of places used for shelter or protection by great crested newt).

### 5.2.6 Reptiles

- **Reptile presence/absence surveys will be undertaken in all suitable areas of habitat following the relevant national guidelines.** If reptiles are present, removal of scrub, grassland and ruderal vegetation might have an impact upon these species and mitigation will be required.
- The results of the surveys will inform subsequent mitigation for reptiles, but this is likely to include retention of commuting corridors and suitable foraging habitat, and possibly habitat enhancement and creation in order to offset loss of habitat. Sensitive working methods are also likely to be required.

### 5.2.7 Breeding and wintering birds

- **Breeding bird surveys will be carried out across the site in spring/summer in accordance with national guidelines, in order to establish the site's value for breeding birds.**
- **Wintering bird surveys will be carried out across the site over the winter period in accordance with national guidelines, in order to establish the site's value for wintering birds.**

- The results of these surveys will inform subsequent mitigation requirements, depending on the species using the site and to what extent.
- All nesting birds are protected by law. To avoid committing an offence, any works to habitat that might be used by nesting birds should be undertaken outside the bird breeding season (March to August inclusive). If this is not possible, the habitat or structure to be affected should be checked immediately prior to works commencing by a suitably qualified ecologist. If there are breeding birds present, works cannot continue until the chicks have fledged and left the nest.

### 5.2.8 Invertebrates

- **A terrestrial invertebrate survey (TIS) will be undertaken during the summer months to scope the survey area for its potential nature conservation importance for terrestrial invertebrates.**
- Following the result of the TIS, further terrestrial and/or aquatic invertebrate surveys may be recommended.

### 5.2.9 Other species

- **UKBAP species such as brown hare, hedgehog and harvest mouse may be impacted by the proposed development and would benefit from the retention of grassland, tall ruderal and scrub areas across the site, improved connectivity to adjacent areas of suitable habitat or creation of compensatory habitats off site.**

## 5.3 Ecological enhancement

Current planning policy requires that development projects minimise ecological damage and should contain elements of ecological enhancement. A variety of habitat creation options could be implemented at the site, although the details of this will depend on the development proposals for the site and the results of the further surveys given above. A number of possible options are included below.

- Any new planting within the site should use appropriate native species where possible.
- Existing hedgerows should be gapped up where necessary with native species and managed appropriately by coppicing or laying in sections every 10-15 years.
- New hedgerows of native species should be incorporated into any new development's layout design where possible, to link up with existing hedgerows and other habitats of particular wildlife value such as the river corridor, long grassland and scrub.
- Retained or created grassland areas should be enhanced through a sensitive cutting regime (for example a twice annual cut, once at the start of the growing season and once at the end, with arisings removed after each cut).

The northernmost field in particular would benefit from such long-term management.

- The proposed development for the site should incorporate wildlife corridors to allow wildlife to commute through the site. These could include wide strips of long grassland adjacent to hedgerows and/or along site perimeters, and should connect up with retained 'wild' areas within the development plot, for example retained areas of species-rich grassland and scrub.
- The development should include a sensitive drainage scheme, which could contribute to ecological enhancements, for example by creation of ponds and wet scrapes, designed and managed for the benefit of wildlife.
- The River Avon should be retained as a 'dark' wildlife corridor with the proposed scheme with appropriate buffer zones from potential development areas and sources of artificial illumination.

### **5.3.1 Biodiversity Offsetting**

It is possible that biodiversity offsetting may be required as part of the consenting process. Biodiversity offsetting is a 'last-resort' option, which should only be employed if there are any residual impacts that cannot be avoided, mitigated for or compensated for. Where this is the case, the biodiversity offsetting metric can be employed to quantify the value of the habitats present on site which will be impacted by the proposed development. This value can then be used to inform the appropriate mitigation and/or compensation required to deliver a 'net ecological enhancement'. 'Multipliers' are integrated into the calculation to take account of habitats of particular value, or those that are hard to re-create. This provides an incentive to avoid/retain habitats of higher nature conservation value to minimise the amount of offsetting required to deliver a net ecological benefit. Offsetting habitat losses may be employed either on site or off site.

## 6 LEGISLATION

### 6.1 Introduction

This section briefly describes legal protection applying to species mentioned in this report. It does not comprehensively reflect the text of the legislation and it should not be relied upon in place of it. The following items of legislation are relevant:

- The Wildlife and Countryside Act 1981 (as amended);
- The Countryside and Rights of Way (CRoW) Act 2000 (in England and Wales);
- Conservation (Natural Habitats etc.) (Amendment) Regulations 2010 (which implements the EC Directive 92/43/EEC in the United Kingdom)
- The Local Government Act 1985;
- The Environmental Protection Act 1990; and
- The UK Biodiversity Action Plan (not itself a Statutory Instrument but referred to in SIs and planning guidance).

### 6.2 Protected Species

#### 6.2.1 Great crested newt, otter, dormouse and all species of British bat

The great crested newt *Triturus cristatus*, otter *Lutra lutra*, dormouse *Muscardinus avellanarius* and all species of British bat (*Vespertilionidae* and *Rhinolophidae*) are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and receive full protection under Section 9. Protection was extended by the Countryside and Rights of Way Act 2000 (the CRoW Act). These species are also all listed as European Protected Species on Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (which implements the EC Directive 92/43/EEC in the United Kingdom) which gives them full protection under Regulation 53.

It is also an offence to set and use articles capable of catching, injuring or killing bats, otters, dormice or great crested newts (for example a trap or poison), or knowingly cause or permit such an action.

The great crested newt, otter and seven species of British bat are included as priority species in the UK Biodiversity Action Plan and as species of principal importance for the conservation of biological diversity in England under Section 74 of the Countryside and Rights of Way (CRoW) Act 2000.

#### 6.2.2 Water vole

Water vole *Arvicola amphibius* is listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and receives full protection under Section 9.

#### 6.2.3 Birds

All species of bird are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended). Protection was extended by the Countryside and Rights of Way (CRoW) Act 2000.

Certain species are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and receive protection under Sections 1(4) and 1(5). The protection was extended by the Countryside and Rights of Way (CRoW) Act 2000. There are special penalties where offences are committed for any Schedule 1 species.

#### **6.2.4 Common reptiles**

Common lizard *Lacerta vivipara*, grass snake *Natrix natrix*, slow worm *Anguis fragilis*, and adder *Vipera berus* are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), in respect of Section 9(5) and part of Section 9(1). This protection was extended by the Countryside and Rights of Way (CRoW) Act 2000.

These species have recently been listed as priority species in the UK Biodiversity Action Plan and as species of principal importance for the conservation of biological diversity in England under Section 74 of the Countryside and Rights of Way (CRoW) Act 2000.

#### **6.2.5 Hedgehog, brown hare and polecat**

These species are listed as priority species in the UK Biodiversity Action Plan and as species of principal importance for the conservation of biological diversity in England under Section 74 of the Countryside and Rights of Way (CRoW) Act 2000.

#### **6.2.6 Badger**

The Badger (*Meles meles*) is protected in Britain under the *Protection of Badgers Act 1992* and *Schedule 6 of The Wildlife and Countryside Act 1981* (as amended). The legislation protects Badgers and their setts.

The Badger is also protected under *Schedule 6 of the Wildlife and Countryside Act 1981* (as amended) relating specifically to trapping and direct pursuit.

## 7 RELEVANT LITERATURE

Hundt, L. (2012). *Bat Surveys – Good Practice Guidelines, 2<sup>nd</sup> edition*. Bat Conservation Trust, London.

Mitchell-Jones, A.J. (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough, England.

Schofield, H.W. & Mitchell-Jones, A.J. (2004). *The bats of Britain and Ireland*. The Vincent Wildlife Trust, Ledbury, England.

Bright, P., Morris, P. & Mitchell-Jones, A. (2006). *The Dormouse Conservation Handbook*. English Nature, Peterborough.

Gent, A. H. & Gibson, S.D. 1998. *Herpetofauna Workers Manual*. Peterborough. JNCC

Institute of Ecology and Environmental Management (2012). *Guidelines for Preliminary Ecological Appraisal*. IEEM, Winchester.

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

Joint Nature Conservation Committee (2003). *Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit* (revised reprint). Joint Nature Conservation Committee, Peterborough.

Langton, T., Beckett, C. & Foster, J. (2001). *Great Crested Newt Conservation Handbook*. Froglife.

[www.ukbap.org.uk](http://www.ukbap.org.uk)

# APPENDIX 1 – BACKGROUND DATA SEARCH

