

# Southfield Flood Alleviation scheme Ecological Appraisal

Prepared for  
**Cheltenham Borough Council**

May 2015

**CH2MHILL®**

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# Contents

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Section	Page
<b>Executive Summary</b> .....	<b>4</b>
<b>1 Introduction</b> .....	<b>5</b>
1.1 Background .....	5
1.2 Aim of Report.....	5
1.3 Report Structure .....	5
<b>2 Methodology</b> .....	<b>6</b>
2.1 Desk Study .....	6
2.2 Field Survey.....	6
2.3 Evaluation .....	6
2.4 Limitations .....	6
<b>3 Legislation, planning policy and biodiversity context</b> .....	<b>8</b>
3.1 Legislation .....	8
3.2 Planning Policy .....	8
<b>4 Baseline Conditions</b> .....	<b>10</b>
4.1 Site Context.....	10
4.2 Designated Sites.....	10
4.2.1 Cotswolds Area of Outstanding Natural Beauty (AONB).....	10
4.2.2 Sites of Special Scientific Interest .....	10
4.2.3 Locally designated sites .....	10
4.3 Habitats.....	11
4.3.2 Broad-leaved semi-natural woodland .....	11
4.3.3 Dry ditch.....	11
4.3.4 Hedgerow.....	11
4.3.5 Hedgerow with trees .....	12
4.3.6 Improved grassland .....	12
4.3.7 Introduced shrub .....	12
4.3.8 Parkland/scattered trees – deciduous and coniferous.....	12
4.3.9 Running water.....	12
4.3.10 Scrub: dense/continuous.....	12
4.3.11 Semi-improved neutral grassland.....	12
4.4 Fauna.....	13
4.4.1 Amphibians .....	13
4.4.2 Badger .....	13
4.4.3 Bats .....	13
4.4.4 Birds .....	13
4.4.5 Insects .....	13
4.4.6 Otter.....	13
4.4.7 Reptiles .....	14
4.4.8 Water Vole .....	14
4.4.9 White-clawed crayfish .....	14
4.4.10 Other species .....	14
<b>5 Evaluations and Recommendations</b> .....	<b>15</b>
5.1 Designated Sites.....	15
5.1.1 Cotswolds Area of Outstanding Natural Beauty (AONB).....	15
5.1.2 Sites of Special Scientific Interest .....	15
5.1.3 Locally designated sites .....	15

5.2	Habitats .....	15
5.2.1	Broad-leaved woodland and scattered trees.....	15
5.2.2	Running water .....	15
5.2.3	Semi-improved grassland .....	15
5.3	Fauna .....	16
5.3.1	Badgers.....	16
5.3.2	Bats.....	16
5.3.2	Birds.....	16
5.3.4	Hedgehogs.....	16
5.3.5	Reptiles.....	16
5.3.5	White Clawed Crayfish .....	17
5.4	Conclusion .....	17
	<b>References.....</b>	<b>18</b>

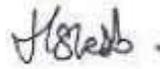
**Appendix A: Figures**

**Appendix B: Target Notes and Photographs**

## Ecology Report Southfield Flood Alleviation Scheme 2015

**Revision Record**

<b>Date</b>	<b>Description</b>	<b>Originator</b>	<b>Reviewer</b>	<b>Approver</b>
May 2015	Final Draft	Clare Williams	Harriet Webb	Shauket Khan



# Executive Summary

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CH2M HILL was commissioned by Cheltenham Borough Council to undertake an Ecological Appraisal of an area around Southfield Manor, Cheltenham where a flood alleviation scheme is proposed by construction of two earth bunds, upgrading an existing ditch and a new filter drain.

This report describes baseline wildlife information obtained from a desk study and extended Phase 1 Habitat survey and makes recommendations for mitigating the likely impacts of the development proposal upon the ecological value of the site.

The desk study identified one SSSI and one Local Wildlife Sites (Key Wildlife Sites KWS) in close proximity to the study area; Leckhampton Hill and Charlton Kings Common SSSI and Charlton Kings Railway Line KWS.

The survey identified a range of habitats of local value within the site extent, including broad-leaved woodland, running water and semi-improved grassland. The desk study identified records for bats, badger, birds, hedgehog, slow-worm, common lizard, grass snake, insects, common frog, common toad, and Roman snail within the search area. The site is considered likely to provide suitable habitat for bats, birds, hedgehogs, white clawed crayfish and reptiles.

Recommendations include:

- Proposed works should be discussed with the Cotswold Conservation Board due to potential to change views from the Cotswold AONB;
- Pollution prevention measures should be employed during to construction works to protect the watercourses;
- Woodland and trees should be avoided and where works are close to retained trees within the vicinity of construction works, trees should have protective fencing in line with BS 5837:2012;
- The semi-improved grassland within the fenced off Southfield Conservation Area should be avoided;
- Further survey is recommended of trees with potential for bat roosts if any are affected by the proposed scheme;
- Removal of trees and scrub to be undertaken outside the breeding bird season to avoid disturbance to breeding birds;
- A mitigation strategy is recommended to protect hedgehogs during vegetation clearance and installation of hedgehog hibernacula is recommended;
- A mitigation strategy is recommended to protect reptiles during vegetation and potential hibernacula clearance;
- The provision of bird and bat boxes on retained trees and to mitigate for the loss of potential nesting/roosting habitat;
- Bats may use the site for foraging or commuting and it is therefore advisable that a sensitive direction lighting strategy is employed during the construction works;
- Due to the mobile nature of badgers and other mammals, mitigation during the construction works should be considered to minimise the potential for species to fall into open trenches and excavations and
- To avoid potential impacts on white clawed crayfish, disturbance of the river bank should be minimised and minimise the amount of silt released into the water by using Environment Agency pollution prevention measures.

# 1 Introduction

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## 1.1 Background

CH2M HILL was commissioned by Cheltenham Borough Council to undertake an Ecological Appraisal of an area around Southfield Manor, Cheltenham (hereafter known as the 'study area'). A flood alleviation scheme is proposed for the study area by construction of two earth bunds, upgrading an existing ditch and a new filter drain. Improvements are also proposed for hedgerows on Leckhampton Hill, situated to the south of the study area. The study area is centred at National Grid Reference (NGR) SO 956 194.

This report describes baseline wildlife information obtained from a desk study and extended Phase 1 Habitat survey and makes recommendations for further ecological surveys and for mitigating the likely impacts of the development upon the ecological value of the site. Reference was also made to a previous ecological scoping appraisal report undertaken for the area (CH2M HILL, 2013).

## 1.2 Aim of Report

The aim of the ecological report is to:

- Describe the baseline wildlife information obtained from an extended Phase 1 Habitat survey;
- Identify key ecological features that will need to be considered during the design and construction of the development;
- Make recommendations for mitigating the likely impacts of the development upon the ecological value of the site; and
- Make recommendations for further survey work, if required, to inform the above.

## 1.3 Report Structure

The report is structured as follows:

- Section 2 – *Methodology*. This section summarises the methodology used for undertaking the desk study and field surveys. In addition it describes the basis for the evaluation of ecological features;
- Section 3 – *Legislation, Planning Policy and Biodiversity Action Plan Context*. This section sets out the considerations made while undertaking the ecological appraisal and informs the recommendations set out in Section 5;
- Section 4 – *Baseline Conditions*. This section describes the findings and context of the site with respect to designated sites, habitats and flora and fauna. In addition, it identifies any actual or potential protected/notable habitat or species issues which have been found; and
- Section 5 – *Evaluation and Recommendations*. This section sets out the conclusions and recommendations of the ecological appraisal in relation to relevant legislation, planning policy and nature conservation strategies as set out in Section 3.

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## 2 Methodology

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### 2.1 Desk Study

A desk study was conducted for a search area encompassing the site and surrounding land within a 1km buffer from the site for all records (2.5km for bats) and within 5km for local and statutory nature conservation designations (national and international). This area was considered to be sufficient to cover the likely zone of influence of the proposed scheme. Data sources consulted during the desk study were:

- The “*Multi-Agency Geographic Information for the Countryside*” website (MAGIC); and
- Gloucestershire Centre for Environmental Records (GCER), for protected and notable species data, and descriptions for Local Nature Reserves, non-statutory designated sites and Wildlife Trust reserves.

This consultation exercise is valuable in identifying past records and nature conservation designations. Understanding nature conservation issues within the wider area helps in the assessment of the ecological value of a site and the habitats and species that a site supports.

Where applicable, information supplied by these organisations has been incorporated into the following account with due acknowledgement where they are particularly informative or relevant.

### 2.2 Field Survey

An extended Phase 1 Habitat survey of the site was undertaken by an experienced ecologist on 10<sup>th</sup> February 2015 and conducted following the methodology of the Joint Nature Conservation Committee (2010). The weather was dry with a temperature of 5°C at the time of the survey and access to the full study area was made.

The habitats were classified and mapped, and plant species were recorded. Note was taken of any signs of fauna and any evidence of, or potential for the presence of, protected animals was recorded within and adjacent to the study area in accordance with the guidelines for Preliminary Ecological Appraisal (Chartered Institute of Ecology and Environmental Management, 2013).

### 2.3 Evaluation

The habitats and species evaluations are based on the guidance from the Institute of Ecology and Environmental Management (IEEM, 2006). The level of value of specific ecological receptors is assigned using a geographic frame of reference, i.e. international value being most important, then national, regional, county, district, local and lastly, within the immediate zone of influence of the proposals only.

Value judgements are based on various characteristics that can be used to identify ecological resources or features likely to be important in terms of biodiversity. These include site designations (such as Sites of Special Scientific Interest (SSSI)) or, for undesignated features, the size, conservation status (locally, nationally or internationally) and the quality of the ecological resource. In terms of the latter, ‘quality’ can refer to habitats (for instance if they are particularly diverse, or a good example of a specific habitat type), other features (such as wildlife corridors or mosaics of habitats), or species populations or assemblages.

### 2.4 Limitations

This report describes the findings of an extended Phase 1 Habitat survey carried out on 10<sup>th</sup> February 2015. It should be noted that:

The report has been prepared under the express instructions and solely for the use of the client (Cheltenham Borough Council) for the specified project. The findings of this report represent the professional opinion of experienced ecologists. CH2M HILL does not provide legal advice and the advice of lawyers may also be required for a definitive legal response. All work carried out in preparing this report

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is based upon CH2M HILL's current professional knowledge and understanding of current relevant UK standards and codes, technology and legislation. Changes in this legislation and guidance may occur at any time in the future, and cause any conclusions to become inappropriate or incorrect. CH2M HILL does not accept responsibility for advising the client or other interested parties of the facts or implications of any such changes. This report has been prepared using factual information contained in maps and documents prepared by others. No responsibility can be accepted by CH2M HILL for the accuracy of such information.

Populations of animals and plants are often transient in nature and a single survey visit can only provide a general indication of species present on site; the possibility exists that other species not recorded during the survey may be present on site.

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## 3 Legislation, planning policy and biodiversity context

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### 3.1 Legislation

Specific habitats and species receive legal protection in the UK under various pieces of legislation, including:

- The Wildlife and Countryside Act 1981 (as amended);
- The Conservation of Habitats and Species Regulations 2010 (as amended);
- The Natural Environment and Rural Communities Act 2006 (NERC);
- The Hedgerow Regulations 1997; and
- The Protection of Badgers Act 1992.

Where relevant, the ecological appraisal report takes account of the legislative protection afforded to specific habitats and species.

### 3.2 Planning Policy

#### 3.2.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) was published on 27<sup>th</sup> March 2012. It sets out the Government's planning policies for England and provides guidance on how these policies are expected to be applied. The NPPF provides a framework for local people and councils to produce distinctive local and neighbourhood plans which reflect the needs and priorities of their communities.

The NPPF includes a chapter on biodiversity, Chapter 11 – Conserving and Enhancing the Natural Environment. The NPPF supersedes the previous guidance (Planning Policy Statement 9: Biodiversity and Geological Conservation). In addition to being concerned with the protection of statutorily designated site, the Chapter outlines ways in which the planning system is required to contribute to and enhance the local environment and sets out guidance for local authorities in respect of the consideration of biodiversity and green infrastructure. The NPPF is a material planning consideration.

#### 3.2.2 Cheltenham Local Plan

The Cheltenham Local Plan was adopted in 2006. The saved local policies will be gradually replaced by new policies in the Joint Core Strategy.

Saved policies relevant to the study area are:-

**Policy GE5 Protection and replacement of trees**

*The Borough Council will resist the unnecessary felling of trees on private land.*

**Policy GE6 Trees and development**

*Details and methodology of tree protection is required, to ensure trees are not damaged by construction work.*

**Policy CO2 Development within or affecting the AONB**

*Development which would harm the natural beauty of the landscape within the AONB will not be permitted.*

**Policy NE1 Habitats or legally protected species**

*Development which would materially harm, either directly or indirectly, a site supporting any legally protected species will not be permitted unless safeguarding measures can be provided through conditions or planning obligations to secure its protection.*

**Policy NE2 Designated nature conservation sites**

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Development which would harm, either directly or indirectly, a designated nature conservation site will not be permitted, unless:

(a) safeguarding measures can be provided through conditions or planning obligations to secure its protection; or

(b) other material factors exist to override nature conservation considerations.

#### **Policy NE3 Biodiversity and geodiversity of local importance**

Development which would harm, either directly or indirectly, a habitat, species or geological site of local importance will only be permitted where:

(a) the features of interest can be maintained within the development; or

(b) suitable measures of mitigation or compensation can be provided.

### **3.3 Local Biodiversity and Nature Partnership**

The 'UK Post-2010 Biodiversity Framework' succeeded the UK Biodiversity Action Plan (UKBAP) in July 2012. The post-2010 framework is underpinned by the biodiversity and environment strategies of the four countries of the UK and sets out their common purpose and shared priorities. The UKBAP list of priority species, however, remains as a reference source and has been used to help draw up statutory lists of priorities. NERC Act Section 41 habitats and species in England are those that were identified as requiring action in the UK BAP.

'Biodiversity 2020: A strategy for England's wildlife and ecosystem services', published in 2011, is the most recent biodiversity strategy for England, and has as its mission to halt overall biodiversity loss, support healthy well-functioning ecosystems, and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.

Gloucestershire Local Nature Partnership was formed in 2012, which builds on the content of the former Gloucestershire Biodiversity Action Plan framework. Relevant priority habitats for the study area, identified by the partnership are:-

- Lowland calcareous grassland;
- Hedgerows;
- Wet woodland;
- Scrub and
- Streams

Relevant priority species for the study area, identified by the partnership are:-

- Amphibians and reptiles including common toad *Bufo bufo* and slow worm *Anguis fragilis*;
- Sky lark *Alauda arvensis subsp. Arvensis/scotica*;
- House sparrow *Passer domesticus*;
- Tree sparrow *Passer montanus*;
- West European hedgehog *Erinaceus europaeus*;
- Soprano pipistrelle *Pipistrellus pygmaeus*.

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## 4 Baseline Conditions

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### 4.1 Site Context

The study area is on the southern edge of Cheltenham and comprises grazing pasture, garden boundaries and ditches. The field margins and banks of the ditches support tall ruderal vegetation and scattered mature trees and scrub. Habitats beyond the study area consist of hard standing/buildings to the west and north and open fields, hedgerows and small blocks of woodland to the south and east.

### 4.2 Designated Sites

There are no internationally designated sites within 5km of the study area.

#### 4.2.1 Cotswolds Area of Outstanding Natural Beauty (AONB)

The study area is on the edge of the Cotswolds AONB. The Cotswolds are nationally important for their rare limestone grassland habitat and for ancient beechwoods with rich flora. Important grasslands such as Cleeve Hill have survived due to their status as ancient common and a National Nature Reserve protects the finest ancient beech complex. Some Cotswolds plants are so rare that they have specific legal protection under the Wildlife and Countryside Act 1981.

Traditionally a landscape formed by sheep grazing, this is now prosperous mixed and arable farming country. There is still active mineral extraction in the AONB.

The AONB may be affected by the proposed scheme by a change in views and landscape features. Improvements are proposed to existing hedgerows within the AONB by Cheltenham Borough Council sponsoring infilling of hedgerow gaps and replacing existing fencelines with hedgerows (refer to Appendix A, Figure 1).

#### 4.2.2 Sites of Special Scientific Interest

Four SSSIs are located within 5km of the study area. These are listed in Table 1.

SSSI name	Approximate distance and direction from the study area	Interest features
Leckhampton Hill and Charlton Kings Common	650 m south	Unimproved calcareous grassland
Lineover Wood	3km east	Ancient semi-natural coppice woodland
Crickley Hill and Barrow Wake	3.2km south west	Species rich grassland, scrub and semi-natural woodland
Badgeworth	4.6km west	Ephemeral pool designated for nationally rare adder's-tongue spearwort <i>Ranunculus ophioglossifolius</i> .

#### 4.2.3 Locally designated sites

There is 1 Local Nature Reserve within the search area; Griffiths Avenue, located approximately 3.8km to the north-west. This is a Victorian stable building with a walled garden which supports a wealth of butterflies and flora species.

There are 19 Key Wildlife Sites within 5km of the study area, and one within 1km which is Charlton Kings Railway line (900m to the north) which is important for its bird, plant and invertebrate interest.

There are 2 Gloucestershire Wildlife Trust Nature Reserves within the search area. Badgeworth Nature Reserve (and SSSI) 4.6km to the west and Arle Grove Nature Reserve 4.2km to the north east, which is ancient woodland with important spring flowers and old trees.

There are 5 Conservation Road Verges within the search area, all of which are more than 2.5km from the study area.

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## 4.3 Habitats

Figure 2 in Appendix A illustrates the distribution of habitats present within the study area, with target notes (TN) and related photographs presented in Appendix B.

Data from GCER returned records of six Wildlife and Countryside Act (as amended) or Red Data List flora species. No rare or notable species were identified during the Phase 1 Habitat Survey.

The habitat types recorded across the study area are listed below in alphabetical order and not in order of ecological importance:

- Amenity grassland;
- Broad-leaved semi-natural woodland;
- Dry ditch;
- Hedgerow;
- Hedgerow with trees;
- Improved grassland;
- Introduced shrub;
- Parkland/scattered trees (broad-leaved and coniferous);
- Running water;
- Scrub: dense/continuous; and
- Semi-improved neutral grassland.

### 4.3.1 Amenity grassland

A small strip of amenity grassland is present along the small watercourse to the west of the study area. Another small strip of amenity grassland is present on the southern verge of the road leading to Southfield Manor. Species present have negligible value and are not referenced further in this report.

### 4.3.2 Broad-leaved semi-natural woodland

An area of broad-leaved woodland surrounds the stream flowing into the western side of the study area (TN 1). The stream and woodland have created a valuable area of wet woodland with ash *Fraxinus excelsior* and hawthorn *Crataegus monogyna* trees. Ground flora includes hart's tongue fern *Asplenium scolopendrium*. Tree saplings have been planted including poplar *Populus* sp. Further recommendations for protection of the woodland is included in Section 5.

### 4.3.3 Dry ditch

A short section of dry ditch is present on the southern side of the road leading to Southfield Manor to the east of the study area. No aquatic species were noted and is not referenced further in this report.

### 4.3.4 Hedgerow

A hedgerow was present at the end of gardens of adjacent properties in the western study area. Hedges consisted of beech *Fagus sylvatica*, holly *Ilex aquifolium* and Japanese laurel *Aucuba japonica*. Some were more gappy with small trees (silver birch *Betula pendula*, holly and willow *Salix* sp.). The hedgerow has value as a screen but no rare or important species were noted and is not referenced further in this report.

A newly planted hedge was present between the improved grassland fields to in the western study area.

Another hedgerow was present to the west of the stream in the centre of the study area. This was dominated by hawthorn. No rare or important species were noted and is not referenced further in this report.

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#### 4.3.5 Hedgerow with trees

A line of scrub and trees followed the western side of Sandy Lane track (TN 7). Species included hawthorn, elm *Ulmus minor*, sycamore *Acer pseudoplatanus* and bramble *Rubus fruticosus* agg. Many trees were ivy covered and are of value for roosting bats (refer to Section 5).

#### 4.3.6 Improved grassland

The study area is dominated by improved grassland which was grazed by horses. Species noted were perennial rye-grass *Lolium perenne*, fescue *Festuca* sp. narrow leaf plantain *Plantago lanceolata* and creeping buttercup *Ranunculus repens*. These species have negligible value and are not referenced further in this report.

#### 4.3.7 Introduced shrub

A small area of introduced shrub was present to the south of the access road to Southfield Manor. Species present are rosemary *Rosmarinus officinalis*, conifers and rose *Rosa* sp. These species have negligible value and are not referenced further in this report.

#### 4.3.8 Parkland/scattered trees – deciduous and coniferous

Mature and semi-mature scattered trees, predominantly ash, as well as willow and hawthorn are present. Some provide potential habitat for roosting bats (refer to Section 5). Two mature *leylandii* *Cupressus x leylandii* trees had been planted to the south of Southfield Manor.

#### 4.3.9 Running water

Three small watercourses flow from south to north into the study area from the adjacent Leckhampton Hill escarpment (Figure 2, TN 1, 2 and 3). The watercourse in the western study area (TN 1) has earth banks, is approximately 0.5m wide (but wider at the northern end where it opens up) and approximately 5cm deep with a cobble substrate and blanket weed *Cladophora* sp. noted.

The watercourse in the centre of the study area (Figure 2, TN 2) has earth banks, approximately 1m wide and 10cm deep with a gravel/cobble substrate. A hawthorn hedge is present on the western bank and aquatic flora is present including water mint *Mentha aquatica*, water figwort *Scrophularia auriculata*, water cress *Rorippa nasturtium-aquaticum* and occasional lesser pond-sedge *Carex acutiformis*.

The watercourse in the eastern study area (Southfield Brook, Figure 2, TN3) has earth banks, is approximately 0.5m wide and 10cm deep. Water figwort was present and the watercourse is shaded by occasional semi-mature trees and scrub.

Another watercourse is present at the rear of the gardens along Hartley Close. This had bare earth banks and no aquatic vegetation and very little water at the time of the survey. Upgrading this ditch is proposed as part of the scheme proposals. This will not be constrained by the ecology of the open watercourse.

#### 4.3.10 Scrub: dense/continuous

Two areas of scrub are present. Bramble dominates with occasional hawthorn. It is considered that the scrub habitats have value within the immediate zone of influence only and can be readily re-created in the short-term. The scrub provides suitable habitat for breeding birds and hedgehogs and recommendations for these are given in Section 5.

#### 4.3.11 Semi-improved neutral grassland

A small area of semi-improved grassland was identified to the west of Southfield Manor and along the watercourse flowing west to the rear of the gardens along Hartley Close. Species present include cocksfoot *Dactylis glomerata*, narrow leaf plantain, common nettle *Urtica dioica*, common comfrey *Symphytum officinale* and common snowdrop *Galanthus nivalis*. An area is fenced off (Figure 2, TN 4) to allow natural regeneration and increase diversity of the habitat, supported by the local interest group 'Southfield Conservation Area', which is supported by Southfield Manor Park Residents Association. This area has local importance and recommendations for the protection of this area are given in Section 5.

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## 4.4 Fauna

The faunal descriptions are ordered alphabetically below and are not listed in priority of ecological significance.

### 4.4.1 Amphibians

GCER returned records of smooth newt *Lissotriton vulgaris*, common frog *Rana temporaria* and common toad *Bufo bufo*.

OS maps at a 1:25,000 scale were checked for presence of ponds within 250m of the study area which may provide suitable habitat for great crested newts. No ponds were confirmed within 250m and amphibians are not considered further in this report.

### 4.4.2 Badger

The GCER search returned four records of badger *Meles meles* within the search area. The habitats within the study area provides suitable foraging for badgers, although no evidence of current use by this species was found during the Phase 1 Habitat Survey. Further recommendations to protect badgers during the construction works is provided in Section 5.

### 4.4.3 Bats

GCER returned 10 records for bats within 2.5km of the study area. Four records of roosts (old or currently in use) were identified within the search area for pipistrelle bat species (*Pipistrellus* sp.), one of which was in the Southfield Manor area (record from 2013). There is one record of lesser horseshoe bat *Rhinolophus hipposideros* in an underground bunker in the Leckhampton area.

#### Trees

Two mature trees (Figure 2, TN 5 and TN 6) and some of the trees within the hedgerow (Figure 2, TN 7) have dense ivy which may cover features of the trees that could be used by bats (hollows, cracks etc). If these trees require felling or pruning the recommendations given in Section 5 should be followed.

### 4.4.4 Birds

71 bird species have been recorded within the search area in the past 12 years. The majority of these have been recorded at Leckhampton Hill and Hartley Hill and 23 species have been recorded at Southfield Manor (County bird recorder's records). Of these, 3 are Red List species (highest conservation priority); song thrush *Turdus philomelos*, linnets *Linaria cannabina* and marsh tit *Poecile palustris*.

Long tailed tit *Aegithalos caudatus*, stone chat *Saxicola rubicola*, green woodpecker *Picus viridis*, great tit *Parus major*, greenfinch *Carduelis chloris*, robin *Erithacus rubecula* and blackbird *Turdus merula* were recorded during the Phase 1 survey. Further recommendations have been made for breeding birds (refer to Section 5).

### 4.4.5 Insects

GCER data returned records of 37 species of moth and 7 butterfly species within the search area. The majority of the records were from Charlton Kings and Leckhampton Hill. Records from the county moth recorder included 18 species of moth recorded at Highland Road, just north of Southfield Manor. The species are UK BAP Priority Species and NERC Section 41 species. Vegetation in the study area is ubiquitous and widespread and does not provide rare habitat therefore insects are not directly referenced further in this report.

### 4.4.6 Otter

GCER returned no records of otter *Lutra lutra* within the search area. The small watercourses within the study area are considered unsuitable for otters due to lack of water, food sources and connectivity to other watercourses and therefore the habitat is considered unsuitable for otters.

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#### 4.4.7 Reptiles

Slow worms *Anguis fragilis*, common lizard *Zootoca vivipara* and grass snake *Natrix natrix* have been recorded within the search area. Grass snake has been recorded at Highland Road, just north of Southfield Manor. The woodland edge, scrub edge and semi-improved grassland habitats were considered to be suitable for reptiles. A purpose built brick and stone reptile hibernacula was present in the Southfield Conservation Area (TN 8) and a log pile with potential for reptile hibernacula was present alongside Southfield Brook (TN 9). Stone walls may also provide potential hibernacula/refugia. Further recommendations for reptiles are made in Section 5.

#### 4.4.8 Water Vole

GCER returned no records of water vole *Arvicola amphibius*. The shallow watercourses within the study area are considered unsuitable for water voles due to lack of water and connectivity to other watercourses, therefore water vole are not considered further in this report.

#### 4.4.9 White-clawed crayfish

There are no records of white-clawed crayfish *Austropotamobius pallipes* within the search area. There is potential for white-clawed crayfish to be present in the three water courses flowing into the study area from the south and further recommendations are made in Section 5.

#### 4.4.10 Other species

Records of other species of note are west European hedgehog *Erinaceus europaeus* in the Leckhampton area and Roman snail *Helix pomatia* on Leckhampton Hill and Hartley Hill. Three bee hives are located in the improved grassland field at TN 10. Habitats within the study area have potential for hedgehogs and further recommendations are made in Section 5.

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## 5 Evaluations and Recommendations

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### 5.1 Designated Sites

There are no internationally designated sites within 5km of the study area and are therefore considered to be at a sufficient distance to be unaffected by the proposed works

#### 5.1.1 Cotswolds Area of Outstanding Natural Beauty (AONB)

The AONB may be affected by the proposed scheme by a change in views and landscape features. Improvements are proposed to existing hedgerows within the AONB by Cheltenham Borough Council sponsoring infilling of hedgerow gaps and replacing existing fencelines with hedgerows (refer to Figure 1). The scheme and the hedgerow improvements should be discussed with the landowners and the Cotswold Conservation Board.

#### 5.1.2 Sites of Special Scientific Interest

The four SSSIs will not be affected directly or indirectly from the proposed scheme due to the distance from the study area.

#### 5.1.3 Locally designated sites

None of the locally designated sites will be affected directly or indirectly from the proposed scheme due to the distance from the study area.

## 5.2 Habitats

### 5.2.1 Broad-leaved woodland and scattered trees

The broad-leaved woodland and scattered trees offer habitat of local value. It is recommended that the design of the scheme avoids impacting semi-mature or mature trees but if any need to be removed, replanting should be undertaken. Retained trees close to the construction site should be protected by protective fencing prior to the commencement of construction works to prevent encroachment of plant and accidental damage of the habitat, in line with BS 5837:2012 *Trees in relation to design, demolition and construction*.

The habitat is of value for breeding birds, bats and hedgehogs and recommendations for these are given below.

### 5.2.2 Running water

Three small watercourses flow from south to north into the study area from the adjacent Leckhampton Hill escarpment. Earthworks for a proposed bund are planned close to the watercourses. Pollution prevention measures following Environment Agency pollution prevention guidelines should be employed during to construction works to avoid direct or indirect impacts.

### 5.2.3 Semi-improved grassland

An area has been fenced off and semi-improved grassland has become established. This is referred to as the Southfield Conservation Area and is supported by the local residents association. Tree planting has been undertaken and a hibernacula built within the fenced off area. Due to local interest it is recommended that the design of the flood alleviation scheme avoids impacting this area. It is recommended that the scheme is discussed with the local residents association.

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This habitat is suitable for reptiles and hedgehogs and recommendations for these are given below.

## **5.3 Fauna**

### **5.3.1 Badgers**

Badgers are protected by the Protection of Badgers Act 1992, and through their inclusion in Schedule 6 of the W&CA.

Due to the mobile nature of badgers and other mammals, mitigation during the construction works should be considered to minimise the potential for species to fall into open trenches and excavations. All excavations left open overnight should be covered with boarding and fenced securely or left with an escape route in the event of a badger falling into them.

### **5.3.2 Bats**

All bats and their places of refuge are protected in the UK under the Wildlife and Countryside Act (1981) (as amended) (WCA) and the Conservation of Habitats and Species Regulations 2010 (as amended).

Several trees have been identified as having features with potential to support roosting bats (TN5, TN6, and TN7). Should felling, pruning or intrusive works be proposed within the vicinity of the trees, a visual inspection by a suitably experienced ecologist is recommended to look for signs of roosting bats (droppings, scratch marks etc.) and a bat emergence/re-entry survey may be required, following bat survey guidelines (Hundt, 2012).

As ecological mitigation, bat boxes could be erected on retained trees. A bat roost has been recorded in the Southfield Manor area and trees/hedgerows may be used for foraging/commuting and it is therefore advisable that the scheme design seeks to employ a sensitive directional lighting strategy during construction. No additional lighting is envisaged during operation of the flood alleviation scheme.

### **5.3.2 Birds**

All breeding birds, whilst actively nesting, are protected in the UK under the WCA (as amended).

It is recommended that vegetation removal be scheduled to occur outside of the breeding bird season (March-August). If it is not possible to do this, then a check for nesting birds should be undertaken by an experienced ecologist within 24 hours of the works commencing. Should nesting/ breeding birds be found then the nest should be protected by an appropriate buffer zone around the tree and works should be postponed until fledging has been confirmed by an ecologist. In addition, areas of potential breeding bird habitat outside the works footprint, should be fenced off to prevent accidental damage and/or disturbance. The scheme design should also include provision for the replacement of lost vegetation and nest boxes to mitigate potential habitat loss.

### **5.3.4 Hedgehogs**

Hedgehogs are a UK BAP priority species and have been recorded in the search area.

A mitigation strategy for the protection of hedgehogs during site clearance should be written and all work undertaken under a precautionary method of working for hedgehogs. This should entail careful clearance of vegetation at least 1 week before construction works commence and the arising removed. Any potential hibernacula (e.g. piles of logs or scrub) should not be cleared within the hedgehog hibernation period (November to March), to avoid injury to hibernating animals.

### **5.3.5 Reptiles**

Widespread reptiles receive partial protection in the UK under the Wildlife and Countryside Act 1981 (as amended). Reptiles likely to use the site (e.g. grass snake and slow worm) are protected against killing, injury and sale.

Potentially suitable habitats for reptiles are present along the woodland edge, scrub edge and semi-improved grassland habitats and potential reptile hibernacula are present (stone walls, rock and log piles).

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It is recommended that habitats suitable for reptiles are avoided in the scheme design. If habitat cannot be avoided a mitigation strategy will be required to avoid killing or injury.

Mitigation is likely to include: that minimal clearance occurs within particularly reptile sensitive areas; if sensitive areas are to be impacted then care is to be taken so that structures such as log piles and rock piles are not disturbed; these structures should also be avoided during vegetation clearance. Vegetation clearance should entail a preference for clearance within the reptile active season (April to October inclusive). Vegetation clearance should be undertaken at least one week before construction works commence and the arising removed. If vegetation clearance is planned within the reptile hibernation period (November to March), the vegetation should be removed in October to avoid injury to hibernating animals. Please note seasonal constraints relating to nesting birds may conflict with these methods of working for reptiles and should be taken into account when planning vegetation clearance.

As ecological mitigation, hibernacula could be installed such as log or rock piles. These would need to be located where they would not be disturbed in the future by the public or future developments.

### **5.3.5 White Clawed Crayfish**

The three watercourses have potential for white clawed crayfish (although no records of these have been found within 1km of the site). To avoid potential impacts, disturbance of the river bank should be minimised and minimise the amount of silt released into the water by using Environment Agency pollution prevention measures. If dewatering is required for construction works, a fish rescue should be undertaken and if white clawed crayfish are found, works should cease and advice sought from a suitably experienced ecologist.

## **5.4 Conclusion**

In summary, it is considered that subject to the implementation of the recommended measures set out above in relation to avoiding or mitigating for potential impacts to habitats and species, that the proposed development of the site could be implemented without significant adverse ecological impacts and be in accordance with relevant legislation.

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# References

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CH2M HILL (2013) *Southfield Manor Ecological Scoping Appraisal*, report for Cheltenham Borough Council.

Hundt L., (2012) *Bat Surveys: Good Practice Guidelines*, 2nd edition, Bat Conservation Trust

Institute of Ecology and Environmental Management (2006) *Guidelines for Ecological Impact in the United Kingdom*.

Institute of Ecology and Environmental Management (2013) *Guidelines for Preliminary Ecological Appraisal*. Revised 2nd Edition

Joint Nature Conservation Committee (2010) *Handbook for Phase I Habitat Survey – a Technique for Environmental Audit*, reprinted 2010, JNCC, Peterborough.

JNCC and Defra (2012) *UK post-2010 Biodiversity Framework*. JNCC, Peterborough.

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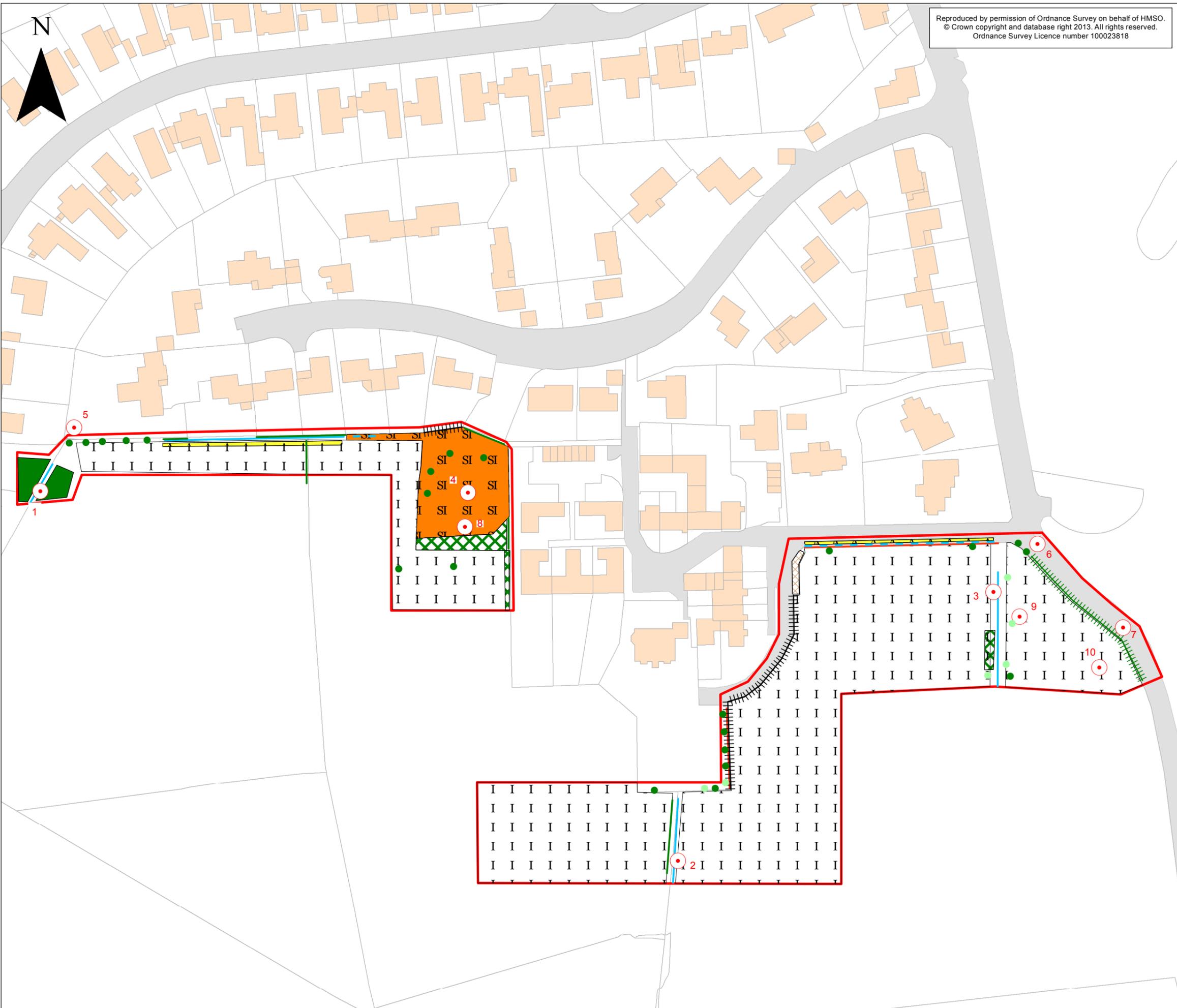
# Appendix A: Figures

Figure 1: Proposed improvements to hedgerows

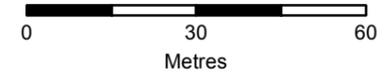
Figure 2: Phase 1 Habitat Plan



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- Key**
- Study Area
  - Phase 1 Habitat points**
    - A3.1, Broadleaved Parkland/scattered trees
    - A3.2, Coniferous Parkland/scattered trees
    - Target Note
  - Phase 1 Habitat lines**
    - G2, Running water
    - J2.1.2, Intact hedge - species-poor
    - + + + + J2.3.2, Hedge with trees - species-poor
    - + + + + J2.4, Fence
    - J2.5, Wall
    - - - - J2.6, Dry ditch
  - Phase 1 Habitat polygons**
    - A1.1.1, Broadleaved woodland - semi-natural
    - A2.1, Scrub - dense/continuous
    - B2.2, Neutral grassland - semi-improved
    - B4, Improved grassland
    - J1.2, Cultivated/disturbed land - amenity grassland
    - J1.4, Introduced shrub



Rev	By	Chkd	Apprvd	Date	Description

Client  
Cheltenham Borough Council

**CH2MHILL**

Project :  
Southfield Flood Alleviation Scheme

Drawing :  
Phase 1 Habitat Survey

Drawn By : AC	Date: 07/05/2015
Checked By : MPC	Date: 07/05/2015
Approved By : CW	Date: 07/05/2015

Drawing No. :	Revision
Figure 2	1

Drawing Scale : 1:1,250 Plot Scale : 1:1

## Appendix B: Target Notes and Photographs

Target Note	Description	Photograph
1	Broad-leaved woodland and running watercourse	
2	Running watercourse in centre of study area	
3	Running watercourse: Southfield Brook	
4	Fenced off area of semi-improved grassland: Southfield Conservation Area	

5	Ash tree with bat potential	
6	Ivy covered tree with bat potential	
7	Line of scrub and trees on western side of Sandy Lane track. Trees have bat potential.	

8	Reptile hibernacula in Southfield Conservation Area	
9	Log pile suitable for reptiles next to Southfield Brook	
10	Three bee hives	