

Ethos Environmental Planning



Ecology Assessment

**Land south of Henley Road,
Reading**

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CONTENTS

	Page(s)
1.0 Introduction	2 - 5
2.0 Legislative and planning context	6
3.0 Methodology	7
4.0 Background data search	8 - 9
5.0 Phase 1 habitat survey	10 - 18
6.0 Assessment for protected species	19 - 37
7.0 Discussion	38- 39
8.0 Conclusion	40
9.0 Recommendations	41 - 48

1.0 INTRODUCTION

Ethos Environmental Planning (Ethos) have undertaken this phase 1 habitat survey which was extended to include an assessment for protected species. The survey was undertaken on land at 199 – 207 Henley Road, Reading, (central grid reference: SU 73014 75214).

1.1 Aims and objectives of the appraisal

The assessment has been informed by guidelines provided in the '*CIEEM Guidelines for Ecological Report Writing, 2015*'. Further guidance in relation to surveys for protected species are detailed in the relevant sections within this report. The survey has the following objectives:

- to identify the existing habitats on site;
- to assess the potential and presence of notable species;
- to establish baseline conditions and determine the importance of ecological features present (or those that could be present) within the specified area;
- to establish any requirements for further surveys or licensing;
- to identify key constraints to the project and make recommendations for design options to avoid significant effects on important ecological features/resources.

1.2 Site location

The site is located to the south of Henley Road in northwest Reading in Berkshire. The site is bordered by Henley Road to the north, by other residential dwellings and gardens to the west and east, and by a brook and farmland to the south. The wider environment was dominated by urban development with residential dwellings, gardens and roads to the west and a number of connected waterbodies, Caversham lakes, and farmland to the east.

Figure 1 Site location



1.3 Development Proposals

The development proposals include demolition of three of the main residential dwellings and all of the outbuildings on site with the retention of numbers 205 and 207 Henley Road, as shown in figure 2. The majority of the habitats in the centre of the site are proposed for removal to allow for construction of 60 new residential dwellings with associated access road, garages and gardens. The boundary hedgerows will be retained, whilst the majority of vegetation in the centre of the site is proposed for removal.

Figure 2 Development proposals



1.4 Structure of the report

The following is included within this report:

- Legislative and planning context;
- Methodology;
- Background data search;
- Phase 1 habitat survey;
- Protected species surveys; and
- Recommendations.

2.0 LEGISLATIVE AND POLICY CONTEXT

This section provides a summary of the legislative and planning context which has been used to inform the ecological assessment and subsequent recommendations made in this report. Appendix 1 sets out further details in relation to the most relevant legislation and policy.

2.1 Legislation

The Habitats Directive (together with the Birds Directive) forms the cornerstone of Europe's nature conservation policy. It is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. All in all the directive protects over 1,000 animals and plant species and over 200 "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance.

The Wildlife and Countryside Act 1981 (as amended) is a key piece of national legislation which implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and implements the species protection obligations of Council Directive 2009/147/EC (formerly 79/409/EEC) on the Conservation of Wild Birds (EC Birds Directive) in Great Britain.

Badgers and their setts are protected under the **Protection of Badgers Act 1992** as amended by the Hunting Act 2004.

The **Natural Environment and Rural Communities Act 2006** (the NERC act) places a duty on all public authorities, including local planning authorities, to consider biodiversity in their work. Local planning authorities are to ensure that there is no net loss of biodiversity on a site, no net loss in habitat connectivity and aims to enhance biodiversity.

The **Hedgerows Regulations 1997** protect 'important hedgerows' from being removed (uprooted or destroyed). Hedgerows are protected if they are at least 30 years old and meet at least one of the criteria listed in part II of schedule 1.

Specific legislation related to different species such as bats, birds and reptiles is outlined in appendix 1.

2.2 Policy

The **National Planning Policy Framework (NPPF)** aims to minimise impacts on biodiversity and provide net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including the establishment of coherent ecological networks more resilient to current and future pressures.

The **UK Biodiversity Action Plan (UK BAP)** sets out a programme for conserving the UK's biodiversity. It led to the production of 436 action plans between 1995 and 1999 to help many of the UK's most threatened species and habitats to recover. A review of the UK BAP priority list in 2007 led to the identification of 1,150 species and 65 habitats that meet the BAP criteria at UK level.

3.0 METHODOLOGY

3.1 Phase 1 habitat survey

The phase 1 habitat survey and mapping has drawn on guidance provided in the *Handbook for Phase 1 Habitat Survey - a technique for environmental audit* (JNCC 2010). A preliminary survey was undertaken in March 2016, with the full phase 1 completed on the 22nd August 2016 by the survey team. The survey incorporated detailed assessment of the land within the development boundary, including a description and mapping of all key features and habitat types. The survey was carried out to identify the range of habitats within the site and the predominant and notable species of flora.

3.2 Background data search

Background data was obtained from Thames Valley Environmental Records Centre (TVERC) and included all designated and locally important sites, and species of conservation concern within a 1km of the development site.

3.3 Protected Species Surveys

As a result of the preliminary appraisal undertaken in March 2016, surveys for protected species were undertaken, details of which are provide in section 6.

3.4 Personnel

All surveys were led by Jim Phillips, BSc (Hons), MA, MCIEEM who was assisted by Rachel Godden, BSc (Hons) ACIEEM. Jim is a Director of Ethos and a qualified and experienced ecologist with over 10 year's field work experience and a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Rachel is a qualified ecologist with four years' experience of practical field ecology. The survey team have worked together on numerous similar projects and have a complimentary range of skills and experience which are considered to have provided a robust ecological appraisal of the site.

3.5 Limitations

Data used in the desktop survey was collated from databases maintained by a number of organisations and individuals and often relying on voluntary submission of records. A reasonable attempt to gather data was made, but it is also possible that other data exists within this area that was not made available to Ethos. This should therefore not be considered an exhaustive list and it is not possible to assume the absence of any species absent from the local records. The Phase 1 habitat survey was carried out at an optimum time of year and the site was fully accessible, therefore no serious limitations were met within the parameters of the Phase 1 survey methodology framework.

4.0 BACKGROUND DATA REVIEW

4.1 Notable Sites

The data search did not return any designated sites within the search area. However, there were a number of deciduous woodland priority habitats present within 1km of the site. These were isolated strips of woodland containing native species within the wider landscape. The nearest of these is located approximately 50m to the southwest, with other woodland 100m to the south and 200m to the east. Additionally, Berry brook runs along the southern border of the site and connects to Caversham Lakes in the west.

Figure 3 Notable sites within 1km



4.2 Notable Species

Amphibians and reptiles: No protected amphibian records were found within the search area, however two reptile species were returned; grass snake (*Natrix natrix*) and adder (*Vipera berus*) records.

Bats: The following bat species were recorded within the search area; noctule bat (*Nyctalus noctula*), brown long-eared bat (*Plecotus auritus*) and common pipistrelle (*Pipistrellus pipistrellus*)

Mammals: There were records of badger (*Meles meles*), otter (*Lutra lutra*), and hedgehog (*Erinaceus europaeus*) within 1 km of the site.

Invertebrates: Stag beetle (*Lucanus cervus*) had been recorded.

4.3 Relevance of the background data search

4.3.1 Notable Sites

There are no nearby designated sites, and the site is bordered by urban areas to the north and west. However, there are a number of deciduous woodland strips (part of the Priority Habitat Inventory) to the south and east which have links to the southern boundary hedgerow and form an ecological corridor.

4.3.2 Notable species

In general, few protected species were returned within the data search, the records of highest significance with regards to the habitats present on site were those of bats. Given the mosaic of habitats in the wider environment, it will be important to assess the potential for all protected species during the assessment.

5.0 PHASE 1 HABITAT SURVEY

5.1 General site description

The site is located to the south of Henley Road to the east of Reading in Berkshire. The wider environment is dominated by urban development including residential dwelling, gardens, main and minor roads to the north and west, with pastureland and Caversham lakes to the south and east. The site itself included three main residential dwellings and outbuildings at the northern end of the site, with associated gardens extending to the south. The main habitats on site were amenity and semi-improved grassland, orchard, hedgerows and built structures.

5.2 Habitat description

Figure 4 shows the key habitats using the phase 1 habitat classifications. The key features described within this section are:

- Hedgerows
- Amenity grassland
- Semi-improved grassland
- Scattered scrub
- Introduced shrub
- Orchard
- Vegetable patch
- Ponds
- Hard standing
- Built structures

Figure 4 Phase 1 Habitats on site



5.2.1 Hedgerows

There were six hedgerows which were identified on site, predominantly located at the site boundaries with short sections of hedgerow separating the existing residential gardens. The numbered hedgerows are shown in figure 5.



Photo 1: Hedge 2



Photo 2: Hedge 1



Photo 3: Hedge 1



Photo 4: Hedge 4



Photo 5: Hedge 2



Photo 6: Hedge 6

Figure 5 Hedgerows on site



Hedge 1: this was a defunct, species-poor hedgerow located at the northern site boundary. There were gaps in the hedgerow where driveways cut through. The hedge was dominated by English elm (*Ulmus procera*) with privet, snowberry (*Symphoricarpos albus*), buddleja (*Buddleja davidii*) and occasional hazel (*Corylus avellana*).

Hedge 2: this was an intact, species-rich hedgerow with trees located along the western boundary. The hedge was dominated by beech (*Fagus sylvatica*) and other species included damson (*Prunus sp.*), walnut (*Juglans regia*), holly (*Ilex aquifolium*), ash (*Fraxinus excelsior*), hawthorn (*Crataegus monogyna*), garlic mustard (*Alliaria petiolata*), bramble (*Rubus fruticosus*), buddleja (*Buddleja davidii*) and of particular note was the presence of *Cotoneaster sp.* which is a schedule 9 invasive species.

Hedge 3: this was a species-poor hedgerow with trees which ran from north to south, separating the residential gardens of properties 199 and 201. The hedge was dominated by beech (*Fagus sylvatica*) and other species included holly (*Ilex aquifolium*), walnut, sycamore (*Acer pseudoplatanus*), hedge woundwort (*Stachys sylvatica*), common nettle (*Urtica dioica*) and wood avens (*Geum urbanum*).

Hedge 4: this was an intact hedgerow with trees located along the southern site boundary. Species included mature beech (*Fagus sylvatica*) trees, sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*), hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*), holly (*Ilex aquifolium*), guelder rose (*rosalpp.*), snowberry (*Symphoricarpos albus*), bamboo, common nettle (*Urtica dioica*), bramble (*Rubus fruticosus*), and dog rose (*Rosa canina*).

Hedge 5: This was a short section of species-poor hedgerow which was located in the rear garden of house 201, running from east to west. Species included grape vine, buddleja (*Buddleja davidii*), rose (*rosalpp.*), hazel (*Corylus avellana*), common nettle (*Urtica dioica*) and ivy (*Hedera helix*).

Hedge 6: This was a short section of species-poor hedgerow which was located in the north of the site, separating gardens 205 and 207. Species included cotoneaster sp., ivy (*Hedera helix*), lilac (*Syringa vulgaris*) and English elm (*Ulmus procera*).

None of the hedgerows were assessed as ‘important’ under the hedgerow regulations.

5.2.2 Amenity grassland



Photo 7: amenity grassland, house 199



Photo 8: amenity grassland

Houses 199, 205 and 207 had large lawns of amenity grassland within the rear gardens. Species diversity was poor with perennial rye grass (*Lolium perenne*), wood avens (*Geum urbanum*), clover (*Trifolium spp.*), ribwort plantain (*Plantago lanceolata*), daisy (*Bellis perennis*), and perennial rye grass (*Lolium perenne*).

5.2.3 Semi-improved grassland



Photo 9: semi-improved grassland



Photo 10: semi-improved grassland

The joint residential gardens of 201 and 203 were dominated by semi-improved grassland with a traditional orchard in the south. Species included forgetmenot (*Myosotis sylvatica*), daisy (*Bellis perennis*), dandelion (*Taraxacum officinale*), red clover (*Trifolium spp.*), ribwort plantain (*Plantago lanceolata*), false oat grass (*Arrhenatherum elatius*), cock's foot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), creeping bent (*Agrostis stolonifera*), buddleja (*Buddleja davidii*), willowherb (*Epilobium spp.*), yarrow (*Achillea millefolium*) and black medick (*Medicago lupulina*).

5.2.4 Scattered scrub



Photo 11: scattered scrub

There were a few small areas of scattered scrub, particularly adjacent to the southern site boundary. Species in this area included bramble (*Rubus fruticosus*), snowberry (*Symphoricarpos albus*), buddleja (*Buddleja davidii*) and common nettle (*Urtica dioica*).

5.2.5 Introduced shrub



Photo 12: introduced shrubs



Photo 13: introduced bamboo

There were a number small areas of introduced ornamental shrubs throughout the gardens. These areas were dominated by non-native species such as red lantern (*Banksia caleyi*), mint (*Mentha spp.*) buddleja (*Buddleja davidii*), Clematis spp., rose (*Rosa spp.*), lavender (*Lavandula spp.*), field bindweed (*Convolvulus arvensis*), wood avens (*Geum urbanum*), jasmine (*Jasminum spp.*) and honeysuckle (*Lonicera periclymenum*). There were also several clumps of bamboo towards the south of the gardens which had started to spread across the site.

5.2.6 Fruit Trees (Orchard)



Photo 14: orchard



Photo 15: orchard

A small group of planted fruit trees was located in the southern part of the semi-improved grassland, comprising different varieties of apple (*Malus domestica*), walnut (*Juglans regia*), plum (*Prunus spp.*) and hazel (*Corylus avellana*) coppice. Mistletoe (*Viscum album*) was noted growing on a number of the fruit trees.

5.2.7 Vegetable patch



Photo 16: introduced shrub

Several vegetable patches were present within the rear gardens of house 205.

5.2.8 Ponds



Photo 17: pond 4



Photo 18: pond 2



Photo 19: pond 3



Photo 20: pond 1

There were four ponds on site, as shown in figure 6 and described below:

Figure 6 ponds on site



Pond 1 was located in the north-east of the site, to the rear of house 207. This was a man-made pond with paving slabs around the edges and artificial pond liner. Some aquatic invertebrates were observed in the water and there were a range of aquatic plants.

Pond 2 was located in the north-east of the site, to the rear of house 205. This was a man-made pond which was covered with netting at the time of survey. Paving slabs were around the pond edges and there was a steep drop into the pond. Few aquatic invertebrates and plants were observed.

Pond 3 was located in the south-east of the site, to the rear of house 205. The pond was heavily shaded and was completely dry at the time of survey with a dense layer of leaf litter. Some reeds were noted growing in the centre of the pond. There was suitable terrestrial habitat close to the pond edges.

Pond 4 was located in the south-east of the site, to the rear of house 207. The pond was moderately shaded and had dense vegetation growing throughout the pond. There was some suitable terrestrial habitat close to the pond edges.

5.2.9 Hard standing



Photo 21: hard standing



Photo 22: hard standing

There were areas of hard standing scattered throughout the site, including tarmac and gravel driveways and paving patio areas. These areas had negligible ecological value.

5.2.10 Built structures



Photo 23: Number 203 & 205 Henley Road



Photo 24: garden shed

There were several built structures across the site; including three detached residential dwellings, along with associated garages and outbuildings, and a number of sheds and greenhouses within the residential gardens. The built structures are described in detail in section 6.

6.0 ASSESSMENT FOR PROTECTED SPECIES

The background data search and phase 1 habitat assessment have been used to inform the assessment for protected species outlined in the following sections.

6.1 Methodology

6.1.1 Badger (and other terrestrial mammals)

The survey for badgers included a search of the development site for any evidence of badgers, including setts, foraging signs (snuffle holes), runs and latrines.

6.1.2 Hedgehog

There is no standardised survey technique for this BAP species however, hedgerows and other habitats within the site were assessed for their potential to support hedgehogs, and visually for evidence of hedgehogs themselves or their droppings.

6.1.3 Otter and water vole

All waterbodies on site were assessed for their potential to support riparian mammals. The banks of the stream were visually inspected for evidence of water vole and otter including mammal holes, mammal trails, droppings and feeding remains.

6.1.4 Hazel dormouse

The survey included an assessment of the potential of the site for hazel dormice, focusing on the connectivity and suitability of the habitat on site, as well as a search for evidence of hazel dormouse feeding signs.

6.1.5 Amphibians

The habitats on site were assessed for their potential to support amphibian species, including great crested newts (GCN) *Triturus cristatus*. Surveys for GCN were informed by the *Great Crested Newt Conservation Handbook*, Froglife 2001. The site was examined for suitable waterbodies and for breeding terrestrial habitat. Terrestrial habitats providing sufficiently structured vegetation in which amphibians may forage or hibernate over winter were also surveyed for. In addition to the on site assessment, a desktop analysis of ponds within 500 metres of the site was undertaken, to identify any potential breeding ponds which may require further survey. Ponds within 500metres of the site were mapped on GIS with a topographic base map.

6.1.6 Birds

The bird survey included an assessment of the habitats on site for their potential to support breeding birds. Bird species and nesting birds were recorded during all visits to the site and this included a search for bird nests within the built structures on site.

6.1.7 Invertebrates

Due to the many invertebrate taxonomic groups that exist, the often large differences in invertebrate diversity between habitats and the many survey techniques available, invertebrate surveys are highly specific to the site in question. Therefore, an assessment of the potential site for invertebrates was undertaken, including the need for any targeted surveys.

6.1.8 Reptiles

The survey methodology for this assessment was informed by the *Froglife Advice Sheet 10 – Surveying for Reptiles*. Forty refugia were positioned in suitable habitat around the site, focusing on the grassland fringes and scrub. The site is approximately 0.9 Ha in size, but approximately two thirds of the site was composed of close mown amenity grassland or hard standing which had negligible potential for reptiles. Approximately 0.4ha of the site is made up of habitat deemed suitable for reptiles and the density of refugia in these areas equates to 100 refugia per hectare, which greatly exceeds the minimum refugia rate in Froglife (5 – 10 per ha).

The reptile mats were deployed around the site on 20th July 2016 and a presence/absence survey undertaken on seven occasions between 23rd August – 15th September 2016.

An additional eight visits were undertaken between 19th September and 12th October 2016 to gather further information to estimate relative population size on site and inform the scope of mitigation required. Although the Froglife guidance recommends at least 20 visits to assess population size, it also notes that this '*depends on the objective of the survey, the size of the site and the size of the reptile population*'. For this site, a total of 15 visits was deemed a proportional survey effort considering its small size, the significant increase in refugia numbers deployed, the relatively low numbers observed in the presence/absence surveys and the limited habitat suitable for reptiles.

6.1.9 Bats

The methodology for the bat survey has been informed by the Bat Conservation Trust *Bat Surveys Good Practice Guidelines 2016*. The habitats on site were assessed for their suitability for foraging and commuting bats and the potential for roosting bats. Additionally, the following surveys and assessment were undertaken:

Building Inspection

Physical external site inspection of the buildings on site were undertaken by the survey team. The surveyors conducted this inspection using the equipment described below to assist the inspection, and approximately 2.5 hours of search effort was expended. A 3.8m telescopic ladder was used to gain access to various points and a CLU-10 (1 million candlepower) searchlight fitted with a red filter was used to search dark areas for signs of bats. Pentax 0.5m Papilio (8.5x21) close focusing binoculars were used to view areas inaccessible on foot. A telescopic inspection mirror was used to look on top of structures for evidence of bats.

Following the inspection, an assessment was made of each building for bat roosting potential. This assessment incorporated external features of the building and focussed on aspects including access points, cracks and crevices, buildings age and construction, environmental variables, and geographic location.

Dawn/Dusk and activity surveys

The structures on site were assessed as having either ‘moderate’ or ‘high’ potential for bats. BCT guidance recommends that structures with ‘*High Roost Suitability*’ should be subject to ‘*Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn*’. It also recommends that surveys should take place from ‘*May to September with at least two of surveys between May and August*’, and that surveys it is recommended that ‘*surveys are spaced at least two weeks apart*’.

Drawing on this guidance, the following survey effort was undertaken:

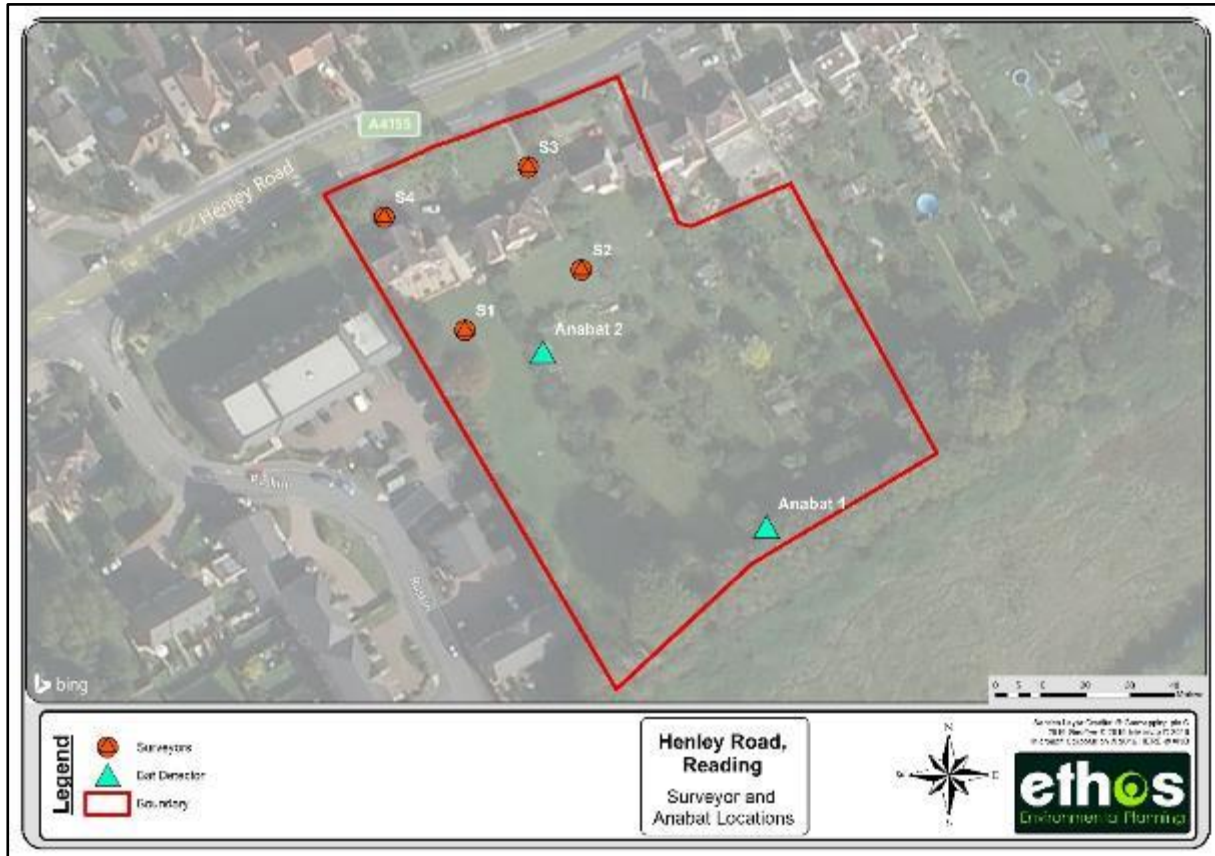
- Three dusk emergent surveys were undertaken on the built structures on site on 20/07/16, 31/08/16 and 07/09/16. This is one additional survey than recommended by the BCT guidance, the first two of the surveys were undertaken between May and August, and there was more than two weeks between these surveys;
- A dawn survey was undertaken on 15/09/16;
- The surveys focused on the three main residential dwellings located to the north of the site. Four surveyors were positioned to be able to observe all sides of the buildings with greatest bat potential. As the structures were very close together, the surveyors were able to observe all aspects of the buildings, as shown in figure 7;
- This also allowed T1 on the boundary to be surveyed (see figure 9).
- Following the emergent surveys, the surveyors walked a transect around the site (including the hedgerows, scattered trees, built structures and across the centre of the semi-improved grassland) to record bat activity across the site.

The bat detectors used during the surveys were a Batbox Griffin full spectrum detector, Elekon Batlogger and a Wildlife Acoustics Echo Meter Touch. All calls recorded were analysed using Batsound V4 and Bat Explorer software.

Passive bat detector surveys

Anabat Express passive detectors were deployed at three locations across the site during August and September, as shown on figure 7. All calls recorded were analysed using Kaleidoscope Software.

Figure 7 Location of passive bat detectors and surveyors during emergence surveys



6.2 Results

6.2.1 Badger

The background data search returned records of badger (*Meles meles*) within 1km of the site. There was suitable habitat on site for this species, with the fruit trees within the scattered trees and the hedgerows providing excellent potential foraging opportunities.

Mammal droppings attributed to badger (*Meles meles*) were found in the orchard area and mammal trails were present throughout the semi-improved grassland beneath the orchard. Two mammal holes were observed at the site; one beneath a shed in the centre of the site and the other in a compost heap in the south-western corner of the site. The holes were rounded rather than the D-shape typical of badger (*Meles meles*) setts and had a faint odour of fox (*Vulpes vulpes*).

Further camera trap surveys were carried out on the hole beneath the shed and no mammals were recorded using the hole (cameras were deployed from 22/08/16 – 15/09/16), thus it was assumed that the hole is not in regular use.



Photo 25: Badger (*Meles meles*) droppings



Photo 26: Mammal trail leading beneath fence between gardens 203 and 205

6.2.2 Hedgehog

The data search returned records of hedgehogs within 1km of the site, however no evidence of hedgehogs was found on site; although habitats on site were assessed to be suitable – with areas of scattered scrub to provide shelter and grassland for foraging.

6.2.3 Otter and water vole

Otter (*Lutra lutra*) presence has been recorded within 1km of the site but there were no records of water vole (*Arvicola amphibius*). There is suitable habitat in the wider environment with the River Thames and Caversham Lakes, located within a 1km radius of the site to the south. The four ponds on site were assessed as being too small to be of value to foraging otter (*Lutra lutra*). The stream located immediately offsite was slow-flowing with very low water levels at the time of survey. Very little vegetation was present in the stream and there was poor water quality which could be attributed to its urban location. No mammal holes were observed in the banks of the stream and no evidence of riparian mammals was observed.

6.2.4 Hazel dormouse

The data search did not return any records of hazel dormice within 1km of the site and no evidence of hazel dormice was found on site during the search of the hedgerows. Although a small number of the hedgerows and scrub contained species known to be food sources for dormice, they lacked connections with other suitable habitats in the wider environment.

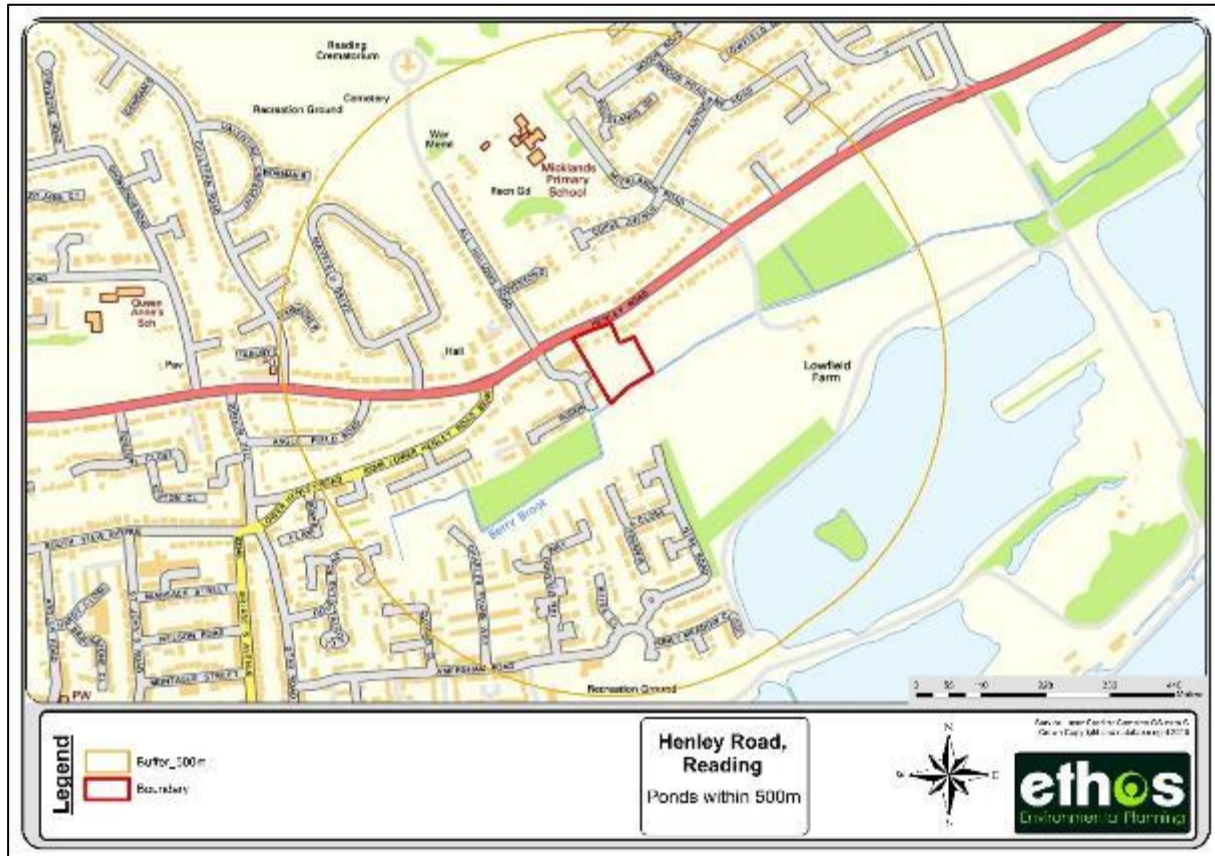
6.2.5 Great crested newt

The background data search no records of GCN within 1km of the site. There were four ponds on site (as described in section 5.2.8). Ponds 1, 2 and 4 scored 'below average' in the Habitat Suitability Index (HSI) assessment and pond 3 scored 'poor'.

The majority of the terrestrial habitats on site were typical of urban gardens with short-mown amenity grassland, introduced shrubs and hard standing which had low value for foraging amphibians. The highest quality terrestrial habitat was located adjacent to the stream in the south of the site.

There was only one other water body within 500metres of the site, as shown in figure 8.

Figure 8: Waterbodies within 500 metres of the site



6.2.6 Birds

The mature trees, hedgerows and introduced shrub were assessed as providing potential habitat for nesting and foraging birds. The traditional orchard provided potential foraging habitat for a wide range of bird species such as thrushes. Several of the outbuildings were located adjacent to hedgerows and other dense vegetation, were undisturbed and also provided suitable nest sites. The following bird species were observed during visits to the site: mistle thrush (*Turdus viscivorus*), great spotted woodpecker (*Dendrocopos major*), sparrowhawk (*Accipiter nisus*), blue tit (*Cyanistes caeruleus*), great tit (*Parus major*), blackbird (*Turdus merula*), wood pigeon (*Columba palumbus*), collared dove (*Streptopelia decaocto*) and pheasant (*Phasianus colchicus*).

6.2.7 Invertebrates

The hedgerows, semi-improved grassland and introduced shrubs on site provided potential foraging grounds and refugia for a range of invertebrate species, with the species-rich hedgerows, orchard and stream running along the south of the site providing high quality habitat. The remainder of the habitats on site – hard standing, built structures and short sward amenity grassland provided limited opportunities for invertebrates.

6.2.8 Reptiles

The preliminary appraisal and phase 1 habitat survey identified potential habitat for reptiles in the scrub edges and the semi-improved grassland beneath the traditional orchard.

Subsequently, a series of reptile checks were carried out at the site and the results are shown in table 1 below. Surveys 1 – 7 show the results of the presence/absence survey, surveys 8 – 15 are additional surveys undertaken to assess the population size.

Table 1 *Reptile survey results*

Survey No.	Date/Time	Environmental conditions	Results
1	23/08/16 10:00	17°C, 1/8 cloud, 2 mph avg. wind, 6mph max wind, 73% relative humidity, dry.	No reptiles
2	29/08/16 18:00	18°C, 2/8 cloud, 2 mph avg. wind, 4mph max wind, 43% relative humidity, dry.	1M slow worm
3	31/08/16 17:00	12°C, 3/8 cloud, 4 mph avg. wind, 6mph max wind, 77% relative humidity, dry.	2 M, 1F slow worms
4	02/09/16 11:00	20°C, 6/8 cloud, 5 mph avg. wind, 11mph max wind, 81% relative humidity, dry.	No reptiles
5	07/09/16 17:00	18°C, 2/8 cloud, 4 mph avg. wind, 6mph max wind, 70% relative humidity, dry.	No reptiles
6	12/09/16 10:00	15°C, 7/8 cloud, 7 mph avg. wind, 12mph max wind, 71% relative humidity, dry.	1 adult grass snake (sex not confirmed)
7	15/09/16 11:00	17°C, 5/8 cloud, 3mph avg. wind, 7mph max wind, 79% relative humidity, dry.	1M slow worm
8	19/09/2016 10:25	14 °C, 3/8 cloud, 3mph avg. wind, 6mph max wind, 77% relative humidity, dry.	No reptiles
9	22/09/2016 09:10	14 °C, 3/8 cloud, 2mph avg. wind, 4mph max wind, 74% relative humidity, dry.	No reptiles
10	26/09/2016 10:20	15 °C, 5/8 cloud, 2mph avg. wind, 5mph max wind, 69% relative humidity, dry.	1F slow worm
11	30/09/2016 09:10	12 °C, 7/8 cloud, 4mph avg. wind, 4mph max wind, 77% relative humidity, dry.	No reptiles
12	03/10/2016 18:10	9 °C, 3/8 cloud, 3mph avg. wind, 4mph max wind, 69% relative humidity, dry.	No reptiles
13	04/10/2016 09:45	12 °C, 6/8 cloud, 5mph avg. wind, 6mph max wind, 73% relative humidity, dry.	No reptiles
14	07/10/2016 17:30	13 °C, 7/8 cloud, 4mph avg. wind, 5mph max wind, 76% relative humidity, dry.	1 F, 1M slow worm
15	12/10/2016 16:20	13 °C, 4/8 cloud, 2mph avg. wind, 3mph max wind, 80% relative humidity, dry.	1 M slow worm

6.2.9 Bats

6.2.9.1 *Habitat*

The hedgerows, in particular hedgerow 4 along the southern boundary and hedges 2 and 3 in the west of the site provided potential foraging and commuting habitat for common bat species. The traditional orchard and introduced shrubs provided potential foraging habitat in the centre of the site.

The wider environment contained a mosaic of habitats with high potential for foraging and commuting bats, including residential gardens, hedgerows, fields and Caversham lakes.

6.2.9.2 Tree survey

The tree survey found the following trees with features suitable for roosting bats, as shown on figure 9:

Figure 9 Trees with bat potential



Tree 1: this was a mature horse chestnut (*Aesculus hippocastanum*) tree with two woodpecker holes located approximately 4metres high on the main trunk. The tree was classified as 'Category 1' – high potential for roosting bats. During one emergence survey of the built structures on site, a surveyor was located adjacent to the horse chestnut (*Aesculus hippocastanum*) tree and a common pipistrelle was observed emerging from it.

Tree 2: this was a mature beech (*Fagus sylvatica*) tree with dense ivy (*Hedera helix*) covering the main trunk. The tree was classified as 'Category 1' – high potential for roosting bats.

Tree 3: this was a mature beech (*Fagus sylvatica*) tree within the southern hedgerow which had a slight covering of ivy (*Hedera helix*). The tree was classified as 'Category 2' – no obvious features but of a size and age where further surveys could find features suitable for roosting bats.



Photo 27: Tree 1



Photo 28: Tree 2

6.2.9.2 Building Inspection

Figure 10 Buildings on site



Building 199 (residential dwelling, no 199. Henley Road)

This was a two storey residential dwelling with brick walls with a relatively recent extension at the western elevation. The roof was composed of clay tiles which were generally in good condition although there were a few missing and raised tiles at the eastern elevation which provided potential access into the roof void. There were wooden fascia boards, of which parts were rotten, with gaps between the fascia boards and the walls, particularly at the southern elevation. There were wooden soffits which were in moderate condition and lead flashing was present around the chimney and roof joins. The features on the modern extension were in excellent condition; tight-fitting and with no potential access points. There were external wooden beams at the northern elevation and pebble dashing on the top half of the building.

Internally there were two loft voids; one over the original building and one over the modern extension which tied into the original roof.

The modern loft had wooden panels where it tied into the original building, plastic sarking which had no gaps, and tight-fitting breezeblocks at the gable end. No evidence of bats was observed and the modern plastic sarking was considered to reduce the suitability of the loft for roosting bats.

The loft over the original building was large, with a high pitched roof. There was wooden panel sarking which was tight-fitting, and wooden purling, rafters and ridge beam. There were small gaps at the gable ends which provided potential access for bats and a cluster of approximately 30 bat droppings were found at the southern gable end. Some of the droppings were stuck to the wall which indicated that bats were using the gap between the brick wall and the roof. The droppings were fresh, and three new droppings were found during a subsequent inspection of the loft. As a result of these findings, it was confirmed that the building had **high potential** as a bat roost.



Photo 29: Building 199 front (north)



Photo 30: Building 199 rear (east)



Photo 32: building 199 rear porch (east)



Photo 33: building 199 gaps in soffits



Photo 34: building 199 loft



Photo 35: building 199 loft



Photo 36: building 199 bat droppings



Photo 37: building 199 new loft

Building 199a - shed

This was a wooden shed with wooden panel walls and a slightly pitched roof composed of felt. The structure lacked features suitable for roosting bats and was assessed as having **negligible potential** for roosting bats.



Photo 40: building 1a

Building 201 – Number 201 Henley Road

This was a two and a half storey residential dwelling with brick walls and pebble dashing on the second storey. The hip roof was clad in clay tiles, with many having slipped or missing, and the clay ridge had gaps at the ridge tiles. The house had wooden soffits and fascia boards, which left some gaps next to the walls, and there were also gaps in the lead flashing on the roof.

Internally the majority of the loft space had been converted into living accommodation, however, there were narrow roof voids at the edges. These roof voids had dense insulation between chipboard sarking and the roof tiles which greatly reduced the suitability for roosting bats. No evidence of bats was found within the loft void.

Although no evidence of bats was found, due to the high number of slipped roof tiles and age of the building, it was assessed that the building had **moderate potential** for roosting bats.



Photo 41: Building 201 – northern elevation



Photo 42: Building 201 – south elevation

*Photo 43: Building 201 slipped tiles**Photo 44: Building 201 south elevation**Photo 45: Building 201 loft**Photo 46: Building 201 loft*

Building 201a - shed

This was a dilapidated shed with walls composed out of a mixture of wooden panels and clear corrugated plastic which had large gaps. The roof was pitched and composed partially of corrugated metal and felt which was in poor condition. There were lots of cobwebs within the shed and no evidence of bats was found. The shed was quite damp inside and overall, it was assessed as having **negligible potential** for roosting bats.

*Photo 47: building 201a on right**Photo 48: building 201a*

*Photo 49: building 201 a**Photo 50: building 201 a*

Building 203 – Residential dwelling No. 203 Henley Road

This two storey building had brick walls covered with pebble dashing on the upper half of the structure, and a pitched roof with clay tiles. The roof had gables to the east, west and south and many of the clay tiles were slipped or missing, particularly in the joins between different sections of roof. The pebble-dashing was in poor condition and there were many crevices where gaps had formed.

Internally, there was a loft void which was open and free of clutter. The clay roof tiles were attached directly onto wooden rafters with no sarking and there was wooden purling. No evidence of bats was found within the loft space, although the search was hampered by the extremely thick layer of dirt/dust on the loft floor.

There was a coal shed beneath the main structure which had wooden beams and brick walls. There were no potential entry points to the shed and the interior was heavily cobwebbed.

Although no evidence of bats was found, due to the high number of slipped roof tiles and age of the building, it was assessed that the building had **moderate potential** for roosting bats.

*Photo 51: building 203 north elevation**Photo 52: building 203 southern elevation*

*Photo 53: building 203 coal shed**Photo 54: building 203 damaged pebble dashing**Photo 55: building 203 loft**Photo 56: building 203 loft*

Buildings 203a, 203b, 205b, 205d, and 207d (sheds)

These were varying styles of sheds, located in the south of gardens 201 – 207. The majority of the sheds had wooden panel walls with pitched roofs composed of roof felt. Shed 203a had wooden panel walls with a pitched, corrugated asbestos roof. Shed B207a was located adjacent to the southern hedgerow and was covered in dense vegetation. Overall, it was assessed that the sheds had **negligible potential** for roosting bats and no further surveys were required.

*Photo 57: building 205b**Photo 58: building 203b*



Photo 59: Building 205d



Photo 60: Building 207a



Photo 61: Building 203a

Buildings 205a and 205c (greenhouses)

Two greenhouses were located within the garden of Building 205. The greenhouses lacked features suitable for roosting bats and no further surveys were required.



Photo 62: greenhouse



Photo 63: greenhouse

Buildings 205 and 207 Henley Road

The residential dwellings at numbers 205 and 207 Henley Road was inspected for evidence of bats due to their close connection with the proposed development site. House 205 contained potential entry points and features suitable for bats, with approximately 10 bat droppings found in cobwebs at the gable end. No evidence of bats was found in number 207 and the structures had **negligible potential** for roosting bats.

6.2.9.3 Dawn/Dusk Surveys

A summary of the bat emergence surveys is included below:

Survey 1 – 20/07/16 (emergent)

Building 199: 4 common pipistrelles emerged from the main house, from the south-facing gable between the soffits and the wall. The bats were regularly foraging around the house and gardens for 30 minutes following emergence.

Building 201: 2 common pipistrelles and 3 soprano pipistrelles emerged from the main house, all from beneath roof tiles at the southern elevation. The bats were observed foraging around the house and gardens and then commuted south off site.

Building 203: 1 No bats emerged.

Tree 1: 1 common pipistrelle emerged from the woodpecker hole

Survey 2 – 31/08/16 (emergent)

Building 199: 4 common pipistrelles and 1 soprano pipistrelle emerged from the main house, from the south-facing gable between the soffits and the wall. The bats remained foraging along hedgerow 2 for the duration of the survey.

Building 201: 2 common pipistrelles and 4 soprano pipistrelles emerged from the main house, all from beneath roof tiles at the southern elevation. The bats then commuted south down hedgerow 3 or commuted into the garden of house 199.

Building 203: 1 soprano pipistrelle emerged from the main house, beneath roof tiles in the southern elevation where two sections of roof joined together.

Tree 1: 1 common pipistrelle emerged from the woodpecker hole.

Survey 3 - 07/09/16 (emergent)

Building 199: 2 common pipistrelles emerged from the main house, from the south-facing gable between the soffits and the wall.

Building 201: 1 common pipistrelle emerged from the main house, from beneath roof tiles at the southern elevation. The bat remained foraging in the garden to the south of the building.

Building 203: 2 soprano pipistrelles emerged from the main house, beneath roof tiles on the western elevation.

Tree 1: no bats observed emerging.

Survey 4 – 15/09/16 (Dawn re-entry)

Building 199: 2 common pipistrelles were observed around the house, re-entering around the southern gable end;

Building 201: A single common pipistrelle bat was observed swarming around the roof structure, the exact location of re-entry was not determined.

Building 203: no bats observed

Tree 1: no bats observed.

6.2.9.4 Activity surveys

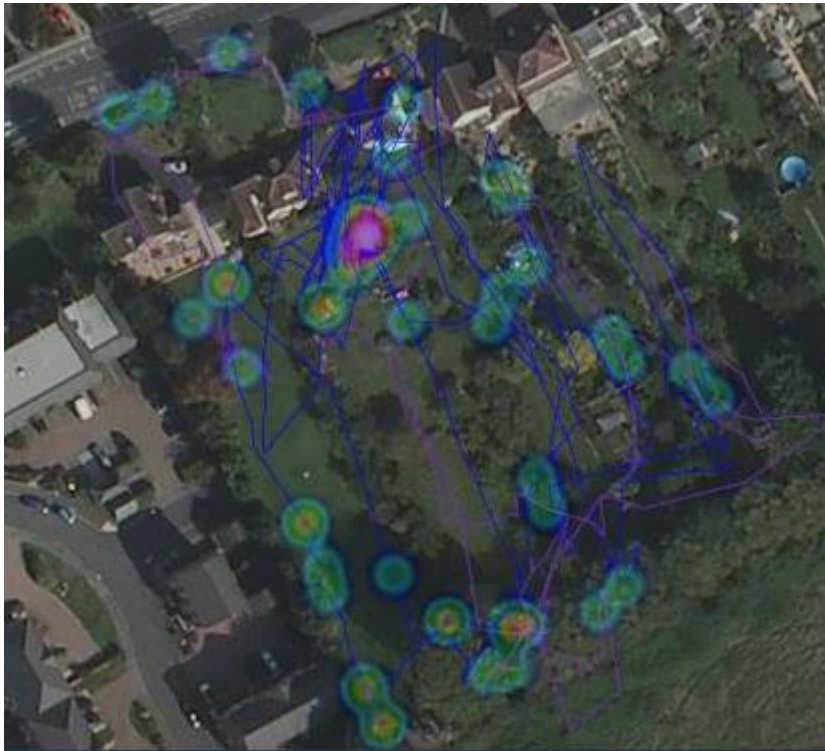
A summary of the bat activity on site is shown on figure 11, which is a summary of records made by the batlogger bat detector. It does not include calls recorded by other bat detectors, but provides a useful insight.

Bat activity was spread over the site, with the highest concentrations along the western hedgerow, to the south of the main residential dwellings (where the bats emerged from) and along the southern boundary.

The following species were recorded foraging at the site:

Common pipistrelle, soprano pipistrelle, Daubenton's, brown long eared, Noctule, serotine (*Eptesicus serotinus*) and Nathusius' pipistrelle.

Figure 11 Bat activity on site



6.2.9.5 Environmental variables

Table 2 Environmental variables on site

	20/07/16 Sunset: 21:08		31/08/16 Sunset: 19:50		07/09/16 Sunset: 19:35		15/09/16 Sunrise: 06:40	
Variable	Start	End	Start	End	Start	End	Start	End
Time	20.50	23.15	19:30	22.00	19:15	21:40	04.45	06.55
Temperature (°C)	18	16	19	16.5	22	19	14	15
Relative Humidity (%)	72	76	74	79	65	72	77	78
Cloud cover (oktas)	2/8	2/8	1/8	0/8	2/8	4/8	3/8	4/8
Precipitation	None	None	None	None	None	None	None	None
Average wind speed (mps)	0.5	0.3	0.2	0.0	0.0	0.1	0.3	0.4

6.2.9.6 Static bat detector results

The Anabat express detectors recorded the following bat calls:

Table 3 Passive bat detector results

Detector	Bat species	Number of records (first call)
Location 1: Traditional orchard (22/08/16 -29/08/16)	Common pipistrelle	710 (20:10)
	Soprano pipistrelle	442 (20:12)
	Noctule	22 (20:07)
	Leisler's	3 (21:21)
	Daubenton's	4 (00:30)
	Brown long-eared	88 (00:01)
Location 2: Hedgerow 3 (31/08/16 – 07/09/16)	Common pipistrelle	105 (19:55)
	Soprano pipistrelle	216 (20:00)
	Nathusius' pipistrelle	4 (21:27)
	Noctule	54 (19:26)
	Leisler's	5 (20:04)
	Daubenton's	47 (20:27)
	Brown long-eared	36 (00:08)

6.0 DISCUSSION

6.1 Habitats

The Habitats on site were assessed as being of generally low botanical value although they may hold low to moderate value for protected species such as reptiles, breeding birds and foraging bats. The highest value ecological features on site were the hedgerows and the orchard, both of which are BAP priority habitats. Whilst the majority of hedgerows are being retained on site, the central species-rich hedgerow and the northern part of the orchard are scheduled for removal. Recommendations in section 8 are included which, if carried out sympathetically to biodiversity, will compensate for the loss of the central hedgerow and the section of orchard. Cotoneaster was recorded in three locations on site. This is a Schedule 9 invasive species which should not be allowed to spread outside of the site and, therefore, will be removed.

6.2 Protected Species

Birds – moderate levels of bird activity were noted across the site, with the majority of activity recorded in the hedgerows. It was assessed to be likely that birds would be nesting seasonally in the hedgerows and mature trees. Some of the hedgerows, part of the traditional orchard and all of the outbuildings are scheduled for removal and therefore mitigation measures will be required to ensure that nesting birds are not harmed or disturbed and compensation will be required to offset the loss of this nesting habitat.

Reptiles – The reptile surveys found low numbers of two reptile species – slow worm (*Anguis fragilis*) and grass snake (*Natrix natrix*). The reptiles were observed in the semi-improved grassland and around the orchard. The remainder of the habitats on site were assessed as having low to negligible value for reptiles. In order to ensure that there is no negative impact on reptiles resulting from the development, a reptile mitigation strategy has been developed for the site and is outlined in section 9.

Bats – The bat surveys confirmed that the three main residential dwellings (199, 201 and 203) were all used by roosting bats. Low numbers of common and soprano pipistrelle bats were observed emerging/entering gaps beneath roof tiles during the surveys. The numbers of bats emerging/entering the structures varied on each survey which indicated that bats used the buildings on a transitional basis. The roost status was assessed as being of low conservation significance as defined in *Figure 4. Guidelines for proportionate mitigation* of the Bat Mitigation Guidelines (2004). A European Protected Species licence will be required in order to demolish the main residential dwellings and mitigation and compensation measures will be required. The remainder of the built structures on site were assessed as having negligible potential for roosting bats and no further actions are required in relation to these structures.

A common pipistrelle was observed emerging from Tree 1 during two of the emergent surveys and it was assessed that the tree was an occasional day roost for a maximum of 1 common pipistrelle bat. Current development proposals include the retention of this tree, however, if proposals seek its removal, a European Protected Species license will be required.

Eight bat species were recorded at the site across all surveys. Proposals include the removal of a number of the hedgerows in the centre of the site, including hedgerow 3 which was used by bats commuting from the roost in building 201. As this building is proposed for removal, and the roost will be lost, it was assessed that the removal of hedgerow 3 would not have an additional negative impact. However, recommendations to compensate for this loss are made in section 9.

Overall, it was assessed that with appropriate and proportional mitigation and compensation (section 9), the development of the site would not result in a significant negative impact on bat populations at a local level.

Invertebrates – The habitats on site have low – moderate value for invertebrates and relatively high numbers of bees and butterflies were observed feeding on the introduced shrubs in the front gardens and the central hedgerow contained some deadwood with potential for beetles. The highest quality habitat, however, was the southern and western hedgerow and, as these features are being retained, it was assessed that invertebrate populations will persist at the site following its development. Recommendations in relation to enhancing the site for invertebrates are made in section 9.

Badger – The habitats on site have moderate potential for badger (*Meles meles*) with the orchard providing potential foraging habitat. No badgers were recorded on site during the camera trap surveys and no mammals were recorded in the holes beneath the shed in the centre of the site. A mammal dropping consistent with badger was found in the traditional orchard and it is likely that badger forage at the site sporadically. Therefore, recommendations in relation to protecting badgers during construction and compensating for lost foraging habitat are made in section 9.

Great crested newt – There were four ponds on site, all scored 'poor' or 'below average' on the HSI assessment and were assessed as having negligible potential for GCN. The only other pond within 500metres of the site was a large lake located 310metres to the south-east of the site. The lake was surrounded by suitable terrestrial habitat and it was assessed that any GCN (if present) in the lake would use the suitable terrestrial habitat around the lake rather than travel such a significant distance to the site. Therefore, it was assessed that there was negligible potential for the presence GCN in terrestrial habitats on site, and no further surveys were required. Overall, the potential for GCN to be present on site was considered to be negligible, and a precautionary working method statement recommended for protection of reptiles during hedgerow clearance will also safeguard any amphibians which may be present.

Hazel dormice – The habitats on site have low - moderate potential for hazel dormouse, but as no evidence of hazel dormouse (*Muscardinus avellanarius*) was found in the data search, and habitat connectivity is poor, it is assessed that the potential for them to be present is negligible to low and no further recommendations are made in relation to this species.

8.0 CONCLUSIONS

8.1 Habitats

The majority of habitat currently occupying the site will be removed within the development proposals. Much of this habitat was assessed as having low-moderate ecological value (eg amenity grassland, introduced shrub, built structures and hard standing), however some features such as the species-rich hedgerow and the traditional orchard were assessed as having high value. It will therefore be important to adequately compensate for the loss of these habitats in order to comply with local planning policy and consequently, recommendations are made in section 9.

8.2 Protected Species

The site is used by roosting bats, reptiles, breeding birds and invertebrates. Mitigation, compensation and enhancement measures for these species will be required as part of the development proposals, and are outlined in section 9.

9.0 RECOMMENDATIONS

This section makes recommendations for mitigation, compensation and enhancement measures for ecology on the site. The key measures are detailed below:

9.1 Habitats

The development proposals include the retention of the boundary hedgerows, but the removal of the majority of vegetation in the centre of the site which includes a species-rich hedgerow, two ponds, short sections of species-poor hedgerows, introduced shrub, amenity grassland, and part of the semi-improved grassland and traditional orchard.

9.1.1 Wildlife buffer

The vegetation at the south of the site will be retained and enhanced to create a wildlife buffer and this will compensate for the loss of the habitats cleared during development of the site. The following recommendations are made in relation to the wildlife buffer:

- The two retained ponds in the south of the site will be enhanced to compensate for the loss of the two ponds in the north of the site. Currently the ponds are very shallow, have very low water levels and dense vegetation. It is recommended that the ponds are made deeper and wider and the vegetation is cleared. The ponds should then be left to fill naturally with rainwater and to colonise with plants;
- To compensate for the loss of the section of Orchard (which is a BAP habitat), 10 fruit trees will be planted in the wildlife buffer. These will include a range of apple, plum and pear;
- Selected vegetation removed during site clearance will be retained on site and used to create habitat piles in the wildlife buffer;
- The existing hedgerow will be enhanced with the planting of native species such as hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), rowan (*Sorbus aucuparia*) and English elm (*Ulmus procera*). This will enhance the site for a wide range of faunal species; and,
- Grassland areas will be sown with a species-rich seed mixture such as Emorsgate Seeds EM3 – Special General Purpose Meadow Mixture. This contains a wide range of herb and grass species which would provide foraging habitat to a range of invertebrates.

9.1.2 General habitat recommendations

- All proposed areas of amenity grassland (areas of open space and residential gardens) should be sown with Emorsgate Seeds EL1. This contains a range of slow growing grasses with a few wild flower species that both respond well to regular mowing and have value for butterflies and other pollinators; and,
- Proposed trees planted as part of the street scene should be native species. Suitable species include silver birch (*Betula pendula*) and rowan (*Sorbus aucuparia*) as they do not grow too large yet provide foraging habitat for a range of bird species.

9.2 Protected Species

9.2.1 Birds

The proposals include the protection of the boundary hedgerows which were a key habitat feature for breeding birds. The development proposals will require the clearance of vegetation in the centre of the site and demolition of the outbuildings. These activities have the potential to disturb nesting birds. In order to protect breeding birds on site, it is recommended that these areas are cleared outside of the bird nesting season (March to August inclusive) or else be subject to a pre-works check by a trained ecologist.

To compensate for the loss of the suitable nesting habitat, it is recommended that the retained southern boundary is enhanced with the planting of native species. It is recommended that six bird boxes are installed at the site to compensate for the temporary loss of nesting habitat. These should be of a style suitable for blue tits/great tits and robins/wrens.

To further enhance the site for breeding birds it is recommended that 6 bird boxes should be installed onto proposed dwellings at the site, facing out onto proposed hedgerows. These should be of a style suitable for house sparrows, swallows and house martins.

Legend:

- Free standing bat box
- Schweglar 2F bat box
- Bat Brick
- Swallow House martin / house sparrow box
- Blue/Great tit/Wren Robin) Box

Site Information:

199-207 Henley Road, Caversham, RG4 6LJ

Project Details:

MZA
Architectural & Planning
199-207 Henley Road
Caversham, RG4 6LJ
Tel: 01235 831111
Email: info@mza.co.uk
Website: www.mza.co.uk

9.2.2 Bats

It is concluded that the residential dwellings (199, 201 and 203) are day roosts for low numbers of common and soprano pipistrelle bats. Therefore, in order to demolish the existing dwelling and develop the site, a European Protected Species (EPS) license from Natural England will be required in order that the project can proceed post planning and a suitable mitigation, compensation, and enhancement strategy will be required. The license application will be to remove three day roosts of a maximum of 6 common pipistrelle bats and 4 soprano pipistrelle bats. Mitigation and compensation measures in relation to this are detailed below.

The current development proposals show the retention of Tree 1, which is a confirmed transitional roost for common pipistrelle bats. If the development seeks the removal of this tree, a license will be required from Natural England prior to its removal.

9.2.2.1 Replacement Roosts

It is therefore recommended that several replacement roosts capable of supporting pipistrelle species are erected around the site to provide a suitable range of environmental conditions and enhanced potential for roosting-shifting within the site boundary. To that end, it is recommended that the following three designs should be included within the site plan in accordance with figure 12:

- **A)** Two free-standing four-chamber bat house (can be custom-built or purchased). To be erected amongst vegetation along southern boundary;
- **B)** Two Schweglar 2F bat boxes will be installed into mature trees on the western and southern boundary; and,
- **C)** Additionally, 4 bat bricks (such as the Ibstock bat brick C) will be included in the walls of the new-build houses facing out onto the southern and western boundaries to further enhance the site by creating roosting opportunities for individual and small groups of bats.

9.2.2.2 Timing of Works

There will be a requirement for careful timing in relation to demolition of the existing dwelling to minimise the impact on bats as follows:

- The existing residential dwellings must be demolished during the bat inactive season (October – April inclusive). Prior to demolition the building must be inspected by a licensed bat worker (see section 2.4);
- The replacement roosts will be in place prior to demolition commencing.

9.2.2.3 Additional Recommendations

In addition to the measures outlined above, the development provides excellent opportunities for additional enhancements for bats on site. Some simple enhancements such as planting

native species such as Honeysuckle which are attractive to moths and other bat prey items, would increase the foraging opportunities on site. Planting of native shrubs and hedgerows would create corridors and increase the commuting potential on site. It is also recommended that an external lighting plan be agreed with the Local Planning Authority. This should ensure that there is no excessive external lighting of the proposed roost entrances.

9.2.2.4 Summary of mitigation and compensation plan

In order to develop the site and have regard for bats the recommendations made below must be adhered to in their entirety. Once planning permission is in place, a license application to Natural England will be made to demolish the roost on site, and implement the following mitigation and compensation measures:

1. The mitigation measures will include a timing restriction on demolition works (October – April inclusive). Prior to any demolition works on site the buildings will be checked by a bat licensed ecologist.
2. Before any works commencing, the retained bat expert will brief any site contractors on the presence of bat species, the legal implications of their presence and the appropriate procedures and control measures to be put in place.
3. A pre-commencement bat survey will be made by the retained bat expert 24 hours before works commence. If any bats are encountered works will immediately stop and the bat expert will consult with the authorities. The bat expert will attempt to rescue torpid bats, hold them in accordance with the Bat Workers Manual and relocate them to the replacement bat roost boxes on site.
4. Any gaps in the timbers, which have been recorded as clear of bats, will be plugged using clean rolls of newspaper into the holes which will remain in place during the soft stripping operations should this be required.
5. New Roost Creation – 4 replacement roost bat boxes and 4 bat bricks will be deployed in mature trees and on buildings across the site (figure 11).
6. An external lighting plan will be agreed with the Local Planning Authority. This should ensure that there is no excessive external lighting of the proposed roost entrances. Where required, light shielding/ hooding and restrictions shall be utilised to preserve darkened flight corridors to the principal bat mitigation features commuting routes and foraging areas.
7. Planting of native vegetation on site will help to enhance the site for bats foraging and provide linear corridors of movement through the site.

9.2.3 Reptiles

Mitigation

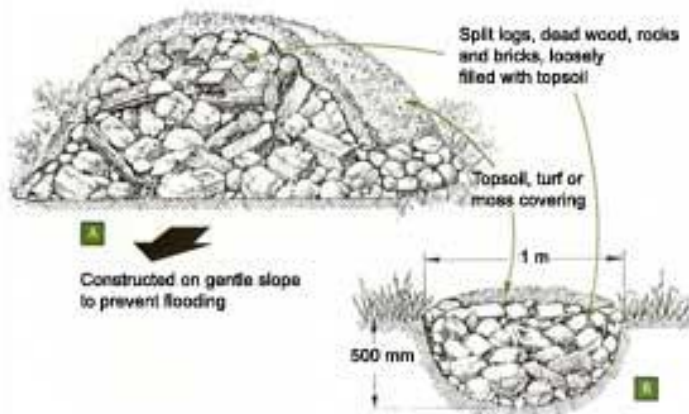
Low numbers of two reptile species were found on site, however as much of the site was made up of unsuitable habitat, it was assessed that a small scale translocation exercise and working method statement would ensure that there was no accidental injury or killing of animals during construction.

- Reptile fencing will be installed around the garden areas on site;

- The reptile receptor site will be prepared in advance of the reptile translocation, and will include the provision of two reptile hibernacula;
- Further reptile refugia will then be laid out across the remaining site inside the reptile fencing;
- These refugia will then be visited by a trained ecologist over a period of up to 30 days or until no reptiles are found for 5 consecutive visits;
- Any reptiles found will be relocated to the reptile receptor site;
- After approximately 15 days into the translocation period, an initial grass cutting regime will be implemented; this will involve the following:
 - strimming the grass within the site to a short sward, starting in the centre of the site and moving out, retaining a longer sward for 10 metres at the site fringes – this will encourage any remaining reptiles to move to these longer grass areas and assist with the translocation;
 - refugia from the short grass areas can then be moved to long grass areas;
 - Once the translocation is complete, the remaining long grass areas will be cut short and the whole site maintained as short grass prior to commencement of construction;
 - The hedgerows and grassland must be cleared using hand machinery to allow any animals to disperse into adjacent habitats.
- All of the recommendations outlined above will be undertaken in the months of April – September inclusive and prior to construction commencing.

Compensation

Two reptile hibernacula will be created in the reptile receptor site as shown in the diagram opposite. The receptor site will also be subject to ongoing management to ensure its suitability for reptiles (see management below).



Management

As slow worms require tussocky grassland with a thick thatch, the receptor site will be topped once every three years or alternatively that a third of the area is cut on a three year cycle. Reducing the cuts will enable thick thatch and tussocky grassland to develop. If a three year rotational cut is undertaken the grassland structure will be more varied and provide wider opportunities for hunting and basking whilst still maintaining cover.

Figure 13 Reptile mitigation strategy



9.2.4 General mitigation and enhancement measures

- Any excavations or trenches created during construction should either be covered at night time, or include ramps to allow animals to escape if they would fall in;
- Any external lighting used during construction should be switched off at night time to prevent disturbance to nocturnal animals; and
- Any proposed fencing should make use of permeable features that allow animals such as hedgehogs free movement around the site.

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APPENDIX 1 LEGISLATION AND POLICY DETAILS

A1.1 Legislation - Species

This section outlines the key legislation related to the habitats and species considered within this survey report.

Bats

All British bats are protected under Section 9 Schedule 5 of the Wildlife and Countryside Act 1981 and amendments. In addition, they are protected under the Berne Convention, they are given migratory species protection within the Bonn Convention Agreement, and are protected under Schedule 2 of the EC Council Directive on the Conservation of Natural Habitats and Wild Fauna and Flora (Habitats Directive).

Regulation 41 of The Conservation of Habitats and Species Regulation 2010 makes it an offence to deliberately capture or kill bats, to deliberately disturb a bat, damage or destroy a breeding site or resting site of any bat. It is an offence to disturb any bat roosting site. Presence of bats does not necessarily mean that development cannot go ahead, but that with suitable, approved mitigation, exemptions can be granted from the protection afforded to bats under regulation 41 by means of a licence. Natural England (NE) is the appropriate authority for determining licence applications for works associated with developments affecting bats, including demolition of their roost sites. In cases where licences are required, certain conditions have to be met to satisfy Natural England. Before the Statutory Nature Conservation Organisation (SNCO), in this case NE, can issue a licence to permit otherwise prohibited acts three tests have to be satisfied. These are:

1. Regulation 53(2)(e) states that licenses may be granted by SNCO to *‘preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment.*
2. Regulation 42(10)(a) states that a license may not be granted unless SNCO is satisfied *‘that there is no satisfactory alternative’.*
3. Regulation 42(10)(b) states that a license cannot be issued unless SNCO is satisfied that the action proposed *‘will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range’.*

In order to meet the tests, SNCO usually expects the planning position to be fully resolved as this is necessary to satisfy tests 1 and 2. Full planning permission, if applicable, will need to have been granted and any conditions relating to bats fully discharged. For test 3, the licensing body seek advice from Natural England. As well as consulting with Natural England, the licensing body may also seek information from the local authority before they will determine

any licence application. The licence application process may take two months before a licence is issued.

Reptiles

All reptile species in Great Britain receive some legal protection from legislation in the Wildlife and Countryside Act 1981. More recently, further protection was afforded in Great Britain to species listed in the Habitat Regulations 1994. Both the Wildlife and Countryside Act 1981 and Habitat Regulations 1994 provide mechanisms to protect species, their habitats and sites occupied by the species. Native reptile species fit into two bands of protection:

European protected species receive all elements of protection in Section 9 of the Wildlife and Countryside Act 1981 and the Habitat Regulations 1994. Native species that receive this protection are:

- Sand lizards (*Lacerta agilis*)
- Smooth snakes (*Coronella austriaca*)

This legislation prohibits the following on any of the above species:

- Deliberately or intentionally killing and capturing (taking) or intentional injuring.
- Deliberately disturbing
- Deliberately taking or destroying eggs
- Damaging or destroying a breeding site or resting place or intentionally damaging a place used for shelter or protection.
- Intentionally obstructing access to a place used for shelter; and keeping, transporting, selling or exchanging; offering for sale or advertising.

Species that receive protection against intentional killing, injuring and sale only:

- Slow-worm (*Anguis fragilis*)
- Common lizard (*Lacerta vivipara*)
- Adder (*Vipera berus*)
- Grass snake (*Naatrix natrix*)

Both the Wildlife and Countryside Act 1981 and the Habitat Regulations 1994 apply to all life stages of the protected species: eggs and spawn, larvae, juveniles and adults are all protected.

Badgers

The Protection of Badgers Act 1992 is based primarily on the need to protect badgers from baiting and deliberate harm or injury. It also contains restrictions that apply more widely and it is important for developers to know how this may affect their work. All the following are criminal offences:

- to willfully kill, injure, take, possess or cruelly ill-treat a badger;
- to attempt to do so; or

- to intentionally or recklessly interfere with a sett.

Sett interference includes damaging or destroying a sett, obstructing access to a sett, and disturbing a badger whilst it is occupying a sett. It is not illegal, and therefore a licence is not required, to carry out disturbing activities in the vicinity of a sett if no badger is disturbed and the sett is not damaged or obstructed.

Development should not be permitted unless it is possible to take steps to ensure the survival of the badgers in their existing range and at the same population status, with provision of adequate alternative habitats if setts and foraging areas are destroyed. Natural England will normally only issue a licence after detailed planning permission has been granted, where applicable, so that there is no conflict with the planning process.

Before the planning application is determined, the local planning authority should request a detailed ecological survey/report and developers should be prepared to provide the following information:

- The numbers and status of badger setts and foraging areas that are affected by the proposal;
- the impact that the proposal is likely to have on badgers and what can be done by way of mitigation;
- judgment on whether the impact is necessary or acceptable; and
- a recommendation on whether a licence will be required.

Planning Permission and badger licensing are separate legal functions. Thus receiving planning permission from the Local Authority is no guarantee that development operations will not breach the Protection of Badgers Act 1992. Similarly planning permission does not guarantee that a badger licence will be granted.

Birds

All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended) and cannot be killed or taken, their nests and eggs taken, damaged or destroyed, it also prohibits or controls certain methods of killing or taking except under licence. Other activities that are prohibited include possession and sale. Activities such as killing or taking birds (including relocating) which would otherwise be illegal can be carried out under licence where there is suitable justification and the issue cannot be resolved by alternative means.

Specially protected or Schedule 1 birds receive full protection under the Wildlife and Countryside Act 1981 (as amended). Part I birds are protected at all times, Part II during the close season only. In addition to the protection from killing or taking that all birds, their nests and eggs have under the Act, Schedule 1 birds and their young must not be disturbed at the nest.

Hazel Dormouse

They are protected under both the Conservation of Habitats and Species Regulations 2010 and the Wildlife and Countryside Act 1981 (as amended). Dormice and their breeding sites and

resting places are fully protected. Without a licence it is an offence for anyone to deliberately disturb, capture, injure or kill them. It is also an offence to damage or destroy their breeding or resting places, to disturb or obstruct access to any place used by them for shelter. It is also an offence to possess, or sell a wild dormouse.

Great Crested Newts

Great crested newts are fully protected under UK and European legislation:

- Bern Convention 1979: Appendix III
- Wildlife & Countryside Act (as Amended) 1981: Schedule 5
- EC Habitats Directive 1992: Annex II and IV
- Conservation (Natural Habitats etc.) Regulations 1994: Schedule 2
- Countryside Rights of Way Act 2000 (CRoW 2000)

Because great crested newts are listed on Schedule 5 of the Wildlife & Countryside Act 1981, Section 9(1) of the Act makes it an offence to intentionally kill, injure or take great crested newts. Section 9(2) makes it an offence to possess or control a live or dead great crested newt or any part or thing derived from them. Section 9(4) makes it an offence to intentionally damage, destroy, obstruct access to, any structure or place which great crested newts use for shelter or protection. It is also an offence to intentionally disturb them while occupying a structure or place which it uses for that purpose. Section 9(5) makes it an offence to sell, offer or expose for sale, or possess or transport for the purpose of sale, any live or dead great crested newt or any part or thing derived from them. It is also an offence to publish or cause to be published any advertisement likely to be understood as conveying that great crested newts, or parts or derived things of them are bought, sold or are intended to be. Section 9 applies to all stages in their life cycle.

Their inclusion on Schedule 2 of the Conservation Regulations 1994 affords great crested newts extra protection by also making it an offence under Regulation 39(1) to deliberately capture, kill or disturb great crested newts or to deliberately take or destroy their eggs, or damage or destroy a breeding site or resting place. Regulation 39(2) makes it an offence to keep, or transport, or exchange great crested newts or any part or thing derived from them. Paragraphs 39(1) and 39(2) apply to all stages of their life cycle.

A1.2 Legislation - Habitats

Special Areas of Conservation

The legal requirements relating to the designation, protection and management of SACs in England are set out in the Conservation of Habitats and Species Regulations 2010 (SI No. 2010/490) (as amended), often referred to as 'the Habitats Regulations'. All terrestrial SACs in England are also Sites of Special Scientific Interest (SSSIs). The additional SAC designation is recognition that some or all of the wildlife habitats and species within a SSSI are particularly valued in a European context and require additional protection.

The Habitats Regulations require that any plans, projects or activities which are proposed and require a permission of some kind and may significantly affect a SAC must be subject to special

scrutiny and first require a detailed ‘appropriate assessment’. The decision-making authority may only permit or undertake the proposals if the assessment concludes that there would no adverse effect on the integrity of the SAC. Where it cannot reach this conclusion, the project can then only proceed in particular circumstances. This process allows those proposals which clearly will not impact upon the special European wildlife interest of a SAC to proceed. Natural England is able to provide advice to authorities on how proposed activities can avoid adverse impacts on a SAC.

Under the Habitats Regulations planning authorities must also require that any permitted development normally carried out under a general planning permission but which may affect a SAC requires further approval before being undertaken.

As the statutory nature conservation body in England, Natural England is duty bound to ensure that SACs are protected and managed favourably for conservation in line with the requirements of the Habitats Directive. Our experience is that it is usually possible to find mutually acceptable solutions where sustainable land use and wildlife can flourish.

A1.3 Policy considerations

This section considers key policies that are relevant to ecology and development of the site.

National Planning Policy

NPPF policy 109: Conserving and enhancing the natural environment

The planning system should contribute to and enhance the natural and local environment by:

- *protecting and enhancing valued landscapes, geological conservation interests and soils;*
- *recognising the wider benefits of ecosystem services;*
- *minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government’s commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
- *preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and*
- *remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.*

Local policy

Epsom Ewell Borough Council adopted a Core Strategy Planning Document in 2007, which sets the overall planning framework for the Borough and contains a number of key strategic policies. The following highlights the key policy from this document and assesses the development proposals against it:

Policy CS 3

The biodiversity of Epsom and Ewell will be conserved and enhanced through the support for measures which meet the objectives of national and local biodiversity action plans in terms of species and habitat. Sites that are designated for their nature conservation attributes will be afforded protection appropriate to their designation. Sites of Special Scientific Interest and Ancient Woodland will be afforded the highest level of protection. Development which harms the scientific interest of these areas will not be permitted. Development that would harm Grade 2, Grade 3 SNCIs or Local Nature Reserves will not be permitted unless:

- suitable mitigation measures are put in place, and
- it has been demonstrated that the benefits of a development would outweigh the harm caused.

Elsewhere, development that is detrimental to the Borough's biodiversity will be minimised, and where it does take place, adequate mitigating measures should be provided. Wherever possible, new development should contribute positively towards the Borough's biodiversity.

The site is not designated for nature conservation and is insufficiently close to a designated site for the development to have any effect on a protected area. The development will have some detrimental effects on habitats on site due to the removal of a species-rich hedgerow, however it is assessed that the recommendations made in this report adequately mitigate and compensate for this loss.

Appendix II Habitat Suitability Index Assessment

Parameter	Description	Pond 1		Pond 2		Pond 3		Pond 4	
		Score	Index	Score	Index	Score	Index	Score	Index
Location	England = optimal	Optimal	1.00	Optimal	1.00	Optimal	1.00	Optimal	1.00
Pond Area	Measure pond surface area (m ²) and round to nearest 50m ²	50.00	0.10	50.00	0.10	50.00	0.10	50.00	0.10
Pond Drying		Sometimes	0.50	Sometimes	0.50	Annually	0.10	Sometimes	0.50
Water Quality	Abundant/Moderate/Low invertebrate community/Few submerged plants/clearly polluted	Moderate	0.67	Poor	0.33	Poor	0.33	Poor	0.33
Shade	Estimate percentage perimeter shaded to 3m from shore	0.00	1.00	30.00	1.00	100.00	0.20	80.00	0.60
Fowl	No evidence/present but little impact/severe impact	Absent	1.00	Absent	1.00	Absent	1.00	Absent	1.00
Fish	No records/no evidence but local conditions suggest they may be present/small number of carp, goldfish or stickleback/ dense populations	Absent	1.00	Possible	0.67	Absent	1.00	Absent	1.00
Ponds	Count number of ponds within 1km of survey pond, not separated by major barriers	4.00	0.69	4.00	0.69	4.00	0.69	4.00	0.69
Terrestrial Habitat		Poor	0.33	Poor	0.33	Moderate	0.67	Moderate	0.67
Macrophytes	Estimate percentage of pond surface occupied	30.00	0.60	10.00	0.40	0.00	0.30	100.00	0.80
		TOTAL		TOTAL		TOTAL		TOTAL	
		0.583		0.501		0.394		0.570	
		CATEGORY		CATEGORY		CATEGORY		CATEGORY	
		Below Average		Below Average		Poor		Below Average	