



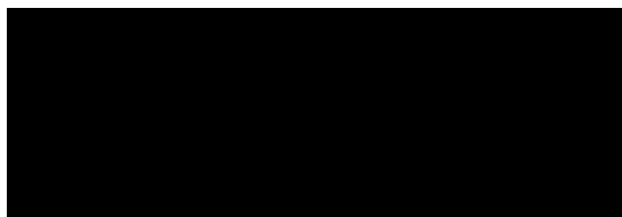
Persimmon Homes

**Dapper's Lane, Angmering,
West Sussex**

Preliminary Ecological Appraisal

December 2016

Wharf House, Wharf Road, Guildford, Surrey, GU1 4RP





Document Control

Project: Dapper's Lane, Angmering, West Sussex

Client: Persimmon Homes

Job Number: A085519-3

File Origin: \\lds-dc-vm-002\Group Ecology\Projects\Projects A085000 on\A085519-3
Dappers Lane Angmering\REPORTS

Issue 1		13/12/2016	ISSUE
Prepared by:			Rosie Pope GCIEEM Consultant Ecologist
Checked By:			Vivienne Greenough MCIEEM Senior Ecologist
Verified By:			Tamsin Clark MCIEEM Associate Ecologist

WYG Environment Planning Transport Ltd. accept no responsibility or liability for the use which is made of this document other than by the Client for the purpose for which it was originally commissioned and prepared.



Contents

Executive Summary.....	1
1.0 Introduction	2
1.1 Background	2
1.2 Site Location.....	2
1.3 Development Proposals	2
1.4 Survey & Reporting Objectives.....	2
2.0 Planning Policy & Legislation	4
2.1 National Planning Policy.....	4
2.2 Local Planning Policy	4
2.3 Legislation	7
2.4 Biodiversity Action Plans	7
3.0 Methodology	9
3.1 Desk Study	9
3.2 Field Surveys	9
3.3 Limitations.....	13
4.0 Baseline Conditions	14
4.1 Designated Sites	14
4.2 Habitats	15
4.3 Protected & Priority Species	20
5.0 Constraints & Opportunities	28
5.1 Designated Sites	28
5.2 Habitats	28
5.3 Protected & Priority Species	29
5.4 Ecological Enhancements.....	34
6.0 Summary of Recommendations.....	35
7.0 References	36

APPENDICES

APPENDIX A – Figures

Figure 1: Location of Site

Figure 2: Phase 1 Habitat Plan

Figure 3: Surrounding Waterbodies

APPENDIX B – Biodiversity and Environmental Legislation, Conventions and Threatened Lists

APPENDIX C –2km Data Search Maps

APPENDIX D –Wildlife Planting List



Executive Summary

Site Description and Scope of Works		
- The site is a series of grazed grassland paddocks bound by hedgerows with trees. OS Grid Reference: TQ 07098 05176. - Development proposals include the construction of approximately 35 new dwellings, associated access and landscaping. - WYG was commissioned to undertake an update Preliminary Ecological Appraisal of the site, with a great crested newt HSI assessment, and ground based and climbed tree inspections. - The surveys were carried out on 13th September and 23rd November 2016.		
Potential Constraints	Yes	No
Great crested newts		
Has the site been assessed for great crested newts?	✓	
Is there suitable habitat for great crested newts on, or close to the application site?	✓	
Reptiles		
Has the site been assessed for reptiles?	✓	
Is there suitable habitat on the site for reptiles?	✓	
Breeding Birds including Barn Owls		
Has the site been assessed for breeding birds including barn owls?	✓	
Will areas of hedgerow, scrub, woodland, trees or other features likely to be used by nesting birds be affected by the proposal?	✓	
Bats		
Has the site been assessed for bats?	✓	
Are there any structures or trees on site which have the potential to support roosting bats?	✓	
Badgers		
Has the site been assessed for badgers?	✓	
Is there any evidence of badgers on or near the application site including setts, foraging or commuting?		✓
Dormouse		
Has the site been assessed for dormouse?	✓	
Is there suitable habitat on the site for dormouse?	✓	
Recommendations	Yes	No
Are further surveys recommended to inform the ecological impact assessment?	✓	
Is mitigation (including avoidance/compensation) and enhancement recommended?	✓	
Further survey recommendations: - Great Crested Newt – eDNA and/or presence / absence surveys. - In the event that hedgerow severance or removal is necessary, further surveys for commuting and foraging bats are likely to be required to fully inform the planning application. Mitigation and enhancement recommendations: - Retain 5m vegetation buffer from retained hedgerows / woodland; - Maintenance of current grazing regime or introduction of a regular mowing regime, to prevent colonisation by reptiles. - In the event that any scrub or hedgerow clearance is required to facilitate the development, a dormouse licence will need to be applied for from Natural England to allow works to proceed legally. - Clearance of vegetation to ground level outside of the breeding bird season; - Pre-works check and precautionary methods are recommended during the construction phase for badger; - Sensitive lighting strategy to avoid disturbance to nocturnal wildlife; and - Ecological enhancement of the site through the inclusion of native planting, a wildlife waterbody, brash/ log piles, and bird and bat boxes. - The recommendations within this report can be updated once the proposals are finalised.		



1.0 Introduction

1.1 Background

WYG was commissioned by Persimmon Homes (the 'applicant') in August 2016 to complete an update a Preliminary Ecological Appraisal consisting of a Desk Study and an Extended Phase 1 Habitat Survey at land at Dapper's Lane, Angmering, West Sussex (the 'site'). A previous Phase 1 survey and report was completed in 2014 by WYG. This update report has been written by Rosie Pope GCIEEM¹.

1.2 Site Location

The site is located to the north of the village of Angmering, immediately east of Dapper's Lane. The site is centred on Ordnance Survey National Grid Reference TQ 07098 05176. The site is approximately 3.7 ha in area and falls within Arun District Council Local Planning Authority (LPA). The area of land within the site includes a series of grazed grassland paddocks bound by hedgerows with trees, and occasional tall ruderal and scrub patches. Adjacent to the northern boundary is an area of broadleaved woodland, and a footpath bounds the western side of the site, with playing fields beyond. To the east is Dapper's Lane and agricultural land, and to the south lie houses in the village of Angmering. The site location in relation to the wider environment is shown in Figure 1, Appendix A.

1.3 Development Proposals

The applicant is proposing to develop the site for residential development. The proposals are not yet finalised; however, at present, approximately 35 new detached dwellings are planned along with private amenity areas and private drive ways for car parking. A pre-application response from Arun District Council was received in November 2016 and a planning application will be submitted in 2017. The final proposals will be shaped and supported by the findings of this report.

1.4 Survey & Reporting Objectives

The ecological investigations undertaken included the following objectives:

- ✧ A desk study to obtain existing information on statutory and non-statutory sites of nature conservation interest, and records of protected/notable species within and up to 2km from the site;

¹ Graduate Member of the Chartered Institute of Ecology and Environmental Management



- ✧ An Extended Phase 1 Habitat Survey involving a walkover of the site to record habitat types and dominant vegetation, and assess the potential of the site to support protected species and species of conservation concern. The survey also aimed to identify the presence of invasive plant species;
- ✧ An external bat inspection (from the ground) of the trees within the site;
- ✧ A climbed bat inspection of a single tree within the site;
- ✧ A habitat suitability index (HSI) assessment of all accessible and connected ponds within the site and within 500m of the site boundary.
- ✧ An assessment of the potential ecological constraints to the proposed works at the site and recommendations for further survey, avoidance, mitigation and enhancement where appropriate.

Based on the results of these studies, potential ecological constraints and opportunities relating to the proposed development have been identified and recommendations for further work have been made as appropriate.



2.0 Planning Policy & Legislation

An overview of the planning policy and legislation which is applicable to the site is provided below. More detailed information on biodiversity and environmental legislation is provided in Appendix B.

2.1 National Planning Policy

The National Planning Policy Framework (NPPF) was adopted in March 2012. Section 11 (outlined in Appendix B) of the NPPF, Conserving and Enhancing the Natural Environment, replaces Planning Policy Statement 9 (PPS9): Biodiversity and Geological Conservation. The NPPF requires that the planning system should contribute to and enhance the natural and local environment by: *minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity....* Government Circular 06/2005, Biodiversity and Geological Conservation: Statutory Obligations and their Impact within the Planning System, which relates to the former PPS9 remains valid as part of the NPPF and is referenced within Paragraph 113 of the NPPF.

ODPM circular 06/2005 states that the presence of protected species is a material consideration in the planning process. The NPPF also states that *planning policies should promote the protection of priority species populations linked to national and local targets.*

Furthermore, central and local government policy now requires consideration of opportunities for ecological enhancement on development sites. The NPPF considers enhancement in the statement: *The planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes....and minimising impacts on biodiversity and providing net gains in biodiversity.*

2.2 Local Planning Policy

The Arun District Council Local Plan was published in 2014 and sets out the vision and policies for the district to 2031 and beyond. A number of policies relate to ecological matters in development.

Policy GI SP1 relates to Green Infrastructure and development, and states:

The existing Green Infrastructure Network, as shown on the Green Network Maps (provided in the Technical Appendix) for each parish and town, must be considered at an early stage of the design process for all major development proposals.

All major development must be designed to protect and enhance existing Green Infrastructure assets, and the connections between them, in order to ensure a joined up Green Infrastructure Network.



Where compatible with nature conservation objectives, development proposals must identify opportunities to connect existing Green Infrastructure assets with the coast, the South Downs National Park or to the District's inland villages. Opportunities to enhance the network should take account of the multiple functions of Green Infrastructure assets and should be based upon those opportunities set out in the supporting text.

Gaps between settlements should also be considered as important Green Infrastructure assets and should be protected from inappropriate development, and enhanced to ensure that they provide high quality environment and multi-functional benefits for the District.

The technical appendix for Angmering details no Green Infrastructure within the site boundary.

Policy ENV DM1 relates to designated sites of biodiversity or geological importance and states;

1. Proposed development likely to have an adverse effect on land within or adjoining a Site of Biodiversity or Geological Importance as listed in Tables 17.1 - 17.6 (either individually or in combination with other developments), will not normally be permitted. Exceptions will only be made where the following can be demonstrated:

- a. There is no alternative solution (which shall be adequately demonstrated by the developer) and*
- b. There are reasons of public health or public safety or*
- c. There are benefits of primary importance to the environment or*
- d. There are imperative reasons of overriding public interest.*

Notwithstanding the above however, the presumption in favour of sustainable development does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined.

2. In determining any planning application affecting Sites of Biodiversity or Geological Importance the Council will ensure that the intrinsic natural features of particular interest are safeguarded or enhanced having regard to;

- a. The European, National or Local status and designation of the site;*
- b. The nature and quality of the site's features, including its rarity value;*
- c. The extent of any adverse impacts on the notified features of interest;*
- d. The need for compensatory measures in order to re-create remaining features of habitats on or off the site.*

3. Where appropriate the Council will ensure the effective management of designated sites through the imposition of planning conditions or Section 106 agreements as appropriate.

4. Developments shall also be consistent with all other Local Plan policies.



Policy ENV DM3 relates to non-designated sites and states;

Within Biodiversity Opportunity Areas (BOAs) (see Policies Map), development shall:

- a. Retain and sympathetically incorporate locally valued and important habitats, including wildlife corridors and stepping stones*
- b. Be designed in order to minimise disturbance to habitats*

Where development proposals are likely to have an impact on species or habitats within the BOAs, any application for planning permission shall include a properly conducted survey of the presence of that species and habitat and any impact that development may have on the BOA. Development proposals that do not reasonably address opportunities for enhancing BOAs through their design, layout and landscaping or access/management shall not be permitted. Where a development scheme would result in a habitat loss, mitigation measures shall be proposed as part of the proposed scheme and such measures agreed with the Planning Authority prior to the determination of any planning application.

Developments shall also be consistent with all other Local Plan policies

Policy ENV DM5 relates to development and biodiversity, stating;

Development schemes shall, in the first instance, seek to achieve a net gain in biodiversity and protect existing habitats on site. They shall also however incorporate elements of biodiversity including green walls, roofs, bat and bird boxes as well as landscape features minimising adverse impacts on existing habitats (whether designated or not). Development schemes shall also be appropriately designed to facilitate the emergence of new habitats through the creation of links between habitat areas and open spaces. Together, these provide a network of green spaces which serve to reconnect isolated sites and facilitate species movement.

Where there is evidence of a protected species on a site, planning applications shall include a detailed survey of the subject species, with details of measures to be incorporated into the development scheme to avoid loss of the species. This involves consideration of any impacts that will affect the species directly or indirectly, whether within the application site or in an area outside of the site, which may be indirectly affected by the proposals. All surveys shall be carried out at an appropriate time of year and shall be undertaken by a qualified and, where appropriate, suitably licensed person.

All developments shall have regard to Natural England's standing advice for protected species.

Developments shall also be consistent with all other Local Plan policies.



2.3 Legislation

Specific habitats and species of relevance to the site and the proposed development receive legal protection in the UK under various European and domestic legislative provisions, including:

- ✧ The Conservation of Habitats and Species Regulations 2012 (as amended) 'The Habitat Regulations';
- ✧ The Wildlife and Countryside Act (WCA) 1981 (as amended);
- ✧ The Countryside and Rights of Way (CROW) Act 2000;
- ✧ The Natural Environment and Rural Communities (NERC) Act 2006; and
- ✧ Wild Mammals (Protection) Act 1996.

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

2.4 Biodiversity Action Plans

2.4.1 UK Post-2010 Biodiversity Framework

The Environment Departments of all four Governments in the UK work together through the Four Countries Biodiversity Group. Together they have agreed, and Ministers have signed, a framework of priorities for UK-level work for the Convention on Biological Diversity. The 'UK Post-2010 Biodiversity Framework' (JNCC and DEFRA 2012) covers the period from 2011 to 2020.

Although the UK Post-2010 Biodiversity Framework does not confer any statutory legal protection, in practice many of the habitats and species identified for conservation action already receive statutory legal protection under UK and / or European legislation. The Priority national (English) habitats and species are now listed as Habitats and Species of Principal Importance in England (SPI) (listed under Section 41 (S41) of the NERC Act 2006). All public bodies have a legal obligation or *biodiversity duty* under Section 40 of the NERC Act (2006) to conserve biodiversity, having particular regard to those species and habitats listed under S41. For the purpose of this report, habitats and species listed under S41 of the NERC Act 2006 are referred to as having superseded the UK BAP listings.

2.4.2 Local Biodiversity Action Plan

As part of the action plan process, local BAPs (LBAPs) must also be produced for every local authority in the UK. The site is covered by the Sussex BAP. Updated in 2007, the Sussex BAP sets out the



actions needed for protecting and enhancing biodiversity in the county. The Sussex BAP includes 65 habitats with targeted action plans. There are 1,149 species on the Sussex BAP species inventory (BAPSI), including hazel dormouse *Muscardis avellanarius*, six species of bat, hedgehog *Erinaceus europaeus* and six species of terrestrial reptile.



3.0 Methodology

In line with guidance produced by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2013), this Preliminary Ecological Appraisal comprises the following:

- ✦ A desk study to identify notable or protected habitats or species potentially affected by the proposal under consideration; and
- ✦ A field survey based on the Phase 1 habitat survey or equivalent, i.e. within the survey area.

Detailed methodologies for these two elements are provided below in Section 3.1 and 3.2.

3.1 Desk Study

Information was previously gathered from Sussex Biological Records Centre (SxBRC) regarding the presence of nature conservation designations and protected and notable species within 2km of the site (WYG, 2014). In addition, a search for designations was made of Natural England's interactive, web-based MAGIC (Multi-Agency Geographic Information for the Countryside) database.

Given the recent date of the previous desk study undertaken for the site, an update desk study was not considered necessary, as it is unlikely to yield further pertinent information.

3.2 Previous Survey

An extended Phase 1 survey was undertaken by WYG in 2014, the results of which are discussed where relevant in this report. During 2014 a dormouse survey was also undertaken by WYG, which found evidence of this species utilising the site, in the form of a nest, as discussed below in section 5.

3.3 Field Surveys

The update Preliminary Ecological Appraisal was undertaken by WYG Senior Ecologist, Vivienne Greenough MCIEEM² and Consultant Ecologist Rosie Pope GCIEEM on the 13th September 2016. All areas of the site were investigated, including those parts that are not expected to be affected directly by the works but may be indirectly impacted upon.

² Full member of the Chartered Institute of Ecology and Environmental Management



3.3.1 Extended Phase 1 Habitat Survey

The vegetation and habitat types within the site were noted during the walkover survey using the Joint Nature Conservancy Council (JNCC, 2010) standard *Phase 1 Habitat Survey* technique. The Phase 1 habitat survey methodology was 'extended' by undertaking an assessment of the site's potential to support protected and notable faunal species, in line with the Guidelines for Preliminary Ecological Appraisal produced by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2013). Species considered during the survey included great crested newt, bats, dormouse, reptiles, badger, breeding birds and invertebrates. Specific methodologies for great crested newt and roosting bats are detailed below in Section 3.2.2 and 3.2.3.

Additionally, any invasive species listed under Schedule 9 of the Wildlife and Countryside Act (WCA) 1981 (as amended in 2010) as well as other notable species (such as those listed under S41 of the NERC Act 2006) were also noted if observed. All habitat types within the site were mapped on a Phase 1 habitat map. Any additional key features / features of interest within the site were mapped as 'Target Notes'.

The weather conditions during the survey were sunny, 28°C, 0% cloud cover with a strong breeze.

3.3.2 Habitat Suitability Index (HSI) for Great Crested Newts

The site was appraised for its suitability to support great crested newts. The assessment was based on guidance outlined in the Joint Nature Conservation Committees' published *Herpetofauna Workers' Manual* (JNCC, 2003) and the *Great Crested Newt Conservation Handbook* (Langton, Beckett & Foster, 2001).

As recommended by Natural England, the Oldham *et al.* (2000) Habitat Suitability Index (HSI) was applied to suitably connected water bodies within 500m of the site (i.e. not those beyond major barriers to GCN movement such as roads or towns), where access permitted. These were identified using Ordnance Survey maps and aerial images. The survey area and water bodies surveyed are shown in Figure 3, Appendix A.

3.3.3 External Bat Inspection (Trees)

Ground Survey

Trees within and surrounding the site were appraised externally from ground level with methodology based on the Bat Conservation Trust's *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, 2016).



Binoculars were used to inspect features that were assessed as having potential to support roosting bats, such as:

- ✧ Rot holes in trees;
- ✧ Splits and cracks in tree bark; and
- ✧ Woodpecker nest holes.

Other factors that may influence roost establishment were also taken into account, such as aspect, shading, disturbance, lighting and the presence of features in the adjacent habitat that could be used by bats for commuting and foraging.

Evidence searched for included:

- ✧ Bat droppings;
- ✧ Staining from urine or from the natural oil on bats' fur around well-used roosting places or access points; and
- ✧ Actual bat presence.

Features assessed as having potential to support roosting bats which could not be searched from ground level were also noted.

Based on the findings, the trees on site were assigned a 'suitability' rating based on their potential to support roosting bats. The categories include **negligible**, **low**, **moderate** or **high** suitability and are based on a multitude of factors, including (but not limited to):

- ✧ Number of features suitable to support roosting bats;
- ✧ Type of feature;
- ✧ Age of tree; and
- ✧ Location and disturbance of tree.

Table 1 below provides a summary of the bat roost suitability categories for trees.



Table 1: Guidelines for assessing the potential suitability of trees for bats (taken from Collins, 2016)

Suitability	Roosting Habitat Description
Negligible	Negligible habitat features likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Climbed Survey

In order to give further information on the bat roosting value of trees assessed from the ground, a climbed tree inspection was undertaken on 24th November 2016. The tree climbed survey was carried out by qualified tree climbers David West (Natural England Bat Licence Number: CLS02436) and Emmanuelle Amiral.

The assessment was carried out with reference to Bat Surveys for professional Ecologists: Good Practice Guidelines, 3rd edn. (Collins 2016).

The climbing technique used to inspect the tree was the standard rope and harness method. The climber had a second person ('groundsperson'), who is also a qualified climber, to provide guidance and rescue if needed, during the climb. This technique requires a tree to have a suitable number of limbs for the climber to harness the rope on to, prior to ascending.

Climbers are looking to identify live bats within the features but are also looking for evidence of bats including dead bats, droppings, staining, smells etc. An endoscope and high powered torch was used to inspect features where possible. After the tree climbed inspection, the tree was re-categorised for its suitability to support roosting bats using the guidance provided in Table 1.



3.4 Limitations

The survey was completed at an appropriate time of year during suitable weather conditions.

To determine likely presence or absence of protected species usually requires multiple visits at suitable times of the year. As a result, this survey focuses on assessing the potential of the site to support species of conservation concern, which are considered to be priority species with reference to the NPPF, especially those given protection under UK or European wildlife legislation.

There are no known limitations to the external bat inspection. External bat assessments of buildings and trees can be undertaken at any time of year. The climbed tree inspection was limited by access on several limbs. These limbs overhang the road and are therefore not safe to work from. However the large majority of the limbs were available for inspection, meaning the survey results are not significantly undermined by this limitation.

It was not possible to inspect all of the 50m buffer for badgers along the northern and western boundary of the site due to access restrictions. However, a search for badger evidence (footprints, pathways, latrines, foraging scrapes and badger hairs) of the habitats to the south and east was carried out.

The details of this report will remain valid for a period of **two years** following the survey (i.e. until September 2018). Beyond this period, it is recommended that a review of the ecological status of the site is undertaken.



4.0 Baseline Conditions

Results from the previous desk study carried out in 2014 and update Extended Phase 1 Habitat Survey are detailed below. Only protected species records from the past ten years have been included in the results from the ecological desk study, unless stated otherwise.

4.1 Designated Sites

The site is not subject to any statutory or non-statutory nature conservation designations. Outside the site boundary, there are a number of nature conservation designations within the 2km search radius.

4.1.1 Statutory designated sites

There are no statutory designated sites present within 2 km of the centre of the site. The closest statutory designated site is the Arundel Park Site of Special Scientific Interest (SSSI) located 5.4 km north-west of the site. This SSSI is designated for its important assemblage of invertebrates and birds.

4.1.2 Non-Statutory designated sites

There are two non-statutory designated sites within 2 km of the site. The closest is Titnore & Goring Woods Complex Site of Nature Conservation Importance (SNCI), located approximately 1.7 km to the south east of the site. This is designated for its ancient woodland complex, the largest in Worthing Borough, with much of it being of ancient origin. Its structure and species composition varies considerably, due to management. The site is of outstanding importance as a large area of semi-natural habitat close to a heavily built-up area.

The second SNCI is Highdown Hill & the Miller's Tomb SNCI. This is located 1.99 km east of the site. This is species rich chalk grassland, with scrub and chalk pits. The mosaic of habitats support uncommon flora and fauna, including invertebrates and birds.

4.1.3 Ancient woodland

SxBRC returned ten records of 'Ancient Woodlands' within 2 km of the site. The closest of these is 0.5 km east of the site, separated by Dapper's Lane and grassland fields.



4.2 Habitats

Habitats recorded during the Extended Phase 1 Habitat Survey are detailed below for the site. The habitat descriptions should be read in conjunction with Figure 2 in Appendix A, which shows the location and extent of the habitats recorded.

4.2.1 Semi-improved Grassland

The site is dominated by neutral semi-improved grassland and is heavily grazed by horses up to most of the boundaries. The grassland is divided by fences into a series of paddocks. The grass was too closely grazed to identify many grass species present, though Yorkshire fog *Holcus lanatus*, crested dog's-tail *Cynosurus cristatus* and perennial rye grass *Lolium perenne* were noted. A number of forbs are present including common daisy *Bellis perennis*, white clover *Trifolium repens*, scentless mayweed *Tripleurospermum inodorum*, lesser stitchwort *Stellaria graminea*, ribwort plantain *Plantago lanceolata*, common nettle *Urtica dioica*, young heather *Calluna vulgaris*, scarlet pimpernel *Anagallis arvensis*, red clover *Trifolium pratense*, common centuary *Centaureum erythraea*, self-heal *Prunella vulgaris*, ragwort *Jacobea vulgaris*, common fleabane *Pulicaria dysenterica* and species of bryophytes. This habitat is lacking in structure and comprises common and widespread species, but has a moderately good diversity, likely of value to species such as pollinating insects. As such it is considered to be of **low ecological value at the site level**.

Photograph 1: Grassland paddocks dominating the site, southern portion



Photograph 2: Grassland paddocks dominating the site, northern portion



4.2.2 Species-poor hedgerows with trees

A number of species-poor hedgerows are present along the site boundaries to the west, south and east. These are summarised in Table 2 below.

Table 2: Hedgerows within the site

No. & location	Size & Structure	Woody Species	Ground Flora	Assoc. Features	Likely to qualify as 'Important Hedgerow'*
H1 Eastern site boundary (Photo 3)	Approx. <10m (h) x 2.5m (w) Unmanaged, outgrown, bushy	Blackthorn <i>Prunus spinosa</i> , Hawthorn <i>Crataegus monogyna</i> , elm <i>Ulmus minor</i> , dog rose <i>Rosa canina</i> , holly <i>Ilex aquifolium</i> , oak <i>Quercus robur</i> (6)	Ivy <i>Hedera helix</i> , rough hawkbit <i>Leontodon hispidus</i> , dandelion <i>Taraxacum officinalis</i> , creeping cinquefoil <i>Potentilla reptans</i>	Standard tree (oak), see section 4.3.1 for discussion in relation to bats	No
H2 Southern site boundary	Approx. 1m (h) x 1m (w) Managed offsite side and top by residents	Hawthorn, blackthorn (2) Bramble	Reflective of surrounding grassland	-	No
H3 Western site boundary (Photo 4)	Approx 3m (h) x 1.5m (w) Low management ; outgrown and gappy in places	Blackthorn, hawthorn, elm, dog rose, hornbeam <i>Carpinus betulus</i> , hazel <i>Corylus avellana</i> (4) Bramble	Poor	Adjacent to public footpath	No
H4	Approx 3m (h) x 1m (w)	Leylandii <i>Cupressus x leylandii</i>	Very poor	-	No

No. & location	Size & Structure	Woody Species	Ground Flora	Assoc. Features	Likely to qualify as 'Important Hedgerow'*
Northern site boundary (Photo 5)	Highly managed box-cut				

* 'Important Hedgerows' under the Hedgerow Regulations (1997)

Photograph 3: Hedgerow H1



Photograph 4: Hedgerow H3



Photograph 5: Hedgerow H4

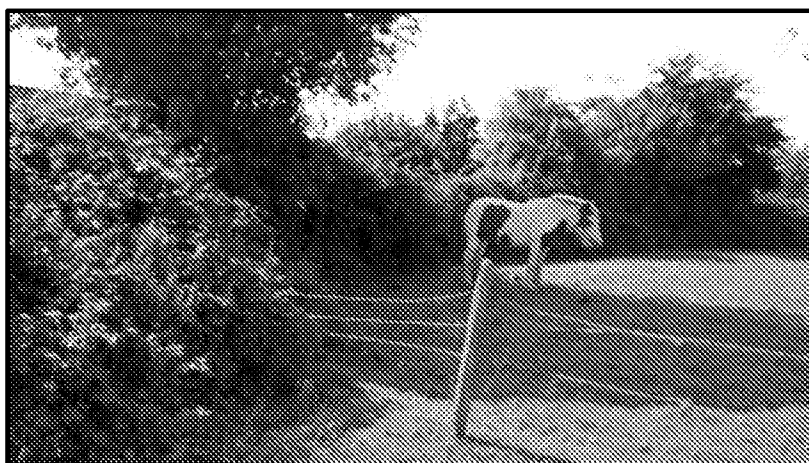


Collectively the hedgerows within the site provide linear vegetated features likely to be used as wildlife corridors. Furthermore these hedgerows link to offsite woodland to the north. As such, although they lack any notable species diversity they are considered to be of **moderate ecological value at the local level**.

4.2.3 Scattered and continuous scrub

Patches of scrub are scattered around the boundaries of the site particularly along the western boundary, with smaller areas located along the south, east and northern boundaries. Species recorded were dominated by bramble, with some rose, hawthorn and various ornamental species (Photograph 6). The scrub is of a poor botanical diversity though does provide some limited opportunities for foraging and resting wildlife. As such the scrub is considered to be of **low ecological value at the site level**. The value of this habitat to dormouse and other protected species is discussed at section 5.

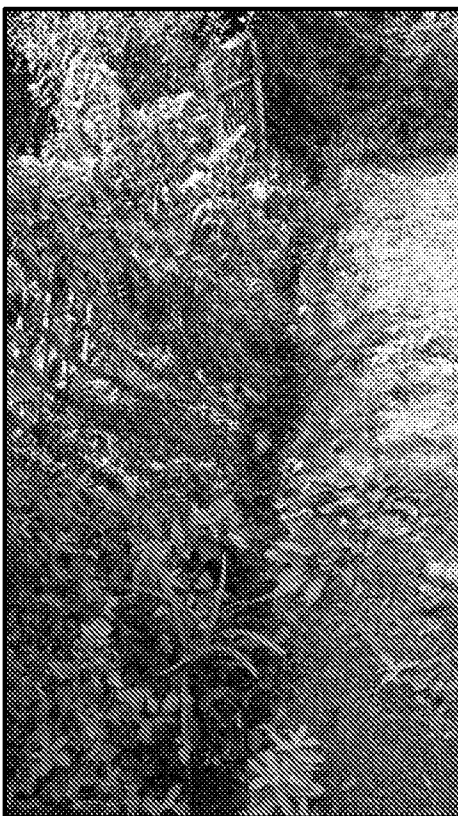
Photograph 6: Bramble scrub within the south of the site.



4.2.4 Dry Ditch

A dry ditch was identified within the site boundary, located at the southern site boundary (Photograph 7). It contains no aquatic vegetation and had abundant grass growth, with some mint *menta spp*, common nettle, dock *Rumex obtusifolia* and spurge *Euphorbia sp.* affording some resources to wildlife through this structure. At the time of survey, this waterbody was dry though may occasionally be inundated. The ditch is approximately 0.25m deep and 0.25m wide. It has steps from neighbouring gardens entering it, and in places it was mown short. The dry ditch is considered to be of **low ecological value at the site level**.

Photograph 7: Dry ditch at southern site boundary



These waterbodies will be discussed further with regards to great crested newts in Section 4.3.3.

4.2.5 Surrounding Area

The majority of the immediate surroundings (roads, residential areas and playing fields) are of little ecological value. However the broadleaved woodland to the north of the site is considered to be of **high ecological value at the local level**. Though full access to this area was not possible, the woodland was recorded to be semi-mature to mature and oak-dominated. Other species recorded include sycamore *Acer pseudoplatanus*, and ash *Fraxinus excelsior*, with a dense understorey



comprising hazel, holly and bramble. The structure of the woodland is varied and dense, with fallen deadwood present.

4.3 Protected & Priority Species

4.3.1 Protected / Notable Flora

Desk Study

SxBRC returned 26 records for species listed under the Natural Environment and Rural Communities Act 2006 as Priority Species in England. SxBRC returned a historical record of the critically endangered red helleborine *Cephalanthera rubra* within the 2 km grid reference TQ00M, up to 0.22 km south west of the site within an orchard in West Polling in 1921.

Field Survey

No protected or priority species of flora were recorded during the field survey. Furthermore, the site is dominated by highly managed (grazed) grassland, which is unlikely to support any notable botanical species.

4.3.2 Invertebrates

Desk Study

SxBRC provided no records of protected invertebrate species within 2 km of the site. The closest record for stag beetle *Lucanus cervus*, protected under the Wildlife and Countryside Act 1981 (as amended), was 2.21 km south east of the site. Two species of Coleoptera (beetles), one species of Dermaptera (earwigs), two species of Diptera (flies) and eleven species of Lepidoptera (moths and butterflies) were also returned.

Field Survey

No protected or notable invertebrate species were recorded during the survey. Although a specific survey for invertebrates was not carried out as part of this assessment, the majority of the site, being homogenously short-sward grassland, offers low value to invertebrates. However the adjacent woodland to the north provides higher value habitat due to the presence of mature trees and dead wood. Overall, the site has a **low potential for invertebrates**.



4.3.3 Amphibians

Desk Study

SxBRC provided two records of great crested newt *Triturus cristatus* within 2 km of the site, this species is protected under the Wildlife and Countryside Act 1981 (as amended). These were located 1.94 km north west of the site at the 'Vinery', Angmering.

Field Survey

Sixteen waterbodies were recorded within 500m of the site (see Figure 3, Appendix A). Of these, the majority were recorded to be dry (appearing permanently dry e.g. lacking any aquatic flora), or separated from the site by major barriers to movement such roads or the village of Angmering, as detailed in Table 3.

Table 3. Waterbodies Scoped-Out and reasoning

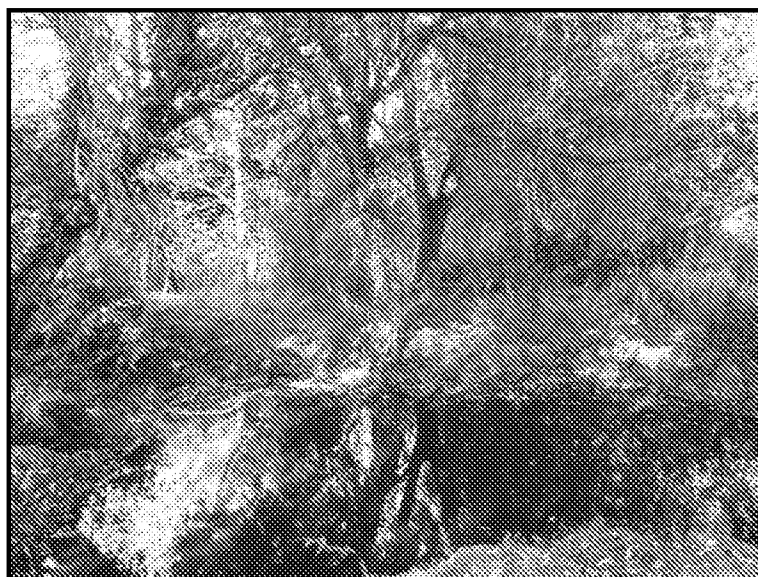
Ref.	Description & reason for scoping-out
WB1	Dry ditch
WB3	Dry ditch
WB4	Dry ditch
WB5	Absent
WB6	Dry ditch
WB7	Dry ditch
WB8	Dry ditch
WB9	Small concrete amenity pond, providing water for domestic chickens
WB10	Located in private resident's garden, inaccessible
WB11	Heavily polluted concrete duck pond, no aquatic vegetation
WB12	A wide fast-flowing river. Separated from the site by at least two roads, hardstanding and houses
WB15	A large lake/pond in private residence, inaccessible. Separated from the site by at least two roads, hardstanding and houses.

Four remaining ponds were identified which held water and were ecologically connected to the site, WB2, WB13, WB14a and WB14b (Figure 3, Appendix A). These are described in Table 4 and shown in photograph 8-10.

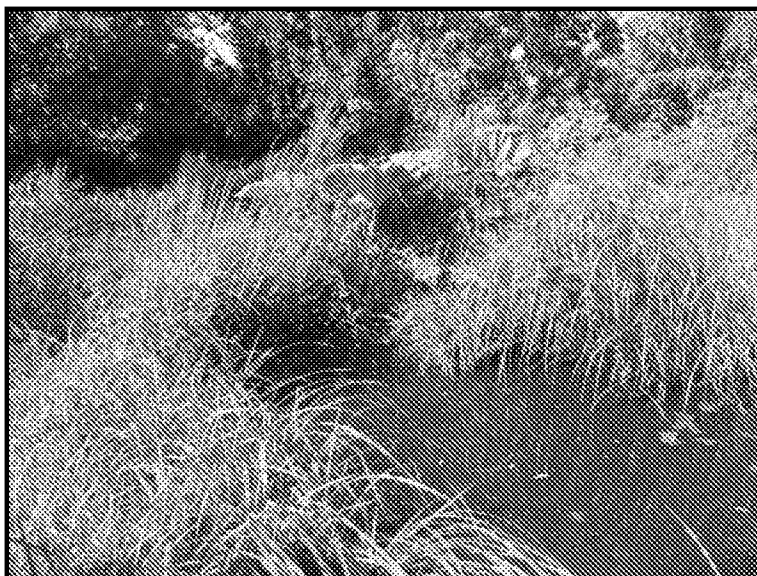
Table 4. Waterbody Descriptions and HSI result

Ref.	OS grid ref.	Distance and Direction from site	Area (m ²)	Description	HSI Score
WB2	TQ068053	186m north west	224	A fully shaded woodland pond with no macrophytes but free of fowl or fish.	Average (0.67)
WB13	TQ071052	Adjacent to northern boundary	75	Garden pond with shading from trees, but good level of macrophytes. Fowl present, fish possible.	Average (0.61)
WB14a	TQ071052	Adjacent to northern boundary	20	Heavily vegetated garden pond, largely shaded, and links to WB14b. Fowl present, fish possible.	Good (0.70)
WB14b	TQ071052	Adjacent to northern boundary	10	Heavily vegetated garden pond, largely overshadowed, and links to WB14a. Fowl present, fish present.	Good (0.70)

Photograph 8: WB13



Photograph 9: WB14a



Photograph 10: WB14b



The short semi-improved grassland within the site has **low** potential to offer suitable terrestrial habitat for great crested newts to commute and forage. However the boundaries of longer vegetation in ditches, and the hedgerows have **moderate potential to support great crested newts** during their terrestrial phase.



4.3.4 Reptiles

Desk Study

SxBRC provided records for three species of reptile within 2 km of the site. These include slow-worm *Anguis fragilis*, adder *Vipera berus*, and grass snake *Natrix natrix*. The closest record for slow worm is from approximately 2 km north-east of the site. SxBRC returned two records of adder. The closest record for adder is for approximately 1.2 km west of the site within Northpark Wood, Parham Estate. SxBRC returned nine records for grass snake. The closest record for grass snake is approximately 0.71 km north of the site. All species of UK native reptile are protected under the Wildlife and Countryside Act 1981 (as amended).

Field Survey

The majority of the site, being dominated by very short sward grassland, is considered to be unsuitable for reptiles. The hedgerows, dry ditches and scrub offer some opportunities for this species group, though these are limited in extent. As such the site is considered to be of **low potential for reptiles**.

4.3.5 Birds

Desk Study

SxBRC provided records of 133 species of protected / notable bird species within 2km of the site. Nine of these are protected under *Schedule 1 of the Wildlife and Countryside Act* including: peregrine falcon *Falco peregrines*, Eurasian hobby *Falco subbuteo*, red kite *Milvus milvus*, firecrest *Regulus ignicapilla*, barn owl *Tyto alba*, common kingfisher *Alcedo atthis*, common crossbill *Loxia curvirostra* and Cetti's Warbler *Cettia cetti*.

Records were also provided for a number of red list species such as grey partridge *Perdix perdix* and corn bunting *Emberiza calandra*. Priority Species under the NERC Act 2006 recorded include lesser-spotted woodpecker *Dendrocopos minor*, and willow tit *Poecile montanus*.

Field Survey

During the field survey, a total of five bird species were noted (either by sight or sound). These included:

- Robin *Erithacus rubecula*;
- Jackdaw *Corvus monedula*;
- House sparrow *Passer domesticus*;



- Green Woodpecker *Picus viridis*; and
- Blackbird *Turdus merula*.

House sparrow is a Priority Species under the NERC Act 2006.

The majority of the site is unsuitable for nesting birds, lacking in cover or structure. The trees and hedgerows, and to a lesser extent the scrub, within the site provide suitable habitat for breeding birds. For example, species such as wren and blackbird may nest within the hedgerows and shrubs whereas woodpigeon may nest within the trees. The woodland and larger scattered trees within the site may support breeding red kite or sparrowhawk. As such the site is considered to be of **low-moderate potential for nesting birds**.

4.3.6 Bats

Desk Study

SxBRC provided records for up to ten species of bat including unidentified pipistrelle bat *Pipistrellus* sp., common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, an unidentified long-eared bat *Plecotus* sp. and brown long-eared bat *Plecotus auritus*, a serotine bat *Eptesicus serotinus*, and Natterer's Bat *Myotis nattereri*. The closest record is for an unidentified pipistrelle roost approximately 0.3 km south of the site; this record is for a maximum count of 148 bats.

Field Survey – Roosting Bats

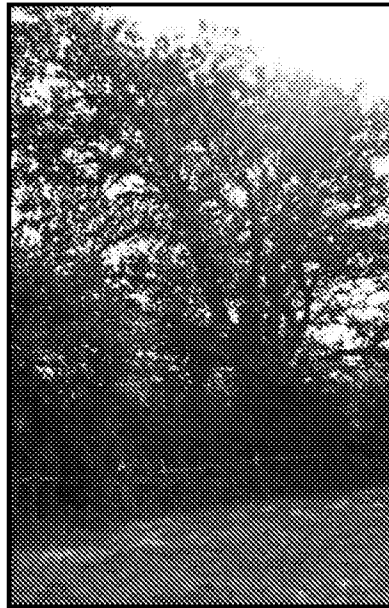
The trees within the site were assessed for their potential to support roosting bats.

A single oak tree (T1 on Figure 1, Appendix A) was recorded to be a mature tree with splits present in limbs and trunk, and a broken limb (Photograph 11). This tree was initially graded as having moderate bat roost potential. No other trees of bat potential were recorded within the site.

As such a climbed inspection was commissioned in order to investigate the potential of these features. The climbed inspection revealed that the splits and crevices do not lead to cavities sufficient to allow for roosting bats, and **T1** was downgraded to **low bat roosting potential**.



Photograph 11. T1



Field Survey - Foraging and commuting bats

The site is dominated by short sward semi improved grassland of little foraging or commuting value to bats. The site supports a number of hedgerows and scrub lines for bats to commute and forage along, providing connectivity to the wider area, such as Poling Furzefields woodland approximately 80m north of the site along the east and western boundaries of the site. The boundary with the adjacent woodland to the north provides a suitable feature for bats to commute and forage along. The site is considered be of **low-moderate potential for foraging and commuting bats**

4.3.7 Badgers

Desk Study

No records for badger were returned from within 2km of the site.

Field Survey

No evidence of badger (setts, push-throughs, latrines or snuffle holes etc.) was recorded during the survey. The habitats within the site are of **low potential for badger**, providing little cover and few foraging resources, though the broadleaved woodland to the north of the site is of higher value.



4.3.8 Dormouse

Desk Study

SxBRC provided two records for hazel dormice *Muscardinus avellanarius* within 2 km of the site. The closest record was 1.56 km north west of the site, within the woods north of Angmering Park.

Field Survey

The grassland which dominates the site is of negligible value to dormice, as they are an arboreal species. However the hedgerows, in particular H3, and the offsite woodland to the north, present foraging and nesting opportunities for dormouse, as well as hibernation opportunities.

WYG previously carried out a dormouse tube survey in 2014 (internal comm.) which recorded evidence of dormouse utilising the hedgerow habitats within the site. (Dormouse nest was found within the dormouse tubes installed around the site). As such **dormouse are assumed to be present in all suitable habitats on site (e.g. hedgerows and scrub).**

4.3.9 Other mammals

Desk Study

No records of otter were returned from within 2km of the site. SxBRC returned three records of European water vole *Arvicola amphibious* within 2 km of the site, protected under the Wildlife and Countryside Act 1981 (as amended). The closest record was 0.94 km south west of the site, at Beavers Brook, 'The Thatchway', Angmering.

The desk study returned records for several mammal species within 2k of the site boundary, including hedgehog *Erinaceus europaeus* and brown hare *Lepus europaeus*, both Priority Species under the NERC Act, 2006 and local BAP species. The closest record is for hedgehog located approximately 180m south of the site boundary in a residential garden, dated 2013.

Field Survey

The hedgerows and scrub within the site have potential to support a range of mammals including hedgehog and rodent species, although these are limited in extent. A wood mouse was recorded within hedgerow H3 during the update Phase 1 survey. As such the boundary habitats at the site are likely to be of **moderate potential for other mammals.**

There are no waterbodies on or adjacent to the site that would be suitable for otters or water voles to utilise. Therefore, the site has a **negligible potential for otter and water vole.**



5.0 Constraints & Opportunities

The recommendations detailed in this section are based on the results of the desk study, Extended Phase 1 Habitat Survey, HSI and external bat roost and tree climbing assessments. Recommendations for mitigation, avoidance, compensation and enhancement take into account relevant legislation and planning policy for the site (as detailed in Section 2).

5.1 Designated Sites

5.1.1 Statutory and non-statutory sites

There are no statutory designated sites located within 2km of the proposed development. The closest statutory designated site is the Arundel Park Site of Special Scientific Interest (SSSI) located 5.4 km north-west of the site. Due to the distance, it is highly unlikely the proposed development will have an adverse impact to any statutory designated sites.

There are two non-statutory designated SNCIs within 2 km of the site; Titnore & Goring Woods Complex SNCI and Highdown Hill & The Miller's Tomb SNCI, located approximately 1.7km south east and 1.9km east of the site respectively. The site is considered to be of a sufficient distance from these designations to avoid any direct impacts (e.g. noise, dust, sound). To walk to these sites (which could result in increases in recreational pressure) it is at least 2.7km, and given the scale of the development, significant recreational impacts are also considered unlikely.

5.2 Habitats

There are no priority habitats or habitats of principal importance within the site. The majority of the site is considered to be generally of low ecological value, with the hedgerows and trees being of moderate value. It is recommended that these boundary features are retained within the final masterplan wherever possible to maintain connectivity throughout the site and the wider area.

A buffer zone between the development footprint (including private gardens) and the hedgerows and trees is recommended to be incorporated into the plans, to protect these features from adverse impacts (see Section 5.3.2 for more details).

It is recommended that any retained trees (including the woodland edge and T1 on the eastern boundary) are protected during demolition and construction using root protection fencing around the root zones in accordance with British Standards *BS 5837 2012: Trees in Relation to Construction. Recommendations*. In order to minimise any impact to retained hedgerows, offsite woodland (and the



species within it) and as a matter of best practice, mitigation measures should be adopted throughout the construction phase of the development. These should include:

- ✧ Measures to minimise dust arising, when necessary, including the use of dust control machinery and wetting-down machinery;
- ✧ Measures to prevent pollution / contamination events through surface run-off;
- ✧ Measures to minimise other pollution events such as noise, vibration and wind-blown litter;
- ✧ No construction materials should be stored within the woodland or buffer zones; and
- ✧ Any new external lighting along the boundaries (particularly the western and northern boundaries) of the site should be avoided.

5.3 Protected & Priority Species

5.3.1 Great Crested Newt

GCN (including the habitat that this species uses) receive comprehensive protection under the Conservation of Habitats and Species Regulations 2010 (as amended), the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000.

The grassland within the site is considered to be of low potential to support great crested newts during their terrestrial phases, though they may disperse across this habitat. The hedgerows, ditch and scrub have moderate potential to support this species.

Of the waterbodies located within the dispersal distance of great crested newt from the site (i.e. within 500m and not separated by any major barriers to movement such as roads), four waterbodies (WB2, WB13, WB14a, WB14b) are considered to have potential to support breeding great crested, scoring 'average' to 'good' in the HSI assessment.

To ascertain whether great crested newt are present in these nearby waterbodies, it is recommended that environmental DNA (eDNA) water sampling is undertaken. This is a novel technique providing a presence/ likely absence result through a single site visit and should be undertaken in accordance with the survey recommendations in English Nature's Great Crested Newt Mitigation Guidelines (2001) between mid-March and mid-June.

If the eDNA survey confirms the presence of great crested newts, then population surveys will be required to inform any future mitigation plans, method statements or European Protected Species Licences to Natural England (EPSL). For this, six visits are required between mid-March and mid-May,



with half of the survey visits conducted between mid-April and mid-May. As such it is recommended that eDNA surveys are undertaken as early as possible in the season, in order to allow time for further survey if required.

5.3.2 Hazel Dormouse

Dormouse and their habitats are fully protected under the Wildlife and Countryside Act 1981 (as amended). The hedgerows within the site are considered suitable for dormouse, and they connect to offsite woodland which may also be suitable. Furthermore, a dormouse survey undertaken by WYG in 2014 confirmed the presence of dormouse within the site.

As such, it is recommended that these hedgerows and scrub be retained in full under the proposals, with a 5m buffer zone between them and the development footprint (including private gardens). If removal of hedgerows is required, update dormouse surveys will be required to inform EPSL requirements and methods. Additional planting of new hedgerows would also be necessary to compensate for any hedgerow loss.

These surveys (if required) comprise nest tube presence / absence surveys, undertaken between April and November (May to October being optimal months) and include the deployment of dormouse tubes at the site (from February onwards) followed by monthly checks of the tubes for dormice or evidence of their activity.

5.3.3 Reptiles

All species of native reptile are protected under the Wildlife and Countryside Act 1981 (as amended).

The sites' current management (horse grazing) results in a short sward throughout the centre of the site, creating habitat that is considered of low potential to support reptiles. Provided the sward is kept short by grazing or cutting, no further reptile surveys are considered necessary to inform the planning application.

The boundary hedgerows provide some opportunities for reptiles. If these features are retained under the current proposals, no mitigation is considered necessary. Should any clearance be required, precautionary methods are recommended.

These areas should be cleared during the active reptile season (Mar-Oct inclusive). Vegetation will first be cut to a height of 10-15cm (this can take place overwinter to avoid nesting bird constraints, to a height of 30cm above ground level; ground disturbance can then take place in the spring to avoid disturbing hibernating reptiles). This will then be subjected to a 'fingertip search' by a suitably qualified ecologist, to check for the presence of any reptiles. In the unlikely event that any reptiles are found, they will be moved to areas of suitable retained habitat on site, or to the woodland edge to the north of the site. Following the fingertip search, vegetation can be cleared to ground level,



including a strip of the top layer of soil, to prevent recolonisation by reptiles, and allow the area to be developed. The clearance should happen in a directional manner, beginning away from suitable retained habitat and moving towards it (e.g south-north towards the offsite woodland to the north), to allow any reptiles to disperse to suitable habitat.

5.3.4 Breeding Birds

All bird's eggs and active nests are protected from damage and destruction under the Wildlife and Countryside Act 1981 (as amended). The site is dominated by grassland with a short sward, and is unlikely to support ground nesting birds. The trees, scrub and hedgerow within the site may support common breeding birds. Where possible, clearance of this habitat should be avoided, and retained hedgerows should be protected by a buffer zone.

It is recommended that any clearance of trees, shrub, scrub and hedgerow within the site should take place outside of the bird breeding season, which is generally considered to extend between March and September inclusive (i.e. habitat should be cleared between October to February inclusive, to 30 cm above ground level as described in section 5.3.3 above).

If this timing is not possible, then a suitably experienced ecologist should check for active bird nests immediately prior to clearance of vegetation (within 48 hours). If an active nest is discovered, then work in that area should cease and an appropriate buffer zone installed around the nest site where no works are undertaken until such a time that the young have fledged and the nest is no longer in use. The extent of this buffer zone will depend on the nature of the works to be undertaken and the species of bird nesting, but this would be advised by an ecologist (as a minimum this would be 5m).

5.3.5 Bats

All species of bats (including their roosts) receive comprehensive protection under the Conservation of Habitats and Species Regulations 2012 (as amended), the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000.

Roosting Bats

Results from the Extended Phase 1 survey combined with the climbed tree inspection found that a single oak tree (T1) within hedgerow H1 on the eastern boundary had **low** suitability for bats. No other trees within the site were recorded to have suitability for roosting bats.

It is recommended that this tree is retained under the proposals, with a suitable buffer zone. If this tree is scheduled for removal, sectional 'soft-felling' methods are recommended.



'Soft felling' is a generic term used to describe more cautious felling approaches. Where possible, cross cutting in proximity to cavities or hollows will be avoided, and any sections felled containing cavities will be lowered carefully using rope and cushioning techniques to reduce the impact of felling limbs which may still have bats within cavities. The felled sections will be left on the ground (preferably for up to 48 hours) with the openings clear, allowing any remaining bats to escape. Split limbs that are under tension may need to be wedged open to prevent their closure when pressure is released, to avoid trapping bats (Bat Conservation Trust, 2016).

Foraging and Commuting Bats

The hedgerows and woodland edge within the site are likely to provide some opportunities for foraging and commuting bats, and it is therefore recommended that these features are retained. In this instance, further survey is considered unlikely to be required.

A sensitive lighting strategy is recommended in proximity to any retained features of bat foraging value. Artificial lighting has been proven to disturb bats and have a negative impact on their ability to forage and commute to and from their roosts (Emery, 2008; Bat Conservation Trust 2009, 2012).

To minimise the risk of disturbance to bats, the following mitigation is recommended:

During Construction

- ✧ It is recommended that no night time working is undertaken between the months of April to October, inclusive (during the bat active season); and
- ✧ If security lighting is necessary, lights triggered by motion sensors should be used and their coverage should be kept to a minimum.

Operational Development

At present, it is not known whether any external lighting will be required for the new development. Ideally, no external lighting would be recommended around the perimeter of the development. However, if lighting is required, it is recommended that it be carefully designed to minimise disturbance to foraging and commuting bats using hedgerows and woodland (as well as any potential roosts in the local area). A sensitive lighting strategy is recommended involving:

- ✧ Consideration of the available lighting technology to minimise impacts on bats, i.e. use of traditional low pressure sodium lamps (as opposed to high pressure sodium, mercury, and white SON). These have been shown to have the least impact on bats (as well as invertebrates) as they emit no UV light (which attracts invertebrates). LED lighting also emits little UV light, and these lamps can be programmed to switch off, or dim at certain times;



- ✧ The lights being directional with light spillage avoided. Hoods / cowls can be used to direct light below the horizontal plane (ideally at an angle less than 70 degree);
- ✧ Lights designed to be as low to the ground as possible (specifically not above 8m); and
- ✧ Lights to be switched off at night (particularly during the months of April to October, inclusive when bats are active), or at least, motion activated.
- ✧ No lighting should be directed at the adjacent woodland or hedgerows.

If the hedgerows and/or woodland edge are to be removed or significantly affected by the proposals, a suite of bat activity surveys are recommended in accordance with BCT (2016) to fully inform the planning application.

5.3.6 Badger

Badgers are protected under the Protection of Badgers Act 1992. As no evidence of badger was found during the survey, no further ecological survey is required at this time. Nonetheless, the potential presence of foraging badger should be taken into account during construction phase of the development due to the adjacent woodland having high potential for this species, and the highly nomadic nature of this species.

The following precautionary methods are recommended during the construction phase:

- ✧ A pre-works check for badgers is recommended prior to clearance works commencing, which should be carried out by a suitably qualified ecologist (SQE). If an active badger sett / entrance hole is discovered, all works should stop until an agreed mitigation strategy has been put in place; Any materials or chemicals should be stored within site compounds and these should be fenced to ensure that no badgers can obtain access;
- ✧ Should any trenches need to be left open overnight, a means of escape for badgers and other mammals should be provided such as a suitably placed plank of wood;
- ✧ Checks of any excavations should be made by construction staff prior to commencing work to make sure that no badgers, or other animals, have become trapped in the excavations. Should a trapped badger be found within the works, an ecologist or Natural England should be immediately contacted for advice;
- ✧ Any pipes stored or installed on site with a diameter of greater than 200mm should be covered or capped at night to reduce the risk of badgers becoming trapped inside; and



- » Works should not continue after dusk, or begin before dawn.

5.3.7 Other Mammals

The hedgerows within the site provide some potential to support hedgehog, a UK Priority Species. Precautionary methods in respect of badger are also applicable to hedgehog. Furthermore, any clearance of hedgerow habitat will be in the presence of an ecologist (c.f. dormouse and reptiles), who will be able to identify and relocate any hedgehogs encountered.

5.4 Ecological Enhancements

In line with national and local planning policy (Policy ENV DM5 of the Arun Local Plan), the development design should incorporate enhancements for the benefit of wildlife. Enhancements for biodiversity are recommended and outlined below:

- » The use of locally sourced native trees, shrubs and insect attracting plants to be included in the landscape design for the site (see Appendix D for a wildlife friendly planting list);
- » Creation of brash and log piles within landscaped amenity areas to favour fauna such as invertebrates, hedgehogs, reptiles and amphibians;
- » If possible, the use of sustainable drainage systems (SUDS) to create a new waterbody within the site, with suitably designed riparian structure and planting, will enhance the value of the site for a range of fauna including invertebrates, bats and amphibians;
- » Ten bird boxes to be installed on trees / new buildings. House sparrow and blue / great tit boxes could be attached to the new buildings whereas boxes for blue tits / woodpeckers could be installed on mature trees; and
- » Provision of three suitably positioned integrated bat boxes within new houses on the site. An ecologist can advise on the most suitable types and locations for this development.



6.0 Summary of Recommendations

The site is located over 2km from any statutory sites, and no impacts upon these or local non-statutory sites are likely as a result of the development,

- ✦ Further survey is recommended for great crested newts.
- ✦ It is recommended that the hedgerows and trees within the site are retained wherever possible within the final masterplan, with a 5m buffer zone to prevent adverse impacts on dormouse and other species utilising the site.
- ✦ The single tree with low bat roosting potential (T1) should be 'soft felled' if scheduled for removal. In addition, mitigation measures for bats, nesting birds and badger are also provided.
- ✦ If any trees or hedgerows are to be removed or lit by the proposals, further survey will be required for dormouse and foraging/commuting bats, and precautionary methods of clearance will be required for reptiles and nesting birds. A pre-works check for badgers should be undertaken if any trees or hedgerows are removed.
- ✦ The recommendations within this report should be updated once the proposals have been finalised.
- ✦ The results described here are considered valid for up to 2 years from the date of the survey (i.e. until September 2018), providing no major changes happen to the habitats on the site. After this an assessment of the ongoing ecological validity of this report should be undertaken.



7.0 References

- * Arun District Council (2014) *Arun Local Plan 2011-2031, Publication Version*
- ♦ Bat Conservation Trust (2016), *Bats & Trees*
- * Chartered Institute of Ecology and Environmental Management (2013) *Guidelines for Preliminary Ecological Appraisal*
- ♦ Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn.). The Bat Conservation Trust, London.
- ♦ *Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora. 1992.* [Also known as the Habitats Directive]
- ♦ Department for Communities and Local Government (2012) *National Planning Policy Framework*
- ♦ Eaton, M.A., et al. (2015). Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *British Birds* 108:708-746
- ♦ HM Government (2010) *Conservation of Habitats and Species Regulations*
- * HM Government (2006) *Natural Environment and Rural Communities Act*
- * HM Government (1981) *Wildlife and Countryside Act 1981.*
- ♦ HMSO (1994): *Biodiversity: The UK Action Plan*
- * Joint Nature Conservation Committee (2010). *Handbook for Phase 1 Habitat Survey: A technique for environmental audit.* JNCC, Peterborough
- * JNCC and DEFRA (on behalf of the Four Countries' Biodiversity Group) (2012): *UK Post-2010 Biodiversity Framework.* July 2012. Available from: <http://jncc.defra.gov.uk/page-6189>
- * Office of the Deputy Prime Minister (ODPM). *Circular 06/2005* (2005) Surrey Heath Borough Council (2012) *Surrey Heath Core Strategy & Development Management Policies*
- ♦ WYG (2014) *Dapper's Lane, Angmering: Extended Phase 1 Habitat Survey*

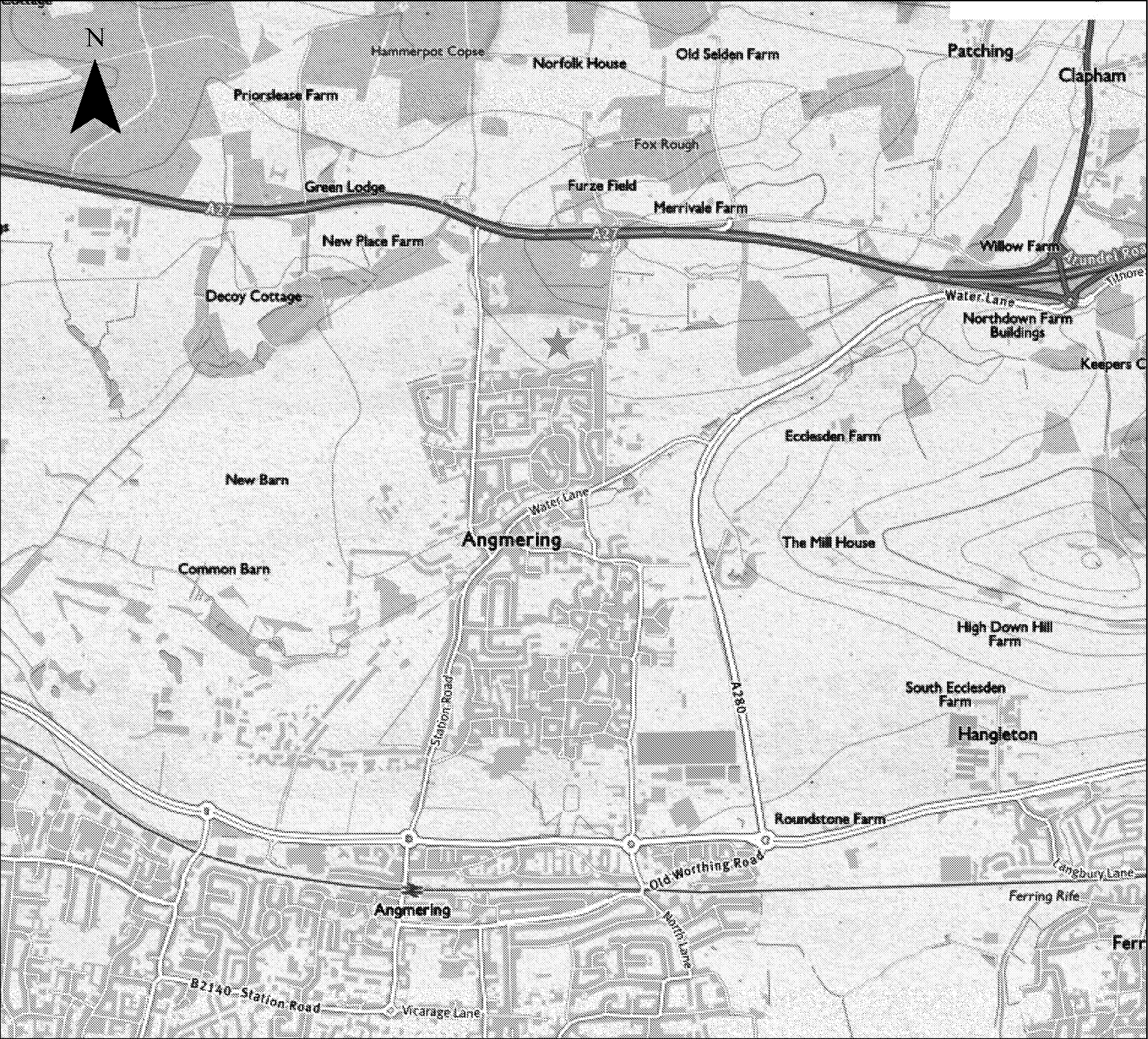


APPENDIX A – Figures

Figure 1: Location of Site

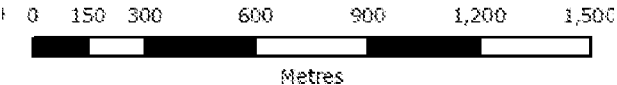
Figure 2: Phase 1 Habitat Plan

Figure 3: Surrounding Waterbodies



Legend

★ Site Location



Created:	Checked:	Date:	Version:
JS	RP	22/11/2016	V1.

Contains Ordnance Survey data © Crown Copyright and database right 2012. All rights reserved.



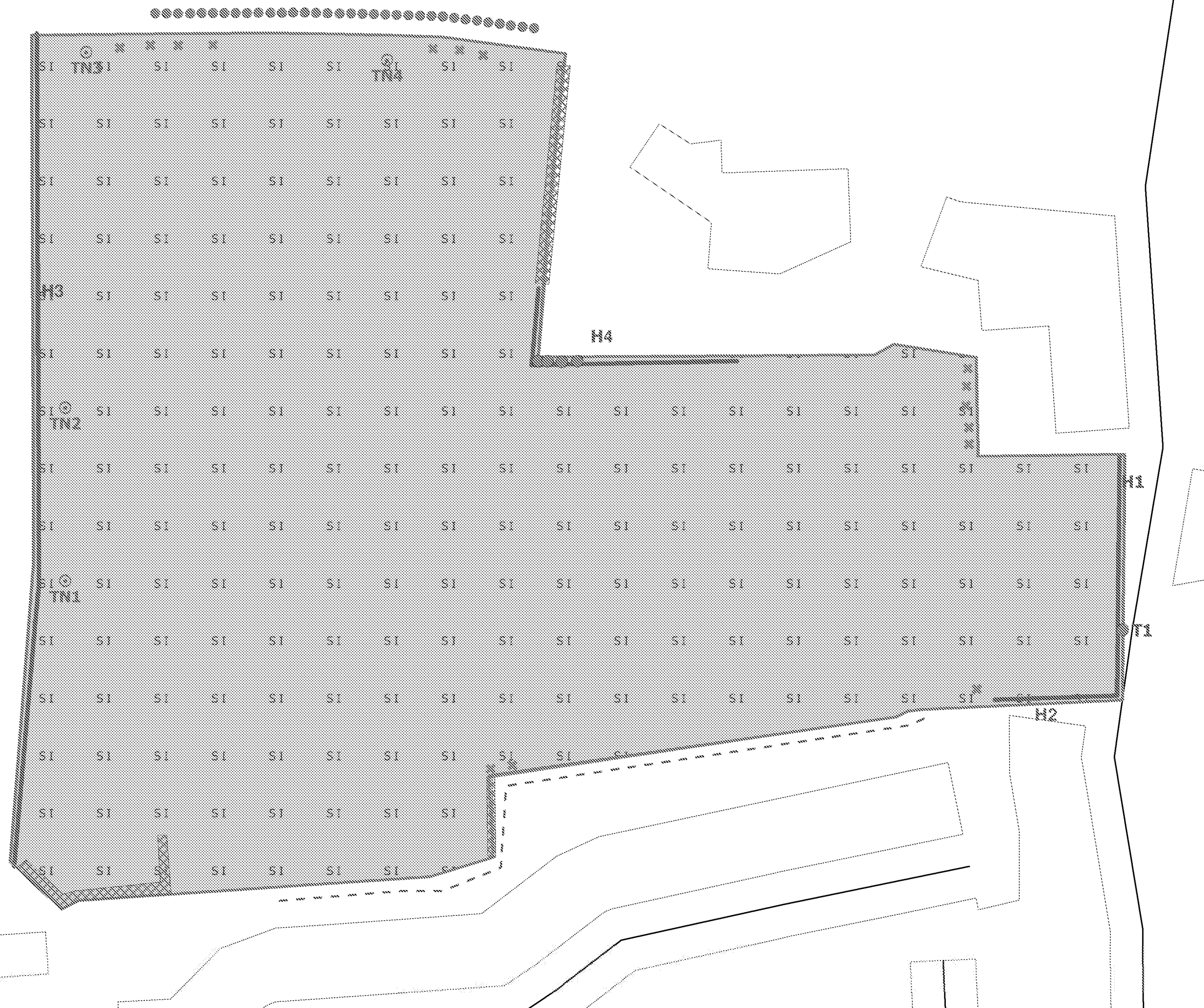
Sheet Size: A3 Scale of Original: 1:20,000

Client:
Persimmon Homes

Project:
Dapper's Lane, Angmering

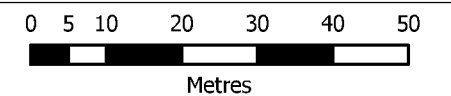
Title:
Site Location Plan

Office:	Project No:	Figure No:
4594	A085519-3	1



Legend

- Survey Area Boundary
- Target Note
- Scrub
- Mature Tree
- Dense Continuous Scrub
- Species-poor Hedge with Trees
- Dry Ditch
- SI Semi-improved Neutral Grassland



Created: JS	Checked: RP	Date: 22/11/2016	Version: V1.
----------------	----------------	---------------------	-----------------

Contains Ordnance Survey data © Crown Copyright
and database right 2012. All rights reserved.



Sheet Size: **A3** Scale of Original: **1:1,000**

Client:
Persimmon Homes

Project:
Dapper's Lane, Angmering

Title:
Phase 1 Habitat Survey Plan

Office: 4594	Project No: A085519-3	Figure No: 2
------------------------	---------------------------------	------------------------



APPENDIX B – Biodiversity and Environmental Legislation, Conventions and Threatened Lists



Introduction

The UK has ratified a number of Conventions and implemented legislation pertaining to the protection of biodiversity and habitats, either independently or as member state of the European Union. These are defined and summarised below.

Lists of threatened, endangered and extinct species are also provided, together with a summary explanation of each.

Bern Convention (1982)

The *Convention on the Conservation of European Wildlife and Natural Habitats* (the *Bern Convention*) was adopted in Bern, Switzerland in 1979, and was ratified in 1982. Its aims are to protect wild plants and animals and their habitats listed in Appendices 1 and 2 of the Convention, and regulate the exploitation of species listed in Appendix 3. The regulation imposes legal obligations on participating countries to protect over 500 plant species and more than 1000 animals.

To meet its obligations imposed by the Convention, the European Community adopted the *EC Birds Directive* (1979) and the *EC Habitats Directive* (1992 – see below). Since the Lisbon Treaty, in force since 1st December 2009, European legislation has been adopted by the European Union.

UK Post-2010 Biodiversity Framework

The Environment Departments of all four governments in the UK work together through the Four Countries Biodiversity Group. Together they have agreed, and Ministers have signed, a framework of priorities for UK-level work for the Convention on Biological Diversity. Published on 17 July 2012, the 'UK Post-2010 Biodiversity Framework' covers the period from 2011 to 2020.

Although the UK Post-2010 Biodiversity Framework does not confer any statutory legal protection, in practice many of the species listed already receive statutory legal protection under UK and / or European legislation. In addition, the majority of Priority national (English) BAP habitats and species are now those listed as Habitats and Species of Principal Importance in England (listed under Section 41 (S41) of the NERC Act 2006). All public bodies have a legal obligation or *biodiversity duty* under Section 40 of the NERC Act (2006) to conserve biodiversity by having particular regard to those species and habitats listed under S41.



Local Biodiversity Action Plan

Local Biodiversity Action Plans (LBAP) identify habitat and species conservation priorities at a local level (typically at the County level), and are usually drawn up by a consortium of local Government organisations and conservation charities.

Birds Directive (BD)

The *EC Directive on the Conservation of Wild Birds* (791409/EEC) or '*Birds Directive*' was introduced to achieve favourable conservation status of all wild bird species across their distribution range. In this context, the most important provision is the identification and classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex 1 of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance.

Birds of Conservation Concern (BoCC)

This is a review of the status of all birds occurring regularly in the United Kingdom. It is regularly updated and is prepared by leading bird conservation organisations, including the British Trust for Ornithology (BTO), Joint Nature Conservation Committee (JNCC) and The Royal Society for the Protection of Birds (RSPB).

The latest report was produced in 2009 (Eaton *et al*, 2009) and identified 52 red list species, 126 amber species, and 68 green species. The criteria are complex, but generally:

- ✧ Red list species are those that have shown a decline of the breeding population, non-breeding population or breeding range of more than 50% in the last 25 years.
- ✧ Amber list species are those that have shown a decline of the breeding population, non-breeding population or breeding range of between 25% and 50% in the last 25 years. Species that have a UK breeding population of less than 300 or a non-breeding population of less than 900 individuals are also included, together with those whose 50% of the population is localised in 10 sites or fewer and those whose 20% of the European population is found in the UK.
- ✧ Green list species are all regularly occurring species that do not qualify under any of the red or amber criteria are green listed



Bonn Convention

The Convention on the Conservation of Migratory Species of Wild Animals or '*Bonn Convention*' was adopted in Bonn, Germany in 1979 and came into force in 1985. Participating states agree to work together to preserve migratory species and their habitats by providing strict protection to species listed in Appendix I of the Convention. It also establishes agreements for the conservation and management of migratory species listed in Appendix II.

In the UK, the requirements of the convention are implemented via the *Wildlife & Countryside Act 1981* (as amended), *Wildlife (Northern Ireland) Order 1985*, *Nature Conservation and Amenity Lands (Northern Ireland) Order 1985* and the *Countryside and Rights of Way Act 2000* (CROW).

Global IUCN Red List

The International Union for Conservation of Nature (IUCN) Threatened Species was devised to provide a list of those species that are most at risk of becoming extinct globally. It provides taxonomic, conservation status and distribution information about threatened taxa around the globe.

The system catalogues threatened species into groups of varying levels of threat, which are: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CE), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), Not Evaluated (NE). Criteria for designation into each of the categories is complex, and consider several principles.

Habitats Directive

The *Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora*, or the '*Habitats Directive*', is a European Union directive adopted in 1992 in response to the Bern Convention. Its aims are to protect approximately 220 habitats and 1,000 species listed in its several Annexes.

In the UK, the *Habitats Directive* is transposed into national law via the *Conservation of Habitats and Species (Amendment) Regulations 2012* in England, Scotland and Wales, and via the *Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended)* in Northern Ireland.

Protection of Badgers Act 1992 (PBA 1992)

The main legislation protecting badgers in England and Wales is the *Protection of Badgers Act 1992* (the 1992 Act). Under the 1992 Act it is an offence to: wilfully kill, injure, take or attempt to kill, injure or take a badger; dig for a badger; interfere with a badger sett by, damaging a sett or any part



thereof, destroying a sett, obstructing access to a sett, causing a dog to enter a sett or disturbing a badger while occupying a sett.

The 1992 Act defines a badger sett as: "any structure or place which displays signs indicating current use by a badger"

National Planning Policy Framework (2012)

Following the publication of the National Planning Policy Framework (NPPF) in March 2012, *Planning Policy Statement 9 (PPS9): Biodiversity and Geological Conservation (2005)* has been withdrawn. However, *ODPM 06/2005: Biodiversity and Geological Conservation – Statutory Obligations and their impact within the Planning System* (the guidance document that accompanied PPS9) has not been withdrawn and, where more detailed guidance is required than is given within the NPPF, local planning authorities will continue to rely on ODPM 06/2005.

This guidance requires local planning authorities to take account of the conservation of protected species when determining planning applications and makes the presence of a protected species a material consideration when assessing a development proposal that, if carried out, would be likely to result in harm to the species or its habitat.

In the case of European Protected Species such as bats, planning policy emphasises that strict statutory provisions apply (including the *Conservation of Habitats and Species (Amendment) Regulations 2012*), to which a planning authority must have due regard.

Where developments requiring planning permission are likely to impact upon protected species it is necessary that protected species surveys are undertaken and submitted to meet the requirements of paragraph 98 of ODPM Circular 06/2005 which states that:

'The presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat.'

General guidance within the body of the NPPF which are also potentially relevant to the possible presence of bats at the site includes the following statements:

"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"*

"Local planning authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife or geodiversity sites or landscape areas will be judged."

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

- ✧ *if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;"*

Species of Principal Importance in England

Section 41 (S41) of this Act requires the Secretary of State to publish a list (in consultation with Natural England) of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as public bodies including local and regional authorities, in implementing their duty under Section 40 of the *Natural Environment and rural Communities (NERC) Act 2006*, to have regard to the conservation of biodiversity in England, when carrying out their normal (e.g. planning) functions. The S41 list includes 65 habitats of principal importance and 1,150 species of principal importance.

The Conservation of Habitats and Species Regulations 2010 (as amended)

The *Conservation of Habitats and Species Regulations 2010* (as amended) came into force on 16th August 2012 and amend the *Conservation of Habitats and Species Regulations 2010* to ensure the various provisions of Directive 92/43/EC ('the Habitats Directive') are transposed in a clear manner.

Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species (listed in Annexes I or II of the Habitats Directive respectively) to the European Commission. These sites, if ratified by the European Commission, are then designated as Special Protection Areas (SPAs) within six years. The 2012 amendments include that public bodies help preserve, maintain and re-establish habitats for wild birds.

The Regulations also make it an offence to deliberately capture, kill, disturb or trade in the animals listed in Schedule 2, or pick, uproot, destroy, or trade in the plants listed in Schedule 5 (see Table 1).



Table 1 Schedules of the Conservation of Habitats and Species Regulations 2010 (as amended)

Schedule 2 – European Protected Species of Animals		Schedule 5 – European Protected Species of Plant	
Common name	Scientific name	Common name	Scientific name
Horseshoe bats	Rhinolophidae - all species	Dock, Shore	<i>Rumex rupestris</i>
Common bats	Vespertilionidae - all species	Killarney Fern	<i>Trichomanes speciosum</i>
Wild Cat	<i>Felis silvestris</i>	Early Gentian	<i>Gentianella anglica</i>
Dolphins, porpoises and whales	Cetacea – all species	Lady's-slipper	<i>Cypripedium calceolus</i>
Dormouse	<i>Muscardinus avellanarius</i>	Creeping Marshwort	<i>Apium repens</i>
Pool Frog	<i>Rana lessonae</i>	Slender Naiad	<i>Najas flexilis</i>
Sand Lizard	<i>Lacerta agilis</i>	Fen Orchid	<i>Liparis loeselii</i>
Fisher's Estuarine Moth	<i>Gortyna borelii lunata</i>	Plantain, Floating-leaved water	<i>Luronium natans</i>
Newt, Great Crested	<i>Triturus cristatus</i>	Yellow Marsh Saxifrage	<i>Saxifraga hirculus</i>
Otter	<i>Lutra lutra</i>		
Lesser Whirlpool Ram's-horn Snail	<i>Anisus vorticulus</i>		
Smooth Snake	<i>Coronella austriaca</i>		
Sturgeon	<i>Acipenser sturio</i>		
Natterjack Toad	<i>Bufo calamita</i>		
Marine Turtles	<i>Caretta caretta</i> , <i>Chelonia mydas</i> , <i>Lepidochelys kempii</i> , <i>Eretmochelys imbricata</i> , <i>Dermochelys coriacea</i>		



The Hedgerow Regulations 1997

The *Hedgerow Regulations 1997* were made under Section 97 of the *Environment Act 1995* and came into force in 1997. They introduced new arrangements for local planning authorities in England and Wales to protect important hedgerows in the countryside, by controlling their removal through a system of notification. Important hedgerows are defined by complex assessment criteria, which draw on biodiversity features, historical context and the landscape value of the hedgerow.

Wildlife and Countryside Act 1981 (as amended)

This is the principal mechanism for the legislative protection of wildlife in the UK. This legislation is the chief means by which the '*Bern Convention*' and the *Birds Directive* are implemented in the UK. Since it was first introduced, the Act has been amended several times.

The Act makes it an offence to (with exception to species listed in Schedule 2) intentionally:

- ✧ kill, injure, or take any wild bird,
- ✧ take, damage or destroy the nest of any wild bird while that nest is in use, or
- ✧ take or destroy an egg of any wild bird.

In addition, the Act makes it an offence (subject to exceptions) to:

- ✧ intentionally or recklessly kill, injure or take any wild animal listed on Schedule 5,
- ✧ interfere with places used for shelter or protection, or intentionally disturbing animals occupying such places.
- ✧ The Act also prohibits certain methods of killing, injuring, or taking wild animals

Finally, the Act also makes it an offence (subject to exceptions) to:

- ✧ intentionally pick, uproot or destroy any wild plant listed in Schedule 8, or any seed or spore attached to any such wild plant,
- ✧ unless an authorised person, intentionally uproot any wild plant not included in Schedule 8,
- ✧ sell, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.



Following all amendments to the Act, Schedule 5 'Animals which are Protected' contains a total of 154 species of animal, including several mammals, reptiles, amphibians, fish and invertebrates. Schedule 8 'Plants which are Protected' of the Act, contains 185 species, including higher plants, bryophytes and fungi and lichens. A comprehensive and up-to-date list of these species can be obtained from the JNCC website.

Part 14 of the Act makes unlawful to plant or otherwise cause to grow in the wild any plant which is listed in Part II of Schedule 9.

Table 2 provides a comprehensive list of plant species listed in this schedule. It is recommended that plant material of these species is disposed of as bio-hazardous waste, and these plants should not be used in planting schemes.

Table 2 Invasive plant species listed in Schedule 9 of the *Wildlife & Countryside Act 1981* (as amended)

Common name	Scientific name
Perfoliate alexanders	<i>Smyrniium perfoliatum</i>
Red algae	<i>Grateloupia luxurians</i>
Variagated yellow archangel	<i>Lamiastrum galeobdolon</i> subsp. <i>argentatum</i>
Yellow azalea	<i>Rhododendron luteum</i>
Himalayan balsam	<i>Impatiens glandulifera</i>
Cotoneaster	<i>Cotoneaster horizontalis</i>
Entire-leaved cotoneaster	<i>Cotoneaster integrifolius</i>
Himalayan cotoneaster	<i>Cotoneaster simonsii</i>
Hollyberry cotoneaster	<i>Cotoneaster bullatus</i>
Small-leaved cotoneaster	<i>Cotoneaster microphyllus</i>
False Virginia creeper	<i>Parthenocissus inserta</i>
Virginia creeper	<i>Parthenocissus quinquefolia</i>
Purple dewplant	<i>Disphyma crassifolium</i>
Fanwort or Carolina water-shield	<i>Cabomba caroliniana</i>
Water fern	<i>Azolla filiculoides</i>
Hottentot fig	<i>Carpobrotus edulis</i>



Common name	Scientific name
Three-cornered garlic	<i>Allium triquetrum</i>
Giant hogweed	<i>Heracleum mantegazzianum</i>
Water hyacinth	<i>Eichhornia crassipes</i>
Giant kelp	<i>Macrocystis</i> spp.
Giant knotweed	<i>Fallopia sachalinensis</i>
Hybrid knotweed	<i>Fallopia japonica</i> × <i>Fallopia sachalinensis</i>
Japanese knotweed	<i>Fallopia japonica</i>
Few-flowered garlic	<i>Allium paradoxum</i>
Water lettuce	<i>Pistia stratiotes</i>
Parrot's-feather	<i>Myriophyllum aquaticum</i>
Floating pennywort	<i>Hydrocotyle ranunculoides</i>
Duck potato	<i>Sagittaria latifolia</i>
Floating water primrose	<i>Ludwigia peploides</i>
Water primrose	<i>Ludwigia grandiflora</i>
Water primrose	<i>Ludwigia uruguayensis</i>
Rhododendron	<i>Rhododendron ponticum</i>
Rhododendron	<i>Rhododendron ponticum</i> × <i>Rhododendron maximum</i>
Giant rhubarb	<i>Gunnera tinctoria</i>
Japanese rose	<i>Rosa rugosa</i>
Giant salvinia	<i>Salvinia molesta</i>
Green seafingers	<i>Codium fragile</i>
Californian red seaweed	<i>Pilayella littoralis</i>
Hooked asparagus seaweed	<i>Asparagopsis armata</i>
Japanese seaweed	<i>Sargassum muticum</i>
Laver seaweeds (except native species)	<i>Porphyra</i> spp
Australian swamp stonecrop or New Zealand pygmyweed	<i>Crassula helmsii</i>

Dapper's Lane, Angmering, West Sussex: Preliminary Ecological Appraisal Report

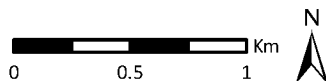
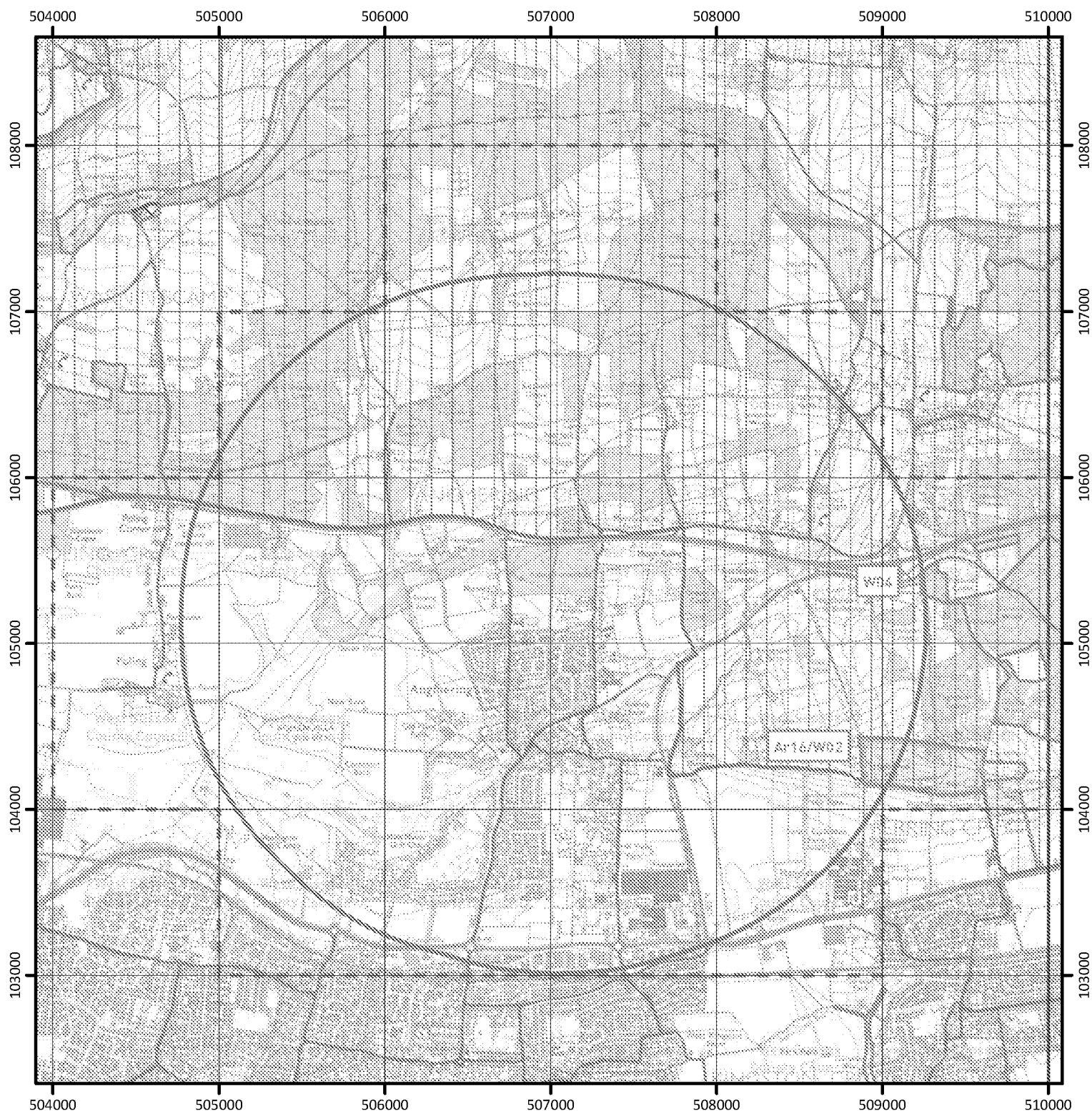


Common name	Scientific name
Wakame	<i>Undaria pinnatifida</i>
Curly waterweed	<i>Lagarosiphon major</i>
Waterweeds	<i>Elodea</i> spp.



APPENDIX C –2km Data Search Maps

Designated Site Map (ESD/14/42)
Land at Dappers Lane, Angmering + 2km buffer
 Prepared for Isla Hoffman (WYG) - 27/01/2014



Key to Map:

-  Enquiry area
-  Species search area
-  LGS
-  National Park
-  SNCI

© Crown copyright and database rights 2014 Ordnance Survey. West Sussex County Council 100023447. East Sussex County Council 100019601. Natural England 100046223. Sussex Wildlife Trust 100025883.

RAMSAR, Special Area of Conservation (SAC), Special Protection Area (SPA), National Park, Area of Outstanding Natural Beauty (AONB), National Nature Reserve (NNR), Site of Special Scientific Interest (SSSI), Local Nature Reserve (LNR) and Country Park data reproduced with permission of Natural England. Site of Nature Conservation Importance (SNCI) data provided by East and West Sussex County Councils, and Brighton & Hove City Council. Notable Road Verge data supplied by East and West Sussex County Councils. Local Geological Site (LGS) data created by SxBRc in partnership with Sussex Geodiversity Group. © Crown Copyright. All rights reserved 2014.

Habitat Map (ESD/14/42)

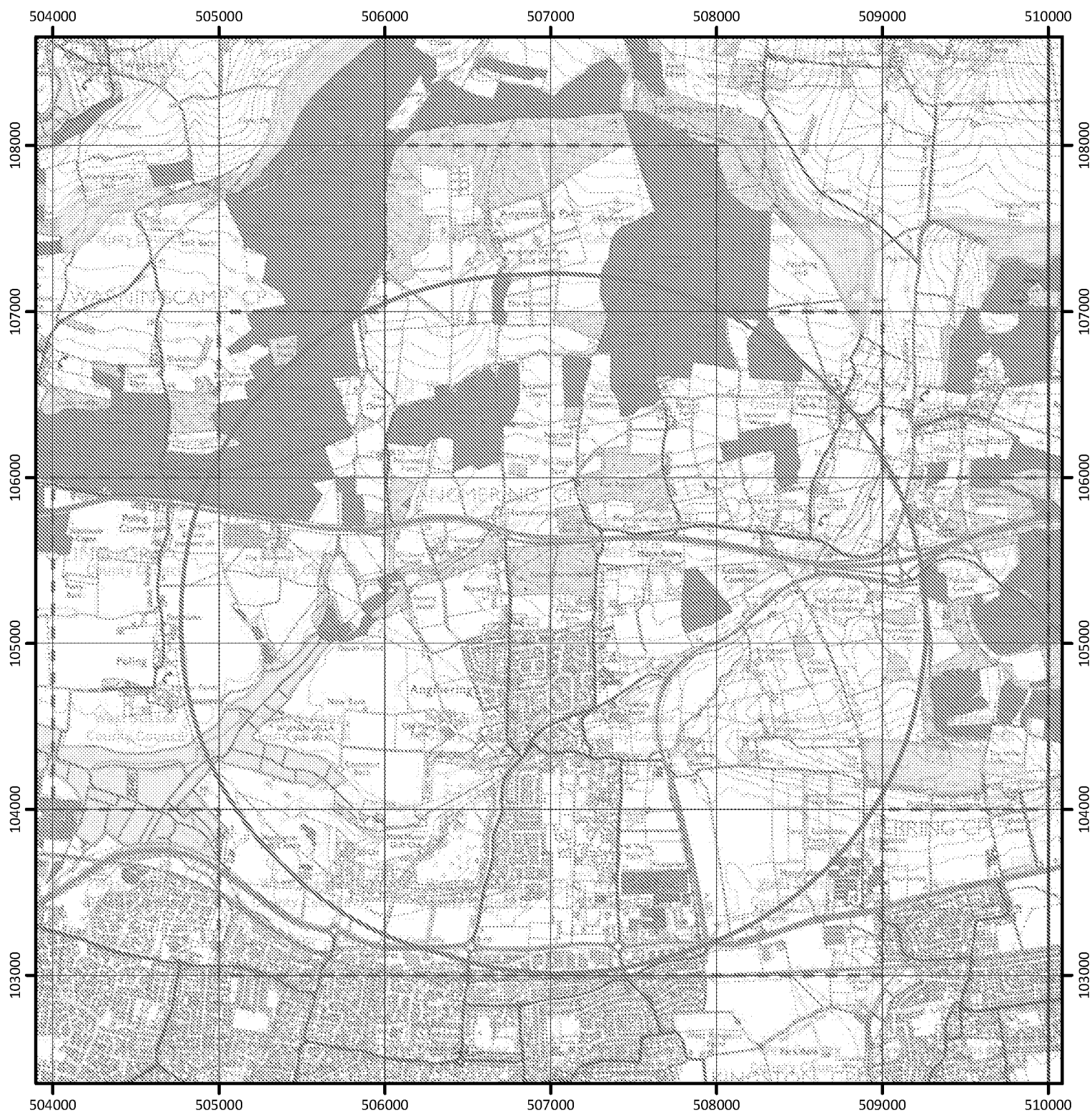
Land at Dappers Lane, Angmering + 2km buffer

Prepared for Isla Hoffman (WYG) - 27/01/2014



**Sussex
Biodiversity
Record Centre**

Woods Mill, Henfield,
West Sussex BN5 9SD
sxbrcc@sussexwt.org.uk
01273 497 558
www.sxbrcc.org.uk



Key to Map:

-  Enquiry area
-  Species search area
-  Ancient/veteran tree
-  Ancient woodland
-  Coastal & floodplain grazing marsh
-  Lowland calcareous grassland
-  Open Water
-  Traditional orchard

© Crown copyright and database rights 2014 Ordnance Survey. West Sussex County Council 100023447. East Sussex County Council 100019601. Natural England 100046223. Sussex Wildlife Trust 100025883.

Ancient woodland, traditional orchards, vegetated shingle and saline lagoon data reproduced with permission of Natural England. Revised coastal and floodplain grazing marsh data remains provisional and is also reproduced with permission of Natural England. Chalk grassland data supplied by Natural England and South Downs Conservation Board. Black Poplar data supplied by Sussex Wetland Landscapes Project. Ghyll woodland data supplied by Dr Francis Rose. Reedbed data funded by Environment Agency and West Sussex County Council is provided by Sussex Biodiversity Record Centre and maintained by RSPB. Heathland data funded by West Sussex County Council, RSPB and High Weald AONB Unit. Ancient/veteran tree data derived from results of the Ancient Tree Hunt Project and the Tree Register of the British Isles (TROBI). South East Coastal Habitat Mapping data reproduced with permission of Environment Agency. © Crown Copyright. All rights reserved 2014.

Habitat data held by Sussex Biodiversity Record Centre (SxBRC) are created in-house or obtained from a variety of dataset providers. SxBRC continually strive to further improve and update these data wherever possible. However, this map should be treated as indicative rather than definitive: data may be generated from a range of field survey and/or predictive methods, each of which may have its own inherent limitations. In some situations a recent ground survey may be required to establish definitively the current status of a particular habitat at a specific location.



APPENDIX D –Wildlife Planting List



Table 1: Shrub species of native origin or generally thought to be beneficial to wildlife

(Source: 'Gardening with wildlife in mind', Natural England, 2008)

Common name	Scientific name
Hazel	<i>Corylus avellana</i>
Elder	<i>Sambucus nigra</i>
Goat willow	<i>Salix caprea</i>
Hawthorn	<i>Crataegus monogyna</i>
Dog rose	<i>Rosa canina</i>
Butterfly bush	<i>Buddleia davidii</i>
Guelder rose	<i>Viburnum opulus</i>
Gorse	<i>Ulex europaeus</i>
Broom	<i>Cytisus scoparius</i>
Wayfaring tree	<i>Viburnum lantana</i>
Shrubby cinquefoil	<i>Potentilla fruticosa</i>
Raspberry	<i>Rubus idaeus</i>
Alder buckthorn	<i>Frangula alnus</i>
Wild privet	<i>Ligustrum vulgare</i>
Barberry	<i>Berberis x stenophylla</i>
Barberry	<i>Berberis vulgaris</i>
Bell heather	<i>Erica cinerea</i>
Bilberry	<i>Vaccinium myrtillus</i>
Black currant	<i>Ribes nigrum</i>
Blackthorn	<i>Prunus spinosa</i>
Buckthorn	<i>Rhamnus catharticus</i>
Butcher's-broom	<i>Ruscus aculeatus</i>
Cherry laurel	<i>Prunus laurocerasus</i>
Cowberry	<i>Vaccinium vitis-idaea</i>
Cross-leaved heath	<i>Erica tetralix</i>
New Zealand holly	<i>Olearia macrodonta</i>
Daphne	<i>Daphne odora</i>
Dogwood	<i>Cornus sanguinea</i>
Field rose	<i>Rosa arvensis</i>
Firethorn	<i>Pyracanthus angustifolia</i>
Flowering Currant	<i>Ribes sanguineum</i>
Gooseberry	<i>Ribes uva-crispa</i>
Hebe 'Midsummer Beauty'	<i>Hebe species</i>
Himalayan honeysuckle	<i>Leycesteria formosa</i>



Common name	Scientific name
Holly	<i>Ilex aquifolium</i>
Japanese quince	<i>Chaenomeles japonica</i>
Lilac	<i>Syringa vulgaris</i>
Mexican orange	<i>Choisya ternata</i>
Mezereon	<i>Daphne mezereum</i>
Midland Hawthorn	<i>Crataegus laevigata</i>
Oregon Grape	<i>Mahonia aquifolium</i>
Osier	<i>Salix viminalis</i>
Portugal laurel	<i>Prunus lusitanica</i>
Privet	<i>Lustrum ovalifolium</i>
Purple Willow	<i>Salix purpurea</i>
Snowy Mespilus	<i>Amelanchier canadensis</i> , <i>Amelanchier lamarckii</i>
Spindle	<i>Euonymus europaeus</i>
Spurge laurel	<i>Daphne laureola</i>
Sweet briar	<i>Rosa rubiginosa</i>
Wild privet	<i>Ligustrum vulgare</i>

Table 2: Tree species of native origin or generally thought to be beneficial to wildlife

(Source: 'Gardening with wildlife in mind', Natural England, 2008)

Common name	Scientific name
Pedunculate oak	<i>Quercus robur</i>
Ash	<i>Fraxinus excelsior</i>
Wych Elms	<i>Ulmus glabra</i>
Whitebeams	<i>Sorbus aria</i> agg.
Rowan	<i>Sorbus aucuparia</i>
Aspen	<i>Populus tremula</i>
Apple	<i>Malus domestica</i>
Bird Cherry	<i>Prunus pardus</i>
Common Alder	<i>Alnus glutinosa</i>
Crab apple	<i>Malus sylvestris</i>
Crack Willow	<i>Salix fragilis</i>
Downy Birch	<i>Betula pubescens</i>
False Acacia	<i>Robinia pseudoacacia</i>
Field Maple	<i>Acer campestre</i>



Hornbeam	<i>Carpinus betulus</i>
Juniper	<i>Juniperus communis</i>
Large-leaved lime	<i>Tilia platyphyllos</i>
Small-leaved lime	<i>Tilia cordata</i>
Pear	<i>Pyrus communis</i>
Scots Pine	<i>Pinus sylvestris</i>
Sessile oak	<i>Quercus petraea</i>
Silver birch	<i>Betula pendula</i>
Sweet chestnut	<i>Castanea sativa</i>
Wild Cherry	<i>Prunus avium</i>
Wild service-tree	<i>Sorbus torminalis</i>
Yew	<i>Taxus baccata</i>



Table 3: Gardening for bats

Aim at having flowers in bloom throughout the year, including both annuals and herbaceous perennials. Below are some suggestions, but this is not an exhaustive list. Flowering times are approximate, varying dependent on region. Regular dead-heading extends flowering period in many flowers.

A=annual, HA= hardy, annual, HHA=half-hardy annual, P=perennial, W=wild flower.

Flowers for borders			
St. John's Wort	<i>Hypericum</i>	P	March
Marigolds	<i>Calendula</i>	H/A	March-October
Aubrietia	<i>Aubrietia deltoidea</i>	P	March-June
Honesty	<i>Lunaria rediviva</i>	HB	March
Forget-me-not	<i>Myosotis</i> sp.	A/P	March-May
Elephant ears	<i>Bergenia</i>	P	April
Wallflowers	<i>Erysimum</i>	B	April-June
Cranesbills	<i>Geranium</i> sp.	P	May-September
Yarrow	<i>Achillea</i>	P	May-
Poppies	<i>Papaver</i> sp.	A	May- July
Dames violet	<i>Hesperis matronalis</i>	P	May-August
Red Valerian	<i>Centranthus ruber</i>	P	May-Sept
Poached egg plant	<i>Limnanthes</i>	HA	June-August
Knapweed	<i>Centaurea nigra</i>	P	June-September
Phacelia		HA	June-September
Ox-eye daisy	<i>Leucanthemum vulgare</i>	P	June-August
Evening primrose	<i>Oenothera biennis</i>	B	June-September
Candytuft	<i>Iberis umbellata</i>	HA	June-September
Sweet William	<i>Dianthus barbatus</i>	B	June-July
Blanket flowers	<i>Gaillardia</i>	P	June -
Verbena	<i>Verbena bonariensis</i>	HHA	June-October
Scabious	<i>Knautia arvensis</i>	P	July-August
Night-scented stock	<i>Mattiola bicornia</i>	HA	July-August
Pincushion flower	<i>Scabious</i> sp.	A/P	July-September
Cherry pie	<i>Heliotrope</i>	HHA	July-October
Mexican aster	<i>Cosmos</i> sp.	A/P	July-October
Cone flower	<i>Rudbeckia</i> sp.	A/P	August-November
Mallow	<i>Lavatera</i> sp.	P	August-October
Michaelmas daisy	<i>Aster</i> sp.	P	August-September
Ice plant 'Pink lady'	<i>Sedum spectabile</i>	P	September



Herbs – both leaves and flowers are fragrant			
Fennel	<i>Foeniculum vulgare</i>		July-September
Bergamont	<i>Monarda didyma</i>		June-September
Sweet Cicely	<i>Myrrhis odorata</i>		April-June
Hyssop	<i>Hyssopus officinalis</i>		July-September
Feverfew	<i>Tanacetum parthenium</i>		June-September
Borage	<i>Borago officinalis</i>		May-September
Rosemary	<i>Rosmarinus officinalis</i>		March-May
Lemon balm	<i>Melissa officinalis</i>		
Coriander	<i>Coprianrum sativum</i>		June-August
Lavenders	<i>Lavendula</i> sp.		
Marjoram	<i>Origanum</i> sp.		
Trees, shrubs and climbers important to insects			
Oak	<i>Quercus</i> sp.		large gardens only
Silver birch	<i>Betula pendula</i>		
Common alder	<i>Alnus glutinosa</i>		Suitable for coppicing
Hazel	<i>Corylus avellana</i>		Suitable for coppicing
Elder	<i>Sambucus nigra</i>		Small
Goat willow	<i>Salix caprea</i>		Suitable for coppicing
Hawthorn	<i>Crataegus monogyna</i>		Suitable for coppicing
Honeysuckle	<i>Lonicera</i> sp.		Grow a variety for succession
Dog rose	<i>Rosa canina</i>		Climber
Bramble	<i>Rubus fruticosus</i>		Climber
Ivy	<i>Hedera helix</i>		Climber
Buddleia	<i>Buddleija davidii</i>		Shrub
Guelder rose	<i>Viburnum opulus</i>		Shrub
Gorse	<i>Ulex</i> sp.		Shrub
Plants for pond edges and marshy areas			
Purple loosestrife	<i>Lythrum salicaria</i>	W	June-August
Meadow sweet	<i>Filipendula ulmaria</i>	W	June-September
Lady's smock	<i>Cardamine pratensis</i>	W	April-June
Water mint	<i>Mentha aquatica</i>	W	July-September
Angelica	<i>Angelica sylvestris</i>	W	July-September
Hemp agrimony	<i>Eupatorium cannabinum</i>	W	March-May
Marsh marigold	<i>Caltha palustris</i>	W	June-September
Creeping Jenny	<i>Lysimachia nummularium</i>	W	May-August
Fringed water lily	<i>Nymphoides peltata</i>	W	June-September



Water forget-me-not	<i>Myosotis scorpioides</i>	W	June-September
---------------------	-----------------------------	---	----------------

Allow part lawns to grow long in summer and cut in autumn, removing the clippings. Avoid using fertilisers. Compost heaps are food producers of insects too.

(Source: '*Gardening for bats*', Bat Conservation Trust, 2004)