



Barratt Homes

Sinah Lane, Hayling Island

Extended Phase 1 Habitat Survey

June 2018

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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	3
2.1 National Planning Policy	3
2.2 Local Planning Policy	4
2.3 Legislation	4
3.0 Methodology	7
3.1 Desk Study	7
3.2 Field Surveys	7
4.0 Baseline Conditions	10
4.1 Designated Sites	10
4.2 Habitats	14
4.3 Protected & Notable Species	15
4.4 Invasive Species	17
5.0 Constraints & Opportunities	18
5.1 Designated Sites	18
5.2 Habitats	18
5.3 Protected & Notable Species	19
6.0 Conclusions	23
7.0 References	24

FIGURES

Figure 1 – Site Location Plan

Figure 2 – Phase 1 Habitat Plan

APPENDIX A - Invasive plant species list



Executive Summary

Contents	Summary
Site Location	The site is located within the south west of Hayling Island, centred on OS Grid Reference SZ 70816 99897. Two residential streets separate the site from the coastline to the west. To the south further residential dwellings, whilst arable fields sit to the north and east.
Proposals	The erection of 195 dwellings, associated open space, pumping station, sub-station with vehicular access via Sinah Lane and change of use of land from agricultural to a Wader and Brent Geese refuge.
Previous Reports / Surveys	Tyler Grange previously completed an EA of the site.
This Survey(s)	Sinah lane, Hayling Island: Extended Phase 1 Habitat Survey.
Results	Habitat suitable for: • Over wintering birds; • Nesting birds within trees; • Reptiles around hedgerow peripheries; • Foraging and commuting bats; • Roosting bats.
Recommendations	• It is recommended that boundary features are retained on site where possible, including all hedgerows and reinforced with native species of local provenance. • It is recommended that any removal of vegetation is undertaken outside nesting bird season, which runs from March to September inclusive. If this is not possible, then a thorough check for nesting birds should be made prior to clearance. If any active nests are found they must remain <i>in situ</i> until all young have fledged, with an appropriate buffer zone (usually 5m buffer) according to the species involved. • It is recommended that reptile presence absence surveys are carried out along the boundary habitats of the site. • It is recommended that a two surveys one emergence and one return survey is carried out on trees with moderate potential. • It is recommended that one dusk bat activity survey is conducted per season (3 surveys total). • It is recommended that a bat sensitive lighting scheme is designed to direct lighting away from areas of retained habitat to provide dark corridors for commuting bats within and around the final development. • As a precautionary approach, a pre- commencement check is recommended for badger up to one month prior to development commencing. • Wintering bird surveys are recommended which involved two visits per month between October and March. Given the surveys completed on site to date, it is likely that only one year of data will be required to support an application.



1.0 Introduction

1.1 Background

WYG was commissioned by Barratt Homes in June 2016 complete an extended Phase 1 habitat survey of a proposed development site at Sinah lane, Hayling Island (hereafter referred to as 'the site'). The site location is shown in Figure 1.

The site survey was completed on the 17th June 2016 by Sarah Cruickshank, Assistant Ecologist. This report was prepared by Consultant Ecologist Emmanuelle Amiral and is informed by data collected during the site survey as well as data gathered through an extensive desk survey using aerial imagery, the Multi-Agency Geographic Information for the Countryside (MAGIC) service and consultation with the biodiversity records centre local to the site (Hampshire Biodiversity Information Centre).

1.2 Site Location

The site is located within the south west of Hayling Island, centred on OS Grid Reference SZ 70816 99897. Two residential streets separate the site from the coastline to the west. To the south further residential dwellings, whilst arable fields sit to the north and east.

1.3 Development Proposals

The erection of 195 dwellings, associated open space, pumping station, sub-station with vehicular access via Sinah Lane and change of use of land from agricultural to a Wader and Brent Geese refuge.

1.4 Survey & Reporting Objectives

The ecological investigations undertaken by WYG 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 the site and its surroundings for up to 2km of the site;
- An extended Phase 1 habitat survey involving a walkover of the site to record habitat types and dominant vegetation, invasive species, a reconnaissance survey for evidence of protected fauna or habitats capable of supporting such species;
- 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.



2.0 Planning Policy & Legislation

2.1 National Planning Policy

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 Regulations 2010* (as amended)), 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."*

2.1.1 Biodiversity 2020

Biodiversity 2020: A strategy for England's wildlife and ecosystem services replaces the previous UK Biodiversity Action Plan and sets national targets to be achieved. The intent of Biodiversity 2020, however, is much broader than the protection and enhancement of less common species, and is meant to embrace the wider countryside as a whole.

The priority species and habitats considered under Biodiversity 2020 are those detailed under Section 41 of the Natural Environment and Rural Communities (NERC) Act, 2006 (as detailed below).

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. Although no-longer accountable at a national level many are still managed and implemented at a local level.

2.2 Local Planning Policy

The Havant Borough Local Plan (Core Strategy) includes Policy CS11 Protecting and Enhancing the Special Environment and Heritage of Havant Borough

Planning permission will be granted for development that:

- Has particular regard to the following hierarchy of nature conservation designations within the borough (i) Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar (ii) Sites of Special Scientific Interest (SSSI) and National Nature Reserves. (iii) Sites of Importance for Nature Conservation (SINC), Local Nature Reserves (LNR) and other Ancient Woodland.
- Protects and where appropriate enhances the borough's statutory and non-statutory heritage designations by appropriately managing development in or adjacent to conservation areas, listed buildings, scheduled ancient monuments, historic parks and gardens, archaeological sites, buildings of local historic or architectural interest.
- Protects wildlife habitats and wildlife corridors to prevent the fragmentation of existing habitats and to allow species, for example Brent Geese, to respond to the impacts of climate change by making provision for habitat adaptation e.g. coastal managed realignment and species migration.

2.3 Legislation

2.3.1 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* (1982) and the *Birds Directive* (2009) are implemented in the UK. Since it was first introduced, the Act has been amended several times and includes the requirement to designate Special Protection Areas (SPAs) of particular importance to birds.



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.
- to disturb any bird listed within Schedule 1 without a valid licence.

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, a total of 154 species of animal, including several mammals, reptiles, amphibians, fish and invertebrates are protected under Schedule 5. Schedule 8 contains 185 protected species of flora, 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 it unlawful to plant or otherwise to allow to grow in the wild any plant which is listed in Part II of Schedule 9.

Appendix A 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.

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

The *Conservation of Habitats and Species Regulations 2010* (as amended) originally came into force in 1994 and was updated on 16th August 2012 to ensure the various provisions of Directive 92/43/EC (the *Habitats Directive*) are transposed in a clear manner. These regulations are predominately aimed at the conservation of habitats and species other than birds and complement the Wildlife and Countryside Act.



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 Areas of Conservation (SACs). 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 2).

2.3.3 Natural Environment and Rural Communities (NERC) Act 2006

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, NERC Act 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.

2.3.4 Hedgerow Regulations 1997

The *Hedgerow Regulations* 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.

2.3.5 Protection of Badgers Act 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".



3.0 Methodology

3.1 Desk Study

3.1.1 Local Records Centre

Wildlife information was provided by the Hampshire Biodiversity Information Centre (HBIC), the ecological records centre for Hampshire, regarding nature conservation designations and protected and notable species within 2km of the boundary of the proposed development site.

The data search included:

- Non-statutory nature conservation designations, such as Sites of Importance for Nature Conservation;
- Records of protected species, such as badgers, great crested newts and bats; and
- Records of notable species, such as those listed under Section 41 of the NERC Act 2006.

3.1.2 Online Resources

The Multi-Agency Geographic Information for the Countryside database (MAGIC) was utilised to gather details of statutory.

3.2 Field Surveys

An extended Phase 1 habitat survey was completed on the 17th June 2016 by Assistant Ecologist Sarah Cruickshank. All areas of the site were investigated, including those parts that are not expected to be affected directly by the works but that may be impacted indirectly.

3.2.1 Habitats

The habitat types within the site were noted during the walkover survey in accordance with the categories specified for a Phase 1 habitat survey (Joint Nature Conservation Committee, 2010). Dominant plant species were recorded for each habitat present.

3.2.2 Protected and Notable Species

The site was inspected for evidence of and its potential to support protected or notable species, especially those listed under the Conservation of Habitats and Species Regulations 2010 (as amended), the Wildlife & Countryside Act 1981 (as amended), the Natural Environment and Rural Communities (NERC) Act 2006, the Countryside & Rights of Way (CROW) Act 2000 or local Biodiversity Action Plans.

The following species were considered:

Great Crested Newts

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



Reptiles

The site was appraised for its suitability to support reptiles. The assessment was based on guidance outlined in the *Herpetofauna Workers' Manual* (Joint Nature Conservation Committee, 2003).

Bats

A full bat roost assessment of trees was not completed during the extended Phase 1 habitat survey, but should any trees be impacted by future proposals for the site, these trees should be assessed for their potential to support roosting bats.

Dormice

The site was appraised for its suitability to support dormice. The assessment was based on guidance outlined in the *Dormouse Conservation Handbook* (Bright *et al.*, 2006).

Badgers

The site was surveyed for evidence of badger setts or other badger activity such as paths, latrines or signs of foraging. Methodologies used and any setts recorded were classified according to published criteria (Harris, Cresswell & Jefferies, 1989). It is recommended in *Badgers and Development* (English Nature, 2011) that a 50m buffer around the site is investigated for evidence of badger activity where possible. This was not possible due to access restrictions.

Water Voles

Following methods set out in the *Water Vole Conservation Handbook* (Strachan & Moorhouse, 2011), an assessment of waterbodies within and adjacent to the site was undertaken to determine their suitability to support water voles and a search for evidence of activity was conducted, including droppings, latrines, burrows, footprints and feeding lawns, of any areas considered suitable.

Other Species

The site was also appraised for its suitability to support other protected or notable fauna including mammals, birds and invertebrates in accordance with the Institute for Ecology and Environmental Management's *Guidelines for Preliminary Ecological Appraisal* (2013). Evidence of any current or historical presence of such species was recorded.

Invasive Species

The site was searched for evidence of invasive plant species, such as Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*), giant hogweed (*Heracleum mantegazzianum*), New Zealand pygmyweed (*Crassula helmsii*), horizontal cotoneaster (*Cotoneaster horizontalis*), pontic rhododendron (*Rhododendron ponticum*) and floating pennywort (*Hydrocotyle ranunculoides*) (see Section 2.3.1 Table 1 for full list).



Limitations

The comprehensiveness of any ecological assessment will be limited by the season in which surveys are completed. The extended Phase 1 habitat survey was completed in June, within the optimum survey season and as such the timing of the survey is not considered to represent a limitation.

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 protected or priority species with reference to the *National Planning Policy Framework* (NPPF, 2012) and Circular 06/2005, especially those given protection under UK or European wildlife legislation.

A 50m buffer along all boundaries of the site could not be surveyed for evidence of badgers due to residential dwellings bordering the site. It is unlikely that badgers would be foraging or sett building in these areas and therefore is not considered a limitation to the extended Phase 1 habitat survey.

This report cannot therefore be considered a comprehensive assessment of the ecological interest of the site. However, it does provide an assessment of the ecological interest present on the day of the visit and highlights areas where further survey work may be recommended.

The need to update these surveys should be reviewed after 2 years (after June 2018). Beyond this period, if an application has not yet been submitted, it is recommended that a new review of the ecological conditions is undertaken.

4.0 Baseline Conditions

4.1 Designated Sites

Statutory designated sites

A data search to include all national European and International statutory sites was undertaken on MAGIC within 2km of the site.

There are four statutory sites within 2km of the site.

Table 1 Designated Sites

Designation	Site Name	Distance & Direction	Summary of features
Local Nature Reserve (LNR)	Hayling Billy	Adjacent north of the site	Hayling Billy is a nature trail running along the route of an old railway line which encompasses habitats important habitats for birds and scarce plants.
Special Areas of Conservation (SAC)	Solent Maritime	0.1km north west of the site	The Solent encompasses a major estuarine system on the south coast of England with four coastal plain estuaries Yar, Medina, King's Quay Shore, Hamble and four bar-built estuaries Newtown Harbour, Beaulieu, Langstone Harbour and Chichester Harbour. The site is the only one in the series to contain more than one physiographic sub-type of estuary and is the only cluster site. The Solent and its inlets are unique in Britain and Europe for their hydrographic regime of four tides each day, and for the complexity of the marine and estuarine habitats present within the area. Sediment habitats within the estuaries include extensive estuarine flats, often with intertidal areas supporting eelgrass (<i>Zostera spp</i>). and green algae, sand and shingle spits, and natural shoreline transitions. The mudflats range from low and variable salinity in the upper reaches of the estuaries to very sheltered almost fully marine muds in Chichester and Langstone Harbours. Unusual features include the presence of very rare sponges in the Yar estuary and a sandy 'reef' of the polychaete (<i>Sabellaria spinulosa</i>) on the steep eastern side of the entrance to Chichester Harbour.
Ramsar Site and Special Protection Area (SPA)	Chichester and Lanstone Harbour	0.1km north west of the site	Chichester and Langstone Harbours are located on the south coast of England in Hampshire and West Sussex. They are

Designation	Site Name	Distance & Direction	Summary of features
Site of Special Scientific Interest (SSSI)	Langstone Harbour		large, sheltered estuarine basins comprising extensive sand- and mud-flats exposed at low tide. The two harbours are joined by a stretch of water that separates Hayling Island from the mainland. Tidal channels drain the basin and penetrate far inland. The mud-flats are rich in invertebrates and also support extensive beds of algae, especially (<i>Enteromorpha</i>) species, and eelgrasses (<i>Zostera</i> spp). The basin contains a wide range of coastal habitats supporting important plant and animal communities. The site supports important overwintering populations of migratory waterfowl. It also supports important colonies of breeding terns.
SSSI	Sinah Common	0.6km south of the site.	The site is notified for its coastal habitats including the following: pioneer shingle vegetation, maritime shingle grassland which includes dry acid grassland and lichen rich acid grassland, mobile dune, semi-fixed dune, dune heath and an associated small area of saltmarsh. The site is also notified for the childing pink (<i>Petrorhagia nauteuillii</i>) an endangered plant which occurs at just two sites in Britain, and for its outstanding assemblage of nationally scarce plants including little robin (<i>Geranium purpureum</i>), Nottingham catchfly (<i>Silene nutans</i>), bulbous meadow-grass (<i>Poa bulbosa</i>), bearded fescue (<i>Vulpia fasciculata subsp ambigua</i>), dune fescue (<i>Vulpia fasciculata</i>), suffocated clover (<i>Trifolium suffocatum</i>).
LNR	The Kench, Hayling Island	1.3km west of the site	This shallow tidal inlet alongside Ferry Road on Hayling Island) is used by many birds as a feeding area while the tide is out and when it is high the shingle ridge between the inlet and the main harbour is used as a roost by waders. Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands. Sites which support one or more notable species – Golden Samphire (<i>Limbarda crithmoides</i>) & Sea Mayweed (<i>Tripleurospermum maritimum</i>).

Sites of Importance for Nature Conservation (SINCs)

There are 17 SINCs within 2km of the site.

Table 2 SINCs

SINC Ref	Site Name	Distance & Direction	Summary of features
HV0055	Saltmarsh Lane C	0.36km north east of the site.	A site which regularly supports a significant population of a species which has a restricted distribution or has substantially declined in population or range. Such sites may be used seasonally or for only one part of a species life-cycle. Species supported – dark-bellied brent goose (<i>Branta bernicla bernicla</i>)
HV0057	Saltmarsh Lane E	0.36 km north east of the site.	A site which regularly supports a significant population of a species which has a restricted distribution or has substantially declined in population or range. Such sites may be used seasonally or for only one part of a species life-cycle. Species supported – dark-bellied brent goose
HV0124	Sinah Stables	0.77 km south west of the site	A site which regularly supports a significant population of a species which has a restricted distribution or has substantially declined in population or range. Such sites may be used seasonally or for only one part of a species life-cycle. Species supported – dark-bellied brent goose
HV0123	Sinah Warren Village Marsh	0.80 km south west of the site.	Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands. Sites which support one or more notable species – golden samphire & sea wormwood
HV0122	Gun Site Car Park & Open Space	0.89 km west of the site.	Sites which support one or more notable species – (<i>Geranium purpureum forsteri</i>)
HV0061	Hayling Billy G	0.94 km north east of the site.	A site which regularly supports a significant population of a species which has a restricted distribution or has substantially declined in population or range. Such sites may be used seasonally or for only one part of a species life-cycle. Species supported – dark-bellied brent goose.
HV0073	South of Daw Lane H	1.20 km north east of the site.	A site which regularly supports a significant population of a species which has a restricted distribution or has substantially declined in population or range. Such sites may be used seasonally or for only one part of a species life-cycle. Species supported – dark-bellied brent goose
HV0062	Hayling Billy F	1.30 km north east of the site.	A site which regularly supports a significant population of a species which has a restricted distribution or has substantially declined in population or range. Such sites may be used seasonally or for only one part of a species life-cycle. Species supported – dark-bellied brent goose
HV0121	The Kench Scrubs	1.40 km west of the site.	Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands. Sites which support one or more notable species – golden samphire, sea mayweed & sea radish.



SINC Ref	Site Name	Distance & Direction	Summary of features
HV0144	The Kench Beach (East)	1.52 km north east of the site.	Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands. Sites which support one or more notable species – marram, golden samphire & sea radish.
HV0063	Hayling Billy E	1.57 km north east of the site.	A site which regularly supports a significant population of a species which has a restricted distribution or has substantially declined in population or range. Such sites may be used seasonally or for only one part of a species life-cycle. Species supported – dark-bellied brent goose
HV0125	Beachlands East	1.63 km south east of the site	Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands. Sites which support one or more notable species – sand sedge, toothed medick, upright chickweed, english stonecrop, & suffocated clover
HV0064	Hayling Billy D	1.66 km north east of the site.	A site which regularly supports a significant population of a species which has a restricted distribution or has substantially declined in population or range. Such sites may be used seasonally or for only one part of a species life-cycle. Species supported – dark-bellied brent goose
HV0091	Hayling Secondary School Playing Field	1.75 km north east of the site.	A site which regularly supports a significant population of a species which has a restricted distribution or has substantially declined in population or range. Such sites may be used seasonally or for only one part of a species life-cycle. species supported – dark-bellied brent goose
HV0078	South of Daw Lane C	1.86 km north east of the site.	A site which regularly supports a significant population of a species which has a restricted distribution or has substantially declined in population or range. Such sites may be used seasonally or for only one part of a species life-cycle. Species supported – dark-bellied brent goose
HV0065	Hayling Billy C	1.93 km north east of the site.	A site which regularly supports a significant population of a species which has a restricted distribution or has substantially declined in population or range. Such sites may be used seasonally or for only one part of a species life-cycle. Species supported – dark-bellied brent goose
HV0085	South of Daw Lane D	1.98 km north east of the site.	A site which regularly supports a significant population of a species which has a restricted distribution or has substantially declined in population or range. Such sites may be used seasonally or for only one part of a species life-cycle. Species supported – dark-bellied brent goose

4.2 Habitats

The site is located to the south of Hayling Island and predominantly comprises an arable field with hedgerow boundaries. See Figure 1 for the site location plan and Figure 2 for the extended Phase 1 habitat plan showing the distribution of identified habitats.

4.2.1 Tall Ruderal

There is a small patch of tall ruderal along the western boundary of the site, dominated by bramble (*Rubus fruticosus*) and cow parsley (*Anthriscus sylvestris*).

4.2.2 Arable

The site is prominently an arable field sown with wheat at the time of the survey, a small area of bare ground with small patches of scentless mayweed (*Tripleurospermum inodorum*) recorded but little evidence of other species present. (Refer to Photograph 1)

Photograph 1: Arable field



4.2.3 Species-poor Hedgerow

Around the majority of the site are species-poor hedgerows. HR1 and HR2 are intact whilst HR3 and HR4 are defunct. Species comprise of ivy (*Hedera helix*), goat willow (*Salix caprea*), lilac (*Syringa* spp.), wayfaring tree (*Viburnum lantana*), creeping thistle (*Cirsium arvense*), cleavers (*Galium aparine*), dog rose (*Rosa canina*), cherry laurel (*Prunus laurocerasus*), bay laurel (*Laurus nobilis*) along with introduced shrubs originating from adjacent gardens. Within all of the hedgerows are scattered trees comprising of beech (*Fagus sylvatica*), privet (*Ligustrum* sp.), elm (*Ulmus minor*), oak (*Quercus robur*), ash (*Fraxinus excelsior*) and field maple (*Acer campestre*).

4.2.4 Semi-improved Grassland

The field is cropped close to the boundaries with little in the way of a field margin. There are a number of small patches of semi-improved grassland located at the corners of the field. These are linked by the boundary hedgerows. Species recorded includes false oat grass (*Arrhenatherum*



elatus), meadow foxtail (*Alopecurus pratensis*), common ragwort (*Jacobaea vulgaris*), winter heliotrope (*Petasites fragrans*), narrow leaved dock (*Rumex acetosa*), common sedge (*Carex nigra*), cow parsley, common vetch (*Vicia sativa*), fern (*Tracheophyta* sp.), willow herb (*Epilobium* sp.), charlock (*Sinapis arvensis*), horseradish (*Armoracia rusticana*), lords and ladies (*Arum maculatum*) and figwort (*Scrophularia nodosa*).

4.3 Protected & Notable Species

4.3.1 Great Crested Newts

Desk Study

There are no ponds with 500m of the site and terrestrial habitat is poor. It is considered that the site has **negligible potential** for great crested newts.

4.3.1 Reptiles

Desk Study

HBIC returned four records of reptiles within 2km of the site, records comprised of slow worm (*Anguis fragilis*) and adder (*Viper berus*) north east and south west of the site.

Field Surveys

The field margins, although small in area when compared to the site as a whole, do provide suitable habitat for foraging and bare ground between arable crops and along the edge of field margins provide suitable basking areas for reptiles. The site's hedgerows are connected to offsite woodland and residential gardens which all provide suitable habitat; therefore, the site is considered to have **moderate potential** for reptiles.

4.3.2 Bats

Desk Study

HBIC returned 21 records of bats, these comprised serotine (*Epetsicus serotinus*), Bechstein's bat (*Myotis bechsteinii*), noctule (*Nyctalus noctula*), Daubenton's bat (*Myotis daubentonii*), Natterer's bat (*Myotis nattereri*), brown long-eared bat (*Plecotus auritus*), long-eared (*Plecotus* sp.) common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*) within 2km of the site. All bat records are considered sensitive and as such the exact locations of the records were not returned by HBIC.

Field Surveys

Roosting bats – Trees

Hedgerows along the boundary of the site contain semi-mature trees with a number of features suitable for roosting bats such as cracks, crevices and ivy. Therefore, these trees provide potential for roosting sites for bats. T1, T10 -T13 hold **moderate potential** as they have a larger number of roosting features while T2-T9 hold **low potential** for roosting bats.

Foraging and commuting bats



The majority of the site, comprising as it does a single large arable field, has poor suitability for foraging bats. The hedgerow and field margin edge habitats however do provide suitable foraging resource for bats. In addition to this, the hedgerows on the eastern and northern boundaries are connected to woodland offsite connecting the site to the wider landscape and may provide a commuting corridor. Therefore, the site is considered to have **low potential** for foraging and commuting bats (BCT, 2012).

4.3.3 Badgers

Desk Study

HBIC returned no records of badger (*Meles meles*) from within 2km of the site.

Field Surveys

No badger setts or signs of badger activity were recorded during the survey. It was not possible to survey areas immediately adjacent to the boundaries due to the site being surrounded by private residential properties to the west, south and part of the eastern boundary; however, it is considered unlikely that setts would be created in residential gardens due to a lack of suitable foraging and shelter habitat and disturbance. Despite not finding signs of badger, the site is connected to further suitable habitat offsite. Therefore, it is considered that the site provides **low potential** for badgers.

4.3.4 Hazel Dormouse

Desk Study

HBIC returned no records of hazel dormouse (*Muscardinus avellanarius*) from within 2km of the site.

Field Surveys

The hedgerows on site could provide suitable habitat to support dormice, HR1 is a well-established hedgerow that is connected to an area of woodland that borders the Hayling Billy Trail (LNR). HR3 and HR4 are defunct and their structure hinders the potential movement of dormice on site. As there are no known records of dormice within 2km of the site it is likely that the species is unlikely to be present and therefore the site is assessed as offering **low potential** for dormice.

4.3.5 Birds

Desk Study

HBIC returned 1324 records for notable bird species within 2km of the site. Species listed on Schedule 1 of the Wildlife and Countryside Act (WCA) and recorded within the area include. Red listed species have also been recorded from within the search area; including starling, skylark (*Alauda*), house sparrow (*Passer domesticus*), herring gull (*Larus argentatus*), black-tailed godwit (*Limosa limosa*), curlew (*Numenius*), whimbrel (*Numenius phaeopus*), song thrush (*Turdus philomelos*) and lapwing (*Vanellus vanellus*). Amber listed species were returned with species listed including black-headed gull, oystercatcher, lesser black-backed gull, great black-backed gull and Mediterranean gull. Many of the species returned by the data search are associated with coastal/wetland habitats that are not found on the site

Wintering Birds



HBIC returned records of waders and Brent Geese recorded as part of the Solent and Brent Goose Wader Strategy (post 2010) using the site, a maximum count of 9 waders and a large count of 900 Brent Geese has been recorded on the field to the north of the site. Records also should both waders and brent geese fields immediately to the north and east of the site.

Field Surveys

Nesting birds – vegetation

Habitats were identified within the sites which offer **high potential** to support nesting birds such as scrub, hedgerows with trees and arable fields. No birds were recorded nesting on the site at the time of extended Phase 1 habitat survey. Off-site vegetation close to the site boundary also offers high potential to support nesting birds.

4.3.6 Invertebrates

Desk Study

HBIC returned records for the Schedule 5 (Wildlife and Countryside Act, 1981, as amended) listed stag beetle (*Lucnus cervus*) and silver-studded blue (*Plebejus argus*) within 2km of the site.

Field Survey

All of the habitats within the site are assessed as being species-poor with very low botanical diversity and a high proportion of non-native species. The site is, therefore, considered to provide **low potential** for notable invertebrates.

4.3.7 Water Vole and Otter

Desk Study

There are no water bodies on or adjacent to the site and therefore the site has negligible potential for water vole or otter.

4.3.8 Notable Plants

No notable plant species were identified onsite during the survey.

4.4 Invasive Species

No invasive species were recorded at the time of the survey.



5.0 Constraints & Opportunities

5.1 Designated Sites

There are a total of four statutory sites within 2km of the site, the closest of these, Hayling Billy is located directly north of the site. This site is a designated LNR and SINC due to the usage by Brent Geese. The Hayling Billy coastal path is likely to be subject to increased visitor pressure as a result of the proposals.

Chichester and Langstone Harbour (Ramsar, SPA and SSSI) are located 0.1km west of the proposed development site, and is designated for supporting populations of European importance including little tern and sandwich tern during the breeding season, little egret on passage. In addition, Chichester and Langstone Harbour provides a wetland of international importance supporting waterfowl.

Any noise/visual disturbance impacts occurring on the designated sites as a result of construction or occupation are likely to be limited due to the distance of the site from the foreshore of the site. Mitigation measures may need to be put in place to reduce potential noise impacts during the construction phase – this is likely to involve works being undertaken in the summer months. Measures will also likely to be put in place to reduce impacts on wintering brent geese and waders using the field.

As part of the Solent Recreation Mitigation Strategy, all residential developments within 5.6km of the SPA will require a financial contribution per dwelling to mitigate for increased recreational pressure upon the Solent SPAs. Assuming that these measures are implemented, there are not predicted to be any adverse impacts on the internationally designated sites, or their qualifying species.

5.2 Habitats

The habitats identified on site were common/widespread, the largest impact will be the loss of the arable field which will reduce foraging area for brent geese. There is likely to be a loss of or impacts upon semi improved grassland present in the field margins and the hedgerows on site. No priority habitats were identified on site.

The proposed development has an opportunity to enhance retained vegetated areas through increasing species diversity and biodiversity value. It is recommended as part of the proposed masterplan to include an 'open space' area which will be designated for visitors and residents of the development. This area will be designed for dog walkers and recreational use but will also be enhanced for wildlife with the creation of ponds and scrapes.

In addition, hedgerows and areas of scrub and scattered trees should be in-filled with native species and planting of native scattered trees, whilst maintaining the open nature of the site. The grass should be sown with a wildflower seed mixture, ideally in the autumn to maximise establishment.

These enhancements will increase the suitability for wading birds such as, nesting birds and other species such as bats and invertebrates; as well as providing an aesthetic wildlife area for residents, dog walkers and visitors to the site. It is recommended that sympathetic, species rich planting is



implemented as a part of a wider landscaping scheme in order to increase the suitable post-construction habitat for wildlife.

A list of recommended species is provided in Appendix B; locally native species would be preferred although, in this instance, cultivars of native species and other non-native but wildlife friendly trees and shrubs would provide value for wildlife without impacting on the character of the area. Along with these recommendations above an area of the site should be managed for wintering brent geese.

5.3 Protected & Notable Species

5.3.1 Reptiles

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

The site is considered to have **moderate potential** to support reptiles. If present and in the absence of suitable mitigation, there is the potential for the development to result in the loss of reptile habitat, and cause the killing or injury of individual reptiles. It is recommended that reptile presence absence surveys are carried out along the semi-improved grassland boundary habitats of the site. These will comprise of seven surveys in suitable weather conditions between April and September to determine the presence or likely absence of reptiles on site.

5.3.2 Bats

Roosting bats – Trees

All species of British bats and their roosts are fully protected under the *Wildlife & Countryside Act 1981* (as amended) and the *Conservation of Habitats and Species Regulations 2010* (as amended).

Trees provide potential for roosting bats, T2-T9 holds **low potential** while T1, T10- T13 hold **moderate potential** while for roosting bats. Trees are located within the boundary habitats, if bats were to be present in any trees there is potential that the disturbance from the proposed developments will impact trees and result in the loss of a bat roosts, potentially killing or injuring bats. As per BCT (2016) guidelines, it is recommended that trees with low potential are soft-felled and one dusk emergence and one dawn return surveys are carried out on trees with moderate potential to assess the presence or likely absence of roosting bats.

Foraging and commuting bats

ODPM 06/2005: Biodiversity and Geological Conservation, the circular that accompanied the now redundant Planning Policy Statement 9 (PPS9) but which itself is still valid, requests that mitigating for impacts caused by developments to foraging and commuting routes should be considered when determining planning applications.

The site is considered to have **low potential** for foraging and commuting bats. If bats are present and in the absence of suitable mitigation, there is the potential for the development to result in the loss or fragmentation of bat foraging and commuting habitat. It is recommended that one dusk bat activity survey is conducted per season (3 surveys) in line with BCT (2016) guidelines. In addition,



one automated bat detector will be left on site, within a hedgerow, for a minimum of five days each season to record bat activity utilising the site.

It is recommended that landscaping proposals seek to improve the linear features onsite, such as using infill planting on the gappy hedgerow along the southern and western boundary. By incorporating a sensitive landscaping scheme (especially along the eastern boundary that connects to Hayling Billy), utilising a species-rich mix of native planting, the overall foraging potential for bats around the site edges will be improved in line with the aims of Policy CS11 of the Havant Borough Local Plan: Core Strategies 2011-2026. A sensitive lighting strategy is recommended for the site to ensure the trees remain within darkened corridors.

Construction lighting will be directed away from buffer areas, and light spill into the buffer zone will not exceed 0.33 lux (0.1 average). This should ensure that the bats which may use the site for roosting or foraging will not be significantly disturbed during the construction phase. Adequate consideration should be given to the type and position of lights to minimise the impact on bats that may be roosting, foraging or commuting in the area. Light spillage should be controlled through the use of hoods and appropriate angling of the light itself and low or high pressure sodium lamps should be used instead of mercury or metal halide lamps. For further technical detail see the Institute of Lighting Engineers (ILE) *Guidance Notes For The Reduction Of Obtrusive Light (2005)*.

It is recommended that construction activity ceases at sunset, if not before, to avoid delaying the emergence of locally roosting bats as it is unknown if any bats are roosting within the trees and buildings within the site.

It is recommended that the lighting across the development footprint for the operational phase of the development will be **sensitively designed** with bats in mind, so that valuable foraging and commuting areas are retained and existing/new roost sites are not impacted by ambient light. Operational phase lighting will be positioned to avoid directly illuminating areas along the site boundary to prevent disturbance to foraging bats and nesting birds. **Light levels should not exceed 1 lux** along any vegetated boundaries in order to provide dark areas for foraging and commuting bats and to prevent disturbance to bats that may be roosting.

5.3.3 Badgers

Badger and their setts are protected under the *Protection of Badgers Act 1992* and the NPPF stipulates that considering their welfare and mitigating for damage to their habitat are material considerations when considering planning applications.

No evidence of badgers was found during the extended phase 1 habitat survey and due to the **low potential** of the site. As a pre-cautionary approach, a pre commencement check is recommended for badger up to one month prior to development commencing.

5.3.4 Dormice

Hazel dormouse and its habitat are fully protected under the *Wildlife & Countryside Act 1981* (as amended) and the *Conservation of Habitats and Species Regulations 2010*.

Hedgerows HR1 and HR2 are assessed as having low suitability for dormice, however it is unlikely that the hedgerows will be impacted upon by the proposals as these form a boundary feature separating the site from neighbouring residential gardens. Therefore no further surveys are recommended.



5.3.5 Birds

All nesting birds are protected from disturbance whilst nesting by the *Wildlife and Countryside Act 1981* (as amended).

The site is considered to have **high potential** for breeding birds due to available suitable habitats, and the opportunity for birds utilising the trees around the site to nest. It is recommended any vegetation clearance works that is required is done so between October and February inclusive, this will not include harvesting of crops or agricultural practices within the field. (i.e. outside the bird nesting season) and managed over winter in order to reduce the suitability of the site for nesting birds.

If this is not possible a thorough check for nesting birds should be made no more than 24 hours prior to site clearance. If any active nests are found, they must remain *in-situ* and protected with an appropriate buffer zone until all young have fledged and cease to return to the nest in order to avoid an offence under Section 1 of the Wildlife and Countryside Act (1981, as amended). It is recommended that communal sparrow boxes and bird boxes with entrance holes are installed on a minimum of 10 per hectare of new dwellings in order to provide enhanced nesting opportunities for birds, fulfilling the aim of enhancing the site under Policy CS11 of the Havant Borough Local Plan: Core Strategies 2011-2026.

Wintering Birds

Due to the designation of the site as a SINC for wintering brent geese as well as the close proximity of the site to Chichester and Langstone Harbour RAMSAR, SPA and SSSI, designated for supporting wintering birds. Wintering bird surveys are recommended which involved two visits per month between October and March inclusive following the method laid out in the Solent Waders and Brent Goose Strategy. Winter bird surveys have been carried out in 2012/13 and 2015/16 which did not record brent geese within the southern part of the site. It was concluded that as such the SINC designation for the southern area of the site should not apply. Informed by the result of further wintering bird surveys, a mitigation strategy will need to be agreed with the LPA and Natural England. This must work in combination with the strategy accepted for the adjacent Station Road site and will likely require screening between the northern and southern fields and off-site enhancement measures.

In addition, areas of public open space will be required as part of the sites design, these areas will remain open in nature and will be a designated walking area for the public including dog walkers. The area should be further enhanced for over wintering birds as well as other notable birds and species found on site by the creation of water bodies and scrapes, planting of scattered trees and infilling of hedgerow with native species. The grass will be maintained should be cut once per year in September.

5.3.6 Invertebrates

Although there is **low potential** for the site to support notable invertebrates, there are opportunities for biodiversity enhancement through sympathetic, species rich planting as a part of a wider landscaping scheme in order to increase the suitable post-construction habitat for wildlife (see appendix B). This will increase the overall suitability of the site for such invertebrate species in line with Policy CS11 of the Havant Borough Local Plan: Core Strategies 2011-2026.





6.0 Conclusions

6.1.1 Survey Recommendations

- It is recommended that boundary features are retained on site where possible, including all hedgerows and reinforced with native species of local provenance.
- It is recommended that any removal of vegetation is undertaken outside nesting bird season, which runs from March to September inclusive. If this is not possible, then a thorough check for nesting birds should be made prior to clearance. If any active nests are found they must remain *in situ* until all young have fledged, with an appropriate buffer zone (usually 5m buffer) according to the species involved.
- It is recommended that reptile presence absence surveys are carried out along the semi-improved grassland boundary habitats of the site.
- It is recommended that two surveys, one emergence and one return survey is carried out on trees with moderate potential.
- It is recommended that one dusk bat activity survey is conducted per season (3 surveys).
- It is recommended that a bat sensitive lighting scheme is designed to direct lighting away from areas of retained habitat to provide dark corridors for commuting bats within and around the final development.
- As a pre-cautionary approach, a pre commencement check is recommended for badger up to one month prior to development commencing.
- Wintering bird surveys are recommended which involved two visits per month between October and March along with a bespoke mitigation strategy to mitigate and compensate for impacts upon the wintering bird assemblage and nearby designated sites.



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FIGURES

Figure 1 – Site Location Plan

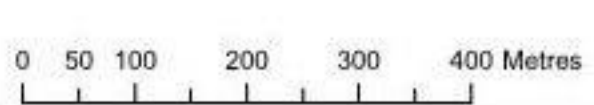
Figure 2 – Phase 1 Habitat Plan



Rev	Date	Notes
A	28/06/18	Initial map production

Legend

 Site Boundary



Site Location Plan

Project Name
Client Name

Scale at A3: 1:8,996	Project No: A092944-3	Drawing No: Figure 1	Revision: A
Drawn by: Ben Cooke	Drawn date: 28/06/2018	Approved by:	

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Legend

- Trees within hedge
- Intact species-poor hedgerow
- ~~~~~ Defunct species-poor hedgerow
- SI SI Semi-improved grassland bank
- A A Arable
- Site Boundary



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Extended Phase 1 Habitat Survey

Scale at A3:	Drawn by: BC	Date: 28/06/18	Checked By: DW	Date: 28/06/18	Approved By: CM	Date: 28/06/18
Project No: A092944-3	Office: 45	Type: 94	Drawing No: Figure 2	Revision		

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APPENDIX A - Invasive plant species list

Table 3. Invasive plant species listed under Schedule 9 of the Wildlife and 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>
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>
Pontic 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>Pikea californica</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>
Wakame	<i>Undaria pinnatifida</i>
Curly waterweed	<i>Lagarosiphon major</i>
Waterweeds	<i>Elodea</i> spp.

Table 4 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	<i>Rhinolophidae</i> - all species	Shore dock	<i>Rumex rupestris</i>
Common bats	<i>Vespertilionidae</i> - all species	Killarney fern	<i>Trichomanes speciosum</i>
Wildcat	<i>Felis silvestris</i>	Early gentian	<i>Gentianella anglica</i>
Dolphins, porpoises and whales	<i>Cetacea</i> – 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 borellii lunata</i>	Floating-leaved water plantain	<i>Luronium natans</i>
Great crested newt	<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>		



APPENDIX B -Wildlife-friendly Planting

Table E1 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 × stenophylla</i>
Barberry	<i>Berberis vulgaris</i>
Bell heather	<i>Erica cinerea</i>

Common name	Scientific name
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>
Holly	<i>Ilex aquifolium</i>
Japanese quince	<i>Chaenomeles japonica</i>
Lilac	<i>Syringa vulgaris</i>

Common name	Scientific name
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, 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 E2 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>
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 padus</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>
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>
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Table E3 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 sp.</i>		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
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)