



Barratt Homes

Havant Road, Emsworth

Extended Phase 1 Habitat Survey

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Executive Summary

Site Description and Scope of Works		
The site covers approximately 6.1 hectares, located to the east of Havant in Hampshire, centred on Ordnance Survey grid reference SU734062. The site is bordered to the north west by the A27, residential development to the east and to the south by the A259. The site comprises very short, cattle grazed improved grassland with scattered scrub, bramble and defunct hedgerows. Along the north western boundary adjacent to the A27 is young tree belt plantation mainly comprising field maple and hawthorn. The eastern boundary comprises back garden fencing with planted shrubs with scrub and tall ruderal becoming established. To the south of the site is a hedgerow adjacent to the footway of the A259 comprising mainly sycamore. Scrub dominates the north eastern extent of the site and two defunct hedgerows run north to south separating the fields from one another.		
Potential Constraints	Yes	No
Bats		
Has the site been assessed for bats?	✓	
Are there any structures or trees on site which have the potential to support roosting bats? (see section 5.3.2)		✓
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? (see section 5.3.7)	✓	
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? (see section 5.3.1)		✓
Dormice		
Has the site been assessed for dormice?	✓	
Is there suitable habitat for dormice on, or close to the application site?		✓
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? (see section 5.3.3)		✓
Reptiles		
Has the site been assessed for reptiles?	✓	
Is there suitable habitat on the site for reptiles? (see section 5.3.5)	✓	
Other protected species		
Has the site been assessed for otters, water voles, white-clawed crayfish	✓	
Is there suitable habitat on the site for otters, water voles, white-clawed crayfish		✓
Other features of nature conservation interest		
Does the application site support Habitats of Principal Importance or Local Biodiversity Action Plan Priority Habitats?		✓
If 'Yes' list types of habitat		
Does the application site potentially support Species of Principal Importance or Local Biodiversity Action Plan Species?	✓	
If 'Yes' list species		
Commuting / foraging bats, reptiles and wintering birds.		
Have details of biodiversity enhancements been included with the application?	✓	
Recommendations	Yes	No
Are further surveys recommended to inform the ecological impact assessment?	✓	



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If 'Yes' list surveys

- It is recommended that a suite of updated **reptile presence/ likely absence surveys** is carried out at the site. Surveys must be undertaken during the reptile active season, which runs from March to October. These surveys were completed between 5th September and 6th October 2014.
- It is recommended that **bat activity surveys** are completed seasonally during spring, summer and autumn, along one transect route. In addition to this, an automated bat detector should be left at one location on site for three consecutive nights during spring, summer and autumn. Due to the timescales of the project, bat activity surveys were completed on three occasions over August and September and automated bat detectors were left at the location along the western boundary of the site. This approach takes place within the peak bat activity season and has been used for similar sites in the local area and been approved by the LPA ecologist in these instances. These surveys were completed between August and September 2014.
- Given the dense scrub present in parts of the site, it is recommended that a **pre-commencement badger check** is completed approximately 2 months prior to works commencing to confirm the continued absence of this species from the site.

Is mitigation (including avoidance/compensation) and enhancement recommended?

✓

- **Habitats:** Ecologists have provided input into the design stage of the masterplan and as such, the boundary hedgerows have all been incorporated and where possible enhanced. The defunct hedgerows within the site will not be retained but as these were gappy, poor quality and of low ecological value this is not considered to be a constraint. It is recommended that there will be reduce lighting impacts on these retained features. It is also recommended that multi-functional green space is incorporated into the final design to reduce increase in visitor pressure to designated sites in the wider area.
- **Badgers:** An ecological clerk of works is recommended to be present during the clearance of scrub to confirm that no badger setts are present.
- **Reptiles:** Assuming the site continues to be managed in the same way prior to mitigation, it is recommended that 20 days of translocation is needed to move reptiles from the works area to a receptor area onsite. Prior to translocation the receptor area localted towards the eastern extent of the site and along the boundaries of the site will be enhanced for reptiles.
- **Wintering Birds:** As a precautionary measure to avoid disturbance to any birds using the off-site fields to the south of the A259, it is recommended that hoarding be placed along the southern boundary of the site, and that any pile driving (if required) does not take place between October and February.
- **Nesting Birds:** Vegetation clearance should be scheduled to take place between October and February wherever possible to avoid the breeding bird season. If this is not possible, then a thorough check for nesting birds should be completed immediately prior to site clearance. If any active nests are found they must be retained, together with a suitable vegetated buffer until all the young have fledged.
- **Invertebrates:** If any dead wood is found during site clearance, it is recommended that it be placed elsewhere within the site, to be retained within the final development as stag beetles have been recorded from the wider area.
- **Bats:** More detailed recommendations will be provided following the protected species surveys recommended above, however, in general, it is recommended that lighting is directed away from hedgerows and mature trees where possible within the final development, to retain dark corridors for commuting bats within and around the final development.
- **Enhancements:**
- Recommendations are made to provide additional nesting / roosting and feeding opportunities for birds, bats and invertebrates within the final design.



1.0 Introduction

1.1 Background

This report has been produced to review the previous findings of the extended Phase 1 habitat survey completed by WYG in 2014 in order to assess the validity of the findings in relation to the current conditions of the site and the most up to date layout plan.

WYG was commissioned by Barratt Homes in July 2014 to undertake an Extended Phase 1 habitat survey at Havant Road, Warblington. An initial visit took place on the 1st of July 2014 with a second visit on the 20th August due the northern field being inaccessible during the previous visit. An update survey was carried out on 29th June 2016 by David West, Principal Ecologist to assess whether there had been any change in site conditions since the 2014 survey.

Aluco Ecology completed an Ecological Assessment of Land North of Havant Road, Emsworth in August 2011. The habitats recorded included improved to semi-improved grassland with a reduced herb content, hedgerows, patches of bramble and scrub.

Winter bird surveys were undertaken by Aluco Ecology in winter 2010 and between 10th January 2013 to 28th March 2013 and recorded use of fields to the South of Havant Road (off site) by a low number of waders (curlew and lapwing), however no waterfowl were recorded on the proposed development site.

Aluco Ecology completed bat emergence/return surveys along the site edges to determine where bats first enter the site and transect surveys of the site were undertaken by Aluco Ecology during August and September 2011. The surveys concluded that there was no roost potential on the development site, but the transect surveys recorded common and soprano pipistrelle, Noctule, Serotine and Myotis (Brandts/Whiskered/Alcahloe).

Aluco Ecology completed a reptile presence/likely absence survey at the site between 6th August 2011 and 29th September 2011 completing a total of nine survey visits. During these surveys, one species of reptile was recorded which was the slow worm with a maximum of four adults recorded on any one visit. A breeding slow worm population at the site was confirmed with a maximum of four sub adults recorded.



1.2 Site Location and General Description

The site covers approximately 6.1 hectares, located to the east of Havant in Hampshire, centred on Ordnance Survey grid reference SU734062. The site is bordered to the north west by the A27, residential development to the east and to the south by the A259. The site comprises very short, cattle grazed improved grassland, areas of bare ground, scattered scrub and trees, bramble and defunct hedgerows. Along the north western boundary adjacent to the A27 is young tree belt plantation mainly comprising field maple and hawthorn. The eastern boundary comprises back garden fencing with planted shrubs with scrub and tall ruderal becoming established. To the south of the site is a hedgerow adjacent to the footway of the A259 comprising mainly sycamore. Scrub dominates the north eastern extent of the site and two defunct hedgerows run north to south separating the fields from one another.

1.3 Development Proposals

It is proposed to develop the site for 147 residential properties, with associated parking, access, gardens, hard and soft landscaping and areas created for local wildlife. An area of open space will be retained within the southern area of the site, in addition to several areas of public open space throughout the scheme including a buffer varying between 5.6m and 8.3m along the south eastern boundary which will be managed as tall grassland with one cut a year in September along with a tall grassland-scrub mosaic area along the eastern extent of the site. The scheme will be accessed from the southern boundary, with additional foot access provision along the south eastern boundary. There will be a trim trail that forms the circular route surrounding the development boundaries. For the most up to date layout plan please refer to Layout Plan Drawing No. CB_15_105_900, contained in Appendix A. The ecological investigations undertaken by WYG in 2014 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 environs;
- A review of existing survey information;
- An extended Phase 1 habitat survey involving a walkover of the site to record habitat types and dominant vegetation, including any invasive species, and a reconnaissance survey for evidence of protected fauna or habitats capable of supporting such species;



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- 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 Desk Study

2.1 Methodology

Information was gathered from Hampshire Biodiversity Information Centre (HBIC), the ecological records centre for Hampshire, regarding the presence of nature conservation designations and protected and notable species within 2 km of the proposed development site. In addition, a search for designations was made of Natural England's interactive, web-based MAGIC (Multi Agency Geographic Information for the Countryside) database.

The data search covers:

- Statutory nature conservation designations, such as National Nature Reserves and Sites of Special Scientific Interest;
- Non-statutory nature conservation designations, such as Wildlife Sites;
- Protected species, such as badgers, great crested newts and bats; and
- Notable species, such as those listed in the local Biodiversity Action Plan.

The data search did not include Tree Preservation Orders and non ecological Conservation Designations.

2.2 Data Search Results

2.2.1 Statutory Sites

According to MAGIC there are six statutory designated sites (some of which cover part or all of the same area) within 2km of the site comprising. Details of these sites are provided in **Table 1**.

Table 1: Details of statutory sites within 2 km

Designated site	Distance and direction from site	Reasons for designation
Warblington Meadow Site of	1.0 km south of the	Warblington Meadow SSSI is an unimproved grazing marsh adjoining Chichester Harbour and is of special interest for its gradation from fresh water, base-rich marsh to old reclaimed



Designated site	Distance and direction from site	Reasons for designation
Special Scientific Interest (SSSI)	site.	salt marsh and for its associated flora, with a total of 158 species of flowering plants having been recorded.
Chichester and Langstone Harbour Special Protection Area (SPA)	1.1 km south of the site.	Chichester and Langstone Harbour SPAs are located on the south coast of England in Hampshire and West Sussex. They are 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 is of particular significance for waterbirds, especially in migration periods and in winter. It also supports important colonies of breeding terns.
Solent Maritime Special Area Conservation (SAC)	1.1 km south east 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, 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</i> spp. 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.
Chichester and Langstone Harbour Ramsar Site	1.1 km south-east of the site.	The site comprises two large, interconnected sheltered estuarine basins providing extensive intertidal mud and sand flats with eelgrass <i>Zostera</i> spp. beds, large areas of mixed saltmarsh and extensive cord-grass <i>Spartina</i> spp. swards in an advanced state of degeneration. Fringing habitats



Designated site	Distance and direction from site	Reasons for designation
		includeshingle spits, saline, brackish and freshwater lagoons, coastal grazing marsh and deciduous woodland. The site supports important overwintering populations of migratory waterfowl. The information sheet on Ramsar wetlands within this area shows the following winter peak counts: • Dark-bellied brent goose, <i>Branta bernicla bernicla</i>, 12987 individuals, representing an average of 6% of the population. • Common shelduck , <i>Tadorna tadorna</i>, 1468 individuals, representing an average of 1.8% of the GB population. • Grey plover, <i>Pluvialis squatarola</i>, 3043 individuals, representing an average of 1.2% of the population. • Dunlin, <i>Calidris alpina alpina</i>, 33436 individuals, representing an average of 2.5% of the population.
Brook Meadow Local Nature Reserve (LNR)	1.5 km east of the site.	The site consists of 5 acres of grassland, surrounded by woodlands and flanked by two streams. Brook Meadow supports a range of birds, insects and wild flowers, with water voles present in the river.
Chichester and Langstone Harbour Site of Special Scientific Interest (SSSI)	1.6 km south east of the site.	Chichester Harbour is a large estuarine basin in which at low water extensive mud and sandflats are exposed, drained by channels which unite to make a common exit to the sea. The site is of particular significance for wintering wildfowl and waders and also breeding birds both within the Harbour and in the surrounding permanent pasture fields and woodlands. There is a wide range of habitats which have important plant communities.
Eames Farm Local Nature Reserve (LNR)	2.7km south east of the site.	In 2008 West Sussex County Council granted a 999-year lease to Chichester Harbour Trust for 71 hectares (177 acres) of farmland at Eames Farm, within Chichester Harbour Area of Outstanding Natural Beauty (AONB). The farm lies at the heart of the AONB and boasts extensive coastal grazing marsh of national and international importance for its plants and bird life.



2.2.2 Non-statutory Sites

HBIC returned information of seventeen non-statutory designated sites within 2km of the site. Brook Farm B and Warblington Castle Farm East D are the closest SINC's at 0.1 km south and south west of the site.

Refer to Table 2 for details of these designated sites.

Table 2: Details of statutory sites within 2 km

SINC Name	Distance and direction from site	Reason for designation	Species supported by SINC
Brook Farm B	0.1 km south west of the site.	Criteria 6A: Sites which support one or more notable species ⁴ . Criteria 6B: Sites which regularly support 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.	Dark-Bellied Brent (<i>Goose Branta bernicla bernicla</i>), Weasel's Snout (<i>Misopates orontium</i>) and Corn Spurrey (<i>Spergula arvensis</i>).
Warblington Castle Farm East D	0.1 km south of the site.	Criteria 6B: Sites which regularly support 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.	Dark-Bellied Brent Goose (<i>Branta bernicla bernicla</i>)
Conigar Point Meadows	0.5 km south of the site.	Criteria 2A: Agriculturally unimproved grasslands Criteria 4A: Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands. Criteria 6A: Sites which support one or more notable species. Criteria 6B: Sites which regularly support 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.	Wild Celery (<i>Apium graveolens</i>) Field Brome (<i>Bromus arvensis</i>) Slender Hair's Ear (<i>Bupleurum tenuissimum</i>), Divided Sedge (<i>Carex divisa</i>), Long-Bracted Sedge (<i>Carex extensa</i>), Golden-Samphire (<i>Inula crithmoides</i>) and Lax-flowered sea lavender (<i>Limonium humil</i>).
Warblington Castle Farm East E	0.5 km south of the site.	Criteria 6B: Sites which regularly support a significant population of a species which has a restricted	Dark-Bellied Brent Goose (<i>Branta bernicla bernicla</i>)



SINC Name	Distance and direction from site	Reason for designation	Species supported by SINC
		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.	
Warblington Castle Farm West	0.7 south west of the site.	Criteria 6B: Sites which regularly support 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.	Dark-Bellied Brent Goose (<i>Branta bernicla bernicla</i>)
Land West of Emsworth Recreation Ground	0.9 km east of the site.	Criteria 2B: Semi-improved grasslands which retain a significant element of unimproved grassland.	N/A
Nore Grassland & Saltmarsh	1.1 km south-east of the site.	Criteria 6A: Sites which support one or more notable species ⁴ . 6B: Sites which regularly support 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.	Slender Hair's Ear (<i>Bupleurum tenuissimum</i>) and Sea Wormwood (<i>Seriphidium maritimum</i>)
Stream West of Emsworth Recreation Ground	1.1 km east of the site.	Criteria 6A: Sites which support one or more notable species ⁴ .	Narrow-Leaved Water-Plantain (<i>Alisma lanceolatum</i>)
Westbrook Stream, Bridge Road	1.1 km east of the site.	Criteria 6A: Sites which support one or more notable species ⁴ .	Narrow-Leaved Water-Plantain (<i>Alisma lanceolatum</i>)
Emsworth Millpond	1.1 km north west of the site.	Criteria 4A: Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands.	N/A
Lumley Meadow	1.3 east of the site	Criteria 2A: Agriculturally unimproved grasslands Criteria 6A: Sites which support one or more notable species ⁴ .	Distant Sedge (<i>Carex distans</i>) and Divided Sedge (<i>Carex divisa</i>)
Southleigh Forest (South)	1.4 km north east of the site.	Pasture woodland and wooded commons, not included in any of the above, which are of considerable biological and historical interest.	N/A
Langstone Mill	1.5 km south west of	Criteria 4A: Semi-natural coastal and	Large-Leaved Lime (<i>Tilia</i>



SINC Name	Distance and direction from site	Reason for designation	Species supported by SINC
Pond	the site.	estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands. Criteria 5B: Fens, flushes, seepages, springs, inundation grasslands etc. that support a flora and fauna characteristic of unimproved and waterlogged (seasonal or permanent) conditions. Criteria 6A: Sites which support one or more notable species. Criteria 6B: Sites which regularly support 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.	<i>platyphyllos</i>)
Nore Grassland & Saltmarsh	1.6 km north of the site.	Criteria 4A: Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands. Criteria 6A: Sites which support one or more notable species4.	Slender Hair's Ear (<i>Bupleurum tenuissimum</i>) and Sea Wormwood (<i>Seriphidium maritimum</i>)
Barton's Copse & The Slip	1.9 km north of the site	Criteria 1A: Ancient semi-natural woodlands.	N/A
Wade Court Park	1.8 km south of the site.	Criteria 6B: Sites which regularly support 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. Criteria 6C: Sites which support an outstanding assemblage of species.	Little Egret (<i>Egretta garzetta</i>) - Colony
Land East of 54 Long Copse Lane	2.1 km north east of the site	Criteria 2B: Semi-improved grasslands which retain a significant element of unimproved grassland.	N/A



2.2.3 Protected and Notable Species

Invertebrates (includes White-clawed Crayfish)

HBIC returned records of 32 different invertebrate species within 2km of the site. These included the following Hampshire BAP species: Stag Beetle (*Lucanus cervus*) (this species is also protected under the Habitats Directive); Purple Emperor (*Apatura iris*); Silver-washed Fritillary (*Argynnis paphia*); Pearl-bordered Fritillary (*Boloria euphrosyne*); Star-wort (*Cucullia asteris*) and Mathew's Wainscot (*Mythimna favicolor*).

Great Crested Newts

HBIC returned no records for Great Crested Newts within 2 km of the site.

Reptiles

HBIC returned 7 records of reptiles from within 2 km of the site, comprising slow worm (*Anguis fragilis*); adder (*Vipera berus*) and grass snake (*Natrix natrix*). The closest records are those for grass snake and approximately 0.89 km north of the site.

However, previous survey works by Aluco Ecology in 2011 confirmed the presence of slow worm on the proposed development site itself.

Birds

HBIC provided records of 39 species of bird within 2 km of the proposed development site. Of these, the following are protected under Schedule 1 of the Wildlife and Countryside Act 1981; Greater Scaup (*Aythya marila*); Cetti's Warbler (*Cettia cetti*); Black Tern (*Chlidonias niger*); Eurasian Marsh Harrier (*Circus aeruginosus*); Hen Harrier (*Circus cyaneus*); Montagu's Harrier (*Circus pygargus*); Long-tailed Duck (*Clangula hyemalis*); Horned Lark (*Eremophila alpestris*); Merlin (*Falco columbarius*); Peregrine Falcon (*Falco peregrinus*); Eurasian Hobby (*Falco subbuteo*); Brambling (*Fringilla montifringilla*); Black-throated Diver (*Gavia arctica*); Great Northern Diver (*Gavia immer*); Red-throated Diver (*Gavia stellata*); Little Gull (*Hydrocoloeus minutus*); Eurasian Wryneck (*Jynx torquilla*); Mediterranean Gull (*Larus melanocephalus*); Black-tailed Godwit (*Limosa limosa*); Velvet Scoter (*Melanitta fusca*); Common Scoter (*Melanitta nigra*); Red Kite (*Milvus milvus*); Whimbrel (*Numenius phaeopus*); Osprey (*Pandion haliaetus*); European Honey-buzzard (*Pernis apivorus*); Black Redstart (*Phoenicurus ochruros*); Eurasian Spoonbill (*Platalea leucorodia*); Slavonian Grebe (*Podiceps auritus*); Black-necked Grebe (*Podiceps nigricollis*); Pied Avocet (*Recurvirostra*



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avosetta); Firecrest (*Regulus ignicapilla*); Little Tern (*Sternula albifrons*); Dartford Warbler (*Sylvia undata*); Common Greenshank (*Tringa nebularia*); Green Sandpiper (*Tringa ochropus*); Redwing (*Turdus iliacus*); Fieldfare (*Turdus pilaris*); Barn Owl (*Tyto alba*) and Hoopoe (*Upupa epops*).

HBIC also provided records for Waders and Brent Geese in the Solent Waders and Brent Goose Strategy (SWBGS)(2010). The proposed development site was classed as 'Uncertain' usage for wading birds. Within the SWBGS data was provided for the site itself and it was surveyed on 22/12/2007, 27/01/2008, 27/03/2009 and 29/01/2009 and no Brent Geese or waders were recorded. The neighbouring site to the north east of the proposed development, which could potentially be subject to disturbance impacts as a result of the development proposals, also has uncertain for usage classification and no Brent Geese or waders recorded when surveyed on 29/01/2009, 02/03/2009 and 27/03/2009.

Aluco Ecology completed winter bird surveys between winter 2012 and winter 2013. A single visit was undertaken on 15th of January 2012 and numerous visits between 10th January 2013 to 28th March 2013 and recorded use of these fields to the South of Havant Road (off site) by a low number of waders (curlew and lapwing) however no waterfowl were recorded on the proposed development site itself.

Bats

HBIC provided records for up to 13 species of bat within 2 km of the development site comprising serotine (*Eptesicus serotinus*); unidentified bat of the *Myotis* genus (*Myotis spp.*); Bechstein's Bat (*Myotis bechsteinii*); Brandt's Bat (*Myotis brandtii*); Daubenton's Bat (*Myotis daubentonii*); whiskered Bat (*Myotis mystacinus*); Natterer's Bat (*Myotis nattereri*); noctule (*Nyctalus noctula*); unidentified bat of the pipistrelle genus (*Pipistrellus spp.*); common pipistrelle (*Pipistrellus pipistrellus*); soprano pipistrelle (*Pipistrellus pygmaeus*); long-eared bat (*Plecotus spp.*) and brown Long-eared bat (*Plecotus auritus*). The closest records are for soprano pipistrelle, located 0.3 km south of the site.

Aluco Ecology recorded common and soprano pipistrelle, Noctule, Serotine and Whiskered bat using the site for commuting and foraging during bat surveys in 2011.

Badgers

HBIC provided one record of badger (*Meles meles*) within 2 km west of the proposed development site, the record is sensitive, so the exact grid reference is unknown but the closest it could be is 1.4 km to the west.



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Otter

No records for otter (*Lutra lutra*) were provided within 2 km of the site.

Water Voles

HBIC provided 26 records of water vole (*Arvicola amphibious*) within 2 km of the proposed development site, the closest record provided was 1.6 km of east of the site.

Hazel Dormouse

No records for hazel dormouse (*Muscardinus avellanarius*) were provided within 2 km of the site.



3.0 Survey Methodology

An extended Phase 1 habitat survey was conducted within the predicted zone of influence¹ on 1st July 2014 by Assistant Ecologist Emmanuelle Amiral. A second visit to access the northern field was necessary on the 20th August due to the presence of cattle during the first visit. The surveys were conducted in clear weather conditions, with no restrictions to visibility. 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. This included a 30m buffer around the site to search for evidence of badgers as recommended in English Nature's *Badgers and Development* (2002) (since superseded by CIEEM's best practice guidelines which recommend a survey for signs of badger within 50m of a proposed development. Survey of the surrounding area for signs of badgers was only possible to the north of the site as the east and southern boundaries the site is surrounded by roads and residential buildings (and therefore considered unsuitable for sett creation and foraging badger activity). The A27 runs along the western boundary of the site, constituting a barrier to dispersal onto the site from this direction.

A further survey was completed on 29th June 2016 by Principal Ecologist David West CEnv MCIEEM to determine whether there had been any change in site conditions following the 2014 survey.

3.1 Habitats

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

3.2 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)*, including those given extra protection under the *Natural Environment and Rural Communities (NERC) Act 2006* and *Countryside & Rights of Way (CROW) Act 2000*, and listed on the UK and local Biodiversity Action Plans.

¹ **Zone of influence:** the area that may be affected by the biophysical changes caused by the activities associated with the development.



The following species were considered:

3.2.1 Great Crested Newt

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* (Joint Nature Conservation Committee, 2003) and the *Great Crested Newt Conservation Handbook* (Langton, Beckett & Foster, 2001). No ponds were located within the site and HBIC provided no records of GCN within 2km of the site. It can be seen from OS mapping that there is a pond to the west of the site however the A27 bisects these two sites and is considered to represent a barrier to GCN.

3.2.2 Reptiles

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

3.2.3 Bats

The trees within the boundary were appraised by an experienced ecologist from WYG for their suitability to support breeding, resting and hibernating bats using survey methods based on those outlined in the Bat Conservation Trust's *Bat Surveys: Good Practice Guidelines* (Hundt, 2012) and English Nature's *Bat Mitigation Guidelines* (2004).

Bat roost potential of trees is determined by a variety of factors including physical attributes of the tree, and proximity to good feeding sites and safe commuting routes. A brief summary of the known factors which influence a tree's potential to support bats is provided in **Table 3**.



Table 3. Factors influencing potential for trees to be used by bats (adapted from Bat Conservation Trust, 2012)

Features of trees used by bats	Signs indicating possible use by bats
• Natural holes • Woodpecker holes • Cracks/splits in major limbs • Loose bark • Behind dense, thick-stemmed ivy • Hollows/cavities • Within dense epicormic growth • Bird and bat boxes	• Tiny scratches around entry point • Staining around entry point • Bat droppings in/around/below entrance • Audible squeaking at dusk or in warm weather • Flies around entry point • Distinctive smell of bats • Smoothing of surfaces around cavity

Please note that Table 3 identifies what are generally considered to be the most important influences on bat roost preferences. There are 18 species of bats in the UK, each with its own specific requirements. Additionally males generally have different roost preferences to females and, therefore, it is not practical to assess a feature against all the possible permutations of an 'ideal' roost.

3.2.4 Badger

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). A 30 m buffer zone around the expected zone of influence was surveyed, where appropriate, as recommended in English Nature's *Badgers and Development* (2002).

3.2.5 Hazel Dormouse

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

3.2.6 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* (2012). Evidence of any current or historical presence of such species was recorded.



3.3 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*, horizontal cotoneaster *Cotoneaster horizontalis* and rhododendron *Rhododendron ponticum* (see Appendix B Table B2 for full list).

3.4 Limitations

The comprehensiveness of any ecological assessment will be limited by the season in which surveys are undertaken. The extended Phase 1 habitat survey was completed within the optimal season for completing this type of survey, which is considered to be between April and September.

Although the site was not accessible in its entirety during the initial site visit, due to the presence of cows in the north of the site, a second site visit was completed to ensure all areas of the site were surveyed. Some sections of the land within 30m of the site could not be fully searched for evidence of badger, but a detailed search for potential badger access points / mammal paths into the site was made. Therefore there are considered to be no limitations to survey access.

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 note, which are considered to be of principal importance for the conservation of biodiversity with reference to the *National Planning Policy Framework* (NPPF, 2012), especially those given protection under UK or European wildlife legislation.

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 findings of the survey carried out in 2014 have been reviewed within this report, and the conditions onsite are considered to remain consistent with the original assessment. As such, it is considered that the findings of the extended Phase 1 habitat survey remain valid. A further review of this data should be undertaken if works have not commenced within one year of the production of this report (i.e. February 2018) to assess whether the recommendations of the survey reflect any changes in the condition of the site.

4.0 Survey Results

An extended Phase 1 habitat plan showing the location of key ecological features is included in Appendix A.

4.1 Habitats

4.1.1 Improved to Semi-improved Grassland

The site comprises a number of fields of improved grassland (**Image 1**). At the time of the extended Phase 1 habitat survey, cows were grazing within the fields of the site. Fields of improved grassland generally had very short grass, with rough semi-improved grassland margins. Species composition included perennial rye grass (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), creeping buttercup (*Ranunculus repens*), meadow buttercup (*Ranunculus acris*), cock's foot (*Dactylis glomerata*), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), ribwort plantain (*Plantago lanceolata*) creeping thistle (*Cirsium arvense*), cinquefoil (*Potentilla spp.*), rough meadow grass (*Ophioglossum vulgutum*), cut leaved cranesbills (*Geranium dissectum*), sweet vernal grass (*Anthoxanthum odoratum*), spear thistle (*Cirsium vulgare*), bentgrass (*Agrostis capillaris*), dandelion (*Taraxacum spp.*), greater ribwort plantain (*Plantago lanceolata*), yarrow (*Achillea millefolium*), wall barley (*Hordeum murinum*), chick weed (*Stellaria sp*) and Timothy-grass (*Phleum pratense*).

No cattle were present during the 2016 visit, however no significant change in this habitat from the 2014 findings was observed.

Image 1: Improved Grassland



4.1.2 Scrub; scattered and continuous

Within the site there were a number of patches of scattered scrub along most of the boundaries, which appear to be managed to some degree. Towards the northern extent of the site approximately 25% of the northern-most field is an area of dense scrub (**Image 2**) and appears to be much less formerly managed. Species composition included hawthorn (dominating species) bramble, elder, ivy, rose and sycamore.

There is also an area of outgrown and overmature hawthorn dominated scrub acting as secondary woodland with some blackthorn, elder and ash. The ground flora is dominated by common nettle but also there was evidence of cuckoo pint, garlic mustard, and the ancient woodland indicator species Butchers broom and wood avens.

There are also a number of patches of isolated scrub islands comprising hawthorn and some bramble.

No significant change in this habitat from the 2014 findings was observed during the 2016 survey. No additional areas of scrub were noted and there appeared to have been no increase in the areas identified previously.

Image 2: Scrub in northern field



4.1.3 Scattered Trees

Within the southernmost field there is a line of unmanaged scrub interspersed with scattered trees within the hedgerow (**Image 2**). The rest of the scattered trees are clustered in the northern end of the top field. Species composition included hawthorn, sycamore, rose, ivy and bramble.

No significant change in this habitat from the 2014 findings was observed during the 2016 survey. No additional scattered trees were noted none appeared to have been removed.



4.1.4 Clay Pit

During the Aluco Ecology surveys in 2011 a clay pit was noted. This clay pit was not noted during the 2014 phase 1 habitat survey undertaken by WYG, this habitat is suspected to have been lost due to reestablishment of vegetation.

No clay pit was observed during the 2016 survey.

4.1.5 Hedgerows

A number of hedgerows are present along field boundaries throughout the site. Details of these are provided in **Table 4** below.

Table 4: Hedgerows

Hedgerow Ref (HR)	Location	Description	Species Present	Other Features
HR1	Southern boundary along A259.	Intact, managed	Sycamore, hawthorn, bramble, dewberry clematis ap and the ground flora included common nettle, mallow and spear thistle.	N/A
HR2/ Tree line	Within the centre of the southern field.	Defunct, disconnected, unmanaged	Hawthorn, elder, sycamore, rose, ivy and bramble.	N/A
HR3	North western boundary boarding the A27.	Intact, managed	Field maple, hawthorn, bramble with occasional sycamore, cherry, dog rose and and ivy	Young tree plantation, fence running along entire length boarding the A27.
HR4	Top eastern	Defunct,	Beech, sycamore, bramble,	Bordering onto



Hedgerow Ref (HR)	Location	Description	Species Present	Other Features
	edge boarding residential gardens.	disconnected, unmanaged	cypress and ground flora of nettle.	residential gardens
HR5	Top end of the site dividing the northern section of the site by a north-south hedgerow	Defunct, disconnected, unmanaged	Hawthorn, ivy, bramble, elder	N/A
HR6	East to west hedgerow that divides the north to south field.	Defunct, disconnected, unmanaged	Hawthorn, bramble, ivy	Heavily dominated by tall ruderal on southern side.

None of the hedgerows listed above are considered to fit into the criteria of 'Important' under the Hedgerow Regulations 1997. Whilst the habitat in the north of the site is shown as broadleaved woodland BAP on the HBIC data search, the habitat in the northern extent of the site comprised dense and continuous scrub predominantly dominated by hawthorn. There were no standard tree species and as such it is not considered to qualify as broadleaved BAP habitat.

All hedgerows were present during the 2016 survey with no significant change in this habitat from the 2014 findings observed.

4.2 Protected and Notable Species

4.2.1 Great Crested Newt

The grassland, scrub and hedgerow habitat within the site provide potentially suitable terrestrial habitat for great crested newts. No ponds were located within the site. There is one water body located within 500m of the site. This is located 257m north west of the site. However, the A27, a trunk road, is located between the proposed development site and the pond, which is considered to represent a barrier to great crested newts migrating to the site, if present within this pond. From the review of aerial photography there are two ditches within a field to the east of the site, the ditches were assessed in December 2014. One ditch contains shallow fast flowing water and little aquatic vegetation was evident. Therefore this ditch is considered unsuitable to support GCN. The second ditch contained a small amount of water in shallow puddles. As the ditch did not contain very much water in December 2014 it is considered likely to be dry



during the GCN breeding season. This was confirmed during the June 2016 survey when both ditches were found to be dry. Within this site a recently excavated small pit (8m x 3m) was present. As this feature has been recently created, and no suitable water bodies are within 500m of connected habitat to this feature it is considered unlikely GCN would be present. As such, the site is considered to offer ***negligible potential*** to support great crested newts.

4.2.2 Bats

Roosting bats - Trees

There is one large Pedunculate oak tree along the eastern boundary near the entry gate onto site –TN1; the tree is within a residential garden with overhanging branches onto the site. There is a bird box attached to the tree facing eastwards towards the house. There are no visible bat features on the tree itself and it is located just outside the boundary. It can be seen from the masterplan (18-1720-PS05) that the tree will not be directly impacted by the proposed works or any lighting as the surrounding area is proposed to comprise green open space. Due to the presence of the bird box, which could potential provide a roosting location for bats, the tree is considered to be of Low potential to roosting bats.

Along the western boundary there is a line of plantation woodland comprising immature field maple and hawthorn with occasional sycamore and cherry trees, and a number of trees are also present within the hedgerows within the centre of the fields labelled HR2 and HR7 and scattered trees are found within the northern extent of the site. No features were identified within these trees that would offer suitability for roosting bats. These trees were assessed again during the 2016 survey with all found to have negligible suitability for roosting bats. These trees were assessed as offering negligible suitability for roosting bats.

Foraging and commuting bats

To the west of the site there is a narrow plantation woodland boundary adjacent to the A27 (HR2), it comprises of immature sycamore and the section of the A27 is well lit. Hedgerows form the southern, eastern and north eastern boundaries of the site with scattered and continuous scrub towards the north east of the site. The hedgerow along the eastern boundary is gappy for large extents and forms the rear boundaries of the properties along Selangor Avenue. No significant change in these features was observed during the 2016 survey. As such the habitats on site are considered to be of Low potential to foraging and commuting bats, given the well lit nature of the surrounding habitat, the isolated hedgerows within the site are generally defunct, and isolated with limited species diversity and hence offering low potential for foraging and commuting bats.



4.2.3 Badger

The site was searched for evidence of badgers. Whilst a number of mammal paths were noted, these appeared to be attributed to rabbits. However, dense bramble growth was present towards the north western extent of the site and whilst every effort was made to check as much of the site as possible, there is still a low potential that badger may be present on site. However, no badger setts or evidence of foraging / commuting badgers such as paths, latrines or foraging holes were recorded within the proposed development site, and no mammal paths were noted leading into the dense scrub.

It was not possible to survey a 30m buffer around the site as access along the northern western boundary due for health and safety reasons as this was directly adjacent to the A27, and there was no access to the north-east as this comprises private land, while land to the east of the site comprised residential rear gardens. However, many of the properties had relatively open boundaries and clear views were visible into the gardens and no setts or signs of badgers were noted. No additional signs of badgers were noted during the 2016 survey, although this survey was likewise limited by the dense scrub at the north west extent of the site and the lack of access to Highways England land between the site and A27. The site is considered to offer Low potential to foraging, commuting and sett development by badgers.

4.2.4 Hazel Dormice

The HBIC data search provided no known records for dormice with 2k search of the site. Whilst the site does support some scrub which offers a fairly limited number of food plants for dormice, the site is isolated from suitable habitat in the wider surrounding area, connecting to the relatively recently planted A27 tree belt, which offers very little understory. Many of the hedgerows on the site were defunct and gappy and hence the site and wider surroundings are considered to be of Negligible potential to dormice. No significant change was observed during the 2016 survey when habitats were also assessed as having negligible potential. It is also understood that the hedgerows and tree lines within the proposed development site boundary are being retained as part of the proposed development. The site is considered to offer ***negligible potential*** for this species.

4.2.5 Breeding bird

No birds were recorded nesting on the site at the time of extended Phase 1 habitat survey. The site provides some nesting potential with low lying scrub and hedgerows/woodland habitat. No significant change in these habitats was observed during the 2016 survey and they were still considered to be suitable



for nesting birds. Aluco Ecology (2013) recorded four widespread BAP or Red list species of Conservation Concern during 2011 including house sparrow (*Passer domesticus*), starling (*Sturnus vulgaris*), bullfinch (*Pyrrhula pyrrhula*) and song thrush (*Turdus philomelos*). The site is considered to offer **Moderate potential** to breeding birds.

4.2.6 Wintering Birds

The site is relatively small and enclosed by hedgerows with no clear lines of sight. The site is heavily grazed by cattle and it is understood from the Aluco Ecology (2013) report that since 2011 the site has been cattle grazed which reduces the sites suitability for overwintering birds. Whilst the site has been identified as holding 'uncertain' usage by overwintering birds (SWBGS, 2010), there are no records of waders or Brent geese using the site from the Solent Disturbance and mitigation Project (SWBGS, 2010) from the Aluco Ecology (2013) surveys from winter 2012 and 2013. Although cattle were not present during the 2016 survey the site still appeared to be managed through grazing. All hedgerows and tree lines remained and the site still appeared unsuitable for wintering birds. As such the site is considered to offer **Low potential** to over-wintering birds.

4.2.7 Reptiles

At the time of the extended Phase 1 habitat survey, the grassland at the site was cattle grazed. The site was heavily grazed with some of the margins comprising slightly longer grassland, but there were also areas of extensive bare ground particularly by the gate along the eastern boundary. No significant change was observed during the 2016 survey with the grassland still short with areas of bare ground due to poaching. The grassland / hedgerow / scrub interface provides suitable areas for reptiles to bask, shelter and forage. The hedgerows and the treeline to the north west of the site provide potentially suitable hibernacula for reptiles in the winter. Aluco Ecology (2013) recorded a low population of slow worms at the site in 2011, but given the cattle grazed nature of the site, the site is considered to be of **Low-Moderate potential** to reptiles.

4.2.8 Invertebrates

The scrub and scattered trees within the site boundary are likely to offer suitable habitat for invertebrate species. During the Aluco Ecology surveys in 2011, a small population of common blue butterfly were recorded within the clay pit, as a female was noted on one of Aluco Ecology survey visits. This clay pit was not noted during the 2014 or 2016 Phase 1 habitat survey.



HBIC returned records of stag beetle within 2km of the site, however no deadwood was noted on the site during 2014 or 2016 and as such the site is considered to be of Negligible potential to stagbeetles.

The habitats on site are widespread within the wider area, and throughout Great Britain, and it is considered that invertebrate species that may be present will be widespread and common. Therefore, the site is assessed as offering ***Negligible potential*** for rare or notable invertebrate species

4.3 Invasive Species

The survey was carried out in July which is within the optimal time for identifying invasive species. The invasive species Montbretia (*Crocrosmia sp.*) was noted within an island of hawthorn (TN2). This was also observed during the 2016 survey. This species is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) as a non-native invasive species.



5.0 Ecological Impacts and Recommendations

5.1 Statutory and Non-statutory Sites

The internationally designated sites of Chichester and Langstone Harbour Ramsar, SPA and SAC lie within 1.1km to the south of the site. These sites are designated primarily for their ornithological interest, including nationally significant numbers of wildfowl and waders during the non-breeding season, and their estuarine habitats.

No direct impacts are anticipated on the statutory protected sites within 2km of the development footprint as a result of habitat loss, although indirect impacts could potentially occur through visitor disturbance to breeding and/or wintering birds as these areas are accessible along public footpaths. South of the site are a network of fields many of which are designated as SINC's for wintering waterfowl use (primarily Brent Geese potential). Aluco Ecology completed winter bird surveys of the site and surrounding areas in 2013 and those to the south of the Havant Road (off site) showed a low use by waders only, with two species recorded (curlew and lapwing) as well as little egret. No wader use of the site itself has been recorded by Aluco, or by SWBGS (2010).

Possible impacts on the Internationally designated sites are outlined below, together with our assessment of their likelihood and magnitude.

Disturbance

The data search revealed records of some of the waders and waterfowl which form part of the reasons for the designation of the SPA within 2km of the site. Previous surveys by Aluco Ecology in 2012 and 2013 have not recorded the proposed development site being used by waders. Furthermore, whilst the site is noted as 'uncertain' usage by waders in the Solent Waders and Brent Goose Strategy SWBGS 2010. Natural England have been consulted and suggest that up to three years worth of wintering bird data is required to discount the use of the site for waders and Brent geese despite the low value of the site to overwintering birds. Currently we have wintering bird data for 22/12/2007, 27/01/2008, 27/03/2009 and 29/01/2009, a single visit within 2012 and 14 surveys between January and March 2013

It is also considered extremely unlikely that construction activities or final use of the site would indirectly cause disturbance to the birds using the Harbour and the surrounding area, as the site lies to the north of a busy A road with existing houses and businesses along both sides of the roads. Any increase in noise or



Havant Road, Emsworth: Extended Phase 1 Habitat Survey

disturbance is not considered to be significant, as, in our opinion, it would be indistinguishable above existing levels of traffic noise and residential properties, once south of the road.

As a precautionary approach to ensure that the risk of disturbance during construction is minimal, hoarding will be erected along the southern boundary of the development site during the development phase to screen the SPA from the development. If any deep piling is proposed it is recommended that this is undertaken outside of the wintering bird season (i.e. avoiding October to March).

Visitor Pressure

The Harbour is internationally designated as the Chichester and Langstone Harbours SPA and Ramsar site, as well as being nationally designated as a SSSI. Due to these International designations, consultation is currently underway with Natural England with regards to potential 'alone' and 'in combination' impacts from increased recreational pressure resulting from the proposed development. Multi-functional green space will be included within the proposed development..

A footpath network leads from the south of the site through the fields designated as SINC's for their overwintering bird assemblage, from the site to Chichester harbour is approximately 1.7km. The footpath runs west to east as well as south throughout the fields which leads to the Harbour designated for overwintering bird assemblages. Hence there is a risk that there will be an increase in visitor pressure to the coast.

There is also potential for increased visitor pressure on other statutory sites in the wider area such as Brook Meadow and Warblington Meadow. These areas are already open to the public and are easily accessible by foot as they are only 1.6km east of the site.

Areas of open space have been incorporated with the layout plan (Drawing No. 18-2059-100). This open space will contribute to relieving recreational pressure on nearby designated sites, there have been initial discussions with Natural England and they have advised that additional mitigation could include providing a financial contribution to upgrade the fences surrounding arable fields to the south of the site. Wintering birds from the SPA have been recorded feeding within these fields so fence works to prevent dogs entering these fields would be beneficial for wintering birds.



5.2 Habitats

In line with the most up to date Planning Layout (drawing No. 18-2059-100) the majority of mature trees situated along the western boundary of the site along with the hedgerow running along the same area are to be retained and protected with a grassland buffer of 7-10m. Infill planting will be compelled along this boundary to increase its suitability as a commuting and foraging resource for a range of notable and protected species, including bats. A receptor site for reptiles has been incorporated into the landscape at the eastern extent and along the south eastern boundary of the site which will be protected from construction impacts with exclusion fencing and managed as rough grassland with the installation of a hibernacula as a focal release point for reptiles. Multi functional green space will be provided with tree lined roads throughout the site.

5.3 Protected and Notable Species

5.3.1 Great Crested Newts

The great crested newt and its habitat are protected under the *Wildlife and Countryside Act 1981* (as amended) and the *Conservation of Habitats and Species (Amendment) Regulations 2012* (see Appendix B).

The site has been assessed as offering negligible potential to support great crested newts. Therefore, no further survey work or mitigation measures for this species have been recommended.

5.3.2 Reptiles

All species of native reptiles are under the *Wildlife and Countryside Act 1981* (as amended). The sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca* are further protected under *Conservation of Habitats and Species (Amendment) Regulations 2012*.

Aluco Ecology completed a reptile presence/likely absence survey at the site between 6th August 2011 and 29th September 2011 completing a total of nine survey visits. During these surveys, one species of reptile was recorded which was the slow worm with a maximum of four adults recorded on any one visit. A breeding slow worm population at the site was confirmed with a maximum of four sub adults recorded. The habitats on site are still offered to provide Low to Moderate potential to reptiles, albeit the habitats are heavily grazed. As such, given the reptile surveys are over two years old, update reptile presence/likely



Havant Road, Emsworth: Extended Phase 1 Habitat Survey

absence surveys are recommended to support the planning application. These surveys have been completed by a WYG ecologist within the reptile active period in 2014. Slow worms were recorded on three surveys of the seven survey occasions, with a maximum count of 2 adults recorded on 12th September 2014. A breeding population was also confirmed as one juvenile slow worm was recorded during one of the seven survey visits. In accordance with Frog life (1999) the site is assessed as supporting a low population of slow worms.

The eastern extent of the site has been identified as receptor site for reptiles and the south eastern buffer has been retained within the masterplan which will have a tall grassland buffer between 5.6 – 8.3m providing foraging and basking habitat along with hibernacula along the hedgerow base. The grass within this area will be left to grow tall and three hibernacula will be created to act as a focal point for reptile release and to improve overall habitat suitability. In addition there will be a grassland buffer of 7-10 metres wide running along the western boundary adjacent to the tree belt running along the A27 which will connect with the ecological receptor area providing a continuous boundary for reptiles to commute. This habitat will be managed sensitively for reptiles which will involve cutting grass once a year during September to a minimum height of 6 inches. Areas where public access will be permitted will be demarcated through trimmed footpaths. It is recommended that 20 days of translocation is needed to move reptiles from the works area to a receptor area onsite.



5.3.3 Bats

Roosting Bats

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) (see Appendix B).

No buildings are present on site. None of the trees assessed within the site boundary were considered suitable for bats to roost in, as they did not support any features suitable to roosting bats. There is a mature oak tree along the eastern boundary which didn't support any features suitable to roosting bats on the tree itself but a bird box was present facing in an easterly direction away from the development site which offers Low potential to roosting bats (TN1). However, this tree will not be directly impacted as a result of the development and the tree is located adjacent to the area of proposed open space and hence no further surveys are recommended.

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.

Aluco Ecology (2013) recorded five species of bats foraging and commuting over the site during survey in August and September 2011. However, the surveys concluded that there was no roost potential on the development site, but the transect surveys recorded common and soprano pipistrelle, Noctule, Serotine and Myotis (Brandts/Whiskered/Alcathoe).

The site is considered to have **low** potential for bats. In accordance with updated guidelines from the Bat Conservation Trust (BCT, March 2012) further **bat activity surveys are recommended** to gain an updated understanding of the usage of the site by bats, including potentially important areas for bat commuting and foraging. This will be used to help to inform the site masterplan and recommendations for avoidance, mitigation, compensation and enhancement for bats, as well as informing detailed lighting and landscape design.

In accordance with the Bat Conservation Trust (BCT) Guidelines 2012, for medium sized site (1-15 hectare) with low habitat quality it is recommended that one transect route is completed seasonally during spring,



summer and autumn. In addition to this, an automated bat detector should be left at one location on site for three consecutive nights during spring, summer and autumn.

Due to the timescales of the project, bat activity surveys were completed on three occasions over August and September, during the peak bat activity season, and automated bat detectors were left at the location along the western boundary of the site. This approach has been used for similar sites in the local area and has been approved by the LPA ecologist in these instances providing mitigation considers commuting and foraging bats. Whilst these surveys were undertaken in 2014, no update surveys were considered necessary as buffers have been retained off the boundary vegetation. The internal hedgerows were sparse and defunct and were not found to be used by foraging and commuting bats during the surveys and as such no impact is considered.

Bat foraging and commuting habitat has been incorporated into the masterplan a grassland buffer of 5.8 to 8.3m wide is being retained between the hedgerow running along the south eastern boundary of the site and any development. An area of open space will be retained within the north east of the site which will be managed as tall grassland with scattered trees along the eastern boundary. These features will provide suitable habitat for foraging and commuting bats during the operational phase of the development.

5.3.4 Badgers

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

No evidence of badgers was recorded onsite during the extended Phase 1 habitat survey and update survey in June 2016. However, some parts of the site comprised dense bramble and as such a pre-commencement badger survey is recommended, and that an Ecological Clerk of Work checks the area where scrub is removed for evidence of badger setts. In the event a badger sett is discovered, all works should stop and a Natural England development licence in relation to badgers is obtained before works can proceed.

5.3.5 Hazel Dormouse

The site is isolated from suitable habitat in the wider surrounding area, connecting to the relatively recently planted A27 tree belt, which offers very little understory. Many of the hedgerows on the site being defunct



and gappy and hence the site and wider surroundings are considered to be of Negligible potential to dormice. As such no further surveys are recommended in relation to this species. Infill planting of the boundary hedgerows using fruit bearing native species including hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) will increase the suitability of these features for foraging and commuting hazel dormouse should they move onto the site in the future.

5.3.6 Birds

Nesting birds

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

The habitats on site which are likely to be used as nesting sites are hedgerows, woodland and scrub. The majority of this habitat will be retained. However, defunct hedgerows and isolated scrub patches will be removed from the site. It is recommended that where possible, such habitats are preserved and any disturbance is kept to a minimum. All nesting birds are protected from disturbance whilst nesting by the *Wildlife and Countryside Act 1981 (as amended)*. Therefore it is recommended that any necessary felling of trees or scrub is undertaken outside nesting bird season where possible (March to September inclusive). If this is not possible, it is recommended that a nesting bird check is carried out by an ecologist immediately prior to felling. If an active bird nest is found, it must be retained along with a suitable buffer until the chicks have fledged.

Wintering Birds

Precautionary mitigation for disturbance during construction is recommended in the form of screening to be placed along the southern boundary of the site.

It is also recommended that should any pile driving be required, this takes place outside the wintering bird season (i.e. avoiding October – March).

More detailed analysis and recommendations are contained within the WYG (2017) Wintering Birds Survey Report.



5.3.7 Invertebrates

A number of invertebrate species are protected under the *Wildlife and Countryside Act 1981* (as amended) and the *Conservation of Habitats and Species (Amendment) Regulations 2012*. The current Biodiversity Action Plan (BAP) contains 411 invertebrate species (see Appendix B).

Invertebrate species present within the site are likely to be common and widespread and therefore no further surveys for invertebrates are recommended.

5.3.8 Invasive Species

The *Wildlife and Countryside Act 1981* (as amended) recognises several invasive plant species list in Schedule 9 of the Act (see Appendix B, Table B2).

A non-native plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 was recorded: *Crocodyria x crocosmiiflora* (Montbretia) (TN2). It is an offence under the Wildlife and Countryside Act 1981 to cause any species listed on Schedule 9 to spread in the wild.

To comply with the law, this Schedule 9 species should be eradicated so not to cause the plant to spread on this or other sites as a result of earth moving, soil/rubble removal or other operations. Two main options exist; mechanical removal and chemical treatment. The removal of these species should be completed by appropriately qualified contractors prior to any earth-moving operations.

5.4 Enhancements

Opportunities should be sought where possible for nature conservation enhancement of the site in line with current policy guidance (NPPF, 2012).

As an enhancement it is recommended that five bat and bird boxes are included within the final development where possible to be secured onto mature trees or new buildings (see Appendix D for potential designs). Planting of new areas of soft landscaping with native species of local provenance to enhance the site's ecology. This approach should apply to any tree/scrub species planted, as well as the ground flora/grass mixes sown and will create valuable habitats for invertebrates. Planting woody species that produce fruit and berries and nectar-producing herbaceous plants that flower at different times of the year would have the greatest benefits. Some recommendations for wildlife-friendly planting are included in Appendix E.



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Habitat enhancements will include additional native hedgerow planting and the retention of a 5.8-8.3 metre grassland buffer along the south eastern boundary, and a creation of a receptor site with a purpose built hibernacula for reptiles in the eastern most extent of the site. Multi functional green space will be provided with tree lined roads throughout the site.



6.0 Summary of Recommendations

- Reptiles:** It was recommended that a suite of update reptile presence / likely absence surveys are completed at the site. These surveys have been completed by a WYG ecologist within the reptile active period in 2014. Slow worms were recorded on three survey of the seven survey occasions, with a maximum count of 2 adults recorded on 12th September 2014. A breeding population was also confirmed as one juvenile slow worm was recorded during one of the seven survey visits. The southern area of the site will be retained as open space, with the grass within this area will be left to grow tall and be created and enhanced as a receptor site for reptiles through the construction of a hibernacula. In addition there will be a grassland buffer of 5.8-8.3m metres wide running along the western boundary adjacent to the tree belt running along the A27 which will connect with the ecological receptor area providing a continuous boundary for reptiles to commute. It is recommended that 20 days of translocation is needed to move reptiles from the works area to a receptor area onsite.
- Commuting and Foraging Bats:** Update bat activity surveys are recommended in line with BCT (2012) guidance, these have now been completed during summer 2014. Up to four species of bat recorded including both common and soprano pipistrelles and a bat of the *Myotis* genus considered most likely to be whiskered/ Brandt's. In-depth recommendations for protection, mitigation and enhancement measures for bats are contained within the WYG (2017) Bat Activity Survey Report.
- Badger:** A pre-commencement badger survey is recommended to take place two months prior to works to confirm the continued absence of this species from the site. An Ecological Clerk of Work is also recommended to check the area where scrub is removed for evidence of badger setts during vegetation clearance. In the event a badger sett is discovered, all works should stop and a Natural England development licence in relation to badgers is obtained before works can proceed.
- Breeding Birds:** It is recommended that vegetation clearance takes place between October and February wherever possible to avoid the breeding bird season. If this is not possible, then a thorough check for nesting birds should be completed immediately prior to site clearance, by a suitably qualified ecologist. If any active nests are found they must be retained, together with a suitable vegetated buffer until all the young have fledged.



- **Wintering birds:** It is recommended that wintering bird surveys are undertaken for the site between October and March. These surveys have been completed. In-depth recommendations for protection, mitigation and enhancement measures for wintering birds are contained within the WYG (2017) Wintering Birds Survey Report.
- **Invertebrates:** If any dead wood is found during site clearance, it is recommended that it be placed elsewhere within the site, to be retained within the final development as stag beetles have been recorded from the wider area.
- **Invasive species;** To comply with the law, Montbreita species should be eradicated so not to cause the plant to spread on this or other sites as a result of earth moving, soil/rubble removal or other operations. Two main options exist; mechanical removal and chemical treatment. The removal of these species should be completed by appropriately qualified contractors prior to any earth-moving operations.
- Habitat enhancements will include additional native hedgerow planting and infill planting of gappy hedgerows along the boundaries, the retention of a 5.8-6.3 metre grassland buffer along the south eastern boundary, and a receptor site for reptiles in the eastern most extent of the site. Multi functional green space will be provided with tree lined roads throughout the site.



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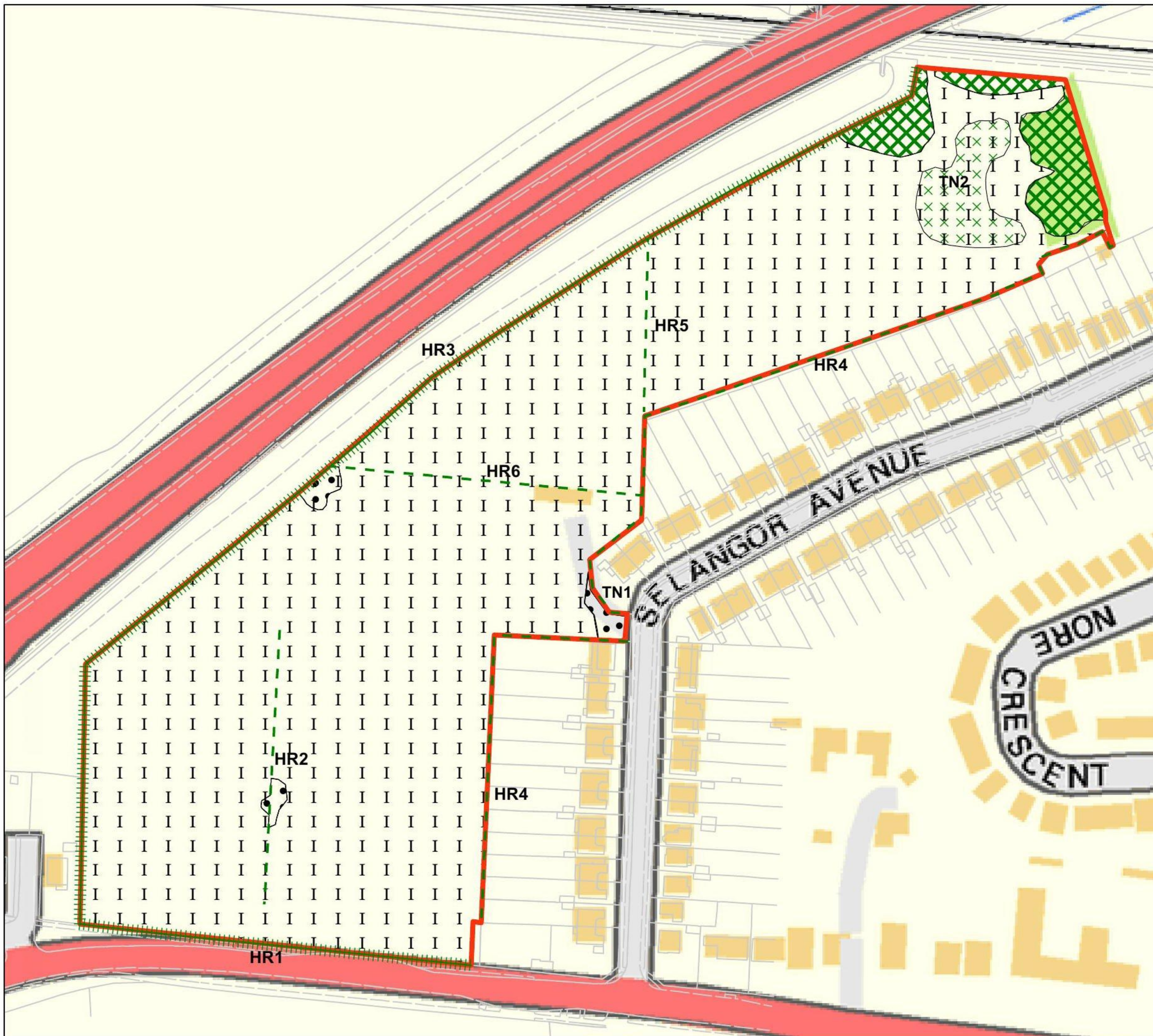
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Appendix A - Figures



Legend

- Species poor, defunct hedgerow
- ||||| Species poor hedge/trees
- Site boundary
- <all other values>
- Bare ground
- Dense/continuous scrub
- x x x Scattered scrub
- I I I Improved grassland

0 25 50 100 Metres

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WYG Planning & Environment

creative minds safe hands

Land at Havant Road Warblington

Phase 1 habitat survey map

Scale at A3:	Drawn by: EA	Date: 03/12/14	Checked By: EH	Date: 03/12/14	Approved By: CM	Date: 03/12/14
Project No: A088368	Office: 45	Type: 94	Drawing No: Figure 1	Revision		

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Appendix B – Biodiversity and Environmental Legislation, Conventions & 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.

Biodiversity Action Plan (BAP)

The UK *Biodiversity Action Plan* (UKBAP – UK Steering Group, 1995; UK Biodiversity Group, 1998 - 2000) lists and prioritises habitats and species and sets national targets to be achieved. The intent of the UKBAP, 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 UKBAP has recently undergone a review (Biodiversity Reporting and Information Group, June 2007) resulting in the identification of 391 'Priority' Species Action Plans (SAPs), 45 'Priority' Habitat Action Plans and 162 Local Biodiversity Action Plans.

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 (Amendment) Regulations 2012

The *Conservation of Habitats and Species (Amendment) Regulations 2012* 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 B1).



Table B1 Schedules of the Conservation of Habitats and Species (Amendment) Regulations 2012

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,



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- 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 B2 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 B2 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>
Three-cornered garlic	<i>Allium triquetrum</i>
Giant hogweed	<i>Heracleum mantegazzianum</i>



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Common name	Scientific name
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>Pilea 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.



Appendix C – Data Search Research



Appendix D – Wildlife Boxes



Introduction

The information in this appendix relates to bat and bird boxes that can be easily incorporated into building and landscape plans. The information provided is not exhaustive and provides examples of some of the types of boxes available.

Including bat and bird boxes throughout the development site has a number of benefits:

- Any roosting or resting places lost as a result of the work will be replaced;
- The ecological value of the site will be enhanced;
- Priority species within the UK and local Biodiversity Action Plans (BAPs) will be encouraged.

Bats

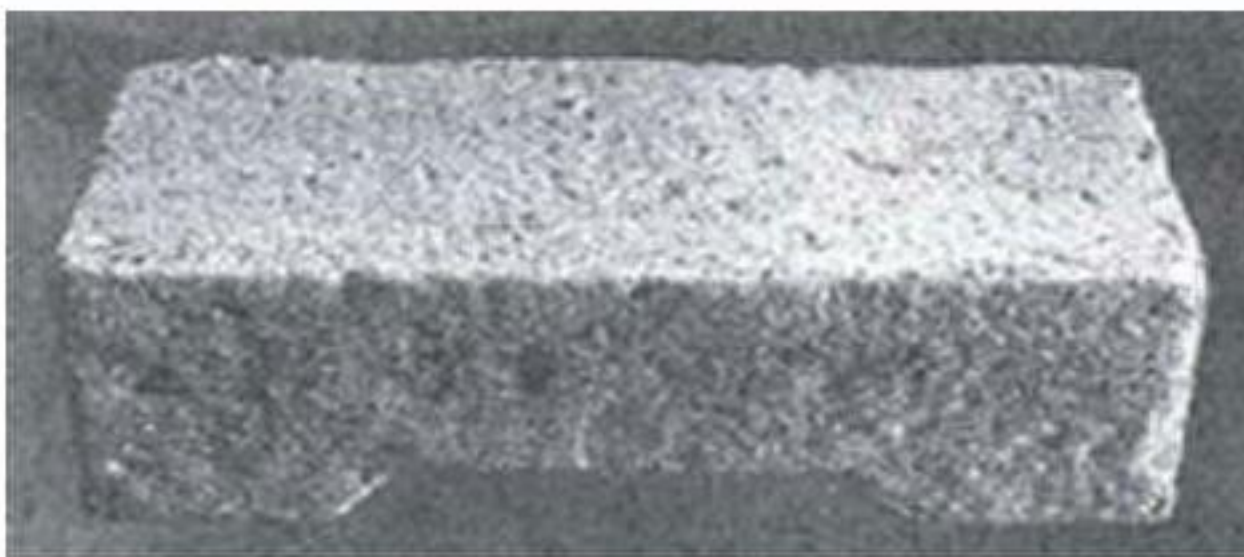
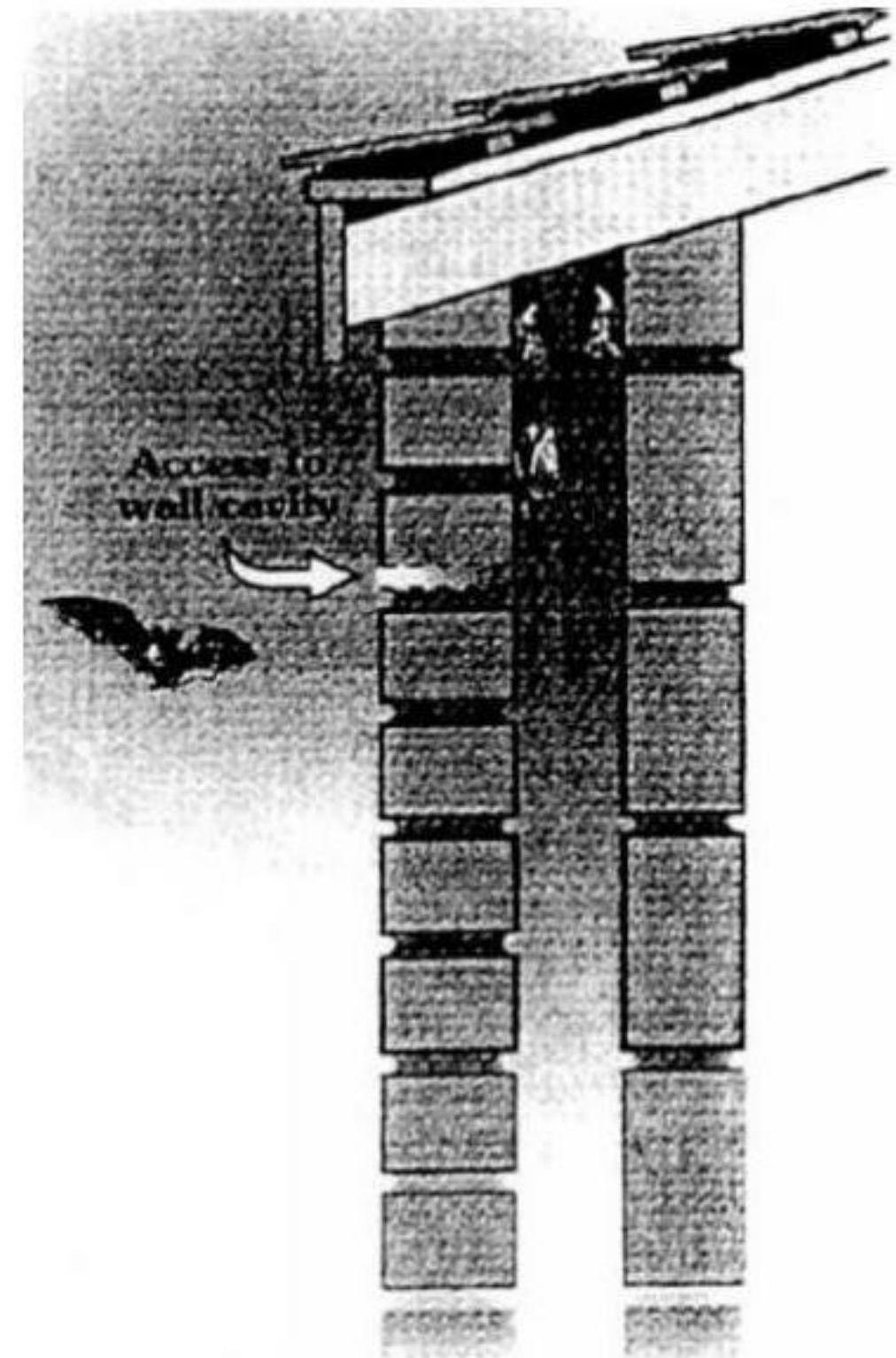
For Buildings

The inclusion of a variety of bat bricks, tubes and boxes for buildings is recommended to encourage a diversity of bat species. Bat bricks and tubes require no maintenance.

Bat Access and Roost Bricks

Source: Marshalls Clay Products (approved by the Bat conservation Trust)

'... Marshall Clay Products have been producing a Bat Access Brick specially designed to help the country's badly depleted bat population by provided access to wall cavities or roof spaces where most bat colonies tend to be (see diagram). In recent years bats have been declining at an alarming rate. Nearly all colonies tend to be on the outside of houses, in wall cavities, under slates, flashing or tiles, et c. ... Contrary to popular opinion, bats do not make pests and do absolutely no damage to buildings or roof timbers, indeed many people encourage bat colonies in their area because of the large number of insect pests, woodworm, et c. which they eat. Most colonises will use a house for only a few weeks in summer before dispersing in autumn.'



Marshall's Bat Access Brick, which is now also available in stone.

A Bat Brick should ideally be placed as high as possible at the gable apex or close to the soffit.

Marshalls Clay Products - Quarry Lane,
Howley Park, Woodkirk, Dewsbury, West
Yorkshire, WF12 7JJ – Tel: (01132) 203535,
Fax: (01132) 203555.

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Bat Tube

Brick bat tubes are designed for buildings, or underneath bridges, arches or tunnels, where conditions are relatively humid. They are particularly useful for new buildings or bridges to attract bats, or to provide new roost sites where existing buildings with bats are being renovated.

This long box can be installed within brick masonry, beneath plasterwork or wood panelling, or incorporated into concrete structures such as factory buildings or bridges. Inside it contains a woodcrete surface, a roughened wood board, and a metal mesh, providing a choice of roosting areas depending on the weather conditions and the bats' habits. This box is maintenance-free as the entrance slit is at the bottom.

No painting required, but if painting is necessary a natural breathable paint should be used.

Width: 20cm; Height: 47.5cm; Depth: 12.5cm; Entrance Width: 15cm; Entrance Depth: 2cm; Weight: 13kg



Bat Box

This type of box is made of woodcrete and is expected to last approximately 25 years. It has a narrow crevice-like internal space to attract Pipistrelle and Noctule bats. Woodcrete (75% wood sawdust, concrete and clay mixture).

Width: 27cm; Height: 43cm; Weight: 8.3kg.



For Trees

Woodcrete boxes have the highest rates of occupation of all box types. The 75% wood sawdust, concrete and clay mixture allows natural respiration, stable temperature, and durability. They are long lasting (approx. 25 years) and are rot- and predator-proof. Hang from a tree branch near the trunk, or fix to a trunk with the supplied 'tree-friendly' aluminium nail. Attractive to smaller British bats.

Material: Woodcrete (75% wood sawdust, concrete and clay mixture); Diameter: 16cm; Height: 33cm; Weight: 4kg.



Bird Boxes

A variety of bird box designs could be installed throughout the development site to attract a diversity of species. Open fronted boxes will attract species such as robins, pied wagtails and spotted flycatchers, while boxes with entrance holes will attract tits, wrens and tree sparrows. Roost pockets will be used by roosting birds over the winter and by smaller species, such as wrens, for nesting in the spring.

Open Fronted Boxes

This box is attractive to robins, pied wagtails, spotted flycatcher, wrens and black redstarts and is best sited on the walls of buildings with the entrance on one side.

These woodcrete boxes are designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting. They can be expected to last 25 years or more without maintenance.



Boxes with Entrance Holes

This box is attractive to smaller birds such as tits, wrens and tree sparrows. Sparrow terraces are also available.



Insect Boxes

As with the bat and bird boxes, a variety of insect boxes is recommended to encourage a diversity of species.

Wooden Insect House

A general insect habitat for beneficial insects in summer and, later in the year, overwintering ladybirds and lacewings. Locate in a sheltered place near nectar or pollen plants or by a pond.

Durable and strong construction in acacia, oak or larch with no maintenance necessary. Dimensions: 22 × 13.5 × 13.5cm.



Woodcrete Insect House

An insect nest made from long-lasting, insulating, woodcrete, with holes of different sizes providing homes for a variety of beneficial insects such as bees and solitary wasps.

Dimensions: 14 × 8 × 26cm; Weight: 3.65kg



Insect House with Inspection Tubes

This nesting and hibernation box for insects has a woodcrete exterior with a wooden front panel which can be removed for observation. Through the transparent tubes you can see the usually hidden lifecycle of many solitary types of bees and hymenoptera including egg-laying, development of larvae and sealing of brood chambers.

Typical inhabitants are wild bees and thread-waisted wasps. All the species attracted to this box are harmless non-aggressive pollinating insects. Dimensions: 33 × 21 × 51 cm; Weight: 7.1kg.





Appendix E – 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>Franula alnus</i>
Wild privet	<i>Ligustrum vulgare</i>
Barberry	<i>Berberis × 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>
Hedgehog Rose	<i>Rosa rugosa</i>
Himalayan honeysuckle	<i>Leycesteria formosa</i>
Holly	<i>Ilex aquifolium</i>
Japanese quince	<i>Chaenomeles japonica</i>
Lilac	<i>Syringa vulgaris</i>
Mexican orange	<i>Choisya ternata</i>
Mezereum	<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>



Common name	Scientific name
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 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>
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 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>Limnathes</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



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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)