

APP/12/00966



PV ECOLOGY

Land North of Goldring Close, Mengham, Hayling Island

Extended Phase 1 Ecological Assessment

Prepared on behalf of Tolcarne Drive Developments

August 2012

**Land North of Goldring Close
Ecology 7008_Phase 1
Issue 01**

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Date: August 2012

Signed:



Checked by: Ann Thornton

Date: August 2012

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1.0 Executive Summary

- 1.1 Surveyor: Davog McCloskey, Michelle Brown, Robin Walls, Ann Thornton
Grid Reference: SZ 72557 99539
Client/contact: Tolcarne Drive Developments
- 1.2 The client is proposing to demolish two existing properties (23 St Margarets Road and 1 Hawthorne Grove) and construct 131No. residential dwellings with associated landscaping and access on the land north of Goldring Close. A planning application is required to obtain permission for the development. PV Ecology was commissioned to provide the ecological assessment for this proposal.
- 1.3 The ecological assessment consisted of 1) a desk study of designated sites of conservation interest and protected and notable species in relation to the site, and 2) an Extended Phase 1 Habitat Survey of the land within the footprint of the proposed development and a buffer zone of 50m outside the site boundary.
- 1.4 The closest part of the site lies approximately 210m from Chichester Harbour SSSI, Chichester and Langstone Harbours SPA (Special Protection Area) / Ramsar and Solent Maritime SAC (Special Area of Conservation). Further survey work will be required to determine the impact of the proposed development on these protected areas and qualifying features. A Brent Geese and Wader survey and appropriate data search will be required of the site, and immediately adjacent sites, to determine the extent to which they are used by these species, if at all. The study and analysis is reported on separately.
- 1.5 The largest habitat area within the development boundary comprises species-poor semi-improved grassland currently divided into paddocks and intensively grazed by horses and ponies. Hedgerow boundaries are present around each field. Hedgerows of ecological 'importance' are protected under The Hedgerow Regulations (1997). Further survey work will be required to determine which hedgerows on site fulfil the criteria for 'importance' under these regulations. The two houses being demolished are brick built bungalows with amenity lawn.
- 1.6 Reptiles (slow worms *Anguis fragilis*) were found on site during the Phase 1 Survey and the Hampshire Biodiversity Information Centre data search recorded adders (*Vipera berus*) within 2km of the site. Further survey work is required to determine species and population size of reptiles within the development boundary to appropriately inform mitigation.
- 1.7 No evidence of bats was recorded within the extant buildings on site. 23 St Margarets Rd had low-medium bat roosting potential and therefore further bat emergence surveys took place to determine presence/absence of bats. The semi-mature oaks within the hedgerow are suitable for roosting bats and the hedgerows are also suitable for commuting and foraging bats. The open grassland on site is also likely to be suitable for foraging and commuting bats. Further bat activity survey work is required to determine how bats are using the site to appropriately inform mitigation.
- 1.8 The hedgerows on site have the potential to support dormice. Further survey work is required to determine presence / likely absence of dormice within the development site boundary to appropriately inform mitigation.

- 1.9 The hedgerows and scrub around the site have the potential to support a range of breeding birds including farmland birds. Swallows (*Hirundo rustica*) were recorded nesting in a stable towards the north west of the northern field. A breeding bird survey is required to determine the impact of the proposed development upon nesting birds.
- 1.10 The site contains habitats with the potential to support nesting birds. Vegetation clearance should avoid bird nesting season (01st March to 01st August, inclusive) or not be undertaken without prior inspection by an ecologist.
- 1.11 The broad-leaf trees within the site boundary and hedgerows have potential to support roosting bats. The trees were assessed as having 'medium-high' or 'medium' potential to support roosting bats. None of the trees assessed are due to be removed as part of this development. If the removal of these trees is unavoidable or work is to be carried out on them, prior inspection by an ecologist for roosting bats will be necessary.
- 1.12 The report provides an assessment of the potential ecological impacts of the proposed development (Section 6.0) and details mitigation measures to be implemented prior to and during construction (Section 7.0). Mitigation measures include; a) further measures required to mitigate against the effects of the development, and b) further measures recommended to mitigate against the effects of the proposed development.

2.0 Introduction

Background

- 2.1 PV Ecology was commissioned in April 2011 to carry out an Extended Phase 1 Ecological Assessment Survey of the land within the footprint of the proposed development to the north of Goldring Close, Mengham, Hayling Island. This report will contribute to a forthcoming planning application to be submitted by the client to Havant Borough Council and Hampshire County Council for permission to construct a number of new residential dwellings, and associated access roads and landscaping on site.
- 2.2 The results set out within this Phase 1 report are valid for one year from the issue date. After this a site visit will be required to ascertain if site conditions have changed.
- 2.3 This report describes the current ecological baseline of the site, based on the findings of an Extended Phase 1 Habitat Survey and review of existing data.
- 2.4 The methods employed to obtain ecological information on the site are described in **Section 3.0** of this report and the results are detailed in **Sections 4.0** and **5.0**. **Section 6.0** identifies the potential impact on biodiversity receptors and **Section 7.0** describes the recommendations for further ecological survey work and the recommended environmental measures which should be incorporated into the scheme design to minimise potential effects on biodiversity receptors.

Site Description

- 2.5 The site comprises two fields to the north of Goldring Close, Mengham, Hayling Island and also includes two houses adjacent to the fields that are necessary to access the site. The central grid reference of the site is SZ 72557 99539 (**Appendix A**). The site is surrounded by housing to the northern and southern sides with further housing to the south west. School playing fields are present to the north-west. Agricultural fields used for grazing cattle or for cutting hay for silage are present to the eastern side of the site.
- 2.6 The site comprises two fields currently used as horse paddocks. Both fields consist predominantly of intensively grazed short-sward grassland and are surrounded on all sides by mixed hedgerows with associated mature and semi-mature trees. The southern field contains isolated patches of scrub and a small area of mature trees at the north-western corner. The northern field is surrounded by dry ditches on the western, eastern and southern sides. The southern field is bordered by a small area of standing water situated to the north-west corner, outside the boundary of the site. Two houses border the main site – these will be used to access the development. The houses are brick built bungalows set within gardens containing amenity lawn and some ornamental planting at the borders.
- 2.7 The site lies approximately 210m from Chichester Harbour SSSI, Chichester & Langstone Harbours SPA/Ramsar and Solent Maritime SAC. The nearest SINC, Hayling Secondary School Playing Field, can be found approximately 0.5km to the north and meets the SINC Selection Criteria for Brent geese (*Branta bernicla*).
- 2.8 The site has been used by grazing horses for approximately 15-20 years. Previously it was relatively unmanaged and scrubbed over and before that it was used for hay and growing crops. The eastern boundary hedge was infill planted approximately 15-20

years ago to enhance the buffer between the proposed development site and the Site of Special Scientific Interest (SSSI). The adjacent houses are used residentially.

- 2.9 The site has been identified as potentially suitable for waders and Brent Geese in the Solent Waders and Brent Goose Strategy (Hampshire and Isle of Wight Wildlife Trust, 2010), along with the field to the east of the site. These sites were monitored during the Autumn/Winter 2011/2012 and the results are included in a separate report.

Brief

- 2.10 PV Ecology was commissioned by Tolcarne Drive Developments in March 2011 to carry out an Extended Phase 1 Ecological Assessment of the land within the footprint of the proposed development to the north of Goldring Close, Mengham and inform the clients of any ecological implications of the proposals and advise on any further survey work required.

3.0 Methodologies

Desk Study

- 3.1 The desk study methodology is based upon guidelines set out by the Institute of Environmental Assessment (IEA, 1995) and the Institute of Environmental and Ecological Management (IEEM, 2012). A data-gathering exercise was undertaken to obtain any available information relating to statutory and non-statutory nature conservation sites, priority habitats and species, and legally protected and controlled species using a range of sources (**Table 3.1**).
- 3.2 Given the potential for the scheme to affect biodiversity resources located off- as well as on-site, data was requested for:
- statutory sites of nature conservation interest located on or within 2km of the site;
 - non-statutory sites of nature conservation interest located on or within 2km of the site;
 - Biodiversity Action Plan Habitats located on or within 2km of the site; and
 - Data obtained HBIC for the site were used to provide records of priority legally protected and controlled species to a distance of 2km from the site boundary.

Table 3.1: Summary of information sources used for the Desk Study

Organisation / Source	Information Sought
Hampshire Biodiversity Information Centre (HBIC)	Location and details of statutory and non-statutory (locally designated) wildlife sites, UK Biodiversity Action Plan Priority Habitats and records of protected and/or notable species within 2km of Scratchface Lane.
Natural England	Locations of, and citations for, any SSSI, SAC, SPA or Ramsar sites within 2km of the site
MAGIC	Locations of all statutory wildlife sites and areas of ancient woodland within 2km of the site
Ordnance Survey Maps	Large scale habitat information and identification of off-site habitats which may require consideration (such as ponds)
Local Biodiversity Action Plan (LBAP)	Listings of LBAP species and habitats

Extended Phase 1 Habitat Survey

- 3.3 The site was visited initially on the 13th April 2011 with further site visits occurring through the spring, summer, autumn and winter 2011/2012 and a final site visit carried out on the 22nd August 2012. The survey employed techniques based on standard Phase 1 Habitat Survey methods (JNCC, 2006). Habitat types on and adjacent to the site were identified according to standard habitat definitions and mapped at an appropriate scale using standard colour codes and/or acronyms (**Appendix B**).

- 3.4 The collection of botanical information focused on the dominant and/ or key indicator species for each habitat, to allow allocation of habitats to the standard Phase 1 habitat types and where relevant to identify any LBAP habitats which are present on site. Any habitats identified as having potentially high botanical value will be subject to further botanical surveys, if deemed necessary.
- 3.5 The Phase 1 Habitat survey methodology was 'extended' in accordance with EIA guidelines (EIA, 1995) to include an assessment of the potential for habitats on or immediately adjacent to the site to support legally protected or conservation-notable species. The location and nature of any signs of the presence of protected species (such as droppings, footprints, burrows, etc.) were documented and mapped accordingly. Indicative methods for protected species are outlined below.

Bats

- 3.6 Extant buildings and trees were inspected for potential roosting areas that could support bats. The on-site buildings were searched externally for evidence of bats and evaluated for their potential to support bat roosts. Particular attention was paid to the following:

Trees

- Mature trees with ivy covering and/or crevices and peeling bark

Outside of buildings

- Stone crevices or cracks in brickwork, gaps between roofing materials and the main building structure, ground outside any potential access points.

Inside of buildings

- Floors, on and between any ridge beams or other parts of roof timbers that are deemed accessible to bats, within crevices of stonework and under tiles (where accessible).

Evidence searched for to indicate usage of bats included:

- Droppings;
- Urine staining;
- Worn entrances or claw marks around potential access points;
- Insect feeding remains;
- Oil staining left from bat fur; and
- Live/dead bats.

Birds

- 3.7 Any habitat features, for example, scrub, trees and buildings which could potentially be used by nesting birds, were surveyed and any nesting activity was noted. The habitat was also assessed regarding its potential for bird activity.

Reptiles

- 3.8 Habitat features that could be suitable as hibernacula, foraging or basking areas were noted. Extant refugia were lifted and examined for evidence of reptiles, including sloughs (shed skins).

Badgers

- 3.9 Any area that could be used for foraging or could potentially contain a Badger sett was surveyed and any signs noted including:
- Evidence of active or disused setts;
 - Evidence of potential badger diggings;
 - Latrines / dung pits;
 - Evidence of badger foraging ('snuffle holes');
 - Footprints; and
 - Badger hairs.

Great Crested Newts

- 3.10 Water-bodies within the site boundary and ponds within the vicinity of the site were noted and the potential of the land to act as a commuting route, shelter or foraging resource for great crested newts was assessed.

Otters and Water Voles

- 3.11 Any riparian habitat present on-site or immediately adjacent to the site was searched for signs of otters and water voles. Signs included:
- Otter spraints or sign heaps;
 - Water vole latrines and feeding stations;
 - Evidence of potential holts or burrows; and
 - Footprints.

Dormice

- 3.12 The suitability of the habitat was assessed for dormice. Any small mammal feeding signs were checked and assessed, including:
- Examination of hazel nuts; and
 - Evidence of nest building.

4.0 Results

Desk Study

Statutory Nature Conservation Sites

- 4.1 Three statutory sites of wildlife designation lie within 2km of the site boundary. Maps provided by Hampshire Biological Information Centre (HBIC) are included in **Appendix D**. The Chichester and Langstone Harbour Special Protected Area (SPA) / Special Area of Conservation (SAC) lies to the east of the proposed development. Langstone Harbour Site of Special Scientific Interest (SSSI) lies to the east of the proposed development.

Non-statutory Nature Conservation Sites

- 4.2 23 non-statutory sites of wildlife designation lie within 2km of the site boundary. Details of the non-statutory sites are summarised in **Table 4.1** below. Maps provided by Hampshire Biological Information Centre (HBIC) are included in **Appendix E** with full details of SINC's recorded within 2km available on request.
- 4.3 The site has also been highlighted in the Solent Brent Geese and Wader Strategy Current Use Map 13 as having 'uncertain' potential for waders. The site is not highlighted in the Future Use Map 36.

Table 4.1 Non-statutory Nature Conservation Sites within 2km of the site

Name and Designation	Distance from Site	Designation Information
• Non-Statutory Sites (SINC)		
• Saltmarsh Lane	• 1.5 and 1.6km west	• <i>Branta bernicla bernicla</i> (Dark-Bellied Brent Goose) [UKBAP]
• Landfill Meadow	• 1.5 north-west	• <i>Linum bienne</i> (Pale Flax) [CS]
• Hayling Billy	• 1.6 – 2km north-west	• <i>Branta bernicla bernicla</i> (Dark-Bellied Brent Goose) [UKBAP]
• South of Daw Lane	• 1.3 – 2km north-west	• <i>Branta bernicla bernicla</i> (Dark-Bellied Brent Goose) [UKBAP]
• Verner Common West	• 2km north-west	• <i>Branta bernicla bernicla</i> (Dark-Bellied Brent Goose) [UKBAP]
• Hayling Secondary School Playing Field	• 0.7km north	• <i>Branta bernicla bernicla</i> (Dark-Bellied Brent Goose) [UKBAP]
• Pound Marsh	• 1.4km	• <i>Branta bernicla bernicla</i> (Dark-Bellied

	north	Brent Goose) [UKBAP]
• Mill Rythe Lane Saltmarsh	• 1.5km north	• <i>Branta bernicla bernicla</i> (Dark-Bellied Brent Goose) [UKBAP]
• Tournerbury Farm	• 0.9km north-east	• <i>Branta bernicla bernicla</i> (Dark-Bellied Brent Goose) [UKBAP]
• Mill Rythe Holiday Village	• 1.6km north-east	• <i>Branta bernicla bernicla</i> (Dark-Bellied Brent Goose) [UKBAP] • <i>Ononis spinosa</i> (Spiny Restharrow) [CS] • <i>Tripleurospermum maritimum</i> (Sea Mayweed)
• Beachlands East	• 0.9km west	• <i>Carex arenaria</i> (Sand Sedge) [CS] • <i>Medicago polymorpha</i> (Toothed Medick) [NS] • <i>Moenchia erecta</i> (Upright Chickweed) [nHS] • <i>Sedum anglicum</i> (English Stonecrop) [CS] • <i>Trifolium suffocatum</i> (Suffocated Clover) [NS] • <i>Tripleurospermum maritimum</i> (Sea Mayweed)
• Fishery Creek Camp Site	• 1.4km south-east	• <i>Branta bernicla bernicla</i> (Dark-Bellied Brent Goose) [UKBAP]
• Selsemore Boating Lake	• 1.4km south-east	
• Mengham Salterns	• 1.2km south-east	• <i>Linum bienne</i> (Pale Flax) [CS] • <i>Nematostella vectensis</i> (Starlet Sea- Anemone) [NR] • <i>Ononis spinosa</i> (Spiny Restharrow) [CS]

Ponds

- 4.4 The results of the desk study revealed there are five ponds / water-bodies within 500m of the site.

Biodiversity Action Plan (BAP) Priority Habitats on Site

- 4.5 The data search revealed one BAP Priority Habitats present on site:
- Hedgerows

Protected and Notable Species

- 4.6 A list of the protected and notable species which have been recorded within 2km of the site was obtained from HBIC. Key species records are summarised here. A comprehensive list of records returned by the data search is available on request.
- The nearest SINC, Hayling Secondary School Playing Field, is located approximately 0.5km to the north. Dark Bellied Brent Geese were the reason the site met SINC Selection Criteria.
 - A National Biodiversity Network data search found historical records of Dormice on Hayling Island from 1929.
 - There are roost records for eight different species of bats within 2km of the site.
 - Adders and Slow worms have been recorded within 2km of the site.

Extended Phase 1 Habitat Survey

Introduction

- 4.7 The survey was carried out on 13th April 2011 by consultant ecologists with further site visits occurring through the spring, summer, autumn and winter 2011/2012 and a final site visit carried out on the 23rd August 2012 under clear, dry weather conditions.
- 4.8 The results of the Extended Phase 1 Habitat Survey are presented in the Sections below. An illustrated and annotated Extended Phase 1 Habitat Survey Map is presented in **Appendix B**. The map illustrates the location and extent of all habitat types recorded on site.

Site Constraints

- 4.9 The initial Phase 1 survey was carried out in April. Ideally, botanical surveys should be carried out May – August, however the site contained sufficient indicator species to enable assessment to be made. Vegetative keys were used to identify species not in flower. During the follow up Phase 2 surveys, additional species of flowers were recorded.
- 4.10 It was not possible to closely inspect features on the mature trees. Possible roosting features were examined using close focusing binoculars.

Habitats

- 4.11 The site comprises two fields currently each divided by electric fences into paddocks for horse grazing. The field boundaries comprise hedgerows with trees. Land immediately adjacent to the fields includes residential gardens with amenity grassland and agricultural semi-improved and improved fields. A public footpath is present to the east and west of the northern field and between the northern and southern fields. Two ponds were present within 500m of the development site. A number of wooden stable buildings and sheds were present within the proposed development site. In terms of on-site habitats, these can be divided into three main areas:
- Semi-improved grassland utilised as horse paddocks;
 - Hedgerows and trees;

- Scattered willow and scrub;
- Dry ditch;
- Wooden stable buildings, sheds and houses; and
- Amenity grassland

Each of the habitat types is described in detail below:

Short-sward, grazed, semi-improved grassland

- 4.12 The fields are composed of semi-improved grassland that is heavily grazed by horses. The most abundant species present are perennial rye grass (*Lolium perenne*), annual meadow grass (*Poa annua*), creeping buttercup (*Ranunculus repens*), lesser trefoil (*Trifolium dubium*) and white clover (*Trifolium repens*).
- 4.13 Reports by the tenant indicate that some areas of the fields do grow longer during the spring/summer when grazing is not so intensive. Patches of willow (*Salix caprea*) and bramble (*Rubus fruticosus* L. agg) are present in the southern field.
- 4.14 A full botanical species list is contained in **Appendix K**.

Hedgerows and trees

- 4.15 The hedgerows on site were identified as being potentially ecologically 'important' under the Hedgerow Regulations 1997. In addition, hedgerows are a UK BAP habitat. Further survey work is required to confirm whether these hedgerows fulfil the criteria under the Hedgerow Regulations 1997 and UK BAP. Woody species in the hedgerow included oak (*Quercus robur*), dogwood (*Cornus sanguinea*), ash (*Fraxinus excelsior*), field maple (*Acer campestre*), aspen (*Populus tremula*), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), dog rose (*Rosa canina*) and bramble (*Rubus fruticosus* L. agg).

Wooden stable block, sheds and houses

- 4.16 Buildings within the proposed development were assessed for their potential to support roosting bats and nesting birds.
- 4.17 The buildings on site are all used as horse stables or sheds and are constructed from wood with a range of flat and pitched roofs. They are all single storey and open to the elements. They are all used for cover for the horses and ponies and storage of food and equipment.



Buildings generally unsuitable for roosting bats

- 4.18 The buildings were all open to the elements and were generally draughty with high levels of light ingress. It would be possible for bats to fly in and use the buildings to forage however there were no visible signs of roosting bats and no evidence of bat usage.
- 4.19 The two residential houses, 23 St Margarets Rd and 1 Hawthorne Grove, were both brick built bungalows with concrete interlocking and slate roofs, respectively. 23 St Margarets had some hanging tiles on the front with small potential access points and also an area of boarding missing from the ceiling of the porch that could allow bat access to the area below the tiles. 1 Hawthorne Grove had one access point under a ridge tile, however, it was possible to see the tile from the attic and there was no sign of bats or signs of roosting bats. 1 Hawthorne Grove had lots of cobwebs internally and no roofing felt.

Scattered willow trees and scrub

- 4.20 A number of scattered trees were recorded within the development site boundary, in the southern field – these were all willow. Small clumps of scrub were present in the southern field – these were all clumps of bramble (*Rubus fruticosus*).



The group of willow trees

Amenity Grassland

- 4.21 Both areas of amenity grassland within the houses included as part of the proposals, contained predominantly Perennial rye grass (*Lolium perenne*), Yorkshire Fog (*Holcus lanatus*), Dandelion (*Taraxacum officinale*) and ribwort plantain (*Plantago lanceolata*). Ornamental planting was present along the borders of both houses.

Ditch

- 4.22 The ditch was present between the northern and southern fields. It was mostly dry at the time of survey except for a small area of standing water at the north-west corner of the southern field, outside of the site boundary. The ditches are approximately 1-3m wide, have high leaf-litter build up and are heavily silted. Gullies are present which link piles of manure directly to the ditches, resulting in a likely high nutrient content and low dissolved oxygen content. The banks in this area of standing water are steep and the area is highly shaded. There is little to no vegetation or emergent habitat.



Manure heap seeping into ditch

Protected or notable species

Bats

- 4.23 No evidence of bats was recorded during the internal or external inspection of the buildings on site, including the buildings on 23 St Margaret's Road and 1 Hawthorne Grove. Access points were recorded on both buildings although further investigation of Hawthorne Grove concluded that no bat roosts were present and the only area a bat would roost had no signs of bats ever having roosted there. St Margarets Rd had some areas that could not be surveyed with a visual inspection and therefore further emergence surveys would be required to ascertain presence/absence.
- 4.24 Mature oak trees were assessed for their potential to support roosting bats. Several trees along the eastern boundary of the northern field and north-west boundary of the southern field as well as trees in the southern hedge of the northern field were assessed as suitable for roosting bats due to holes and crevices present in the trunk and larger branches. None of the trees assessed are due to be removed as part of this development. If the removal of these trees is unavoidable, prior inspection by an ecologist for roosting bats will be necessary. One tree due for removal for site access was present at the northern boundary, however, it was found to have negligible bat

roosting potential due to a lack of suitable crevices and features although it would be suitable for foraging bats.



Mature oak trees to the north-west of the southern field

- 4.25 Habitat within the proposed development and immediately adjacent, including the hedgerows, provides foraging opportunities for bats. The majority of the site is low foraging potential for bats due to the intensive grazing, however, the hedgerows offer higher foraging potential and commuting habitat. The hedgerows are due to be retained as part of the proposals. The open nature of the fields offers some potential for a range of foraging bat species. **Appendix I** shows the parts of the site with bat foraging and commuting potential.



Open fields, scrub and hedgerow

Birds

- 4.26 The hedgerows and trees on site all have high bird nesting potential. Species of bird recorded during the time of survey include those listed below:
- Robin (*Erithacus rubecula*) – located to north-east of site in hedge
 - Great Tit (*Parus major*) – present long eastern boundary of the site
 - Woodpigeon (*Columba palumbus*) – breeding pair located in hedgerow separating two fields

- Goldfinch (*Carduelis carduelis*) – located foraging at the entrance to the site to the north-east boundary
- Black-headed Gull (*Chroicocephalus ridibundus*) – recorded flying over the southern area of the site.
- Greenfinch (*Carduelis chloris*) – recorded in the willow to the eastern side of the southern-most field.
- House Sparrow (*Passer domesticus*) – recorded in all the bramble scrub in the southern most field
- Magpie (*Pica pica*) – recorded in trees to the north west of the southern-most field.
- Wren (*Troglodytes troglodytes*) – located in willow to the west of the southern- most field
- Mallard (*Anas platyrhynchos*) – flying over southern-most field
- Blackbird (*Turdus merula*) – located in hedgerow to the west of northern-most field and in hedge separating two fields.
- Grey Heron (*Ardea cinerea*) – flying towards the south of the site.

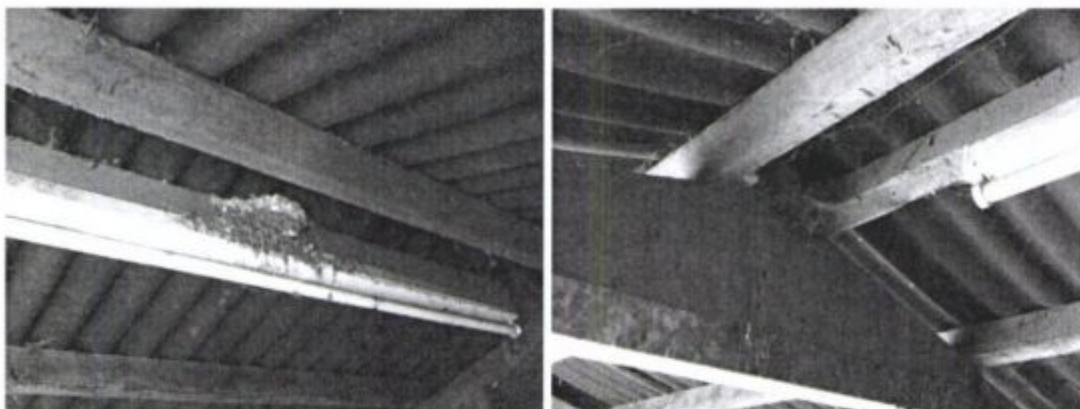


Boundary hedgerows suitable for nesting birds



Bramble suitable for nesting birds

- 4.27 Several old swallow (*Hirundo rustica*) nests were found in the stables to the north west of the northernmost field.



Swallow nests in stable

- 4.28 The site was also recorded within the Solent Wader and Brent Goose Strategy as having 'uncertain potential' for waders, in relation to the nearby SPA.

Dormice

- 4.29 No dormice or signs of dormice were recorded at the time of survey. The hedgerow habitat is suitable for dormice. The hedges and habitat on site are unlikely to be sufficient to support dormice in isolation. However, as the site links to the greater countryside and larger areas of woodland and scrub their presence on site cannot be ruled out. The hedges did not support an abundance of hazel (*Corylus avellana*), but did contain fruiting species such as hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*) and bramble (*Rubus fruticosus* L. agg). The hedgerows were of low structural diversity in areas, providing limited potential as a nesting resource for this species. However, it is possible that they are used as commuting habitat.

Badgers

- 4.30 No badger setts or signs were recorded in or near to the site at the time of survey.
- 4.31 The smell of fox was recorded throughout the site at the time of survey particularly along the eastern boundary of the site, along the public footpath. A single fox scat was recorded in the northern field.
- 4.32 Rabbit holes were recorded along the extent of the eastern boundary hedge.

Great crested newts

- 4.33 The site contains a dry ditch which was assessed as being of 'poor' suitability to support great crested newts. The ditches were present along the western, southern and eastern boundary of the northern field.
- 4.34 The ditches were dry at the time of survey, with only one small area of standing water present at the north-west corner of the southern field, outside the site boundary. The banks in this area of standing water were steep and unvegetated marginally and the area is highly shaded by oaks. There was no emergent habitat. The ditches are approximately 1-3m wide throughout the site, have high leaf-litter build up and are heavily silted. Gullies are present which link piles of manure directly to the ditches,

resulting in a likely high nutrient content and low dissolved oxygen content. The fields are intensively grazed, highly disturbed (by humans and horses) and unsuitable or sub-optimal as terrestrial habitat for newts. The hedges do offer better commuting habitat for newts.

Table 4.1 Habitat Suitability Assessment of dry ditch on site.

Pond Number	HSI $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \times SI_9 \times SI_{10})^{1/10}$	Comments / Description
pond	$(1 \times 0.4 \times 0.1 \times 0.01 \times 0.3 \times 1 \times 1 \times 0.67 \times 0.3)^{1/10} = 0.49494$ HSI = 0.345 (Poor)	Ditch to east of northern field and between north and south field

Otters and water voles

- 4.35 No signs of otters or water voles were recorded at the time of survey. The ditches were dry at the time of survey. There was no suitable aquatic vegetation, cover or potential prey recorded within the ditch-lines or within the small area of standing water. These areas are considered unsuitable for otter or water vole.

Plants

- 4.36 None

Reptiles

- 4.37 One juvenile slow worm was recorded under a piece of unduline in the north-west corner of the southern field at the time of survey. Hedgerow habitat and areas of willow are suitable for reptiles to forage. There are suitable features nearer the boundaries for basking and hibernating reptiles. **Appendix J** details the areas with reptile potential.



Juvenile slow worm found on site

Other species (including amphibians, invertebrates and mammals)

- 4.38 No other protected species of invertebrate, amphibian or mammal were observed on the main site during the survey.
- 4.39 Hedgehogs (UK BAP) were present in the hedge to the west of 23 St Margarets Rd.

5.0 Analysis and Impact Assessment

Nature Conservation Sites

UK Statutory Sites of Conservation Interest

- 5.1 Chichester and Langstone Harbour Special Protected Area (SPA) / Special Area of Conservation (SAC) lies to the east of the proposed development. The development could potentially cause an increase in the numbers of people visiting the site or carrying out recreational activities near to the site and therefore an impact of the potential recreation disturbance should be carried out. This is the subject of the Brent Goose and Wader Survey Report and Impact Assessment (PV Ecology 2012).

Non-Statutory Sites of Conservation Interest

- 5.2 All the publicly accessible SINC's are separated from the development by roads and residential areas and therefore it is unlikely that there will be any direct impact with the proposals at the land north of Goldring Close.
- 5.3 The site was recorded as uncertain for waders. A further Brent Geese and wader survey would be required to determine how the site is used by these species of birds during the Autumn and Winter months when birds migrate to the solent from colder areas. Brent Geese and Waders are known to forage and roost on areas of short grazed grassland when food supplies are lower in winter.

Habitats

Semi-improved grassland

- 5.4 There will be a loss of grassland due to the housing development. With some creative landscape planning using native species and appropriate management of green spaces there could be an overall increase in biodiversity on site. The impact with appropriate planting and design could be positive. Currently the semi-improved grassland is managed by intensive grazing and therefore there is little opportunity for flowering species on the majority of the site to thrive.
- 5.5 The open area of semi-improved grassland is suitable for a range of species to forage including bats. The loss of the semi-improved grassland habitat has an unknown impact until further bat and bird surveys are carried out.

Hedgerows and Trees

- 5.6 The majority of the hedgerows and trees will be retained and protected in the proposals. There will be some small impacts on hedgerows due to entrance widening; new pathways; and construction disturbance. Approximately 5m of the hedgerow on the southern boundary of the northern most field will have to be removed for the proposed access route between the north and south fields. This area is located at an existing gate and hedgerow gap, although this will have to be widened slightly by removing some sections of hedgerow to allow car access. A hedgerow considered to be ecologically 'important' under the Hedgerow Regulations 1997 can only be removed once a Hedgerow Removal Notice has been granted by the Local Planning Authority. Permission from the LPA for the removal of the section of hedgerow for the proposed

access route will be required prior to any removal of hedgerow habitat on site and a full hedgerow survey will be required to determine if the hedgerows on site meet the standards as outlined by the hedgerow regulations.

- 5.7 The current hedgerow network being retained on site should be protected, maintained and fenced off prior to the construction stage of the development. Hedgerow management should be assessed in the long term to ensure protection of this ecologically valuable feature. The individual willow and group of willow in the southern field will be lost in the current proposals and the loss of these should be mitigated for by planting native tree species throughout the site.
- 5.8 Impacts on the hedgerow habitat will be negligible as long as the hedgerow is protected during construction and post development and landscaping provides enhancements for hedgerows through native species planting.
- 5.9 Hedges are important as wildlife corridor and any breakage in the hedge corridor should be mitigated by appropriate planting and other measures to ensure habitat connectivity around the site.
- 5.10 The mature oak trees to the east of the northern field, north-west of the southern field and dividing the two fields are worth conserving. None of the trees are due to be removed as part of this development, although a new road will be sited close to the root areas. Appropriate measures will have to be taken to ensure roots are not damaged and British Standard 5837 will be adhered to if necessary.
- 5.11 Full dormice, reptile and bat activity surveys of the hedgerows and trees should take place to determine the impact of the proposals on these faunal species.

Poor semi-improved grassland

- 5.12 The grassland within the southern field is species-poor and dominated by ranker grass species. However, the grass was tussocky with a sward height of >100mm thus providing foraging and shelter opportunities for a range of faunal species including reptiles. In addition the adjacent ruderal vegetation provides species and structural diversity within the development boundary. The removal of this habitat from the southern field will impact on any population of reptiles present. In the absence of appropriate mitigation, the predicted ecological impact from the proposed development is considered to be 'medium' at the site and landscape scales.

Dry ditch

- 5.13 The ditch was silted up with leaf litter and was considered generally unsuitable for protected species. Its location next to the hedgerow meant that it had some suitability for reptiles. The fact that the ditch had horse manure run-off leading directly into it from manure heaps meant that it was contaminated and any future water level increase would be unsuitable for a wide range of invertebrates or vertebrates due to low oxygen levels. The plans do not indicate any loss of ditch, however, there are opportunities to enhance the current ditch by clearing out the leaf litter and maintaining it as an area of open water or ditch network – this would benefit a range of species.

Amenity Grassland

- 5.14 The amenity grassland in the houses has low species diversity and is likely to be mitigated for by the construction and landscaping of new houses. The loss of the amenity grassland in the absence of mitigation is low.

Protected and Notable Species

Badgers

- 5.15 No records for badger were returned within 2km of the development site. No badger setts were found in the vicinity of the site and no signs of badgers were recorded during any of the site visits. A visit to check for any signs of badger activity should be carried out immediately prior to construction starting on site to determine if there will be any future impact on badgers or their setts. The predicted negative ecological impact upon badgers as a result of the proposed development is considered to be 'negligible' at the site and landscape scales.
- 5.16 As no badger setts were found, development works are free to proceed without further regard to this species, although if a badger sett is subsequently discovered within 30m of the proposed works then a licence from Natural England may be required.

Bats

- 5.17 Bat foraging and breeding habitat is likely to be impacted by the proposals. Further bat activity survey work will be required to determine the level of bat activity at the site and this will be used to determine the level of mitigation required, if any. The semi-improved grassland habitat on site is low quality due to the intensive grazing, however, its size and expanse offers foraging potential for a range of bat species. The hedgerows and trees offer suitable connectivity into the wider countryside as well as good foraging habitat. Surveys in Spring, Summer and Autumn should take place to determine bat activity at the site.
- 5.18 The mature trees to the east of the northern field, northwest of the southern field and trees dividing the two fields should be retained – if these are to be removed or if work is being carried out on them then further inspection and survey work will be required to determine if they are used as roosts.
- 5.19 The two residential dwellings scheduled to be demolished as part of the proposed development were assessed in accordance with current guidance at the time (BCT, 2007) for their potential to support roosting bats. The assessment revealed 1 Hawthorne Grove to have low suitability, however, the only access point for bats did not reveal any usage by bats and the attic area was covered in cobwebs. 23 St Margarets Road had low-medium bat roosting potential due to access points in the porch and to the side of hanging tiles and therefore a series of three bat emergence surveys were recommended to determine bat usage and/or presence/absence.
- 5.20 No evidence of bats was recorded within the attic spaces.
- 5.21 Bats may be present in trees so it is important that if a roost is shown to be present then appropriate buffer zones or appropriate mitigation is in place to maintain the roost.

Birds

- 5.22 Nesting swallows are present in a building that will be impacted by the proposals. If the building is demolished outside of the breeding season for swallows the impact will be low. Site design should include suitable buildings to mitigate for the loss of swallow nesting habitat.
- 5.23 The hedgerows on site, to the east, back onto farmland so it is possible that farmland bird species (whitethroats, yellow hammers etc), which are Hampshire BAP species, use the hedges to nest and forage. This should be taken into account in the design of the site. A nesting bird survey to determine the importance of the site for nesting birds should be carried out during the period April – June.
- 5.24 The hedgerow boundaries, willow trees and scrub all have potential to support nesting birds. Building works / demolition and any associated vegetation clearance will not be conducted during peak bird nesting season which runs from 01st March to 01st August (1st October for swallows), inclusive, unless prior inspection by an ecologist can show that there are no nesting birds present. The boundary trees and hedgerows must be protected during the works. This may mean a stand-off zone of at least 2m from the hedgerow bases and the erection of Heras fencing (or similar) if necessary, to prevent machinery encroachment.
- 5.25 Records for ground nesting birds such as skylark were returned from within 2km of the proposed development site. Habitats within the development site boundary are considered unsuitable due to the presence horses. It is considered likely that these species would make use of more optimal habitat in the wider landscape.
- 5.26 In the absence of appropriate mitigation, if landscaping and construction are not carried out at suitable times of year, there could be a negative impact on nesting birds through destruction of their nests and habitat. Through the appropriate timing of works and incorporation of bird nesting provision within the design of the new dwellings, the negative ecological effects of the proposed works would be reduced to 'low' at both the site and landscape scales. Details of mitigation are discussed in **Section 6.0**.

Dormice

- 5.27 The impacts on the hedgerows are currently unclear. Further survey work is required to determine presence / likely absence of dormice within the development site. Dormice are generally an arboreal species and prefer continuous hedgerow to move around. If present on site then appropriate mitigation will be required to ensure dormice can move around the hedgerows on site. In the absence of appropriate mitigation the impact on dormice, if present, is dependent upon the extent of hedgerow removal. Therefore, it is considered 'low to medium' at both site and landscape scales.
- 5.28 There are more suitable habitats for dormice approximately 300m to the east and if dormice are present on the island it is considered unlikely that they would use hedgerows around the development area. There is connectivity to the development area hedgerows so it cannot be ruled out without carrying out an appropriate dormouse survey at the correct time of year. The impact on dormice is currently unclear and further surveys will be required to determine the impact.
- 5.29 There is likely to be some small impacts on hedgerows on site and if dormice are present then habitat connectivity should be maintained through appropriate planting. Further enhancements should be made to the hedgerows through appropriate planting to enhance the hedgerows.

- 5.30 As a precautionary measure, any hedgerow removal should be removed from the southern section of the site under supervision of an ecologist.

Great crested newts

- 5.31 The data search returned no records of great crested newt within 2km of the proposed development site. The HSI assessment showed the ditch network to be of 'poor' suitability to support great crested newts and the majority of the habitat on site was sub-optimal for great crested newts. Additionally, it was not possible to assess the suitability of the other ponds within 1km of the development site due to their location (within private land). Ponds were present to the east of the site, within 500m, but it was considered highly unlikely that great crested newts (if present) would migrate from these ponds to the site as the habitat linking the ponds to the development site is sub-optimal. The habitat surrounding the ponds to the east is much more suitable, terrestrially, for great crested newts, making the migration west highly unlikely. The ditch network on the site was unsuitable for great crested newts due to the silting and shading and manure seepage and the horse and people presence causes sufficient disturbance to further limit likelihood of newt presence. The small area of standing water to the west of the site was unsuitable for great crested newts due to the lack of emergent vegetation and steep sides.

Otters and water voles

- 5.32 There are no suitable water courses on or in the vicinity of the site.

Reptiles

- 5.33 The site contains habitat suitable for providing shelter and foraging opportunities for reptiles. These include areas of scrub, ruderal vegetation, woodland edge together with suitable pieces of refugia throughout the site. The habitats could potentially act as 'commuting corridors' for reptiles to access the site from the wider landscape and have potential to support the commoner species of reptile, such as slow-worm (*Anguis fragilis*), common lizard (*Zootoca vivipara*) and grass snake (*Natrix natrix*). Records were returned for all common species of reptile within 2km of the site.
- 5.34 The presence of slow worm (*Anguis fragilis*) was confirmed during the Phase 1 survey. Further surveys are required to ascertain the presence or likely absence of other species of reptile and the population of slow worms within areas of suitable habitat on site.
- 5.35 Once the further survey work has been completed, the results will inform recommended mitigation measures in order to comply with current UK legislation. These could include providing suitable habitat for reptiles within the development boundary such as planting a vegetative buffer between the hedgerows and tree borders with native species to mimic woodland-edge conditions. Any open spaces should incorporate reptile habitat and ensure linkage is maintained with the greater countryside. This would benefit biodiversity in general and provide additional foraging and refuge for reptile species. Additional foraging and refuge potential could be provided in the form of hibernacula, log and brash piles and compost heaps at selected points and landscaping within residential areas should offer value to reptiles by planting native hedges and borders with low shrubs.

- 5.36 In the absence of mitigation, the impact on reptiles present on site is considered to be 'medium' at the site scale and 'low' at the landscape scale, however further reptile surveys would be required to appropriately determine this.

Other species (including amphibians, invertebrates and mammals)

- 5.37 No protected species of invertebrate were observed to be present during the survey. However, the site contains areas of habitat suitable for stag beetle (protected by Wildlife and Countryside Act (1981)). These include areas of rotting wood and tree root areas. In the absence of appropriate mitigation, the negative ecological impact upon protected invertebrate species as a result of the proposed development is considered to be 'medium' at the site scale and 'low' at the landscape scale.
- 5.38 Moth data for the site has been included in a table. The moth data has been used to draw up a list of species that could be used to inform a landscaping plan for the site. The landscaping therefore could be used to enhance the biodiversity of the site by providing enhancements for rare and vulnerable moths that are in turn a food source (including their caterpillars) for bats and birds and other species of concern in the local area.
- 5.39 Hedgehog were recorded in the hedge to the west of 23 St Margarets Rd. The tenant had a hedgehog box and regularly fed animals in her garden. She also said they were likely to be using the area of scrub to the rear of the house. Hedgehogs are a UK BAP species and measures to prevent harm and ensure suitable habitat is created for them on site should be put in place.

6.0 Requirements and Recommendations

Essential Pre-Application Further Survey Work

Bats

- 6.1 A suite of bat surveys (comprising dawn and dusk) will be required to take place during the Summer and Autumn. These surveys would be required to monitor bat activity over the site to look for species, foraging areas and commuting routes. Should evidence of roosting bats be determined as a result of the surveys, a European Protected Species Licence may be required to proceed with works. Mitigation in the form of crevice features and appropriate timing may be required to ensure there is no harm on bats or their roosts.
- 6.2 The bat activity surveys will entail a suite of site-wide bat activity surveys (two dusk and one dawn) with surveyors walking a pre-determined transect route across both fields to record bats emerging from trees or foraging over the site. Activity surveys will also focus on the mature oaks in the hedgerows to determine if they are being used by bats and to determine if bats will be impacted by the proposed development. As the developed area of the site has generally low habitat suitability for foraging bats, the surveys in summer and autumn should be spread out across this optimal period to give a good impression of bat use across the active season for bats, especially over the maternity season. Any bat activity will be noted and calls analysed to determine which species are present and inform appropriate mitigation. If further survey work shows bats to be roosting (in one of

the oak trees) on site then appropriate mitigation will be required to ensure that not only are the trees retained but that suitable commuting paths exist to the roost.

- 6.3 The results from the phase 2 works will inform appropriate mitigation measures in relation to bats.
- 6.4 Bat roosting features will be created on new buildings on site. More detail on required mitigation will be provided following the Phase 2 surveys. These will include a range of measures to encourage roosting bats including: Bat access tiles; Schwegler bat boxes; Bat access features to ridge tiles; Fascia access points; and Bat bricks.
- 6.5 A suite of bat emergence surveys will take place on 23 St Margarets road to determine presence/absence of bats.

Reptiles

- 6.6 Further surveys are required to ascertain the presence or likely absence of reptiles within areas of suitable habitat on site. This will involve an initial visit to the site to lay out artificial refugia (squares of roofing felt and/or corrugated tin), followed by 7 further visits under suitable weather conditions during the active season (April to September).
- 6.7 The results from the phase 2 works will inform appropriate mitigation measures in relation to reptiles.

Dormice

- 6.8 There are historic records for dormouse on the Island and the site is linked with areas of more suitable dormouse habitat. Further surveys are required to ascertain the presence or likely absence of dormice within areas of suitable habitat on site. This will involve dormouse surveys between April and September. The hedges on site contained very little Hazel so nut searches would be insufficient alone to confirm presence / likely absence. If dormice are found to be present on site then mitigation will be proposed to ensure habitat linkage is continuous throughout the site.
- 6.9 The results from the phase 2 works will inform appropriate mitigation measures in relation to great crested newts.

Brent Geese, Waders and Special Protection Area

- 6.10 Further survey work will be required over the winter months from October through to March to determine the usage of the site by Brent Geese and Waders.
- 6.11 An assessment of the indirect impact of the housing proposal on the Special Protection Area will be carried out to determine the impact of recreational disturbance on the area and its features.

Further Measures Required to Mitigate Against the Effects of the Proposed Development

Nesting Birds

- 6.12 It is an offence under the Wildlife and Countryside Act 1981 (as amended) to disturb nesting birds (further details relating to current legislation are described in **Appendix H**). To avoid contravention of protected species legislation, any building works / demolition

or vegetation removal will not be undertaken during bird nesting season (1st March until 01st August) unless prior inspection by an ecologist concludes that there are no nesting birds present. If the presence of nesting birds is confirmed, any works which may disturb them will be delayed until the young birds have fledged the nest.

- 6.13 Bird nesting boxes will be incorporated into 10No. new dwellings, to mitigate for the loss of bird nesting habitat. These will consist of the following: 20No. sparrow terraces to be attached to the outside of the building under the eaves or incorporated into fabric of building; 20No. nest bricks for swifts suitable for incorporating into the fabric of the building; and 10No. nest bricks for pied wagtail, spotted flycatcher and black redstart suitable for incorporating into the fabric of the building.
- 6.14 Suggested bird nest boxes are shown in **Appendix F**.

Hedgerow

- 6.15 The hedgerows are likely to be ecologically 'important' (Hedgerow Regulations 1997) and a BAP priority habitat. Further survey work is required to determine whether any hedgerows within the development site meet the criteria under these regulations. Should any section of hedgerow meeting the criteria be required to be removed as part of the development a Hedgerow Removal Notice will be required from the Local Planning Authority. All hedgerows within the site boundary will be protected during the development process by suitable fencing.

Protection of trees and hedgerows prior to, during and after the development

- 6.16 Removal of, or physical disturbance to, all woodland, hedgerows (including line of trees separating northern and southern site) and associated margins will be avoided. This will require a stand-off zone of at least 1m between any machinery and the habitat and, if necessary, the erection of suitable fencing (e.g. Heras) to protect these areas during the construction phase of the development. Appropriate advice will need to be acquired and adhered to regarding trees and their root protection.

Scrub Clearance

- 6.17 Scrub should be cleared on site under supervision of an ecologist. This will ensure reptiles and/or small mammals (i.e. hedgehogs) have minimal disturbance. This should be carried out outside of winter to minimise disturbance to any creatures using the scrub to hibernate.
- 6.18 Suitable areas of hedgerow will be retained on site for hedgehogs to allow them suitable areas for foraging etc.
- 6.19 During the construction phase of the proposals, holes and foundations will not be left opened or uncovered overnight. If this is unavoidable then ramps must be in place to prevent hedgehogs getting stuck if they fall into water at the bottom of a steep sided hole.

Further Measures Recommended to Mitigate against the Effects of the Proposed Development

Biodiversity Enhancement

- 6.20 In accordance with the Natural Environment and Rural Communities Act (2006), the National Planning Policy Framework (2012) and Government Circular 06/2005 (ODPM, 2005), the master planning process should seek to incorporate measures to further the conservation of protected species and biodiversity in general
- 6.21 A habitat enhancement and management plan should be prepared and include measures to enhance biodiversity in the area. Connectivity to the wider countryside to reduce isolation of pockets of the site (most notably the southern area proposed as a nature area) should be covered in the landscape proposals and foraging habitat for species such as bats and birds should be created. The following recommended measures should be incorporated:
 - 6.22 The stag beetle is a globally threatened species, protected under the Wildlife and Countryside Act 1981, as amended, and listed as a priority species for the UK Biodiversity Action Plan. Creating 2No. log piles within the landscape plan for the development will mitigate for any loss of habitat for stag beetles. These will be located at hedgerow edges within the northern and southern fields. Log piles provide ideal habitat for breeding stag beetles. Appropriate designs are given in **Appendix F**;
 - 6.23 Any hedgerow planting required within the landscape scheme for the proposed new development should incorporate native species such as hazel, hawthorn, blackthorn and spindle;
 - 6.24 Planting of a vegetative buffer adjacent to the hedgerows and tree borders (especially along the boundaries where possible) with native species to mimic woodland-edge conditions (a recommended species planting list is included in **Appendix G**);
 - 6.25 Planting of native forbs and shrubs in areas identified for supplementary planting or screening;
 - 6.26 Enhancement of areas of retained grassland and residential areas through the sowing of a native wildflower mix for lawns (such as 'The Flowering Lawn Seed Mix' available from www.reallywildflowers.co.uk or similar) or plug / bulb planting of native flowering species (**Appendix G**).
 - 6.27 Ditches should be cleared of silt and managed to allow them to exist as open or flowing water habitat. This could also be used by bird species including egrets (*Egretta garzetta*).

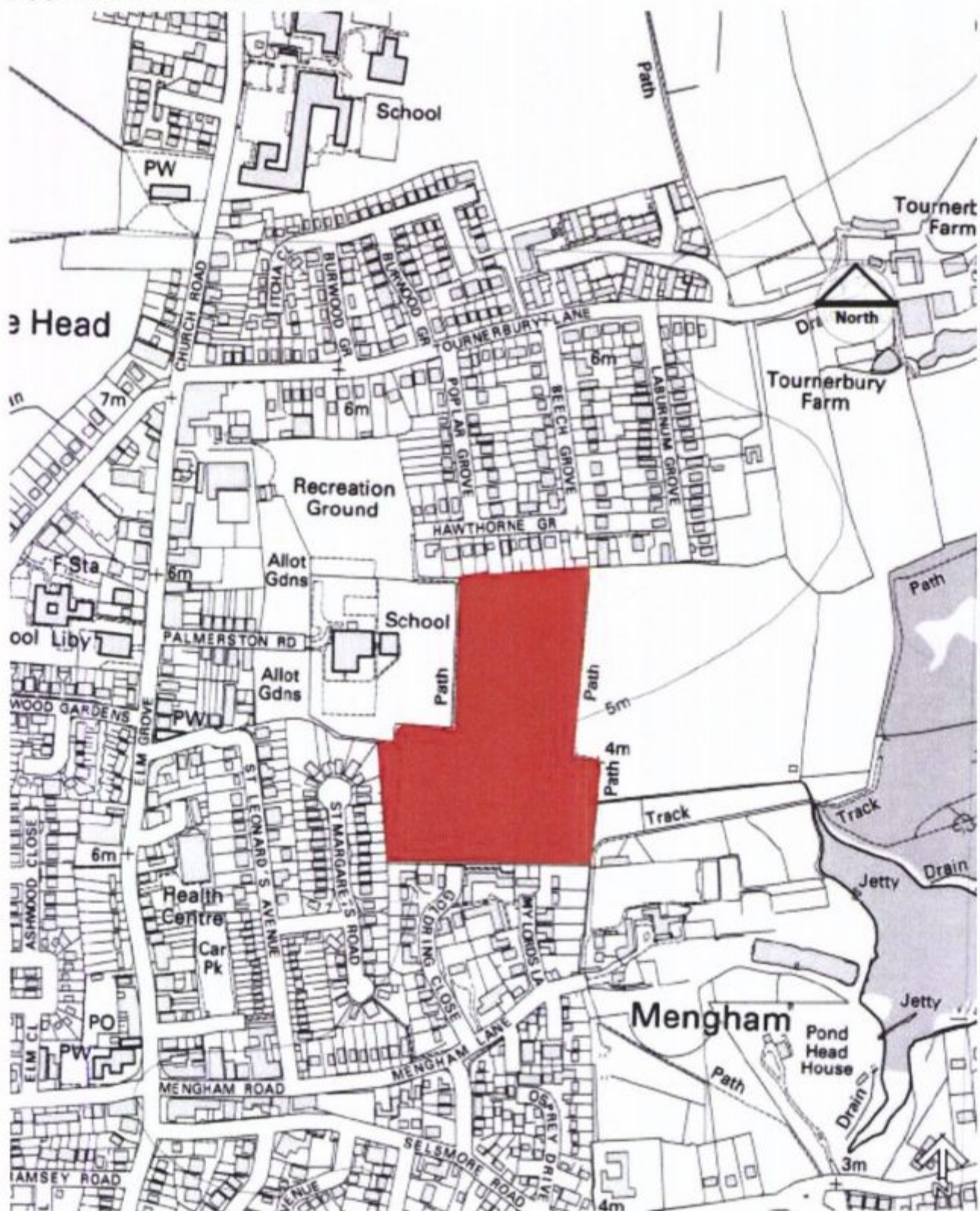
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Appendices

Appendix A: Site Location Plan



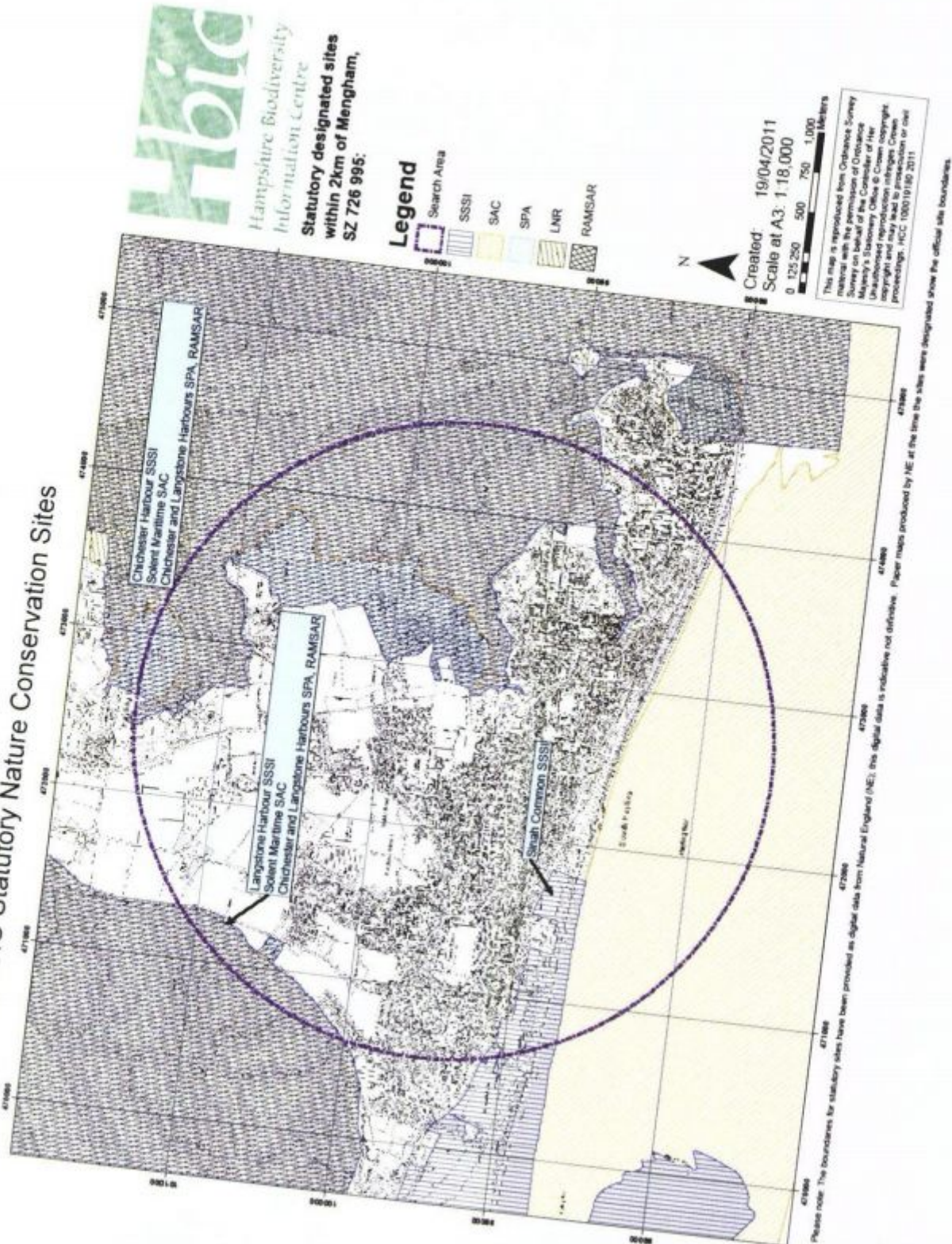
Appendix B: Extended Phase 1 Habitat Survey Map



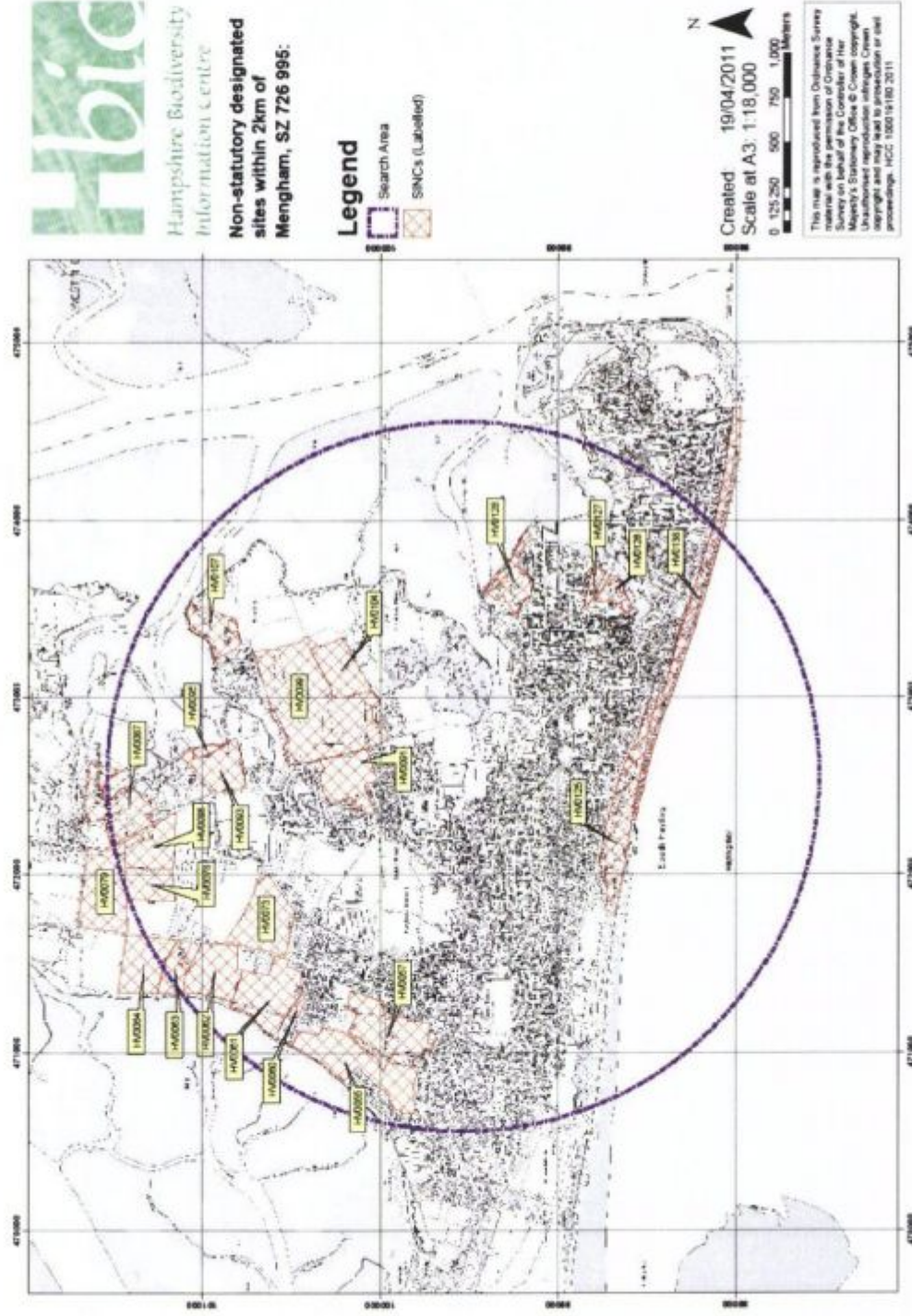
Appendix C: Proposed Development Plans



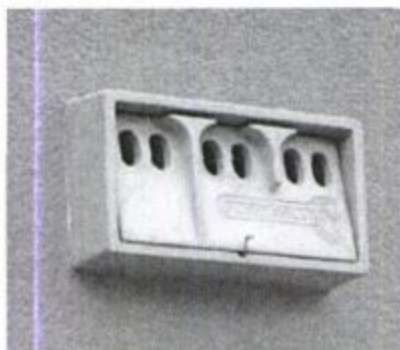
Appendix D: MAGIC Statutory Nature Conservation Sites



Appendix E: HBIC Non-Statutory Nature Conservation Sites

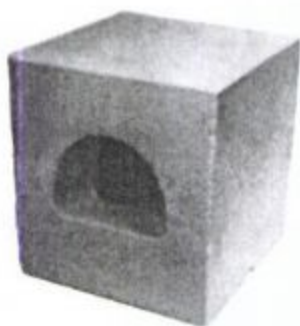


Appendix F: Suggested Bird Boxes and Log Pile Design



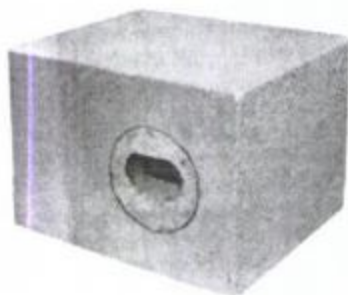
Sparrow Terrace: Schwegler 1SP Bird Box

House sparrows have declined in numbers drastically in recent years and as yet it is not fully known why. This species is *gregarious* and the sparrow terrace provides enough space for multiple nests. Measures 245mm x 430mm x 200mm and weighs 13kgs.



Schwegler No 26 Brick Box

Designed for installation into the fabric of a building, this box is open fronted and suitable for pied wagtail, spotted flycatcher and black redstart.



Schwegler No 25 Brick Box

Designed for installation into the fabric of a building, this box is suitable for swifts.

Log piles: Suitable for breeding stag beetles

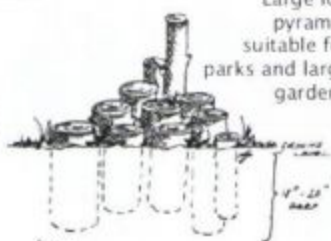
Single logs on or in soil



Log "pile" - logs held in place by posts



Large log pyramid suitable for parks and large gardens



Appendix G: Suggested Species Planting List

Common Name	Latin Name
Tree Layer	
Ash	<i>Fraxinus excelsior</i>
Beech	<i>Fagus sylvatica</i>
Crab apple	<i>Malus sylvestris</i>
Hazel	<i>Corylus avellana</i>
Holly	<i>Ilex aquifolium</i>
Oak	<i>Quercus robur</i>
Rowan	<i>Sorbus aucuparia</i>
Shrub Layer	
Spindle	<i>Euonymus europaeus</i>
Dogrose	<i>Rosa canina</i>
Dogwood	<i>Cornus sanguinea</i>
Hawthorn	<i>Crataegus monogyna</i>
Blackthorn	<i>Prunus spinosa</i>
Base Layer	
Bugle	<i>Ajuga reptans</i>
Butcher's Broom	<i>Ruscus aculeatus</i>
Common Dog Violet	<i>Viola riviniana</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
English Bluebell	<i>Hyacinthoides non-scripta</i>
Foxglove	<i>Digitalis purpurea</i>
Ground Ivy	<i>Glechoma hederacea</i>
Herb Robert	<i>Geranium robertianum</i>
Oxe-eye Daisy	<i>Leucanthemum vulgare</i>
Red Campion	<i>Silene dioica</i>
Stinking Hellebore	<i>Helleborus foetidus</i>
Wild Daffodil	<i>Narcissus pseudonarcissus</i>
Wood Anemone	<i>Anemone nemorosa</i>
Wood Betony	<i>Stachys officinalis</i>
Wood Sage	<i>Teucrium scorodonia</i>
Wood Vetch	<i>Vicia sylvatica</i>

Appendix H: Protected Species Legislation

Bats

These species are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and Schedule 2 of the *Conservation of Habitats and Species Regulations 2010*. They are afforded full protection under Section 9(4) of the Act and Regulation 41 of the Regulations. These make it an offence, *inter alia*, to:

- deliberately capture, injure or kill any such animal;
- deliberately disturb any such animal, including in particular any disturbance which is likely:
 - to impair its ability to survive, breed, or rear or nurture their young;
 - to impair its ability to hibernate or migrate;
 - to affect significantly the local distribution or abundance of that species; or
- damage or destroy a breeding site or resting place of any such animal; or
- intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection; or
- intentionally or recklessly obstruct access to any place that any of these animals uses for shelter or protection.

In addition, five British bat species are listed on Annex II of the Habitats Directive. These are:

Greater horseshoe bat (*Rhinolophus ferrumequinum*);

Lesser horseshoe bat (*Rhinolophus hipposideros*);

Bechstein's bat (*Myotis bechsteinii*);

Barbastelle (*Barbastella barbastellus*);

Greater mouse-eared bat (*Myotis myotis*).

In certain circumstances where these species are found the Directive requires the designation of Special Areas of Conservation (SACs) by EC member states to ensure that their populations are maintained at a favorable conservation status. Outside SACs, the level of legal protection that these species receive is the same as for other bat species.

Dormouse (*Muscardinus avellanarius*), European otter (*Lutra lutra*) and Great Crested Newt (*Triturus cristatus*)

These species are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and Schedule 2 of the *Conservation of Habitats and Species Regulations 2010*. They are afforded full protection under Section 9(4) of the Act and Regulation 41 of the Regulations. These make it an offence, *inter alia*, to:

- deliberately capture, injure or kill any such animal;
- deliberately disturb any such animal, including in particular any disturbance which is likely:
 - to impair its ability to survive, breed, or rear or nurture their young;
 - to impair its ability to hibernate or migrate.
- to affect significantly the local distribution or abundance of that species; or

damage or destroy a breeding site or resting place of any such animal; or
intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection; or
intentionally or recklessly obstruct access to any place that any of these animals uses for shelter or protection.

Nationally Protected Species

Badger (*Meles meles*)

The *Protection of Badgers Act 1992* consolidates previous legislation (including the *Badgers Acts 1973* and *1991 Badgers (Further Protection) Act 1991*). It makes it a serious offence to:

kill, injure or take a badger;
attempt to kill, injure or take a badger; or
to damage or interfere with a sett.

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

Breeding Birds

With certain exceptions¹, all wild birds, their nests and eggs are protected by section 1 of the *Wildlife and Countryside Act 1981* (as amended). Therefore, it is an offence, *inter alia*, to:

intentionally kill, injure or take any wild bird;
intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; or
intentionally take or destroy the egg of any wild bird.

These offences do not apply to hunting of birds listed in Schedule 2 subject to various controls.

Bird species listed on Schedule 1 of the Act receive further protection, thus for these species it is also an offence to:

intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young; or
intentionally or recklessly disturb the dependent young of any such bird.

Reptiles

The four widespread² species of reptile that are native to Britain, namely common or viviparous lizard (*Zootoca vivipara*), slow worm (*Anguis fragilis*), adder (*Vipera berus*) and grass snake (*Natrix natrix helvetica*), are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and are afforded limited protection under Section 9 of this Act. This makes it an offence, *inter alia*, to:

¹ Some species, such as game birds, are exempt in certain circumstances

² The other native species of British reptile (sand lizard and smooth snake) receive a higher level of protection under the *Habitats Regulations 1994* and (in England and Wales only) the *Wildlife and Countryside Act 1981* (as amended). However, the distribution of these species are restricted to only a very few sites. All marine turtles (Cheloniidae and Dermochelyidae) are also protected.

intentionally kill or injure any of these species.

Water vole (*Arvicola amphibius*)

The water vole is listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and is afforded limited protection under Section 9 of this Act. This makes it an offence, *inter alia*, to:

intentionally kill, injure, or take (handle) any a water vole (in England only);

intentionally or recklessly damage or destroy or obstruct access to any structure or place which water voles use for shelter or protection; or

intentionally or recklessly disturb water voles while they are using such a place.

Appendix I: Areas of Site with Bat Roosting, Foraging and Commuting Potential



Appendix J: Areas of Site with Reptile Potential



Appendix K: Botanical Species List

BRC	Taxon	time on site : 2.5 hr	DAFOR
	total spp	85	
	<i>Acer campestre</i>	Field Maple	o
	<i>Alliaria petiolata</i>	Garlic Mustard	r
	<i>Alnus incana</i>	Italian alder	r
	<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass	r
	<i>Anthriscus sylvestris</i>	Cow Parsley	o
	<i>Arrhenatherum elatius</i>	False Oat-grass	o
	<i>Arum maculatum</i>	Lords-and-ladies	la
	<i>Bellis perennis</i>	Daisy	f
	<i>Brachypodium sylvaticum</i>	False-brome	o
	<i>Calystegia sepium</i>	Hedge Bindweed	o
	<i>Capsella bursa-pastoris</i>	Shepherd's-purse	r
	<i>Cardamine hirsuta</i>	Hairy Bitter-cress	r
	<i>Carex remota</i>	Remote Sedge	r
	<i>Centaureum erythraea</i>	Common Centaury	o
	<i>Cerastium diffusum</i>	Dark-green Mouse-ear	r
	<i>Cerastium glomeratum</i>	Sticky Mouse-ear	f
	<i>Cirsium arvense</i>	Creeping Thistle	r
	<i>Cirsium palustre</i>	Marsh Thistle	r
	<i>Clematis vitalba</i>	Traveller's Joy	r
	<i>Cornus sanguinea</i>	Dogwood	o
	<i>Coronopus squamatus</i>	Swine-cress	o
	<i>Crataegus monogyna</i>	Hawthorn	ld
	<i>Dactylis glomerata</i>	Cock's-foot	o
	<i>Epilobium hirsutum</i>	Great Willowherb	r
	<i>Equisetum arvense</i>	Field Horsetail	o
	<i>Fraxinus excelsior</i>	Ash	o
	<i>Galium aparine</i>	Cleavers	la
	<i>Galium mollugo</i>	Hedge Bedstraw	o
	<i>Geranium dissectum</i>	Cut-leaved Crane's-bill	o
	<i>Geranium molle</i>	Dove's-foot Crane's-bill	o
	<i>Hedera helix</i>	Ivy	ld
	<i>Heracleum sphondylium</i>	Hogweed	o
	<i>Hyacinthoides hispanica</i>	Spanish Bluebell	o
	<i>Hyacinthoides non-scripta</i>	Bluebell	lf
	<i>Hypericum perforatum</i>	Perforate St. John's-wort	r
	<i>Hypochaeris radicata</i>	Cat's-ear	o

<i>Ilex aquifolium</i>	Holly	r
<i>Juncus bulbosus</i>	Bulbous Rush	lf
<i>Lamium album</i>	White Dead-nettle	o
<i>Lamium purpureum</i>	Red Dead-nettle	f
<i>Lolium perenne</i>	Perennial Rye-grass	a
<i>Lonicera periclymenum</i>	Honeysuckle	p
<i>Lunaria annua</i>	Honesty	o
<i>Muscari sp</i>	grape hyacinth	r
<i>Narcissus pseudonarcissus</i>	garden daffodil	r
<i>Oenanthe crocata</i>	Hemlock Water-dropwort	lf
<i>Plantago lanceolata</i>	Ribwort Plantain	f
<i>Plantago major</i>	Greater Plantain	f
<i>Poa annua</i>	Annual Meadow-grass	a
<i>Polygonatum x hybridum</i>	Solomon's seal	r
<i>Prunus spinosa</i>	Blackthorn	ld
<i>Pteridium aquilinum</i>	Bracken	lf
<i>Pulicaria dysenterica</i>	Common Fleabane	o
<i>Quercus robur</i>	Pedunculate Oak	lf
<i>Ranunculus acris</i>	Meadow Buttercup	f
<i>Ranunculus ficaria</i>	Lesser Celandine	o
<i>Ranunculus repens</i>	Creeping Buttercup	a
<i>Ranunculus sceleratus</i>	Celery-leaved Buttercup	la
<i>Rosa canina</i> agg.	Dog Rose	o
<i>Rubus fruticosus</i> agg.	Bramble	ld
<i>Rumex acetosa</i>	Common Sorrel	o
<i>Rumex crispus</i>	Curled Dock	o
<i>Rumex obtusifolius</i>	Broad-leaved Dock	r
<i>Rumex sanguineus</i>	Wood Dock	o
<i>Ruscus aculeatus</i>	Butcher's-broom	r
<i>Sagina apetala</i>	Annual Pearlwort	o
<i>Salix cinerea</i>	Grey Willow	lf
<i>Sambucus nigra</i>	Elder	r
<i>Scrophularia nodosa</i>	Common Figwort	r
<i>Senecio jacobaea</i>	Common Ragwort	r
<i>Senecio vulgaris</i>	Groundsel	r
<i>Smyrnium olusatrum</i>	Alexanders	r
<i>Stellaria holostea</i>	Greater Stitchwort	la
<i>Stellaria media</i>	Common Chickweed	o
<i>Taraxacum officinale</i> agg.	Dandelion	f

<i>Trifolium dubium</i>	Lesser Trefoil	a
<i>Trifolium repens</i>	White Clover	a
<i>Tripleurospermum inodorum</i>	Scentless Mayweed	o
<i>Urtica dioica</i>	Common Nettle	ld
	Ivy-leaved Speedwell	
<i>Veronica hederifolia</i>	[agg.]	lf
<i>Veronica persica</i>	Common Field-speedwell	o
<i>Veronica serpyllifolia</i>	Thyme-leaved Speedwell	f
<i>Vicia hirsuta</i>	Hairy Tare	r
<i>Vicia sativa ssp. segetalis</i>	common vetch	o
<i>Vicia sepium</i>	Bush Vetch	r

Appendix L: Moth Data and Preferred Caterpillar Foodplant

Species		Status	Qty of records	Most recent record date	Distance from site of most recent record	Preferred food plant for caterpillar
Latin	Common					
<i>Acronicta psi</i>	Grey Dagger	UKBAP NERC_s41	8	2000	SU7200 0.7km	Blackthorn (<i>Prunus spinosa</i>), hawthorns (<i>Crataegus</i> spp.), Apple (<i>Malus domestica</i>), birches (<i>Betula</i> spp.), lime (<i>Tilia</i> spp.), elms (<i>Ulmus</i> spp.), Rowan (<i>Sorbus aucuparia</i>), broadleaved trees, broadleaved shrubs
<i>Acronicta rumicis</i>	Knot Grass	UKBAP NERC_s41	35	2008	SZ721995 0.4km	Herbaceous and woody plants, including broad-leaved dock, common sorrel, plantains, water mint, bramble, hop, hawthorn, burnet rose and willows.
<i>Agrochola lychnidis</i>	Beaded Chestnut	UKBAP NERC_s41	7	2005	SZ708997 1.71km	buttercups (<i>Ranunculus</i> spp.), clovers (<i>Trifolium</i> spp.), chickweeds (<i>Stellaria</i> spp.), hawthorns (<i>Crataegus</i> spp.), herbaceous plants, broadleaved trees
<i>Amphipoea oculea</i>	Ear Moth	UKBAP NERC_s41	4	2000	SU7301 1.59km	The insides of the lower stems and roots of grasses, including annual meadow grass and tufted hair-grass; also butterbur
<i>Amphipyra tragopoginis</i>	Mouse Moth	UKBAP NERC_s41	5	2000	SZ7199 1.58km	Salad Burnet (<i>Sanguisorba minor</i>), teasels (<i>Dipsacus</i> spp.), Mugwort (<i>Artemisia vulgaris</i>), Fennel (<i>Foeniculum vulgare</i>), Californian Poppy (<i>Eschscholzia californica</i>), willows (<i>Salix</i> spp.), hawthorns (<i>Crataegus</i> spp.), herbaceous plants
<i>Allophyes oxyacanthae</i>	Green-brindled Crescent	UKBAP NERC_s41	4	2000	SZ7199 1.58km	Hawthorn, midland hawthorn, blackthorn, crab apple, dog-rose, plum, cotoneaster and rowan
<i>Apamea remissa</i>	Dusky Brocade	UKBAP NERC_s41	5	2000	SZ7498 2.13km	Reed Canary-grass (<i>Phalaris arundinacea</i>), Common Couch (<i>Elytrigia repens</i>), grasses
<i>Arctia caja</i>	Garden Tiger	UKBAP NERC_s41	21	2007	SZ7498 2.13km	Common Nettle (<i>Urtica dioica</i>), docks (<i>Rumex</i> spp.), burdocks (<i>Arctium</i> spp.), Hound's-tongue (<i>Cynoglossum officinale</i>), herbaceous plants

Species		Status	Qty of records	Most recent record date	Distance from site of most recent record	Preferred food plant for caterpillar
Latin	Common					
<i>Aporophyla luteola</i>	Deep-brown Dart	UKBAP NERC_s41	5	2007	SZ721995 0.4km	Broad-leaved Dock (<i>Rumex obtusifolius</i>), Common Sorrel (<i>Rumex acetosa</i>), Broom (<i>Cytisus scoparius</i>), Blackthorn (<i>Prunus spinosa</i>), Field Gromwell (<i>Lithospermum arvense</i>), Annual Meadow-grass (<i>Poa annua</i>), Tufted Hair- grass (<i>Deschampsia cespitosa</i>), broadleaved shrubs, grasses
<i>Aethmia centrargo</i>	Centre- barred Sallow	UKBAP NERC_s41	1	2000	SZ7199 1.58km	Ash (<i>Fraxinus excelsior</i>)
<i>Brachylomia viminalis</i>	Minor Shoulder- knot	UKBAP NERC_s41	1	2000	SU7301 1.58km	Grey Willow (<i>Salix cinerea</i>), willows (<i>Salix</i> <i>spp.</i>), Aspen (<i>Populus tremula</i>)
<i>Caradrina morpheus</i>	Mottled Rustic	UKBAP NERC_s41	18	2002	SU708000 1.76km	Common Nettle (<i>Urtica dioica</i>), docks (<i>Rumex spp.</i>), goosefoots(<i>Chenopodium spp.</i>), teasels (<i>Dipsacus spp.</i>), Hedge Bedstraw (<i>Galium mollugo</i>), Common Hop (<i>Humulus lupulus</i>), Goat Willow (<i>Salix</i> <i>caprea</i>), herbaceous plants
<i>Catocala sponsa</i>	Dark Crimson Underwing	IUCN_GB_pre9 4:R UKBAP HBAP NERC_s41 NR	1	2000	SZ7199 1.58km	Pedunculate oak and possibly sessile oak.
<i>Celaena leucostigma</i>	Crescent	UKBAP NERC_s41 CS	1	2000	SZ7498 2.13km	Yellow Iris (<i>Iris pseudacorus</i>), Great Fen- sedge (<i>Cladium mariscus</i>)
<i>Chesias legatella</i>	Streak	UKBAP NERC_s41 CS	1	2000	SZ7199 1.58km	Broom (<i>Cytisus scoparius</i>)
<i>Coenonympha pamphilus</i>	Small Heath	IUCN_GB_200 1:NT UKBAP NERC_s41	1	2009	SZ740985 1.8km	bents (<i>Agrostis spp.</i>), meadow- grasses (<i>Poa spp.</i>), fescues(<i>Festuca</i> <i>spp.</i>), grasses

Latin	Species		Status	Qty of records	Most recent record date	Distance from site of most recent record	Preferred food plant for caterpillar
	Common						
<i>Cucullia asteris</i>	Star-wort		HBAP NS	4	2000	SU7301 1.58km	Sea Aster (<i>Aster tripolium</i>), Sea Wormwood (<i>Seriphidium maritima</i>), Goldenrod (<i>Solidago virgaurea</i>)
<i>Cyclophora porata</i>	False Mocha		UKBAP NERC_s41 NS	1	2000	SZ7199 1.58km	Pedunculate Oak (<i>Quercus robur</i>), Sessile Oak (<i>Quercus petraea</i>)
<i>Cymatophorima diluta</i>	Oak Lutestring		UKBAP NERC_s41	1	2000	SZ7199 1.58km	Pedunculate Oak (<i>Quercus robur</i>), Sessile Oak (<i>Quercus petraea</i>)
<i>Diarsia rubi</i>	Small Square-spot		UKBAP NERC_s41	12	2008	SZ721995 0.4km	Dandelion (<i>Taraxacum officinale</i>), Foxglove (<i>Digitalis purpurea</i>), docks (<i>Rumex</i> spp.)
<i>Diloba caeruleocephala</i>	Figure Of Eight		UKBAP NERC_s41 CS	1	2000	SZ7498 2.13km	Blackthorn (<i>Prunus spinosa</i>), hawthorns (<i>Crataegus</i> spp.), plums(<i>Prunus</i> spp.), cherries (<i>Prunus</i> spp.), Crab Apple (<i>Malus sylvestris</i>)
<i>Ecliptopera silaceata</i>	Small Phoenix		UKBAP NERC_s41	1	2000	SZ7199 1.58km	Willowherbs (<i>Epilobium</i> spp.), Enchanter's-nightshade (<i>Circaea lutetiana</i>)
<i>Eilema sororcula</i>	Orange footman		HBAP	1	2000	SZ7199 1.58km	Arboreal lichen
<i>Ennomos erosaria</i>	September Thorn		UKBAP NERC_s41	5	2007	SZ721995 0.4km	Oaks (<i>Quercus</i> spp.), birches (<i>Betula</i> spp.), lime (<i>Tilia</i> spp.), Beech(<i>Fagus sylvatica</i>)
<i>Ennomos fuscantaria</i>	Dusky Thorn		UKBAP NERC_s41	14	2008	SZ721995 0.4km	Ash (<i>Fraxinus excelsior</i>)
<i>Ennomos quercinaria</i>	August Thorn		UKBAP NERC_s41	2	2005	SZ708997 1.71km	Pedunculate oak and probably sessile oak. Also limes, small-leaved elm and probably other elms. Also reported from beech, birches, hawthorn and blackthorn
<i>Epirrhoe galiata</i>	Galium Carpet		UKBAP NERC_s41 CS	15	2007	SZ721995 0.4km	Lady's Bedstraw (<i>Galium verum</i>), Heath Bedstraw (<i>Galium saxatile</i>), Hedge Bedstraw (<i>Galium mollugo</i>)
<i>Eulithis mellinata</i>	Spinach		UKBAP NERC_s41	5	2000	SZ7498 2.13km	Black current and red current
<i>Euxoa nigricans</i>	Garden Dart		UKBAP NERC_s41 CS	3	2000	SZ7498 2.13km	Clovers (<i>Trifolium</i> spp.), docks (<i>Rumex</i> spp.), plantains (<i>Plantago</i> spp.), herbaceous plants

<i>Hoplodrina blanda</i>	Rustic	UKBAP NERC_s41	7	2000	SU7301 1.58km	Chickweeds (<i>Stellaria spp.</i>), docks (<i>Rumex spp.</i>), plantains(<i>Plantago spp.</i>), herbaceous plants
Species		Status	Qty of records	Most recent record date	Distance from site of most recent record	Preferred food plant for caterpillar
Latin	Common					
<i>Euxoa tritici</i>	White-line Dart	UKBAP NERC_s41 CS	25	2005	SZ708997 1.71km	Bedstraws (<i>Galium spp.</i>), Corn Spurrey (<i>Spergula arvensis</i>), mouse-ears (<i>Cerastium spp.</i>), herbaceous plants
<i>Hemistola chrysoprasaria</i>	Small Emerald	UKBAP NERC_s41	4	2007	SZ721995 0.4km	Traveller's-joy (<i>Clematis vitalba</i>), clematis (<i>Clematis spp.</i>)
<i>Hepialus humuli</i>	Ghost Moth	UKBAP NERC_s41	2	2000	SU7300 0.7km	The roots of grasses and many other wild and cultivated herbaceous plants, including common nettle, docks, burdocks and wild strawberry
<i>Hipparchia semele</i>	Grayling	IUCN_GB_200 1:VU UKBAP NERC_s41	7	2009	SZ740985 1.8km	Sheep's-fescue (<i>Festuca ovina</i>), Red Fescue (<i>Festuca rubra</i>), Bristle Bent (<i>Agrostis curtisii</i>), Early Hair-grass (<i>Aira praecox</i>), grasses
<i>Hydraecia micacea</i>	Rosy Rustic	UKBAP NERC_s41	7	2007	SZ721995 0.4km	Broad-leaved Dock (<i>Rumex obtusifolius</i>), Ribwort Plantain(<i>Plantago lanceolata</i>), Field Woundwort (<i>Stachys arvensis</i>), Common Sea-lavender (<i>Limonium vulgare</i>), Potato (<i>Solanum tuberosum</i>), Common Hop(<i>Humulus lupulus</i>), Lesser Burdock (<i>Arctium minus</i>), low-growing plants
<i>Hypena rostralis</i>	buttoned snout	HBAP NS	1	2000	SZ7199 1.58km	Common Hop (<i>Humulus lupulus</i>)
<i>Lasiocampa trifolii</i>	grass eggar	HBAP NS	4	2006	SZ712988 1.46km	Salallows (<i>Salix spp.</i>), Bramble (<i>Rubus fruticosus</i>), Heather(<i>Calluna vulgaris</i>), Broom (<i>Cytisus scoparius</i>), Common Bird's-foot-trefoil (<i>Lotus corniculatus</i>), Blackthorn (<i>Prunus spinosa</i>), Tree Lupin (<i>Lupinus arboreus</i>), False Oat-grass (<i>Arrhenatherum elatius</i>), plants and shrubs
<i>Lasiommata megera</i>	Wall	IUCN_GB_200 1:NT UKBAP	1	2009	SU728007 1.24km	Tor-grass (<i>Brachypodium pinnatum</i>), False Brome (<i>Brachypodium sylvaticum</i>), Cock's-foot (<i>Dactylis glomerata</i>), Wavy

		NERC_s41 CS					Hair-grass (<i>Deschampsia flexuosa</i>), Yorkshire-fog (<i>Holcus lanatus</i>)
<i>Melanthia procellata</i>	Pretty Chalk Carpet	UKBAP NERC_s41	1	2000	SZ7199 1.58km		Traveller's-joy (<i>Clematis vitalba</i>)
Species							
Latin	Common	Status	Qty of records	Most recent record date	Distance from site of most recent record		Preferred food plant for caterpillar
<i>Limenitis camilla</i>	White Admiral	IUCN_GB_200 1:VU UKBAP NERC_s41	2	2000	SZ733997 0.83km		Honeysuckles (<i>Lonicera</i> spp.)
<i>Lycia hirtaria</i>	Brindled Beauty	UKBAP NERC_s41	1	2000	SZ7199 1.58km		Downy Birch (<i>Betula pubescens</i>), Silver Birch (<i>Betula pendula</i>), hawthorns (<i>Crataegus</i> spp.), lime (<i>Tilia</i> spp.), elms (<i>Ulmus</i> spp.), Alder (<i>Alnus glutinosa</i>), willows (<i>Salix</i> spp.), oaks (<i>Quercus</i> spp.), broadleaved trees
<i>Lysandra coridon</i>	Chalk Hill Blue	IUCN_GB_200 1:NT HBAP CS	1	2009	SU7200 0.7km		Horseshoe Vetch (<i>Hippocrepis comosa</i>)
<i>Macaria wauaria</i>	V-moth	UKBAP NERC_s41 CR	1	2000	SZ7498 2.13km		Black Currant (<i>Ribes nigrum</i>), Red Currant (<i>Ribes rubrum</i>), Gooseberry (<i>Ribes uva-crispa</i>)
<i>Malacosoma neustria</i>	Lackey	UKBAP NERC_s41	33	2007	SZ721995 0.4km		Hawthorns (<i>Crataegus</i> spp.), willows (<i>Salix</i> spp.), Bramble (<i>Rubus fruticosus</i>), Blackthorn (<i>Prunus spinosa</i>), Apple (<i>Malus domestica</i>), oaks (<i>Quercus</i> spp.), cherries (<i>Prunus</i> spp.), broadleaved trees, broadleaved shrubs
<i>Melanchra persicariae</i>	Dot Moth	UKBAP NERC_s41	4	2007	SZ708997 1.71km		A wide range of wild and cultivated herbaceous and woody plants, including common nettle, hop, field bindweed, broad-leaved dock, groundsel, michaelmas-daisy, white clover, black current, ivy, hazel, elder, willows and larch seedlings.
<i>Mesoligia litorea</i>	Rosy Minor	UKBAP NERC_s41	15	2007	SZ7498 2.13km		Lyme-grass (<i>Elymus arenarius</i>), Marram (<i>Ammophila arenaria</i>), Cock's-foot (<i>Dactylis glomerata</i>), grasses, cereal

<i>Mythimna comma</i>	Shoulder-striped Wainscot	UKBAP NERC_s41	7	2005	SZ708997 1.71km	crops Grasses including cock's-foot. Feeds mainly on the flowers of Cross-leaved Heath, but also Heather and the seedheads of Bog Asphodel.
<i>Mythimna favicolor</i>	Mathew's Wainscot	HBAP NS	2	2000	SZ7199 1.58km	Common Saltmarsh-grass (<i>Puccinellia maritima</i>), grasses
Species	Common	Status	Qty of records	Most recent record date	Distance from site of most recent record	Preferred food plant for caterpillar
<i>Orthosia gracilis</i>	Powdered Quaker	UKBAP NERC_s41	3	2007	SZ721995 0.4km	Herbaceous and woody plants, including willows, black-poplar, blackthorn, bog-myrtle, meadowsweet, purple-loosestrife and common fleabane
<i>Pelurga comitata</i>	Dark Spinach	UKBAP NERC_s41 CS	1	2000	SZ7199 1.58km	Goosefoots (<i>Chenopodium</i> spp.), oraches (<i>Atriplex</i> spp.)
<i>Pempelia genistella</i>	Gorse Knot-horn	NS HBAP NS	19	2007	SZ7498 2.13km	Gorse (<i>Ulex europaeus</i>)
<i>Rhizedra lutosa</i>	Large Wainscot	UKBAP NERC_s41	5	2005	SZ708997 1.71km	Common Reed (<i>Phragmites australis</i>)
<i>Scopula marginepunctata</i>	Mullein Wave	UKBAP NERC_s41	7	2007	SZ721995 0.4km	Herbaceous plants, Wild Marjoram (<i>Origanum vulgare</i>), Wood Sage (<i>Teucrium scorodonia</i>), Horseshoe Vetch (<i>Hippocrepis comosa</i>), Yarrow (<i>Achillea millefolium</i>), Mugwort (<i>Artemisia vulgaris</i>), stonecrops (<i>Sedum</i> spp.)
<i>Scotopteryx chenopodiata</i>	Shaded Broad-bar	UKBAP NERC_s41	15	2007	SZ7498 2.13km	Clovers (<i>Trifolium</i> spp.), vetches (<i>Vicia</i> spp.)
<i>Spilosoma lubricipeda</i>	White Ermine	UKBAP NERC_s41	4	2008	SZ721995 0.4km	A wide range of herbaceous plants, including common nettle and docks
<i>Spilosoma luteum</i>	Buff Ermine	UKBAP NERC_s41	51	2008	SZ721995 0.4km	A wide range of herbaceous plants, especially common nettle and also woody species including honeysuckle, hop, wild plum, barberry and birches

<i>Tholera cespitis</i>	Hedge Rustic	UKBAP NERC_s41 CS	5	2005	SZ708997 1.71km	Grasses
<i>Tholera decimalis</i>	Feathered Gothic	UKBAP NERC_s41	4	2005	SZ708997 1.71km	Grasses
<i>Timandra comae</i>	Blood-vein	UKBAP NERC_s41	16	2007	SZ721995 0.4km	Docks, common orache, common sorrel, knotgrass and probably other related plants
<i>Tyria jacobaeae</i>	Cinnabar	UKBAP NERC_s41	17	2008	SZ70909890 1.72km	Mainly common ragwort. Also found on other ragworts, cultivated ragworts, groundsels, and occasionally reported from colt's-foot
Species	Status		Qty of records	Most recent record date	Distance from site of most recent record	Preferred food plant for caterpillar
	Latin	Common				
<i>Watsonalla binaria</i>	Oak Hook-tip	UKBAP NERC_s41	23	7	SZ721995 0.4km	Pedunculate Oak (<i>Quercus robur</i>), Sessile Oak (<i>Quercus petraea</i>), Turkey Oak (<i>Quercus laevis</i>)
<i>Xanthia gilvago</i>	Dusky-lemon Sallow	UKBAP NERC_s41 CR	2	2005	SZ708997 1.71km	Elms (<i>Ulmus</i> spp.)
<i>Xanthia ictertia</i>	Sallow	UKBAP NERC_s41	7	2007	SZ721995 0.4km	Sallows (<i>Salix</i> spp.), poplars (<i>Populus</i> spp.), herbaceous plants
<i>Xanthorhoe ferrugata</i>	Dark-barred Twin-spot Carpet	UKBAP NERC_s41	3	2005	SZ708997 1.71km	bedstraws (<i>Galium</i> spp.), Ground- ivy (<i>Glechoma hederacea</i>), docks(<i>Rumex</i> spp.), herbaceous plants
<i>Xestia agathina</i>	Heath Rustic	UKBAP NERC_s41 CS	1	2000	SZ7498 2.13km	Heather (<i>Calluna vulgaris</i>)
<i>Abrostola triplasia</i>	Dark Spectacle	CS	5	2007	SZ721995 0.4km	Common Nettle (<i>Urtica dioica</i>), Common Hop (<i>Humulus lupulus</i>)
<i>Agdistis bennetii</i>	Saltmarsh Plume	CR	4	2004	SU7301 1.58km	Common Sea-lavender (<i>Limonium</i> vulgare)
<i>Agonopterix subpropinqua</i>	Ruddy Flat- body	CR	3	1995	SZ7498 2.13km	Kapweeds (<i>Centaurea</i> spp.), thistles (<i>Carduus</i> spp.)
<i>Agonopterix umbellana</i>	Gorse Flat- body	CR	1	1998	SZ7498 2.13km	Gorse (<i>Ulex europaeus</i>), greenweeds (<i>Genista</i> spp.)
<i>Agrotis vestigialis</i>	Archer's Dart	CR	5	2006	SZ712988 1.46km	Bedstraws (<i>Galium</i> spp.), Sea stitchworts (<i>Stellaria</i> spp.), Sea

								Sandwort (Honckenya peploides), herbaceous plants
<i>Amphipoea fucosa</i>	Saltern Ear	CS	5	1996	SU7301 1.58km	Grasses		
<i>Anerastia lotella</i>	Sandhill Knot-horn	CR	1	2000	SZ7498 2.13km	Coastal grasses		
<i>Apamea subulstris</i>	Reddish Light Arches	CS	2	2000	SZ7498 2.13km	Grasses		
<i>Bucculatrix albedinella</i>	Elm Bent-wing	CR	1	1996	SU7301 1.58km	Ems (Ulmus spp.), English Elm (Ulmus procera), Small-leaved Elm(Ulmus minor)		
<i>Caloptilia leucapennella</i>	Sulphur Slender	CR	1	1995	SZ7498 2.13km	Oaks (Quercus spp.)		
<i>Cataglyphis lemna</i>	Small China-mark	CR	1	2007	SZ721995 0.4km	Duckweeds (Lemna spp.)		
<i>Catarhoe cuculata</i>	Royal Mantle	CS	1	2000	SU7301 1.58km	Lady's Bedstraw (Galium verum), Hedge Bedstraw (Galium mollugo)		
	Species						Preferred food plant for caterpillar	
Latin	Common	Status	Qty of records	Most recent record date	Distance from site of most recent record			
<i>Celypha rosaceana</i>	Roseate Marble	CR	1	1995	SZ7498 2.13km	Perennial Sow-thistle (Sonchus arvensis), Dandelion (Taraxacum officinale)		
<i>Cerapteryx graminis</i>	Antler Moth	CS	3	2000	SU7301 1.58km	Sheep's-fescue (Festuca ovina), Mat-grass (Nardus stricta), Purple Moor-grass (Molinia caerulea), grasses, sedges (Carex spp.), rushes(Juncus spp.)		
<i>Coleophora adspersella</i>	Dusted Case-bearer	CR	1	1998	SU7301 1.58km	Oaches (Atriplex spp.), goosefoots (Chenopodium spp.)		
<i>Coleophora atriplicis</i>	Saltmarsh Case-bearer	CR	3	2002	SU7301 1.58km	Long-stalked Orache (Atriplex longipes), Annual Sea-blite(Suaeda maritima), glassworts (Salicornia spp.), Grass-leaved Orache (Atriplex littoralis)		
<i>Coleophora coracipennella</i>	Blackthorn Case-bearer	CR	1	1997	SZ7498 2.13km	Blackthorn (Prunus spinosa), Apple (Malus domestica), cherries Prunus spp.), hawthorns (Crataegus spp.)		
<i>Coleophora juncicolella</i>	Least Case-bearer	CR	1	1996	SZ7498 2.13km	Bell Heather (Erica cinerea)		
<i>Coleophora maritimella</i>	Sea-rush Case-bearer	CR	7	2004	SU7301 1.58km	Sea Rush (Juncus maritimus)		
<i>Coleophora</i>	Glasswort	CR	6	2004	SU7301	Gssworts (Salicornia spp.)		

<i>salicorniae</i>	Case-bearer					
<i>Coleophora salinella</i>	Sea-purslane Case-bearer	CR	3	2002	SU7301 1.58km	Sea-purslane (<i>Halimione portulacoides</i>), Grass-leaved Orache (<i>Atriplex littoralis</i>)
<i>Colostygia multistrigaria</i>	Mottled Grey	CR	1	2000	SZ7199 1.58km	Lady's Bedstraw (<i>Galium verum</i>), bedstraws (<i>Galium</i> spp.)
<i>Cosmopterix scribaeiella</i>	New Marsh Cosmet	CS	2	2009	SZ7498 2.13km	common reed (<i>Phragmites australis</i>)
<i>Cryphia algae</i>	Tree-lichen Beauty	CR	2	2007	SZ721995 0.4km	Arboreal lichen
<i>Cryphia muralis</i>	Marbled Green	CS	10	2008	SZ721995 0.4km	Lichens such as <i>Xanthoria</i> and <i>Caloplaca</i> species growing on walls, rocks and occasionally tress.
<i>Cucullia chamomillae</i>	Chamomile Shark	CS	1	2000	SZ7498 2.13km	Scentless Mayweed (<i>Tripleurospermum inodorum</i>), Chamomile (<i>Chamaemelum nobile</i>), Feverfew (<i>Tanacetum parthenium</i>)
<i>Ectoedemia louisella</i>	Maple-seed Pigmy	CR	1	2004	SU7301 1.58km	Field Maple (<i>Acer campestre</i>)
Species		Status	Qty of records	Most recent record date	Distance from site of most recent record	Preferred food plant for caterpillar
<i>Latin</i>	Common					
<i>Ephestia parasitella</i>	False Cacao Moth	CR	1	2000	SZ7498 2.13km	Dried leaves and other plant matter
<i>Epirrhoe rivata</i>	Wood Carpet	CS	2	2005	SZ708997 1.71km	Lady's Bedstraw (<i>Galium verum</i>), Hedge Bedstraw (<i>Galium mollugo</i>)
<i>Eupithecia indigata</i>	Ochreous Pug	CS	1	2000	SZ7199 1.58km	Scots Pine (<i>Pinus sylvestris</i>)
<i>Eupithecia pusillata</i>	Juniper Pug	CS	1	2000	SZ7498 2.13km	Common Juniper (<i>Juniperus communis</i>)
<i>Eupithecia simpliciatata</i>	Plain Pug	CS	4	2007	SZ721995 0.4km	Goosefoots (<i>Chenopodium</i> spp.), oraches (<i>Atriplex</i> spp.)
<i>Eupithecia subumbata</i>	Shaded Pug	CS	3	2000	SZ7199 1.58km	Hwk's-beards (<i>Crepis</i> spp.), ragworts (<i>Senecio</i> spp.), Field Scabious (<i>Knautia arvensis</i>), St John's-worts (<i>Hypericum</i> spp.), Wild Marjoram (<i>Origanum vulgare</i>), Spanish Catchfly (<i>Silene otites</i>), Flixweed (<i>Descurainia sophia</i>), herbaceous plants
<i>Eupithecia</i>	Channel	CR	6	2007	SZ721995	

<i>ultimaria</i>	Islands Pug					0.4km	Tamarisk
<i>Furcula bifida</i>	Poplar Kitten	CS	2	2008	SZ721995 0.4km		Poplars (Populus spp.), Aspen (Populus tremula), willows (Salix spp.)
<i>Goniodoma limoniella</i>	Silver-streaked Case-bearer	CR	5	2004	SU7301 1.58km		Common Sea-lavender (Limonium vulgare)
<i>Grapholita internana</i>	Dark Gorse Piercer	CR	3	1999	SZ7498 2.13km		Gorse (Ulex europaeus)
<i>Gynnidomorpha vectisana</i>	Small Saltern Conch	CR	1	2004	SU7301 1.58km		Sea Arrowgrass (Triglochin maritima), Marsh Arrowgrass(Triglochin palustris)
<i>Hadena confusa</i>	Marbled Coronet	CS	3	2000	SU7101 2.12km		Campions (Silene spp.), Rock Sea-spurrey (Spergularia rupicola), coastal spurreys (Spergularia spp.)
<i>Hadena perplexa</i>	Tawny Shears	CS	2	2000	SZ7498 2.13km		Campions (Silene spp.), Nottingham Catchfly (Silene nutans), Rock Sea-spurrey (Spergularia rupicola)
<i>Idaea emarginata</i>	Small Scallop	CS	2	2000	SZ7199 1.58km		Bedstraws (Galium spp.), Field Bindweed (Convolvulus arvensis)
<i>Lacanobia suasa</i>	Dog's Tooth	CS	10	2006	SZ712988 1.46km		Common Sea-lavender (Limonium vulgare), Greater Plantain(Plantago major), goosefoots (Chenopodium spp.), herbaceous plants
Species		Status	Qty of records	Most recent record date	Distance from site of most recent record	Preferred food plant for caterpillar	
Latin	Common						
<i>Larentia clavaria</i>	Mallow	CS	9	2007	SZ721995 0.4km		Mallows (Malva spp.), hollyhocks (Althaea spp.)
<i>Leucoma salicis</i>	White Satin Moth	CS	2	2000	SZ7199 1.58km		Aspen (Populus tremula), poplars (Populus spp.), sallows (Salix spp.), willows (Salix spp.)
<i>Lithophane semibrunnea</i>	Tawny Pinion	CS	1	2000	SZ7498 2.13km		Ash (Fraxinus excelsior)
<i>Monopis obviella</i>	Yellow-backed Clothes	CR	11	2008	SZ721995 0.4km		The larvae are scavengers, feeding on animal and plant refuse, especially woollen materials.
<i>Mythimna obsoleta</i>	Obscure Wainscot	CS	1	2000	SZ7498 2.13km		Common Reed (Phragmites australis)
<i>Operophtera fagata</i>	Northern Winter Moth	CS	1	2000	SZ7199 1.58km		birches (Betula spp.), Alder (Alnus glutinosa), Beech (Fagus sylvatica),

							Apple (Malus domestica), plums (Prunus spp.), cherries (Prunus spp.)
<i>Panemeria tenebrata</i>	Small Yellow Underwing	CS	3	2000	SU7100 1.59km		Common Mouse-ear (seed capsules) (Cerastium fontanum), Field Mouse-ear (Cerastium arvense)
<i>Perizoma bifaciata</i>	Barred Rivulet	CS	1	1995	SZ7498 2.13km		Red Bartsia (Odonittes venus), Eyebright (Euphrasia officinalis)
<i>Phalonia affinitana</i>	Large Saltmarsh Conch	CR	1	1995	SZ7498 2.13km		Sea Aster (Aster tripolium)
<i>Phycitodes saxicola</i>	Small Clouded Knot-horn	CR	1	2000	SZ7498 2.13km		Ragworts (Senecio spp.), Chamomile (Chamaemelum nobile)
<i>Platytes cerussella</i>	Little Grass-veneer	CR	2	2000	SU7301 1.58km		Grasses, sedges (Carex spp.)
<i>Plusia festucae</i>	Gold Spot	CS	1	2000	SZ7199 1.58km		Tufted-sedge (Carex elata), Glaucous Sedge (Carex flacca), Yellow Iris (Iris pseudacorus), Branched Bur-reed (Sparganium emersum), water-plantains (Alisma spp.), sedges (Carex spp.), grasses
<i>Polymixis lichenea</i>	Feathered Ranunculus	CS	53	2008	SZ721995 0.4km		Hound's-tongue (Cynoglossum officinale), Sea Plantain (Plantago maritima), Thrift (Armeria maritima), Biting Stonecrop (Sedum acre), Wild Cabbage (Brassica oleracea), herbaceous plants
Species		Status	Qty of records	Most recent record date	Distance from site of most recent record	Preferred food plant for caterpillar	
Latin	Common						
<i>Polymixis flavicincta</i>	Large Ranunculus	CS	1	2000	SZ7199 1.58km		Dandelion (Taraxacum officinale), Daisy (Bellis perennis), Rosebay Willowherb (Chamerion angustifolium), Red Valerian (Centranthus ruber), mints (Mentha spp.), delphineums (Delphineum spp.), ragworts (Senecio spp.), herbaceous plants

<i>Scrobipalpa instabilis</i>	Saltern Groundling	CR	1	1996	SU7301 1.58km	Sea purslane (<i>Halimione portulacoides</i>)
<i>Scrobipalpa obsoletella</i>	Summer Groundling	CR	2	1998	SU7301 1.58km	Orache and possibly goosefoot
<i>Semiaspilates ochreaia</i>	Yellow Belle	CS	9	2000	SU7301 1.58km	Sea Wormwood (<i>Seriphidium maritima</i>), clovers (<i>Trifolium</i> spp.), Tefoils (<i>Lotus</i> spp.), Common Restharrow (<i>Ononis repens</i>), Wild Carrot (<i>Daucus carota</i>), Beaked Hawk's-beard (<i>Crepis vesicaria</i>), plantains (<i>Plantago</i> spp.), herbaceous plants
<i>Sophronia semicostella</i>	White-shouldered Sober	CR	2	1995	SZ7498 2.13km	Sweet vernal-grass (<i>Anthoxanthum odoratum</i>)
<i>Stigmella assimilella</i>	Aspen Pigmy	CR	8	2009	SZ7498 2.13km	Aspen (<i>Populus tremula</i>), White Poplar (<i>Populus alba</i>)
<i>Stigmella incognitella</i>	Grey Apple Pigmy	CR	1	2008	SZ7099 2.54km	Apples (<i>Malus</i> spp.)
<i>Tethea or</i>	Poplar Lutestring	CS	1	2005	SZ708997 1.71km	Aspen (<i>Populus tremula</i>), poplars (<i>Populus</i> spp.)
<i>Thera juniperata</i>	Juniper Carpet	CR	1	2000	SZ7498 2.13km	Common Juniper (<i>Juniperus communis</i>)
<i>Tinagma ocnorostomella</i>	Bugloss Spear-wing	CR	1	1997	SZ7498 2.13km	Viper's-bugloss (<i>Echium vulgare</i>)
<i>Xanthia citrargo</i>	Orange Sallow	CS	1	2000	SZ7199 1.58km	Lime (<i>Tilia</i> spp.), elms (<i>Ulmus</i> spp.)
<i>Xestia baja</i>	Dotted Clay	CS	1	2000	SZ7199 1.58km	Common Nettle (<i>Urtica dioica</i>), willows (<i>Salix</i> spp.), birches (<i>Betula</i> spp.), Blackthorn (<i>Prunus spinosa</i>), Bog-myrtle (<i>Myrica gale</i>), broadleaved shrubs
Species		Status	Qty of records	Most recent record date	Distance from site of most recent record	Preferred food plant for caterpillar
Latin	Common					
<i>Xylena velusta</i>	Red Sword-grass	CR	1	2005	SZ708997 1.71km	Bog-myrtle (<i>Myrica gale</i>), Heather (<i>Calluna vulgaris</i>), Yellow Iris (<i>Iris pseudacorus</i>), sedges (<i>Carex</i> spp.), rushes (<i>Juncus</i> spp.), broadleaved shrubs
<i>Yponomeuta malinellus</i>	Apple Ermine	CR	2	2007	SZ721995 0.4km	Apple (<i>Malus domestica</i>)

See IUCN (2001) guidelines (IUCN_GB_2001):

EX – Extinct
EW – Extinct in wild
CR – Critically endangered
EN – Endangered
VU – Vulnerable
NT – Near Threatened
LC – Least concern

CR – County rare
CS – County scarce
CI – County interest

UK Biodiversity Action Plan priority species (UKBAP):

Priority species and habitats are those that have been identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan.

Hampshire Biodiversity Action Plan species (HBAP):

Priority species and habitats are those that have been identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan and have been implemented into a specific action plan for Hampshire.

Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC_s41):

Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England.

