

LAND AT HORNDEAN ROAD,
EMSWORTH,
HAMPSHIRE

Ecological Assessment

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1. INTRODUCTION

1.1. Background & Proposals

- 1.1.1. Ecology Solutions were commissioned by Metis Homes in March 2018 to undertake Ecological Assessment work at land to the east of Horndean Road, Emsworth (hereafter referred to as the application site).
- 1.1.2. Planning proposals are for the delivery of small scale residential development (16 units), alongside associated access and landscaping (to include a biodiversity area measuring 0.41ha).

1.2. Site Characteristics

- 1.2.1. The application site is located to the north of the town of Emsworth and is approximately 1ha in size. The site is bordered to the north and east by existing residential development (New Brighton) and to the south by an existing school with associated areas of amenity grassland (predominantly sports pitches) which include for Emsworth Recreation Ground. The western boundary of the site is formed by a small, wooded stream, with agricultural land beyond.
- 1.2.2. Existing residential development associated with the village is present at the northern boundary of the site. Additional residential development, as well as a farmstead, forms much of the sites southern boundary, with Kiln Lane forming the sites south-west boundary. To the east and west the site is framed by agricultural land and open countryside.
- 1.2.3. The application site itself comprises an area of grassland, with boundary vegetation in the form of tree belts, hedgerows and scrub. A dilapidated agricultural building is present in the east of the site.

1.3. Ecological Assessment

- 1.3.1. This document assesses the ecological interest of the site as a whole. The importance of the habitats present is evaluated with regard to current guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM)¹.
- 1.3.2. The report also sets out the existing baseline conditions for the site, setting these in the correct planning policy and legal framework and assessing the need for any further survey work. It also highlights any potential impacts from development at the site. Appropriate mitigation where necessary is identified such that it will offset any negative impacts and where possible provide for an ecological enhancement of the site, in accordance with planning policy.

¹ Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal (Third Edition).

2. SURVEY METHODOLOGY

- 2.1. The methodology utilised for the survey work can be split into three areas, namely desk study, habitat survey and faunal survey. These are discussed in more detail below.

2.2. Desk Study

- 2.2.1. In order to compile background information on the site and its immediate surroundings Ecology Solutions contacted Hampshire biodiversity Information Centre (HBIC).
- 2.2.2. Information has been provided by HBIC and is referenced where necessary within this report. This information is also illustrated where appropriate on Plan ECO1.
- 2.2.3. Further information on designated sites from a wider search area was also obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC)² database. This information is reproduced at Appendix 1 and where appropriate on Plan ECO1.

2.3. Habitat Survey Methodology

- 2.3.1. Ecology Solutions undertook an initial Phase 1 habitat survey in April 2018 to ascertain the general ecological value of the land contained within the boundaries of the site and to identify the main habitats and associated plant species, with notes on fauna utilising the site.
- 2.3.2. On each occasion, the site was surveyed based around extended Phase 1 survey methodology³, as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail.
- 2.3.3. Using the above method, the site was classified into areas of similar botanical community types, with a representative species list compiled for each habitat identified.
- 2.3.4. In addition, and noting that the site is identified as a Site of Importance to Nature Conservation (SINC) a National Vegetation Classification (NVC) survey was undertaken of the supported grassland habitats in June 2019. This survey adopted an accepted methodology, whereby identified homogenous stands of vegetation were surveyed using randomly placed quadrats (2m x 2m), with a minimum of 5 quadrates per homogenous vegetation type.
- 2.3.5. The recorded quadrat data was analysed using the MAVIS computer programme, which generates a best fit list (i.e. more than one result is displayed) of NVC habitat types. The results generated are in a percentage

² <http://www.magic.gov.uk/>

³ Joint Nature Conservation Committee (2010). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. England Field Unit, Nature Conservancy Council, reprinted JNCC, Peterborough.

format (i.e. 64% best fit to MG7 grassland). In accordance with the methodology, once the MAVIS analysis has been undertaken, the relevant NVC handbook is consulted and the habitat descriptions used to guide conclusions as to which vegetation type is present.

- 2.3.6. All of the species that occur in each habitat would not necessarily be detected during survey work carried out at any given time of the year, since different species are apparent at different seasons. However, the survey work was completed during the optimal period for Phase 1 / NVC surveys. As such, it is considered that an accurate and robust assessment has been made.

2.4. Faunal Survey

- 2.4.1. General faunal activity observed during the course of the survey was recorded, whether visually or by call. Specific attention was paid to the potential presence of any protected, rare, notable or Biodiversity Action Plan (Priority / S41) species. In addition, specific surveys were undertaken in 2019 for Badgers *Meles meles*, bats and reptiles.

- 2.4.2. **Badgers.** Surveys were undertaken to search for evidence of Badgers in April 2018 and again in June 2019. The surveys comprised two main elements. The first of these was a thorough search for evidence of Badger setts. For any setts encountered each sett entrance would be recorded and plotted, even if the entrance appeared disused. The following information was recorded if appropriate:

- i) The number and location of well used or very active entrances; these are clear of any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently.
- ii) The number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance.
- iii) The number of disused entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be and the remains of the spoil heap.

- 2.4.3. Secondly, Badger activity such as well-worn paths and run-throughs, snagged hair, footprints, latrines and foraging signs were also searched for in order to build up a picture of the use of the site by Badgers.

- 2.4.4. **Bats.** Specific bat surveys were undertaken in April 2018 to assess the potential for roosting bats within the trees and structures on site. The work was undertaken by an experienced bat worker and aimed to establish the likelihood of presence / absence of bats.

- 2.4.5. Field surveys were undertaken with regard to best practice guidelines issued by Natural England (2004⁴), the Joint Nature Conservation Committee (2004⁵) and the Bat Conservation Trust (2016⁶).
- 2.4.6. All trees at the site were assessed for their potential to support roosting bats. For a tree to be classed as having some potential for roosting bats it must usually have one or more of the following characteristics:
- obvious holes, e.g. rot holes and old woodpecker holes;
 - dark staining on the tree below a hole;
 - tiny scratch marks around a hole from bats' claws;
 - cavities, splits and/or loose bark from broken or fallen branches, lightning strikes etc.; and
 - very dense covering of mature Ivy *Hedera helix* over trunk.
- 2.4.7. A detailed internal and external inspection survey was undertaken to search for any evidence of use by roosting bats within buildings. All accessible voids within buildings were surveyed, with evidence of bat such as droppings, feeding remains or individual bats searched for. Furthermore, a detailed external survey was undertaken to identify any potential access points or features which could be utilised by bats.
- 2.4.8. The probability of a building being used by bats as a summer roost site increases if it:
- is largely undisturbed;
 - dates from pre 20th Century;
 - has a large roof void with unobstructed flying spaces;
 - has access points for bats (though not too draughty);
 - has wooden cladding or hanging tiles; and
 - is in a rural setting and close to woodland or water.
- 2.4.9. Conversely, the probability decreases if a building is of a modern or pre-fabricated design / construction, is in an urban setting, has small or cluttered roof voids, has few gaps at the eaves or is a heavily disturbed premises.
- 2.4.10. The main requirements for a winter / hibernation roost site is that it maintains a stable (cool) temperature and humidity. Sites commonly utilised by bats as winter roosts include cavities / holes in trees, underground sites and parts of buildings. Whilst different species may show a preference for one of these types of roost site, none are solely dependent on a single type.
- 2.4.11. In addition, a bat activity (emergence and transect) survey and accompanying static monitoring surveys were undertaken at the application site in order to establish whether there are any features of potential importance for foraging and commuting bats.
- 2.4.12. The activity initially comprised an emergence survey of two trees along the northern site boundary and was conducted from 30 minutes before sunset

⁴ Mitchell-Jones, A. J. (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough.

⁵ Mitchell-Jones, A.J. & McLeish, A.P. (Eds.) (2004). *Bat Workers' Manual*. 3rd edition. Joint Nature Conservation Committee, Peterborough.

⁶ Bat Conservation Trust (2007). *Bat Surveys – Good Practice Guidelines*. Bat Conservation Trust, London.

and extended to 1.5 hours after sunset. Two surveyors were present for this work. Following this emergence survey, surveyors proceeded to walk a transect incorporating the features of potential value to foraging and commuting bats, including hedgerows, treelines within the site in order to further ascertain the use of the site by bats. This activity transect survey extended for approximately 1.5 hours following the completion of the emergence surveys. The timings and weather conditions for these surveys are detailed in Table 1 below.

Survey Type	Date	Timing	Weather / Cloud / Temperature
Evening emergence	28.06.2019	Start: 20:50 End: 22:50	Light breeze, clear sky, 22C
Evening activity	28.06.2019	Start: 22:50 End: 00:16	Light breeze, 5% cloud, 16C

Table 1. Dates, timings and weather conditions of activity survey work undertaken at the application site.

- 2.4.13. Surveyors utilised EchoMeter Touch 2 Pro (EMT 2 pro) bat detectors to aid identification of bats and record data. All bat data recorded was subsequently analysed using Kaleidoscope bat sound analysis software.
- 2.4.14. In addition static monitoring surveys were conducted at the site. SongMeter SM4 bat and SM2 detectors were deployed at strategic locations (as shown on Plan ECO3) for at least five consecutive nights. These surveys allowed for a longer term assessment of the use of the site by foraging and commuting bats.
- 2.4.15. The deployment dates and duration of static surveys are detailed in Table 2 below.

Detector Reference	Deployment Date / Duration	Prevailing Conditions	Weather
Detector 1 (SM4)	02.07.2019 – 09.07.2019	Warm and dry	
Detector 2 (SM2)	02.07.2019 – 09.07.2019	Warm and dry	

Table 2. Dates and prevailing weather conditions for static detector deployments.

- 2.4.16. Specific surveys to identify the presence or absence of reptiles within the wider site were undertaken in July 2019.
- 2.4.17. Following an initial assessment to identify areas of suitable reptile habitat within the Site, refugia surveys were undertaken. A total of 50 'tins' (0.5 x 0.5 metre squares of heavy roofing felt which are often used as refuges by reptiles) were distributed within specific areas of suitable reptile habitat within the site. These tins were left in place for two weeks to 'bed in' and subsequently surveyed for reptiles beneath or upon the tins during suitable weather conditions.
- 2.4.18. Suitable weather conditions to carry out surveys are typically when the air temperature is between 9 and 18°C. Heavy rain and windy conditions should be avoided.

- 2.4.19. The tins provide shelter and heat up quicker than the surroundings in the morning and can remain warmer than the surroundings in the late afternoon. Being ectothermic (cold blooded), reptiles use them to bask and raise their body temperature which allows them to forage earlier and later in the day.

2.5. **Consultations**

- 2.5.1. The scope of ecological survey work undertaken at the application site has been informed through discussions with Hampshire County Council's Ecology Team. As part of these discussions, Hampshire's Ecology Team have confirmed their in-principle agreement with the scope of survey works proposed.

3. ECOLOGICAL FEATURES

3.1. The site was subject to ecological surveys in April 2018 and June 2019. The vegetation present enabled the habitat types to be satisfactorily identified and an accurate assessment of the ecological interest of the habitats to be undertaken.

3.2. The following main habitat / vegetation types were identified:

- Species-poor Semi-Improved Grassland;
- Scrub and Tall Ruderal Vegetation;
- Hedgerows / Tree Belts; and
- Building (dilapidated structures).

3.3. The location of these habitats is shown on Plan ECO2.

3.4. Each habitat present is described below with an account of their representative plant species.

3.5. Semi-improved Grassland

3.5.1. A large majority of the site comprises a grassland field which appears to be cut on a periodic basis (no significant tussocks or scrub growth). Botanically, the field was unremarkable, being dominated by a small number of common grass species typical of more enriched conditions.

3.5.2. The sward dominated by grasses, of which Meadow Foxtail *Alopecurus pratensis* and Tall Fescue *Festuca arundinacea* were both abundantly recorded. Frequently recorded was False Oat-grass *Arrhenatherum elatius*, Yorkshire Fog *Holcus lanatus*, Rough Meadow-grass *Poa trivialis* and Sweet Vernal Grass *Anthoxanthum odoratum*. Common Bent *Agrostis capillaris*, Cock's-foot *Dactylis glomerata*, Red Fescue *Festuca rubra* were occasionally recorded whilst Perennial Rye Grass *Lolium perenne* and Meadow Barley *Hordeum secalinum* were rare sward components.

3.5.3. A small number of sedges were also rarely recorded within the sward, with these limited to the wetter element of grassland in the south-east of the site. Sedge species recorded included for Glaucous Sedge *Carex flacca* and Oval Sedge *Carex leporina*. Compact Rush *Juncus conglomeratus* was also present in the wetter area.

3.5.4. The herb component of the sward was dominated by a small number of widespread species and included for frequent Yarrow *Achillea millefolium*, Bird's-foot Trefoil *Lotus corniculatus*, Common Sorrel *Rumex acetosa*, Creeping Cinquefoil *Potentilla reptans*, Creeping Buttercup *Ranunculus repens*, Meadow Buttercup *Ranunculus acris* and Lesser Stitchwort *Stellaria graminea*. Occasionally recorded was Common Knapweed *Centaurea nigra*, Field Wood-Rush *Luzula campestris*, Common Fleabane *Pulicaria dysenterica*, Common Vetch *Vicia sativa* and Creeping Thistle *Cirsium arvense*. Rarely recorded herbaceous species included for Broad-leaved Dock *Rumex obtusifolius*, Ground Elder *Aegopodium podagraria*, Cut-leaved Crane's-bill *Geranium dissectum*, Dove's-foot Crane's-Bill *Geranium mollle*, Meadow Vetchling *Lathyrus pratensis*, Pepper Saxifrage *Silaum silaus*, Red Clover *Trifolium pratense*, Lesser Trefoil *Trifolium dubium*, Dandelion *Taraxacum officinalis* agg., Smooth Tare *Vicia*

tetrasperma, Hairy Tare *Vicia hirsuta* Field Forget-me-not *Myosotis arvensis*, Bulbous buttercup *Ranunculus bulbosus*, Cat's Ear *Hypochaeris radicata* and Alexanders *Smyrniololus olusatrum*. Individual specimens were recorded for Daffodil *Narcissus* sp. and Grass Vetchling *Lathyrus nissolia*.

- 3.5.5. The wetter element of the grass additionally included for occasional Hemlock Water Dropwort *Oenanthe crocata* and, rarely, Cuckoo Flower *Cardamine pratensis*.
- 3.5.6. The margins of the field included for species recorded in association with the tree-belts, hedge and scrub on site, including Lesser Celandine *Ficaria verna*, Lesser Stitchwort, Ground Ivy *Glechoma hederacea*, Common Nettle *Urtica dioica*, Cleavers *Galium aparine*, Creeping Thistle *Cirsium arvense*, Hogweed *Heracleum sphondylium* and Cow Parsley *Anthriscus sylvestris*.
- 3.5.7. In order to allow for further assessment of the grassland, the findings of the NVC survey were inputted in MAVIS computer programme such that a best fit NVC habitat could be assigned. This analysis returned a relatively poor fit to any one NVC habitat, with the best fit being community type MG9 (*Holcus lanatus* – *Deschampsia cespitosa* grassland) with a fit of 47.37%, closely followed by the MG9b sub-community (47.01%). The next best fit habitat type was MG1 *Arrhenatherum elatius* grassland with a fit of 42.20%. Both MG9 and MG1 grassland communities are characterised by their rough grassland composition in which coarse grasses frequently dominate and herbs are generally infrequent.

3.6. Scrub and Tall Ruderal Vegetation

- 3.6.1. Areas of dense scrub are present in the north-east of the site (**S1**), in association with the dilapidated shed in the east of the grassland field (**S2**) and along the south-western boundary of the site (in association with **H3**).
- 3.6.2. **S1** comprises an unmanaged corridor which appears to have self-seeded with a range of scrub and ruderal species, a large component of which comprise non-native species and garden escapes. Bramble *Rubus fruticosus* is dominant within this band of scrub, with other scrub/shrub species less frequently recorded and including for Snowberry *Symphoricarpos albus*, Hawthorn *Crataegus monogyna*, immature Ash *Fraxinus excelsior*, Wild Privet *Ligustrum vulgare*, Holly *Ilex aquifolium*, Buddlejia *Buddleja* sp., immature Sycamore *Acer pseudoplatanus*, Elder *Sambucus nigra* and Hazel *Corylus avellana*.
- 3.6.3. A small number of mature trees were recorded within the scrub, including Cypress, Pear *Pyrus* sp., Lime *Tilia* sp., and a semi-mature Pedunculate Oak *Quercus robur*. Ruderal and ground-flora species recorded included for Yorkshire Fog, Meadow Fescue *Festuca pratensis*, Annual Meadow-grass *Poa annua*, Ivy *Hedera helix*, Spanish Bluebell *Hyacinthoides hispanica*, Broad-leaved Dock, Cleavers, Lords and Ladies *Arum maculatum*, Daffodil, Garlic Mustard *Alliaria petiolata*, Lesser Celandine, Ivy-leaved Speedwell *Veronica hederifolia*, Dandelion, Hairy Bitter-cress *Cardamine hirsuta*, Hedge Mustard *Sisymbrium officinale*, Common Nettle, Groundsel *Senecio vulgaris*, Red Dead-nettle *Lamium purpureum*, Strawberry *Fragaria* sp., Greater Periwinkle *Vinca major*, Common Mouse-ear *Cerastium fontanum*,

Willowherb *Epilobium* sp., Foxglove *Digitalis purpurea*, Spear Thistle *Cirsium vulgare*, Hogweed and Wood Avens *Geum urbanum*.

- 3.6.4. **S2** comprises an area of dense Bramble scrub surrounding the on-site building. Elder, Willow *Salix* sp., Laurel sp., and Holly were also present. Where Bramble was less dominant, pockets of ruderal vegetation were recorded and included for Ivy, Cleavers, Common Nettle, Cleavers, Cow Parsley, Ground Elder and Lesser Celandine.

3.7. Hedgerows and Tree Belt

- 3.7.1. The site is bordered by hedgerows to its north, east and west. Whilst some of these hedgerows appear to have undergone some previous management, they are, in the large part, unmanaged and more representative of tree belts with underlying shrub / scrub. Indeed, several mature trees are present at the site boundaries.
- 3.7.2. An individual account of the linear features on site is provided below.
- 3.7.3. **H1** forms the eastern boundary of the site. It is managed to approx. 1.5m in height at its southern end but becomes unmanaged to the north, largely succumbing to scrub. Blackthorn *Prunus spinosa* is dominant, with Elder, Willow *Salix* sp., Pedunculate Oak, Cherry *Prunus avium*, Cherry Laurel *Prunus laurocerasus* and Bramble also present. Several mature, standard Oaks are also present within this hedge. Associated ground flora included for Cleavers, Cow Parsley, Lords and Ladies, Broad-leaved Dock, Lesser Celandine, Alexanders, White Dead-nettle *Lamium album*, Ground Elder *Aegopodium podagraria* and False Brome *Brachypodium sylvaticum*.
- 3.7.4. **H2** forms the northern boundary of the site and comprises an unmanaged and scrubby hedge with several mature trees. Blackthorn was frequent, with other species present including Elder, Cherry Laurel, Hazel, mature Cherry and a mature Pedunculate Oak. The ground flora of this hedge was broadly similar to that recorded within **H1**, albeit with the addition of garden escapes in the form of *Iris* sp., Greater Periwinkle and Daffodil.
- 3.7.5. **H3** is more representative of a small area of wet and scrubby woodland to the north, tending towards a linear belt of Bramble to the south. Goat Willow *Salix caprea*, is dominant in the north, with immature Pedunculate Oak, Hawthorn, Holly and Tutsan *Hypericum androsaemum* also present. Honeysuckle and Ivy were noted trailing through the hedge, with the latter also dominating much of the field layer alongside Lords and Ladies, Cleavers and Alexanders. Hard Shield Fern *Polystichum aculeatum*, Hart's-tongue Fern *Asplenium scolopendrium* and Male Fern *Dryopteris filix-mas* were associated with the stream immediately beyond the sites western boundary. Further south **H3** is dominated by Bramble with Blackthorn and Pedunculate Oak also rarely present.
- 3.7.6. Subsequent to the habitat survey in June 2019, a number of the Willow trees were pruned or felled.

3.8. Buildings / Structures

- 3.8.1. Two structures are present within the site, identified as **B1** and **B2** on Plan ECO1.
- 3.8.2. Both 'buildings' comprise derelict agricultural structures which are in a very poor state of repair, with **B1** being partially collapsed and **B2** just comprising partial walls of a former structure.
- 3.8.3. These buildings are of no ecological value.

Desk Study Exercise

- 3.8.4. The desk study returned two records of notable plant species within grid squares which include for the application site. These records include for Strawberry Clover *Trifolium fragiferum* and Quaking Grass. Both records were dated to 2011, with the latter also noted in the species list gathered at the time the site was surveyed for SINC designation purposes.
- 3.8.5. Neither of these species were recorded during survey work undertaken by Ecology Solutions in 2018/19.

4. WILDLIFE USE OF THE SITE

4.1. During the survey general observations were made of any faunal use of the site with specific attention paid to the potential presence of protected or notable species. Specific surveys were also undertaken with regard to Badgers and bats and reptiles.

4.2. Badgers

4.2.1. Specific surveys for Badger were undertaken in April 2018, with due regard also given to this faunal group as part of the survey work undertaken in 2019.

4.2.2. Whilst the habitats on site would provide a degree of suitable habitat for Badgers, no evidence of their presence, such as sett digging, latrines, snuffle holes or tracks were recorded within or adjacent to the site. As such there is nothing to indicate that the site would be of any particular importance to Badger populations in the local area.

4.2.3. The desk study exercise returned only two records of Badger in the local area, both of which dated to 2006 and were located approximately 1.7km to the west of the application site at their closest points.

4.3. Bats

4.3.1. The buildings / structure within the site are completely unsuitable to support roosting bats.

4.3.2. Three mature Oak trees within the application have developed features of potential value to roosting bats. These trees are associated with the linear features along the sites northern and eastern boundaries (see **T1 – T3** on Plan ECO1). Initial inspections of these trees found no evidence of roosting bats.

4.3.3. The linear habitats within the site offer a degree of suitable foraging and commuting habitats for bats. However, given the small extent of the site, and the prevalence of similar habitats in the local area, it was considered unlikely that the site constitutes a significant resource for local bat populations.

4.3.4. Notwithstanding the above, and in approach agreed in principle with Hampshire's Ecology Team, a single bat survey was undertaken to assess the use of the application site by bats. As set out in the methodology section above, this survey comprised an emergence survey followed by an activity transect survey.

Emergence Survey

4.3.5. The emergence survey was focused on the features with bat potential along the northern and north-eastern edges of the application site (those trees identified to have some bat potential).

4.3.6. No bats were seen emerging from the trees within the site during the course of the emergence survey in June 2019. A modest level of bat activity was

recorded during the emergence survey work, albeit with this largely limited to Common Pipistrelle *Pipistrellus pipistrellus*, with only low levels of registrations pertaining to Soprano pipistrelle *Pipistrellus pygmaeus*, *Nyctalus* sp., and Serotine *Eptesicus serotinus*. Single registrations were recorded for Barbastelle *Barbastella barbastellus* and Myotis *Myotis* sp. of bat. The findings of this survey is provided within Table 3.

Bat Species	Surveyor Location 1	Surveyor Location 2	Time of First Registration
Common Pipistrelle	84	56	21:34
Soprano Pipistrelle	7	9	21:52
<i>Nyctalus</i> sp.	5	2	22:30
<i>Myotis</i> sp.	0	1	22:39
Serotine	2	0	22:03
Barbastelle	0	1	22:39

Table 3. Number of registrations per bat species recorded at each surveyor location. The time of first registration is combined across the two detectors.

- 4.3.7. The surveyor locations are detailed on Plan ECO3.

Activity Surveys

- 4.3.8. Only low levels of bat activity were recorded during the course of the transect survey, with composition of species recorded comparable to that found during the course of the emergence survey work. Again, activity was dominated by Common Pipistrelle (26 registrations) with only a small number of registrations pertaining to *Nyctalus* sp. (4 registrations), Serotine (2 registrations) and a single registration of Nathusius Pipistrelle *Pipistrellus nathusii*.
- 4.3.9. Bat activity was recorded to be scattered around the vegetated boundaries of the site, with slightly higher levels of activity recorded along the eastern boundary, as well as along the south-west corner of the site.

Automated Surveys

- 4.3.10. In order to supplement the transect and emergence work and allow for an assessment of bat activity within the site across an extended timeframe, automated detector surveys were undertaken in July 2019. A total of 2 detectors were deployed. A summary of registrations for each detector is detailed in Table 4 below. The locations of static detectors are detailed on Plan ECO3.

Detector Reference	Bat Registrations Recorded (Over a 7 Night Period)
SD1	52 <i>Nyctalus</i> sp., 18 <i>Myotis</i> sp., 14 Common Pipistrelle, 3 Soprano Pipistrelle.
SD2	35 Common Pipistrelle, 2 Soprano Pipistrelle.

Table 4. Detector references, duration of deployment and registrations recorded during automated detector surveys.

- 4.3.11. As detailed in Table 4, only very low levels of bat activity were recorded during the course of the static surveys, further reaffirming that the application site is of low importance for foraging and commuting bats.

- 4.3.12. A large number of bat records were returned as part of the data search, although no information is provided on whether individual records constituted known roosting activity or other evidence of bats (such as observation in flight). Bat species recorded in the local area included for Serotine, Bechstein's, Brandt's, Daubentons, Whiskered, Natterer's, Leisler, Common Pipistrelle, Soprano Pipistrelle, Nathusius Pipistrelle and long-eared bat *Plecotus sp.* (including confirmed Brown Long-eared bat *Plecotus auritus*).
- 4.3.13. The closest bat record was of a Serotine bat, with this returned from a 100m by 100m grid square which includes for part of the site. This record dates to 2015.

4.4. Birds

- 4.4.1. The treelines and hedgerows provide a degree of suitable opportunities for a range of bird species albeit there is nothing to indicate that the site would be of any significance for local bird populations. The semi-improved grassland habitat is not considered to provide any significant nesting opportunities.
- 4.4.2. The site is not considered to provide habitats of potential value to wading birds or Brent Geese, comprising a small area of rough grassland with surrounding, tall vegetation.
- 4.4.3. A range of generally common 'garden' bird species were noted on site during the habitat survey including Great Tit *Parus major*, Blue Tit *Cyanistes caeruleus*, Blackbird *Turdus merula*, Dunnock *Prunella modularis*, Wood Pigeon *Columba palumbus*, Goldfinch *Carduelis carduelis*, Robin *Erithacus rubecula*, Wren *Troglodytes troglodytes*, Chiffchaff *Phylloscopus collybita* and Greenfinch *Chloris chloris*.
- 4.4.4. A large number of bird records were returned as part of the desk study exercise, many which were of wetland birds, none of which would be in any way reliant on the habitats present within the application site.
- 4.4.5. Several bird records were returned at a low spatial resolution (1km grid squares). Some of these low resolution records were returned within the 1km grid square which includes for the site, albeit all of these records were noted to be from "Ch Emsworth". With the exception of Red Kite *Milvus milvus*, House Sparrow *Passer domesticus*, Black Redstart *Phoenicurus ochruros*, Firecrest *Regulus ignicapilla*, Siskin *Spinus spinus* and Starling *Sturnus vulgaris*, all records were for wetland birds or waders.
- 4.4.6. Whilst the site may provide some opportunities for some of the above species, it would not be of significant importance to any of these species, or indeed any other protected or notable species.

4.5. Amphibians (Great Crested Newts)

- 4.5.1. There are no ponds within the site and as such no potential opportunities for breeding amphibians. Moreover, the stream which runs along the sites western boundary supports flowing water and is therefore unsuitable for

breeding.

- 4.5.2. The closest known pond to the application site is located approximately 300m to the north of the site at its closest point.
- 4.5.3. Great Crested Newts (GCN) are known to travel up to 500 metres – without barriers that inhibit dispersal – to a breeding pond, however it is widely accepted that they most commonly utilise suitable terrestrial habitat within a much closer distance, and activity is usually concentrated within 100 metres of breeding ponds with key habitat being located within 50 metres⁷. Indeed, Research Report 576 produced by English Nature (now Natural England) concludes that “Captures on fences (and by other methods) at distances between 100m and 200-250m from breeding ponds tended to be so low as to raise serious doubts about the efficacy of this as an approach”.
- 4.5.4. Indeed, current guidance by Natural England takes this a step further, stating that *‘impacts beyond the core area often have little or no tangible impact on the viability of populations’*⁸.
- 4.5.5. In light of the above, given the small size of the application site and its separation from any off-site ponds, it is not considered that GCN would be present within the site, nor that the site offers any significant opportunities for this species.
- 4.5.6. Only two records of amphibians was returned as part of the data search exercise, both of these comprising records of Common Toad *Bufo bufo* dating to 2010 and 2016, the closest of which was located approximately 0.8km to the south of the site at its closest point.

4.6. Reptiles

- 4.6.1. Despite an absence of tussocks, the grassland on site provides potential opportunities for common reptile species. As such a suite of reptile surveys were undertaken in July 2019. The findings of these surveys are detailed in Table 5 below.

Survey No	Date	Temperature and Weather Conditions	Reptiles Recorded
N/A (Tin deployment)	20.06.19	-	-
1	03.07.19	10% Cloud, 17C, Dry	1MSW
2	05.07.19	75% Cloud, 17C, Dry	None
3	09.07.19	90% Cloud, 18C, Dry	1FSW
4	12.07.19	100% Cloud, 16C, Dry	1FSW
5	15.07.19	100% Cloud, 17C, Dry	2MSW, 6FSW
6	19.07.19	100% Cloud, 14C, Dry	None
7	23.07.19	10% Cloud, 17C, Dry	None

Table 5. Dates, weather conditions and results for reptile surveys undertaken at the application site in 2019.

⁷ English Nature (2001) *Great Crested Newt Mitigation Guidelines*. Version: August 2001

⁸ Natural England. Great Crested Newt Method Statement for EPS Licence Application.

4.6.2. The surveys in 2019 confirm the site to support a peak count of 8 Slow Worms. A peak count of 8 corresponds to a small population of Slow Worm in line with guidance produced by HGBI⁹. No other reptiles were recorded during the course of the surveys.

4.6.3. The desk study exercise returned a small number of records of Slow Worm in the local area. No other reptile records were returned. The closest record was located approximately 0.6km to the south of the site and dated to 2014.

4.7. Dormouse

4.7.1. Notwithstanding that the hedgerows and (albeit to a lesser extent) the scrub within the site offers a degree of potential habitat for Dormouse, the extent of these habitats is very limited.

4.7.2. Moreover, it is noted that the majority of suitable habitat within the site is to be retained, with losses limited to the removal of an area of predominantly non-native scrub which is of poor structural value (**S1**) as well as the removal of a small area of developing Bramble scrub.

4.7.3. It is further noted that no records of Dormouse were returned as part of the desk study exercise undertaken in 2018.

4.7.4. On the basis of the above, it is considered highly unlikely that Dormouse would be present within the site, or in any way impacted upon by the development proposals. As such, no further consideration is given to this faunal group as part of this assessment.

4.8. Invertebrates

4.8.1. The habitats at the site are likely to support a range of common invertebrate species, but there is no reason to suggest that any protected or notable species may be present.

4.8.2. A small number of notable invertebrate species records were returned as part of the desk study exercise, none of which were returned within the application site itself.

4.9. Other Species

4.9.1. Given the habitats present, it is considered that the site will provide opportunities for a range of small mammal species, however it is unlikely to provide significant opportunities to any other protected or notable species.

4.9.2. The desk study exercise returned a small number of records of other notable species, including Water Vole *Arvicola amphibious*, located approximately 0.9km to the south of the site at its closest point, and Hedgehog *Erinaceus europaeus* located approximately 0.8km to the south of the application site at its closest point.

⁹ Herpetofauna Groups of Britain and Ireland. Evaluating local mitigation / translocation programmes: Maintaining best practice and lawful standards. HGBI Advisory Notes for Amphibian and Reptile Groups (ARG).1998.

5. ECOLOGICAL EVALUATION

5.1. The Principles of Site Evaluation

- 5.1.1. The latest guidelines for ecological evaluation produced by CIEEM propose an approach that involves professional judgement, but makes use of available guidance and information, such as the distribution and status of the species or features within the locality of the project.
- 5.1.2. The methods and standards for site evaluation within the British Isles have remained those defined by Ratcliffe¹⁰. These are broadly used across the United Kingdom to rank sites, so priorities for nature conservation can be attained. For example, current Site of Special Scientific Interest (SSSI) designation maintains a system of data analysis that is roughly tested against Ratcliffe's criteria.
- 5.1.3. In general terms, these criteria are size, diversity, naturalness, rarity and fragility, while additional secondary criteria of typicalness, potential value, intrinsic appeal, recorded history and the position within the ecological / geographical units are also incorporated into the ranking procedure.
- 5.1.4. Any assessment should not judge sites in isolation from others, since several habitats may combine to make it worthy of importance to nature conservation.
- 5.1.5. Further, relying on the national criteria would undoubtedly distort the local variation in assessment and therefore additional factors need to be taken into account, e.g. a woodland type with comparatively poor species diversity, common in the south of England may be of importance at its northern limits, say in the border country.
- 5.1.6. In addition, habitats of local importance are often highlighted within a local Biodiversity Action Plan (BAP). The Biodiversity Action Plan for Hampshire, as compiled by the Hampshire Biodiversity Partnership, identifies a number of habitat and species specific action plans.
- 5.1.7. Levels of importance can be determined within a defined geographical context from the immediate site or locality through to the International level.
- 5.1.8. The legislative and planning policy context are also important considerations and have been given due regard throughout this assessment.

¹⁰ Ratcliffe, D A (1977). *A Nature Conservation Review: the Selection of sites of Biological National Importance to Nature Conservation in Britain*. Two Volumes. Cambridge University Press, Cambridge.

5.2. Habitat Evaluation

Designated sites

- 5.2.1. **Statutory sites.** There are no statutory designated sites of nature conservation interest within or immediately adjacent to the site. The nearest statutory designated site is Brook Meadow (Emsworth) Local Nature Reserve (LNR). Brook Meadow LNR comprises an area of grassland with surrounding woodland and streams. These habitats are noted to support a range of birds, insects and wildflowers whilst Water Voles are also known to be present. This site is owned by Havant Borough Council and is managed by Brook Meadow Conservation Group.
- 5.2.2. Given the separation of this site from the application site, its separation from the application site by built form (including the A27 road), noting that significant recreational opportunities are available between the application site and the site (including Emsworth Recreation Ground) and noting the small scale of the proposals, it is not considered that the proposals would have the potential to give rise to any significant impacts on this site, either alone or in combination with other plans or projects.
- 5.2.3. In any event, the proposals will come forward alongside the adoption of best practice construction and engineering practices which comply with adopted legislation and guidance. These measures would ensure that potential impacts on off-site habitats are avoided. Moreover, the scheme will include for the delivery of an area of open space which will offer additional opportunities to new residents.
- 5.2.4. Impacts on sites of European Importance (alongside their underpinning SSSI's) are considered separately within the 'information for Habitats Regulations Assessment' (iHRA) document submitted as part of this planning application. For clarity, this iHRA includes for assessment of Chichester and Langstone Harbours Special Protection Area (SPA) and Ramsar site, located approximately 1.3km to the south of the site at its closest point, a site which is further designated as Solent Maritime Special Area of Conservation (SAC) as well as Chichester Harbour Site of Special Scientific Interest (SSSI).
- 5.2.5. All other statutory designated sites are well distanced from the application site, and, noting the small scale of the proposed scheme and the best practice construction measures proposed, no significant adverse impacts are considered likely to arise, either alone or in combination with other plans or projects.
- 5.2.6. **Non-statutory sites.** The application site includes for a subset of a wider non-statutory designated site known as Land West of Emsworth Recreation Ground Site of Importance for Nature Conservation (SINC); hereafter termed as Emsworth SINC for the purpose of this report. Emsworth SINC is designated on account of its grassland habitat. The SINC is specifically under criteria 2B for supporting "*Semi-improved grasslands which retain a significant element of unimproved grassland*". This SINC designation was informed through the completion of habitat survey work undertaken in July 2011, at which time the survey identified the presence of a sward which was

“rather rough but still rich in herbs” and with 4 grassland indicator species noted.

- 5.2.7. Survey work undertaken by Ecology Solutions indicates that the value of this SINC (insofar as it lies within the application site) has declined since surveys were undertaken in support of the site citation. As set out in the habitat section above, the grassland within the site now comprises relatively species-poor semi improved grassland, with a sward dominated by coarser grasses. Whilst a modest range of herbs were recorded, the herb assemblage was dominated by only a small number of widespread species. It is further noted that two of the four ‘indicator’ species previously recorded (Stone Parsley *Sison amomum* and Quaking Grass *Briza media*) were not observed during 2019.
- 5.2.8. In light of the survey work undertaken by Ecology Solutions in 2019 and noting the decline in ecological value of the site in the interim period since surveys were undertaken, the SINC designation for the site is no longer considered to be appropriate (at least insofar as it relates to the application site).
- 5.2.9. It is relevant to note that the landowner has since requested that the land within the application site be de-classified as SINC. This formal request has been made to Hampshire’s SINC panel (this comprising several organisations who are jointly responsible for advising on SINC designation and de-classification). Whilst it is understood that the SINC panel will consider this request in due course, the primary requirement from a biodiversity perspective is to assess the true ecological value of an area of land as part of this ecological assessment.
- 5.2.10. This position is made clear by the Inspector considering proposals for a scheme at Hermitage Quarry¹¹ who concludes that:
- “7.39 It would be equally inappropriate if, in the face of evidence to the contrary, the quality of all Local Wildlife Sites (LWS) were treated as identical, notwithstanding the absence of any explicit policy distinction between one LWS and another”*
- 5.2.11. In reviewing this decision, the Secretary of State confirmed his broad agreement with the inspector’s conclusions in this respect, as stated in paragraphs 14 – 18 of his letter¹².
- 5.2.12. In line with the above, it is clear that appropriate avoidance, mitigation and/or enhancement measures should be identified to reflect the true ecological value of the land in question, as identified through the completion of detailed survey work in 2018 and 2019.
- 5.2.13. The proposals for the application site seek to retain and enhance a significant area of grassland within the site, with this primarily to be delivered as an area of informal open space in the south-west of the application site.

¹¹ Appeal Ref: APP/W2275/V/11/2158341. Report to the Secretary of State for Communities and Local Government by J I McPherson JP BSc CEng CEnv CWEM MICE MCIWEM MCMI. 11 March 2013.

¹² Appeal Ref: APP/W2275/V/11/2158341. Town and Country Planning Act 1990 (Sections 73 & 77) Application by Gallagher Aggregates Ltd Hermitage Quarry, Hermitage Lane, Aylesford, Application Ref. TM/10/2158341. 11 July 2013.

This area of informal open space includes for the wetter grassland elements recorded in surveys in 2018 and 2019, supporting populations of sedge and with both Pepper Saxifrage and Meadow Barley present in the sward. In order to instigate longer-term enhancements to this area of grassland (reversing the trend of recent years in which coarser grasses appear to be increasingly outcompeting herbs), it is proposed for a long-term, biodiversity led management plan to be instigated for retained areas of grassland. This management plan, which would be funded by the development proposals, would include for the completion of a rotational hay-cut regime of retained areas of grassland. It is proposed for this hay-cut regime to comprise a late summer hay cut (late July – August subject to on-site conditions). This cut would reduce the sward height to no less than 10cm (noting the presence of reptiles), with arisings left on site for 5 days to allow seeds to disperse, prior to removal from site. The removal of arisings each year will provide a mechanism to gradually reduce soil nutrients and thereby enhance opportunities for a greater range of herbs and fine grasses to establish. It is recommended that 20% of the grassland remains uncut each year, ensuring longer grassland elements for reptiles (see faunal section below).

- 5.2.14. To further expediate diversification in this area, the sowing of Yellow Rattle may be undertaken. Yellow Rattle is a 'hemi-parasite' of grasses and suppresses their growth. Herbaceous species benefit as a result of the reduced competition.
- 5.2.15. It is further proposed for other areas of grassland to be created within the site, such as adjacent to the proposed access road in the north of the site. These areas would be sown with a native wildflower mixture (such as Emorsgate Seed's Standard Meadow Mixture – EM2) and would be subject to the above appropriate management regime for the larger area of open space. This would deliver additional areas of species-rich grassland within the site post-development.
- 5.2.16. It is considered that the retention and enhancement / creation of areas of meadow grassland within the site will realise significant qualitative gains for the site in the longer term, more than mitigating for the loss of a grassland sward which is relatively herb poor and becoming increasingly 'rough' in nature. Indeed, long-term management provides a mechanism whereby retained areas of grassland can be restored to SINC quality post-development, contrasting to the likely outcome of a no-development situation (where rough grassland species will become increasingly prevalent).
- 5.2.17. A small number of other non-statutory designates sites are present in the local area, all of which are separated from the application site by areas built form. As for statutory sites above, given the small scale of the proposals, the provision of new open space within the site the implementation of best practice during construction phase (which accord with the measures set out above in respect of statutory designated sites) any potential direct or indirect adverse effects on these non-statutory sites may be fully mitigated or avoided.

Habitats within the site

- 5.2.18. The application site predominantly comprises an area of relatively species-poor semi-improved grassland. Other habitats present within the application site include for boundary hedgerows and trees, alongside areas of scrub and ruderal which are either species-poor in nature (Bramble monoculture) or comprising a mix of non-native species and amenity escapes.
- 5.2.19. Of these habitats, hedgerows **H1** and **H2**, which form the northern and eastern boundaries of the site are considered to be of higher ecological value in the context of the site on account of the mature trees present. **H3**, whilst of some potential value to faunal species, was considered to be of reduced intrinsic value, comprising a small pocket of scrubby Willow woodland and a Bramble belt.
- 5.2.20. The development proposals will fully retain the mature Oak trees at the boundaries of the site, albeit losses to underlying hedge/scrub are proposed to facilitate access and built form.
- 5.2.21. Where losses are proposed (including the small-scale Willow tree/scrub removal undertaken near **H3**), these will be more than mitigated through the provision of significant new native hedge planting elsewhere within the site. Such new hedge provision will include for new hedge planting along the boundaries of the proposed informal open space, as well as in the northern spur of the site (along the access road), ensuring a net gain in native hedge within the site post-development. New areas of hedge will be planted as species-rich native features, including for species of local prominence.
- 5.2.22. Moreover, it is proposed for both newly created hedge, as well as retained hedge/trees (where this lies within public realm) to be subject to a sensitive management regime in the long-term. This management regime will seek to attain approximate hedge heights of 3m, with an 'A' shaped hedge structure. At this stage, it is proposed for 50% of the native hedge to be cut each year, ensuring some areas remain undisturbed for nesting birds (see faunal section below).
- 5.2.23. It is further proposed for adjacent grassland margins (to a width of approx. 2m) to be subject to a reduced management regime, with perhaps a cut undertaken only once every 2-3 years. This reduced cutting regime will ensure further structural variety within the site, providing refugia opportunities to a range of faunal species.
- 5.2.24. In regards grassland, and as set out in the 'Designated Sites' section above, quantitative losses to the sward will be more than mitigated through the retention and enhancement of an area of informal open space in the south-west of the site. The instigation of a long-term sensitive management regime for this habitat, to be funded by the development proposals, will provide a mechanism to reverse the increasing dominance of rough grassland and the loss of herbaceous diversity. The above management regime would ensure significant qualitative gains to the grassland, allowing for long-term biodiversity enhancements to this habitat within the site in the longer-term. The creation and management of meadow grassland elsewhere within the site will deliver additional areas of high quality grassland, further off-setting losses to the existing, rough sward.

- 5.2.25. Losses to areas of scrub which invariably comprise a Bramble monoculture or areas dominated by non-native species and garden escapes are not considered to be of ecological significance and no specific mitigation would be required for their loss. In any event, the landscaping proposals for the site, including for significant new tree and hedge planting, will more than mitigate such losses.

Summary

- 5.2.26. There will be quantitative losses to areas of rough grassland, as well as minor losses to linear wooded habitat along the site boundary.
- 5.2.27. In order to mitigate these impacts, and indeed to deliver enhancements post-development, the development proposals seek to retain a significant area of grassland and instigate a long-term biodiversity led management regime of this habitat, ensuring qualitative enhancements going forward. Moreover, the adoption of a suitable landscaping scheme for the wider site, in line with the recommendations set out above, would ensure that the biodiversity value of other habitats present within the site can be retained and indeed enhanced as part of the proposed development.

5.3. Faunal Evaluation

Badgers

- 5.3.1. **Legislation.** The Protection of Badgers Act 1992 consolidates the previous Badgers Acts of 1973 and 1991. The legislation aims to protect the species from persecution, rather than being a response to an unfavourable conservation status, as the species is in fact common over most of Britain, with particularly high populations in the south.
- 5.3.2. As well as protecting the animal itself, the 1992 Act also makes the intentional or reckless destruction, damage or obstruction of a Badger sett an offence. A sett is defined as “any structure or place which displays signs indicating current use by a Badger”. ‘Current use’ is defined by Natural England as any use within the preceding 12 months.
- 5.3.3. In addition, the intentional elimination of sufficient foraging area to support a known social group of Badgers may, in certain circumstances, be construed as an offence by constituting ‘cruel ill treatment’ of a Badger.
- 5.3.4. Previous guidelines were issued by Natural England on the types of activity that it considers should be licensed within certain distances of sett entrances. They stated that works that may require a licence include using heavy machinery within 30m of any entrance to an active sett, using lighter machinery within 20m, and light work such as hand digging within 10m. However, interim guidance issued by Natural England in September 2007 specifically states that:

“It is not illegal, and therefore a licence is not required, to carry out disturbing activities in the vicinity of a sett if no Badger is disturbed and the sett is not damaged or obstructed.”

- 5.3.5. More recent guidance produced by Natural England in 2009 states that Badgers are relatively tolerant of moderate levels of disturbance and that low levels of disturbance at or near to Badger setts do not necessarily disturb the Badgers occupying those setts¹³. However, Natural England's guidance continues by stating that any activity that will, or is likely to cause one of the interferences defined in Section 3 (such as damaging a sett tunnel or chamber or obstructing access to a sett entrance) will continue to be licensed.
- 5.3.6. In addition, this latest guidance no longer makes reference to any 30m/20m/10m radius as a threshold for whether a licence would be required. Nonetheless, it is stated that tunnels may extend for 20m so care needs to be taken when implementing excavating operations within the vicinity of a sett and to take appropriate precautions with vibrations and noise, etc. Fires / chemicals within 20m of a sett should specifically be avoided.
- 5.3.7. This interim guidance allows greater professional judgement as to whether an offence is likely to be committed by a particular development activity and therefore whether a licence is required or not. For example, if a sett clearly orientates southwards into an embankment it may be somewhat redundant to have a 30m-exclusion zone to the north.
- 5.3.8. **Site Evaluation.** No evidence of Badger was recorded on site and it is not considered that the application site is of significant value to local Badger populations.
- 5.3.9. **Mitigation / Enhancement Opportunities.** On a precautionary basis given the mobile nature of Badger and their ability to rapidly excavate new setts, it is recommended that an updated Badger walkover is undertaken prior to construction commencing. This survey will be sufficient to reaffirm the absence of Badger from the site or, if necessary, to identify any additional mitigation measures which may be required.

Bats

- 5.3.10. **Legislation.** All bats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and included on Schedule 2 of the Conservation of Habitats and Species Regulations 2010 ("the Habitats Regulations"). These include provisions making it an offence:
- Deliberately to kill, injure or take (capture) bats;
 - Deliberately to disturb bats in such a way as to:-
 - (i) be likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or to hibernate or migrate; or
 - (ii) affect significantly the local distribution or abundance of the species to which they belong;
 - To damage or destroy any breeding or resting place used by bats;
 - Intentionally or recklessly to obstruct access to any place used by bats for shelter or protection.

¹³ Natural England. 2009. Protection of Badgers Act 1992 (as amended). Interpretation of Disturbance in relation to badgers occupying a sett.

- 5.3.11. While the legislation is deemed to apply even when bats are not in residence, Natural England guidance suggests that certain activities such as re-roofing can be completed outside sensitive periods when bats are not in residence provided these do not damage or destroy the roost.
- 5.3.12. The words deliberately and intentionally include actions where a court can infer that the defendant knew that the action taken would almost inevitably result in an offence, even if that was not the primary purpose of the act.
- 5.3.13. The offence of damaging or destroying a breeding site or resting place (which can be interpreted as making it worse for the bat) is an absolute offence. Such actions do not have to be deliberate for an offence to be committed.
- 5.3.14. European Protected Species licences are available from Natural England in certain circumstances, and permit activities that would otherwise be considered an offence.
- 5.3.15. Licences can usually only be granted if the development is in receipt of full planning permission and it is considered that:
- (i) There is no satisfactory alternative; or
 - (ii) The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.
- 5.3.16. **Site Evaluation.** There are a small number (3 trees) along the boundaries of the site which offered potential roosting opportunities for bats. No other potential roosting features are present within the site.
- 5.3.17. The linear habitats within the site offer a degree of suitable foraging and commuting habitats for bats. However, given the small extent of the site, and the prevalence of similar habitats in the local area, the site is not considered to be of significant value to local bat populations. This conclusion has been reaffirmed through the completion of bat survey work which indicated the site to be subject to only low levels of bat activity, primarily Common Pipistrelle.
- 5.3.18. **Mitigation / Enhancement Opportunities.** The trees with potential to support roosting bats will be retained in full as part of the proposals, with no adverse impacts (such as through light spill) envisaged.
- 5.3.19. Moreover, the network of mature trees along the northern and eastern boundaries will be also retained, providing a continued wooded boundary and ensuring uninterrupted dispersal/commuting opportunities for bats. Indeed, the provision of new hedge and tree planting, particularly along the southern boundary of the application site, will ensure enhanced commuting opportunities post-development.
- 5.3.20. The adoption of a sensitive lighting scheme during the construction phase, to include the avoidance of after dark lighting wherever possible, would be sufficient to ensure that adverse impacts on foraging and commuting bats may be avoided.

- 5.3.21. Where lighting is proposed during the operational phase, the emerging proposals seek a design approach which minimises adverse impacts on light sensitive species. The siting of individual lighting columns (to comprise LED lighting with no UV content) will be considered such that the requirements for areas of built form can be met with minimal spill onto semi-natural habitats. Where necessary, screening vegetation will be provided to minimise light spill into wider semi-natural areas. Additionally, accessories (such as baffles, hoods or louvres) will be utilised to further minimise light spillage and direct light below the horizontal plane to where it is required (limiting light to an angle of 70 degrees or below wherever possible). It is proposed for new lighting to comprise warm white LED with a colour temperature of 3000K or below.
- 5.3.22. To realise a significant enhancement for roosting bats post development, it is proposed for a number of new bat roosting features to be provided within the site. A range of suitable designs are provided at Appendix 2. It is proposed for a total of 16 bat boxes to be provided as part of the proposals.

Birds

- 5.3.23. **Legislation.** Section 1 of the Wildlife and Countryside Act is concerned with the protection of wild birds, whilst Schedule 1 lists species which are protected by special penalties.
- 5.3.24. **Site Evaluation.** There are some opportunities for nesting birds in the treelines and hedgerows within the site, albeit it is noted that these habitats are widespread in the local area.
- 5.3.25. **Mitigation / Enhancement Opportunities.** As all species of birds receive general protection whilst nesting, to avoid a possible offence, it is recommended that any clearance of suitable nesting vegetation (including any tree felling) should be undertaken outside of the main breeding season (March to August inclusive) or that checks be made for nesting birds by an ecologist immediately prior to removal.
- 5.3.26. Where losses to features of potential value to breeding birds will result, these are limited in nature and would be more than compensated for through new planting proposed within the site.
- 5.3.27. To realise enhanced nesting opportunities for a range of species, the proposals will include for the provision of a range of nesting features, with this to include integrated features within buildings, as well as the provision of boxes upon retained trees. A range of suitable nesting features are detailed at Appendix 3. It is proposed for integrated bird nesting features to be provided at a 1:1 ratio with new dwellings (i.e. 16 features). Additionally, a minimum of 5 bird boxes will be installed on retained trees.

Reptiles

- 5.3.28. **Legislation.** All six British reptile species receive a degree of legislative protection that varies depending on their conservation importance.

- 5.3.29. Rare, endangered or declining species receive 'full protection' under the Wildlife and Countryside Act 1981 (as amended) as well as protection under the Conservation of Habitats and Species Regulations 2010 (as amended). Species that are fully protected include Smooth Snake *Coronella austriaca* and Sand Lizard *Lacerta agilis*. These receive protection from:
- killing, injuring, taking;
 - possession or control (of live or dead animals, their parts or derivatives);
 - damage to, destruction of, obstruction of access to any structure or place used for shelter or protection;
 - disturbance of any animal occupying such a structure or place;
 - selling, offering for sale, possession or transport for purposes of sale (live or dead animal, part or derivative).
- 5.3.30. By contrast, due to their abundance and more cosmopolitan habitat requirements in Britain, Common Lizard, Slow Worm *Anguis fragilis*, Grass Snake and Adder *Vipera berus* are only 'partially protected' under the Wildlife and Countryside Act 1981 (as amended) and as such only receive protection from:
- deliberate killing and injuring;
 - being sold or other forms of trading.
- 5.3.31. **Site Evaluation.** The grassland habitats within the site are suitable to support common reptiles and a small population of Slow Worm was confirmed during survey work in 2019.
- 5.3.32. **Mitigation / Enhancement Opportunities.** Given the presence of reptiles, a reptile mitigation strategy will be required to ensure adverse impacts to Slow Worms can be avoided. It is proposed for this mitigation strategy to take the form of a reptile translocation exercise, with animals relocated from the wider site into the retained area of open space in the south-west of the site (i.e. the 'receptor site').
- 5.3.33. Prior to the commencement of this exercise, it is proposed for exclusion fencing to be erected along relevant site boundaries to prevent any further influx of reptiles during the translocation exercise and subsequent construction phase. This exclusion fencing would additionally serve to delineate the receptor area from the construction site, although the receptor location will be left unfenced along its southern and western extent (allowing for dispersal into the wider countryside). Where necessary, additional fencing may be installed to sub-compartmentalise the site and assist the translocation effort.
- 5.3.34. In order to enhance the holding capacity of the receptor area, it is proposed for a series of three reptile hibernacula to be created on site. The design of these hibernacula are detailed at Appendix 4 and will ensure high quality resting and hibernating opportunities for translocated reptiles.
- 5.3.35. It is envisaged that the reptile translocation will last a minimum of 30 working days, only ceasing once no reptiles are found over a period of 5 consecutive suitable trapping days within each trapping compartment. Suitable artificial

refugia (0.5m² sections of shed felt or similar) will be deployed at a minimum density of 100 per hectare and will be checked twice daily throughout the exercise. Where necessary, localised habitat manipulation may be undertaken to further assist in maximising trapping success.

- 5.3.36. Exclusion fencing will be retained at the site boundary until the completion of relevant construction works, after which all fencing will be removed.
- 5.3.37. Management of the retained open space (receptor area) in the operational phase would give due regard to reptiles. Hay cuts would be undertaken in suitable weather conditions (dry, >10C) during the reptile active season (typically mid-March to October), with a minimum sward height of 10cm maintained. To ensure rougher elements for reptiles, 20% of the sward is proposed to remain uncut each year.
- 5.3.38. The long-term management regime will ensure the retention of suitable reptile habitat in the long-term, ensuring that adverse impacts on reptiles are avoided.

Invertebrates

- 5.3.39. **Site Evaluation.** It is considered that the habitats present within the majority of the site are likely to support a limited range of common invertebrate species, but are unlikely to be of any significant value to protected, rare or notable species.
- 5.3.40. **Mitigation / Enhancement Opportunities.** The retention of a significant area of grassland and the adoption of a management regime to attain an area of species-rich meadow, alongside the provision of new areas of landscaping, will provide a range of new opportunities for invertebrates within the site, particularly nectar/pollen feeding species.
- 5.3.41. Moreover, opportunities exist to realise small-scale enhancements, such as through the provision of bee bricks within south facing boundary walls or through the retention of deadwood piles within areas of open space (the latter also of valuable to common reptiles).

Other Species

- 5.3.42. **Site Evaluation.** It is considered that the site will provide opportunities for a range of small mammal species, however it is unlikely to provide significant opportunities to any other protected or notable species.
- 5.3.43. **Mitigation / Enhancement Opportunities.** In order to maintain dispersal opportunities for a wide range of small mammal species, not least Hedgehog (should they be present in the local area) it is proposed for boundary treatments (including garden fences) to include for 'hedgehog tunnels'. Hedgehog tunnels will comprise small (13cm by 13cm) openings in the base (gravel board) of garden fences, providing a means for this species to migrate between gardens. It is proposed for one hedgehog tunnel to be provided at each aspect of residential gardens (i.e. 3 in total per garden), where levels permit. This will ensure that hedgehogs are able to disperse throughout residential parcels. Such measures will contribute to

the delivery of targets as set out with the Havant Borough Biodiversity Strategy (2019).

6. PLANNING POLICY CONTEXT

- 6.1.1. The planning policy framework that relates to nature conservation in Cannock, Staffordshire, is issued at two main administrative levels: nationally through the National Planning Policy Framework (NPPF); and locally through the Havant Borough Core Strategy and its supporting evidence base.
- 6.1.2. The proposed development will be judged in relation to the policies contained within these documents.

6.2. National Policy

National Planning Policy Framework

- 6.2.1. Guidance on national policy for biodiversity and geological conservation is provided by the NPPF, published in March 2012, revised on 24 July 2018 and updated on 19 February 2019. It is noted that the NPPF continues to refer to further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system provided by Circular 06/05 (DEFRA / ODPM, 2005) accompanying the now-defunct Planning Policy Statement 9 (PPS9).
- 6.2.2. The key element of the NPPF is that there should be “a presumption in favour of sustainable development” (paragraphs 10 to 11). It is important to note that this presumption “does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site” (paragraph 177). ‘Habitats site’ has the same meaning as the term ‘European site’ as used in the Habitats Regulations 2017.
- 6.2.3. Hence the direction of Government policy is clear; that is, the presumption in favour of sustainable development is to apply in circumstances where there is potential for an effect on a European site, if it has been shown that there will be no adverse effect on that designated site as a result of the development in prospect.
- 6.2.4. A number of policies in the NPPF are comparable to those in PPS9, including reference to minimisation of impacts to biodiversity and provision of net gains to biodiversity where possible (paragraph 170).
- 6.2.5. The NPPF also considers the strategic approach that Local Authorities should adopt with regard to the protection, maintenance and enhancement of green infrastructure, priority habitats and ecological networks, and the recovery of priority species.
- 6.2.6. Paragraphs 174 to 176 of the NPPF comprise a number of principles that Local Authorities should apply, including encouraging opportunities to incorporate biodiversity in and around developments; provision for refusal of planning applications if significant harm cannot be avoided, mitigated or compensated for; applying the protection given to European sites to potential SPAs, possible SACs, listed or proposed Ramsar sites and sites identified (or required) as compensatory measures for adverse effects on

European sites; and the provision for the refusal for developments resulting in the loss or deterioration of 'irreplaceable' habitats – unless there are 'wholly exceptional reasons' (for instance, infrastructure projects where the public benefit would clearly outweigh the loss or deterioration of habitat) and a suitable compensation strategy exists.

- 6.2.7. National policy therefore implicitly recognises the importance of biodiversity and that with sensitive planning and design, development and conservation of the natural heritage can co-exist and benefits can, in certain circumstances, be obtained.

6.3. Local Policy

Havant Borough Core Strategy (adopted 2011)

- 6.3.1. The Havant Borough Core Strategy sets the planning framework for the borough until 2026 and includes a number of policies of relevance to ecology and nature conservation at the application site. Policies of relevance are summarised below.
- 6.3.2. *Policy CS11 - Protecting and Enhancing the Special Environment and Heritage of Havant Borough* concerns the protection of valuable sites, habitats and landscapes. Specific reference is made to statutory and non-statutory designated sites of nature conservation importance, as well as habitats of biodiversity value.
- 6.3.3. *Policy CS13 - Green Infrastructure* requires that new development maintains existing green infrastructure and moreover serves to contribute towards wider green infrastructure enhancement and creation.
- 6.3.4. *Policy CS16 – High Quality Design* identifies amongst other matters that developments should demonstrate measures to promote wildlife and biodiversity.
- 6.3.5. *Policy DM8 – Conservation, Protection and Enhancement of Existing Natural Features* identifies that new development will be required to protect and enhance local habitats and features of conservation interest, incorporating them into proposals where relevant.
- 6.3.6. *Policy DM9 – Development in the Coastal Zone* relates specifically to development within the identified 'Coastal Zone' and as such is not relevant to the application site.
- 6.3.7. *Policy DM10 - Pollution* identifies that development will need to avoid detrimental impacts through air, water and light pollution.

Havant Borough Local Plan 2036 – Pre-Submission Draft

- 6.3.8. The Pre-Submission Havant Borough Local Plan 2036 was approved by the Full Council on 30 January and consulted on between 1 February and 18 March 2019. The Pre-Submission Local Plan is the version of the plan which

the council considers to be 'sound' having been informed by extensive research, before it is formally submitted for examination.

- 6.3.9. Although not formally adopted, the pre-draft still carries some weight when considering development within the borough and includes several policies or relevance to biodiversity and nature conservation.
- 6.3.10. Pertinent policies include Policy E14 which concerns the protection and enhancement of the local ecological network, including designated sites, Policy E5 relates to protected species and in particular, Bechstein's bat. Policy E16 relates to the Solent Special Protection Areas (SPAs) and identifies the need for new developments to contribute towards strategic mitigation approaches for the relevant sites. Policy E17 concerns protection of Brent Goose and waders, although it is noted that no identified roosting sites are located within the site or indeed its close proximity. Policy E18 relates to the protection of trees, hedgerows and woodlands, Policy E22 concerns pollution, with Policy E23 specifically relating to air quality.

Havant Borough Biodiversity Strategy (January 2019)

- 6.3.11. The Havant Borough Biodiversity Strategy serves to supersede the previous Havant Borough Biodiversity Action Plan. This document sets out the Borough's strategies for safeguarding and enhancing biodiversity within the Borough.
- 6.3.12. This document provides further information to inform the direction of planning policy and clarifies strategic mitigation requirements in respect of European sites, cross-referencing to the *Solent Recreation Mitigation Strategy (SRMS)* (see below).

Solent Recreation Mitigation Strategy (SRMS)

- 6.3.13. The SRMS was adopted by Havant Borough Council in February 2018 and implemented from April 2018. This strategy has been adopted by several local authorities and sets out a strategic approach to mitigating potential adverse impacts on European sites in the local area.

6.4. Discussion

- 6.4.1. Recommendations have been put forward in this report that would allow the proposals to fully safeguard the existing ecological interest of the application site. Wherever possible, measures to enhance ecological and biodiversity value have been set out. Based on surveys undertaken and assessment, the presence and potential presence of protected species has been given due regard and measures to retain and enhance the value of the site for such species have been put forward.
- 6.4.2. In conclusion, implementation of the avoidance, mitigation and enhancement measures set out in this report would enable the development proposals for the application site to fully accord with planning policy for ecology and nature conservation at all administrative levels.

7. SUMMARY AND CONCLUSIONS

- 7.1. Ecology Solutions were commissioned by Metis Homes in March 2018 to undertake Ecological Assessment work at land to the east of Horndean Road, Emsworth.
- 7.2. Proposals are for small-scale residential development (16 units), alongside access and the provision of open space.

Designated Sites

- 7.3. There are no statutory or non-statutory designated sites of nature conservation interest within or immediately adjacent to the site. There are a number of designated sites present in the local area, including Brook Meadow LNR, Chichester and Langstone Harbours SPA / Ramsar, Solent Maritime SAC and Chichester Harbour Site SSSI).
- 7.4. Impacts on sites of European Importance (alongside their underpinning SSSI's) are considered separately within the 'information for Habitats Regulations Assessment' (iHRA) document submitted separately as part of this planning application. For clarity, this document concludes that, subject to the adoption of appropriate mitigation measures, the proposed scheme would not give rise to potential adverse impacts on the integrity of nearby European Sites, either when considered alone or in combination with other plans or projects.
- 7.5. In regards sites not further designated at European level, it is considered that there would not be any significant effects arising from the development which could not be mitigated through the adoption of an appropriately designed scheme, and through implementation of standard engineering protocols and best practice during the construction period.
- 7.6. The application site includes for a subset of a wider non-statutory designated site known as Land West of Emsworth Recreation Ground SINC. As set out in this report, the ecological value of this site appears to have declined since the site was designated, with the grassland within the application site now comprising a relatively species-poor sward. Appropriate mitigation measures have been put forward, commensurate with the true ecological value of the site, to ensure that the proposals mitigate for quantitative grassland losses and indeed deliver enhancements to the botanical value of the grassland on site post-development.

Habitats

- 7.7. The application site predominantly comprises an area of relatively species-poor semi-improved grassland. Other habitats present within the application site include for boundary hedgerows and trees, alongside areas of scrub and ruderal which are either species-poor in nature (Bramble monoculture) or comprising a mix of non-native species and amenity escapes.
- 7.8. Of these habitats, hedgerows **H1** and **H2**, which form the northern and eastern boundaries of the site are considered to be of higher ecological value in the context of the site, largely on account of the mature trees present.
- 7.9. There will be quantitative losses to areas of rough grassland, as well as minor losses to linear wooded habitat along the site boundary.

- 7.10. In order to mitigate these impacts, and indeed to deliver enhancements post-development, the development proposals seek to retain a significant area of grassland and instigate a long-term biodiversity led management regime of this habitat, ensuring qualitative enhancements going forward. Moreover, the adoption of a suitable landscaping scheme for the wider site, in line with the recommendations set out above, would ensure that the biodiversity value of other habitats present within the site can be retained and indeed enhanced as part of the proposed development.

Faunal Species

- 7.11. The small scale of the site, as well as the relatively limited extent of habitats present, somewhat limits opportunities for protected and notable faunal species.
- 7.12. Specific survey work undertaken by Ecology Solutions in 2018 and 2019 confirmed the presence a small population of Slow Worms, foraging and commuting bats (low levels of activity and dominated by Common Pipistrelle) and a range of common birds. A small number of trees were further identified to support features of potential value to roosting bats, however no evidence of use was recorded during specific surveys.
- 7.13. Specific surveys for Badger found no evidence indicating the presence of this species. Moreover, given the habitats present, the small scale of the site and its context in the local area, the application site is not considered to be of any potential significance to other protected or notable species groups (such as Dormouse or Great Crested Newts).
- 7.14. Where protected or notable faunal species have been recorded, suitable avoidance, mitigation and enhancement strategies have been identified such that adverse impacts can be avoided and long-term opportunities retained or enhanced.

Conclusions

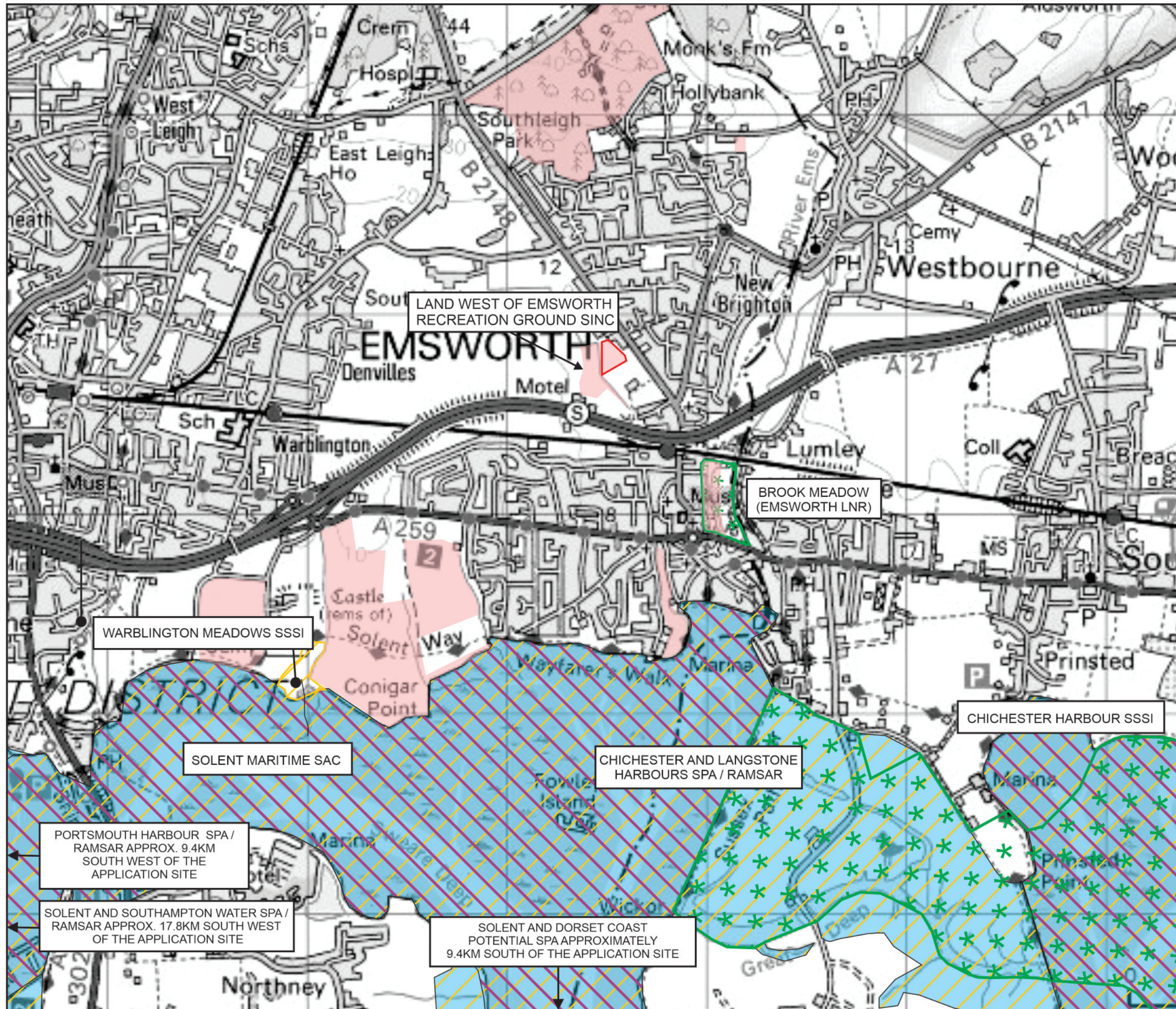
- 7.15. In conclusion, there is no evidence to suggest that there would be any overriding ecological constraints which would prevent the delivery of the proposed development at the site.
- 7.16. With the implementation of the recommendations in this report, it is considered that the proposals would fully conform to relevant national and local policy with respect to nature conservation and biodiversity and further realise an enhancement over the current situation, contributing to local biodiversity targets for the area.

PLANS AND APPENDICES

PLANS

PLAN ECO1

Site Location and
Ecological Designations



KEY:

-  APPLICATION SITE
-  SPECIAL PROTECTION AREA (SPA) / RAMSAR SITE
-  SPECIAL AREA OF CONSERVATION (SAC)
-  SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)
-  LOCAL NATURE RESERVE (LNR)
-  SITE OF IMPORTANCE TO NATURE CONSERVATION (SINC)



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7723: LAND AT HORNDEAN ROAD,
EMSWORTH

PLAN ECO1: APPLICATION SITE
LOCATION IN RELATION TO
RELEVANT DESIGNATED SITES

Rev: A
July 2019

PLAN ECO2

Ecological Features



- KEY:**
- APPLICATION SITE BOUNDARY
 - SPECIES-POOR SEMI-IMPROVED GRASSLAND
 - SCRUB
 - WETTER ELEMENTS
 - HEDGEROW
 - DECIDUOUS TREE
 - TREE WITH BAT POTENTIAL
 - LEYLANDII TREE
 - VEGETATION CLEARED / PRUNED IN SUMMER 2019
 - STREAM
 - BUILDING / STRUCTURE
 - FENCE



7723: HORNDEAN ROAD,
EMSWORTH

PLAN ECO2: ECOLOGICAL
FEATURES

PLAN ECO3

Protected Species



- KEY:**
- SITE BOUNDARY
 - TREE WITH BAT POTENTIAL
 - REPTILE TIN LOCATIONS
 - (1) STATIC DETECTOR LOCATIONS
 - SURVEYOR LOCATIONS (EMERGENCE SURVEY)



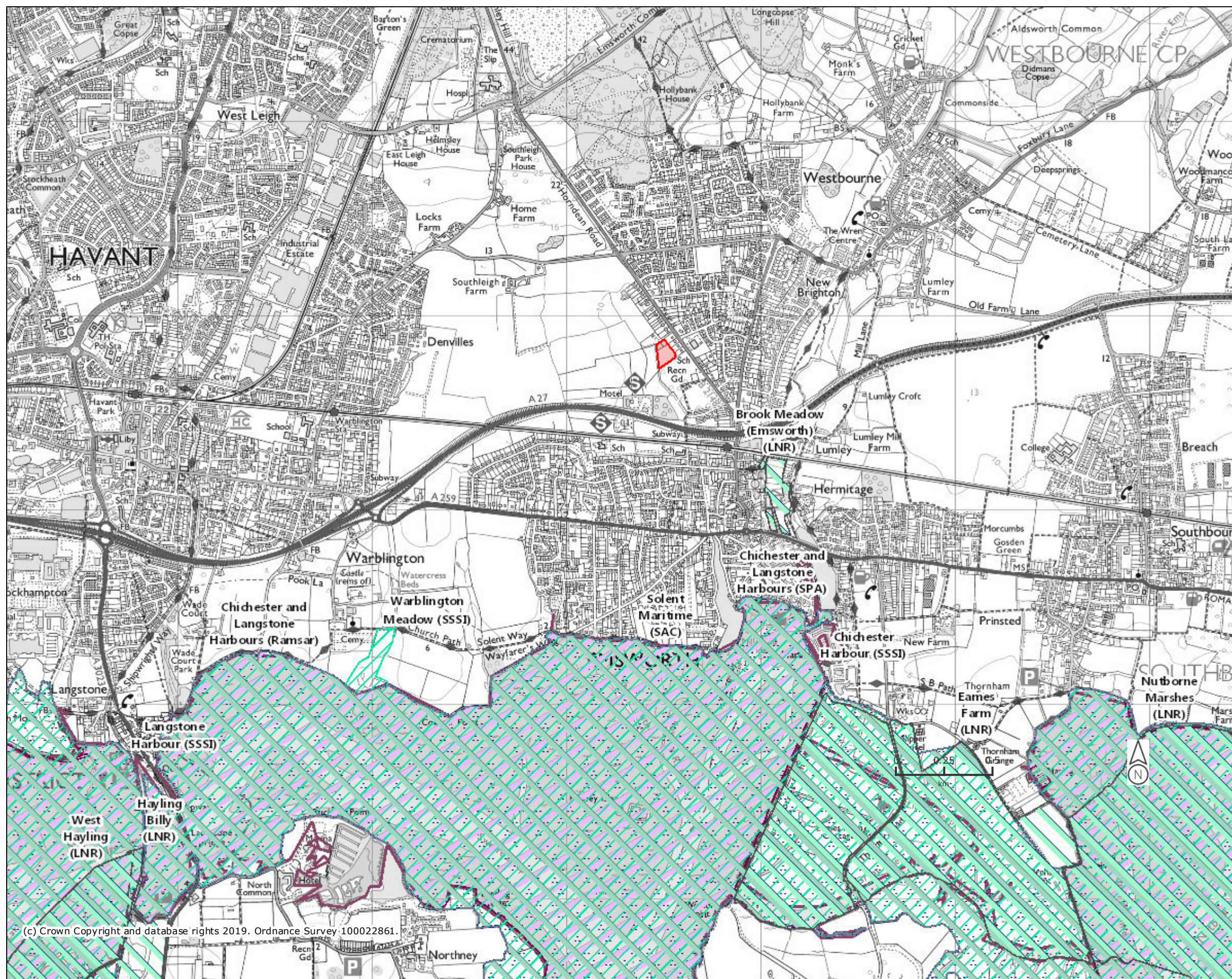
7723: HORNDEAN ROAD,
EMSWORTH

PLAN ECO3: PROTECTED
SPECIES

APPENDICES

APPENDIX 1

Information Obtained From MAGIC



Legend

- Local Nature Reserves (England)
- Ramsar Sites (England)
- Sites of Special Scientific Interest (England)
- Special Areas of Conservation (England)
- Special Protection Areas (England)

Projection = OSGB36

xmin = 470300

ymin = 104200

xmax = 478300

ymax = 107900

Map produced by MAGIC on 31 July, 2019.

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APPENDIX 2

Suitable Examples of Bat Boxes

Bat Boxes

Schwegler bat boxes are made from 'woodcrete' and have the highest rates of occupation of all types of box.

The 75% wood sawdust, clay and concrete mixture is ideal, being durable whilst allowing natural respiration and temperature stability. These boxes are rot and predator proof and extremely long lasting.

Boxes can be hung from a branch near the tree trunk or fixed using 'tree-friendly' aluminum nails.



1FF Bat Box

The rectangular shape makes the 1FF suitable for attaching to the sides of buildings or in sites such as bridges, though it may also be used on trees. It has a narrow crevice-like internal space to attract Pipistrelle and Noctule bats.

Woodcrete (75% wood sawdust, concrete and clay mixture)

Width: 27cm

Height: 43cm

Weight: 8.3kg

2FN Bat Box

A large bat box featuring a wide access slit at the base as well as an access hole on the underside. Particularly successful in attracting Noctule and Bechstein's bats.

Woodcrete construction, 16cm diameter, height 36cm.



2F Bat Box

A standard bat box, attractive to the smaller British bat species. Simple design with a narrow entrance slit on the front.

Woodcrete construction, 16cm diameter, height 33cm.

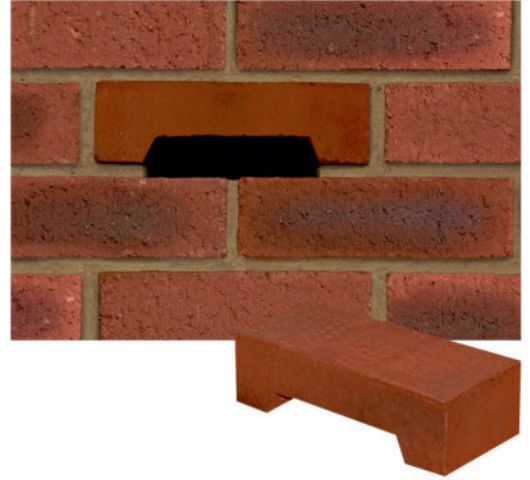
Bat Boxes

Ibstock Bat Box A

A discrete, easy to install single bat brick that allows bats to create a natural home habitat within the cavity of the building

Height: 215mm
Width: 65mm

Please note that this box is designed to be installed flush with a wall.



Enclosed Bat Box B

This bat box is designed specifically for the pipistrelle bats, providing a discrete roosting feature which is available in all brick types.

Bats are contained within the bat box itself, within which several roosting zones are provided.

This feature is maintenance free and ideal for new build & conservation work

Height: 290mm
Width: 215mm

Please note that this box is designed to be installed flush with a wall.

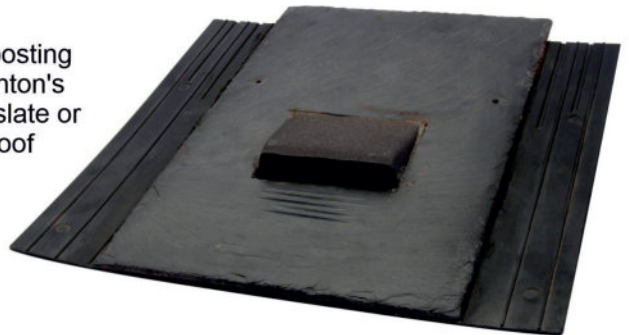


Habibat Bat Access Slate

The Bat Access Slate consists of a standard sized slate, with a capped vent which allows access to roof felt (for roosting Pipistrelles) or roof space (for Serotine, Leisler's, Daubenton's and Barbastelle Bats). We can supply either a standard slate or custom slate that is coloured and sanded to match your roof exactly.

Height: 215mm
Width: 65mm
Depth: 80mm

Habibat Bat Access Slates are made to order and you may need to provide a slate to the manufacturer for customisation. Slates are shipped direct from the manufacturer and will incur a shipping cost of £30-40 (ex VAT) for between one and ten slates. Delivery time is expected to be 2 - 3 weeks.



APPENDIX 3

Suitable Examples of Bird Boxes

Bird Boxes

Schwegler bird boxes have the highest rates of occupation of all types of box.

They are designed to mimic natural nest sites and provide a stable environment with the right thermal properties for chick rearing and winter roosting.

Boxes are made from 'Woodcrete'. This 75% wood sawdust, clay and concrete mixture is breathable and very durable making these bird boxes extremely long lasting.

2GR Nest Box

Because of the special design of the large nesting area and front panel, this box is especially well protected against predators.

Available as shown with three 27mm holes for small tits or with a single oval entrance hole.

Nesting area 14cm x 19cm.



1B Bird Box

This is the most popular box for garden birds and appeals to a wide range of species. The box can be hung from a branch or nailed to the trunk of a tree with a 'tree-friendly' aluminium nail.

Available in four colours and three entrance hole sizes. 26mm for small tits, 32mm standard size and oval, for redstarts.

Bird Boxes

Schwegler bird boxes have the highest rates of occupation of all types of box. They are designed to mimic natural nest sites and provide a stable environment with the right thermal properties for chick rearing and winter roosting. Boxes are made from 'Woodcrete'. This 75% wood sawdust, clay and concrete mixture is breathable and very durable making these bird boxes extremely long lasting.



1B Bird Box

This is the most popular box for garden birds and appeals to a wide range of species. The box can be hung from a branch or nailed to the trunk of a tree with a 'tree-friendly' aluminium nail.

Available in four colours and three entrance hole sizes. 26mm for small tits, 32mm standard size and oval, for redstarts.

2H Bird Box

This box is attractive to robins, pied wagtails, spotted flycatcher, wrens and **black redstarts**.

Best sited on the walls of buildings with the entrance on one side.

Schwegler boxes have the highest occupation rates of all box types. They are carefully designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting. They can be expected to last 25 years or more without maintenance.



2M Bird Box

A free-hanging box offering greater protection from predators. Supplied complete with hanger which loops and fastens around a branch.

With standard general-purpose 32mm diameter entrance hole. Schwegler boxes have the highest occupation rates of all box types. They are carefully designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting. They can be expected to last 25 years or more without maintenance.

Bird Boxes

Ibstock Swift Box

A specially designed Swift nesting feature which can be integrated into the fabric of the building.

Size / Width / Height - 327 x 140 x 140mm.



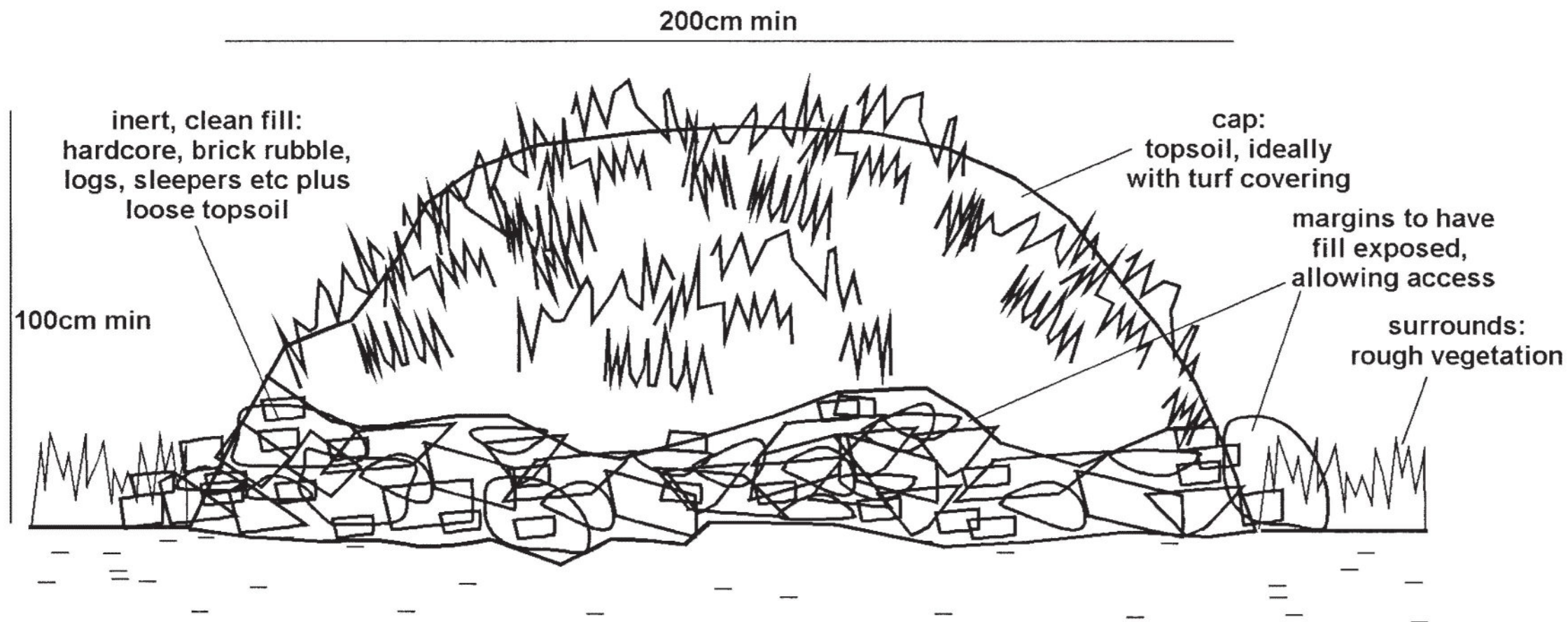
1SP Schwegler Sparrow Terrace

A Woodcrete bird box which allows for several Sparrow pairs to nest in a single location. The box can either be integrated within the fabric of a building or otherwise fitted to the exterior of the building walls.

Brood chamber dimensions: Height: 16cm, Width: 10.5cm, Depth: 15cm

External dimensions: Height: 24.5cm, Width: 43cm, Depth: 20cm

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APPENDIX 4

Proposed Hibernacula Design