

Saltbox, Bognor Regis (1004567)

Ecological Appraisal

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Executive Summary

- i) **Introduction.** Aspect Ecology has been commissioned by Landlink Estates to undertake an ecological appraisal in respect of the proposed development of the site, known as 'Saltbox Field', located west of the A29 Shripney Road, Bognor Regis.
- ii) **Proposals.** The proposals are for the development of the site to provide a new industrial and commercial mixed-use development to be developed over 2 phases, for which a hybrid planning permission is being sought.
- iii) **Survey.** The site was previously surveyed during 2013 as part of the wider Enterprise Bognor Regis Local Development Order (LDO) in order to inform the proposed development. Subsequently, in order to inform the current proposals and given the considerable time that has elapsed since the previous surveys, the site was further surveyed in 2017 by Aspect Ecology Ltd in order to update the previous position.
- iv) **Ecological Designations.** The site itself is not subject to any statutory or non-statutory ecological designations. The nearest statutory such designation is The Brooks LNR, located adjacent to the south and west of the site. No identified non-statutory ecological designations (LWSs) are located within the 1km search area around the site. Accordingly, suitable protection measures are recommended in order to safeguard the LNR designation, whilst all other identified ecological designations are well-separated from the site, such that they are unlikely to be adversely affected by the proposals.
- v) **Habitats.** The site forms a single arable field, along with the associated boundary features. Accordingly, it is dominated by intensively managed arable land, which is of negligible ecological value, albeit the boundary features provide opportunities for wildlife, the majority of which will be retained and enhanced under the proposals, with new areas of native vegetation to be incorporated into the detailed design scheme where possible, whilst safeguards and mitigation measures are recommended where appropriate in order to protect retained boundary habitats and maximise the wildlife value of the site in the long term.
- vi) **Protected Species.** The site offers opportunities for a number of protected and common faunal species, including Water Vole, Badger and common bird species in particular. Accordingly, appropriate mitigation measures are proposed to safeguard these species where appropriate. Long-term opportunities will be maintained, if not enhanced, under the proposals through new landscape planting and provision of specific faunal enhancements.
- vii) **Enhancements.** The proposals present the opportunity to secure a number of ecological enhancement measures at the site, including native landscape planting and additional nesting habitats for birds.
- viii) **Summary.** In summary, the proposals have sought to minimise impacts and subject to the implementation of appropriate avoidance, mitigation and compensation measures, whilst the nature of the site and the proposals are such that it is unlikely that the proposals will result in significant harm to ecological receptors.

1 Introduction

1.1 Background & Proposals

- 1.1.1 Aspect Ecology has been commissioned by Landlink Estates to undertake an ecological appraisal in respect of the site, located west of the A29 Shripney Road, Bognor Regis, centred at OS grid reference SU 938 016 (see Plan 4567/ECO1).
- 1.1.2 The site forms the western part of a wider development area known as 'Enterprise Bognor Regis', for which a Local Development Order (LDO) was previously prepared by Arun District Council. The LDO was subject to statutory consultation in the period 23rd July to 10th September 2015, following which The Council agreed that the LDO be 'made' subject to the resolution of a number of outstanding matters, including transport. To date, the LDO has not been formally 'made' and as such a planning application is required to seek consent for the proposed development. The site was subject to a previous hybrid planning application (Ref: BE/102/17), which was submitted to Arun District Council and subsequently permitted in December 2017, including full planning permission for Class B8 warehouse, fuel island, car parking, access roads, plus engineering works, landscaping and associated works; and outline planning application for the development of employment units, warehouse, hotel, 2 No. drive thru units, public house, gym, plus engineering works, landscaping and associated works. The permitted application was informed by a previous version of this report, dated August 2017.
- 1.1.3 Following the granting of planning permission, in order to address viability issues in relation to the previously permitted scheme, it is proposed to change the mix of uses within the permitted development, and accordingly a revised layout has been developed, for which a new hybrid planning application is proposed. Accordingly, Aspect Ecology has amended this report in order to reflect the revised scheme, for submission to inform the current planning application.
- 1.1.4 The site is proposed for industrial and commercial mixed use development, to be developed in two phases comprising detailed application for a warehouse/distribution unit with associated offices and parking, enhanced landscaping and ecological habitats, highways and access infrastructure, site for new drive-thru restaurants, 2 sites for distribution-business (B1-B8) units which may be subdivided to provide facilities for small businesses, a site for a car showroom and a site for a national food store; along with outline application for two sites for distribution warehouses (Units 1 and 3) (see Appendix 4567/1).

1.2 Site Overview

- 1.2.1 The site is located at the north of Bognor Regis, immediately west of the existing A29 Shripney Road, beyond which is the recently created A259 Felpham Relief Road and associated commercial/employment development within the wider Enterprise Bognor LDO area, along with arable land. South east of the site is an existing caravan and motorhome site, whilst the south west and west of the site are located adjacent to The Brooks (Bersted Brooks) nature reserve and further farmland.
- 1.2.2 The site itself comprises a single arable field and associated boundary features, including hedgerows, ditches, trees and grassland margins.

1.3 Purpose of the Report

- 1.3.1 This report documents the methods and findings of the baseline ecology surveys and desktop study carried out in order to establish the existing ecological interest of the site, and subsequently provides an appraisal of the likely ecological effects of the proposals. The importance of the habitats and species present is evaluated. Where necessary, avoidance, mitigation and compensation measures are recommended so as to safeguard any significant existing ecological interest within the site and where appropriate, opportunities for ecological enhancement are proposed with reference to national conservation priorities and local Biodiversity Action Plans (BAPs).

2 Methodology

2.1 Desktop Study

- 2.1.1 In order to compile background information on the site and its immediate surroundings Sussex Biodiversity Record Centre (SxBRC) was contacted, with data requested on the basis of a search radius of 1km including the site.
- 2.1.2 Information on statutory designations was obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC) database, which utilises data provided by Natural England, including an extended search radius (up to 15km in relation to relevant international level ecological designations).
- 2.1.3 Where information has been obtained from the above sources, this is reproduced at Appendix 4567/2 and on Plan 4567/ECO2, as appropriate.
- 2.1.4 In addition, where available, other resources such as the Woodland Trust database and online mapping/aerial photography were also viewed to identify any records or other information of relevance to the site, whilst the previously submitted ecological information relating to the wider LDO including the site were also reviewed.

2.2 Habitat Survey

Previous survey work

- 2.2.1 Previous habitat and protected species survey work was undertaken at the site by others during 2013 and 2014 as part of the LDO consideration and associated supporting information relating to the wider development area, including the current site boundary as set out within the associated documents.
- 2.2.2 The previously reported surveys included extended Phase 1 survey work, along with specific surveys and associated reports in regard to wintering birds; reptiles; Great Crested Newt; bats; and Water Vole, the results of which are summarised within the '*Enterprise Bognor Regis Proposed Local Development Order Habitat and Ecological Reports*' (Arun District Council, April 2015), which form part of the evidence base associated with the LDO proposal.

Current/update survey work

- 2.2.3 The site was surveyed by Aspect Ecology Ltd over a number of visits during May to July 2017 in order to ascertain the general ecological value of the land contained within the current site boundaries and to update the position with regard to the habitats and ecological features present.
- 2.2.4 The site was surveyed based on standard Phase 1 Habitat Survey methodology¹, 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 through Phase 2 surveys. This method was extended, in line

¹ Joint Nature Conservation Committee (2010) '*Handbook for Phase 1 habitat survey: A technique for environmental audit.*'

with the Guidelines for Preliminary Ecological Appraisal² to record details on the actual or potential presence of any notable or protected species or habitats.

- 2.2.5 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. The nomenclature used for plant species is based on the Botanical Society for the British Isles (BSBI) Checklist.

2.3 Faunal Surveys

- 2.3.1 General faunal activity, such as mammals or birds observed visually or by call during the course of the surveys was recorded. Particular attention was also paid to the potential presence of any protected, rare or notable species, with specific survey work undertaken in regard to bats and Water Vole.

Bats^{3,4}

Visual Inspection Surveys

- 2.3.2 **Trees.** Trees were assessed for their potential to support roosting bats based on the presence of features such as holes, cracks, splits or loose bark. The risk category for roosting bats for each tree was rated based on relevant guidance from BS 8596:2015⁵ as either:

- Known or Confirmed Roost;
- High/medium Risk;
- Low Risk; or
- Negligible/no Risk.

- 2.3.3 Any potential roost features identified were also inspected for any signs indicating possible use by bats, e.g. staining, scratch marks, bat droppings, etc.

Activity Surveys

- 2.3.4 Walked transect surveys were undertaken in May and July 2017 to update the previously recorded surveys and ascertain the level of usage of the site by foraging or commuting bats. This survey method involves walking planned transect routes with key listening points, specifically covering habitats/features with particular potential for commuting or foraging bats. Echometer EM3 and Batbox Duet hand-held electronic detectors (together with MP3 recorders where appropriate) were employed to aid identification of any bats observed. The transect was walked twice, with a 5 minute stop at each listening point.
- 2.3.5 Survey dates, timings and weather conditions experienced during the surveys are set out at Table 2.1 below.

² Chartered Institute for Ecology and Environmental Management (CIEEM) (2013) 'Guidelines for Preliminary Ecological Appraisal.'

³ Based on: English Nature (2004) 'Bat Mitigation Guidelines'

⁴ Bat Conservation Trust (2012) 'Bat Surveys – Good Practice Guidelines'

⁵ Based on: British Standard 8596:2015: Surveying for Bats in Trees and Woodland – Guide

Table 2.1. Walked transect survey details. BF0 = calm, BF12 = hurricane force.

Date	Start & end times & time of sunset	Equipment used	Weather
24/05/2017 (Dusk)	Start time: 20.56 End time: 23.06 Sunset: 20.56	Echo Meter EM3.	Dry, 0% cloud, BF1, 18°C
13/07/2017 (Dusk)	Start time: 21.10 End time: 23.10 Sunset: 21.10	Echo Meter EM3.	Dry, 40% cloud, BF2, 18°C
14/07/2017 (Dawn)	Start time: 03.03 End time: 05.03 Sunrise: 05.03	Echo Meter EM3	Dry, 40% cloud, BF2, 15°C

2.3.6 Automated static detector surveys were also carried out during which a Song Meter 2 (SM2) detector was positioned within the site, between the 24th May and 31st May 2017, to record any bat activity. A SM2 detector was similarly deployed in the same location between 13th July and 18th July 2017. The detector was situated on the western boundary of the site adjacent to the ditch corridor and offsite LNR designation (see Plan 4567/ECO4). The detector was set to switch on approximately 30 minutes before sunset and switch off approximately 30 minutes after sunrise. The weather conditions during the static detector surveys are provided in Table 2.2 below.

Table 2.2. Automated detector survey details.

Survey period	Date	Sunset/ Sunrise Time	Weather Conditions
24/05/2017 (dusk) - 31/05/2017 (dawn)	24 May 2017	20:56 Sunset	Temp max/min 20°C/9°C, Wind Speed 8km/h, dry
	25 May 2017	04:59 Sunrise 20:57 Sunset	Temp max/min 22°C/11°C, Wind Speed 10km/h, dry
	26 May 2017	04:58 Sunrise 20:58 Sunset	Temp max/min 25°C/15°C, Wind Speed 19km/h, dry
	27 May 2017	04:57 Sunrise 21:00 Sunset	Temp max/min 19°C/14°C, Wind Speed 20km/h, dry
	28 May 2017	04:56 Sunrise 21:01 Sunset	Temp max/min 23°C/10°C, Wind Speed 10km/h, apparently dry (5mm rain recorded around 4.20pm)
	29 May 2017	04:55 Sunrise 21:02 Sunset	Temp max/min 20°C/12°C, Wind Speed 10km/h, apparently dry (0.2mm rain recorded around 2.20pm)
	30 May 2017	04:54 Sunrise 21:03 Sunset	Temp max/min 18°C/13°C, Wind Speed 18km/h, dry
	31 May 2017	04:53 Sunrise	Temp max/min 19°C/10°C, Wind Speed 9km/h, dry
13/07/2017 (dusk) - 18/07/2017 (dawn)	13 July 2017	21:10 Sunset	Temp max/min 19°C/11°C, Wind Speed 11km/h, dry
	14 July 2017	05:03 Sunrise 21:09 Sunset	Temp max/min 21°C/12°C, Wind Speed 13km/h, dry
	15 July 2017	05:04 Sunrise 21:08 Sunset	Temp max/min 19°C/12°C, Wind Speed 16km/h, dry
	16 July 2017	05:06 Sunrise 21:07 Sunset	Temp max/min 22°C/16°C, Wind Speed 14km/h, dry
	17 July 2017	05:07 Sunrise 21:06 Sunset	Temp max/min 24°C/16°C, Wind Speed 13km/h, dry
	18 July 2017	05:08 Sunrise	Temp max/min 28°C/16°C, Wind Speed 17km/h, 2mm rain recorded from 7.50pm

Historical weather data sourced from www.wunderground.com.

Analysis of Bat Survey Recordings

- 2.3.7 Bat calls were analysed using BatSound v.3.30© and Analook W v3.7 to verify the species recorded during the survey work. Where recordings could not be reliably attributed to species (such as for *Myotis* species) or where overlaps between otherwise distinguishable species occur (such as in Pipistrelle bat calls around 40kHz or 50kHz) calls were identified to genus level; in the case of calls which could not be distinguished between *Nyctalus* sp. and Serotine, these have been labelled as 'unidentified big bat' species.

2.4 Survey Constraints/Limitations

- 2.4.1 All of the species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of the year, since different species are apparent during different seasons. The current Phase 1 habitat survey was undertaken within the optimal seasonal period for botanical work, whilst the nature of the habitats within the site allowed for the broad habitat types to be identified and for a robust assessment of the intrinsic ecological interest of the site to be made.
- 2.4.2 Attention was paid to the presence of any invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). However, the detectability of such species varies due to a number of factors, e.g. time of year, site management, etc., and hence the absence of invasive species should not be assumed even if no such species were detected during the Phase 1 survey.
- 2.4.3 Any further, specific consideration of individual constraints relating to individual species or issues is set out below, within the body of the text as appropriate.

2.5 Principles of Ecological Evaluation

- 2.5.1 The evaluation of ecological features and resources is based on professional judgement whilst also drawing on the latest available industry guidance and research. The approach taken in this report is based on that described by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2006)⁶. In evaluating ecological features and resources the following key factors are taken into account:
- 2.5.2 Geographic Frame of Reference. The value of an ecological feature or resource is determined within a defined geographical context using the following frame of reference:
- International;
 - National;
 - Regional;
 - County (or Metropolitan);
 - District (or Unitary Authority, City or Borough);
 - Local (or Parish);
 - At the Site level only.

⁶ Chartered Institute of Ecology and Environmental Management (CIEEM) (2006) 'Guidelines for Ecological Impact Assessment in the United Kingdom'

- 2.5.3 Within this frame of reference, certain sites may carry a statutory ecological designation, e.g. Special Area of Conservation (SAC) for internationally important sites or Site of Special Scientific Interest (SSSI) for sites of national importance.
- 2.5.4 Sites of more localised nature conservation importance do not receive statutory protection but may be designated by Local Planning Authorities or other bodies, e.g. Wildlife Trusts. Such non-statutory designations or 'Local Sites'⁷ include Local Wildlife Sites (LWSs) and Sites of Nature Conservation Interest (SNCIs), for example.
- 2.5.5 *Biodiversity Value: Habitats.* In certain cases, the value of a habitat can be measured against known selection criteria, e.g. SAC selection criteria, 'Guidelines for the selection of biological SSSIs' and the Hedgerows Regulations 1997. However, for the majority of commonly encountered sites, the most relevant habitat evaluation will be at a more localised level and based on relevant factors such as antiquity, size, species-diversity, potential, naturalness, rarity, fragility and typicalness (Ratcliffe, 1977). The ability to restore or re-create the habitat is also an important consideration, for example in the case of ancient woodland.
- 2.5.6 Regard should also be given to habitats listed as priorities for conservation in accordance with Sections 41 and 42 of the Natural Environment and Rural Communities Act (NERC) 2006, so called 'Habitats of Principal Importance' or 'Priority Habitats', as the likely effect of a development on such habitats is a potential material consideration within the planning process. Certain habitats may also be listed within regional or local Biodiversity Action Plans (BAPs), albeit the listing of a particular habitat under a BAP does not in itself imply any specific level of importance.
- 2.5.7 *Biodiversity Value: Species.* The assessment of the value of a species is based on factors including distribution, status, historical trends, population size and rarity. With respect to rarity, this can apply across the geographic frame of reference and particular regard is given to populations where the UK holds a large or significant proportion of the international population of a species.
- 2.5.8 Regard should also be given to species listed as priorities for conservation in accordance with Sections 41 and 42 of the NERC Act 2006, so called 'Species of Principal Importance' or 'Priority Species'. Certain species may also be listed within regional or local BAPs, albeit as with habitats the listing of a particular species under a BAP does not in itself imply any specific level of importance.
- 2.5.9 *Secondary or Supporting Value.* Some habitats or features that are of no intrinsic biodiversity value may nonetheless perform an ecological function, e.g. as a buffer. In addition, certain features of the landscape which by virtue of their linear or continuous nature (e.g. rivers) or their function as 'stepping stones' (e.g. small woods) may be of value for the migration, dispersal and genetic exchange of wild species.

⁷ DEFRA (2006) 'Local Sites – Guidance on their Identification, Selection and Management'

3 Ecological Designations

3.1 Statutory Designations

Description

- 3.1.1 The statutory designations of ecological importance that occur within the vicinity of the site are shown on Plan 4567/ECO2 and listed at Table 3.1., below. The nearest statutory designation is The Brooks Local Nature Reserve (LNR) which is located adjacent to the south and west of the site. The LNR includes meadow, reedbeds and ditches, with a number of ponds and extensive recently planted floodplain supporting a range of wildlife.
- 3.1.2 The closest international level ecological designation to the site is the Pagham Harbour Special Protection Area (SPA) and RAMSAR site, which is located approximately 5.7km south west of the site at its closest point and as such is well-separated from the site, including by considerable existing development within Bognor Regis. The site is therefore located outside of the identified zone of influence associated with Pagham Harbour (maximum 5km), whilst the proposals (for commercial/employment use are unlikely to result in any additional recreational use.
- 3.1.1 All other statutory ecological designations are similarly distanced and separated from the site.

Evaluation

- 3.1.2 The site itself is not subject to any statutory ecological designations. All identified international level ecological designations are well removed and separated from the site (which is located outside of the identified zone of influence of all such designations), whilst the nature of the proposals are such that they are unlikely to result in any adverse effects on the integrity of such designations (in line with the previous LDO considerations) and no further consideration or Appropriate Assessment is likely to be required in this regard.
- 3.1.3 The Brooks (Bersted Brooks) LNR is located immediately adjacent to the site. The LNR is located entirely outside of the site boundary, such that it will not be directly affected by the proposals. No direct public access is available from the site into the LNR, nor is any such access proposed, whilst further the proposals are for commercial/employment use such that they are unlikely to result in any significant additional recreational use or disturbance to the LNR. Further, the boundary vegetation and features (including in particular the ditch corridor) will be retained under the proposals (see Appendix 4567/1), whilst considerable buffers of new vegetation (including enhanced wildlife corridors and habitats) are proposed, which will likely ensure the LNR is not adversely affected in the long term. Nonetheless, a number of safeguards and measures are recommended at section 6., below in order to ensure the LNR is suitably safeguarded during the proposed development works .
- 3.1.4 As such, given the nature and scale of the proposals, and separation from all identified statutory nature conservation designations with the exception of The Brooks LNR, subject to the implementation of the measures set out at section 6., in respect of the LNR, the proposals are considered unlikely to adversely affect any such designations.

3.2 Non-statutory Designations

Description

- 3.2.1 The non-statutory designations of nature conservation interest that occur within the vicinity of the site are shown on Plan 4567/ECO2 and listed at Table 3.1., below. The site does not contain any non-statutory designations of conservation interest, whilst no such designations have been identified within a 1km radius around the site.
- 3.2.2 Accordingly, it is clear that the site is well-removed and separated from all identified LWSs, including by existing developed areas.

Evaluation

- 3.2.3 The site itself is not subject to any non-statutory nature conservation designations. All identified non-statutory ecological designations in the surrounding area are well separated from the site, including by existing development and roads. Given the nature and scale of the proposals and separation, all identified non-statutory ecological designations are therefore considered unlikely to be affected.

3.3 Ancient Woodland, Notable Trees and Other Features

Description

- 3.3.1 There are no identified areas of ancient woodland or notable trees within or adjacent to the site. No identified ancient woodland is present within 2km of the site, the nearest identified ancient woodlands to the site being Smith's Copse, which is situated approximately 3.5km north west of the site.

Evaluation

- 3.3.2 On the basis of the available information, it is unlikely that any ancient woodland or other notable habitats will be affected by the proposals.

3.4 Summary

- 3.4.1 In summary, suitable measures and safeguards are set out within this report in order to ensure that the adjacent LNR designation is not adversely affected by the proposals, whilst all other statutory or non-statutory ecological designations are well-separated from the site. Accordingly, subject to the implementation of the measures set out, it is unlikely that any such designations would be adversely affected by the proposals.

Table 3.1: Statutory and non-statutory ecological designations identified within the vicinity of the site.

Designation Name	Designation	Approximate Distance and Direction from Site
<i>Statutory Designations</i>		
The Brooks (Bersted Brooks)	LNR	Adjacent to S and W
Felpham	SSSI	2.4km S
Bognor Reef	SSSI	2.65km S
<i>Non-statutory Designations</i>		
<i>None identified within 1km radius around the site</i>		

4 Habitats and Ecological Features

4.1 Overview

4.1.1 The habitats and ecological features present within the site are described below and evaluated in terms of intrinsic ecological value, such as in relation to the presence of rare plant communities or individual plant species of elevated interest. The likely effects of the proposals on the habitats and ecological features are then assessed. The value of habitats for the fauna they may support is considered separately in section 5 below.

4.1.2 The following habitats/ecological features were identified within/adjacent to the site:

- Arable land;
- Hedgerows and trees;
- Ditches.

4.1.3 The locations of these habitats and features are illustrated on Plan 4567/ECO3 and they are described below.

4.2 Priority Habitats

4.2.1 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places duties on public bodies to have regard to the conservation of biodiversity in the exercise of their normal functions. In particular, Sections 41 of the NERC Act require the Secretary of State to publish a list of habitats which are of principal importance for conservation in England and Wales, respectively. This list is largely derived from the 'Priority Habitats' listed under the former UK Biodiversity Action Plan (BAP), which continue to be regarded as priority habitats under the subsequent country-level biodiversity strategies. Of the habitats within the site, hedgerows are listed as a UK Priority Habitat/Habitat of Principle Importance to Nature Conservation.

4.3 Arable land

Description

4.3.1 The vast majority of the site is dominated by arable land in the form of a single arable field, which forms the entirety of the internal areas, such that other habitats are limited to the field margins. The arable areas are clearly subject to intensive agricultural management (supporting a wheat crop at the time of survey), with weeds apparently sparse and largely limited to Scentless Mayweed *Tripleurospermum inodorum* and Oat *Avena sativa* representing remnants of former cropping. The majority of field margins were recorded to be narrow, (albeit the western margin was noted to extend to a width of approximately 5m) with grassy verges dominated by False Oat-grass *Arrhenatherum elatius* and Cock's-foot *Dactylis glomerata*, and a typical range of common grass and herb species also present, including extending east to the road verge associated with the A29 Shripney Road.

Evaluation

- 4.3.2 The arable land making up the majority of the site is clearly subject to intensive agricultural management, dominated by the planted crops with few weeds noted and narrow margins (which themselves were noted to support common species typical of improved agricultural habitats). This habitat was recorded to support a very limited range of common weed species and accordingly, provides negligible ecological value in the context of the site, with frequent similar habitats within the surrounding areas. Accordingly, the arable habitat is not considered to form an important ecological resource within the wider context than the site itself.

4.4 Hedgerows and Trees

Description

- 4.4.1 Five hedgerows are present within the site boundary, labelled H1 to H5 at Plan 4567/ECO3, whilst a further two hedgerows (H6 and H7) are located adjacent to the western and northern site boundaries. The hedgerows form field boundary features to the arable fields as shown. A summary of the hedgerows is provided at Table 4.1., below.

Table 4.1: Hedgerow descriptions.

	Height, Width & Management	Woody species	Ground Flora	Assoc'd Features	Comments
H1	Gappy, particularly to the south, with scattered young trees replacing the hedge line.	Hawthorn <i>C. monogyna</i> , Ash <i>Fraxinus excelsior</i> , Oak <i>Quercus robur</i> , Horse Chestnut <i>Aesculus hippocastanum</i>	Consistent with grassy road/field margin: dominated by False Oat-grass and Cock's-foot.	None.	Disturbance and light-spill associated with location adjacent to busy road.
H2	3m H x 2m W Dense, box-cut hedgerow.	Hawthorn dominant, with Elder <i>Sambucus nigra</i> and Bramble <i>Rubus fruticosus</i> agg.	Ivy, Bramble.	Two young Alder <i>Alnus</i> sp. trees on the southern side of the hedgerow..	Located offsite, but noted to be overhanging the site boundary fence.
H3	3m H x 2m W Dense, box-cut hedgerow.	Hawthorn dominant, with Elder <i>Sambucus nigra</i> , Spindle <i>Euonymus europaeus</i> , Field Rose <i>Rosa arvensis</i> , Dog Rose <i>Rosa canina</i> and Black Bryony <i>Tamus communis</i> .	Ivy, Bramble.	None	
H4	2-4m H Lacking recent management	Bramble dominant, with Hawthorn, Dog Rose, Blackthorn <i>Prunus spinosa</i> , Traveller's Joy <i>Clematis vitalba</i> and Ivy	Ivy, Bramble	Single semi-mature Ash standard present. Ditch along west (see section 4.5. below)	

H5	Line of mature Ash over hedgerow vegetation – may be better described as line of trees.	Ash, Dogwood <i>Cornus sanguinea</i> , Hawthorn, Elder, Dog Rose, Blackthorn, White Willow <i>Salix alba</i> , Grey Willow <i>Salix cinerea</i>	Stinging Nettle <i>Urtica dioica</i> , Hemlock Water-dropwort <i>Oenanthe crocata</i> , Black Bryony, vegetation consistent with ditch.	Ditch along west (see section 4.5. below)	
H6	Defunct, gappy hedgerow along western (offsite) ditch bank, up to 6m H, with trees. Largely unmanaged.	Hawthorn dominant with Dog Rose, Blackthorn, Oak		Two standard Oak trees. Ditch along eastern (siteward) side (see section 4.5. below)	
H7	5m H x 2-3m W. Unmanaged hedgerow located along northern (offsite) ditch bank. Dense to west, but gappy and defunct towards the east	Hawthorn dominant with Bramble, Elder and Hazel <i>Corylus avellana</i>	Consistent with ditch and grassy field margin.	Single multi-stemmed Ash on southern side of ditch. Ditch along southern (siteward) side (see section 4.5. below)	

4.4.2 In addition, a small area of scrub and trees dominated by Willows *Salix* sp., with tall ruderal vegetation including Stinging Nettle, White Dead-nettle *Lamium album*, Creeping Thistle *Cirsium arvense*, Teasel *Dipsacus fullonum*, Spear Thistle *Cirsium vulgare*, Hemlock *Conium maculatum*, Lesser Burdock *Artium minus*, Charlock *Sinapis arvensis* and Great Willowherb *Epilobium hirsutum* is present at the south of the site, associated with a trampled path supporting Silverweed *Potentilla anserina*, Creeping Buttercup *Ranunculus repens* and Greater Plantain *Plantago major*.

Evaluation

4.4.3 The hedgerows within the site are likely to qualify as a Priority Habitat based on the standard definition⁸, which includes all hedgerows (>20m long and <5m wide) consisting predominantly (≥80%) of at least one native woody species.

4.4.4 The hedgerows present are dominated by common and widespread species, and a number appear largely gappy and unmanaged, such that they appear to represent unexceptional examples of this habitat type, with the eastern boundary vegetation in particular clearly subject to considerable disturbance and light-spill from the adjacent main road corridor. Nonetheless, the hedgerows provide linear corridors and cover for potential use by wildlife, particularly those associated with the western and northern site boundaries and associated ditch corridors (see below).

4.4.5 On this basis, the hedgerows within the site are considered to form an important ecological feature, although given the nature and relatively limited network present within the site itself, are only considered to be of importance at the local level.

4.4.6 With the exception of short sections along the eastern site boundary (which are gappy in nature in any case), the loss of which is required to provide access, the

⁸ Based on: Biodiversity Reporting and Information Group (2011) 'UK Biodiversity Action Plan (BAP) Priority Habitat Descriptions', ed. Ant Maddock

existing hedgerows at the site will be fully retained and enhanced through considerable additional planting of native woody species (see Appendix 4567/1). A number of protection measures are recommended in regard to the retained hedgerows and associated vegetation where appropriate in order to ensure construction works do not encroach upon the retained vegetation (see section 6., below), subject to which the proposals are unlikely to be of particular concern in regard to this habitat type, which will be substantially increased and strengthened as a resource at the site under the proposals.

4.5 Ditches

Description

- 4.5.1 A single ditch (D1) is present along the western and northern site boundaries (see Plan 4567/ECO3). The southern section of the ditch appears to be situated offsite, along the western side of hedgerow H4, apparently extending to form the site boundary itself further north. Ditch D1 is relatively narrow in the south, measuring approximately 0.5m wide and set within steep sided banks of approximately 0.5m height. Further north, the ditch becomes wider and deeper to approximately 5m wide with almost vertical banks of approximately 3-4m height, until it reaches the northern site boundary where it becomes narrower again, to approximately 1m wide. The ditch was recorded to be mostly dry along the southernmost and easternmost sections at the time of most recent survey, becoming wetter to the north and west, supporting an average water depth of approximately 10-20cm. A slow westward flow of water was recorded at the northern boundary.
- 4.5.2 The ditch was recorded to be largely choked by dense bankside and in-channel vegetation comprising Bramble, Great Willowherb, Hemlock Water Dropwort, Hogweed and Common Reed *Phragmites australis* along much of its length, whilst adjacent hedgerows cast shade over the ditch in places resulting in patches of bare ground beneath.

Evaluation

- 4.5.3 The ditch supports a shallow water depth along much of its length, with a relatively high abundance of emergent and bankside vegetation. It is also likely to function as a wildlife corridor in the local context, albeit only limited water was noted to be present along much of the length (including dry sections) at the time of most recent survey. Accordingly, ditch D1 is considered to be of importance at the local level.
- 4.5.4 The ditch will not be directly affected by the proposals, with the opportunity to incorporate enhanced management in order to benefit wildlife use of the corridor. Considerable buffers of new vegetation and habitat areas are incorporated within the proposals, which will likely serve to protect and enhance the ditch corridor in the long term. Nevertheless, recommendations to safeguard the ditch during construction are set out at section 6 below. Subject to the implementation of the protective measures, the proposals are unlikely to result in any significant adverse effects on the ditch, whilst the opportunity exists to result in significant widening and enhancement to the existing value of the ditch under the proposals.
- 4.5.5 Potential for short term effects such as dust deposition, noise disturbance or contaminated run-off exist during construction works, albeit the implementation of

general construction safeguards (as set out at section 6., below) would similarly minimise any risk of such events. Further, the removal of arable management from the site would likely result in a reduction in potential long-term pollution levels to the ditch corridor (and thereby connected offsite habitats) resulting from application (and run-off) of fertilisers, pesticides and sediments.

4.6 Invasive species (Schedule 9, WCA 1981)

- 4.6.1 During the course of the survey work undertaken at the site, no evidence was recorded for the presence of any exotic invasive plant species listed on Schedule 9 Part II of the Wildlife and Countryside Act 1981 (e.g. Japanese Knotweed *Fallopia japonica*) within the site.

5 Faunal Use Of The Site

5.1 Overview

- 5.1.1 During the survey work, general observations were made of any faunal use of the site with specific attention paid to the potential presence of protected or notable species, with specific survey work undertaken in respect of bats, Water Vole and Badger.

5.2 Priority Species

- 5.2.1 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places duties on public bodies to have regard to the conservation of biodiversity in the exercise of their normal functions. In particular, Section 41 of the NERC Act requires the Secretary of State to publish a list of species which are of principal importance for conservation in England. This list is largely derived from the 'Priority Species' listed under the former UK Biodiversity Action Plan (BAP), which continue to be regarded as priority species under the subsequent country-level biodiversity strategies.

- 5.2.2 Where priority species/species of principle importance have been identified within the site as part of the survey work, this is discussed below at the appropriate section.

5.3 Bats

- 5.3.1 **Legislation.** All British bats are classed as European Protected Species under the Conservation of Habitats and Species Regulations 2010 (as amended) and are also listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). As such, both bats and their roosts (breeding sites and resting places) receive full protection under the legislation. If proposed development work is likely to result in an offence a licence may need to be obtained from Natural England which would be subject to appropriate measures to safeguard bats. A number of bat species are also considered S41 Priority Species.

- 5.3.2 **Background Records.** No specific records of bats from within or immediately adjacent to the site were returned from SxBRC as part of the desktop study. A number of records of bat species were returned from the wider search area, with the closest to the site being Common Pipistrelle *Pipistrellus pipistrellus*.

- 5.3.3 The previously reported (2014) bat survey work undertaken as part of the LDO evidence base identified that the site did not contain any suitable roosting features that would be affected under the development proposals, whilst bat activity survey work identified higher levels of bat activity associated with the western site boundary, whilst the eastern boundary (with the A29 Shripney Road) identified to be subject to high levels of artificial lighting and therefore unlikely to be of notable value for foraging bats.

5.3.4 Survey results and evaluation.

Roosts

Buildings

- 5.3.5 The site does not contain any buildings or other structures that could provide roosting opportunities for bat species.

Trees

- 5.3.6 The site contains a very small number of trees, limited to the boundaries, none of which were recorded to support features that could provide potential for use by roosting bats.

Foraging / Commuting

- 5.3.7 The majority of habitats within the site itself are unlikely to offer particular opportunities for foraging or commuting bats, being dominated by intensively managed arable land, with no internal hedgerows or other features likely to provide navigational features or particular foraging opportunities for bats. Nonetheless, the boundary vegetation, particularly along the western site boundary with the offsite LNR designation appears to provide some potential for use as a commuting corridor and foraging resource for use by this group in combination with the offsite habitats. As such, update bat activity survey work was undertaken at the site during 2017 in order to update this position and identify any levels of use and associated key habitats at the site.

Manual walked transect surveys

- 5.3.8 The manual activity survey results summarised at Tables 5.1. to 5.3., below.

Table 5.1: Results of the dusk walked transect on 24th May 2017

Species	Number of Passes Recorded	% of Total Passes Recorded
Common Pipistrelle	18	58.1
Soprano Pipistrelle	12	38.7
Noctule	1	3.2
Total	31	100.0

Table 5.2.: Results of the dusk walked transect on 13th July 2017

Species	Number of Passes Recorded	% of Total Passes Recorded
Common Pipistrelle	16	94.1
<i>Myotis sp.</i>	1	5.9
Total	17	100.0

Table 5.3.: Results of the dawn walked transect on 14th July 2017

Species	Number of Passes Recorded	% of Total Passes Recorded
Soprano Pipistrelle	1	100.0
Total	1	100.0

- 5.3.9 In general, low levels of bat activity were recorded during the manual activity surveys undertaken, with the vast majority of the limited number of passes recorded focussed on the southern site boundary.

Automated Activity Surveys

- 5.3.10 A single static detector was placed out at the site during the surveys, over a number of nights with suitable weather conditions on each occasion. The results of the automated bat activity surveys are set out within Appendix 4553/2 and summarised Tables 5.4., below.

Table 5.4.: Automated static bat survey results summary.

Survey Date	Number of registrations by species#		
	Pip 45	Pip 55	Myotis
24th May 2017	57	5	1
25th May 2017	32	6	0
26th May 2017	13	2	0
27th May 2017	70	12	0
28th May 2017	27	1	0
29th May 2017	146	13	0
30th May 2017	88	13	0
31st May 2017	28	1	0
13th July to 18th July 2017	No bat registrations recorded		
Total registrations	461	53	1
Approximate % of total registrations	89.5	10.3	0.2
Key:			
Myotis- <i>Myotis</i> sp.			
Pip 45- Common Pipistrelle			
Pip 55- Soprano Pipistrelle			
# - Figures shown are the total no. of registrations recorded during the dusk to the proceeding dawn period for each date shown, i.e. a recording 'night' for the 24 th May will be registrations recorded from ~sunset on the 20 th June until ~sunrise on the morning of the 25 th May.			

- 5.3.11 In summary, the automated surveys recorded varying levels of bat activity along the western site boundary, with the use recorded to be dominated almost exclusively by Pipistrelle species and the vast majority of those registrations recorded being Common Pipistrelle.

- 5.3.12 **Evaluation.** As noted above, the site does not contain any internal features that are likely to offer particularly important, specific foraging/commuting habitats for bats, albeit the boundary features (particularly the western and southern boundaries which are removed from light pollution associated with Shripney Road) offer suitable corridors for use by this group. The manual survey work identified extremely low levels of bat activity at the site, whilst the automated surveys recorded a moderate level of bat passes along the most suitable western boundary, albeit predominantly limited to Common Pipistrelle, with only very small numbers of registrations attributed to two other groups (Soprano Pipistrelle and a single pass by *Myotis* species). Given the generally low levels of registrations and species involved it is clear that the internal areas of the site do not represent an important resource for any of these species, albeit the western and southern boundary features providing corridors

used by Pipistrelle bats (this position appears to remain unchanged from the previous survey results). The boundary vegetation (particularly along the western and southern boundaries will be retained and enhanced through the provision of wider vegetated areas and enhanced planting, such that they will continue to provide suitable corridors for use by bats, with additional features including SUDS and new trees and shrubs likely to benefit bats. It is recommended that any proposed new lighting (temporary or permanent) be avoided in the vicinity of the southern and western boundaries in order to ensure these areas continue to provide dark corridors for use by bats and other nocturnal/crepuscular wildlife (see section 6.).

- 5.3.13 As such, subject to the implementation of the measures set out at section 6., below the current proposals are unlikely to result in any significant adverse effects on foraging/commuting bats at the site, whilst further, the proposals offer opportunities to benefit foraging and commuting bats through the provision of strengthened vegetation and additional features associated with the widened site boundary corridors.

5.4 Badger

- 5.4.1 **Legislation:** Badger receives legislative protection under the Protection of Badgers Act 1992. 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. It is the duty of planning authorities to consider the conservation and welfare impacts of development upon Badger and issue permissions accordingly.
- 5.4.2 Licences can be obtained from Natural England for development activities that would otherwise be unlawful under the legislation. Guidance on the types of activity that should be licensed is laid out in the relevant best practice guidance.^{9, 10}
- 5.4.3 **Background Records:** No records of Badger within the vicinity of the site were returned from the data searches, whilst similarly no evidence for any use of the site by Badger was reported from the previous survey work.
- 5.4.4 **Survey results and evaluation.** No Badger setts, latrines or Badger foraging signs were recorded anywhere within the site during the current survey work. However, evidence of Badger presence was recorded within the site, in the form of footprints within the cropped areas in the north east of the arable field. Accordingly on the basis of the current survey results and available evidence, the site does not appear to provide an important resource for Badgers, whilst no current setts would appear likely to be affected by the proposals.
- 5.4.5 Badgers are dynamic animals and as such, should any considerable time elapse (i.e. over a year) prior to commencement of works within the site, it is recommended that the situation in regard to Badgers be subject to update survey work to confirm the continued position and ensure that any measures associated with progression of works at the site are informed by the up to date situation at that time.

⁹ English Nature (2002) 'Badgers and Development'

¹⁰ Natural England (2011) 'Badgers and Development: A Guide to Best Practice and Licensing', Interim Guidance Document

- 5.4.6 In any event, given the identified presence of Badger use of the site, it is recommended that a number of measures and safeguards be put in place during site clearance and construction works to ensure mammals such as this species are fully safeguarded during the works (see section 6. below).

5.5 Water Vole

- 5.5.1 **Legislation.** Water Vole is fully protected under the Wildlife and Countryside Act 1981 (as amended). Water Vole is also a S41 Priority Species. The legislation affords protection to individuals of the species and their breeding sites and places of shelter. There is no provision under the Act for licensing what would otherwise be offences for the purpose of development. Such activities must be covered by the defence in the Act that permits otherwise illegal actions if they are the incidental result of a lawful operation and could not reasonably be avoided.

- 5.5.2 If, despite all reasonable efforts, properly authorised development will adversely affect Water Vole and there are no alternative habitats nearby, Natural England may issue a licence to trap and translocate Water Vole for the purpose of conservation. To issue such a licence, Natural England would need to be assured there is no reasonable alternative to the development and that there are no other practical solutions that would allow Water Vole to be retained at the same location. NE would also require assurance that the actions would make a positive contribution to Water Vole conservation.

- 5.5.3 **Background Records.** Information received from SxBRC includes a number of records of Water Vole within the search area around the site (albeit none of these appear to arise from the site itself), with the nearest such record located at a grid reference situated approximately 50m south of the site at its closest point. Further, the previously reported survey work associated with the LDO information included specific survey work for Water Vole during 2014, which identified a small amount of Water Vole activity along a section of the ditch forming the northern site boundary at that time, along with extensive activity within offsite areas of the wider LDO.

- 5.5.4 **Survey Results and Evaluation.** The habitats within the body of the site are unsuitable for Water Vole, being dominated by arable land. However, ditch D1, located along the western and northern site boundaries, provides some potential opportunities for this species, supporting steep, densely vegetated banks, which provide suitable burrowing and foraging habitat for Water Vole, albeit much of the ditch was recorded to be dry at the time of survey. Nonetheless, given the presence of suitable opportunities and particularly in view of the previous survey results, specific survey work was undertaken during May 2017 to search for evidence of Water Vole and update the previous position.

- 5.5.5 No evidence of Water Vole, in the form of droppings, latrines, burrows or feeding remains were recorded during the 2017 survey work undertaken. As such, (not least given the lack of water along sections of the ditch) it is considered that this species is unlikely to be present within the ditch at the current time, likely due to the limited water levels. Nonetheless, given the previously recorded presence of Water Vole within the site and ditch habitat present, a number of measures and safeguards are set out in regard to this species at section 6., below. Under the proposals, the ditch associated with the site boundaries will be retained, whilst considerable buffers of vegetation will be retained with the development, buffering any potential

disturbance, and potentially creating new opportunities for Water Vole through the incorporation of SUDs features and inclusion of beneficial management of the existing ditch. Subject to the implementation of such measures (see Section 6., below), the proposals are unlikely to adversely affect Water Vole, rather offering the potential to incorporate enhancements for this species in the long term.

5.6 Otter

5.6.1 Legislation. Otter *Lutra lutra* is fully protected under the Wildlife and Countryside Act 1981 (as amended) and is a European Protected Species under the Conservation of Habitats and Species Regulations 2010 (as amended). Such legislation affords protection to individuals of the species and their breeding sites and places of rest (see Appendix 4303/4 for detailed provisions). Otter is also a Priority Species.

5.6.2 Background Records. The information obtained from the background records search does not contain any records of Otter from the site or surrounding search area. The previously reported survey work identified potential opportunities for Otter within the Lidsey Rife corridor, located approximately 800m east of the current site boundary, beyond the A29 Shripney Road, albeit no records of Otter or specific evidence appears to have been recorded during the surveys undertaken.

5.6.3 Results and discussion. The arable land forming the internal areas of the site clearly does not provide suitable habitats for Otter. The ditch corridor does not support sufficient water to provide a significant foraging resource or opportunity for this species, albeit the boundary corridor likely provides cover and a potential movement corridor connected with offsite riparian areas that could be used by this species. Nonetheless, the boundary corridors and ditch will be retained, whilst subject to the implementation of general measures set out in regard to Water Vole and Badger (see Section 6., below), the proposals are unlikely to adversely affect this species.

5.7 Other Mammals

5.7.1 Legislation. A number of mammal species are subject to detailed legislative protection under specific provision or through the provisions of the Conservation of Habitats and Species Regulations 2010 (as amended) and the Wildlife and Countryside Act 1981 (as amended). Further UK mammal species do not receive direct legislative protection relevant to development activities but may receive protection against acts of cruelty (e.g. under the Wild Mammals (Protection) Act 1996). In addition, a number of these mammal species are S41 Priority Species.

5.7.2 Background Records. No specific records of other mammals from within or adjacent to the site were returned during the desktop study. The previous survey reports identify that the site boundary features could be used by Hedgehog *Erinaceus europaeus*, Brown Hare *Lepus europaeus* and Harvest Mouse *Micromys minutus*, albeit no specific evidence for any use by these species appear to have been recorded.

5.7.3 Survey results and evaluation. No evidence of any other protected, rare or notable mammal species was recorded within the site during the current survey work. Other mammal species likely to utilise the site, such as Fox *Vulpes vulpes*, Rabbit *Oryctolagus cuniculus* and Rat *Rattus norvegicus*, remain common in both a local and national context, and as mentioned above do not receive specific legislative

protection in a development context. As such, these species are not a material planning consideration and the loss of potential opportunities for these species to the proposals is of negligible significance.

- 5.7.4 Similarly, in line with the previously reported position, it is likely that other common urban species such as Hedgehog, along with farmland species such as Harvest Mouse and Brown Hare would be present within the surrounding area and could enter the site, in particular the vegetated boundary corridors. These species are included as species of principal importance under the list produced under Section 41 of the NERC Act, albeit they remain common and widespread in England. General construction safeguards set out below at section 6., below will help to prevent any potential harm to individual mammal species that may access the site, subject to which suitable opportunities (including enhanced provision) would continue to remain present at the site under the proposals.

5.8 Amphibians

- 5.8.1 **Legislation.** All British amphibian species receive a degree of protection under the Wildlife and Countryside Act 1981 (as amended). Great Crested Newt is protected under the Act and is also classed as a European Protected Species under the Conservation of Habitats and Species Regulations 2010 (as amended). As such, both Great Crested Newt and habitats utilised by this species are afforded protection. Great Crested Newt is also a S41 Priority Species, as are Common Toad *Bufo bufo*, Natterjack Toad *Epidalea calamita*, and Pool Frog *Pelophylax lessonae*.
- 5.8.2 **Background records.** No specific records of any amphibians from within or adjacent to the site were returned from the desktop study. A small number of records of amphibians were returned from the surrounding search area, including a single record of Great Crested Newt relating to a grid reference situated approximately 570m south of the site.
- 5.8.3 The previously reported survey work associated with the LDO evidence base included specific Great Crested Newt survey work undertaken during 2014 of three ponds situated within 500m of the current site boundary. The previous surveys identified no evidence for any presence of Great Crested Newt at that time, such that this species was concluded to be absent from the site and surrounding areas.
- 5.8.4 **Survey results and evaluation.** Based on a review of available mapping and aerial photography, along with the previously submitted survey information for the wider outline development area, three standing waterbodies appear to be located within 500m of the current site boundaries (in line with the previously reported position) that could provide potential breeding opportunities for Great Crested Newt.
- 5.8.5 The previously submitted survey information included specific survey work (including eDNA analysis) for Great Crested Newt of the offsite pond identified this species to be likely absent at that time. The habitats within the site and surrounding areas remain largely unchanged from the position recorded at the time of the previous surveys such that there is no reason to suggest this species may have colonised since the previous surveys.
- 5.8.6 The majority of the site is dominated by intensively managed arable land, which would be unlikely to provide more than sub-optimal opportunities for Great Crested Newt, with the only other potentially suitable opportunities limited to the boundary

features, which will be retained, protected and potentially enhanced and appear to offer potential terrestrial opportunities for amphibian species including Great Crested Newt. However, given that these habitats are well removed from any identified breeding habitats (based on the previous survey work), it is considered unlikely that Great Crested Newt would have colonised the site since the previous survey work, such that this group does not appear to represent a current constraint on the proposed development.

5.9 Reptiles

5.9.1 **Legislation.** All six species of British reptile are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), which protects individuals against intentional killing or injury. Sand Lizard *Lacerta agilis* and Smooth Snake *Coronella austriaca* receive additional protection under the Conservation of Habitats and Species Regulations 2010 (as amended). All six reptile species are also S41 Priority Species.

5.9.2 **Background records.** No records of any reptiles from the site or immediately adjacent areas were returned from the desktop study, albeit a single record of Slow Worm located at a grid reference situated approximately 150m east of the site was returned within information from SxBRC.

5.9.3 The previously submitted information includes reference to specific reptile survey work undertaken across the wider LDO area, but focussed on the western site boundary during 2014, which recorded no evidence of reptiles within the current site at that time, albeit low numbers of Slow Worm were recorded within Oldlands Farm, beyond the A29 Shripney Road.

5.9.4 **Survey results and evaluation.** The majority of the site is dominated by intensively managed arable land, which would be unlikely to provide suitable opportunities for reptiles, albeit the boundary habitats (in particular the western boundary) provide apparently suitable habitat strips for this group. However, the position appears to remain unchanged from the previously reported situation, with specific surveys undertaken in 2014 identifying no evidence for reptiles within the site at that time, whilst at most the habitats present would likely provide opportunities for small numbers of individuals with any population centred offsite (e.g. within the adjacent LNR).

5.9.5 Further, the boundary areas and vegetation will be retained under the proposals, with considerable additional buffers of vegetation proposed which (if managed appropriately) would likely provide considerable additional opportunities and enhancement for reptiles should they colonise the site.

5.9.6 Nonetheless, in order to ensure this group is suitably safeguarded in the event that any individuals are present within the site, or should any colonise in the future it is recommended that precautionary measures be undertaken during any clearance of vegetated habitats, as set out at section 6, below.

5.10 Birds

5.10.1 **Legislation.** All wild birds and their nests receive protection under Section 1 of the Wildlife and Countryside Act 1981 (as amended) in respect of killing and injury, and their nests, whilst being built or in use, cannot be taken, damaged or destroyed.

Species included on Schedule 1 of the Act receive greater protection and are subject to special penalties.

5.10.2 **Conservation status.** The conservation importance of British bird species is categorised based on a number of criteria including the level of threat to a species' population status¹¹. Species are listed as Green, Amber or Red. Red Listed species are considered to be of the highest conservation concern being either globally threatened and or experiencing a high/rapid level of population decline (>50% over the past 25 years). A number of birds are also S41 Priority Species.

5.10.3 **Background records.** Information returned from the data searches includes a number of records of bird species in the vicinity of the site, including a number of Red Listed species and species of principal importance, albeit there is no reason to suggest any of the records originate from within the current site itself. The previously submitted survey information associated with the LDO evidence base included specific wintering bird survey work, which identified the presence of a number of wintering birds across the wider LDO area.

5.10.4 **Survey results and evaluation.** The habitats present are dominated by intensively managed arable land, which may provide some opportunities for farmland bird species (particularly temporal opportunities associated with crop rotational phase), albeit this habitat type remains common with the surrounding area (including offsite to the north west), whilst the site itself is of limited size in this context and there is no evidence to suggest the site itself is of particularly elevated value at a local level for such bird species.

5.10.5 The boundary habitats in particular provide potentially suitable nesting opportunities for common bird species, albeit the vast majority of these areas will be retained under the proposals, with considerable additional planting and buffer zones providing enhanced opportunities for this group at the site (see Appendix 4567/1). Further a number of safeguards in respect of nesting birds are recommended, as detailed in section 6 below.

5.11 Invertebrates

5.11.1 **Legislation.** A number of invertebrate species are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). In addition, Large Blue Butterfly *Maculinea arion*, Fisher's Estuarine Moth *Gortyna borelii lunata* and Lesser Whirlpool Ram's-horn Snail *Anisus vorticulus* receive protection under the Conservation of Habitats and Species Regulations 2010 (as amended). A number of invertebrates are also S41 Priority Species.

5.11.2 **Background records.** No specific records of invertebrates identified within or immediately adjacent to the site or surrounding search area were returned within information received from SxBRC. Similarly, no indication of the presence of any protected, rare or notable invertebrate species was reported within the previous ecological information across the wider LDO area, albeit the habitats present were considered likely to support a range of common invertebrates.

¹¹ Eaton MA, Brown AF, Noble DG, Musgrove AJ, Hearn R, Aebischer NJ, Gibbons DW, Evans A and Gregory RD (2009) 'Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man' British Birds 102, pp.296-341

- 5.11.3 **Survey results and evaluation.** No evidence for the presence of any protected, rare or notable invertebrate species was recorded within the site, although it is noted that detailed invertebrate species were not undertaken.
- 5.11.4 The site is dominated by intensively managed arable land, which is unlikely to provide particular opportunities for invertebrates, with indeed management likely to include the regular application of pesticides. The boundary features (particularly associated with the west of the site, including the ditch) provide cover and native vegetation that likely provides opportunities for a range of invertebrate species, albeit similar habitats are common in the surrounding area, whilst in any event these areas will be largely retained under the proposals, with considerable new planting within buffer zones, which subject to suitable implementation and management would likely provide considerably enhanced opportunities for invertebrate species. Accordingly, given the habitat composition of the site and lack of adjacent sites designated for significant invertebrate interest, it is considered unlikely that the proposals will result in significant harm to any protected, rare or notable invertebrate populations.

6 Ecological Mitigation Measures and Safeguards

6.1 Mitigation

- 6.1.1 Based on the habitats, ecological features and associated fauna identified within / adjacent to the site, it is recommended that the following mitigation measures (**MM1 to MM6**) are implemented under the proposals. Where required, further, detailed mitigation strategies or method statements could be suitably secured via suitably-worded planning conditions, as recommended by relevant best practice guidance (BS 42020:2013).

General Safeguards and Protective Measures

- 6.1.2 **MM1 – General construction safeguards and working practices.** In order to minimise any potential adverse effects on ecological receptors that may be associated with construction activities at the site, a number of additional general safeguarding measures should be implemented, including the following:

- Any storage of any chemicals and hazardous materials within the site should be in line with best practice guidelines, ensuring that they are kept secure and away from the site boundaries (in particular the boundary ditch corridor) and cannot be accessed or knocked over by roaming animals;
- Fires should only be lit in secure compounds away from boundaries and not allowed to remain lit during the night;
- Unsecured food and litter should not be left within the working area overnight;
- Measures such as temporary bunding and run-off to be put in place to prevent run-off leaving the site during construction works, which could then enter the adjacent ditch corridor;
- Any trenches or deep pits within the site that are to be left open overnight will be provided with a means of escape should mammals enter. This could simply be in the form of a roughened plank of wood placed in the trench as a ramp to the surface. This is particularly important if the trench fills with water;
- Any temporarily exposed open pipes (>150mm outside diameter) should be blanked off at the end of each working day so as to prevent mammals gaining access as may happen when contractors are off-site;
- Any trenches/pits should be inspected each morning to ensure no mammals have become trapped overnight. Should any mammals be found, appropriate measures should be put in place to safeguard individuals;
- The storage of topsoil or other 'soft' building materials in the site should be given careful consideration. Burrowing mammals such as Fox, Badger or Rabbits will readily adopt such mounds. So as to avoid the adoption of any mounds, these should be kept to a minimum and any essential mounds subject to daily inspections with consideration given to temporarily fencing any such mounds to exclude mammals where appropriate;

The Brooks LNR

- 6.1.3 **MM2 – Protection measures.** The Brooks LNR is located offsite adjacent to the west and south of the site. Accordingly, suitable mitigation measures/safeguards are recommended in order to prevent any potential adverse effects on the offsite designation. Specifically, potential appears to exist for run-off or contaminants to enter the LNR via the boundary ditch corridor during the construction phase (albeit in the long term, subject to appropriate drainage proposals, long term pollution

through run-off would likely be improved through the cessation of arable use of the site) as well as potential disturbance, in particular through new lighting provision (temporary or permanent) and dust deposition. As such, it is recommended that in addition to the above general construction measures, additional specific measures be put in place to safeguard the LNR. Such measures would likely include:

- Provision of a detailed permanent drainage scheme for the site including detailed measures to ensure run-off is controlled and suitably treated prior to discharge offsite, preventing any contaminants entering the watercourse (and thereby ensuring no significant adverse effects on the LNR;
- Provision and maintenance of protective fencing at the site boundary to prevent encroachment of construction works towards the boundary vegetation and LNR designation beyond;
- Measures such as temporary bunding and run-off to be put in place to prevent run-off leaving the site during construction works, which could then enter the ditch and lead into the LNR;
- Any new lighting (temporary or permanent) to be avoided in the vicinity of the site boundaries (particularly the western and southern boundaries), with any necessary lighting throughout the site designed sensitively to minimise light spill towards the boundaries to minimise disturbance to crepuscular/nocturnal wildlife using the boundary habitats and offsite areas within the LNR

Boundary hedgerows and vegetation

- 6.1.1 **MM3 – Hedgerow protection.** It is recommended that the retained boundary hedgerows and associated vegetation/trees be protected during construction in line with standard arboricultural best practice (BS5837:2012) or as otherwise directed by a suitably competent arboriculturalist. This will likely involve the use of protective fencing or other methods appropriate to safeguard the root protection areas of retained trees / hedgerows.

Bats/other nocturnal or crepuscular fauna

- 6.1.2 **MM4 - Lighting.** The site boundary corridors (in particular the western and northern boundaries) likely provide some minor potential for use by small numbers of foraging/commuting bats and/or other nocturnal/crepuscular fauna (albeit the previous survey results indicate at best only limited use of these features is currently made). Accordingly, where possible it is recommended that any landscaping scheme incorporate additional planting of native boundary vegetation, particularly associated with (but not limited to) the western and southern site boundaries in order to provide a buffer to the offsite features and provide additional foraging opportunities and resources for bats.
- 6.1.3 Further, any new lighting (including temporary construction lighting) should be kept to a minimum within the western parts of the site, in particular in the vicinity of the boundaries and should incorporate the use of features such as directional fittings and deflectors where lighting is necessary in order to prevent light-spill into the undeveloped offsite areas situated north and east of the site, and ensure that dark corridors and areas remain along the site boundaries (including enhanced buffer zone habitats, which would therefore provide continued suitable and enhanced foraging/commuting routes.

Reptiles

- 6.1.4 **MM5 – Precautionary mitigation.** As set out above, the vast majority of habitats present at the site are currently unlikely to support reptile species, albeit the narrow boundary corridors could be used by small numbers of reptiles (notwithstanding the previous survey results concluding reptile species to be absent from the current site area),.
- 6.1.5 Accordingly, in order to ensure this group is suitably safeguarded in the event individuals may be present within the site, it is recommended that a precautionary approach be put in place in respect of any minor works affecting vegetated and boundary habitats. Measures would likely include management of staged clearance of tall grassland or other vegetation under suitable methodology in order to minimise risk of harm to any individual reptiles that may be present. In the event that any reptiles are encountered at the site at any time, works should cease immediately and a suitably qualified ecologist (e.g. Aspect Ecology) contacted for further advice.

Nesting Birds

- 6.1.6 **MM6 – Nesting Birds: Timing of Works.** To avoid a potential offence under the Wildlife & Countryside Act, clearance of suitable vegetation should be avoided during the bird-nesting season (1st March to 31st August inclusive). If this is not practicable, any potential nesting habitat to be removed should first be checked by a competent ecologist in order to determine the location of any active nests. Any active nests identified would then need to be cordoned off (likely minimum 5m buffer) and protected until the end of the nesting season or until the birds have fledged. These checking surveys would need to be carried out no more than a few days in advance of vegetation clearance.

6.2 Ecological Enhancements

- 6.2.1 The National Planning Policy Framework (NPPF) encourages new developments to maximise the opportunities for biodiversity through incorporation of enhancement measures. The proposals present the opportunity to deliver ecological enhancements at the site for the benefit of local wildlife, thereby making a positive contribution towards the broad objectives of national conservation priorities and the local Biodiversity Action Plans (BAPs). The recommendations and enhancements summarised below are considered appropriate given the context of the site and the scale and nature of the proposals. Through implementation of the following ecological enhancements (**EE1 to EE4**), the opportunity exists for the proposals to deliver a number of ecological benefits at the site.

Habitat Creation

- 6.2.2 **EE1 – New Planting.** The proposals incorporate considerable buffer zones of new ecological planting, in particular associated with the western boundary, including SUDs features and new planting. It is recommended that where practicable, new planting within the site (focussed on these areas) be comprised of native species, including trees and shrubs appropriate to the local area, particularly associated with the existing field boundary features at the south and east of the site. Suitable species are set out within the proposed landscape masterplan (see Appendix 4567/1), which if implemented under detailed design would provide considerable enhancement at

the site over the existing arable areas. **EE2 – SUDS Features.** Where new SUDs or drainage attenuation works are required, the opportunity should be taken to design these features to benefit wildlife whilst fulfilling drainage functions. In particular, where possible, it is recommended that the opportunity to incorporate new pond(s) or wetland features within the areas of open space in the west of the site in line with the proposed landscape masterplan (Appendix 4567/1), with open water and/or marginal aquatic vegetation incorporated if possible to provide additional opportunities for species such as Water Vole in combination with the retained ditch corridor. Where it is possible to incorporate such features, these should be designed based on ecological principals to maximise wildlife value in the long term.

Habitat management

6.2.3 **EE2 - Habitat Management.** It is recommended that all new habitats be managed using ecological principles as part of the general site maintenance regime so as to ensure their ecological interest continues in the long-term. Such management should follow horticultural good practice, whilst including measures such as:

- avoiding the use of pesticides/herbicides, wherever possible;
- any major tree/shrub pruning or vegetation clearance works should take place outside the bird nesting season (i.e. outside of March to August inclusive)
- wildflower grassland areas provided and managed with limited mowing (ideally no more than once or twice per year outside of May to July/August) to promote tall sward, flowering and seed set

Faunal enhancements

6.2.4 **EE3 – Bat/Bird Boxes.** Where possible, it is recommended that a variety of bat and bird boxes be incorporated into the proposed development, for example within the external design of new buildings at the detailed stage, to provide additional opportunities for bats and birds at the site. Examples of suitable boxes/units are included at Appendix 4567/4. Boxes should be ideally located high on the facades of new buildings, within accessible areas incorporated into the structure so that they remain available for use in the long term. Care should be made to ensure, where possible these are placed away from lighting or heavily disturbed areas in order to maximise the potential for use.

6.2.5 **EE4 – Hibernacula and Log Piles.** It is recommended that a number of hibernacula and refugia be incorporated within the areas of open space/ecological buffers associated with the western boundary, which would likely provide additional opportunities for a range of faunal species including in particular invertebrates and herpetofauna (see Appendix 4567/4 for examples).

7 Conclusions

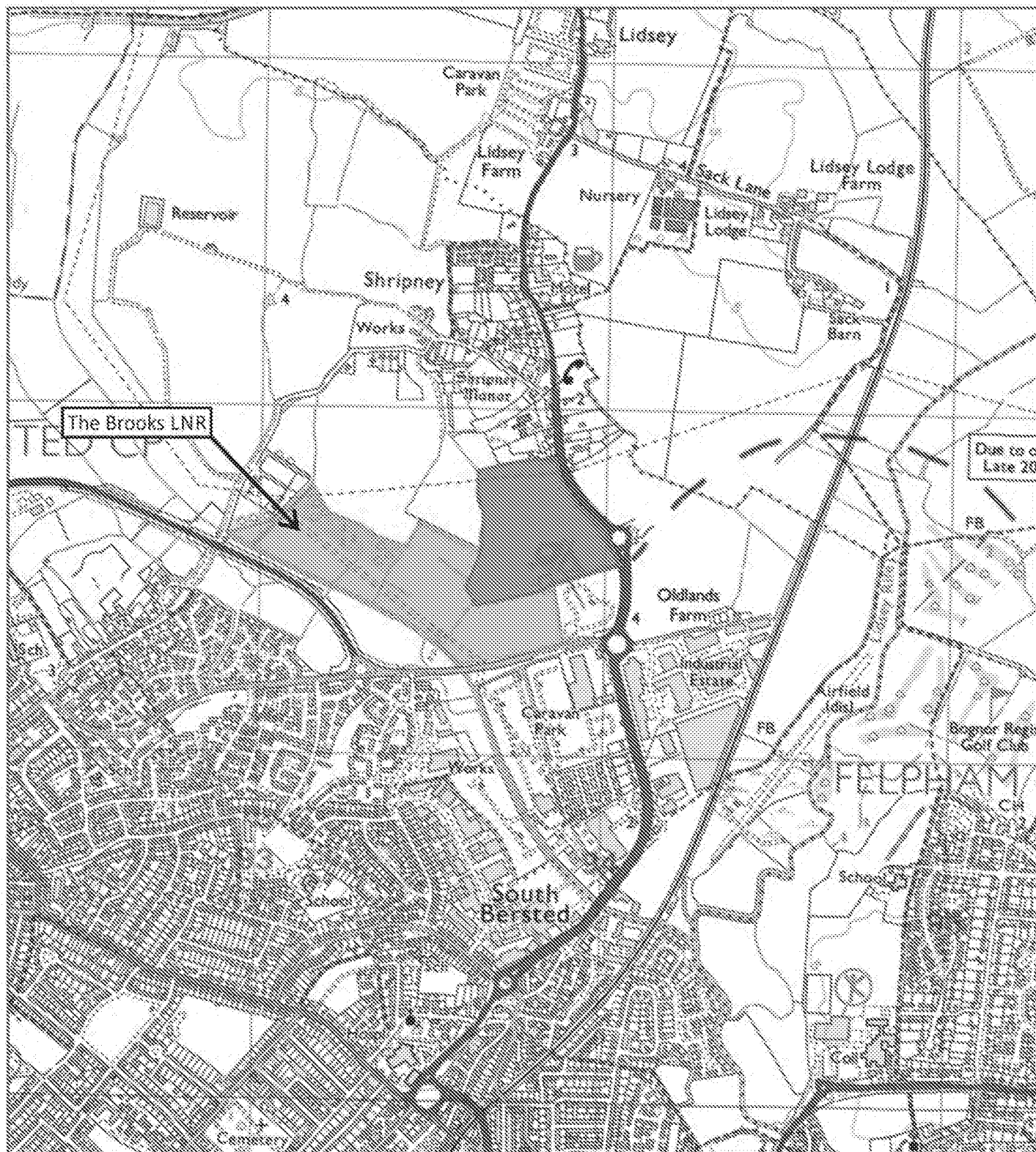
- 7.1.1 Aspect Ecology has carried out an ecological appraisal of the proposed development, based on the results of a desktop study and extended Phase 1 habitat survey, with reference to the wealth of previous ecological survey information available in regard to the site.
- 7.1.2 The available information confirms that no statutory or non-statutory nature conservation designations are present within the site itself. The Brooks LNR is located adjacent to the west and south of the site, and accordingly, a number of safeguards are recommended which will ensure this designation is not adversely affected under the proposals. All other identified ecological designations are well removed and separated from the site. No such designations within the surrounding area are therefore likely to be adversely affected by the proposals.
- 7.1.3 The extended Phase 1 habitat survey has established that the site is dominated by habitats of low to negligible ecological value, with the habitats of greatest ecological value in the form of the boundary vegetation and features, which will be retained and incorporated into larger ecological buffer areas. Accordingly, a number of measures and recommendations are set out in order to ensure the suitable protection (and enhancement) of the retained boundary habitats and associated fauna, whilst new planting at the site is proposed, based on the current plans, which will incorporate native species for the benefit of local wildlife, which will result in significant ecological enhancement.
- 7.1.4 The habitats within the body of the site itself are unlikely to support, or have the potential to support significant use by any protected, rare or notable faunal species, albeit the boundary habitats provide opportunities for use by common nesting birds, whilst evidence of Water Vole has previously been recorded within the boundary ditch. Recommendations and measures are set out in regard to faunal species where appropriate in order to ensure that they are fully safeguarded under the proposals, following which the proposals are unlikely to adversely affect any such species.
- 7.1.5 In conclusion, subject to the implementation of the measures and recommendations set out, the proposals will have sought to minimise impacts on biodiversity and it is considered unlikely that the proposals will result in significant harm to sensitive ecological receptors. Indeed, where appropriate, opportunities are highlighted to provide a number of ecological enhancement measures as part of the proposals.

Plan 4567/ECO1:

Site Location

Plan 4567/ECO2:

Ecological Designations



Key:

- Site Location
- Local Nature Reserve (LNR)

aspect ecology

Aspect Ecology Limited - West House - Sandwalk Business Park
 Manor Way - Bognor Regis - West Sussex - PO22 2JF
 01293 270554 - info@aspectecology.com - www.aspectecology.com

Saltbox, Bognor Regis PROJECT

Ecological Designations TITLE

4567/ECO2 DRAWING NO.

REV

July 2017 DATE



Plan 4567/ECO3:

Habitats and Ecological Features



KEY:

-  Site Boundary
-  Arable
-  Grassland Road Verge
-  Tall Ruderal Vegetation
-  Tree / Scattered Scrub
-  Hedgerow
-  Ditch
-  Photograph Location



aspect ecology

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Norral Way - Banbury - Oxfordshire - OX16 2AF
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Saltbox, Bognor Regis PROJECT

Habitats and Ecological Features TITLE

A567/ECO3 DRAWING NO.

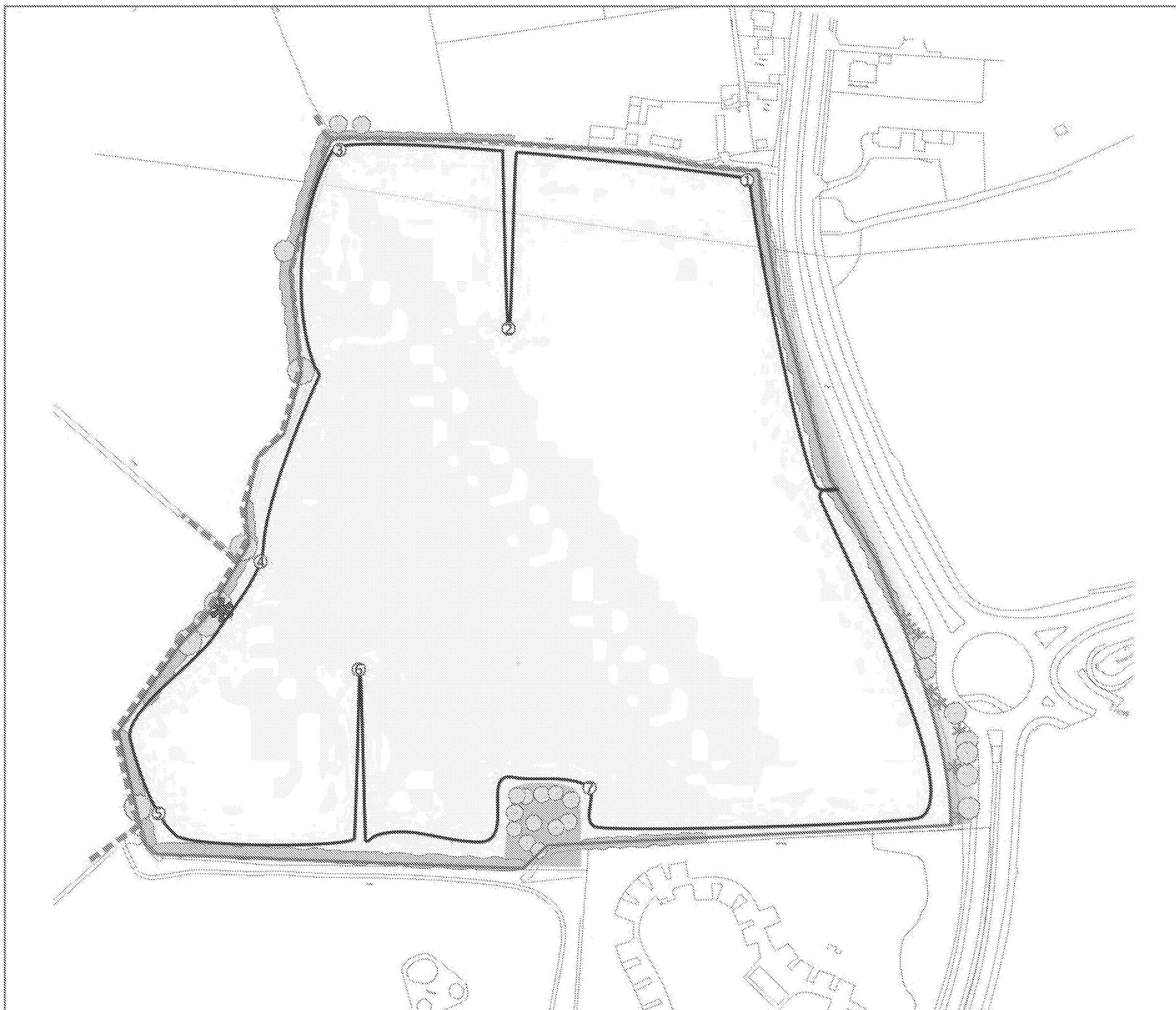
REV.

July 2017 DATE



Plan 4567/ECO4:

Bat Survey Plan



KEY:

-  Site Boundary
 Transect Route
 Stopping Point
 Automated Detector Location

aspect ecology

Aspect Ecology Limited - West Court - Harwood Business Park
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Saltbox, Bognor Regis

Bat Survey Plan 2018

4567/EC04

July 2017 | CASE



Appendix 4567/1:

Proposed Landscape Strategy:

Aspect Landscape Planning Drawing No. 5920/LS/ASP1 Rev D.

Appendix 4567/2:

Desktop Study Information

SxBRC Summary Report

Information obtained from the MAGIC database

Ecological Data Search SxBRC/17/307 - Summary Report

An ecological data search was carried out for land west of A29, Bognor Regis on behalf of Matthew Butters (Aspect Ecology Ltd) on 31/07/2017.

The following datasets were consulted for this report:

	Requested	Radius/buffer size
Designated sites, habitats & ownership maps	Yes	1km
Protected, designated and invasive species	Yes	1km

Summary of results

Sites and habitats

Statutory sites	1 LNR
Non-statutory sites	None present
Section 41 habitats	1 habitat
Ancient and/or ghyll woodland	None present

Protected and designated species

International designations	24 species	140 records
National designations	67 species	1,669 records
Other designations	121 species	2,846 records
Total	131 species	2,865 records
Invasive non-native	22 species	52 records

The report is compiled using data held by Sussex Biodiversity Record Centre (SxBRC) at the time of the request. SxBRC does not hold comprehensive species data for all areas. Even where data are held, a lack of records for a species in a defined geographical area does not necessarily mean that the species does not occur there – the area may simply not have been surveyed.

This summary page may be published.
The full report and maps may not be published or otherwise shared.

The data search report is valid until 31/07/2018 for the site named above.



Legend

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

Site Check Report Report generated on Mon Jul 24 2017
You selected the location: Centroid Grid Ref: SU938016
The following features have been found in your search area:

SSSI Impact Risk Zones - to assess planning applications for likely impacts on SSSIs/SACs/SPAs & Ramsar sites (England)

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW?

- All Planning Applications
- Infrastructure
- Wind & Solar Energy
- Minerals, Oil & Gas
- Rural Non Residential
- Residential
- Rural Residential
- Air Pollution
- Combustion
- Waste
- Composting
- Discharges
- Water Supply
- Notes
- GUIDANCE – How to use the Impact Risk Zones

2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

- Airports, helipads and other aviation proposals.
- Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.
- General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.

[Metadata for magic/SSSI IRZ User Guidance MAGIC.pdf](#)

Site Check Report Report generated on Mon Jul 24 2017
You selected the location: Centroid Grid Ref: SU938016
The following features have been found in your search area:

Local Nature Reserves (England) - points

Reference	1481372
Name	THE BROOKS
Hectares	19.11
Hyperlink	http://www.lnr.naturalengland.org.uk/special/lnr/lnr_details.asp?themaid=1481372

Local Nature Reserves (England)

Reference	1481372
Name	THE BROOKS
Hectares	19.11
Hyperlink	http://www.lnr.naturalengland.org.uk/special/lnr/lnr_details.asp?themaid=1481372

Sites of Special Scientific Interest (England) - points

Name	Bognor Reef SSSI
Reference	1000219
Natural England Contact	WEBSTER - ELAINE
Natural England Phone Number	0845 600 3078
Hectares	39.73
Citation	1004068
Hyperlink	http://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1004068

Name	Felpham SSSI
Reference	1000357
Natural England Contact	WEBSTER - ELAINE
Natural England Phone Number	0845 600 3078
Hectares	0.97
Citation	1003487
Hyperlink	http://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1003487

Sites of Special Scientific Interest (England)

Name	Bognor Reef SSSI
Reference	1000219
Natural England Contact	WEBSTER - ELAINE
Natural England Phone Number	0845 600 3078
Hectares	39.73
Citation	1004068
Hyperlink	http://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1004068

Name	Felpham SSSI
Reference	1000357
Natural England Contact	WEBSTER - ELAINE
Natural England Phone Number	0845 600 3078
Hectares	0.97
Citation	1003487
Hyperlink	http://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1003487

National Nature Reserves (England) - points
No Features found

National Nature Reserves (England)
No Features found

Ramsar Sites (England) - points
No Features found

Ramsar Sites (England)
No Features found

Special Areas of Conservation (England) - points

No Features found

Special Areas of Conservation (England)
No Features found

Special Protection Areas (England) - points
No Features found

Special Protection Areas (England)
No Features found

Biosphere Reserves (England) - points
No Features found

Biosphere Reserves (England)
No Features found



Legend

- Priority Habitat Inventory - Coastal Saltmarsh (England)
- Priority Habitat Inventory - Coastal Sand Dunes (England)
- Priority Habitat Inventory - Coastal Vegetated Shingle (England)
- Priority Habitat Inventory - Maritime Cliffs and Slopes (England)
- Priority Habitat Inventory - Mudflats (England)
- Priority Habitat Inventory - Saline Lagoons (England)
- Saline Lagoons (Wales)
- Saltmarsh (Wales)
- Sand Dunes (Wales)
- Priority Habitat Inventory - Calaminarian Grassland (England)
- Priority Habitat Inventory - Coastal and Floodplain Grazing Marsh (England)
- Priority Habitat Inventory - Good quality semi-improved grassland (Non Priority) (England)
- Priority Habitat Inventory - Lowland Calcareous Grassland (England)
- Priority Habitat Inventory - Lowland Dry Acid Grassland (England)
- Priority Habitat Inventory - Lowland Meadows (England)
- Priority Habitat Inventory - Purple Moor Grass and Rush Pasture (England)
- Priority Habitat Inventory - Upland Calcareous Grassland (England)
- Priority Habitat Inventory - Upland Hay Meadows (England)
- Priority Habitat Inventory - Lowland Heathland (England)
- Priority Habitat Inventory - Mountain Heaths and Willow Scrub (England)
- Priority Habitat Inventory - Upland Heathland (England)
- Priority Habitat Inventory - Limestone Pavements (England)

Projection = OSGB36
xmin = 492900
ymin = 100900
xmax = 494400
ymax = 102200

Map produced by MAGIC on 24 July, 2017.
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Appendix 4567/3:

Bat Activity Survey Data

Bat Activity Survey Results

Automated detector survey results

SD Location 1 (recorded 24th May to 1st June)

Date	Time	Species	Count	Night
2017/05/24	21:53	Pip55	2	1
2017/05/24	21:55	Pip45	1	1
2017/05/24	21:59	Pip45	1	1
2017/05/24	22:22	Pip45	1	1
2017/05/24	22:23	Pip55	1	1
2017/05/24	23:27	Myotis	1	1
2017/05/24	23:53	Pip45	1	1
2017/05/24	23:54	Pip45	3	1
2017/05/25	00:05	Pip45	1	1
2017/05/25	00:21	Pip45	1	1
2017/05/25	00:29	Pip45	1	1
2017/05/25	00:41	Pip45	1	1
2017/05/25	00:43	Pip45	2	1
2017/05/25	00:44	Pip45	1	1
2017/05/25	00:45	Pip45	1	1
2017/05/25	01:32	Pip45	1	1
2017/05/25	01:51	Pip45	2	1
2017/05/25	01:52	Pip45	2	1
2017/05/25	01:55	Pip45	2	1
2017/05/25	01:56	Pip45	1	1
2017/05/25	01:58	Pip45	2	1
2017/05/25	01:59	Pip45	4	1
2017/05/25	02:02	Pip45	1	1
2017/05/25	02:04	Pip45	1	1
2017/05/25	02:05	Pip45	1	1
2017/05/25	02:06	Pip45	1	1

2017/05/25	02:07	Pip45	1	1
2017/05/25	02:47	Pip55	1	1
2017/05/25	03:13	Pip45	1	1
2017/05/25	03:20	Pip45	1	1
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2017/05/25	03:47	Pip45	1	1
2017/05/25	03:56	Pip45	1	1
2017/05/25	03:57	Pip45	1	1
2017/05/25	03:58	Pip45	1	1
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2017/05/25	04:18	Pip45	1	1
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2017/05/25	21:55	Pip45	3	2
2017/05/25	21:56	Pip45	4	2
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2017/05/25	22:03	Pip45	1	2
2017/05/25	22:20	Pip45	1	2
2017/05/25	22:52	Pip45	1	2
2017/05/25	23:12	Pip45	1	2
2017/05/25	23:28	Pip45	1	2
2017/05/25	23:48	Pip45	1	2
2017/05/26	00:18	Pip45	1	2

2017/05/26	00:26	Pip45	1	2
2017/05/26	00:27	Pip45	1	2
2017/05/26	01:18	Pip45	1	2
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2017/05/27	00:53	Pip45	1	3
2017/05/27	01:49	Pip45	1	3
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2017/05/28	01:46	Pip45	1	4
2017/05/28	01:47	Pip45	1	4
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2017/05/28	03:15	Pip45	5	4
2017/05/28	03:16	Pip45	1	4
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2017/05/28	03:46	Pip45	2	4
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2017/05/28	04:08	Pip45	1	4
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2017/05/29	03:19	Pip45	1	5
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2017/05/30	00:27	Pip55	1	6
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2017/05/30	00:33	Pip45	1	6
2017/05/30	00:33	Pip55	1	6
2017/05/30	00:34	Pip45	2	6
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2017/05/30	00:40	Pip55	2	6
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2017/05/30	02:07	Pip45	3	6
2017/05/30	02:08	Pip45	1	6
2017/05/30	02:11	Pip45	2	6
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2017/05/31	02:33	Pip45	4	7
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2017/06/01	03:11	Pip45	2	8
2017/06/01	03:14	Pip45	1	8
2017/06/01	03:15	Pip45	1	8
2017/06/01	03:24	Pip45	1	8
2017/06/01	03:25	Pip45	3	8
2017/06/01	03:26	Pip45	2	8
2017/06/01	03:27	Pip45	1	8
2017/06/01	03:28	Pip45	1	8
2017/06/01	03:39	Pip45	1	8
2017/06/01	03:51	Pip45	2	8

SD Location 2 (recorded 13th July – 18th July)

Date	Time	Species	Count	Night
No Bats Recorded				

Appendix 4567/4:

Faunal enhancement measures

Example bat boxes/units

Example bird boxes

Hibernacula / Log piles

Bat Boxes

Bat Brick House

The Bat Brick House is a cleverly designed bat box with a removable brick front, that provides a permanent roosting site suitable for most British bat species, as an interegral part of the fabric of a building.

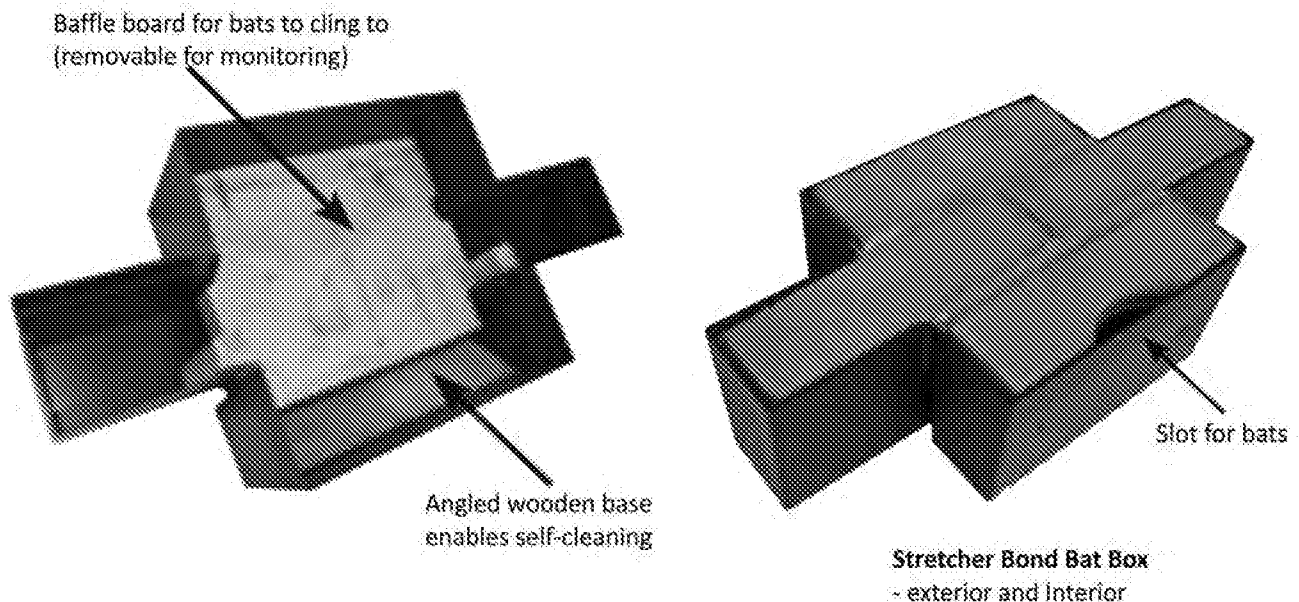
The brick bond of the host wall depends on the type of box, i.e. Stretcher Bond (SB) or Quarter Bond (QB).

The main housing of the box is made out of 100% recycled plastic. The front plate is bonded with slivers of bricks

matching the host wall, one of which will have a slot cut into it for access of bats. The box contains a removable Baffle board for bats to cling to, and an angled wooden base which enables self-cleaning.

Four stainless steel screws hold the removable brick-faced front plate to the box, meaning that the box blends in seamlessly with the host wall.

Available in SB to fit half bond brick work, and QB to fit english bond, old english and flemish bond. Both box types are designed for 3 inch or 75mm courses only.



Bat Boxes

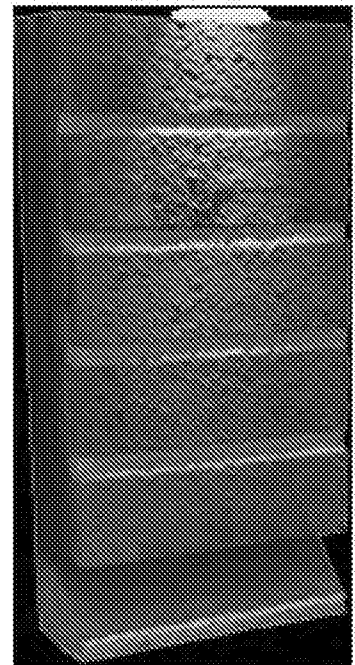
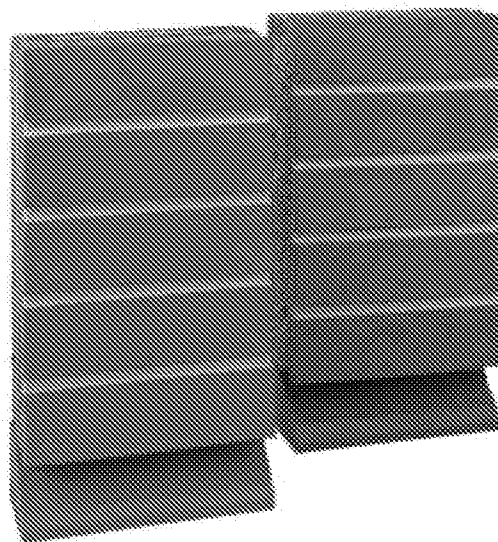
Habibat/Weinerberger Integrated Bat Box

The Habibat/Weinerberger Bat Box has been specifically designed to be incorporated into the fabric of buildings and to encourage the use by species such as Pipistrelles, Natterer's, Whiskered and Brandt's bats which are most commonly found roosting in buildings.

They are larger in size than other similar boxes and can accommodate more bats. The internal structure is not split into chambers and with the unique arrow head internal fixings allows bats to congregate in different areas. The box is available in either Staffordshire Smooth Red or Smooth Blue but can also be manufactured to suit any other brick type.

Dimensions:

102mm (d) x 215mm (w) x 440mm (h).

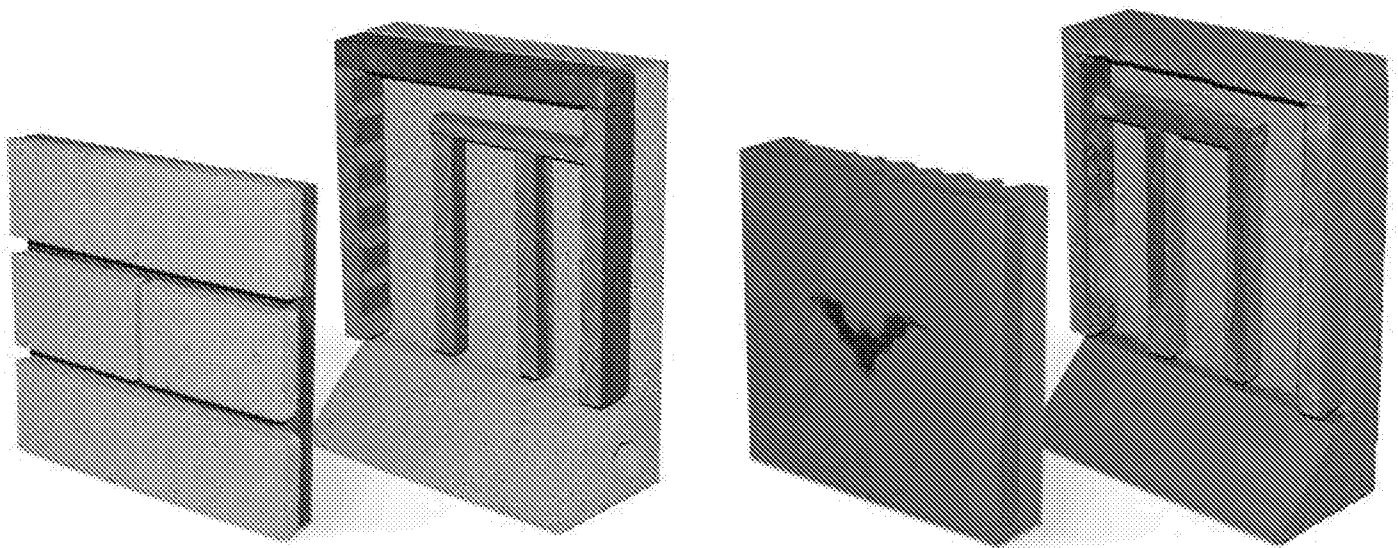


Bat Boxes and Bat Bricks

Ibstock Bat Box

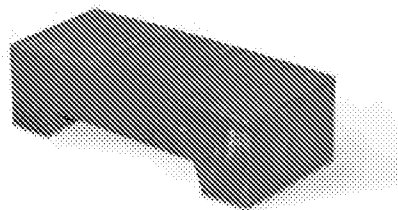
Designed with the Pipistrelle Bat in mind. Available in all brick types and various sizes. A discrete home for bats with several roosting zones created inside the box. Ideal for new build and conservation work. Maintenance free as the entrance is at the bottom.

Dimensions 215 x 215 or 215 x 290mm.



Bat Brick

Bat Access Bricks are specially designed to help provide access to wall cavities or roof spaces of buildings.



Size: 215mm x 65mm

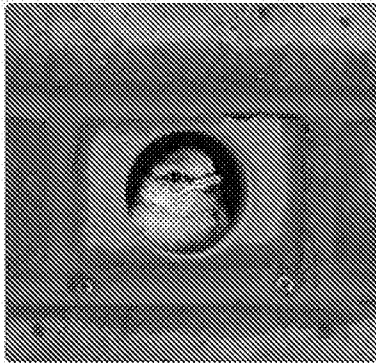
Durability: F2 S2 - Fully Frost Resistant

Bat Access Bricks produced by Ibstock <http://www.ibstock.com>

Bird Boxes

Bird Brick House

The Bird Brick House is a cleverly designed bird box with a removable brick front, that provides a permanent nesting site for hole-nesting birds, as an interegral part of the fabric of a building.



The brick bond of the host wall depends on the type of box, i.e. Stretcher Bond (SB) or Quarter Bond (QB).

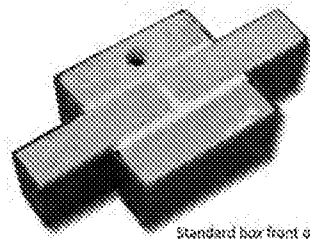
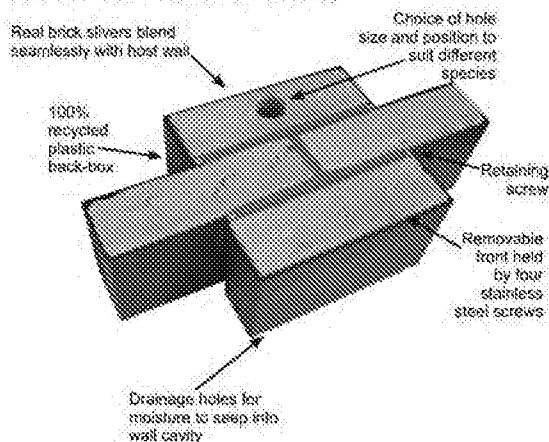
The main housing of the box is made out of 100% recycled plastic. The front plate is bonded with slivers of bricks matching the host wall, one of which will have a bird access hole cut into it (size depending on target bird species).

Four stainless steel screws hold the removable brick-faced front plate to the box, meaning that the box blends in seamlessly with the host wall whilst enabling easy cleaning and monitoring of the box.

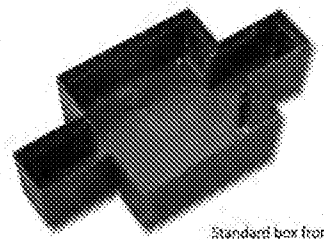
Available in SB to fit half bond brick work, and QB to fit english bond, old english and flemish bond. Both box types are designed for 3 inch or 75mm courses only.

Available in 5 entrance whole sizes:

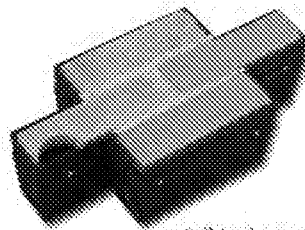
- 25mm for blue, coal and marsh tits
- 28mm for great tits, tree sparrows and pied flycatchers
- 32mm for house sparrows and nuthatches
- 50mm for starlings
- 50mm oval hole for swifts



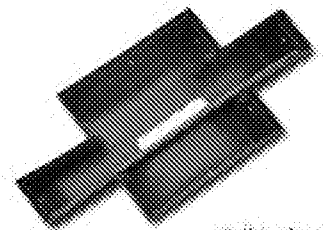
Standard box front on



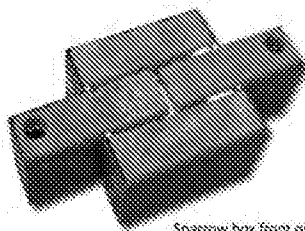
Standard box front off



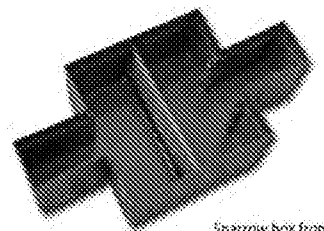
Swift box front on



Swift box front off



Sparrow box front on



Sparrow box front off

Swift Boxes

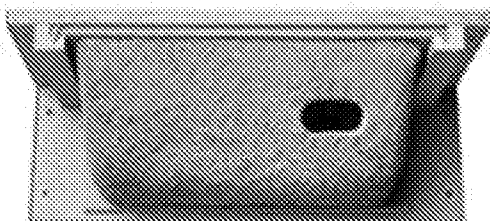
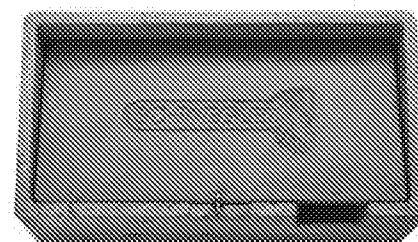
Schwegler Boxes

Schwegler boxes are designed to mimic natural nest sites and provide a stable environment with the right thermal properties for chick rearing and winter roosting. The No 16 and 18 boxes are made from 'Woodcrete', a 75% wood sawdust, clay and concrete mixture which is breathable and very durable, making these bird boxes extremely long lasting.

Schwegler No 16 Swift Box

The design of this box mimics bell tower louvres. It has a removable panel for easy inspection of the nest chamber. The entrance hole should be positioned at least 5m above the ground. Ensure unobstructed access for birds entering or leaving the box. Designed for fixing on or within walls.

Dimensions: 240H x 430W x 220D mm. Weight 11kg



Schwegler No 18 Swift Box

This nest box is suitable for fixing high under the eaves or under the guttering of a building.

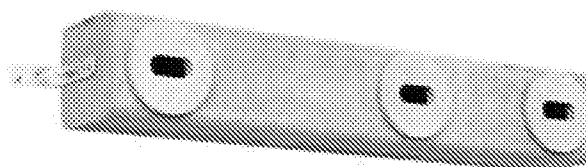
Interior dimensions 14 x 34 x 15 cm.

Exterior dimensions 19 x 50 x 22 cm

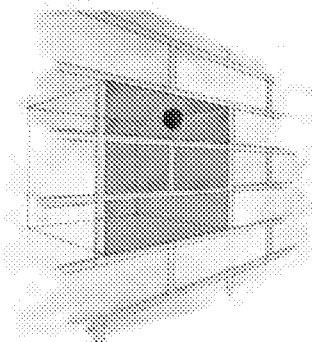
Schwegler No 17 Triple Cavity Swift Box

This box is constructed from plant-fibre based material. It can accommodate 3 pairs of swifts assisting the rapid formation of colonies. It should be sited 6-7m above the ground, near the roof of a building.

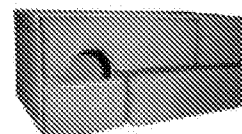
Dimensions: 150H x 900W x 150D mm. Weight 7kg



Bird Brick Box

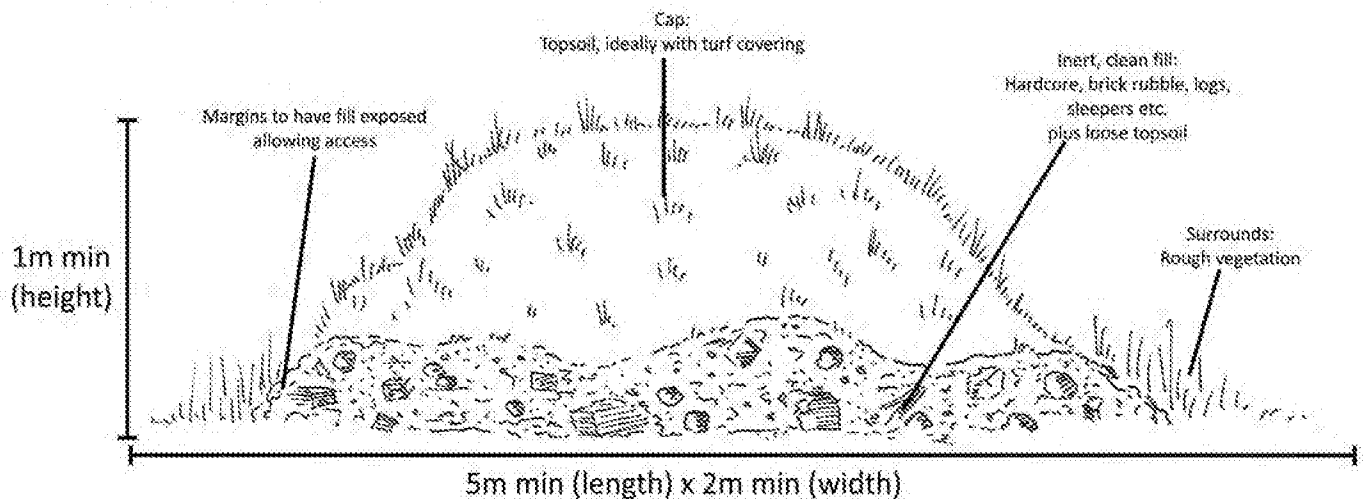


The Swift Brick Box is a large, solid box made of insulating concrete with an internal nesting space, which can be incorporated into the fabric of a building as it is built or renovated. The box is designed to be both unobtrusive and aesthetically pleasing.
Entrance dimensions: 33 x 65 mm



Newt Hibernacula and Refugia

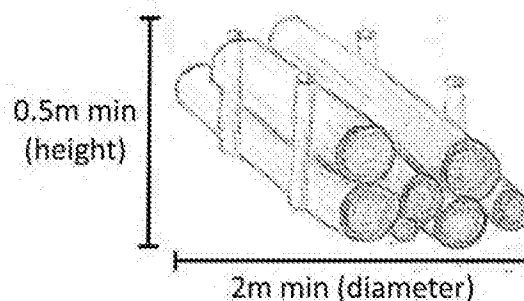
Newt Hibernaculum



The design mimics artificial and natural conditions in which Great Crested Newts have frequently been found over-wintering. Dimensions should not be below 5m length x 2m width x 1m height.

The above illustrated design would be suitable for locating on an impermeable substrate. On free-draining substrates, the design is largely similar but the bulk of the fill is sited in an excavated depression in the ground. Hibernacula should ideally be positioned in suitable terrestrial habitat for newts and outside the normal winter extent of the breeding pond.

Newt Refuge (Log Pile)



Refugia are designed to provide sheltering opportunities for Great Crested Newts. Dimensions should not be below 2m in diameter x 0.5m height. Refugia can be created from wood or brash piles, and should ideally be positioned across a site, both close to and distant from breeding ponds, in suitable terrestrial habitat.

The wood pile illustrated above is created by sinking 4 posts approximately 8-10cm in diameter, at least 20cm into the ground. Logs with bark, of any diameter, should be cut into consistent lengths of 2m and then tightly and nearly stacked into the space between the uprights. The log piles should not be made too high, or the timber may dry out.

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