

LANDFORM BERTSED LIMITED



ECOLOGYSOLUTIONS

Part of the ES Group

NURSERY FIELDS
WEST BERTSED

Ecological Assessment

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CONTENTS

1	INTRODUCTION	1
2	SURVEY METHODOLOGY	2
3	ECOLOGICAL FEATURES	7
4	WILDLIFE USE OF THE SITE	11
5	ECOLOGICAL EVALUATION	20
6	PLANNING POLICY CONTEXT	29
7	SUMMARY AND CONCLUSIONS	32

PLANS

PLAN ECO1	Application Site Location and Ecological Designations
PLAN ECO2	Ecological Features
PLAN ECO3	Bat Survey Plan

APPENDICES

APPENDIX 1	Illustrative Masterplan
APPENDIX 2	Information obtained from MAGIC
APPENDIX 3	Examples of Suitable Bat Boxes

1. INTRODUCTION

1.1. Background & Proposals

- 1.1.1. Ecology Solutions was commissioned by Landform Bersted Ltd in April 2020 to undertake an Ecological Assessment of Nursery Fields, West Bersted (see Plan ECO1), hereafter referred to as the application site.
- 1.1.2. The proposals include development of up to 225 residential dwellings, associated infrastructure, open space and access. An illustrative masterplan has been produced by JTP Ltd and is included at Appendix 1 of this document. The outline application will be parameter based, with site access to be determined in detail. The site access mirrors the proposals in the Chalcroft Nursery outline application.
- 1.1.3. The application site forms part of the West of Bersted Strategic Housing Site SD3, which was allocated in the Arun District Council Local Plan in 2018. For clarity, applications for SD3 will be coming forward separately and will be compatible with the application site proposals.

1.2. Application Site Characteristics

- 1.2.1. The application site is located to the west of Bersted. The vast majority of the application site supports arable land, with other habitats including species-poor grassland, ditches and boundary treelines / hedgerows.
- 1.2.2. The application site is bordered by extensive arable land to the west, with existing development (associated with the town of Bersted) situated to the east. A cemetery and nursery are also present to the immediate south, beyond which lies more residential development.

1.3. Ecological Assessment

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

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

enhancement of the application site, in accordance with relevant planning policy.

2. SURVEY METHODOLOGY

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

2.2. Desk Study

2.2.1. In order to compile background information on the application site and its immediate surroundings, Ecology Solutions contacted the Sussex Biological Records Centre (SxBRC) in 2020. The records received are collated data from a number of sources and provide information on an array of notable species and habitats (covering a 3km² search radius from the application site). Information regarding designated sites is shown where appropriate on Plan ECO1.

2.2.2. Further information on designated sites from a wider search area was also obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC)² database. This information is reproduced at Appendix 2 and where appropriate on Plan ECO1.

2.3. Habitat Survey Methodology

2.3.1. A habitat survey was initially undertaken in November 2016 to ascertain the general ecological value of the land contained within the boundaries of the application site and to identify the main habitats and associated plant species, with notes on fauna utilising the application site.

2.3.2. An updated habitat survey was then undertaken in April 2020 to allow better seasonal coverage and ascertain if the application site had undergone any material changes since previous surveys.

2.3.3. The application site was surveyed based around extended Phase 1 survey methodology³, as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail.

2.3.4. Using the above method, the application site was classified into areas of similar botanical community types, with a representative species list compiled for each habitat identified.

2.3.5. All of the species that occur in each habitat would not necessarily be detected during survey work carried out at any given time of the year, since different species are apparent at different seasons.

² <http://magic.defra.gov.uk>

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

However, given the habitats present, and that the survey was undertaken at an optimal time of year, it is considered that an accurate and robust assessment has been made.

2.4. Faunal Survey

- 2.4.1. General faunal activity observed during the course of the survey was recorded, whether visually or by call. Specific attention was paid to the potential presence of any protected, rare, notable or Priority Species. In addition, specific surveys were undertaken for bats, Badgers *Meles meles*, Great Crested Newts *Triturus cristatus* and reptiles.
- 2.4.2. **Bats.** Initial bat surveys were undertaken across the application site and wider area in April 2020 to assess the potential for roosting bats within trees. The work was undertaken by an experienced bat worker and aimed to establish the likelihood of presence / absence of bats.
- 2.4.3. Field surveys were undertaken with regard to best practice guidelines issued by Natural England (2004⁴), the Joint Nature Conservation Committee (2004⁵) and the Bat Conservation Trust (2016⁶).
- 2.4.4. Assessments of the buildings / structures were also undertaken in April 2020 in order to search for signs of any use by bats and to identify any potential access points for bats. Binoculars were used to inspect any inaccessible areas more closely.
- 2.4.5. The main requirements for a winter / hibernation roost site is that it maintains a stable (cool) temperature and humidity. Sites commonly utilised by bats as winter roosts include cavities / holes in trees, underground sites and parts of buildings. Whilst different species may show a preference for one of these types of roost site, none are solely dependent on a single type.
- 2.4.6. The probability of a building being used by bats as a summer roost site increases if it:
- is largely undisturbed;
 - dates from pre 20th Century;
 - has a large roof void with unobstructed flying spaces;
 - has access points for bats (though not too draughty);
 - has wooden cladding or hanging tiles; and
 - is in a rural setting and close to woodland or water.
- 2.4.7. Conversely, the probability decreases if a building is of a modern or pre-fabricated design / construction, is in an urban setting, has

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

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

⁶ Collins, J. (Eds.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd Edition). Bat Conservation Trust, London.

small or cluttered roof voids, has few gaps at the eaves or is a heavily disturbed premises.

2.4.8. In addition, all trees at the application site were assessed for their potential to support roosting bats in April 2020. For a tree to be classed as having some potential for roosting bats it must usually have one or more of the following characteristics:

- Obvious holes, e.g. rot holes and old woodpecker holes;
- Dark staining on the tree below a hole;
- Tiny scratch marks around a hole from bats' claws;
- Cavities, splits and/or loose bark from broken or fallen branches, lightning strikes etc.; and
- Very dense covering of mature Ivy *Hedera helix* over trunk.

2.4.9. Evening activity surveys were undertaken on a monthly basis between April and September 2020 to ascertain whether the application site supports any features of potential importance for foraging and commuting bats.

2.4.10. The evening activity bat surveys were conducted from 15 minutes before sunset to approximately 2 hours after sunset. Surveyors utilised EchoMeter2 (EMT2) bat detectors to aid identification of bats and record data. Surveyors walked transects in order to encompass all features of potential value to foraging and commuting bats, including hedgerows, treelines and scrub. All bat data recorded was subsequently analysed using Kaleidoscope bat sound analysis software.

2.4.11. EchoMeter4 (EM4) static detectors were also deployed on a monthly basis (i.e. following each activity survey). Detectors were deployed for a minimum period of five consecutive nights in strategic locations to ascertain longer term data regarding the use of the site by foraging and commuting bats.

2.4.12. **Badgers.** Surveys were undertaken to search for evidence of Badgers in November 2016 and April 2020 and comprised two main elements. The first of these was a thorough search for evidence of Badger setts. For any setts encountered each sett entrance would be recorded and plotted, even if the entrance appeared disused. The following information was recorded if appropriate:

- i) The number and location of well used or very active entrances; these are clear of any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently.
- ii) The number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance.
- iii) The number of disused entrances; these have not been in

use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be and the remains of the spoil heap.

- 2.4.13. Secondly, evidence of Badger activity, such as well-worn paths and run-throughs, snagged hair, footprints, latrines and foraging signs, was also searched for in order to build up a picture of the use of the application site by Badgers.
- 2.4.14. **Great Crested Newts.** The application site supports a number of ditches, most of which were recorded as being dry during survey work in 2016.
- 2.4.15. An updated assessment of the application site in 2020 found that two of these ditches were holding a significant amount of water and were considered to offer potential opportunities for breeding amphibian species (including Great Crested Newts *Triturus cristatus*). Moreover, these ditches are part of a wider ditch network which extends to the north and west of the application site. An assessment of these off-site ditches in 2020 found only two to be potentially suitable to support Great Crested Newts.
- 2.4.16. In order to ascertain the presence or absence of Great Crested Newts, an environmental DNA (eDNA) sample survey was undertaken of two ditches within the application site, **D1** and **D2**, and two non-flowing ditches in the wider area in April 2020, based on methodology set out by the Freshwater Habitats Trust, which is endorsed by Natural England.
- 2.4.17. The eDNA survey involved collecting 20 samples of 40ml of water at equally spaced locations around the perimeter of the waterbody (where access was available). These 20 samples were then mixed in a plastic sample bag to form a single amalgamated sample of the water in the pond. The amalgamated sample was mixed thoroughly to ensure any DNA present does not collect at the base of the sample bag.
- 2.4.18. 15ml of water was taken from the amalgamated sample and added to 35ml of ethanol within a sample tube, to preserve any DNA present. The sample tubes were then shaken vigorously to mix the water sample and ethanol thoroughly and prevent degradation of any DNA. This technique was repeated six times, using water from the amalgamated sample, such that six sample tubes are filled.
- 2.4.19. The six sample tubes were then sent to Sure Screen Scientifics to be analysed using Polymerase Chain Reaction (PCR) amplification techniques. The analysis involves producing DNA sequences that verify the taxonomic assignation of amplified DNA signals.
- 2.4.20. Each sample is run in 12 replicates. The results are reported as the proportion of these 12 replicate samples that are successfully amplified, indicating whether Great Crested Newt DNA is present (e.g. 1/12, 8/12).

- 2.4.21. **Reptiles.** The site supports some (albeit limited) areas of suitable reptile habitat. As such, specific surveys to identify the presence or absence of reptiles within the application site were undertaken between April and July 2020.
- 2.4.22. A total of 175 'tins' (0.5 x 0.5 metre squares of heavy roofing felt which are often used as refuges by reptiles) were distributed throughout all suitable reptile habitat within the application site.
- 2.4.23. These tins were left in place for 19 days to 'bed in' and subsequently surveyed for reptiles beneath or upon the tins during suitable weather conditions. The tins provide shelter and heat up quicker than the surroundings in the morning and can remain warmer than the surroundings in the late afternoon. Being ectothermic (cold blooded), reptiles use them to bask and raise their body temperature which allows them to forage earlier and later in the day.
- 2.4.24. Suitable weather conditions to carry out surveys are when the air temperature is between 9 and 18°C. Heavy rain and windy conditions were avoided. A total of seven surveys were undertaken during suitable weather conditions. All surveyors were mindful to record all reptiles present on top of and under the tins, in addition to any observed when walking through the suitable habitats between the tins. All reptiles observed were recorded by the surveyor.

Survey Constraints

- 2.4.25. It should be noted that initial reptile surveys were the subject of sabotage from local residents. As such, an additional two surveys were undertaken in July 2020 to compensate for failed efforts. As such, it's considered a robust reptile survey effort has been undertaken.

3. ECOLOGICAL FEATURES

3.1. The application site was subject to an ecological survey in 2016, and a further updated survey April 2020. The vegetation present enabled the habitat types to be satisfactorily identified and an accurate assessment of the ecological interest of the habitats to be undertaken.

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

- Arable Fields;
- Grassland;
- Hedgerows/Trees;
- Ditches; and
- Bare Ground.

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

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

3.5. Arable Fields

3.5.1. The vast majority of the application site comprises two large arable fields. At the time of survey, the eastern field (**F1**) was hosting Rapeseed crop, whilst the western field (**F2**) was recorded as being mostly bare, likely having recently turned fallow.

3.5.2. As is typical of arable fields in crop production, **F1** supported a monoculture of vegetation to the exclusion of everything else. **F2** was becoming colonised by opportunistic species such as Creeping thistle *Cirsium arvense*, Ragwort *Jacobaea vulgaris* and Broad-leaved willowherb *Epilobium montanum*.

3.6. Grassland and Ruderal

3.6.1. Most of the grassland present within the application site comes in the form of semi-improved field margins associated with fields **F1** and **F2**. These grassland margins range from between 1m – 5m wide and support a limited range of species, all of which are typical of nutrient rich habitats. Species recorded in the field margins include False-oat grass *Arrhenatherum elatius*, Cock's-foot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus*, Perennial ryegrass *Lolium perenne*, Rough meadow-grass *Poa trivialis*, Mouse-ear *Cerastium fontanum*, Creeping buttercup *Ranunculus repens*, Lesser Celandine *Ficaria verna*, Shepherd's purse *Capsella bursa-pastoris*, Common field speed-well *Veronica persica*, Scented mayweed *Matricaria chamomilla*, White dead-nettle *Lamium album*, and Greater Plantain *Plantago major*.

3.6.2. The field margins also support ruderal vegetation, often scattered amongst the grassland but occasionally in dense stands. Ruderal species include Creeping thistle, Spear thistle *Cirsium vulgare*, Mugwort *Artemisia vulgaris*, Broad-leaved dock *Rumex obtusifolius*, Curled dock *Rumex crispus*, Cow Parsley *Anthriscus*

Hsylvestris, Alexanders *Smyrniolus atrum*, Bristly ox-tongue *Helminthotheca echinoides*, Hogweed *Heracleum sphondylium*, and Nettle *Urtica dioica*.

- 3.6.3. Areas of improved grassland are present in the southern part of the site, including a small section of a heavily grazed horse pasture (**F3**). Surveys in 2020 found the horse pasture to be in a very poor condition as a result of heavy grazing and poaching, with species recorded limited to Greater Plantain *Plantago major*, Daisy *Bellis perennis*, Smooth Meadow-grass *Poa pratensis*, Meadow Buttercup *Ranunculus acris*, White Clover *Trifolium repens* and Broad-leaved Dock *Rumex obtusifolius*.
- 3.6.4. A relatively new patch of improved grassland is also located within the southern part of the site (**G1**). In 2016, This area once supported young scrubby woodland and ruderal vegetation previously considered to be of little ecological significance in its own right. However, since 2016 this woodland, scrub and ruderal habitat has been cleared and replaced with a regularly mown improved grassland sward, which in turn, also supports a very limited number of species. Species recorded within **G1** include Perennial Rye-grass, Yorkshire Fog, Red Fescue, Dove's-foot Crane's-bill *Geranium molle*, Creeping Buttercup, Lesser Celandine, Common Vetch *Vicia sativa*, Smooth Tare *Vicia tetrasperma*, White Clover, Hogweed and Dandelion *Taraxacum* sp.

3.7. Hedgerows / Trees

- 3.7.1. A number of hedgerows are present around the site boundaries and support a moderate range of native species, some of which, although considered unlikely, may qualify as "important" under The Hedgerow Regulations 1997.
- 3.7.2. **H1** is a fairly scrubby and relatively unmanaged hedgerow which lines the north-western boundary of F1. This feature supports Blackthorn *Prunus spinosa*, Hawthorn *Crataegus monogyna*, Dog-rose *Rosa canina*, Elder *Sambucus nigra*, Dogwood *Cornus sanguinea*, Hazel *Corylus avellana* with mature specimens of Ash *Fraxinus excelsior* and Oak *Quercus robur*. Some sections of this hedgerow appear to comprise Bramble *Rubus fruticosus* only.
- 3.7.3. **H2** is a section of scrubby hedgerow, comprising Hawthorn, Blackthorn, Ash, with a number of mature Crack Willows and mature Oak.
- 3.7.4. **H3** is a treeline / mature hedgerow and associated ditch situated on the north-western boundary of the application site, supporting Ash, Hawthorn, Wild Privet *Ligustrum vulgare*, Oak, Crack Willow *Salix fragilis*, Elder, Blackthorn and Field Maple *Acer campestre*.
- 3.7.5. **H4** is a tall, unmanaged hedgerow with a scrubby underlayer and associated ditch. This feature supports Hawthorn, Field Maple, Blackthorn, Grey Willow *Salix cinerea*, Elder, Crack Willow, Dog-

rose, Bramble, Wayfaring tree *Viburnum lantana*. This hedgerow continues off-site.

- 3.7.6. **H5** is a mature treeline on the south-eastern boundary of **F2**, associated with a ditch and supporting Ash, Wayfaring Tree, Aspen *Populus tremula*, Dogwood, Alder *Alnus glutinosa*, Field Maple, Oak, Elder, Bramble, Blackthorn and Hawthorn. This feature continues off-site to the south.
- 3.7.7. **H6** is associated with a ditch and forms the southern boundary of **F1** and supports Hawthorn, Blackthorn, Dog-rose, Oak, Field Maple, Hazel, Elder and Ash.
- 3.7.8. **T1** sits adjacent the northern boundary of the application site, and its thought to be associated with an off-site sports field. Species within this feature include Cherry *Prunus sp.*, Hybrid Black Poplar *Populus x canadensis*, Crack Willow, Ash, Alder, Field Maple, Oak and Horse Chestnut *Aesculus hippocastanum*.
- 3.7.9. **T2** is a tall treeline situated just off-site adjacent to the south-western boundary. Species recorded include mature and semi-mature Ash trees, Alder, Field Maple, Crack Willow, Elder, Hazel, Hawthorn and Bramble. The feature supports a notably sparse shrub layer.
- 3.7.10. Flora associated with the hedgerows / treelines was recorded to be very limited, although Lords and Ladies *Arum maculatum*, and Honeysuckle *Lonicera periclymenum* Greater Burdock *Arctium lappa*, and Ivy *Hedera helix* were all recorded on occasion.
- 3.7.11. A small number of large standalone trees are also present with **G1** adjacent to the boundary ditch. However, these species are limited to the non-native Lawsons Cypress *Chamaecyparis lawsonianam* and New Zealand Broadleaf *Griselinia littoralis*.

3.8. Ditches

- 3.8.1. A number of ditches are present within the application. Of these ditches, only two were recorded to be holding water at the time of survey in April 2020 (labelled as **D1** and **D2** and Plan ECO2). All of the ditches within the application site were considered likely to become dry on an annual basis.
- 3.8.2. Wet ditches were also recorded outside of but immediately adjacent to the application site boundary (as shown on Plan ECO2).
- 3.8.3. The ditches support a very limited range of marginal species, including Broadleaved Willowherb *Epilobium montanum*, Hemlock Water-dropwort *Oenanthe crocata*, Common Figwort *Scrophularia nodosa*. No aquatic species were recorded within any of the ditches.

3.9. Bare Ground

- 3.9.1. Surveys in 2016 also recorded an area of young scrubby woodland within the westernmost part of the application site. However, surveys in 2020 record this area to have been recently cleared, with only bare earth present.

3.10. Background Information

- 3.10.1. The desk study undertaken with SxBRC returned a number plant records returned from the local area, including a record of the notable Annual Beard-grass *Polypogon monspeliensis* returned from within the application site within application site from 2004. However, this species was not recorded during surveys in 2016 or 2020.
- 3.10.2. No other notable plant species were recorded during the Phase 1 survey, and given the habitats present it is considered that the application site does not support any other protected or notable plant species.

4. WILDLIFE USE OF THE APPLICATION SITE

- 4.1. During the surveys that have been undertaken within the application site, general observations have been made of any faunal use, with specific attention paid to the potential presence of protected or notable species. Specific surveys were undertaken for bats, Badgers, Great Crested Newts and reptiles.

4.2. Bats

Tree Inspections

- 4.2.1. The application site contains five mature trees which support features of potential interest to roosting bats, on account of the dead wood and woodpecker holes they support. These trees are marked on Plan ECO2.
- 4.2.2. None of the other trees present within the application site are considered to have potential value for roosting bats.

Activity Surveys

- 4.2.3. The application site and wider area offers potential foraging and commuting opportunities in the form of treelines along the site boundaries. As such, bat activity surveys were undertaken in 2020 to ascertain the level of use of the application site by this group and identify any features of importance.
- 4.2.4. Surveys were undertaken on a monthly basis between April and September 2020, with transects covering the application site but also land to the immediate south-east of application site (as shown on Plan ECO3).
- 4.2.5. Table 1 below outlines the weather conditions during each survey visit.

Date	Weather Conditions
23.04.2020	15% cloud cover, 15°C, still, dry
22.05.2020	60% cloud cover, 15°C, strong wind, dry
19.06.2020	40% cloud cover, 14 °C, strong wind, dry
21.07.2020	0% cloud cover, 18 °C, light breeze, dry
13.08.2020	35% cloud cover, 25°C, still, dry
08.09.2020	80% cloud cover, 19 °C, light breeze, dry

Table 1: Weather conditions during 2020 bat activity surveys

- 4.2.6. The following tables below show species assemblages and registrations recorded for each night during the activity surveys.

23/04/20		
Species	Transect 1	Transect 2
Common Pipistrelle	26	34
Soprano Pipistrelle	5	27
<i>Nyctalus</i> sp.	0	2
Noctule	3	1
<i>Myotis</i> sp.	0	1

Table 2: Bat registrations during April activity survey

22/05/20		
Species	Transect 1	Transect 2
Common Pipistrelle	45	23
Soprano Pipistrelle	29	23
Nathusius's Pipistrelle	0	1
<i>Nyctalus</i> sp.	1	0

Table 3: Bat registrations during May activity survey

19/06/20		
Species	Transect 1	Transect 2
Common Pipistrelle	41	63
Soprano Pipistrelle	19	35
<i>Nyctalus</i> sp.	2	0
<i>Myotis</i> sp.	1	4
Serotine	1	3

Table 4: Bat registrations during June activity survey

21/07/20		
Species	Transect 1	Transect 2
Common Pipistrelle	22	35
Soprano Pipistrelle	11	49
<i>Nyctalus</i> sp.	1	16
<i>Myotis</i> sp.	4	0

Table 5: Bat registrations during July activity survey

13/08/2020		
Species	Transect 1	Transect 2
Common Pipistrelle	19	17
Soprano Pipistrelle	4	8
<i>Nyctalus</i> sp.	2	2
Serotine	2	0

Table 6: Bat registrations during August activity survey

08/09/2020		
Species	Transect 1	Transect 2
Common Pipistrelle	44	39
Soprano Pipistrelle	26	18
<i>Nyctalus</i> sp.	21	1
<i>Myotis</i> sp.	3	0
Serotine	2	1

Table 7: Bat registrations during September activity survey

- 4.2.7. Overall, the activity surveys to date show that the application site is predominately used by a low number of common and widespread species, with the highest amount of registrations attributed to Common Pipistrelle (peak count of 104 registrations) and Soprano Pipistrelle (peak count of 62 registrations).

Static Monitoring Surveys

- 4.2.8. Following the transect activity surveys, static acoustic detectors were deployed at various locations within the application site for a minimum of 5 consecutive nights in order to ascertain bat activity over extended periods of time. The dates of the surveys undertaken are set out in Table 8. The results of the surveys are detailed individually below. The locations of detector deployments are shown on Plan ECO3.

Survey	Dates
April 2020	23/04/2020 – 27/04/2020
May 2020	22/05/2020 – 26/05/2020
June 2020	19/06/2020 – 24/06/2020
July 2020	21/07/2020 – 27/07/2020
August 2020	13/08/2020 – 24/08/2020
September	09/09/2020 – 15/09/2020

Table 8: Dates of static monitoring periods

April 2020

- 4.2.9. Overall bat activity (totals of bat registrations) was consistent over this five-night monitoring period. Common Pipistrelle were the most frequently recorded species.
- 4.2.10. The detector deployed at Location A (as shown on Plan ECO3) recorded the lowest level of bat activity within the application site. Over the monitoring period, the detector recorded a total of 62 registrations of Common Pipistrelle, 33 registrations of Soprano Pipistrelle, 11 registrations of *Myotis* sp. bat, 3 registrations of Nathusius's Pipistrelle, 3 registrations of Barbastelle, 1 registration of a *Nyctalus* sp. bat and 1 registration of Serotine.
- 4.2.11. The detector deployed at Location B recorded a moderate amount of activity over the monitoring period. The detector recorded a total of 251 registrations of Soprano Pipistrelle, 240 registrations of Common Pipistrelle, 40 registrations of Barbastelle, 38 registrations of *Myotis* sp. bat, 13 registrations of Brown Long-eared, 8 registrations of Serotine, 7 registrations of *Nyctalus* sp. bat and 6 registrations of Nathusius's Pipistrelle.
- 4.2.12. The detector deployed at Location C recorded a moderate amount of activity over the monitoring period. The detector recorded a total of 453 registrations of Common Pipistrelle, 131 registrations of Soprano Pipistrelle, 23 registrations of *Myotis* sp. bat, 22 registrations of Barbastelle, 9 registrations of Brown Long-eared, 8 registrations of *Nyctalus* sp., 5 registrations of Nathusius's Pipistrelle and 4 registrations of Serotine.
- 4.2.13. The detector deployed at Location D, which was located on the western boundary of the application site, recorded the highest level of bat activity over the monitoring period. The detector recorded a total of 765 registrations of Common Pipistrelle, 421 registrations of Soprano Pipistrelle, 18 registrations of Barbastelle, 8

registrations of *Myotis* sp., 7 registrations of *Nyctalus* sp., 3 registrations of Nathusius's Pipistrelle and 3 registrations of Serotine.

May 2020

- 4.2.14. Overall bat activity (totals of bat registrations) was consistent over the five-night monitoring period. Common Pipistrelle were the most frequently recorded species.
- 4.2.15. The detector deployed at Location E recorded the lowest amount of bat activity over the monitoring period. Over the monitoring period, the detector recorded a total of 388 registrations of Common Pipistrelle, 173 registrations of Soprano Pipistrelle, 22 registrations of Barbastelle, 9 registrations of Nathusius's Pipistrelle, 4 registrations of *Myotis* sp. and 1 registration of Leisler's.
- 4.2.16. The detector deployed at Location F recorded a moderate amount of bat activity over the monitoring period. The detector recorded a total of 806 registrations of Common Pipistrelle, 102 registrations of Soprano Pipistrelle, 21 registrations of *Myotis* sp., 16 registrations of Barbastelle, 7 registrations of Serotine, 7 registrations of Nathusius's Pipistrelle and 6 registrations of *Nyctalus* sp.
- 4.2.17. The detector deployed at Location G recorded a moderate amount of bat activity over the monitoring period. The detector recorded a total of 708 registrations of Common Pipistrelle, 199 registrations of Soprano Pipistrelle, 92 registrations of *Myotis* sp., 52 registrations of Barbastelle, 17 registrations of Nathusius's Pipistrelle, 13 registrations of *Nyctalus* sp., and 9 registrations each of Serotine and Brown Long-eared.
- 4.2.18. The detector deployed at Location H, which was located on the western boundary of the application site, recorded the highest amount of bat activity over the monitoring period. The detector recorded a total of 4041 registrations of Common Pipistrelle, 1128 registrations of Soprano Pipistrelle, 62 registrations of *Myotis* sp., 11 registrations of Nathusius's Pipistrelle, 10 registrations of Barbastelle, 8 registrations of Serotine and 6 registrations of *Nyctalus* sp.

June 2020

- 4.2.19. Overall bat activity (totals of bat registrations) was consistent over the five-night monitoring period. Common Pipistrelle were the most frequently recorded species.
- 4.2.20. The detector deployed at Location I recorded the lowest amount of bat activity within the application site. Over the monitoring period, the detector recorded a total of 331 registrations of Common Pipistrelle, 244 registrations of Soprano Pipistrelle, 4 registrations

of *Myotis* sp., 3 registrations of Serotine, 1 registration each of Brown Long-eared, Barbastelle, Nathusius's Pipistrelle and Greater Horseshoe *Rhinolophus ferrumequinum*.

- 4.2.21. The detector deployed at Location J recorded a moderate amount of bat activity over the monitoring period. The detector recorded a total of 628 registrations of Common Pipistrelle, 69 registrations of Soprano Pipistrelle, 18 registrations of Serotine, 17 registrations of Barbastelle, 13 registrations of *Myotis* sp., 6 registrations of *Nyctalus* sp., 5 registrations of Nathusius's Pipistrelle and 4 registrations of Brown Long-eared.
- 4.2.22. The detector deployed at Location K recorded a moderate amount of bat activity over the monitoring period. The detector recorded a total of 363 registrations of Common Pipistrelle, 330 registrations of Soprano Pipistrelle, 23 registrations of *Myotis* sp., 10 registrations of Barbastelle, 9 registrations of *Nyctalus* sp., 8 registrations of Serotine, 5 registrations of Nathusius's Pipistrelle, 3 registrations of Brown Long-eared and 1 registration of Greater Horseshoe.
- 4.2.23. The detector deployed at Location L, which was located on the northern boundary towards the north-western corner of the application site, recorded the highest amount of bat activity over the monitoring period. The detector recorded a total of 2322 registrations of Common Pipistrelle, 442 registrations of Soprano Pipistrelle, 37 registrations of *Myotis* sp., 13 registrations of Nathusius's Pipistrelle, 10 registrations of Serotine, 9 registration of Barbastelle and 2 registrations of *Nyctalus* sp. and Brown Long-eared.

July 2020

- 4.2.24. Overall bat activity (totals of bat registrations) was consistent over the five night monitoring period. Common Pipistrelle were the most frequently recorded species.
- 4.2.25. The detector deployed at Location M recorded the lowest amount of bat activity within the application site. Over the monitoring period, the detector recorded a total of 303 registrations of Common Pipistrelle, 114 registrations of Soprano Pipistrelle, 28 registrations of *Nyctalus* sp., 7 registrations of *Myotis* sp., 6 registration of Brown Long-eared, 4 registrations of Serotine, 3 registrations of Barbastelle and 1 registration of Nathusius's Pipistrelle.
- 4.2.26. The detector deployed at Location N recorded a moderate amount of bat activity over the monitoring period. The detector recorded a total of 305 registrations of Common Pipistrelle, 114 registrations of Soprano Pipistrelle, 19 registrations of *Nyctalus* sp., 16 registrations of *Myotis* sp., 12 registrations of Serotine, 10 registrations of Nathusius's Pipistrelle and 7 registrations of Brown Long-eared.

- 4.2.27. The detector deployed at Location O recorded a moderate amount of bat activity over the monitoring period. The detector recorded 615 registrations of Common Pipistrelle, 553 registrations of Soprano Pipistrelle, 43 registrations of *Nyctalus* sp., 31 registrations of *Myotis* sp., 25 registrations of Serotine, 5 registrations of Nathusius's Pipistrelle, 4 registrations of Barbastelle, and 1 registration of Brown Long-eared.
- 4.2.28. The detector deployed at Location P, which was located on the western boundary of the application site, recorded the highest amount of bat activity over the monitoring period. The detector recorded a total of 2350 registrations of Common Pipistrelle, 1128 registrations of Soprano Pipistrelle, 106 registrations of *Nyctalus* sp., 12 registrations of *Myotis* sp., 12 registrations of Serotine, 5 registrations of Nathusius's Pipistrelle and 2 registration of Barbastelle.

August 2020

- 4.2.29. Overall bat activity (totals of bat registrations) was consistent over the five night monitoring period. Common Pipistrelle were the most frequently recorded species.
- 4.2.30. The detector deployed at Location Q recorded the highest amount of bat activity within the application site. Over the monitoring period, the detector recorded a total of 1037 registrations of Common Pipistrelle, 1213 registrations of Soprano Pipistrelle, 30 registrations of *Nyctalus* sp., 27 registrations of Serotine, 24 registrations of Brown Long-eared, 22 registrations of *Myotis* sp., and 2 registrations of Nathusius's Pipistrelle.
- 4.2.31. The detector deployed at Location R recorded a moderate amount of bat activity over the monitoring period. The detector recorded a total of 798 registrations of Common Pipistrelle, 439 registrations of Soprano Pipistrelle, 51 registrations of *Myotis* sp., 19 registrations of Serotine, 19 registrations of Barbastelle, 18 registrations of *Nyctalus* sp., 5 registrations of Brown Long-eared and 3 registrations of Nathusius's Pipistrelle.

September 2020

- 4.2.32. Overall bat activity (totals of bat registrations) was consistent over the five night monitoring period. Common Pipistrelle were the most frequently recorded species.
- 4.2.33. The detector deployed at Location S recorded the lowest amount of bat activity within the application site. Over the monitoring period, the detector recorded a total of 435 registrations of Common Pipistrelle, 189 registrations of Soprano Pipistrelle, 47 registrations of *Nyctalus* sp., 6 registrations of Nathusius's Pipistrelle, 5 registrations of *Myotis* sp., 4 registrations of Serotine, 2 registrations of Brown Long-eared and 1 registration of Barbastelle.

- 4.2.34. The detector deployed at Location T recorded a moderate amount of bat activity over the monitoring period. The detector recorded 612 registrations of Common Pipistrelle, 67 registrations of Soprano Pipistrelle, 34 registrations of *Nyctalus* sp., 9 registrations of Barbastelle, 8 registrations of Brown Long-eared, 5 registrations of Serotine, 3 registrations of *Myotis* sp. and 2 registrations of Nathusius's Pipistrelle.
- 4.2.35. The detector deployed at Location U recorded a moderate amount of bat activity over the monitoring period. The detector recorded 218 registrations of Common Pipistrelle, 419 registrations of Soprano Pipistrelle, 65 registrations of *Myotis* sp., 62 registrations of Barbastelle, 19 registrations of Serotine, 10 registration of *Nyctalus* sp., 5 registrations of Brown Long-eared and 2 registrations of Nathusius's Pipistrelle
- 4.2.36. The detector deployed at Location V, which was located towards the north-western corner of the application site, recorded the highest amount of bat activity over the monitoring period. The detector recorded a total of 461 registrations of Common Pipistrelle, 286 registrations of Soprano Pipistrelle, 82 registrations of *Myotis* sp., 28 registrations of *Nyctalus* sp., 22 registration of Barbastelle. 12 registrations of Serotine, 5 registrations of Nathusius's Pipistrelle and 1 registration of Brown Long-eared.
- 4.2.37. As indicated during the activity surveys, static detector surveys show that the application site is mostly used by low numbers of common and widespread species, with a very low number of registrations of more notable species, such as Barbastelle and Greater Horseshoe, being recorded over the static monitoring periods. The static detector surveys show that bat activity is greatest along the western and northern boundary of the application site.
- 4.2.38. **Background information.** The desk study undertaken with SxBRC returned several records of bats from the local area. The closest record was of a grounded male Brown Long-eared bat *Plecotus auratus*, returned from a location circa. 10m to the north of the application site from 2010. In addition, a historical record recorded of an unspecified roost of 50 bats was returned from a location circa. 10m north of the application site, from 1988.
- 4.2.39. Other bats species recorded within the locality (albeit further afield) include Western Barbastelle *Barbastella barbastellus*, Serotine *Eptesicus serotinus*, Daubenton's Bat *Myotis daubentonii*, Whiskered Bat *Myotis mystacinus*, Noctule *Nyctalus noctula*, Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus* and Nathusius's Pipistrelle *Pipistrellus nathusii*.

4.3. Badgers

- 4.3.1. Survey work undertaken in survey work undertaken in both 2016 and 2020 recorded no Badger setts within the application site. Furthermore, no other evidence indicating the presence of Badgers

(such as latrines, footprints, hairs or foraging signs) was recorded within the application site.

4.3.2. Given the above, it is not considered that the application site supports this species and Badgers have therefore been given no further consideration within this Ecological Assessment.

4.3.3. **Background Information.** The desk study undertaken with SBRC returned no records of Badger *Meles meles* from within the search area.

4.4. Dormice

4.4.1. The treelines around the field boundaries of the application site are considered to support limited opportunities for Dormouse due to their structure.

4.4.2. Moreover, these features are significantly isolated from more suitable habitats in the wider area due to expansive areas of surrounding arable land and existing development, with a notable lack of woodland in the region.

4.4.3. **Background information.** The desk study undertaken with BRERC returned no records of Dormouse from the local area. It is considered highly unlikely that Dormice are present within the application site, and as such, no further consideration has been afforded to this group within this Ecological Assessment.

4.5. Water Voles and Otters

4.5.1. None of the ditches within the application site are considered suitable to support Water Vole *Arvicola amphibious* or Otter *Lutra lutra*, given their ephemeral nature, notable lack of suitable bankside vegetation, and poor connectivity to more suitable water resources in the local area. Moreover, no evidence of these species was recorded within any of the wet ditches during other survey work undertaken.

4.5.2. **Background Information.** The desk study undertaken with SxBRC returned no recorded of Water Vole *Arvicola amphibius* within or immediately adjacent to the application site. Several records of Water Vole were returned from the local area to the north of the application site, with the closest being from a location circa. 0.50km north, from 2005.

4.5.3. The desk study returned no records of Otter *Lutra lutra* within the search area.

4.6. Great Crested Newts

4.6.1. The application site supports a number of ditches, all of which were noted as being dry during survey work in 2016. During updated work in 2020, two ditches within the application site was recorded to be holding a significant amount of non-flowing water (labelled as **D1** and **D2** on Plan ECO2). Additionally, a number of other ditches

within the wider area (namely to the north and north-east of the application site) were also recorded to being holding water. As such, there is potential for these features to provide opportunities for breeding amphibians, including Great Crested Newts, if they support water during the breeding season.

- 4.6.2. eDNA sampling surveys were undertaken in April 2020 and included all suitable waterbodies within the application site and all suitable waterbodies within 250m of the application site boundary.
- 4.6.3. The results of all eDNA assessments were negative. It is therefore considered that none of the waterbodies are used by Great Crested Newts.
- 4.6.4. All other ditches in the local ditch network were recorded to be dry, or to support flowing water.
- 4.6.5. Whilst the application site supports some very limited terrestrial opportunities for this species, given the lack of suitable breeding opportunities, it's considered that this species is absent from the application site and has not been considered further within this ecological assessment.
- 4.6.6. **Background Information.** The desk study undertaken with SxBRC did not return any records of Great Crested Newts *Triturus cristatus* from within the application site boundary. Two records of Great Crested Newt were returned from the local area, with the nearest record situated approximately 1.4km east of the application site at its closest point from 2004.
- 4.6.7. Other amphibian species recorded within the locality of the application site include Common Toad *Bufo bufo*, Palmate Newt *Lissotriton helveticus*, Smooth Newt *Lissotriton vulgaris* and Common Frog *Rana temporaria*.

4.7. Reptiles

- 4.7.1. Areas of grassland within the application site provide potential opportunities for reptile species. In order to ascertain whether the application site supports this group, refugia surveys undertaken across May and July 2020, in line with the methodology outlined in Section 2 above.
- 4.7.2. The results of the surveys undertaken so far are summarised in Table 9 below.

Date	Survey Number	Weather Conditions	Reptiles Recorded
5/5/20	1	90% cloud cover, 12 °C	None
14/5/20	2	40% cloud cover, 12 °C	1 Grass Snake
22/5/20	3	70% cloud cover, 13 °C	None – Survey Sabotaged
5/6/20	4	25% cloud cover, 14°C	None – Survey Sabotaged
10/6/20	5	95% cloud cover, 13°C	None

Date	Survey Number	Weather Conditions	Reptiles Recorded
19/6/20	6	50% cloud cover, 14 °C	None
22/7/20	7	90% cloud cover, 18 °C	None
24/7/20	8	80% cloud cover, 16°C	3 Male Slow Worm
27/7/20	9	100% cloud cover, 17°C	1 Male Slow Worm 3 Female Slow Worm

Table 9: 2020 Reptile Survey Results (Summary)

- 4.7.3. The reptile surveys identified small populations of Slow-Worm *Anguis fragilis* and Grass Snake *Natrix helvetica* within grassland habitats in the southern parts of the application site (i.e.
- 4.7.4. In line with HGBI guidance, the site supports a small population of both these reptile species; populations of less than 5 adults / ha. As such a suitable mitigation strategy will be required to facilitate development.
- 4.7.5. **Background Information.** The desk study undertaken with SxBRC returned a small number of reptile records from the local area. The closest of these records was that of a Common Lizard *Zootoca vivipara*, returned from a location approximately 90m to the east of the application site at its closest point from 2011.
- 4.7.6. Other reptile species recorded within the locality of the application site include Slow Worm *Anguis fragilis*, Grass Snake *Natrix helvetica* and Adder *Vipera berus*.

4.8. Birds

- 4.8.1. The application site offers some opportunities for nesting birds in terms of the treelines which border the site, although similar opportunities are available within the wider area, and there is nothing to indicate that the application site is likely to be particularly important for nesting birds.
- 4.8.2. Bird species recorded within and passing over the application site during surveys include Blue Tit *Cyanistes caeruleus*, Great Tit *Parus major*, Blackbird *Turdus merula*, Buzzard *Buteo buteo*, Greenfinch *Carduelis chloris*, Goldfinch *Carduelis carduelis*, Carrion Crow *Corvus corone*, Robin *Erithacus rubecula*, Wren *Troglodytes troglodytes*, Wood Pigeon *Columba palumbus*, Starling *Sturnus vulgaris*, House Sparrow *Passer domesticus*, Long-tailed Tit *Aegithalos caudatus*, Coal Tit *Periparus ater*, Jay *Garrulus glandarius*, Chiffchaff *Phylloscopus collybita* and Magpie *Pica pica*.
- 4.8.3. **Background Information.** The desk study undertaken with SxBRC returned a number of bird records from the local area. The closest record was of House Martin *Delichon urbicum* returned from a location circa. 10m from the eastern boundary of the application site, from 2015.

- 4.8.4. Additionally, three records of single Barn Owls *Tyto alba* were returned from a location circa. 0.4km west of the application site, from between 2009 and 2012.

4.9. Invertebrates

- 4.9.1. The application site is expected to support a limited range of common invertebrate species, but there is no evidence to suggest that any protected or notable species are likely due to the habitats present.
- 4.9.2. **Background Information.** The desk study undertaken with SxBRC returned a number of invertebrate records from the local area. The closest was that of a Stag Beetle *Lucanus cervus*, returned from a location circa. 0.15km north of the application site at its closest point, from 2015.

5. ECOLOGICAL EVALUATION

5.1. The Principles of Site Evaluation

- 5.1.1. The latest guidelines for ecological evaluation produced by CIEEM propose an approach that involves professional judgement, but makes use of available guidance and information, such as the distribution and status of the species or features within the locality of the project.
- 5.1.2. The methods and standards for site evaluation within the British Isles have remained those defined by Ratcliffe⁷. These are broadly used across the United Kingdom to rank sites, so priorities for nature conservation can be attained. For example, current Site of Special Scientific Interest (SSSI) designation maintains a system of data analysis that is roughly tested against Ratcliffe's criteria.
- 5.1.3. In general terms, these criteria are size, diversity, naturalness, rarity and fragility, while additional secondary criteria of typicalness, potential value, intrinsic appeal, recorded history and the position within the ecological / geographical units are also incorporated into the ranking procedure.
- 5.1.4. Any assessment should not judge sites in isolation from others, since several habitats may combine to make it worthy of importance to nature conservation.
- 5.1.5. Further, relying on the national criteria would undoubtedly distort the local variation in assessment and therefore additional factors need to be taken into account, e.g. a woodland type with comparatively poor species diversity, common in the south of England may be of importance at its northern limits, say in the border country.
- 5.1.6. In addition, habitats of local importance are often highlighted within a local Biodiversity Action Plan (BAP). The Sussex BAP also highlights a number of habitats and species. These are referred to below where relevant.
- 5.1.7. Levels of importance can be determined within a defined geographical context from the immediate site or locality through to the International level.
- 5.1.8. The legislative and planning policy context are also important considerations and have been given due regard throughout this assessment.

⁷ Ratcliffe, D A (1977). *A Nature Conservation Review: the Selection of sites of Biological National Importance to Nature Conservation in Britain*. Two Volumes. Cambridge University Press, Cambridge.

5.2. Habitat Evaluation

Designated sites

- 5.2.1. **Statutory sites.** There are no statutory designated sites of nature conservation interest located within or immediately adjacent to the application site.
- 5.2.2. The closest statutory designated sites in the surrounding area are Bersted Brooks Local Nature Reserve (LNR), which is located approximately 1.4km north-east of the application site at its closest point. This site is designated on account of its wetland habitats and wildlife that they support, including reedbed, meadow and floodplain woodland.
- 5.2.3. Another national statutory designated site present within the locality of the application site is the Bognor Reef Site of Special Scientific Interest (SSSI), situated approximately 1.9km south of the application site. This site is designated on account of extensive areas of vegetated shingle, a rare habitat in Britain, and the area of old sand dunes at the western end which supports a range of invertebrates and flora, including childing pink *Petrorhagia nanteulii*, a Schedule 8 protected species of the Wildlife and Countryside Act 1981.
- 5.2.4. Both of these nationally designated sites are separated from the application sites by significant areas of existing residential development and open space. It is not considered that the emerging development proposals will have any detrimental impacts on these designated sites.
- 5.2.5. The nearest internationally designated statutory site is Pagham Harbour Special Protection Area (SPA), Ramsar and SSSI located approximately 3.6km to the south-west of the application site at its closest point. The SPA is designated on the account of the sites international importance of the wetland for supporting wintering populations of Dark-Bellied Brent Geese *Branta bernicla*, as well as supporting nationally important populations of breeding populations of Little Tern *Sterna albifrons* and Common Tern *Sterna hirundo*. The Ramsar is designated on account of the site's international importance for the assemblage wildfowl, waders, wintering and breeding birds and nationally importance communities of plants and invertebrates.
- 5.2.6. Other internationally designated statutory sites present within 10km of the application sites is the Chichester and Langstone Harbours SPA, Ramsar and SSSI and the Solent Maritime Special Area of Conservation (SAC), located approximately 8.4km west of the application site at its closest point. Chichester and Langstone Harbours is designated on account of the sites international importance for supporting large numbers of wintering wildfowl, waders and migratory bird species. The Solent Maritime SAC is designated on account of its major estuarine systems comprising a range of habitats that support a range of rare plant and invertebrate species.

- 5.2.7. Given the proximity of the application site to these European designated sites, there is potential for proposals to impact upon these European designated sites. As such, the potential for impacts to these designated sites will be assessed in detail within an accompanying Shadow Habitats Regulations Assessment (SHRA) document.
- 5.2.8. **Non-statutory sites.** There are no non-statutory designated sites of biological conservation importance located within or immediately adjacent to the application site boundary.

Habitats within the application site

- 5.2.9. The habitats within the application site are considered to hold limited ecological value, with the majority of the application site comprising arable land, much of which was bare earth during surveys in 2020.
- 5.2.10. Under the development proposals for the application, all arable fields will be lost facilitate construction which is considered to be of negligible ecological significance. Some losses to semi-improved grassland field margins will also occur, however the grassland within the application site supports very limited botanical diversity, comprising species typical of nutrient rich / arable environments. No notable species were recorded during the survey and it is considered that losses to these habitats would be of very limited ecological significance.
- 5.2.11. Existing grassland will be retained where possible, and enhanced through the introduction of new species, targeted management and improved connectivity to new areas of open space. Moreover, species-rich wildflower grassland will be delivered within the application site as part of the landscaping scheme. This grassland will be provided within areas of dedicated informal open space and adjacent retained hedgerows / treelines and new hedgerow planting.
- 5.2.12. Additionally, to provide new opportunities for biodiversity, an appropriately designed SuDS feature will be delivered as part of the development proposals, providing new seasonal waterbodies at the site boundaries. Whilst the design and function of these features will necessarily be focused on their primary function (for drainage), there will be ample scope to design and manage it for the benefit of faunal groups, such as invertebrates, foraging bats and birds. SuDS features will be delivered within informal open space, thus complimenting an array of other new species-rich habitats. SuDS will be seeded with species-rich wet grassland (such as Emorsgate EM8 or similar) - a habitat not previously recorded within the application site.
- 5.2.13. A number of ditches will also be retained and enhanced as part of the development proposals, ensuring continued commuting, foraging and dispersal opportunities for a large range of associated fauna and flora. Then enhancement of ditches alongside the

provision of new wetland habitats will again realise a significant improvement to the application site, potentially encourages species previously recorded as absent.

- 5.2.14. In order to avoid potential for adverse effects of local watercourses, standard engineering protocols and best practice shall be employed throughout the construction period, with all materials stored away from this part of the site and appropriate measures employed where necessary, such as the use of interceptor fencing. Protective fencing will be installed prior to construction.
- 5.2.15. The implementation of a sensitive, biodiversity-led management regime for new and retained grassland habitats would provide opportunities to realise significant qualitative enhancements post development. This management would provide a mechanism to restore grassland habitats which have been historically suppressed and damaged by intensive agriculture and which have limited potential for recovery under current management.
- 5.2.16. Of comparatively greater ecological value are the hedgerows and treelines which form the boundaries of the application site. Under the proposals, these features will be retained, with only minor losses to facilitate access. Moreover, these features will be brought under a new management regime, designed to enhance the ecological opportunities already present within the site. Gappy or defunct sections of hedgerow will also be the subject of bolster planting, using ecologically valuable nut and / or berry-bearing species to create new foraging opportunities within the site and further promote biodiversity.
- 5.2.17. The creation of new edge habitat, which would be bought under a suitable management regime in the long term, would provide a significant enhancement over the existing situation where mature trees and hedgerows abut managed agricultural land.
- 5.2.18. The retention of the vast majority of tree and hedgerow network, as well as new planting to deliver both quantitative and qualitative gains relative to the existing situation, would ensure significant enhancements for the application site and moreover improve habitat connectivity across the local area.
- 5.2.19. In order to prevent encroachment of machinery and personnel during the construction period, temporary protective fencing (Heras or similar) shall be installed in line with current British Standards at canopy width from retained trees. This fencing shall remain in place throughout the construction period. No materials such as fuels or oils shall be stored in close proximity to the ditches.
- 5.2.20. It is considered that the provision of an appropriate landscape planting scheme for the application site, based around utilising native species of local provenance wherever possible, any losses to other habitats within the application site will be more than mitigated. The provision of new ecologically beneficial habitats and improvement of retained habitats and will result in a biodiversity enhancement and be of benefit for a range of faunal species.

- 5.2.21. The emerging proposals seek to strengthen and improve the existing green connectivity within the application site, benefiting not only the application site but also the wider area.

5.3. Faunal Evaluation

Bats

- 5.3.1. **Legislation.** All bats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and included on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 ("the Habitats Regulations"), as amended. These include provisions making it an offence:

- Deliberately to kill, injure or take (capture) bats;
- Deliberately to disturb bats in such a way as to:-
 - (i) be likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or to hibernate or migrate; or
 - (ii) affect significantly the local distribution or abundance of the species to which they belong;
- To damage or destroy any breeding or resting place used by bats;
- Intentionally or recklessly to obstruct access to any place used by bats for shelter or protection.

- 5.3.2. While the legislation is deemed to apply even when bats are not in residence, Natural England guidance suggests that certain activities such as re-roofing can be completed outside sensitive periods when bats are not in residence provided these do not damage or destroy the roost.

- 5.3.3. The words deliberately and intentionally include actions where a court can infer that the defendant knew that the action taken would almost inevitably result in an offence, even if that was not the primary purpose of the act.

- 5.3.4. The offence of damaging or destroying a breeding site or resting place (which can be interpreted as making it worse for the bat) is an absolute offence. Such actions do not have to be deliberate for an offence to be committed.

- 5.3.5. European Protected Species licences are available from Natural England in certain circumstances, and permit activities that would otherwise be considered an offence.

- 5.3.6. Licences can usually only be granted if the development is in receipt of full planning permission and it is considered that:

- (i) The activity to be licensed must be for imperative reasons of overriding public interest or for public health and safety;
- (ii) There is no satisfactory alternative; and

- (ii) The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

- 5.3.7. **Application Site Evaluation.** A total of five mature trees have been recorded to support features of potential value to roosting bat species (the locations of which are shown on Plan ECO3).
- 5.3.8. Six activity surveys were undertaken on a monthly basis between April and September and show that the application site mostly utilised by small numbers of common and widespread species. Similarly, data obtained as part of the static monitoring surveys is considered to represent low levels of bat activity when averaged across each monitoring period.
- 5.3.9. **Mitigation and Enhancements.** As part of the proposals, all trees with roosting bat potential will be retained where possible. However, should any of these trees require any form of arboricultural works (removal or otherwise), they will be the subject of updated assessments (as appropriate). Should any evidence of roosting bats be found, a licence will be sought from Natural England prior to removal.
- 5.3.10. On the basis of bat activity survey data, it is considered that the application site is of relatively limited value for foraging and commuting bat species. Notwithstanding this, the development proposals will fully retain the vast majority of the treelines, with only minor losses to facilitate access. This will ensure continued opportunities for commuting and foraging bats post development.
- 5.3.11. Moreover, new species-rich grassland, shrub and hedgerow planting will be provided across the application site. Such provisions will not only result in improved commuting opportunities for bat species but are also highly likely to improve foraging opportunities by increasing the density of invertebrate prey species.
- 5.3.12. To ensure existing dark corridors are retained for commuting and foraging bat species, a sensitive lighting regime will be implemented. The lighting scheme for the proposed development will ensure that existing and new areas of green space will be retained as dark corridors where possible. Ambient lighting will be 1lux or less, with accessories (such as baffles, hoods or louvres) utilised where appropriate to further minimise light spillage and direct light below the horizontal plane to where it is required (limiting light to an angle of 70 degrees or below wherever possible).
- 5.3.13. As an enhancement, a number of Schweglar bat boxes will be installed within or on suitably mature trees at the boundaries of the application site. It is recommended that a model which can readily accommodate the bat species recorded within the application site is used, such as the 1FF and 3FF models (shown at Appendix 3).

Reptiles

- 5.3.14. **Legislation.** Rare, endangered or declining species receive 'full protection' under the Wildlife and Countryside Act 1981 as well as protection under The Conservation of Habitats and Species Regulations 2017 (as amended), which transposed into UK law the European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, more commonly known as the Habitats Directive. Species that are fully protected include Smooth Snake *Coronella austriaca* and Sand Lizard *Lacerta agilis*. These receive the following protection from:
- killing, injuring, taking;
 - possession or control (of live or dead animals, their parts or derivatives);
 - damage to, destruction of, obstruction of access to any structure or place used for shelter or protection;
 - disturbance of any animal occupying such a structure or place; and
 - selling, offering for sale, possession or transport for purposes of sale (live or dead animal, part or derivative).
- 5.3.15. Given the geographical location of the application site and the habitats present, it is considered that neither of these species would be present.
- 5.3.16. Due to their abundance in Britain, Common Lizard, Slow-worm *Anguis fragilis*, Grass Snake *Natrix natrix* and Adder *Vipera berus* are only 'partially protected' under the Wildlife and Countryside Act 1981 (as amended) and as such only receive protection from:
- deliberate killing and injuring; and
 - being sold or other forms of trading.
- 5.3.17. **Application Site Evaluation.** The grassland within the southern parts of the application site have been recorded to support a low populations of Common Lizard and Grass Snake, with a total of one Grass Snake and seven Slow Worms recorded during specific surveys undertaken between May and July 2020. All reptiles were recorded within field margins at the application site boundaries, where opportunities for reptiles are more apparent.
- 5.3.18. **Mitigation / Enhancements.** The proposals will result in direct impacts upon reptile habitat during site clearance and construction operations. However, given that reptiles were recorded in very low numbers, and that suitable reptile habitat within the site is limited / sub-optimal, it considered any losses to these habitats would be of little significance to the local reptile population.
- 5.3.19. Notwithstanding above, and to ensure no adverse impacts of the local reptile population, its recommended that a suitably designed mitigation scheme is implemented prior to the construction phase. Given reptiles have only been recorded adjacent existing hedgerows, it's considered likely that sensitive removal of

grassland will be sufficient to avoid adverse impacts to the local reptile population. At any rate, hedgerows across the application are being retained and protected during the development phase, and with them, the associated grassland - thus providing continued opportunities during and post development.

- 5.3.20. Where necessary, herpetofauna fencing may be used to ensure reptiles do not recolonise the application site. Its considered that a suitably designed reptile mitigation strategy will be secured via condition.
- 5.3.21. The proposals will deliver significant enhancements for reptiles over the existing situation, with new species-rich grassland and wetland habitats, in addition to new eco-tone habitats created at adjacent a number of retained hedgerows.
- 5.3.22. The management regimes of these new species-rich habitats will be also be designed with reptiles in mind, with areas of longer grassland encouraged in specific areas, thus offering a variety of foraging and basking opportunities.
- 5.3.23. Moreover, the proposals will include new hibernation and basking opportunities for reptiles in the form of log piles within areas of open space.
- 5.3.24. Subject to the above measures being implemented, its considered that the proposals will deliver a significant enhancement for reptiles, with new opportunities likely to encourage further colonisation of the application site.

Birds

- 5.3.25. **Legislation.** Section 1 of the Wildlife and Countryside Act is concerned with the protection of wild birds, whilst Schedule 1 lists species which are protected by special penalties
- 5.3.26. **Application Site Evaluation.** There are some opportunities for nesting birds in the treelines and shrubs within the application site, although the site is not considered to be of any particular significance for nesting bird species.
- 5.3.27. **Mitigation and Enhancements.** As all species of birds receive general protection whilst nesting, to avoid a possible offence it is recommended that any minor clearance of hedgerows or scrub is undertaken outside the breeding season (between March and the end of July), or alternatively that checks be made for nesting birds by an ecologist immediately prior to any vegetation removal.
- 5.3.28. Through the retention of existing vegetation, it is considered that the emerging development proposals for the site provide an opportunity to maintain the value of the application site for nesting and foraging birds. Moreover, new planting will comprise a range of berry bearing species, providing new foraging opportunities for this group.

- 5.3.29. In order to provide new breeding opportunities, its recommended that a small number of bird boxes (Schweglar or similar) are provided post development. All nest boxes should be situated out of direct sunlight and out of the reach of predators, particularly cats.

6. PLANNING POLICY CONTEXT

- 6.1. The planning policy framework that relates to nature conservation in West Bersted is issued at two main administrative levels: nationally through the National Planning Policy Framework (NPPF); and locally through the Arun Local Plan 2011-2031. The proposed development will be judged in relation to the policies contained within these documents.

6.2. National Policy

National Planning Policy Framework (February 2019)

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

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

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

6.3. Local Policy

Arun Local Plan 2011 - 2031 (Adopted 2018)

- 6.3.1. The Arun Local Plan was adopted in 2018 and sets out the Council's plans for the development of Arun up to 2031. It contains strategic and development management planning policies which should be used in the consideration of planning applications.
- 6.3.2. Policy ENV SP1 - Natural Environment states that Arun District Council will promote the preservation, restoration and enhancement of biodiversity and the natural environment particularly through policies for the protection of statutory sites, including European sites of importance. The creation of new areas of habitats where possible will also be promoted.
- 6.3.3. Policy ENV DM1 - Designated sites of biodiversity or geological importance refers to proposed developments likely to have an adverse effect on any such designated sites. The policy states these proposals will not normally be permitted, except in cases where there developer can demonstrate that there is no alternative solution, there are reasons of public health or public safety, there are benefits of primary importance to the environment or there are imperative reasons of overriding public interest. In determining planning applications affecting sites of biodiversity importance the Council must ensure that the intrinsic value of the sites are safeguarded or enhanced having regard to the following; the European, National or Local status and designation of the site; the nature and quality of the site's features, including rarity value; the extent of any adverse impacts on the notified features of interest; the need for compensatory measures in order to re-create remaining features of habitats on or off site. The policy states that where appropriate the Council will ensure the effective management of designated sites through the imposition of planning conditions or Section 106 agreements as appropriate.
- 6.3.4. Policy ENV DM2 – Pagham Harbour deals direction with development proposals which may have adverse effects of the Pagham Harbour SPA/Ramsar site. The policy states major development proposals for anywhere over 5km from the designated site shall be examined to determine any potential

effects on Pagham Harbour and the need for any avoidance or mitigation measures.

- 6.3.5. Policy ENV DM3 - Biodiversity Opportunity Areas (BOAs) states that development shall retain and sympathetically incorporate locally valued and important habitats including wildlife corridors and stepping stones. Development shall also be designed in order to minimise disturbance to habitats. Where development proposals are likely to have an impact on a BOA, planning applications must include surveys conducted to identify the presence of such species and habitats, any impacts identified and mitigation measures put in place with accordance with the Planning Authority.
- 6.3.6. Policy ENV DM4 - Protection of trees seeks to protect trees protected by a Tree Preservation Order(s), Ancient Woodland or those in a Conservation Area or contributing to local amenity. The damage or destruction of such trees shall not be permitted unless exceptional circumstances can be demonstrated.
- 6.3.7. Policy ENV DM5 - Development and biodiversity states that development should seek to achieve a net gain in biodiversity and protect existing habitats. The policy states that development should incorporate features that would benefit biodiversity such as green walls, green roofs, bat and bird boxes and landscape features. Links should also be provided with surrounding habitats where possible to facilitate species movement across the landscape as a whole. Where evidence of protected species within a development site is identified, surveys must be undertaken and if impacts identified, mitigation provided.

6.4. Discussion

- 6.4.1. Recommendations have been put forward in this report that would fully safeguard the existing ecological interest of the application site. Furthermore, the proposals include scope to enhance opportunities for protected species where appropriate. Based on surveys undertaken and assessment, the presence and potential presence of protected species has been given due regard and measures to enhance the application site for such species have been put forward.
- 6.4.2. In conclusion, implementation of the measures set out in this report enable the proposals to fully accord with planning policy for ecology and nature conservation at all administrative levels.

7. SUMMARY AND CONCLUSIONS

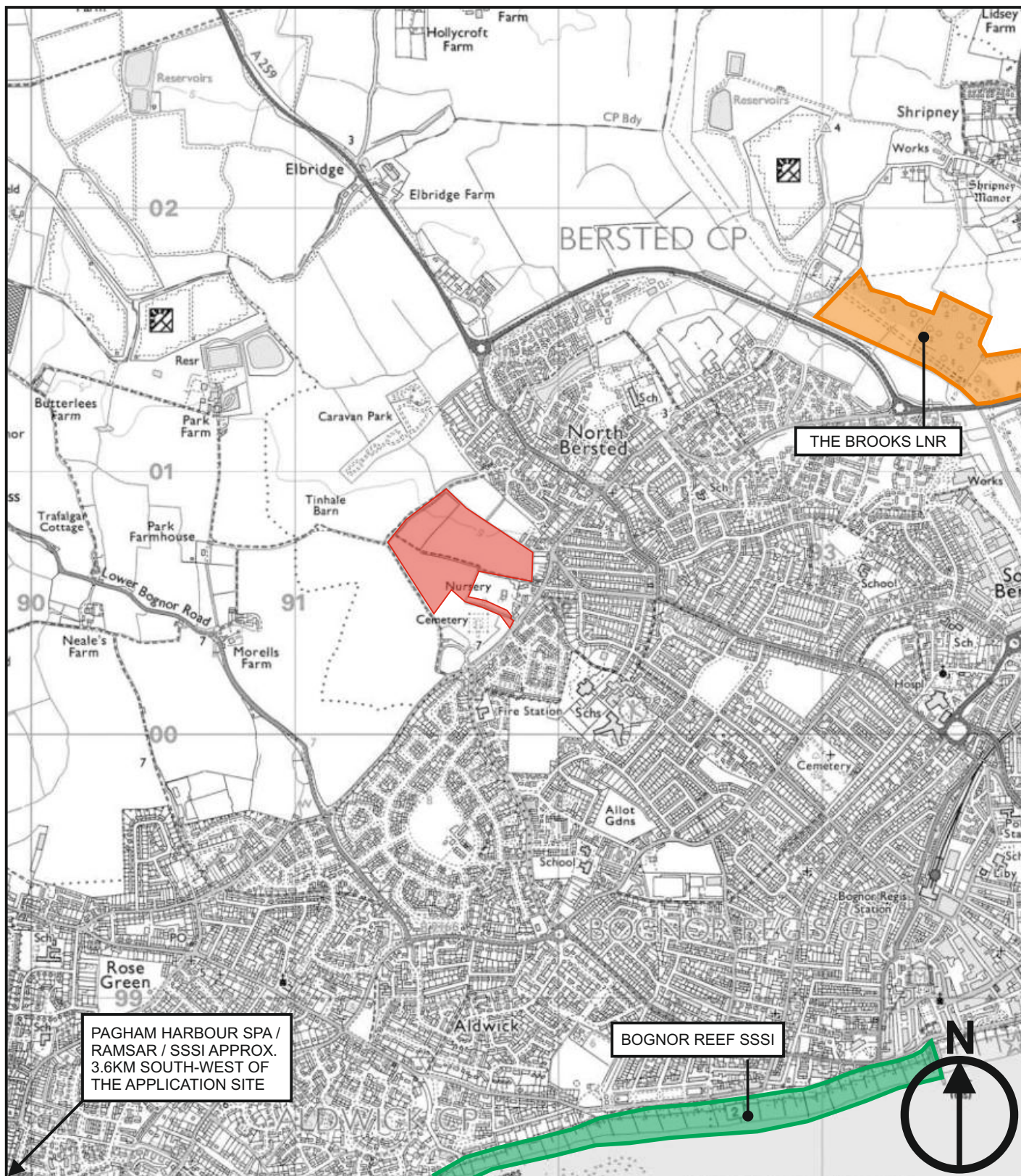
- 7.1. Ecology Solutions was commissioned by Landform Bersted Ltd in April 2020 to undertake an Ecological Assessment of Nursery Fields, West Bersted, West Sussex.
- 7.2. The proposals include development of up to 225 residential dwellings, associated infrastructure, open space and access. The outline application will be parameter based, with site access to be determined in detail. The site access mirrors the proposals in the Nursery Fields outline application.
- 7.3. There are no statutory or non-statutory sites designated sites of nature conservation interest situated within or immediately adjacent to the application site. Given the areas of open countryside and existing development separating the application site from nearby statutory designated sites, the provision of new public open space within the application site and the implementation of standard engineering protocols and best practice throughout the construction period, it is considered that the proposed development is unlikely to have any significant impacts on any of these nearby designated sites, during either the construction or operational phase.
- 7.4. The application site lies approximately 3.6km north-east from the European and nationally designated site Pagham Harbour (SPA, Ramsar, and SSSI). The potential for impacts to these designated sites in addition to their supporting habitats and qualifying species, will be assessed in detail within an accompanying Shadow Habitats Regulations Assessment (sHRA) document.
- 7.5. The majority of the habitats within the application site generally hold very limited ecological value, with the application site primarily comprising hardstanding, buildings and bare earth. The proposals will retain habitats of relatively greater ecological significance (i.e. the boundary ditches), with sufficient scope to offset losses to these habitats where appropriate. Losses to the grassland habitats are considered to be of low ecological significance.
- 7.6. A suite of protected species surveys and assessments have been undertaken. The trees offer nesting and foraging opportunities for birds in addition to suitable, roosting, foraging and navigational resources for bats. The application site is also utilised by low populations of Common Lizard and Grass Snake.
- 7.7. Appropriate mitigation measures have been proposed, including measures to safeguard bats, reptiles and bats. Subject to the implementation of mitigation measures as outlined above in respect of these species, opportunities for key faunal groups may be retained and moreover enhanced post-development.
- 7.8. In conclusion, on the evidence of the ecological surveys undertaken, the application site is not considered to be of particularly high intrinsic value from an ecology and nature conservation perspective. The design of the proposed development and the implementation of mitigation measures as recommended in this report (and accompanying sHRA) will ensure

that there are no adverse effects on any designated sites or protected species as a result of development at the application site.

PLANS

PLAN ECO1

Application Site Location and Ecological
Designations



KEY:

- APPLICATION SITE LOCATION
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)
- LOCAL NATURE RESERVE (LNR)



Farncombe House
Farncombe Estate | Broadway
Worcestershire | WR12 7LJ

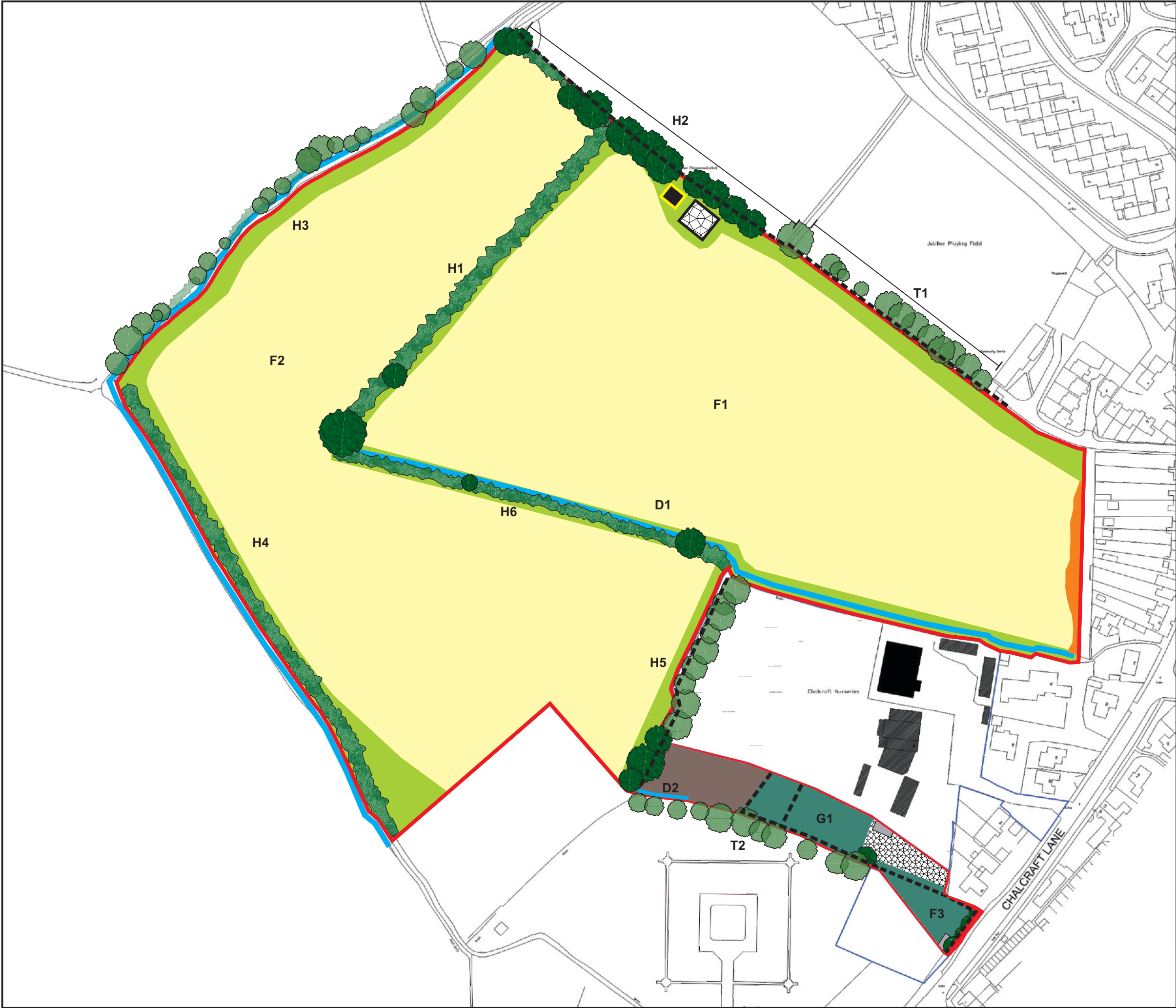
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7216:
NURSERY FEILDS, WEST BERSTED

PLAN ECO1: SITE LOCATION AND
ECOLOGICAL DESIGNATIONS

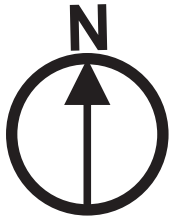
Sept
2020

PLAN ECO2
Ecological Features



KEY:

- APPLICATION SITE BOUNDARY
- ARABLE LAND
- IMPROVED GRASSLAND
- SEMI-IMPROVED GRASSLAND
- BARE EARTH
- SCRUB
- RADIO MAST
- TEMPORARY STRUCTURE
- TREELINE
- HEDGE
- HARDSTANDING
- WET DITCH
- DRY DITCH



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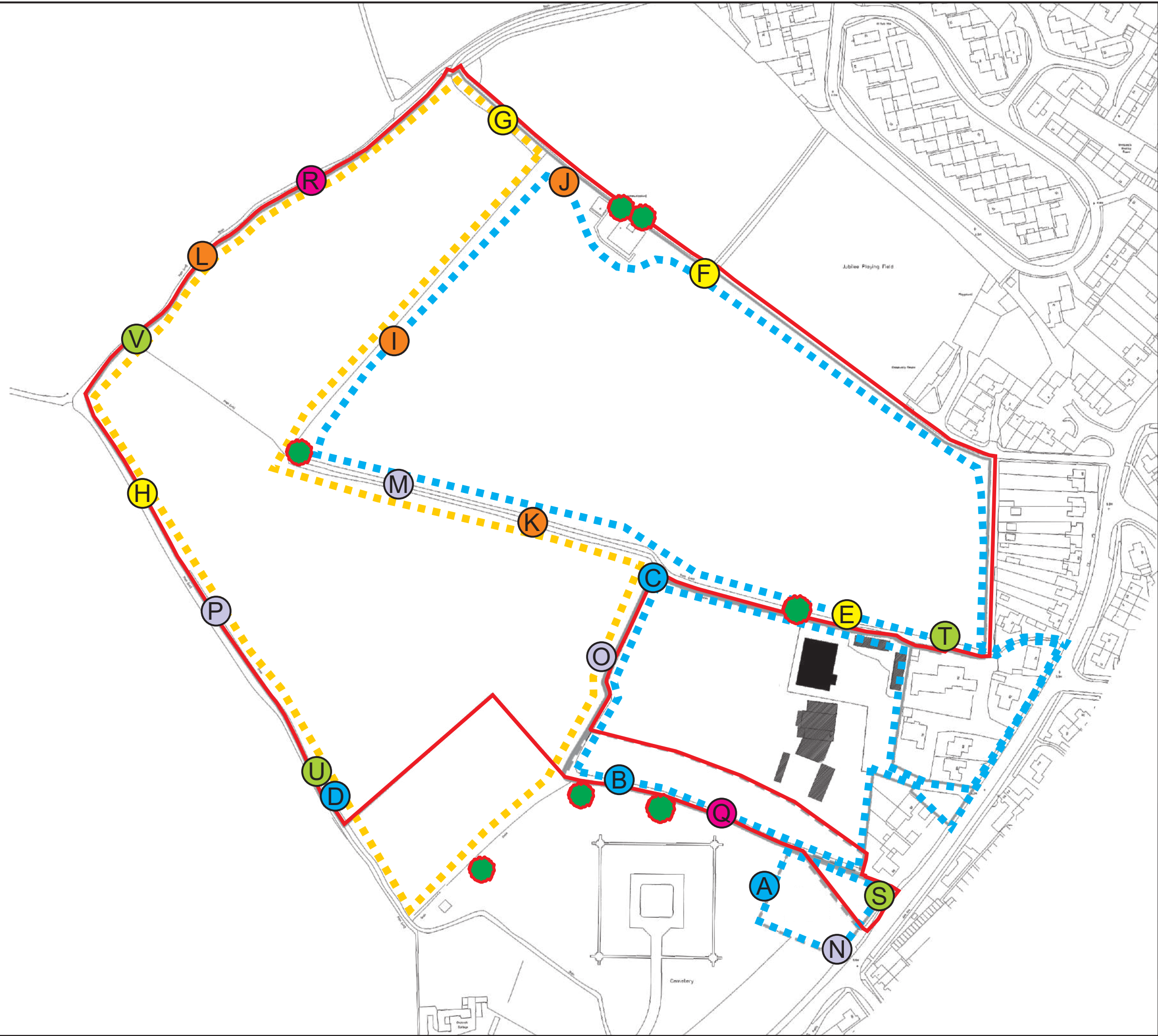
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7216:
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ECO2:
ECOLOGICAL FEATURES

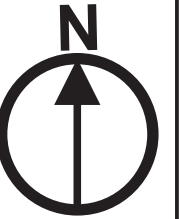
SEPT
2020

PLAN ECO3
Bat Survey Plan



KEY:

- APPLICATION SITE BOUNDARY
- BAT ACTIVITY TRANSECT 1
- BAT ACTIVITY TRANSECT 2
- TREE WITH LOW BAT POTENTIAL
- APRIL STATIC DETECTOR LOCATIONS
- MAY STATIC DETECTOR LOCATIONS
- JUNE STATIC DETECTOR LOCATIONS
- JULY STATIC DETECTOR LOCATIONS
- AUGUST STATIC DETECTOR LOCATIONS
- SEPTEMBER STATIC DETECTOR LOCATIONS



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7216:
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ECO3: BAT SURVEY PLAN

August
2020

APPENDICES

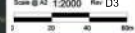
APPENDIX 1

Illustrative Masterplan



Nursery Fields
Illustrative Masterplan
for Landform Bersted Ltd

Drawing No: 01304_MP_001
Scale @ A2: 1:2000 Rev: D3



APPENDIX 2

Information obtained from MAGIC



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)

Projection = OSGB36
xmin = 486500
ymin = 98380
xmax = 496500
ymax = 103000

Map produced by MAGIC on 22 July, 2020.
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APPENDIX 3

Examples of Suitable Bat Boxes

Examples of Suitable Bat Boxes

Schwegler bat boxes are made from 'woodcrete' and have the highest rates of occupation of all types of box. The 75% wood sawdust, clay and concrete mixture is ideal, being durable whilst allowing natural respiration and temperature stability. These boxes are rot and predator proof and extremely long lasting. Boxes can be hung from a branch near the tree trunk or fixed using 'tree-friendly' aluminum nails.



1FF Bat Box

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

Woodcrete construction
Width: 27cm
Height: 43cm
Weight: 8.3kg

2FN Bat Box

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

Woodcrete construction, 16cm diameter, height 36cm.



3FF Colony Bat Box

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

Woodcrete construction
Width: 27cm
Height: 43cm
Weight: 9.5kg





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