



Wicks Farm, Ford

West Sussex

Preliminary Ecological Appraisal

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LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living animals and plants are capable of migration/establishing and whilst such species may not have been located during the survey duration, their presence may be found on a site at a later date.

This report provides a snap shot of the species that were present at the time of the survey only and does not consider seasonal variation. Furthermore, where access is limited or the site supports habitats which are densely vegetated only dominant species maybe recorded.

The recommendations contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background

- 1.1 The Ecology Partnership Ltd was commissioned by John Hall Consulting to undertake a Preliminary Ecological Appraisal (PEA) on land at Wicks Farm near Ford, West Sussex.
- 1.2 This report presents the results of The Ecology Partnership's surveys in and around the site, which aims specifically to assess the site's potential to support protected species and protected habitats that may be affected by the proposed development.
- 1.3 Section 2 of this report sets out the methodologies of the Ecology Partnership's surveys. In section 3 the results of the surveys are presented. Discussions and implications for development are found in section 4, including general site enhancements. Ecological impacts are discussed in section 5 with conclusions drawn from the report presented in section 6.

Site Context and Status

- 1.4 The site is located to the north-west of Ford in West Sussex, immediately to the north of Ford Lane and to the south of the railway line. The surrounding local area predominantly comprises agricultural and commercial buildings, as well as agricultural fields, pasture fields and small blocks of plantation woodland with connective tree-lines and hedgerows. Figure 1 overleaf shows the approximate red-line boundary of the site and its immediate surrounds.



Figure 1: Approximate location of the red-line site boundary

Description of Proposed Development

- 1.5 The proposals are yet to be finalised; however, they are understood to include for the construction of glasshouses totalling an area of approximately 6ha with a reservoir located in the north-west corner of the site and a service area, offices, boilers and staff welfare facilities located in the south-east corner of the site.

Planning Policies

- 1.6 National and local planning policies may have an effect on the proposed development. The following paragraphs identify relevant planning policies and discuss these in the context of the site.
- 1.7 Under the NERC Act (2006) *“Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”*. In order to comply with this ‘Biodiversity Duty’, planning

decisions must ensure that they adequately consider the potential ecological impacts of a proposed development.

- 1.8 In compliance with Section 41 of the NERC Act, the Secretary of State has published a list of species and habitats considered to be of principle importance for conserving biodiversity. These were known as BAP habitats and species. The UK BAP lists of priority species and habitats remain an important and valuable reference certainly at county levels. However, the UK Post 2010 Biodiversity Framework (published 2012) has succeeded BAP. It was produced by JNCC and Defra, on behalf of the Four Countries' Biodiversity Group (4CBG), through which the environment departments of all four governments in the UK work together to achieve the 'Aichi Biodiversity Targets' and the aims of the EU biodiversity strategy.
- 1.9 National policy guidance is provided by National Planning Policy Framework (NPPF 2018), which sets out the Government's planning policies for England and how they should be applied. Section 15 of the document is entitled 'Conserving and Enhancing the Natural Environment'.
- 1.10 The following paragraphs are also considered to be relevant:

'174. 'To protect and enhance biodiversity and geodiversity, plans should:

- a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and*
- b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.*

175. When determining planning applications, local planning authorities should apply the following principles:

-
- a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
 - b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
 - c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
 - d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.*

- 1.11 The site falls under the jurisdiction of Arun District Council. A new Local Plan is currently being developed, and in the meantime, the existing Arun District Local Plan (updated July 2018) contains policies relating to nature conservation and relevant to the site including:

Policy ENV DM1

Designated Sites of biodiversity or geological importance

- a. "Proposed development likely to have an adverse effect on land with the designated features of any Site of Biodiversity or Geological Importance as listed in Tables 17.1 - 17.7 or any subsequently designated sites (either individually or in combination with other developments), will not normally be permitted. Consideration will be given to the exact designated features present on the site, their scarcity/rarity and recognition of the protection offered by their existing status. Development on wildlife sites with the highest value will only be permitted exceptionally where the following can be demonstrated:*
 - i. There is no alternative solution (which shall be adequately demonstrated by the developer).*
 - ii. There are reasons of public health or public safety or*

- iii. *There are benefits of primary importance to the environment or*
- iv. *There are imperative reasons of overriding public interest.*

Notwithstanding the above however, the presumption in favour of sustainable development does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined.

- b. *In determining any planning application affecting Sites of Biodiversity or Geological Importance the Council will ensure that the intrinsic natural features of particular interest are safeguarded or enhanced having regard to;*
 - i. *The European, National or Local status and designation of the site;*
 - ii. *The nature and quality of the site's features, including its rarity value;*
 - iii. *The extent of any adverse impacts on the notified features of interest;*
 - iv. *The need for compensatory measures in order to re-create remaining features of habitats on or off the site.*
- c. *Where appropriate the Council will ensure the effective management of designated sites through the imposition of planning conditions or Section 106 agreements as appropriate."*

Policy ENV DM2

Pagham Harbour

- a. *Within Zone A (0-400m from the boundary) as identified on the Policies Maps, development will only be permitted in exceptional circumstances where the developer is able to demonstrate there will be no detrimental effects on Pagham Harbour, including non-native species and the water environment. Regard shall also be had to tests 1-4 as set out in Policy DM1 (Designated Sites of Biodiversity or Geological Importance).*
- b. *Within Zone B (0-5km) for all new residential development and development which is likely to have an impact on Pagham Harbour will be required to:*
 - i. *Make developer contributions towards the agreed strategic approach to access management at Pagham Harbour.*
 - ii. *create easily accessible new green spaces for recreation within or adjacent to the development site. These shall be capable of accommodating the predicted increases in demand for local walking, including dog walking. Good pedestrian links shall be provided between housing areas and new and existing green space*

- iii. *in order to discourage car use.*
- c. *Major developments (as defined in the GDPO 1995 as amended) taking place outside Zone B and close to its boundary will be considered on a case by case basis to determine any potential effects on Pagham Harbour, and the need for any avoidance or mitigation measures."*

Policy ENV DM3

Biodiversity Opportunity Areas

"Development shall:

- a. *Retain and sympathetically incorporate locally valued and important habitats, including wildlife corridors and stepping stones*
- b. *Be designed in order to minimise disturbance to habitats*

Development proposals that do not reasonably address opportunities for enhancing these through their design, layout and landscaping or access/management shall not be permitted. Where a development scheme would result in a habitat loss, mitigation measures will be proposed as part of the proposed scheme and such measures agreed with the Local Planning Authority prior to the determination of any planning application. Within Biodiversity Opportunity Areas (BOAs) identified on the Policies Maps or where likely to have an impact on species or habitats within the BOAs, any application for planning permission shall include a properly conducted survey of the presence of that species and habitat and impact(s) that development may have on the BOA."

Policy ENV DM4

Protection of trees

"Development will be permitted where it can be demonstrated that trees protected by a Tree Preservation Order(s), (TPO) identified as Ancient Woodland, in a Conservation Area or contributing to local amenity, will not be damaged or destroyed now and as they reach maturity, unless development:

- a. *Would result in the removal of one or more trees in the interests of good arboricultural practice. This shall be demonstrated by the developer following the advice of a suitably qualified person which shall be guided by BS 5837 (2012). Details of any advice received having regard to BS 5837 (2012) shall be submitted, in writing, as part of a planning application; or*
- b. *Would enhance the survival and growth prospects of other protected trees;*

-
- c. *The benefits of the proposed development in a particular location outweigh the loss of trees or woodland, especially ancient woodland.*

Where planning permission is granted in any of the above instances, conditions shall be used to ensure that, for any trees which are removed as part of a development, at least an equivalent number of a similar species and age (where practical) are planted on the proposed development site. Sufficient space for replacement trees to mature without causing future nuisance or damage shall be provided. The planting of new trees shall form an integral part of the design of any development scheme.

Proper provision must be made for the protection and management of trees or areas of woodland on-site when undertaking development. A management plan shall be provided as part of a planning application in accordance with BS 5837 (2012) in order to ensure that trees are adequately protected during development and appropriately maintained in the future. Conditions for the continued protection of trees on sites shall be included in any planning permission given.

Where there are existing trees on or adjacent to a development site, developers shall be required to provide:

- d. Land and tree surveys*
- e. A tree constraints plan*
- f. An arboricultural impact assessment to include a tree protection plan and arboricultural method statement*

These will ensure that development is planned to take a comprehensive view of tree issues at an early stage in the design process and that development works do not have a negative impact on existing trees."

Policy ENV DM5

Development and biodiversity

"Development schemes shall, in the first instance, seek to achieve a net gain in biodiversity and protect existing habitats on site. They shall also however incorporate elements of biodiversity including green walls, roofs, bat and bird boxes as well as landscape features minimising adverse impacts on existing habitats (whether designated or not). Development schemes shall also be appropriately designed to facilitate the emergence of new habitats through the creation of links

between habitat areas and open spaces. Together, these provide a network of green spaces which serve to reconnect isolated sites and facilitate species movement.

Where there is evidence of a protected species on a proposed development site, planning applications shall include a detailed survey of the subject species, with details of measures to be incorporated into the development scheme to avoid loss of the species. This involves consideration of any impacts that will affect the species directly or indirectly, whether within the application site or in an area outside of the site, which may be indirectly affected by the proposals. All surveys shall be carried out at an appropriate time of year and shall be undertaken by a qualified and, where appropriate, suitably licensed person.

All developments shall have regard to Natural England's standing advice for protected species."

- 1.12 The site was surveyed to assess its ecological value and to ensure compliance with national and local plan policies. The report has been produced with reference to current guidelines for preliminary ecological appraisal (CIEEM 2013) and in accordance with BS 42020:2013 Biodiversity – Code of Practice for Planning and Development.

2.0 Methodology

Desk Top Study

- 2.1 A desk top study search was completed using an internet-based mapping service (www.magic.gov.uk) for statutory designated sites and an internet-based aerial mapping service (www.earth.google.co.uk) was used to understand the habitats present in and around the survey area and habitat linkages and features (ponds, woodlands etc) within the wider landscape.
- 2.2 In addition to this, biological records were requested from Sussex Biodiversity Records Centre (SxBRC) with a search radius of 2km around the site. This includes protected species and statutory and non-statutory protected sites and habitats.

Preliminary Ecological Appraisal

- 2.3 A preliminary ecological appraisal was undertaken by The Ecology Partnership ecologist, Vicky Hale BSc (Hons) CEnv MCIEEM on the 26th September 2018. The surveyor identified the habitats present, following the standard 'Phase 1 habitat survey' auditing method developed by the Joint Nature Conservancy Council (JNCC). The site was surveyed on foot and the existing habitats and land uses were recorded on an appropriately scaled map (JNCC 2010). In addition, the dominant plant species in each habitat were recorded. The potential for the site to support protected species was also assessed.

Tree Assessment for Bats

- 2.4 Roosts of bats in trees may be identified from the following field signs:
- Black stains beneath cracks, splits and other features where bat dropping have fallen;
 - Dark marks at entrance points where bats have rubbed against the wood and left natural body oils;
 - Feeding remains beneath roosts, such as insect wings;
 - Chattering of bats;
 - Bat droppings under access points;
 - Scratch marks around a feature (cavity or split) caused by bat claws;
 - Urine stains below the entrance or end of split;
 - Large roosts or regularly used sites may produce an odour;
 - Flies around the entrance, attracted by the smell of guano.
- 2.5 The trees on site were assessed for their potential to support roosting bats. The trees were assessed visually for evidence of bats as well as for features that increase the likelihood such as the following:
- Woodpecker holes, natural cracks and rot holes in trunks and branches;
 - Frost cracks;
 - Trunk and branch splits;
 - Hollow sections of trunk and branches;
 - Loose bark;
 - Cavities beneath old root buttresses and coppice stools;

- Dense epicormic growth;
- Dense ivy cover.

2.6 Trees scheduled for arboricultural work should also be assessed, and may be categorised (Table 1) to relate the value of their features to recommended actions. This approach allows trees to be graded according to their potential to support bat roosts. Trees may be assessed as having the potential to support bats (from an individual to a larger roost) even if no bats have been found.

Table 1. Protocol for visual inspection of trees due to be affected by arboricultural work, to assess the value of the trees to bats. Taken from Table 4.1 within the 'Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn), 2016'.

Suitability	Description Roosting habitat
Negligible	Negligible habitat features on-site likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain PRFs* but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
High	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

*Potential roost features

Badger Survey

2.7 A badger survey was undertaken at the site to assess if badgers were using the area and if any setts were located on the site and 30m away from the site that might constrain development. The evaluation of badger activity was based on methodology developed for the National Survey of Badgers (Creswell et al., 1990) and includes searching for badger field signs such as setts, badger pathways, tracks (paw prints), dung piles with latrines, badger hairs and feeding signs such as snuffle holes.

2.8 During the survey, all habitats potentially suitable for badgers were systematically examined for evidence of badger activity including:

- Setts: several sett types may be present within a social group territory, ranging from a single hole to numerous interconnecting tunnels. Setts can be categorised into main, annexe, subsidiary and outlier (Wilson *et al.*, 1997).
- Latrine sites: badgers characteristically deposit dung in pits, which may be located along the boundaries and within the social group territory. These sites serve as means of inter- and intra-group communication.
- Paths and runs: well used routes between setts and/or foraging areas. Often used by generations of badgers.
- Snuffle holes: areas of disturbed vegetation often formed by badgers foraging for ground dwelling invertebrates such as earthworms and larvae and the underground storage organs of plants.
- Hair: often found among spoil and bedding outside entrances to setts or snagged on fences (such as barbwire) along well-used runs.
- Footprints: easily distinguishable from other large mammal species. Often found along paths and runs or in spoil outside sett entrances.

Habitat Suitability for Reptiles

2.9 Habitat surveys were carried out to assess the potential of the site to hold populations of reptile species. This involved looking for the presence of factors that would increase the suitability of the site for reptiles such as:

- Scrub and grassland (long sward) mosaic across the site;
- Features that can be potential hibernation sites for common reptiles such as log piles;
- Grass tussocks within the grassland that can act as shelter and burrowing sites;
- Water bodies or damp places on site (grass snakes);
- Compost heaps or decaying vegetation (slow worms);
- Features that can act as refugia on the ground such as disused roofing felt.

Habitat Suitability for Great Crested Newts (GCN)

2.10 Habitat surveys were carried out to assess the potential of the site to hold great crested newts (*Triturus cristatus*). This involved looking at the wider landscape using Google Maps

and OS maps to assess types of habitat in the wider landscape. This also involved looking for the presence of factors that would increase the suitability of the site for GCN such as:

- The presence of suitable breeding places (water bodies) on site and within 500m of the site in the wider landscape;
- Habitat connectivity between ponds (if present) in the wider landscape and on site;
- The condition of the ponds and whether there were factors that would render them unsuitable for GCN such as fish;
- Land uses surrounding the site that may affect the potential of the site to hold GCN such as agriculture;
- Type of suitable habitat on site such as scrub/grassland mosaic;
- Patches of woodland in the wider landscape that can provide terrestrial habitat;
- Any barriers between known populations of GCN such as motorways and roads;
- Hibernation features on site for GCN such as log and rubble piles.

Hedgerow Assessment

2.11 The hedgerows were assessed under the criteria of the Hedgerow Regulations 1997 (as amended 2002). Under the criteria, to be determined as 'important', a hedgerow must be at least 30 years old and meet at least one of the additional criteria as summarised below:

- Marks a pre-1850 parish or township boundary
- Incorporates an archaeological feature
- Is part of, or associated with, an archaeological site
- Marks the boundary of, or is associated with pre-1600 estate or manor.
- Forms an integral part of a pre-Parliamentary enclosure field system.
- Contains certain categories of species of birds, animals or plants listed in the Wildlife and Countryside Act or Joint Nature Conservation Committee (JNCC) publications

2.12 To be determined as 'species-rich', the hedgerow must include:

- a) at least 7 woody species, on average, in a 30 metre length;
- b) at least 6 woody species, on average, in a 30 metre length and has at least 3 associated features;
- c) at least 6 woody species, on average, in a 30 metre length, including a black poplar tree, or large-leaved lime, or small-leaved lime, or wild service-tree; or

- d) at least 5 woody species, on average, in a 30 metre length and has at least 4 associated features.
- 2.13 The number of woody species is reduced by one in northern counties. The list of 56 woody species comprises mainly shrubs and trees. It generally excludes climbers (such as clematis, honeysuckle and bramble) but includes wild roses.
- 2.14 The hedgerow may also be considered as 'important' if the hedgerow runs alongside a bridleway, footpath, road used as a public path, or a byway open to all traffic and includes at least 4 woody species, on average, in a 30 metre length and has at least 2 of the associated features listed at (i) to (vii) below:
- i) a bank or wall supporting the hedgerow;
 - ii) less than 10% gaps;
 - iii) on average, at least one tree per 50 metres;
 - iv) at least 3 species from a list of 57 woodland plants;
 - v) a ditch;
 - vi) a number of connections with other hedgerows, ponds or woodland; and
 - vii) a parallel hedge within 15 metres.

Limitations

- 2.15 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no single investigation could ensure the complete characterisation and prediction of the natural environment. . The site was visited over the period of one site visit, as such seasonal variations cannot be observed and potentially only a selection of all species that potentially occur within the site have been recorded. Therefore, the survey provides a general assessment of potential nature conservation value of the site and does not include a definitive plant species list.
- 2.16 The protected species assessment provides a preliminary view of the likelihood of protected species occurring on site, based on the suitability of the habitat and any direct evidence on site. It should not be taken as providing a full and definitive survey of any protected species group. The assessment is only valid for the time when the survey was

carried out. Additional surveys may be recommended if, on the basis of this assessment it is considered reasonably likely that protected species may be present.

3.0 Results

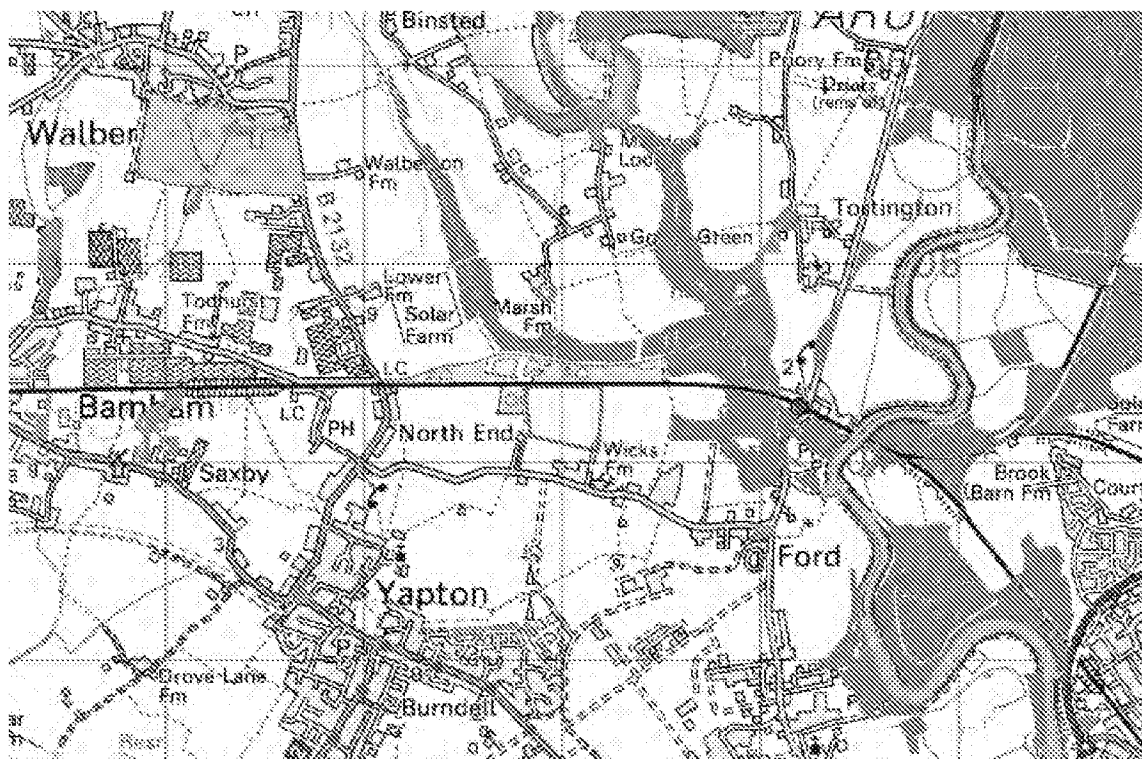
Desktop Study

- 3.1 A 2km data search was requested from SxBRC. Information on designated sites and protected species is summarised below. Records have been included from the last ten years, with the closest and the most recent records included.

Statutory and non-statutory designated sites and ancient woodland

- 3.2 In terms of statutory designated sites, The South Downs National Park is located approximately 1.3km to the north of the site at its closest point. The non-statutorily designated Binstead Wood Complex Local Wildlife Site (LWS) is also located approximately 1.3km to the north of the site. No additional designated sites are located within 2km of the red-line boundary of the site.
- 3.3 In terms of internationally designated sites, Duncton and Bignor Escarpment Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) is located approximately 8.7km to the north-west of the site and Arun Valley Special Protection Area (SPA), SAC, Ramsar and SSSI is located approximately 9.4km to the north-east of the site. No additional internationally designated sites are present within 10km of the red-line boundary of the site.
- 3.4 The surrounding local area predominantly comprises agricultural and commercial buildings, as well as agricultural fields, pasture fields and small blocks of plantation woodland with connective tree-lines and hedgerows. Approximately 11 units of ancient semi-natural and/or ancient re-planted woodland are located within 2km of the site. The closest of which, an unnamed unit of ancient semi-natural woodland is located approximately 720m to the north-east of the site. Units of deciduous woodland in the wider landscape, which is a priority habitat, and areas of ancient woodland are shown in

Figure 2, along with additional priority habitats, such as coastal and floodplain grazing marsh.



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Figure 2: Priority deciduous (dark green) and ancient semi-natural and replanted (hatches) woodland, woodpasture and parkland (green with scrub and tree symbols) and coastal and floodplain grazing marsh (blue) habitat within the local landscape of the site.

Protected species

Table 2: Records of protected species within 2km of the site

Species	Designation	Closest record	Most recent record	Comments
Bluebell <i>Hyacinthoides non-scripta</i>	Wildlife and Countryside Act (W&C Act) 1981 (Sch. 8)	Within 2km (SU90Y) 02/05/2016		
Stag beetle <i>Lucanus cervus</i>	Habitats Directive Annex II; W&C	In excess of 1km from the site (SU9705)		

	Act 1981 (Sch. 5) Sec9.5a; NERC Act S41	13/06/2017		
Pearl-bordered fritillary <i>Boloria euphrosyne</i>	W&C Act 1981 (Sch. 5) Sec9.5a; NERC S41	In excess of 1.6km to the north of the site (SU9806) 07/05/2016		
Palmate newt <i>Lissotriton helveticus</i>	W&C Act 1981 (Sch. 5) Sec9.5a	1.2km North 23/03/2017		
Smooth newt <i>Lissotriton vulgaris</i>	As above	1.3km North 23/03/2017	1.7km North 16/06/2017	
Great crested newt <i>Triturus cristatus</i>	Habitats Directive Annex II & IV; Conservation (Natural Habitats, &c.) Regulations 2017 (Sch. 2); W&C Act 1981 (Sch. 5); NERC S41	Same 1km grid square as part of the site (SU9804) – exact location unknown 01/06/2017		1 female present
Common frog <i>Rana temporaria</i>	W&C Act 1981 (Sch. 5) Sec9.5a	1.2km North 23/03/2017	In excess of 1km from site (SU9707) 30/09/2017	
Common toad <i>Bufo bufo</i>	W&C Act 1981 (Sch. 5) Sec9.5a; NERC S41	1km South-West 2000-2010	1.1km North-West 14/07/2018	
European water vole <i>Arvicola amphibius</i>	WCA Sch5 s9.4a/s9.4b/s9.4c, NERC S41	1km North-west 02/07/2015	1.6km West 24/05/2016	
Hazel dormouse <i>Muscardinus avellanarius</i>	Habitats Directive Annex IV; Conservation (Natural Habitats, &c.) Regulations 2017 (Sch. 2); W&C Act 1981 (Sch. 5); NERC S41	In excess of 1.6km to the north of the site (SU9906) 20/09/2015		
Slow worm <i>Anguis fragilis</i>	W&C Act 1981 (Sch. 5) Sec9.1 and 9.5a; NERC S41	1km South-West 2000/2010	1.5km North 17/07/2017	
Adder <i>Vipera berus</i>	As above	1.4km North 25/07/2017		
Grass snake <i>Natrix natrix</i>	As above	1.3km North 29/05/2017		
Common lizard <i>Zootoca vivipara</i>	As above	1.1km North-East 17/07/2017		

Serotine <i>Eptesicus serotinus</i>	Habitats Directive Annex IV; Habitat regulations Sch2; W&C Act (Sch.5)	1.6km South-West 01/08/2016		1 juvenile male – bat rescue
Myotis species <i>Myotis</i> sp	Habitats Directive Annex II & IV; Habitat regulations Sch2; W&C Act (Sch.5); NERC S41	1.2km South-East 24/06/2016		
Daubenton's bat <i>Myotis daubentonii</i>	Habitats Directive Annex IV; Habitat regulations Sch2; W&C Act (Sch.5)	2km North 16/08/2015		
Whiskered/Brandt's bat <i>Myotis mystacinus/brandtii</i>	As above	1.7km North 18/08/2015		
Natterer's bat <i>Myotis nattereri</i>	As above	1 km South-West 2000-2010	2km North 16/08/2015	
Noctule <i>Nyctalus noctula</i>	Habitats Directive Annex IV; Habitat regulations Sch2; W&C Act (Sch.5); NERC S41	1km South-West 2000-2010		
Pipistrelle species <i>Pipistrellus</i> sp	As above	1km South-West 2000-2010		
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	As above	1.1km South-East 24/06/2015		
Common pipistrelle <i>Pipistrellus pipistrellus</i>	As above	1.1km South-West 28/07/2017		
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	As above	1.1km South-East 24/06/2015	1.7km North 18/08/2015	
Long-eared species <i>Plecotus</i> sp	As above	1.1km South-East 01/04/2015		
Garganey <i>Anas querquedula</i>	W&C Act 1981 (Sch.1)	Within 2km 16/09/2011		
Scaup <i>Aythya marila</i>	W&C Act 1981 (Sch.1); NERC S41	Within 2km 19/11/2016		
Long-tailed duck <i>Clangula hyemalis</i>	W&C Act 1981 (Sch.1)	Within 2km 20/04/2010 - 21/04/2010		
Velvet scoter <i>Melanitta fusca</i>	As above	Within 2km 26/04/2014		

Smew <i>Mergellus albellus</i>	Birds Directive Annex I	Within 2km 01/01/2011	
White stork <i>Ciconia ciconia</i>	As above	Within 2km 22/09/2017	
Spoonbill <i>Platalea leucorodia</i>	Birds Directive Annex I; W&C Act 1981 (Sch.1)	Within 2km 29/03/2014	
Black-throated diver <i>Gavia arctica</i>	As above	Within 2km 29/09/2013	
Great northern diver <i>Gavia immer</i>	As above	Within 2km 05/09/2015	
Slavonian grebe <i>Podiceps auritus</i>	As above	Within 2km 16/03/2014	
Black-necked grebe <i>Podiceps nigricollis</i>	W&C Act 1981 (Sch.1)	Within 2km 03/11/2014	
Marsh harrier <i>Circus aeruginosus</i>	Birds Directive Annex I; W&C Act 1981 (Sch.1)	Within 2km 26/12/2017	
Hen harrier <i>Circus cyaneus</i>	Birds Directive Annex I; W&C Act 1981 (Sch.1); NERC S41	Within 2km 10/12/2016	
Merlin <i>Falco columbarius</i>	Birds Directive Annex I; W&C Act 1981 (Sch.1)	Within 2km 24/09/2017	
Peregrine <i>Falco peregrinus</i>	As above	Within 2km 17/09/2017	
Dotterel <i>Charadrius morinellus</i>	As above	Within 2km 18/04/2009	
Golden plover <i>Pluvialis apricaria</i>	Birds Directive Annex I	Within 2km 29/12/2017	
Stone curlew <i>Burhinus oedichenus</i>	Birds Directive Annex I; W&C Act 1981 (Sch.1); NERC S41	Within 2km 30/04/2017	
Whimbrel <i>Numenius phaeopus</i>	W&C Act 1981 (Sch.1)	Within 2km 08/09/2017	
Ruff <i>Calidris pugnax</i>	Birds Directive Annex I; W&C Act 1981 (Sch.1)	Within 2km 09/09/2016	
Black-tailed godwit <i>Limosa limosa</i>	W&C Act 1981 (Sch.1)	Within 2km 16/08/2017	
Greenshank <i>Tringa nebularia</i>	As above	Within 2km 23/08/2017	
Green sandpiper <i>Tringa ochropus</i>	As above	Within 2km 08/08/2017	

Little gull <i>Hydrocoloeus minutus</i>	Birds Directive Annex I; W&C Act 1981 (Sch.1)	Within 2km 14/01/2016	
Mediterranean gull <i>Larus melanocephalus</i>	As above	Within 2km 12/06/2017	
Black tern <i>Chlidonias niger</i>	As above	Within 2km 20/04/2014	
Sandwich tern <i>Sterna sandwicensis</i>	Birds Directive Annex I	Within 2km 03/10/2013	
Common tern <i>Sterna hirundo</i>	As above	Within 2km 15/06/2011	
Short-eared owl <i>Asio flammeus</i>	As above	Within 2km 17/03/2016	
Hoopoe <i>Upupa epops</i>	W&C Act 1981 (Sch.1)	Within 2km 04/01/2014	
Woodlark <i>Lullula arborea</i>	Birds Directive Annex I; W&C Act 1981 (Sch.1); NERC S41	Within 2km 01/07/2010	
Black redstart <i>Phoenicurus ochruros</i>	W&C Act 1981 (Sch.1)	Within 2km 31/10/2015	
Red-breasted flycatcher <i>Ficedula parva</i>	Birds Directive Annex I	Within 2km 10/06/2012	
Dartford warbler <i>Sylvia undata</i>	Birds Directive Annex I; W&C Act 1981 (Sch.1)	Within 2km 28/10/2015	
Red-backed shrike <i>Lanius collurio</i>	As above	Within 2km 09/01/2015	
Snow bunting <i>Plectrophenax nivalis</i>	W&C Act 1981 (Sch.1)	Within 2km 08/11/2011 - 09/11/2011	
Ortolan bunting <i>Emberiza hortulana</i>	Birds Directive Annex I	Within 2km 10/06/2016	
Osprey <i>Pandion haliaetus</i>	Birds Directive Annex I; W&C Act 1981 (Sch.1)	1.1km South-West 30/04/2017	
Little ringed plover <i>Charadrius dubius</i>	W&C Act 1981 (Sch.1)	Within 2km 23/04/2017	
Kingfisher <i>Alcedo atthis</i>	Birds Directive Annex I; W&C Act 1981 (Sch.1)	1.1km North 18/07/2016	Within 2km (TQ00C) 29/08/2016
Cett's warbler <i>Cettia cetti</i>	W&C Act 1981 (Sch.1)	20m North-West (Yapton Marsh Farm to north of railway line)	Within 2km (TQ00C) 22/08/2017

		01/06/2017	
Bewick's swan <i>Cygnus columbianus</i>	Birds Directive Annex I; W&C Act 1981 (Sch.1); NERC S41	Within 2km 02/02/2011	
Bewick's swan <i>Cygnus columbianus</i> <i>subsp.</i> <i>bewickii</i>	As above	Within 2km 18/02/2017	
Little egret <i>Egretta garzetta</i>	Birds Directive Annex I	In excess of 1km from the site (TQ0004) 23/06/2010	
Red kite <i>Milvus milvus</i>	Birds Directive Annex I; W&C Act 1981 (Sch.1)	1.7km North-West 22/05/2017	
Firecrest <i>Regulus ignicapilla</i>	W&C Act 1981 (Sch.1)	In excess of 1km North-West (SU9705) 13/05/2015	
Fieldfare <i>Turdus pilaris</i>	W&C Act 1981 (Sch.1)	Within 2km 13/12/2016	
Redwing <i>Turdus iliacus</i>	As above	Within 2km 28/10/2016	
Barn owl <i>Tyto alba</i>	As above	0.8km North 03/07/2017	
Common crossbill <i>Loxia curvirostra</i>	As above	In excess of 1.6km North 03/02/2012	

Preliminary Ecological Appraisal

- 3.5 The site predominantly comprises a large arable field which was being drilled for crops at the time of survey. The field is bounded on its northern, eastern and western margins by a poor semi-improved grassland, tall ruderal vegetation and scrub verge with hedgerows and trees extending part-way along the eastern and western field boundaries and along either side of the site access to the south-west. A small copse of plantation broadleaved woodland with pond is present immediately outside of the western site boundary and a small single storey building used for dog training is present outside of the south-western site boundary. Broad habitat types identified within the site are detailed below.

Grassland, tall ruderal vegetation and scrub

- 3.6 An arable field margin of poor semi-improved neutral grassland, tall ruderal vegetation and scrub extends along the northern, eastern and western boundaries. At the time of survey, it was observed that this field margin had been recently cut; however, some more rank, tussocky vegetation was noted to persist, particularly in the north-west corner of the site. Grasses within the arable field verge were dominated by cocks-foot (*Dactylis glomerata*), perennial rye-grass (*Lolium perenne*) and Yorkshire-fog (*Holcus lanatus*) with false-oat grass (*Arrhenatherum elatius*) and red fescue (*Festuca rubra*). Areas of hard rush (*Juncus inflexus*) and common reed (*Phragmites australis*) were also noted in the north-west corner of the field and scattered along the northern boundary.
- 3.7 Herbs present within the margin included common nettle (*Urtica dioica*), particularly along the western field margin with broadleaved dock (*Rumex obtusifolius*), cleavers (*Galium aparine*), red campion (*Silene dioica*), ground-ivy (*Glechoma hederacea*), meadow buttercup (*Ranunculus acris*), creeping buttercup (*Ranunculus repens*), crane's-bill (*Geranium* sp), hedge bindweed (*Calystegia sepium*) and sow thistle (*Sonchus* sp). The extreme north-western corner of the field is dominated by common fleabane (*Pulicaria dysenterica*) with willowherb (*Epilobium* sp), common valerian (*Valeriana officinalis*), horsetail (*Equisetum* sp), common ragwort (*Jacobaea vulgaris*) and sapling dogwood (*Cornus* sp). On the eastern field boundary, additional herb species included scentless mayweed (*Tripleurospermum maritimum* ssp *inodorum*), scarlet pimpernel (*Anagallis arvensis*) and greater plantain (*Plantago major*) with common toadflax (*Linaria vulgaris*) also present on the northern margin and small toadflax (*Chaenorhinum minus*), black nightshade (*Solanum nigrum*) and redshank (*Polygonum persicaria*) present in the south-east corner.
- 3.8 Areas of bramble (*Rubus fruticosus* agg) scrub are scattered throughout the site margins with areas of young willow (*Salix* sp) and hawthorn (*Crataegus monogyna*) also present along the northern field boundary.

Trees and hedgerow

- 3.9 Several trees are present within the red-line boundary, predominantly located within hedgerows on the eastern and western field boundaries. Trees within the site predominantly include semi-mature and young standards with more mature specimens present on the eastern field margin. Species present include silver birch (*Betula pendula*), elm (*Ulmus* sp), ash (*Fraxinus excelsior*), maple (*Acer* sp), poplar (*Populus* sp), beech (*Fagus sylvatica*) and whitebeam (*Sorbus* sp).
- 3.10 Four lengths of hedgerow are present within the site, located on the eastern and western field margins, as well as on either side of the site access to the south-west. All four hedgerows within the site have been assessed for their species richness and to assess whether they are classified as ‘important’ under the Hedgerow Regulations 1997 (as amended 2002). The approximate locations of hedgerows within the site and details of the hedgerows assessed in accordance with the Hedgerow Regulations, 1997 are detailed in Figure 3 and Table 3 below.



Figure 3: Location of hedgerows within the red-line boundary of the site

Table 3: Hedgerow Assessment

Hedgerow	Woody species within 30m	Additional species (incl. non-natives)	Height (m)	Width (m)	Shape	Structure/Type	Features	Important and/or species rich?
H1	Hawthorn, damson (<i>Prunus domestica</i> var <i>insititia</i>), elder (<i>Sambucus nigra</i>), blackthorn (<i>Prunus spinosa</i>)	Bramble, ivy (<i>Hedera helix</i>), young silver birch, elm, maple and ash (northern extremity of hedgerow)	6	3	Maintained	Shrubby	Adjacent to a public right of way, dry ditch, <10% gaps, average of one tree per 50m	Not species-rich Important
H2	Poplar, rose (<i>Rosa</i> sp), hawthorn, spindle (<i>Euonymus europeaus</i>)	Ash, blackthorn, beech, whitebeam, bramble, ivy, Wilson's honeysuckle (<i>Lonicera nitida</i>), young spruce (<i>Picea</i> spp)	6	4	Maintained	Gappy	Average of one tree per 50m	Not species-rich Not important
H3	Hawthorn	ivy	4	2.5	Maintained	Shrubby	Adjacent to a public right of way	Not species-rich Not important
H4	Hawthorn; young pedunculate oak (<i>Quercus robur</i>)	ivy	4	2.5	Maintained	Shrubby with few trees	Adjacent to a public right of way; average of one tree per 50m	Not species-rich Not important

3.11 Areas of poor semi-improved grassland, tall ruderal vegetation, scrub and/or arable land are present adjacent to hedgerows within the site (see above for typical species list).

Outside of the site

- 3.12 A small copse of plantation broadleaved woodland is present immediately to the west of the site, west of the public right of way. This area comprises young and semi-mature ash, hawthorn, pedunculate oak, elder, hazel (*Corylus avellana*), sweet chestnut (*Carpinus betulus*) and apple (*Malus domestica*) with additional standards of alder (*Alnus* sp), willow, maple and silver birch further towards the railway line to the north.

Tree Assessment for Bats

- 3.13 Several trees are present within the red-line boundary of the site, located primarily on the site margins and within hedgerows. The majority of trees within the site were considered to have negligible potential to support roosting bats owing to a lack of suitable roosting features, such as broken and split limbs, woodpecker holes, cavities and dense ivy cover. Notwithstanding this, several trees on the boundaries of the site, particularly within hedgerows on the eastern and western field margins were considered to have low potential for roosting bats owing to the presence of ivy growth.
- 3.14 The habitats on site are likely to provide foraging opportunities for bats in the local area. It is likely that a variety of bats use the local landscape and forage around the hedgerows and trees on the margins of the site. These features also provide some connectivity across the site and into the wider landscape.

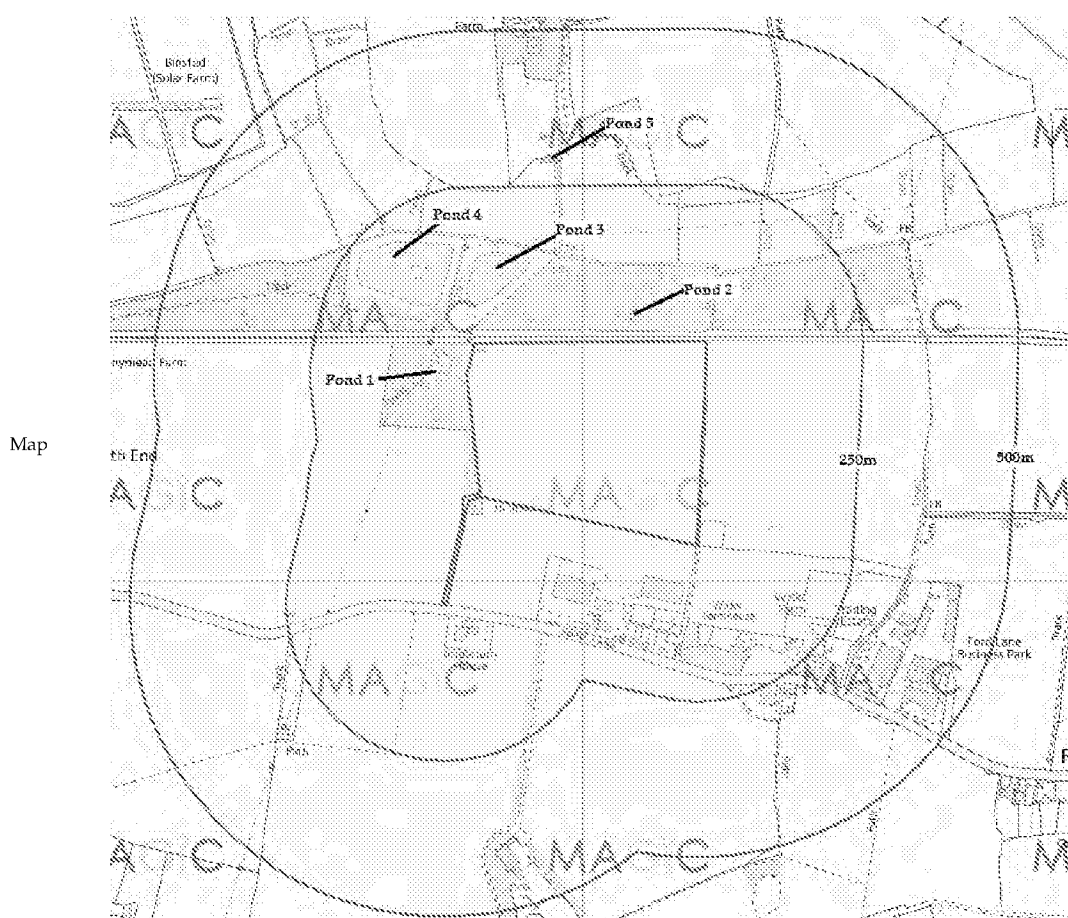
Great Crested Newts

- 3.15 Although no ponds are present within the red-line boundary of the site, online mapping and aerial photographs show five ponds (1-5) within 500m of the site (not separated by barriers to dispersal, such as main roads). Whilst the majority of ponds within 500m of the site are located to the north of the railway line which extends immediately to the north of the site, this railway line is not considered to pose a significant barrier to dispersal, as it is not considered to be a busy line and the railway does not possess multiple tracks.
- 3.16 Four of the five ponds (1 to 4) are located within 250m of the site. Approximate pond distances from the site are detailed in Table 4 below.

Table 4: Approximate pond distances from the site boundary

Pond number	Distance and direction
1	Approximately 30m West
2	Approximately 40m North
3	Approximately 60m North-West
4	Approximately 85m North-West
5	Approximately 300m North

3.17 Figure 4 below shows the approximate location of the ponds (not separated from the site by barriers to dispersal) in proximity to the red-line boundary of the site.



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Figure 4: Approximate location of ponds within 500m of the site boundary

- 3.18 With the exception of pond 2, all ponds were able to be accessed on the day of survey. Pond 2 was not able to be located after extensive searching and therefore it is not considered likely to be present and as such has been scoped out of further assessment.
- 3.19 Ponds 1, and 3 to 5 were assessed in accordance with Habitat Suitability Index (HSI) criteria.
- 3.20 The suitability index is calculated for each of the 10 categories. These are then analysed using the equation below to obtain the geometric mean or HSI score of the ten suitability indices.

$$\text{HSI} = (\text{SI}_1 \times \text{SI}_2 \times \text{SI}_3 \times \text{SI}_4 \times \text{SI}_5 \times \text{SI}_6 \times \text{SI}_7 \times \text{SI}_8 \times \text{SI}_9 \times \text{SI}_{10})^{1/10}$$

- 3.21 The calculated score should be between 0 and 1 and will fall within one of several bands, which correspond to a given category for the pond. Table 5 below shows the HSI scores and their corresponding pond suitability category.

Table 5: HSI scores and pond suitability

HSI	Pond Suitability
< 0.5	Poor
0.5 - 0.59	Below Average
0.6 – 0.69	Average
0.7 – 0.79	Good
> 0.8	Excellent

- 3.22 Table 6 below shows the Habitat Suitability Index scores for all of the ponds able to be assessed (1, and 3 to 5).

Table 6: HSI scores for ponds 1 and 3 to 5

Suitability Indices No.	Feature	Pond 1 Score	Pond 3 Score	Pond 4 Score	Pond 5 Score
1.	Location	1	1	1	1
2.	Area	1	In excess of 2000m ²	In excess of 2000m ²	0.2
3.	Permanence	1	0.9	0.9	0.5
4.	Water quality	0.67	0.67	0.67	0.67
5.	Shading	1	1	1	0.3
6.	Presence of waterfowl	0.67	0.01	0.01	1
7.	Presence of fish	0.67	0.01	0.01	0.67
8.	Pond density	0.89	0.89	0.89	0.89
9.	Suitable newt habitat within 500m	1	1	1	1
10.	Macrophyte content	0.4	0.35	0.35	0.8
10 th root (9 th root where ponds exceed 2000m ²)		0.79	0.29	0.29	0.62
Pond Suitability		Good	Poor	Poor	Average

3.23 In addition to identified ponds within the local landscape, water-filled drainage ditches located outside of the northern site boundary, north of the railway line, were considered to have potential to support great crested newts.

3.24 Owing to the level of management and lack of suitable habitat, the majority of the site was considered sub-optimal for great crested newts in their terrestrial phase; however, boundary features and fringe habitats, such as rank grassland, tall ruderal vegetation and hedgerows may provide suitable dispersal corridors around the margins of the site.

Badgers

3.25 No evidence of badger activity, such as setts, latrines or footprints was identified within the site on the day of survey. Numerous rabbit burrows were noted within the site, particularly along the western field margin.

Habitat Suitability for Reptiles

- 3.26 Owing to the level of management and lack of suitable habitat, the majority of the site was considered sub-optimal for common reptile species; however, narrow strips of grassland and tall ruderal vegetation on arable field margins may have some potential to support reptiles.

Breeding Birds

- 3.27 Trees, hedgerows and scrub predominantly on the margins of the site are considered to have the potential to be used by birds for nesting during the breeding season.

Other Species

- 3.28 Boundary features, particularly hedgerows to the east and west of the site are in themselves considered to provide suitable habitat for dormice, both in terms of habitat structure and provision of food and nesting resources. Notwithstanding this, aerial photography shows few areas of suitable dormouse habitat within the local landscape and it is considered that suitable features within the red-line boundary of the site provide minimal habitat connectivity with these areas of off-site habitat.
- 3.29 Due to lack of suitable habitat and connectivity, the site was not considered to have potential for additional protected species such as otters and water voles.

4.0 Discussion

Designated sites

- 4.1 The South Downs National Park and Binstead Wood Complex LWS are both located approximately 1.3km to the north of the site. No additional designated sites are located within 2km of the red-line boundary of the site.
- 4.2 In terms of internationally designated sites, Duncton and Bignor Escarpment SAC and SSSI is located approximately 8.7km to the north-west of the site and Arun Valley SPA, SAC, Ramsar and SSSI is located approximately 9.4km to the north-east of the site. No

additional internationally designated sites are present within 10km of the red-line boundary of the site.

- 4.3 It is considered that there will be no significant direct or indirect impacts from the development on any designated sites identified within this report due to the distances from the site and the nature and scale of the development.

Habitats

- 4.4 In terms of ancient woodland, approximately 11 units of ancient semi-natural and/or ancient re-planted woodland are located within 2km of the site. The closest of which, an unnamed unit of ancient semi-natural woodland is located approximately 720m to the north-east of the site. This is beyond the 15m standing advice for developing near ancient woodland as recommended by Natural England. It is therefore considered there will be no impact on off-site habitats of ecological value as a result of the proposals.
- 4.5 As well as ancient woodland, there are also units of priority deciduous woodland, woodpasture and parkland and coastal and floodplain grazing marsh habitat within the local landscape of the site (see Figure 2). The closest of these, an area of coastal and floodplain grazing marsh is located approximately 150m to the north of the site. These habitats are of principal importance for the conservation of biodiversity under section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Developments need to take into account impacts on these habitats to prevent their degradation, which may result from indirect impacts. Given the distances of these areas of priority habitat from site, as well as the nature and scale of the development, it is considered that there will be no impacts, direct or indirect, on these habitats.
- 4.6 The habitats on site are common and widespread throughout the local area. Much of the site comprised of arable land with narrow margins of poor semi-improved grassland with a relatively low species diversity, tall ruderal vegetation and scrub. Notwithstanding this, trees and hedgerows on the boundaries of the site are considered to be of greater ecological value and therefore it is recommended that these features are retained and enhanced within the scheme.

- 4.7 Policy ENV 5M5 of the Arun District Local Plan encourages developments to contribute towards a net gain in biodiversity and protection of existing habitats. It is recommended that the proposed development be restricted to areas of existing arable land, retaining existing arable field margins, including grassland verges, trees and hedgerows, where possible. Whilst the removal of trees and hedgerows is not anticipated, any trees and/or sections of hedgerow to be removed should be replaced with species of native provenance. Further ecological enhancements for the site are discussed below.

Hedgerow Assessment

- 4.8 Four lengths of hedgerow are present within the site, located on the eastern and western field margins, as well as on either side of the site access to the south-west. All four hedgerows within the site have been assessed for its species richness and to assess whether they are classified as 'important' under the Hedgerow Regulations 1997 (as amended 2002).
- 4.9 Whilst based on the criteria detailed within the Hedgerow Regulations 1997 (as amended), none of the hedgerows are considered to be species-rich and hedgerows H2 to H4 are not considered to be 'important', hedgerow H1 on the western site boundary is considered to be 'important', as it is located immediately adjacent to a public right of way and has four woody species within a 30m section, as well as four additional features, such as ditches and less than 10% gaps.
- 4.10 Whilst based on The Regulations hedgerows H2 to H4 are not considered 'important', if a hedgerow is found to support protected species listed under 'Schedule 5 of the Wildlife and Countryside Act 1989 (as amended)' it is automatically classed as 'important'. This includes species such as dormice and common reptile species such as slow worm and grass snake. Whether this hedgerow is classed as important under this classification will be determined after further survey work, if deemed necessary. It must be noted that none of the hedgerows within or adjacent to the site were assessed for their historic interest.
- 4.11 It is understood that boundary trees and hedgerows will be retained throughout development of the site and therefore it is recommended that existing lengths of hedgerow

be enhanced post development with the planting of native species and are sensitively managed going forward. It is considered important to keep connectivity across the site post development and to enhance existing sections of hedgerow where possible.

- 4.12 In order to boost berry crops within existing hedgerows and ensure thick nesting cover is available, it is recommended that hedgerows are trimmed on a two or three year rotation, rather than annually. Flailing of hedgerows should be avoided, as this practice can damage woody material. For heavy hedges, a circular saw is preferable.
- 4.13 Enhancement of existing hedgerows by planting up hedgerow gaps and planting of additional species-rich hedgerows, particularly along the northern site boundary will provide important food resources for native wildlife. Species that may be planted include hazel, holly, elder, alder buckthorn (*Frangula alnus*), guelder rose (*Viburnum opulus*), dog rose (*Rosa canina*) and dogwood (*Cornus* spp). Planting the base and edges of hedgerows with herbaceous plants and bulbs attract bees, butterflies and other insects as well as providing ground cover for smaller animals. It is recommended that seeds that are tolerant of semi-shade and are suitable for sowing beneath established hedges be used. The following species can included in the mix:
- Yarrow (*Achillea millefolium*)
 - Agrimony (*Agrimonia eupatoria*)
 - Garlic mustard (*Alliaria petiolata*)
 - Common knapweed (*Centurea nigra*)
 - Wild Basil (*Clinopodium vulgare*)
 - Hedge bedstraw (*Galium album*)
 - Wood avens (*Geranium urbanum*)
 - Oxeye daisy (*Leucanthemum vulgare*)
 - Ribwort plantain (*Plantago lanceolata*)
 - Cowslip (*Primula veris*)
 - Selfheal (*Prunella vulgaris*)
 - Red campion (*Silene dioica*)
 - Hedge woundwort (*Stachys sylvatica*)
 - Upright hedge parsley (*Torilis japonica*)
 - Tufted vetch (*Vicia cracca*)

Protected Species

Bats

- 4.14 Several trees are present within the red-line boundary of the site, located within and adjacent to hedgerows on the eastern and western site boundaries. Although several trees present within the site were considered of adequate maturity to potentially support roosting bats, no obvious bat roosting features, such as broken and split limbs, woodpecker holes, cavities and dense ivy cover were observed and therefore these trees are considered to have negligible potential for roosting bats. Notwithstanding this, few trees on the eastern and western boundaries were noted to have a covering of ivy on their stems, which were considered to have low potential for roosting bats.
- 4.15 Whilst the removal of boundary trees is not anticipated, should it be necessary to remove trees identified as having potential to support roosting bats, it is recommended that ivy be sensitively removed by hand with any cracks or crevices surveyed for evidence of bats by an ecologist prior to felling. These should be surveyed either by endoscopic survey or dusk emergence/dawn return to roost surveys. This will show whether bats are using these trees and whether a licence for felling would be required by Natural England.
- 4.16 Whilst the majority of the site comprised arable land, devoid of vegetation at the time of survey, trees and hedgerows on the margins of the site provide some foraging opportunities for bats in the local area. These features also provide some connectivity across the site and into the wider landscape.
- 4.17 According to Bat Conservation Trust guidelines, it is important that proportionality is employed when recommending further survey work for bat species on a proposed development site. As stated within section 8.2.7 of the latest survey guidelines (2016), the following points need to be taken into account with regard to planning activity surveys:
- Likelihood of bats being present;
 - Likely species concerned;
 - Number of individuals;
 - Type of habitat affected;
 - Predicted impacts of the proposed development on bats;

- Type and scale of proposed development.

1.13 It is understood that current proposals involve the construction of glasshouses totalling an area of approximately 6ha with a reservoir located in the north-west corner of the site and a service area, offices, boilers and staff welfare facilities located in the south-east corner of the site. It is also understood that boundary features, such as trees and hedgerows will largely be left *in situ* post development and incorporated into the design. These habitats are the most significant for bats on site providing foraging and commuting habitat as well as potential roosting space within more mature trees. Furthermore, biological records returned from SxBRC only highlight records of the most common species in the UK and no specialist bats, including woodland specialists, such as Barbastelles, are present in the local landscape.

4.18 Considering the above, the nature and location of the development proposals and the potential for ecological enhancement to be provided within the site, it is considered that no further survey work for bats would be required. Furthermore, it is considered that the development of glasshouses and associated ancillary structures would not impact upon the ecological functionality of the local landscape and will not significantly sever or fragment landscape links or green corridors. It is therefore considered that the proposals will not impact upon the favourable conservation status of bats in the local area.

4.19 Any proposed lighting scheme as part of the development will have to take into account bats in the surrounding area as well as on site. All bat species are nocturnal, resting in dark conditions in the day and emerging at night to feed. Bats are known to be affected by light levels which can affect both their roosting behaviour as well as their foraging behaviour. This needs to be taken into account, with a sympathetic lighting scheme for the development.

4.20 Recommendations include:

- Lighting should only be installed if there is a significant need;
- Lighting should be avoided near woodland, tree-lines and hedgerows, with light angled away from these areas, bats use linear features such as hedgerows to commute across the landscape to forage;

- Lights should have focussed luminance on their target area, preventing light spill and pollution into other areas of the site and local area.
- Dark buffer zones can be used as a good way to separate habitats or features from lighting by forming a dark perimeter around them. Buffer zones rely on ensuring light levels within a certain distance of a feature do not exceed certain defined limits; and
- Light levels should be kept low. All luminaires should lack UV elements when manufactured and metal halide, fluorescent sources should not be used. LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.

Great Crested Newts

- 4.21 Although no ponds are present within the red-line boundary of the site, online mapping and aerial photographs show five ponds (1-5) within 500m of the site (not separated by barriers to dispersal, such as main roads). Whilst the majority of ponds within 500m of the site are located to the north of the railway line which extends immediately to the north of the site, the railway line is not considered to pose a significant barrier to dispersal, as it is not considered to be a busy line and the railway does not possess multiple tracks.
- 4.22 The desk study identified a single record of a female great crested newt located within the same 1km grid square as part of the site (SU9804); however, the exact location of the record was not given.
- 4.23 Owing to a large proportion of the site comprising arable land, which was devoid of vegetation at the time of survey, the majority of the site was considered sub-optimal for great crested newts in their terrestrial phase; however, boundary features and fringe habitats, such as rank grassland, tall ruderal vegetation and hedgerows may provide suitable dispersal corridors around the margins of the site.
- 4.24 With the exception of pond 2, all ponds were able to be accessed on the day of survey. Pond 2 was not able to be located after extensive searching and therefore it is not considered likely to be present and as such has been scoped out of further assessment.

-
- 4.25 Ponds 1, and 3 to 5 were assessed in accordance with HSI criteria. Pond 1 was calculated as having 'good' habitat suitability for great crested newts, ponds 3 and 4 were calculated as having 'poor' habitat suitability owing to the presence of significant populations of fish and waterfowl and pond 5 was calculated as having 'average' habitat suitability for great crested newts.
- 4.26 In addition to identified ponds within the local landscape, water-filled drainage ditches located outside of the northern site boundary, north of the railway line, were considered to have potential to support great crested newts.
- 4.27 The total area of the red-line boundary measures approximately 10.7ha in size; however, the proposed construction footprint is understood to be smaller in extent (just over 6ha in size, excluding reservoir) with the majority of construction works to be sited on the footprint of existing arable land. Boundary features, such as trees and hedgerows, as well as arable margins are largely to be retained *in situ* post development. Access to the proposed site (during the construction and operational phases) is also to be restricted to the existing hardstanding access road which leads into the site.
- 4.28 With regard to the habitat suitability of the five identified ponds in the local landscape, low scoring ('poor') ponds are less likely to support great crested newts with approximately 3% of ponds classed as 'poor' having been found to contain GCN (HSI guidelines). Low scoring ponds only tend to support this species when located in close proximity to occupied ponds and within a landscape with a high pond density. As such, given the 'poor' habitat suitability of Ponds 2 and 3 as well as the majority of the site being largely sub-optimal for GCNs in their terrestrial phase (particularly within the proposed development footprint), the likelihood of great crested newts being present is considered to be relatively low and therefore further survey of these ponds is not recommended.
- 4.29 Pond 5 is located approximately 300m to the north of the site. Where present, great crested newts tend to remain in close proximity to their breeding pond and whilst a maximum routine migratory range has been estimated as approximately 250m from a breeding pond (Franklin, 1993; Oldham and Nicholson, 1986; Jehle, 2000), one study by Robert Jehle,

(2000) demonstrated a 'terrestrial zone' of 63m, within which 95% of summer refuges were located. A further study (Jehle, R & Arntzen, JW. 2000) showed that after the breeding season 64% of newts were recorded within 20m of the pond edge.

4.30 In addition to this, English Nature (now Natural England) published findings of a research report into the efficiency of capture techniques and the value of different habitats for great crested newts, which stated that *'The most comprehensive mitigation, in relation to avoiding disturbance, killing or injury is appropriate within 50m of a breeding pond. It will also almost always be necessary to actively capture newts 50-100m away. However, at distances greater than 100m, there should be careful consideration as to whether attempts to capture newts are necessary or the most effective option to avoid incidental mortality. At distances greater than 200-250m, capture operations will hardly ever be appropriate.'* This report also identified clear correlations between the number of newts captured and certain habitats where four habitats (woodland, arable land, post-industrial habitats and hedgerows) were found regularly to predict the number of newts captured. It can therefore be surmised that greater densities of great crested newts will be found within or in close proximity to areas of favourable terrestrial habitat such as woodland and boundary features, such as hedgerows. Aerial photographs show that pond 5 located within and in close proximity to areas of suitable terrestrial habitat, such as hedgerows and tree-lines.

4.31 Pond 1 located approximately 30m to the west of the site was calculated as having 'good' habitat suitability for great crested newts. Whilst the presence of newts within this pond cannot be discounted, it is understood that the proposed development is to be sited on areas of existing sub-optimal arable land with all construction plant (and operational traffic movements) using the existing hardstanding access road to the south-west. In addition to this, trees, hedgerows and arable verges, which have the potential to be used by newts in their terrestrial phase are to be retained throughout development of the site. Therefore, should the proposals not alter from this assertion and if Reasonable Avoidance Measures (RAMS) are strictly adhered to, the development is considered unlikely to result in licensable activities and therefore a licence for the works and further survey of pond 1 are not considered necessary at this time. Furthermore, the scale and nature of the development is not considered to be significant in terms of habitat loss with no loss of optimal great crested newt habitat anticipated and the development will not isolate,

fragment or removal any specially protected habitats or indeed affect landscape connectivity.

4.32 The proposed development will not affect any ponds, nor will it result in the isolation of one pond from another or in the isolation of a breeding pond from suitable terrestrial habitat. The edges around the site provide continual opportunities for amphibians and provide the ability to move across the site and into the wider landscape. As such, it is reasonable to assume that the proposed development *“will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status across their range”*.

4.33 While it is considered unlikely that GCN are present on site, it is possible that individuals may use habitats on site, particularly marginal hedgerows and verges. Reasonable Avoidance Measures are therefore recommended to mitigate for the risk of accidental damage of individual GCNs.

- Timing: Amphibians hibernate from the end of October until mid-February (weather-dependent). If construction activities can be carried out during this period, risk to individual amphibians is considered to be at an absolute minimum.
- During the construction phase: Amphibians are only likely to be present within boundary features and arable margins. Construction materials are to be kept away from these areas and be stored on areas of arable land within the construction area towards the centre of the site. This is so that no features are created that amphibians could potentially use as refuge habitat. All trenches and other excavations must be backfilled before nightfall, or a ramp must be provided to allow amphibians to easily exit.

4.34 The proposals are understood to include for a reservoir in the north-west corner of the site, closest to the railway line. The management of this waterbody for wildlife would greatly increase the biodiversity of the site and the local area, providing suitable habitat for a range of species, including amphibians and providing a ‘stepping stone’ for dispersing great crested newts in the local area. This waterbody should be linked to the wider landscape through the protection and enhancement of hedgerows and associated arable

verges. The waterbody can be planted to enhance invertebrate species on the site and provide breeding opportunities for great crested newts and other amphibian species. These habitats can also be an important water source for mammals, including badgers and birds. Species suitable for planting in waterbodies and the typical zones that they occupy are indicated below and in Figure 5.

- Water mint (*Mentha aquatica*)
- Common reed (*Phragmites australis*)
- Soft rush - (*Juncus effuses*)
- Water plantain (*Alisma plantago-aquatica*)
- Meadowsweet (*Filipendula ulmaria*)
- Yellow flag iris (*Iris pseudacorus*)

4.35 Edge habitats can also be planted. These areas, where it may be a little more damp and muddy can be planted with the following:

- Fools water cress (*Apium nodiflorum*)
- Marsh marigold (*Caltha palustris*)
- Meadowsweet (*Filipendula ulmaria*)
- Brooklime (*Veronica beccabunga*)
- Water forget-me-not (*Mysotis scorpioides*)
- Water figwort (*Scrophularia auriculata*)
- Watercress (*Nasturtium officinale*)
- Water crowfoot (*Ranunculus sp*)
- Starwort (*Callitriche sp*)

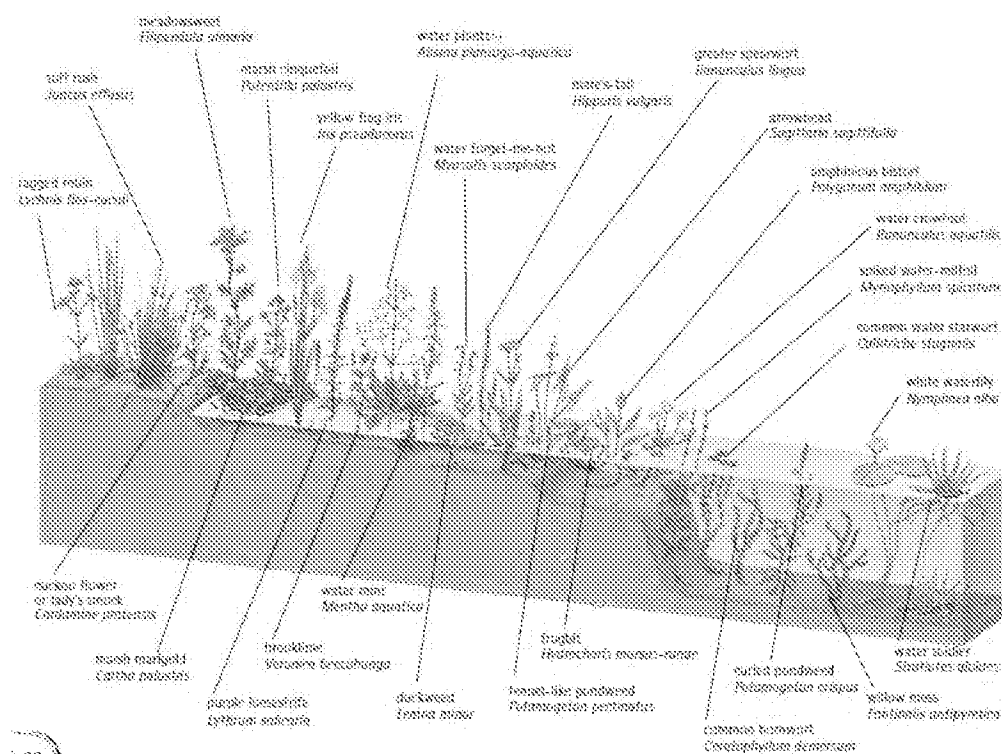


Figure 5: Native marginal and aquatic species suitable for ponds

- 4.36 It is also recommended that log piles are created for use as refugia by reptiles, amphibians, small mammals and invertebrates (Figure 6). These can be located in a variety of locations, such as damp places with some situated in sunnier locations. They can be placed close to retained margins and positioned under mature trees. These should be stacked and perhaps some leaf litter added. Planting around log piles with species such as honeysuckle (*Lonicera periclymenum*) or clematis (*Clematis* sp) can also add value.

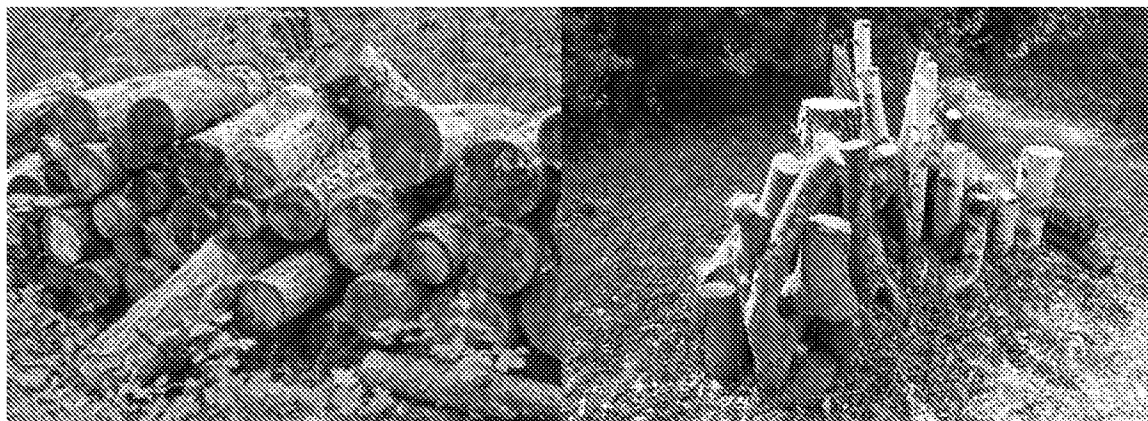


Figure 6: Log piles and hibernacula can be created within the edges of the site or in the retained habitats on site

Dormice

- 4.37 Boundary features, particularly hedgerows to the east and west of the site are in themselves considered to provide suitable habitat for dormice, both in terms of habitat structure and provision of food and nesting resources. Notwithstanding this, aerial photography shows few areas of suitable dormouse habitat within the local landscape and it is considered that suitable features within the red-line boundary of the site provide minimal habitat connectivity with these areas of off-site habitat.
- 4.38 Whilst SxBRC returned records of dormice in the local area, the closest identified record is located in excess of 1.6km to the north of the site. In addition to this, it is understood that boundary features, such as trees and hedgerows will largely be retained throughout development of the site. Furthermore, it is considered that any indirect effects through cat predation are not considered likely to be significant, as the scheme includes for the construction of glasshouses and ancillary structures, such as offices and welfare facilities with no residential properties proposed.
- 4.39 Considering the nature and extent of the proposals, along with the proposed retention of boundary features and a lack of dormouse records for the immediate vicinity of the site, further surveys for dormice are not recommended; however, should these assertions change and it becomes necessary to remove areas of suitable dormouse habitat, such as trees and hedgerow to facilitate the development, further mitigation for dormice may be required.

Badgers

- 4.40 No evidence of badger activity, such as setts, latrines or footprints was identified within the site on the day of survey. Although further surveys for badgers are not considered necessary, as badgers may use the site and surrounds for foraging, it is recommended that during the construction phase, all deep excavations and trenches are covered at night to prevent foraging badgers from accidentally falling into areas of digging. Disturbances, such as loud noises, vibrations and flood lighting in association with night working should be minimised.

Reptiles

- 4.41 Owing to the level of management and lack of suitable habitat, the majority of the site was considered sub-optimal for common reptile species; however, narrow strips of grassland and tall ruderal vegetation on arable field margins may have some potential to support reptiles.
- 4.42 Although it is not considered necessary to complete further presence/absence surveys for reptiles, it is however recommended that all works are confined to areas of sub-optimal arable land, where possible. Any small incursion into areas of more suitable reptile habitat on field margins should be undertaken sensitively in good weather between April and September, whilst reptiles are active.

Breeding Birds

- 4.43 Trees, hedgerow and scrub predominantly on the margins of the site have the potential to be used by birds for nesting during the breeding season. It is therefore recommended that any works likely to affect suitable breeding bird habitat be undertaken outside of the bird breeding season (the bird breeding season extends from the end February until the end of August inclusive). If unavoidable, it is recommended that any works affecting suitable nesting habitat on site should be carried out under ecological watching brief.

Other species

- 4.44 Due to lack of suitable habitat and connectivity, the site was not considered to have potential for additional protected species such as otters and water voles.

General Site Enhancements

- 4.45 A number of enhancements can be made to the final development to help reduce potential ecological impacts. It is important to utilise native species of local provenance in landscaping schemes to enhance the ecological value of a development.

- 4.46 Bird boxes may be hung on retained mature trees to increase the number of breeding opportunities throughout the site. Recommended boxes include:
- Schwegler 1N Deep Nest Box – give added nest protection from predators
 - Schwegler 1B Bird Box – general purpose bird box, suitable for many species
 - Schwegler bird house - general purpose bird box, suitable for many species
- 4.47 Installation of bat boxes will also enhance the number of roosting opportunities for bats in the local area. Boxes should be hung on mature trees and have clear flight paths. Recommended boxes include:
- Schwegler 2F – This box simulates crevices inside to allow suitable habitats for crevice-dwellers
 - Schwegler 1FD – This box is a larger version of the 2F
 - Schwegler 1FW – This box is suitable for maternity or hibernation roosts
- 4.48 Although loss of trees is not anticipated, it is recommended that any trees that are removed be replaced elsewhere on the site or with native species such as: oak, ash, hazel, beech and cherry (*Prunus* sp), this will mitigate against the loss of habitat that could be considered important under planning local policies. Native tree and shrub planting can be used to link gaps within the boundary features on-site.
- 4.49 The use of wildflower mixes to increase the biodiversity of existing arable land and verges will enhance the ecological value of the site for a range of important invertebrates.
- 4.50 The incorporation of these in the design of the site will greatly enhance the site for local wildlife. Log piles can be incorporated into the design to encourage invertebrates, as well as hedgehogs and amphibian and reptile species.

5.0 Impact Assessment

5.1 This section of the report forms an EcIA (Ecological Impact Assessment) and is designed to quantify and evaluate the potential impacts of the development on habitats and species present on site, or within the local area.

Methodology

5.2 The approach to this assessment accords with guidance presented within the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM 2016). The guidelines recommend the following approach to EcIA:

- Identification of the ecological features on site, both habitats and species, from baseline surveys;
- Identification of the works on site, both during construction and operation that are likely to have impacts on ecological features (habitats and species);
- Identification of the zone of influence;
- Evaluation of the ecological receptors likely to be affected;
- Identification of impacts, for example positive or negative, on receptors and assess their significance;
- Incorporation of mitigation measures to reduce potential impacts;
- Review assessment in light of mitigation of negative impacts;
- Assessment of cumulative impacts;
- Assessment of residual effects and the potential need for compensation for negative effects which remain significant after mitigation.

5.3 Receptors are defined as a feature affected by an impact and may have negligible value for nature conservation or it may have value at site, local, county, national, or international level. Impacts on ecology assessed by (a) determining the level of important/sensitivity of the receptor, for example national, county, or local; (b) determining the type, magnitude and timescale of the impact; and then (c) using this information on the receptor and impact to determine the significance of the impact: described as major, moderate, or minor significant, or of negligible significance.

-
- 5.4 In essence, an EcIA assesses the activities associated with a proposed scheme that are likely to generate changes, within identified zone of influences, on identified ecological features and receptors. The proposals are subsequently reviewed, and iteration undertaken to include enhancements and mitigation to reduce negative impacts.

Assessment

- 5.5 Owing to the nature and extent of the proposals, it is considered that any direct or indirect ecological impacts of any proposals on-site would be restricted to site level only. The development of the site would not result in any severance of significant habitats.
- 5.6 The habitats on-site are considered to be of limited ecological value, comprising predominantly arable land, where the bulk of construction activities are proposed. Whilst arable field margins, including grassland, tall ruderal vegetation, hedgerows and trees are considered to be of greater ecological value, these features are proposed to be retained, ensuring that connectivity around the margins of the site and across the local landscape is maintained. The loss of common habitats such as these will result in a minor impact at site level only. It is considered that the proposals and development of glasshouses and associated ancillary structures, such as welfare facilities would have negligible impact on statutory and non-statutory designated sites as well as habitats of principal importance within the local area.
- 5.7 In terms of protected species, the site was considered to offer some potential habitat for bats, birds, reptiles and to a lesser extent, terrestrial great crested newts and dormice. Restriction of all construction activities to areas of existing arable land with retention of arable field margins, as well as sensitive working measures are recommended to reduce any potential impacts to reptiles to negligible.
- 5.8 No direct impacts to bats are predicted but a sensitive lighting scheme has been recommended to reduce any indirect impacts to suitable habitat and foraging habitat with the planting of and enhancement of hedgerows. It is considered unlikely that great crested newts are present on site and through the provision of RAMs undertaken in conjunction

with the recommendations made for reptiles, it is considered that the impact to this species would be negligible. Considering the nature and extent of the proposals with retention of boundary trees, hedgerows and scrub, it is considered that any impacts on birds and dormice would also be negligible.

5.9 The scheme should also be considered in conjunction with other surrounding proposals in order to determine cumulative impacts on ecological features. Whilst the majority of local planning applications for the surrounding area within the last 10 years are for small scale commercial and household works such as extensions, change of use and construction of business units, on 31st July 2017 planning consent was given for a digestate lagoon and associated pipework on land immediately to the south of the site, within the curtilage of Wicks Farm (Application number WSCC/019/17/F).

5.10 Consented developments are all required, as a result of the planning process, to minimise effects on ecology through mitigation measures. The granting of planning permission for these sites must have been a result of assessing potential impacts on the surrounding habitats, including designated sites, as required by law and policy. This includes assessing the impacts alone and in combination with other projects and plans within the local landscape.

6.0 Conclusions

6.1 The South Downs National Park and Binstead Wood Complex LWS are both located approximately 1.3km to the north of the site. No additional designated sites are located within 2km of the red-line boundary of the site.

6.2 In terms of internationally designated sites, Duncton and Bignor Escarpment SAC and SSSI is located approximately 8.7km to the north-west of the site and Arun Valley SPA, SAC, Ramsar and SSSI is located approximately 9.4km to the north-east of the site. No additional internationally designated sites are present within 10km of the red-line boundary of the site.

-
- 6.3 It is considered that there will be no significant direct or indirect impacts from the development on any designated sites identified within this report due to the distances from the site and the nature and scale of the development.
- 6.4 Approximately 11 units of ancient semi-natural and/or ancient re-planted woodland are located within 2km of the site. The closest of which, an unnamed unit of ancient semi-natural woodland is located approximately 720m to the north-east of the site. This is beyond the 15m standing advice for developing near ancient woodland as recommended by Natural England. It is therefore considered there will be no impact on off-site habitats of ecological value as a result of the proposals.
- 6.5 The habitats on site are common and widespread throughout the local area. Much of the site comprised of arable land with arable margins of poor semi-improved grassland, tall ruderal vegetation and scrub. Notwithstanding this, trees and hedgerows on the boundaries of the site are considered to be of greater ecological value and therefore it is recommended that these features are retained and enhanced within the scheme.
- 6.6 Four lengths of hedgerow are present within the site, located on the eastern and western field margins, as well as on either side of the site access to the south-west. All four hedgerows within the site have been assessed for their species richness and to assess whether they are classified as 'important' under the Hedgerow Regulations 1997 (as amended 2002). Whilst none of the hedgerows are considered to be species-rich and with the exception of hedgerow H1, none of the hedgerows are considered to be 'important', it is recommended that all hedgerows, particularly hedgerow H1 which is considered 'important', be retained and sensitively managed going forward.
- 6.7 It is presently unknown whether any trees will be required to be removed in order to facilitate development of the site; however, if any of the trees identified as having potential to support roosting bats are to be removed, then a soft felling approach should be adopted. Replacement of any trees removed with native species is recommended.
- 6.8 Although boundary features, such as trees and hedgerows were considered to have potential for foraging and commuting bats, it is considered likely that these features will

largely be retained throughout development of the site and therefore, whilst further bat surveys are not considered necessary, it is recommended that these features be considered when designing the lighting scheme.

- 6.9 No evidence of badgers was identified on site; however, badgers may use the site for foraging and therefore consideration should be given to this species during construction works.
- 6.10 Owing to the lack of suitable habitat and the level of management, the majority of the site was considered sub-optimal for common reptile species. Notwithstanding this, should small inclusions into areas of suitable reptile habitat limited to arable margins be required, it is recommended that any vegetation clearance be undertaken sensitively and at an appropriate time of year.
- 6.11 Although no ponds are present within the red-line boundary of the site, online mapping and aerial photographs show five ponds (1-5) within 500m of the site (not separated by barriers to dispersal, such as main roads).
- 6.12 The desk study identified a single record of a female great crested newt located within the same 1km grid square as part of the site (SU9804); however, the exact location of the record was not given.
- 6.13 Owing to a large proportion of the site comprising arable land, which was devoid of vegetation at the time of survey, the majority of the site was considered sub-optimal for great crested newts in their terrestrial phase; however, boundary features and fringe habitats, such as rank grassland, tall ruderal vegetation and hedgerows may provide suitable dispersal corridors around the margins of the site.
- 6.14 Considering the habitat suitability of these ponds, their proximity to the site as well as the nature and extent of the proposals, no impacts are predicted on the favourable conservation status of GCNs in the wider landscape. As such, further survey of these ponds and a licence for the development are not considered necessary provided

Reasonable Avoidance Measures are employed during the construction phase. Feasible and appropriate enhancement of the site are recommended post development.

- 6.15 Considering the nature and extent of the proposals, along with the proposed retention of boundary features and a lack of identified dormouse records for the immediate vicinity of the site, further surveys for dormice are not recommended.
- 6.16 Trees and hedgerows on the margins of the site are considered to have the potential to be used by birds for nesting during the breeding season. It is therefore recommended that any works affecting suitable nesting areas are performed outside of the bird breeding season or under ecological watching brief.
- 6.17 Recommendations for enhancements have been made within this report, aimed at improving the ecological value of the site post-development.

7.0 References

Bat Conservation Trust (2018). *Bats and artificial lighting in the UK – Bats and the built environment series, (Guidance Note 08/18)*. Bat Conservation Trust, London.

Bat Conservation Trust (2016). *Bat Surveys – Good Practice Guidelines (3rd Edition)*. Bat Conservation Trust, London.

Cresswell, W and Whitworth, R (2004) *An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt Triturus cristatus*. Peterborough, UK

English Nature (2001) *Great Crested Newt Mitigation Guidelines*. Peterborough
<http://www.naturalengland.org.uk>

English Nature (2006). *The Dormouse Conservation Handbook (Second edition)*. Peterborough.

Francis Rose (1981) *The Wildflower Key – British Isles-N.W Europe*. Penguin Group, London.

Franklin, P.S (1993) *The migratory ecology and terrestrial habitat preferences of the great crested*

newt (Triturus cristatus) at Little Wittenham Nature Reserve. De Montford University unpublished thesis.

Jehle, R (2000) *The terrestrial summer habitat of radio-tracked great crested newts (Triturus cristatus) and marbled newts (T. marmoratus).* Herpetological Journal, 10, pp. 137-142.

Jehle, R. & Arntzen, J.W (2000) *Post-breeding migrations of newts with contrasting ecological requirements.* J. Zool., Lond., 251, pp. 297-306.

Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001), *Great Crested Newt Conservation Handbook*, Froglife, Halesworth.

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

Natural England (2011) *Badgers and Development: A guide to best practice and licensing.* Natural England, Bristol

Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M (2000) *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus).* Herpetological Journal 10 (4), 143-155.

Oldham, R.S. & Nicholson, M (1986) *Status and ecology of the warty newt Triturus cristatus.* Report to the Nature Conservancy Council (Contract HF 3/05/123), Peterborough.

Magic Interactive Map: www.magic.gov.uk

Google Earth: www.earth.google.co.uk

Appendix 1: Habitat Map

Key

- SI Poor semi-improved grassland
- A Arable
- Tall ruderal vegetation
- Hardstanding
- Plantation broadleaved woodland
- Pond
- Building
- Scattered scrub
- Approximate tree location
- Hedgerow
- Dry ditch
- Approximate site boundary

Site: Wicks Farm, Ford
Client: John Hall Consulting
Surveyor: VH
Survey Date: 26th September 2018
Drawing Title: Habitat Map
the ecology partnership
The Ecology Partnership Ltd
Thorncroft Manor, Thorncroft Drive, Leatherhead,
Surrey, KT22 8JB
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Appendix 2: Site Photographs

Wicks Farm, Ford: Appendix 2 – Site Photographs

Photo 1: Western arable field margin with hedgerow H1. Photograph taken from the south, looking north



Photo 2: North-west corner of the field dominated by tall ruderals and scrub. Photograph taken from the east, looking west



Photo 3: Northern field margin. Photograph taken from the east, looking west along railway line



Photo 4: North-east field margin



Wicks Farm, Ford: Appendix 2 – Site Photographs

Photo 5: South-east field margin (hedgerow H2)



Photo 6: Hedgerows H3 and H4 in the south-west corner of the site, either side of the access track



Photo 7: Pond 1 outside of western site boundary



Wicks Farm, Ford: Appendix 2 – Site Photographs

Photo 8: Pond 3 outside of north-western site boundary



Photo 9: Pond 4 outside of north-western site boundary



Photo 10: Pond 5 outside of northern site boundary



Photo 11: Example of drainage ditch outside of northern site boundary



Appendix 3: Desk Study

Ecological Data Search SxBRC/18/448 - Summary Report

An ecological data search was carried out for land at Wicks Farm, Ford on behalf of Vicky Hale (The Ecology Partnership) on 25/09/2018.

The following datasets were consulted for this report:

	Requested	Radius/buffer size
Designated sites, habitats & ownership maps	Yes	2km
Protected, designated and invasive species	Yes	2km

Summary of results

Sites and habitats

Statutory sites	1 National Park
Non-statutory sites	1 LWS
Section 41 habitats	8 habitats
Ancient and/or ghyll woodland	Present

Protected and designated species

International designations	57 species	638 records
National designations	145 species	3,492 records
Other designations	311 species	6,419 records
Total	336 species	6,948 records
Invasive non-native	33 species	281 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 25/09/2019 for the site named above.

The Ecology Partnership Ltd

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Approved: Alexia Tamblyn MA (Oxon) MSc CEnv MCIEEM FRGS

Managing Director

Date: 11/10/2018