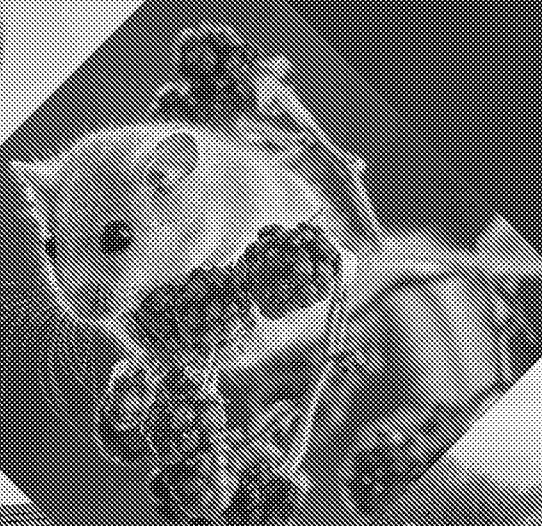




ecosupport
PROFESSIONAL ECOLOGICAL SOLUTIONS



ECOLOGY

TREE PROTECTION FENCING

SITE PREPARATION & CLEARANCE

HABITAT MANAGEMENT & ENHANCEMENT

Bonhams

Report prepared by
Tristanna Boxall BSc (Hons)

October 2021

K4 Keppel, Daedalus Park, Daedalus Drive, Lee on the Solent, PO13 9FX

EXECUTIVE SUMMARY

Ecosupport Ltd were commissioned to undertake a Preliminary Ecological Appraisal (PEA) of land located at Bonhams. This was required in order to identify any potentially important ecological features and identify potential impacts associated with the construction of four new dwellings. This assessment included:

- Data request submitted to the Sussex Biodiversity Records Centre
- Extended phase I habitat survey
- HSI Assessment
- Reptile Survey

The following important, and potentially important, ecological features were identified on site following the conclusion of the above survey work and may be subject to adverse impacts in the absence of suitable mitigation / compensation:

- Traditional Orchard habitat (no longer present on site)
- Potential for GCN
- Suitable habitat for foraging and commuting Badgers and Hedgehogs
- Low quality habitat for foraging bats

Key steps going forward:

- Subsequent Phase II work is recommended to establish the presence / likely absence of GCN. This will inform any required mitigation and compensation.
- Extensive native planting will take place across the site, including the creation of a new orchard.

A range of general measures have been outlined to avoid impacts to wildlife considered likely to be on site. Where impacts on wildlife/habitats are unavoidable, appropriate mitigation measures have been proposed. A number of general enhancements have already been included within this report to facilitate site design. It is considered following these will increase provision for notable and legally protected species on site. It is considered the site provides opportunities for ecological and biodiversity net gain.

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1.0 INTRODUCTION

1.1 Brief

Ecosupport Ltd. was commissioned to conduct a Phase I Ecological Survey of the land at Bonhams, Flansham, Felpham, PO22 8NP. This was required to identify if any ecological impacts would arise from the proposed construction of four detached dwellings.

Should the proposed development not be underway within 18 months of the date of survey, an updated walkover should be undertaken by a suitably experienced Ecologist to determine if any significant changes have occurred to the ecological value of the site, as per CIEEM (2019) guidance. Changes to the ecological baseline may require additional or updating ecological surveys and/or alterations to the mitigation and compensation strategy.

This survey does not constitute a full site assessment for invasive species such as Japanese Knotweed. A search for the presence of Tree Preservation Orders (TPOs) on site has not been undertaken.

This survey takes no account of seasonal variation or fluctuations in the presence of any species that might take up residence following this report. Lack of signs of a particular species does not confirm its absence, merely that there was no indication of its presence at the time of survey.

1.2 Aim

A Phase I Habitat Survey is the first step in assessing the potential ecological effects (or lack of) of a proposed development, and determines whether or not (and which) Phase II Protected Species Surveys are required. The objectives of this survey were as follows:

- Identify current land use and distribution of broad habitat types including plant communities of ecological importance,
- Identify and classify any priority habitats,
- Assess the ecological value of the site,
- Identify any signs of protected species and potential features that may support them,
- Identify all relevant legislation and policy,
- Make recommendations for further survey work as appropriate,
- Make recommendations for appropriate enhancements.

The aim of Phase II protected species surveys is to confirm the presence/likely absence of species to aid the assessment of the ecological value of the site and potential ecological effects (or lack of) of a proposed development.

1.3 Site Location

The site is located at Bonhams, Flansham, Felpham, PO22 8NP (central Grid Reference SU 96151 01064). The site is bound to the east and south by the A259, residential properties and associated garden space to the north and open green space to the west. The surrounding area is of a mixture of rural characteristics with farmland and hedgerow networks to the north and residential development with the settlement of Felpham to the south.

Figure 1. Location of the site (GoogleMaps, 2021).



1.4 Development Proposals

Proposals include the construction of four detached dwelling.

2.0 LEGISLATION & POLICY

One of the aims of this report is to demonstrate that the proposed development complies with relevant Planning Policy and nature conservation legislation. This section details the policy and legislation with which the development would need to comply.

2.1 Legislation

2.1.1 The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

This transposes the EU Habitats Directive (Council Directive 92/43/EEC) into UK domestic law. It provides protection for sites and species deemed to be of conservation importance across Europe. It is an offence to deliberately capture, kill or injure species listed in Schedule 2 or to damage or destroy their breeding sites or shelter. It is also illegal to deliberately disturb these species in such a way that is likely to significantly impact on the local distribution or abundance or affect their ability to survive, breed and rear or nurture their young.

The EU Exit instrument makes changes to the three existing instruments which transpose the Habitats and Wild Birds Directives so that they continue to work (are operable) upon the UK's exit from the European Union (EU). These include The Conservation of Habitats and Species Regulations 2017 and The Conservation of Offshore Marine Habitats and Species Regulations 2017. This instrument also amends section 27 of the Wildlife and Countryside Act 1981 to ensure existing protections continue.

The intention is to ensure habitat and species protection and standards as set out under the Nature Directives are implemented in the same way or an equivalent way when the UK exits the EU. There is no change to policy.

Sites designated under the Nature Directives previously contributed to the EU's Natura 2000 network. A national site network is created to retain the concept of a UK network of sites. The 'national site network' is defined as including Natura 2000 sites designated prior to EU exit and those Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated post EU Exit.

Current references to "European site", "European Marine Site", "Special Area of Conservation" and "Special Protection Area" are retained as there is no operability reason for these to change.

Management objectives are established for the national site network. Appropriate authorities are required to manage, and where necessary, adapt the national site network in cooperation with each other to meet the network's management objectives. The management objectives are to:

i. maintain or restore habitats and species listed in the Habitats Directive to a favourable conservation status; and

ii. contribute, in their area of distribution, to ensuring the survival and reproduction of wild birds and securing compliance with the overarching aims of the Wild Birds Directive.

2.1.2 The Wildlife and Countryside Act (1981) (as amended)

This is the primary piece of legislation by which biodiversity is protected within the UK. Protected fauna and flora are listed under Schedules 1, 5 and 8 of the Act. They include all species of bats, making it an offence to intentionally or recklessly disturb any bat whilst it is occupying a roost or to intentionally or recklessly obstruct access to a bat roost. Similarly this Act makes it an offence to kill or injure any species of British reptiles and also makes it an offence to intentionally kill, injure or take any wild bird or to take, damage or destroy their eggs and nests (whilst in use or being built).

2.1.3 The Countryside and Rights of Way Act (2000)

This Act places a duty on Government Ministers and Departments to conserve biological diversity and provides police with stronger powers relating to wildlife crimes.

2.1.4 Natural Environment and Rural Communities Act (2006)

This places a duty on authorities to have due regard for biodiversity and nature conservation during the course of a development.

2.2 Policy

The development would seek to comply with relevant Planning Policy at a local, regional and national level.

2.2.1 National Planning Policy Framework (NPPF) 2021

Section 15 of the National Planning Policy Framework (NPPF) 'Conserving and enhancing the natural environment' states that planning policies and decisions should contribute to and enhance the natural environment. They should do this by protecting and enhancing sites of biodiversity and minimising impacts on and providing net gains for biodiversity, including establishing coherent ecological networks.

The plan states to protect and enhance biodiversity plans should identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks. This includes the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them. Plans should identify the protection and recovery of priority species and opportunities for securing measurable net gains for biodiversity.

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

- if significant harm to biodiversity resulting from a development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- 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;
- 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
- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

2.2.2 Arun Local Plan 2011-2031 (Adopted July 2018)

Arun District Council will encourage and promote the preservation, restoration and enhancement of biodiversity and the natural environment through the development process and particularly through policies for the protection of both designated and non-designated sites. Where possible it shall also promote the creation of new areas for habitats and species. In relation to designated sites, development will be permitted where it protects these sites and the species and habitats contained within them.

Proposed development likely to have an adverse effect on land with the designated features of any Site of Biodiversity or Geological Importance as designated in the Arun Local Plan or any subsequently designated sites (either individually or in combination with other developments), will not normally be permitted. Development on wildlife sites with the highest value will only be permitted exceptionally where the following can be demonstrated:

- There is no alternative solution (which shall be adequately demonstrated by the developer).
- There are reasons of public health or public safety or
- There are benefits of primary importance to the environment or iv. There are imperative reasons of overriding public interest.

Aside from 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. 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;

- The European, National or Local status and designation of the site;
- The nature and quality of the site's features, including its rarity value;
- The extent of any adverse impacts on the notified features of interest;
- The need for compensatory measures in order to re-create remaining features of habitats on or off the site.

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 states the varying level of protection afforded to Pagham Harbour when considering development;

- 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).
- 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:
 - Make developer contributions towards the agreed strategic approach to access management at Pagham Harbour.
 - 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 in order to discourage car use.
- 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 states that any development will retain and incorporate important ecological habitats, wildlife corridors and stepping stones as well as be designed to minimise any disturbance to these habitats. Developments that fail to do so will have their proposal rejected. 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 within the local plan 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.

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.

3.0 METHODOLOGY

3.1 Desk Based Search

A data search was submitted to Sussex Biodiversity Records Centre for information on legally protected species, designated sites and priority habitat within 2km of the site.

Great Crested Newts (*Triturus cristatus*) (GCN), a protected species, can utilise terrestrial habitat up to 250m from a pond (Langton et al., 2001). Any ponds located within 500m of the proposed works were searched for using online resources.

3.2 Phase I Habitat Survey

The initial walk over survey was carried out by Tristanna Boxall BSc (Hons) (Natural England Class Level 2 Bat and Class Level 1 Great Crested Newt License Holder) of ecosupport Ltd on the 17th August 2021. This incorporated a visual assessment of the site and the surrounding landscape, loosely following the methodology outlined within the Joint Nature Conservation Committees (JNCC) *Phase I habitat survey handbook* (2003). The habitats present were noted, focusing particularly on their potential to support protected species.

3.3 Assessment of Waterbodies

Although the development will not impact directly upon any ponds, Great Crested Newts (*Triturus cristatus*) (GCN) can utilise terrestrial habitat up to 250m from a pond (Langton et al., 2001). Therefore, guidelines state that a pond, within 500m of a development site, should be surveyed if it holds potential to support newts (Natural England, 2013). To adhere to such guidelines, a visit to undertake Habitat Suitability Index (HSI) was carried out on all accessible ponds. This takes into account the following factors when calculating the ponds suitability to support GCN:

- Location of Pond,
- Surface Area,
- Desiccation Rate,
- Water Quality,
- Shade,
- Presence of Waterfowl and Fish,
- Number of Ponds within 1km,
- Quality of Terrestrial Habitat,
- Macrophyte Cover.

These criteria are used to calculate a score according to ARG guidelines (ARG, 2010) using the Oldham (2000) calculation formulae.

This gives a score between 0 and 1 of the suitability of the pond for GCN with:

0.40 – 0.50: Poor suitability for GCN

0.51 – 0.59: Below average suitability for GCN

0.60 – 0.69: Average suitability for GCN

0.70 – 0.79: Good suitability for GCN

0.80 – 1.00: Excellent suitability for GCN

3.4 Reptile survey

Due to the presence of habitat considered suitable to support reptiles, a Phase II Reptile Survey was undertaken on site to identify the presence/likely absence of reptiles on site, following best practice guidelines published by Froglife (1999). Artificial refugia (a combination of bitumen roofing felt and corrugated tin) were distributed throughout the site. The refugia were left to 'bed in' for a two weeks per best practice guidelines, and then checked a total of seven times by experienced Ecologists of Ecosupport Ltd during September 2021. Each check was made during suitable weather conditions (between 9 and 18 degrees Celsius with full sun or sunny spells). The survey was undertaken during September to coincide with the optimum survey season for reptiles in the UK.

3.5 Limitations

It was not possible to access one of the waterbodies identified via aerial imagery. This pond is located >220m from the closest part of the site. Therefore, it is considered even if GCN were present it is unlikely they would be negatively impacted by proposals.

The survey was considered to provide an accurate representation of the site at the time of visiting however the species list provided is not considered to be exhaustive, instead a record of those identified during the Phase I survey. This survey does not constitute a full site assessment for invasive species, such as Japanese Knotweed (*Fallopia japonica*), but no such species were found during the time on site.

4.0 RESULTS

4.1 Desk Based Search

4.1.1 Protected Sites

Solent and Dorset Coast SPA lies approximately 1.4km south. Felpham SSSI lies 2.1km southwest of the site and Bognor Reef SSSI lies 3.6km southwest.

4.1.2 Protected Species

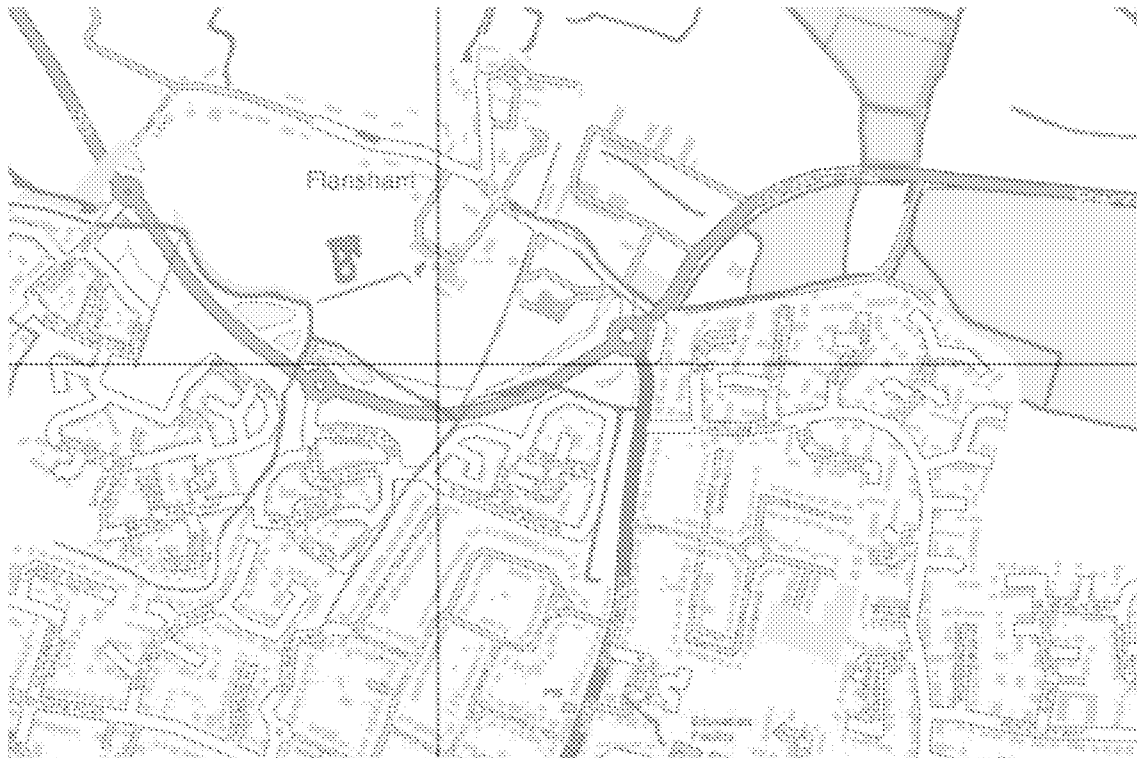
Within 2km of the site records of Water Vole (*Arvicola amphibius*), Great Crested Newt (*Triturus cristatus*), Hedgehog (*Erinaceus europaeus*), Slow Worm (*Anguis fragilis*), Lizard (*Zootoca vivipara*) and Grass snake (*Natrix helvetica*) were recorded along with records of numerous botanical and invertebrate records.

Within 2km at least 11 species of bat have been recorded including Brown Long-eared (*Plecotus auritus*), Soprano, Common and Nathusius Pipistrelle (*Pipistrellus pygmaeus*, *pipistrellus* and *nathusii*), Noctule (*Nyctalus noctula*), Leisler (*Nyctalus leisleri*), Natterer's (*Myotis nattereri*), Whisker's (*Myotis mystacinus*), Daubenton's (*Myotis daubentonii*), Serotine (*Eptesicus serotinus*) and Barbastelle (*Barbastella barbastellus*).

4.1.3 Priority Habitat

Maps provided by SBRC indicates part of the site was once occupied by a traditional orchard (**Figure 2**).

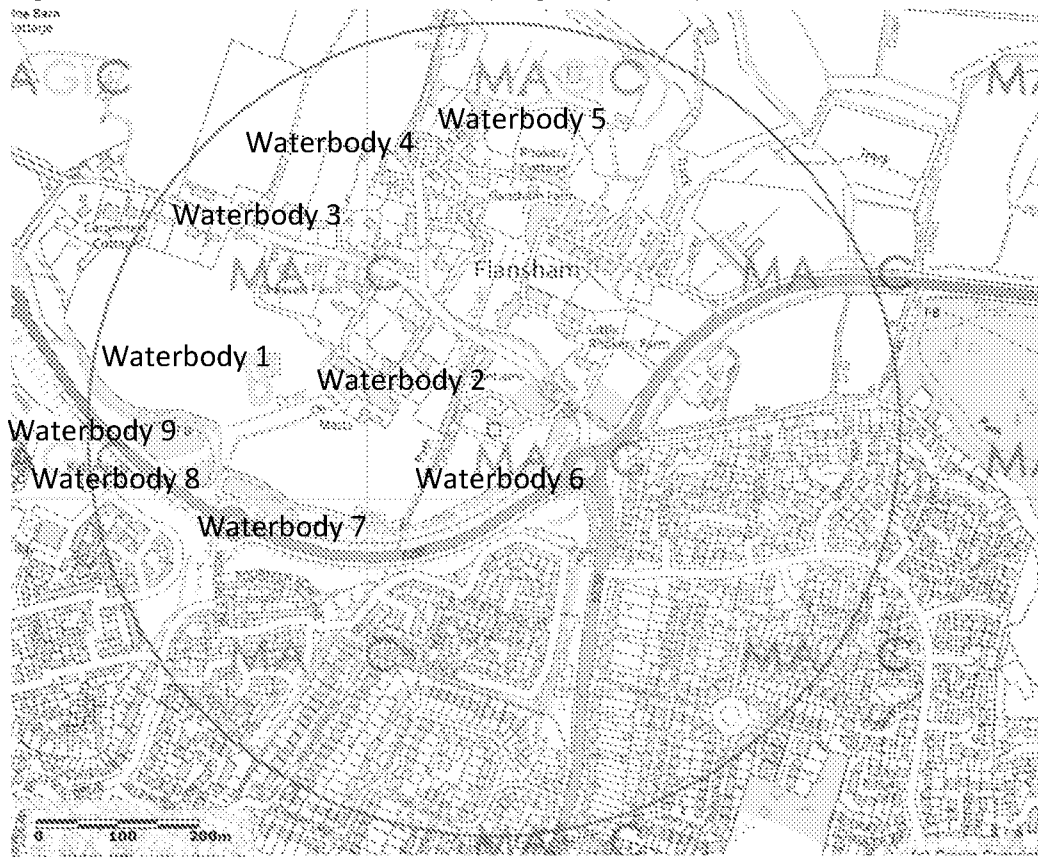
Figure 2. Traditional Orchard on site (SBRC, 2021).



4.1.4 Ponds

Eight water bodies were identified within 500m (**Figure 3**).

Figure 3. Ponds within 500m of the site (MagicMap, 2021).



4.2 Phase I Survey

The following habitat types and dominant species were identified on site:

Ruderal Vegetation: The site is dominated by ruderal vegetation with patches of improved grassland (**Figure 4**). Species included common grass species Dock (*Rumex Sp.*), Prickly Sow Thistle (*Sonchus asper*), Ragwort (*Senecio jacobaea*), Fleabane (*Pulicaria dysenterica*), Spear Thistle (*Cirsium vulgare*), Creeping Buttercup (*Ranunculus repens*), Ribwort Plantain (*Plantago lanceolate*), Dandelion (*Taraxacum officinale agg*), Common Nettle (*Urtica dioica*), Dove's foot Cranesbill (*Geranium molle*) and Ground Elder (*Aegopodium podagraria*). Occasional Buddleia was also recorded (*Buddleja davidii*).

Figure 4. Ruderal vegetation on site.



NB – During the reptile surveys it became evident the vegetation on site had been sprayed with weed killer as the vegetation deteriorated (**Figure 5**).

Figure 5. Status of the vegetation after weed killer had been applied.



Rubbish Piles: Rubbish and brash piles were recorded across the site (an example of which is provided in **Figure 6**).

Figure 6. Rubbish pile on site.



Hardstanding: A hardstanding access road is present on site (**Figure 7**).

Figure 7. Hardstanding on site.



K4 Keppel, Daedalus Park, Daedalus Drive, Lee on the Solent, PO13 9FX

Traditional Orchard/Bare ground: Part of the site is designated a traditional orchard (**Figure 2**) however this aspect of the site was found to have been cleared of vegetation with bare ground remaining.

4.3 HSI Assessment

A record of the criteria from the HSI assessment was taken off all accessible waterbodies and later used to calculate the score according to ARG guidelines (ARG, 2010) using the Oldham (2000) calculation formulae. The results are shown in **Table 1** below. The waterbody numbers correlate with **Figure 3**.

Table 1. Results of HSI assessment.

	HSI Score Result	Suitability	Photo
W1	N/A	N/A	Not accessible.
W2	N/A	N/A	Not accessible.
W3	0.62	Average	

W4	0.51	Below average	
W5	N/A	N/A	Not accessible.
W6	0.55	Below average	

W7	0.56	Below average	
W8	0.67	Average	

W9	0.81	Excellent	
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4.4 Reptile survey

During the surveys, no reptiles were recorded on site (**Table 2**).

Table 2. Conditions and results of the reptile survey.

Date	Time	Temperature (°c)	Beaufort	Cloud Cover (%)	Precipitation	Observed reptiles
04/09/21	09:45	17	0	0	0	-
10/09/21	16:45	18	0	20	0	-
11/09/21	10:15	17.5	1	100	0	-
13/09/21	12:15	18	1	100	0	-
20/09/21	11:00	16	0	50	0	-
24/09/21	10:30	17.5	1	100	0	-
27/09/21	10:00	16	0	80	0	-

5.0 EVALUATION

5.1 Desk Based Search

5.1.1 Protected Sites

Solent and Dorset Coast SPA is of *international value* whereas Felpham SSSI and Bognor Reef SSSI are of *national importance*.

5.1.2 Protected Species

Within 2km of the site records of Great Crested Newt were recorded (**Figure 7**). One record lies adjacent to Water Body 8, therefore it is considered likely GCN were recorded within this pond.

Figure 7. Location of GCN records in relation to the site boundary.



Water Voles were also recorded within 2km (**Figure 8**). A record lies approximately 220m to the northeast. Online resources show there is a drain which is connected to the wider network, part of which runs along the southern boundary of the site (Water

Body 6). As a result, it is considered there is potential for Water Vole to be present.

Figure 8. Location of Water Vole records in relation to the site boundary.



The presence of reptile records supported the recommendation for further survey on site as the site was considered suitable. Similarly, the site is considered suitable for Hedgehog.

Although records of bats were recorded within 2km, the site itself was not considered to provide quality habitat. There is a lack of floral diversity to encourage invertebrates and linear features to provide cover for commuting bats.

5.1.3 Priority Habitat

The priority habitat is of **local value** however it does not currently support the habitat for which it is designated.

5.2 Phase I Survey

Ruderal Vegetation: Reptiles require open habitats with a deep and diverse vegetation structure. Scrub and grass tussocks are also preferable (Edgar et al., 2010). The majority of the sward is not considered suitable for reptiles as there is a lack of structure at ground level however patches of grassland across the site are considered

to be optimum. The habitat is also considered to have potential to support commuting and foraging mammals such as bats, Badgers (*Meles meles*), Foxes (*Vulpes vulpes*) and Hedgehogs. As a result, it is considered to be of at least **site value**.

Rubbish Piles: The piles across the site are considered to provide opportunities for hibernating animals such as Hedgehogs. Therefore, they are potentially of **site value**.

Hardstanding: This aspect of the site is considered to have negligible value.

Traditional Orchard / Bare ground: As mentioned above the priority habitat is of **local value** however it does not currently support the habitat for which it is designated.

5.3 HSI Assessment

Assuming GCN are present within each of the ponds within 500m **Table 3** below illustrates the likely effect. It is considered likely that even if GCN are present in all nine waterbodies identified within the search radius, GCN would only likely be impacted within drain adjacent to site (W6) and to the southwest (W7).

Table 3. Rapid Risk Assessment of ponds to determine the benefit of further survey effort.

	Suitability	Rapid Risk Assessment Result		
W1	N/A	Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; sets are in order of harm, top to bottom)	Technical effects probability score
		Great crested newt breeding pond(s)	No effect	0
		Land within 100m of any breeding pond(s)	No effect	0
		Land 100-250m from any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.1
		Land >250m from any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.005
		Individual great crested newts	No effect	0
			Maximum	0.1
		Rapid risk assessment result:	GREEN: OFFENCE HIGHLY UNLIKELY	
W2	N/A	Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; sets are in order of harm, top to bottom)	Technical effects probability score
		Great crested newt breeding pond(s)	No effect	0
		Land within 100m of any breeding pond(s)	No effect	0
		Land 100-250m from any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.1
		Land >250m from any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.005
		Individual great crested newts	No effect	0
			Maximum	0.1
		Rapid risk assessment result:	GREEN: OFFENCE HIGHLY UNLIKELY	
W3	Average	Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; sets are in order of harm, top to bottom)	Technical effects probability score
		Great crested newt breeding pond(s)	No effect	0
		Land within 100m of any breeding pond(s)	No effect	0
		Land 100-250m from any breeding pond(s)	No effect	0
		Land >250m from any breeding pond(s)	0.5 - 1 ha lost or damaged	0.05
		Individual great crested newts	No effect	0
			Maximum	0.05
		Rapid risk assessment result:	GREEN: OFFENCE HIGHLY UNLIKELY	

W4	Below average	Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; sets are in order of harm, top to bottom)	Notional offence probability score
		Great crested newt breeding pond(s)	No effect	0
		Land within 100m of any breeding pond(s)	No effect	0
		Land 100-250m from any breeding pond(s)	No effect	0
		Land >250m from any breeding pond(s)	0.5 - 1 ha lost or damaged	0.03
		Individual great crested newts	No effect	0
			Maximum	0.03
		Rapid risk assessment result:	GREEN: OFFENCE HIGHLY UNLIKELY	
W5	N/A	Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; sets are in order of harm, top to bottom)	Notional offence probability score
		Great crested newt breeding pond(s)	No effect	0
		Land within 100m of any breeding pond(s)	No effect	0
		Land 100-250m from any breeding pond(s)	No effect	0
		Land >250m from any breeding pond(s)	0.5 - 1 ha lost or damaged	0.03
		Individual great crested newts	No effect	0
			Maximum	0.03
		Rapid risk assessment result:	GREEN: OFFENCE HIGHLY UNLIKELY	
W6	Below average	Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; sets are in order of harm, top to bottom)	Notional offence probability score
		Great crested newt breeding pond(s)	No effect	0
		Land within 100m of any breeding pond(s)	0.5 - 1 ha lost or damaged	0.7
		Land 100-250m from any breeding pond(s)	0.01 - 0.1 ha lost or damaged	0.01
		Land >250m from any breeding pond(s)	No effect	0
		Individual great crested newts	No effect	0
			Maximum	0.7
		Rapid risk assessment result:	RED: OFFENCE HIGHLY LIKELY	
W7	Below average	Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; sets are in order of harm, top to bottom)	Notional offence probability score
		Great crested newt breeding pond(s)	No effect	0
		Land within 100m of any breeding pond(s)	No effect	0
		Land 100-250m from any breeding pond(s)	0.5 - 1 ha lost or damaged	0.3
		Land >250m from any breeding pond(s)	No effect	0
		Individual great crested newts	No effect	0
			Maximum	0.3
		Rapid risk assessment result:	AMBER: OFFENCE LIKELY	
W8	Average	Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; sets are in order of harm, top to bottom)	Notional offence probability score
		Great crested newt breeding pond(s)	No effect	0
		Land within 100m of any breeding pond(s)	No effect	0
		Land 100-250m from any breeding pond(s)	No effect	0
		Land >250m from any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.005
		Individual great crested newts	No effect	0
			Maximum	0.005
		Rapid risk assessment result:	GREEN: OFFENCE HIGHLY UNLIKELY	
W9	Excellent	Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; sets are in order of harm, top to bottom)	Notional offence probability score
		Great crested newt breeding pond(s)	No effect	0
		Land within 100m of any breeding pond(s)	No effect	0
		Land 100-250m from any breeding pond(s)	No effect	0
		Land >250m from any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.005
		Individual great crested newts	No effect	0
			Maximum	0.005
		Rapid risk assessment result:	GREEN: OFFENCE HIGHLY UNLIKELY	

"Offence highly unlikely" indicates that the development activities are of such a type, scale and location that it is highly unlikely any offence would be committed should the development proceed even if GCN were present within the associated pond. Therefore, no licence would be required. As a result, it is considered further survey effort would not produce useful or applicable information.

"Offence likely/highly likely" indicates that the development activities are of such a type, scale and location that an offence is likely. In this case, further survey will determine if GCN are likely present or absent. If present, mitigation, compensation and enhancement will be required along with a license from Natural England.

4.5 Reptile survey

As no reptiles were recorded on site it is considered unlikely they will be negatively impacted by proposals.

6.0 LIKELY IMPACTS IN THE ABSENCE OF MITIGATION

6.1 Introduction

The CIEEM guidelines (CIEEM 2018) require that the potential impacts of the proposals should be considered in absence of mitigation. In order for a significant adverse effect to occur, the feature being affected must be at least of local value. At this stage the value of the site, associated habitat features and usage by legally protected/notable species has not been confirmed therefore rather than assessing the scale of impacts at scale, this section considers whether impacts are likely, assuming species are present.

6.2 Site Preparation and Construction

6.2.1 Designated Sites

It is not considered that this development will have any direct impacts upon the nearby designated sites during the construction phase itself (i.e. through noise, air or water pollution) as it is not connected to the site via any pollution pathways.

6.2.2 Bats

The use of artificial lighting during construction could negatively impact upon commuting and foraging bats. This would have a **negative impact at site level**.

6.2.3 Other Mammals

Precommencement dismantling and removal of the rubbish piles have the potential to have a **certain adverse impact at site level**. Potential indirect impacts to Badgers and Hedgehogs, associated with the construction phase, are considered to comprise disturbance by lighting, and the disruption to habitat connectivity. Direct impacts during construction include open excavations at night pose a threat to commuting and foraging nocturnal wildlife (i.e. Badgers and/or Hedgehogs can become trapped). There is a potential **negative impact at site level**.

6.2.4 GCN

If GCN are present on site, the loss of grassland will have a **certain adverse impact at site level**. If present during the stripping of grassland there would be a risk of injury and/or death of individuals. This would have a **certain adverse impact**.

6.2.5 Water Vole

There will be no direct impacts towards Water Body 6. Similarly, it is set back >5m from proposals and is protected via a fence therefore, even in Water Voles are present, it is considered unlikely they will be negatively impacted by proposals.

6.2.6 Habitats

The loss of traditional orchard on site has resulted in a ***negative impact at a local level***. Works would be in close proximity to the ditch. If pollutants were to enter into the ditch this would have a ***certain adverse impact at local level***.

6.3 Operational

Increased levels of artificial light can cause disturbance and disruption to bats. Though several bat species can take advantage of artificial lighting systems for foraging, feeding off the insects they attract, other species avoid them. This would result in a ***negative impact at site level***.

As the site lies outside both Zone A and B for Pagham Harbour, is not within close proximity to other nearby designated sites and will only result in an increase of four new homes it is considered there will be negligible impacts towards nearby designated sites.

7.0 RECOMMENDATIONS

7.1 Introduction

The below sections outline a number of recommendations for further survey work required to fully assess the potential ecological impacts of any future development. This will inform proposed mitigation and compensation.

In addition to this, general measures are outlined to protect the existing features of value and provide enhancements to inform any future layout and landscape design.

7.2 Further Survey (GCN)

It is recommended that Water Body 6 and 7 be subject to eDNA assessment to establish the presence / likely absence of GCN. If GCN are present within the water bodies a population estimation will take place. This will involve further survey utilising three methods (such as bottle traps, torching, egg searching and netting).

7.3 Bats

7.3.1 Lighting

Any lighting on site will be controlled by sensors to ensure dark periods are maintained for as long as possible.

7.3.2 Bat Boxes

At least one bat box should be integrated within each of the new builds. The 1FR Bat Tube is designed to be installed on the external walls of buildings, either flush or beneath a rendered surface. It has been specifically designed to meet the requirements of the species of bats that inhabit buildings. It has an integrated wooden panel onto which bats can cling and a ridged entrance slope which makes it easy for them to enter and leave the box safely. The design maintains stable climatic conditions providing bats with a safe and stable environment in which to roost. This style of bat box requires no maintenance as droppings fall out of the entrance ramp. The Enclosed Bat Box 'C' from Ibstock is designed for Pipstrelle bats. It can be integrated directly into the brickwork of new builds. The inside of the box is designed to create several roosting zones which are ideal for crevice dwelling bats. The bottom entrance means that no maintenance is required as dropping simply fall out the bottom.

In general, bats seek warm spaces to help them with rearing young. For this reason, bat boxes should be located where they will receive at least partial sunlight (facing south, south-west or south-east). The bat boxes will be a minimum of 2m above ground, although 5-7m is better to prevent disturbance from people and/or predators. The features should be positioned near the eaves or gable apex of buildings to minimise disturbance.

7.4 Mammals

The rubbish piles will be dismantled sensitively by hand outside of winter (between March - October).

During construction, all excavations on site should be covered nightly and/or include a suitable escape ramp for the protection of wildlife such as Badgers (a suitable escape can be provided by wooden planks placed at 45 degree angle or provision of a sloping end wall). Any temporarily exposed open pipe systems should be checked and then suitably capped when not in use to prevent access by wildlife.

Provision will be made to promote site connectivity and extended foraging ranges and opportunities for the European Hedgehog, as per best practice. Holes measuring 10cm x 10cm will be made at the base of boundary fences/gravel boards into and between each garden and the surrounding habitats. Small signage will be installed on the fence above both sides of these access points to ensure they remain open upon completion of the development. The People's Trust for Endangered Species provide such signage, the purchase of which also supports conservation efforts: <https://ptes.org/shop/hedgehog-highways-signs/hedgehog-highway-labels/>

7.5 Native Planting

Any proposals will need to deliver significant gains in the biodiversity value of the site in line with the forthcoming 10% net gain requirement associated with the Environment Bill.

An area at least 1.5 times the size of the traditional orchard will require replanting. This will then be subject to a strict management regime to support the successful establishment of the habitat.

In line with the CIEEM guidance (2012) planting will favour local, native species over non-natives and ornamentals wherever possible. Where possible, species should comprise those that produce berries and nectar to provide feeding opportunities for a range of wildlife. Species that should be considered include:

- Hawthorn (*Crataegus monogyna*),
- Alder Buckthorn (*Frangula alnus*),
- Blackthorn (*Prunus spinosa*),
- Wild Cherry (*Prunus avium*),
- Crab Apple (*Malus sylvestris*),
- Elder (*Sambucus nigra*),
- Rowan (*Sorbus aucuparia*).
- Holly (*Ilex aquifolium*),
- Dogwood (*Cornus sanguinea*),

- Privet (*Ligustrum vulgare*),
- Dog Rose (*Rosa canina*),
- Guelder Rose (*Viburnum opulus*).

Native species and pollen rich ornamentals can greatly increase the assemblage of invertebrates on site, in turn encouraging further species such as reptiles and foraging bats. Planting a mixture of flowering plants, trees (including fruit trees) and shrubs encourages a diversity of insects to sustain bats. It is beneficial that the flowers vary in colour (although pale flowers that are more easily seen in poor light and so attract insects at dusk), fragrance, shape, amount of nectar and time of flowering. (It is important to provide native flowering plants, shrubs and trees throughout spring, summer and autumn). Flowers with 'landing platforms' for insects (i.e. flowers from the Daisy and Carrot families) increase opportunities for insects and in turn foraging bats. The inclusion of wildflower habitats will greatly increase the floral diversity on site. Any public open areas should be sown with a wildflower mixture.

Native trees are important to foraging bats as well as nesting birds. Key species are Willow, Birch (*Betula pendula*) and Oak (*Quercus robur*) as they can support high numbers of insects. In addition, once matured they can eventually provide roosting opportunities (see **Table 4** below).

Table 4. Tree species for foraging and roosting potential (Gunnel et al. 2012).

Native Tree species	Roosting potential	Supporting foraging
Oak	Very good	Very good
Willow	Minimal	Very good
Beech	Very good	Good
Ash	Good	Good
Elm	Good	Good
Birch	Minimal	Very good

Wherever possible wildflowers should be incorporated into the landscape scheme. Planting a mixture of flowering plants, trees (including fruit trees) and shrubs encourages a diversity of insects to sustain bats. It is beneficial that the flowers vary in colour (although pale flowers that are more easily seen in poor light and so attract insects at dusk), fragrance, shape, amount of nectar and time of flowering. (It is important to provide native flowering plants, shrubs and trees throughout spring, summer and autumn). Flowers with 'landing platforms' for insects (i.e. flowers from the Daisy and Carrot families) increase opportunities for insects and in turn foraging mammals.

7.6 Nesting Birds

At least one bird nesting feature should be integrated within each of the new builds. The 'CJ Wildlife swift maxi nesting box' with entrance via a CJ Wildlife 'Cambridge swift full face brick' is recommended as it provides ideal nesting opportunities for Swifts and the full face brick is available in different colours and can also be painted if necessary to blend in with the surrounding brickwork. If this model is not suitable for the building specifications, an alternative swift box with internal floor space exceeding 400cm squared must be used. These features should be installed at least six to seven meters above the ground, ensuring that there is unobstructed access for birds entering and leaving. The boxes should be installed under the eaves in shaded areas out of direct sunlight and away from windows.

Alternatively, the Schwegler No.10 swallow nest cups are created from woodcrete and are durable, lasting for approximately 20-25 years. Although these nest cups are designed specifically for Swallows, they may also occasionally attract House Martins. They should also be installed 6-7m high leaving a distance of at least 6cm between the top of the nest and the ceiling.

8.0 CONCLUSION

It is considered the site provides opportunities for ecological and biodiversity net gain providing the measures outlined in Section 7.0 are followed.

The Phase I survey identified the potential for reptiles and Great Crested Newts on site. It was possible to undertake the reptile survey as the Phase I Assessment coincided with the optimum survey window however the survey window for GCN starts in mid-April. Therefore, subsequent Phase II work has been recommended. This will inform any required mitigation and compensation along with appropriate enhancements. Following on from the completion of this survey work, an updated report will be required containing all findings.

A range of measures have been outlined to avoid impacts to wildlife considered likely to be on site. Where impacts on wildlife/habitats are unavoidable, appropriate mitigation measures have been proposed. A number of general enhancements have already been included within this report. It is considered following these will increase provision for notable and legally protected species on site.

9.0 REFERENCES

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