

# Preliminary Ecological Appraisal

**Land at Bean Cottage,  
Shellbank Lane, Bean DA2 8AX**

*Report to:*  
Mr Shumshair Haider

23<sup>rd</sup> February 2021



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## 1. Summary

### *Background*

- 1.1 Land at Bean Cottage has been proposed as the location of a new development project.
- 1.2 Calumma Ecological Services was commissioned to undertake a preliminary ecological assessment of the site that advises on the need for additional survey work and mitigation.

### *Priority Habitats*

- 1.3 The proposed development site includes a residential dwelling with associated garden.
- 1.4 The site includes evidence of mature trees and shrubs, some of which had recently been removed. Part of the site consists of an orchard that has been designated as traditional and represents a priority habitat. The orchard forms part of the Beacon Wood Local Wildlife Site.
- 1.5 The proposed development area is bounded on two sides by deciduous woodland that is a priority habitat and also forms part of the Beacon Wood Local Wildlife Site.
- 1.6 **The applicant is advised that the orchard area should be managed sympathetically for its wildlife interest.**

### *Birds*

- 1.7 Remaining trees and shrubs offer potential habitat for nesting birds. Birds may also nest in some of the buildings. There was no evidence of nesting barn owl.
- 1.8 **Care must be taken to ensure that nesting birds are not disturbed during proposed works.**

### *Bats*

- 1.9 The main dwelling offers medium potential for roosting bats. One outbuilding offers low potential for roosting bats.
- 1.10 **Additional survey work for bats is recommended.**

### *Reptiles*

- 1.11 Ground vegetation within the lawn area displays moderate structural complexity offering potential for sheltering reptiles.
- 1.12 The current proposals are likely to disturb some habitat that could be occupied by reptiles.
- 1.13 **Additional survey work for reptiles is recommended.**

### *Amphibians*

- 1.14 Four waterbodies are known to be located within 500 m of the site boundary. Two of these are ponds located within 250 m.

- 1.15 The closest pond is considered to offer average potential for great crested newt.
- 1.16 **Since great crested newt has been confirmed present at Beacon Wood Country Park appropriate survey and/or mitigation works will be required.**

*Badgers*

- 1.17 Several animal trails were observed within the orchard area.
- 1.18 No setts were observed within the proposed development site.
- 1.19 **Although additional survey work for badger is not considered necessary, precautionary mitigation advice is provided to ensure that badgers are not disturbed.**

*Dormouse*

- 1.20 Nearby areas of deciduous woodland offer potential habitat for dormouse.
- 1.21 Areas currently subject to management works within the proposed development site include habitat that is considered suitable for dormouse.
- 1.22 **If habitat areas suitable for dormouse are to be disturbed as part of the proposed development, additional survey work for dormouse is recommended.**

*Water Vole*

- 1.23 No waterbodies are located within the proposed development site.
- 1.24 Additional survey work for water vole is not considered necessary.

*Invertebrates*

- 1.25 Available habitat within the proposed development area is considered to offer opportunities for invertebrates.
- 1.26 Habitat within the orchard offers good potential for invertebrates.
- 1.27 The scale of proposed development outside of the orchard means that additional survey work for invertebrates is not considered necessary.

*Other Considerations*

- 1.28 Hedgehog could shelter and/or forage within the proposed development site.
- 1.29 On the basis of the site assessment it is not expected that other protected species will be found to be present on the site.

## 2. Site Location and Assessment

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<b>Site Name:</b>	Land at Bean Cottage, Bean - <i>the site</i> ; Fig. 2.1
<b>Grid Reference:</b>	TQ 588 719
<b>County:</b>	Kent
<b>Planning Authority:</b>	Dartford Borough Council
<b>Planning Ref:</b>	tbc
<b>Natural Area:</b>	North Kent Plain

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<b>Client:</b>	Mr Shumshair Haider
<b>Proposed Disturbance:</b>	Demolition of existing structures and construction of single residential dwelling.
<b>Survey Request:</b>	Preliminary Ecological Appraisal

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<b>Surveyor:</b>	Lee Brady PhD, BSc (Hons), MCIEEM
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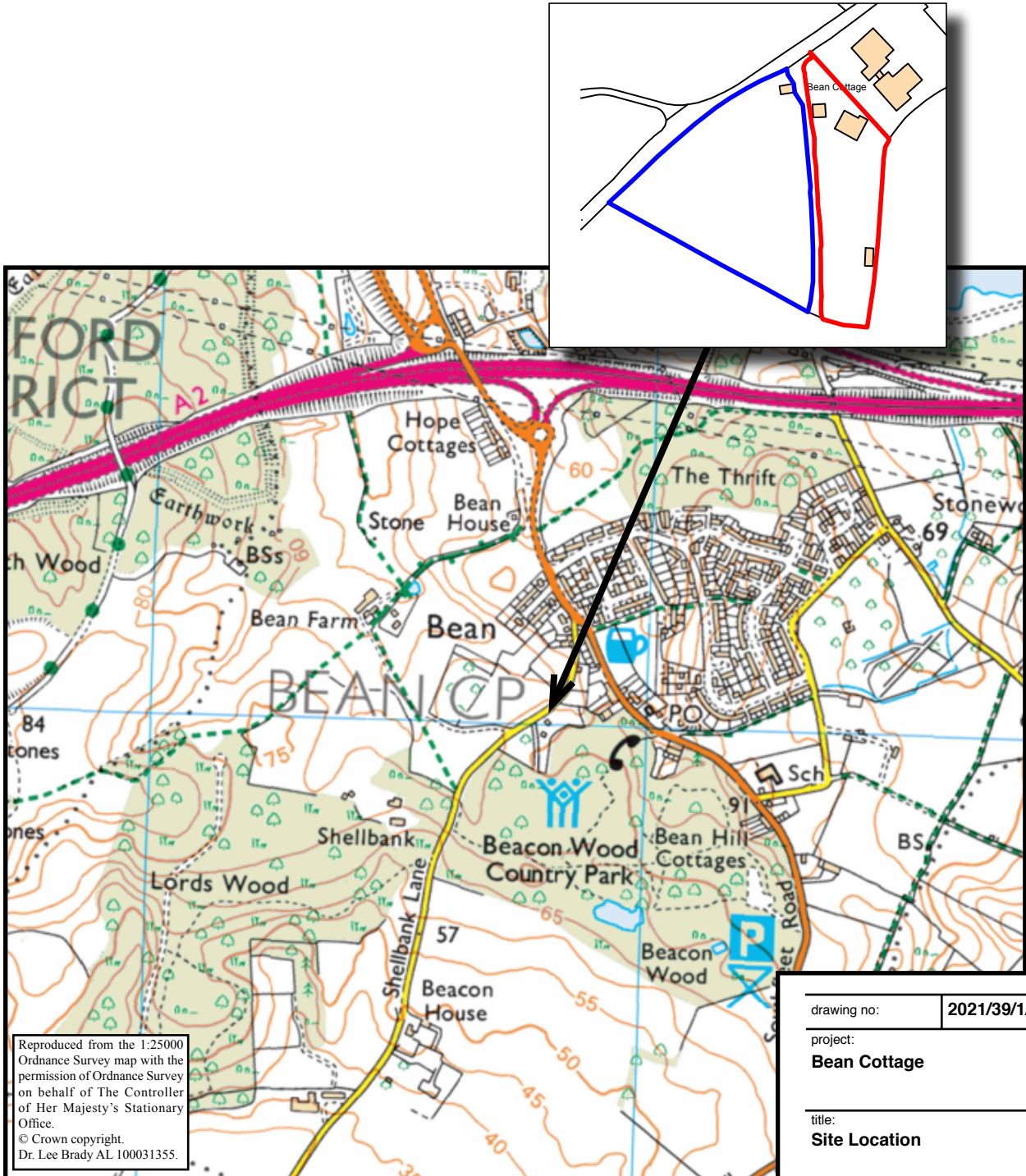
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<b>Assessment Period:</b>	18 <sup>th</sup> February 2021
<b>Limitations:</b>	This assessment did not include detailed surveys of protected species. Scoping surveys assess likely presence of species on a site and recommend follow-up survey work, management and mitigation as appropriate. This report may need to be updated if new information becomes available (e.g. ponds not previously known to be present).
<b>Reliance:</b>	Information, including any survey data, contained within this report must only be relied upon for a maximum period of one year from the date of the report.

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# Fig. 2.1 Land at Bean Cottage, Bean (TQ 588 719)

Location of study site.



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drawing no:	2021/39/1/2.1
project:	<b>Bean Cottage</b>
title:	<b>Site Location</b>
scale: N.T.S.	date: Feb 2021



### 3. Legal Protection

The legal protection of animals and plants in the United Kingdom is governed by several different regulations and conventions. Principally, these include:

- The Wildlife & Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000 and
- The Habitats and Species Directive (92/43/EC) enacted through the Conservation of Habitats and Species Regulations 2017. Development works affecting listed species are subject to a licence granted by an appropriate authority. This authority is currently Natural England.
- The Natural Environment and Rural Communities (NERC) Act 2006
- The Hedgerow Regulations 1997

Species and habitats receive legal protection that may prohibit sale, disturbance and/or killing/injury.

#### 3.1 Flora

A number of plant species are protected under Section 13 of the amended 1998 Wildlife and Countryside Act of 1981. It is an offence to intentionally pick, uproot or destroy any wild plant listed in Schedule 8 of the Act. The list includes both higher plants including several of the rarer orchids and lower plants including several mosses and lichens.

#### 3.2 Birds

All wild birds (birds in a wild state resident in or visiting Great Britain) and their nests and eggs are protected under the Wildlife & Countryside Act 1981. Particular emphasis is given to the protection of breeding birds. With certain exceptions, it is an offence to intentionally kill, injure or take wild birds, take, damage or destroy the nest of wild birds while in use or being built, take or destroy the eggs of wild birds, disturb wild birds listed in Schedule 1 when nest building or at a nest containing eggs or young, or disturb dependent young of wild birds.

#### 3.3 Bats

All species of bat and their breeding sites or resting places (roosts) are protected under Regulation 41 of The Conservation of Habitats and Species Regulations 2010 and Section 9 of the Wildlife and Countryside Act 1981. It is an offence for anyone to intentionally kill, injure or handle a bat, to possess a bat (whether live or dead), deliberately disturb a roosting bat, or sell or offer a bat for sale without a licence. It is also an offence to damage, destroy or obstruct access to any place used by bats for shelter.

### **3.4 Reptiles**

All native reptiles are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (WCA 1981). It is an offence for anyone to intentionally kill or injure a 'widespread' reptile species (viviparous lizard, slow-worm, grass snake or adder), or sell or offer for sale without a licence.

The sand lizard and smooth snake, their breeding sites or resting places (any structure that may offer refuge) are protected under Regulation 41 of The Conservation of Habitats and Species Regulations 2010. It is an offence for anyone intentionally to kill, injure or handle either of these two species, to possess an animal (whether live or dead), deliberately disturb a sheltering animal, or sell or offer an animal for sale without a licence. It is also an offence to damage, destroy or obstruct access to any place used by sand lizards and smooth snakes for shelter.

### **3.5 Amphibians**

All native amphibians are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (WCA 1981). It is an offence for anyone to sell or offer for sale any native amphibian species without a licence.

The great crested newt and natterjack toad, their breeding sites (typically ponds) or resting places (typically a terrestrial habitat that offers refuge) are protected under Regulation 41 of The Conservation of Habitats and Species Regulations 2010. It is an offence for anyone to intentionally kill, injure or handle either of these two species, to possess an animal (whether live or dead), deliberately disturb a sheltering animal, or sell or offer an animal for sale without a licence. It is also an offence to damage, destroy or obstruct access to any place used by natterjack toads or great crested newts for shelter.

### **3.6 Badger**

Badgers and their setts are protected under the Protection of Badgers Act 1992, which makes it illegal to kill, injure or take badgers or to interfere with a badger sett. The term 'badger sett' is normally understood to mean the system of tunnels and chambers, in which badgers live, and their entrances and immediate surrounds. The 1992 Act specifically defines a sett as "any structure or place which displays signs indicating current use by a badger".

### **3.7 Hazel Dormouse**

Individual animals, their breeding sites or resting places (nests) are protected under Regulation 41 of The Conservation of Habitats and Species Regulations 2010 and Section 9 of the Wildlife and Countryside Act 1981. It is an offence for anyone intentionally to kill, injure or handle a dormouse, to possess a dormouse (whether live or dead), deliberately disturb a dormouse, or sell or offer a dormouse for sale without a licence. It is also an offence to damage, destroy or obstruct access to any place used by dormice for shelter, whether they are present or not.

### **3.8 Water Vole**

Until the 6th April 2008 water voles received partial protection under the Wildlife & Countryside Act 1981 (as amended). This included protection from killing or taking by

certain prohibited methods. Breeding and resting places (burrows) were fully protected from destruction or obstruction; it was also an offence to disturb them in these places. From April 2008 water voles and their resting places are fully protected in England. It is an offence to deliberately, capture, injure or kill them or to damage, destroy or obstruct their breeding or resting places. It continues to be an offence to disturb them in their breeding or resting places.

### **3.9 Invertebrates**

A small number of invertebrates including beetles, crickets, butterflies and moths are protected under Section 9, Schedule 5 of the amended 1998 WCA 1981 against deliberate killing, injuring and taking. Other species receive partial protection under the same act. For example, it is an offence for anyone to sell or offer for sale a stag beetle without a licence. The stag beetle is also listed as a Priority Species on the UK BAP.

### **3.10 The National Planning Policy Framework**

The National Planning Policy Framework (2018) (NPPF) has reformed the planning system, to make it less complex and more accessible, to protect the environment and to promote sustainable growth. Regarding ‘Conserving and enhancing the natural environment’, when determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying a number of principles.

### **3.11 Miscellaneous Planning Policy**

Previous planning policy refers to UK Biodiversity Action Plan (BAP) habitats and species as being a material consideration in the planning process. Although such habitats and species remain material considerations in the planning process, they are now described as *Species and Habitats of Principal Importance for Conservation* in England, or simply priority habitats and priority species. The list of habitats and species is still derived from Section 41 of the Natural Environmental and Rural Communities (NERC) Act 2006. Note that as was previously the case when it was a BAP priority species, hen harrier continues to be regarded as a priority species although it does not appear on the Section 41 list.

### **3.12 Habitats Regulations Assessment**

Where a proposed development project is located within or close to an area designated or proposed for designation under the Birds and/or Habitats Directives (European sites) and/or the Ramsar Convention (Ramsar sites) an Appropriate Assessment under Regulation 61(1) of the Habitat Regulations may be required.

Regulation 63 states that:

*“A competent authority, before deciding to undertake, or give any consent, permission, or other authorisation for a plan or project which:*

*(a) is likely to have significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects); and*

*(b) is not directly connected with or necessary to the management of the site*

*must make an appropriate assessment of the implications for the site in view of that site’s conservation objectives”.*

The decision as to whether an Appropriate Assessment is required or not is based upon an assessment of 'Likely Significant Effect' (LSE), which is recognised as being a statement that the anticipated effects of the proposal will be more than trivial. That is the anticipated changes resulting from the proposal have the potential to impact on a designated, or proposed to be designated, European/Ramsar site. It does not automatically follow that an impact will occur, or that the impact would be significant, with a decision of LSE being purely an indication of the need for an Appropriate Assessment.

## 4. Literature Review

### 4.1 MAGIC Geographic Information System

<http://magic.defra.gov.uk>

#### 4.1.1 Habitat Designations

Nearby priority habitat designations are illustrated in Appendix I.

Information available through MAGIC indicates that some habitat within the proposed development site has been designated as Traditional Orchard.

Other priority habitats located within the local area include:

- Ancient Woodland;
- Deciduous Woodland.

#### 4.1.2 Statutory Designated Areas

The locations of nearby designated areas are illustrated in Appendix II.

Information available through MAGIC indicates that land within the proposed development site is located within the London Area Greenbelt. Other statutory designated sites located nearby include:

- Darenth Wood SSSI (0.2 km south west).

#### 4.1.3 Non-statutory Designated Areas

The locations of nearby designated areas are illustrated in Appendix II.

Information available through MAGIC indicates that land within the proposed development site has no specific designations associated with it (but see 4.2.2 below for Local Wildlife Sites).

#### 4.1.4 Site of Special Scientific Interest Impact Risk Zone

Natural England has created a tool that is accessed via MAGIC to determine the risk of development impact on designated areas (including SSSIs, SACs, SPAs and Ramsar sites). Available information indicates that the proposed development **is located** within a SSSI risk zone.

The SSSI risk tool provides guidance on when the Local Planning Authority should consult Natural England (Table 4.1). Natural England will then provide advice on any potential impacts and how these might be avoided or mitigated. Available information indicates that the Local Planning Authority will not be required to consult Natural England over possible impacts to nearby designated areas.

#### 4.1.5 European Protected Species Licences

Information available via MAGIC reveals that an EPS mitigation licence has been issued for works within 2.5 km of the proposed development site (2015-17789-EPS-MIT: dormouse).

<b>Planning Category</b>	<b>Consult NE if Proposals Include</b>
All Planning Applications	n/a
Infrastructure	Airports, helipads and other aviation proposals.
Wind & Solar Energy	n/a
Minerals, Oils & Gas	Oil & gas exploration/extraction.
Rural Non Residential	n/a
Residential	n/a
Rural Residential	n/a
Air Pollution	Any development that could cause AIR POLLUTION (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons/manure stores).
Combustion	All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.
Waste	Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management.
Composting	Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.
Discharges	Any discharge of water or liquid waste of more than 20m <sup>3</sup> /day to ground (ie to seep away) or to surface water, such as a beck or stream.
Water Supply	n/a
Notes	n/a

**Table 4.1.** SSSI Risk Assessment for proposed development site: When to consult Natural England.

## **4.2 Kent Landscape Information System (KLIS)**

### **4.2.1 Kent Habitat Survey 2012**

The 2012 Kent Habitat Survey characterised the study area as (1) built up, (2) boundary/linear, (3) improved grassland and (4) traditional orchard.

### **4.2.2 Non-Statutory Nature Conservation Sites**

Information available through KLIS indicates that some land within and adjacent to the site forms part of Beacon Wood Country Park Local Wildlife Site.

## **4.3 Records Searches**

Available records for protected species have been obtained from Kent Reptile and Amphibian Group.

*Note that the availability of records is directly related to survey effort. A lack of records does not necessarily indicate the absence of protected species.*

### **4.3.1 Kent Reptile and Amphibian Group (KRAG)**

KRAG is one of the primary data holders for reptiles and amphibians in Kent. Information supplied by KRAG indicates that common frog, common toad, smooth newt, palmate newt and great crested newt have been recorded from the local area (Ref. CES/21/024, Appendix III). The closest great crested newt observation is from Beacon Wood Country Park, located approximately 0.2 km to the south.

Viviparous lizard, slow-worm, grass snake and adder have also been recorded from the local area.

The closest reptile record is for slow-worm, recorded from Beacon Wood Country Park (0.2 km to the south).

KRAG has prepared a summary risk assessment that describes the likely presence of herpetofauna (Table 4.2). The risk assessment is based on statistical analysis of available distribution data but does not take into consideration the quality of habitat available within the proposed development area.

Species	Likelihood of Presence
<i>Amphibians</i>	
Common Frog	Likely
Common Toad	<b>HIGH</b>
Natterjack	<i>n/a</i>
Smooth Newt	<b>HIGH</b>
Palmate Newt	<b>HIGH</b>
Great Crested Newt	<b>HIGH</b>
<i>Reptiles</i>	
Viviparous Lizard	Likely
Slow-worm	<b>HIGH</b>
Sand Lizard	<i>unlikely</i>
Grass Snake	Possible
Adder	<b>HIGH</b>
Smooth Snake	<i>n/a</i>

**Table 4.2.** Herpetofauna risk assessment prepared by Kent Reptile and Amphibian Group.



## 5. Proposed Development and Summary Site Description

### 5.1 Site Location

Land at Bean Cottage is located in a rural area within the North Kent Plain Natural Area (English Nature, 1998). The site is accessed directly from Shellbank Lane.

### 5.2 Proposed Development

The proposed development includes demolition of existing structures and construction of a single residential dwelling.

The proposed development area is approximately 0.26 Ha.

The site also includes an orchard that is 0.42 Ha. This is currently outside of the proposed development area, but will be subject to management works.

The proposed development site is illustrated in Fig. 5.1.

### 5.3 Aquatic Habitat

Ponds located within the local area have been identified using the following sources:

- Ordnance Survey (<https://www.bing.com/maps>)
- MAGIC (<http://magic.defra.gov.uk>)
- Google Earth

No ponds are located within the proposed development site. Available information indicates that four waterbodies are known to be located within 500 m of the site (Table 5.1). Two of these are ponds located within 250 m. Small ornamental ponds could also occur in nearby residential gardens. The search area for waterbodies is illustrated in Fig. 5.2.

### 5.4 Terrestrial Habitat

Land within the proposed development area includes a residential garden that is dominated by trees, shrubs and grassland. Part of the garden includes a traditional orchard. The proposed development area is bounded on two sides by deciduous woodland.

Habitat available within the proposed development area is illustrated in Figs. 5.3 - 5.4.

### 5.5 Buildings

Four structures are located within the proposed development site:

- B1 – One-storey residential property with tiled roof.
- B2 – Brick garage with tiled roof
- B3 – Old bomb shelter
- B4 – Dilapidated wooded shed.

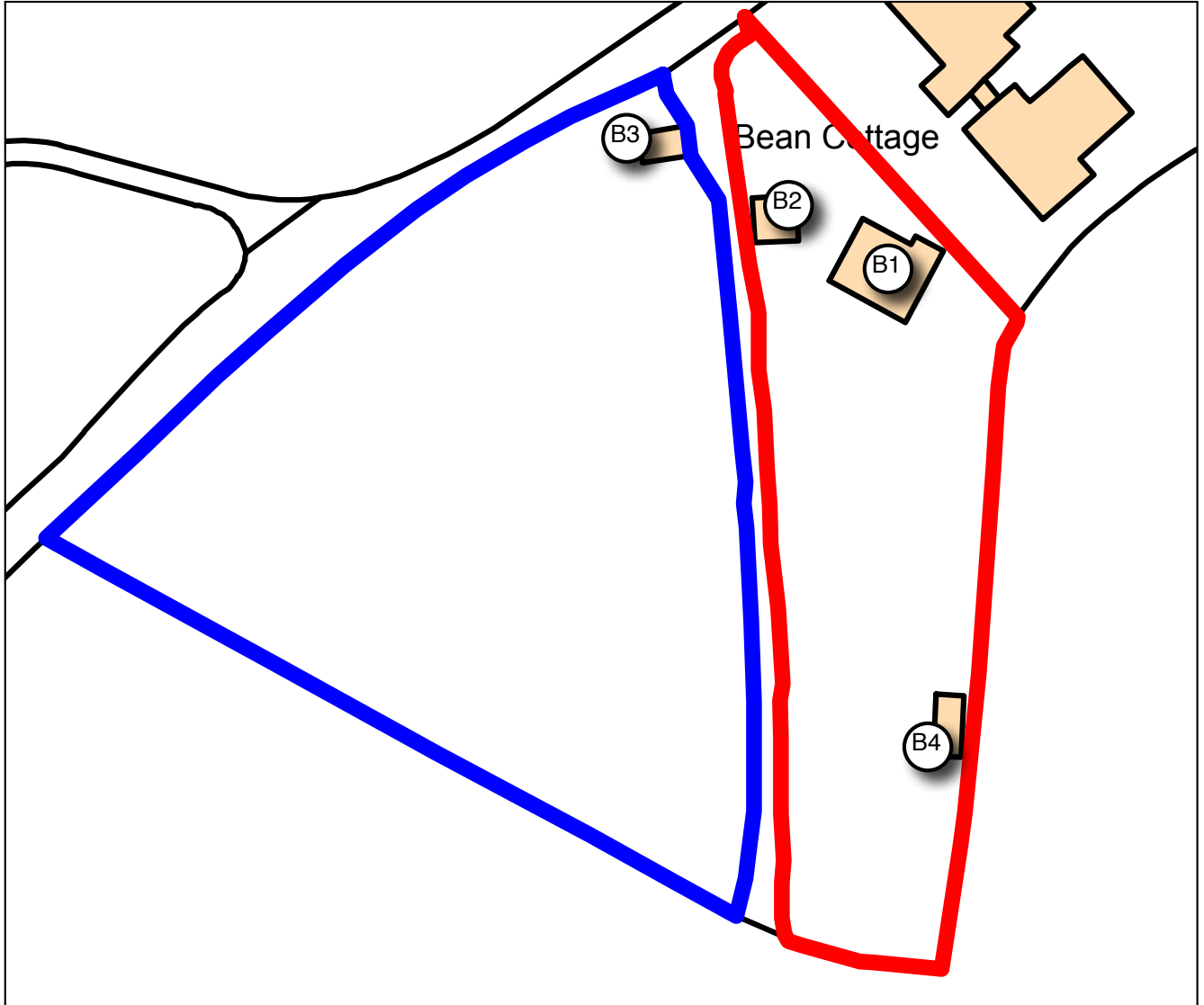
<b>WB</b>	<b>Grid Reference</b>	<b>Distance (m)</b>	<b>Notes</b>
1	TQ 58996 71621	311	Large pond in woodland. Great crested newts and smooth newts found sheltering under old sleepers close to pond.
2	TQ 58789 71737	176	Shaded pond in woodland.
3	TQ 58910 71867	100	Shaded pond in woodland.
4	TQ 58532 72263	352	Farm pond. No access permission.

**Table 5.1.** Summary information for ponds (WB) located within 500 m of the proposed development site. The locations of ponds are illustrated in Fig. 5.2.

**Fig. 5.1 Proposed Development Area**

Red area = 0.26 Ha

Blue area = 0.42 Ha



drawing no: 2021/39/1/5.1

project:  
**Bean Cottage**

title:  
**Development Area**

scale: N.T.S. date: Feb 2021



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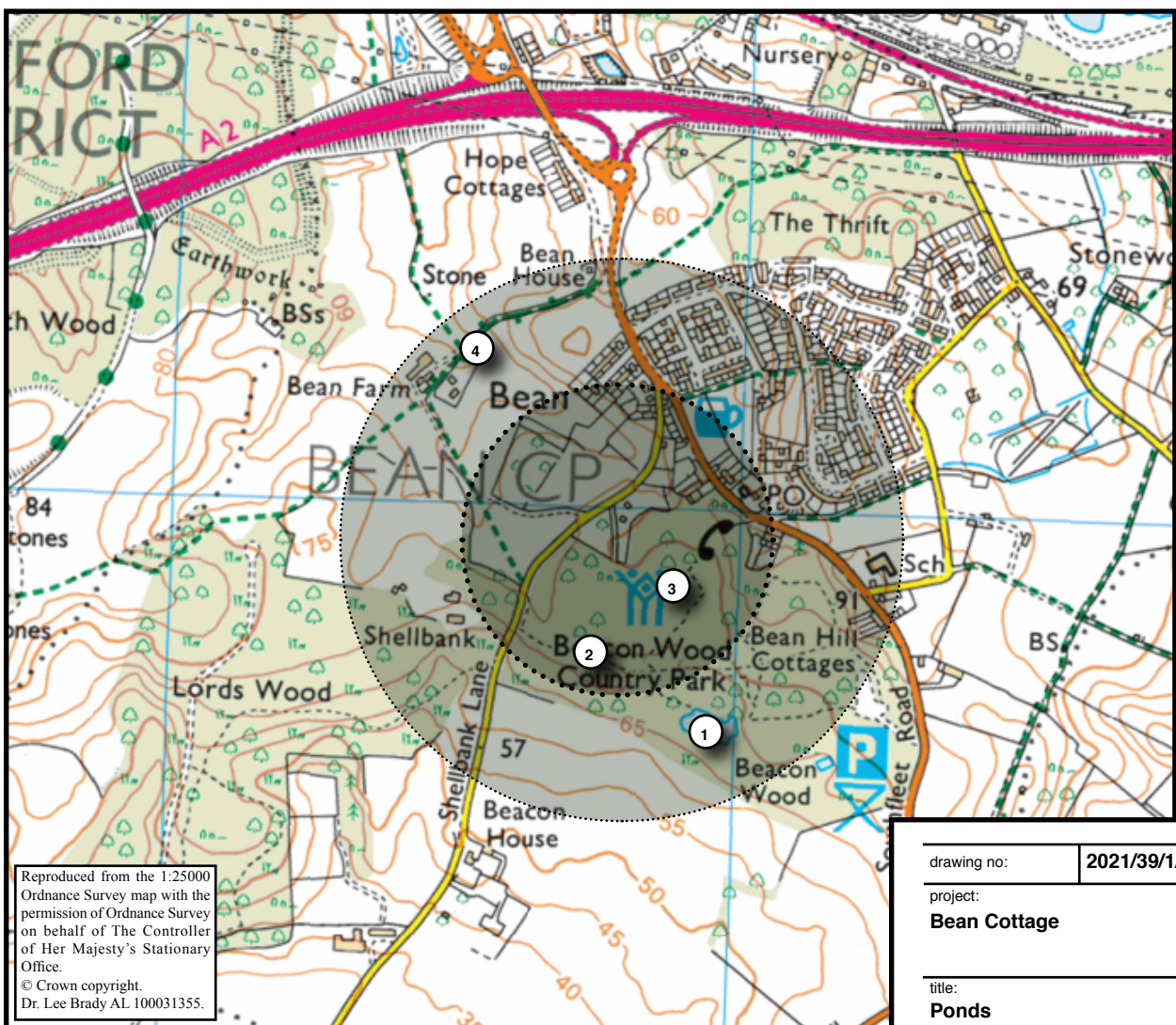
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## Fig. 5.2 Ponds

Figure illustrates ponds known to occur within recommended area of search for great crested newt.

Three waterbodies are known to be located within 500 m of the site boundary.

For ponds located more than 250 m from a proposed development, Natural England recommend that survey work is most appropriate when (a) the pond has the potential to support a large population, (b) the development includes particularly favourable habitat, (c) the development will have a significant impact on available habitat, (d) there is an absence of dispersal barriers.



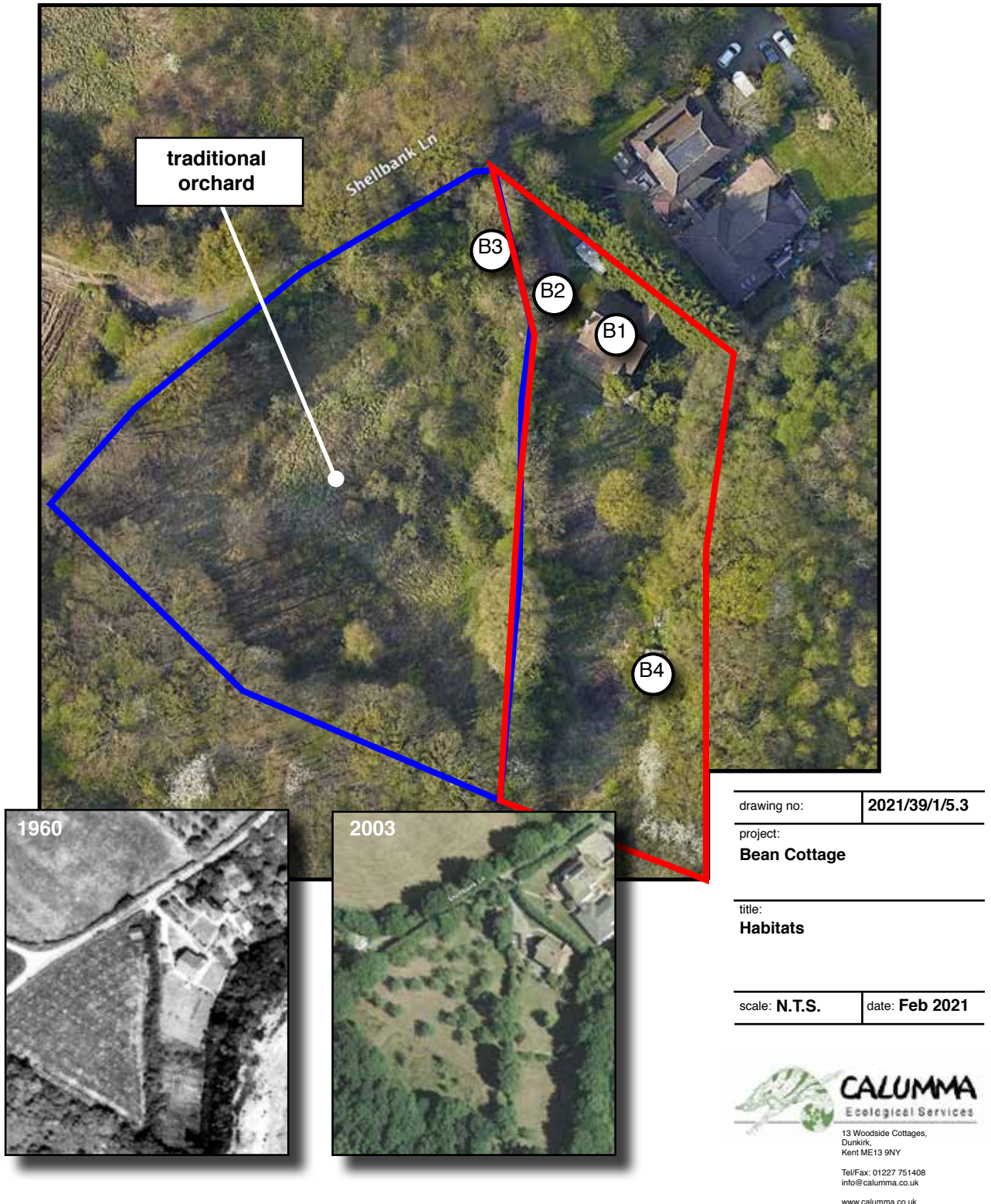
### Key to Symbols

- surveyed pond
- unsurveyed pond
- filled/dry pond
- 250/500 m radius

## Fig. 5.3 Habitats

Indicative location of proposed development, illustrating existing habitat (main plate 2020).

Land within the proposed development site consists of a residential property with associated garden that includes an orchard. Available habitat includes grassland with trees and shrubs. A single dwelling with four outbuildings is present. The main dwelling (B1) was constructed before 1960. The site is adjacent to deciduous woodland.





The proposed development site consists of a residential property with associated garden that includes an orchard. The property consists of a detached one storey dwelling (B1) that is constructed from brick and characterised by a tiled roof. Several trees and shrubs had been removed at the time of the site assessment.



There are gaps under several tiles. There are also gaps in the brickwork on the north and western aspects (inset). These features provide medium potential for roosting bats and additional survey work is recommended.

**Fig. 5.4 Site Photographs**

Figure illustrates habitat features located within the study area.



The garden area includes trees, shrubs and grassland. The grassland is populated by ant nests indicating low disturbance in recent years. Part of the garden includes fruit trees that are considered to form a traditional orchard (inset). Available habitat offers potential for reptiles, dormouse and foraging badger. No badger setts were observed within the site boundary.



Three ponds are located in Beacon Wood Country Park. WB3 is situated within 100 m of the proposed development site and offers Average potential for great crested newt (HSI = 0.60). Great crested newt is known to breed in other nearby ponds. An adult female great crested newt (Inset) was found close to WB1.

drawing no:	<b>2021/39/1/5.4</b>
project:	<b>Bean Cottage</b>
title:	<b>Available Habitat</b>
scale: <b>N.T.S.</b>	date: <b>Feb 2021</b>



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## 6. Potential Ecology Interests

### 6.1 Habitats

The majority of the proposed development area includes residential garden that is characterised by grassland with mature trees and shrubs. At the time of the site assessment management work within the garden was being undertaken and several trees/shrubs had been removed. Areas of bramble were also being removed. Prior to this, grassland areas appear to have been relatively undisturbed and were populated with numerous ant nests.

#### 6.1.1 Designated Sites

Part of the site includes a traditional orchard consisting of apple trees. The orchard has been designated as a Priority Habitat and is included within the Beacon Wood Local Wildlife Site.

**Sympathetic management works for the traditional orchard is recommended.**

### 6.2 Birds

Within the local area there are areas of woodland and grassland that are expected to support a varied bird population. Structures located in and around the proposed development site (including the main building and outbuildings) could support nesting birds.

No evidence of barn owl was observed within the site and it is considered unlikely that any species afforded protection by inclusion on Schedule 1 of the Wildlife & Countryside Act 1981 will nest in the proposed development area and additional bird survey work is not considered necessary.

### 6.3 Bats

Local habitat features include woodland, ponds, grassland and buildings that provide potential roosting, foraging and commuting opportunities for bats. Bats are considered likely to commute/forage over the proposed development area.

#### 6.3.1 Building Inspection

A buildings inspection was undertaken which followed the survey guidelines recommended in The Bat Workers' Manual (Mitchell-Jones, 2004) and the Bat Conservation Trust's Good Practice Guidelines (BCT, 2016). Covid-19 restrictions were followed but since the building was not occupied an internal inspection of the building was undertaken.

Features and evidence of bat use and potential habitat that were considered when assessing buildings included:

- Roof and wall construction;
- Any bat droppings and/or staining on external walls;
- Scattered or accumulated bat droppings (identified by their dry, powdery texture when compressed) around entrances to potential roosts;
- Oily staining, scratch marks and/or urine staining around entrances to potential roosts;
- Places where cobwebs have been swept away;

- The presence of live or dead bats; and
- Features that have the potential to be bat roosts or to provide access to roosting opportunities within the building. These include missing tiles, cavities in woodwork or masonry and any crevices within the building.

Results are summarized in Table 6.1.

**Further survey work for bats is recommended.**

### 6.3.2 Trees

No mature trees suitable for roosting bats will be disturbed by proposed development activities.

Building Number	Description	Bat Potential	Further Survey Required?
1	One-storey brick building with tiled roof. Numerous rodent droppings and wasp nests in attic space, but no evidence of bats observed. Gaps below tiles and cracks/gaps in brickwork provide potential roost opportunities for bats.	Medium	Emergence survey with minimum two visits. If bats confirmed an additional visit will be required.
2	Brick garage with tiled roof. Gaps under tiles offer potential roost opportunities for bats.	Low	Emergence survey with minimum one visit. If bats confirmed an additional two visits will be required.
3	Old bomb shelter with open front.	Negligible	No.
4	Dilapidated wooden shed.	Negligible	No.

**Table 6.1.** Building assessment for bats.

## 6.4 Reptiles

Available vegetation includes grassland that displays moderate structural complexity offering potential for sheltering reptiles.

**Additional survey work for reptiles is recommended.**

## 6.5 Amphibians

### 6.5.1 Great Crested Newt

Although survey work of all ponds located within 500 m can sometimes be necessary, Natural England now recommends a proportionate approach to great crested newt survey work:



*"In keeping with a proportionate and risk-based approach, surveys need reasonable boundaries. The Great crested newt mitigation guidelines explain that surveys of ponds up to around 500m from the development might need to be surveyed. The decision on whether to survey depends primarily on how likely it is that the development would affect newts using those ponds. For developments resulting in permanent or temporary habitat loss at distances over 250m from the nearest pond, carefully consider whether a survey is appropriate. Surveys of land at this distance from ponds are normally appropriate when all of the following conditions are met: (a) maps, aerial photos, walk-over surveys or other data indicate that the pond(s) has potential to support a large great crested newt population, (b) the footprint contains particularly favourable habitat, especially if it constitutes the majority available locally, (c) the development would have a substantial negative effect on that habitat, and (d) there is an absence of dispersal barriers."*

In line with Natural England's recommendations, survey work beyond 250 m is not considered necessary.

#### 6.5.2 Great Crested Newt Habitat Assessment

The likely presence of great crested newt in accessible ponds has been assessed by examination of aquatic variables such as presence of fish, waterfowl and water quality. For ponds, these data have been used to calculate a 'Habitat Suitability Index' (HSI; after Oldham et. al., 2000). The HSI is represented by a number from 0 to 1, the higher the number the higher the quality of habitat and the more likely each pond is to support breeding great crested newt. A pond with a score of 0.7 or higher is typically considered to represent a likely breeding pond. In order to facilitate interpretation of a waterbody's HSI, calculated scores are accompanied by a subjective description that reflects pond quality and the likely presence of great crested newt (ARG UK, 2010).

WB1 is a large pond located within woodland 311 m to the south east. Available information indicates that the pond offers *excellent* habitat potential for great crested newt (HSI = 0.84). Adult and juvenile great crested newts and adult smooth newts were found sheltering under old sleepers close to this pond.

WB2 is a pond located within woodland 176 m to the south. Available information indicates that the pond offers *below average* habitat potential for great crested newt (HSI = 0.58).

WB3 is a pond located within woodland 100 m to the south east. Available information indicates that the pond offers *average* habitat potential for great crested newt (HSI = 0.63).

Access permission was not available for WB4.

WB	Distance (m)	Provisional HSI Score	Provisional GCN Suitability	NE Risk Zone	Survey Required for Non DLL Licence
1	311	0.84	Excellent	Green	No
2	176	0.58	Below Average	Green	No
3	100	0.65	Average	Green	No
4	352	-	-	Green	No

**Table 6.1.** Provisional habitat suitability for accessible waterbodies (WB) located within 500 m of proposed development area. All specified distances measured from pond to edge of proposed development. The listed NE risk zones are for individual ponds rather than the proposed development site.

### 6.5.3 Great Crested Newt Risk Assessment

Natural England has recently published a risk map for Kent that predicts the likelihood of newts being present within a proposed development site. The proposed works area is located in a *Green* risk zone.

*"Red zones contain key populations of GCN, which are important on a regional, national or international scale and include designated Sites of Special Scientific Interest for GCN. Amber zones contain main population centres for GCN and comprise important connecting habitat that aids natural dispersal. Green zones contain sparsely distributed GCN and are less likely to contain important pathways of connecting habitat for this species. White zones contain no GCN."*

Note that we disagree with Natural England’s Green classification at this site. The classifications are based on available survey data and Natural England refused to include data older than 5 years for the risk assessment. Beacon Wood Country Park is a site with a known good population of great crested newt that lacks up to date survey data. The area would should more accurately be considered to be *Amber*.

Natural England has also published a risk assessment tool for determining whether development activities are likely to result in significant disturbance to great crested newt (Natural England, 2008). Natural England advise:

*"This risk assessment tool has been developed as a general guide only, and it is inevitably rather simplistic. It has been generated by examining where impacts occurred in past mitigation projects, alongside recent research on newt ecology. It is not a substitute for a site-specific risk assessment informed by survey. In particular, the following factors are not included for sake of simplicity, though they will often have an important role in determining whether an offence would occur: population size, terrestrial habitat quality, presence of dispersal*

barriers, timing and duration of works, detailed layout of development in relation to newt resting and dispersal. The following factors could increase the risk of committing an offence: large population size, high pond density, good terrestrial habitat, low pre-existing habitat fragmentation, large development footprint, long construction period. The following factors could decrease the risk: small population size, low pond density, poor terrestrial habitat, substantial pre-existing dispersal barriers, small development footprint, short construction period. You should bear these mitigating and aggravating factors in mind when considering risk.”

The completed risk assessment assumes that newts are subsequently confirmed present in WB3 and therefore represents the maximum potential impact.

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists 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)	0.001 - 0.01 ha lost or damaged	0.05
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:	<b>GREEN: OFFENCE HIGHLY UNLIKELY</b>	

*"Green: 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. Therefore, no licence would be required. However, bearing in mind that this is a generic assessment, you should carefully examine your specific plans to ensure this is a sound conclusion, and take precautions (see Non-licensed avoidance measures tool) to avoid offences if appropriate. It is likely that any residual offences would have negligible impact on conservation status, and enforcement of such breaches is unlikely to be in the public interest.*

#### 6.5.4 Great Crested Newt Mitigation Licence

Five levels of licence are available for development projects (Table 6.2).

The proposed works are not considered likely to significantly impact on the local conservation status of great crested newt for the following reasons:

- No impact on breeding ponds.
- Relatively small area of habitat suitable for sheltering newts within the proposed development area.
- Main construction works will take place more than 100 m away from closest pond.

**The applicant is advised that there remains a low risk of disturbing a small number of great crested newts and precautionary mitigation should be undertaken (non-licensed method statement).**

Licence Level	Licence Type	Notes
1	No Licence	No or negligible impacts on gcn.
2	<b>Non-Licensed Method Statement</b>	<b>Negligible or low impacts on gcn that can be prevented using avoidance measures.</b>
3	Low Impact Class Licence	Low impacts on gcn in relatively small areas over short periods of time. No impacts on ponds.
4	Full EPS Licence	Impacts on gcn in larger areas or over longer periods of time.
5	District Level License	New licence recently introduced by NE that permits development without the need for survey and/or mitigation works.

**Table 6.2.** Available licence categories for development projects affecting great crested newt (gcn).

#### 6.5.5 Other Widespread Amphibian Species

Common frog, common toad, smooth newt and palmate newt are likely to breed in nearby ponds, including those in residential gardens and ponds supporting fish.

The proposed development is not considered likely to negatively impact on the local conservation status of widespread amphibian species.

Additional survey work for widespread amphibian species is not considered necessary.

#### 6.6 Badgers

Several mammal trails were found to be present within the proposed development area and some ant hills appeared to have been disturbed by foraging badger and/or fox. No setts were observed within the proposed development area.

Although additional survey work for badger is not considered necessary, precautionary mitigation advice is provided to ensure that badgers are not disturbed.

## 6.7 Hazel Dormouse

Habitats typically suitable for dormouse include:

- Deciduous woodland, with a dense understory, species-rich shrub layer and thick ground cover.
- Hazel or sweet chestnut coppice.
- Continuous, thick, wide hedgerows over 4m high with connections to nearby suitable woodland.
- Thick continuous areas of scrub, particularly bramble, close to hedgerows or woodlands.

Deciduous woodland within the local area could support dormouse. Habitat located within the development site includes habitat that could support dormouse. Ideally, such habitat should remain undisturbed.

**If extensive habitat clearance works are to be undertaken, survey work for dormouse is recommended.**

## 6.8 Water Vole

No waterbodies are located within or close to the site boundary and additional survey work for water vole is not considered necessary.

## 6.9 Invertebrates

Available habitat within the site, particularly the area of orchard, is considered to offer good opportunities for invertebrates.

Although additional survey work is not considered necessary, habitat should be managed to promote invertebrate biodiversity interest.

## 6.10 Other Considerations

Hedgehog is likely to be present in the local area and could forage and/or shelter within the garden area.

On the basis of the site assessment, it is not expected that other protected species are present within the proposed site.

## 7. Recommendations

### 7.1 Bats

#### 7.1.1 Bat Survey

The main dwelling (B1) was considered to offer medium potential for roosting bats and the garage (B2) low potential for roosting bats. To determine whether or not bats are using features within the buildings to roost, further survey work is recommended. Buildings B1 & B2 should be subject to dusk emergence survey(s) in accordance with BCT Guidelines (2016). The survey should be carried out during the optimum season from May to August. If bats are found to be using a building, further surveys may be required, as per current guidelines (BCT, 2016), to provide sufficient information to inform a European Protected Species Mitigation Licence from Natural England. At least 2 weeks gap should be left between each survey.

Should a bat roost be present within the buildings and will be impacted by the proposed development, appropriate mitigation will be required. This may include the provision of bat roosting boxes. Details of such boxes should be included within an Ecological Impact Assessment and Biodiversity Enhancement Report.

For more information see:

<https://www.gov.uk/guidance/bats-surveys-and-mitigation-for-development-projects>

#### 7.1.2 Lighting

Some artificial lighting can be detrimental to roosting, foraging and commuting bats especially Daubenton's, Whiskered, Natter's and Long-eared. Impacts on bats are higher in the April/May and September/October time periods, when bats emerge earlier and when most lighting will be on. The impact on bats is increased after mid-October when British Summer Time ends (by subtracting an hour).

If lighting is required for the proposed scheme, the Bat Conservation Trust's *Bats and Lighting in the UK guidance* must be adhered to in the lighting design (Appendix IV).

### 7.2 Birds

#### 7.2.1 Timing of Works

To avoid any potential offence under the Wildlife & Countryside Act, no clearance of features that could support nesting birds should be undertaken during the bird-nesting season (1st March to 31st August inclusive).

If this is not practicable, any potential nesting habitat to be removed must first be checked by a competent ecologist in order to determine the location of any active nests. Any active nests identified will then need to be cordoned off (within a minimum 5m buffer) and protected until the end of the nesting season or until the birds have fledged. These checking surveys would need to be carried out no more than three days in advance of vegetation clearance. If vegetation clearance works have not been completed within this timeframe, an update check should be undertaken.

### 7.2.2 Bird Nesting Boxes

The applicant should consider installing at least two bird nesting boxes in suitable locations within the garden area. Suitable exterior boxes include those for blue tit and/or robin and should be installed at a height of ~3 m above ground with a minimum distance of 3 m between boxes. Boxes should face north to east.

Details of the boxes that will be installed together with their locations should be included within an Ecological Impact Assessment and Biodiversity Enhancement Report.

## 7.3 Reptiles

### 7.3.1 Reptile Survey

Available habitat could support reptiles and presence/likely absence survey work should be undertaken.

- Survey all suitable terrestrial habitat within the proposed development site.
- Survey work should be undertaken by a suitably experienced ecologist using appropriate methods (preferably artificial cover object survey).
- A minimum of 7 survey visits are required to reliably confirm presence/likely absence.
- Survey visits should be undertaken during suitable weather conditions from April to September.

If reptiles are subsequently confirmed present a suitable mitigation strategy should be prepared and included in an Ecological Impact Assessment and Biodiversity Enhancement Report.

For more information see:

<https://www.gov.uk/guidance/reptiles-protection-surveys-and-licences>

## 7.4 Great Crested Newt

### 7.4.1 Non-Licensed Method Statement

Proposed works will not significantly impact on the local conservation status of great crested newt. However, newts are known to breed in the adjacent Beacon Wood Country Park and a small number of newts could shelter in suitable habitat within the proposed development area. A suitable non-licensed method statement should be prepared and included in an Ecological Impact Assessment and Biodiversity Enhancement Report.

For more information see:

<https://www.gov.uk/guidance/great-crested-newts-surveys-and-mitigation-for-development-projects>

## 7.5 Dormouse

### 7.5.1 Avoidance Measures

It is recommended that all reasonable steps be taken to avoid disturbance to woody vegetation located within and close to the site boundary (including hedgerows and shrubs). If any sections of such vegetation are to be removed or damaged in any way, survey work to confirm the presence or likely absence of dormouse may be required.

If dormouse is subsequently found to occupy habitat within areas proposed for disturbance a European Protected Species Mitigation Licence from Natural England will be required before such habitat can be disturbed.

Confirmation that native boundary shrubs and hedgerows located around the site boundary will not be disturbed should be included with the application. If management works are required this must be undertaken following appropriate guidelines and details included within an Ecological Impact Assessment and Biodiversity Enhancement Report.

For more information see:

<https://www.gov.uk/guidance/hazel-or-common-dormice-surveys-and-mitigation-for-development-projects>

## 7.6 Badgers

### 7.6.1 Avoidance of Disturbance

Although there is some evidence of badger foraging within the site, proposed development work will not affect any known setts.

Appropriate precautionary mitigation should be included within an Ecological Impact Assessment and Biodiversity Enhancement Report.

For more information see:

<https://www.gov.uk/guidance/badgers-protection-surveys-and-licences>

## 7.7 Hedgehogs

### 7.7.1 Hedgehog Gates

If any installed fencing will be of a design similar to that of close board fencing which are typically solid from ground level, *hedgehog gates* should be installed in the fencing within the proposed site. The gates consist of semi circular holes (measuring 0.13 m x 0.13 m) cut into the bottom of the fence to allow the movement of hedgehogs into adjacent areas of land. The locations of such gates should be included within an Ecological Impact Assessment and Biodiversity Enhancement Report.

### 7.7.2 Open Excavations

During months when hedgehogs are most likely to be active (March to October), excavations should not be left open for animals to fall into. If this is not possible, suitable planks of wood should be placed to allow trapped animals to escape. Any open excavation should be inspected before works commence in the morning and trapped animals relocated to a suitable place of safety along the site boundary.



## **7.8 Ecological Enhancement**

The results of all recommended follow-up surveys should be summarised in an Ecological Impact Assessment and Biodiversity Enhancement Report. In addition to specific mitigation works for protected species, the report should include recommendations for habitat management and enhancement targeting more widespread species that are of biodiversity interest. There should be particular emphasis on the area of traditional orchard that is located within Beacon Wood Local Wildlife Site.

Features that should be considered for inclusion include:

- Appropriate soft landscaping to promote native plants and nectar dependent insects.
- Appropriate shrub/hedgerow management/planting (including removal of non-native species as required).
- Bird nesting boxes.
- Bat roosting boxes (numbers and locations to be guided by bat survey).
- Reptile and amphibian sheltering places (e.g. log piles).
- Stag beetle logeries (ideally using existing logs).
- Fences that permit dispersal of hedgehogs.

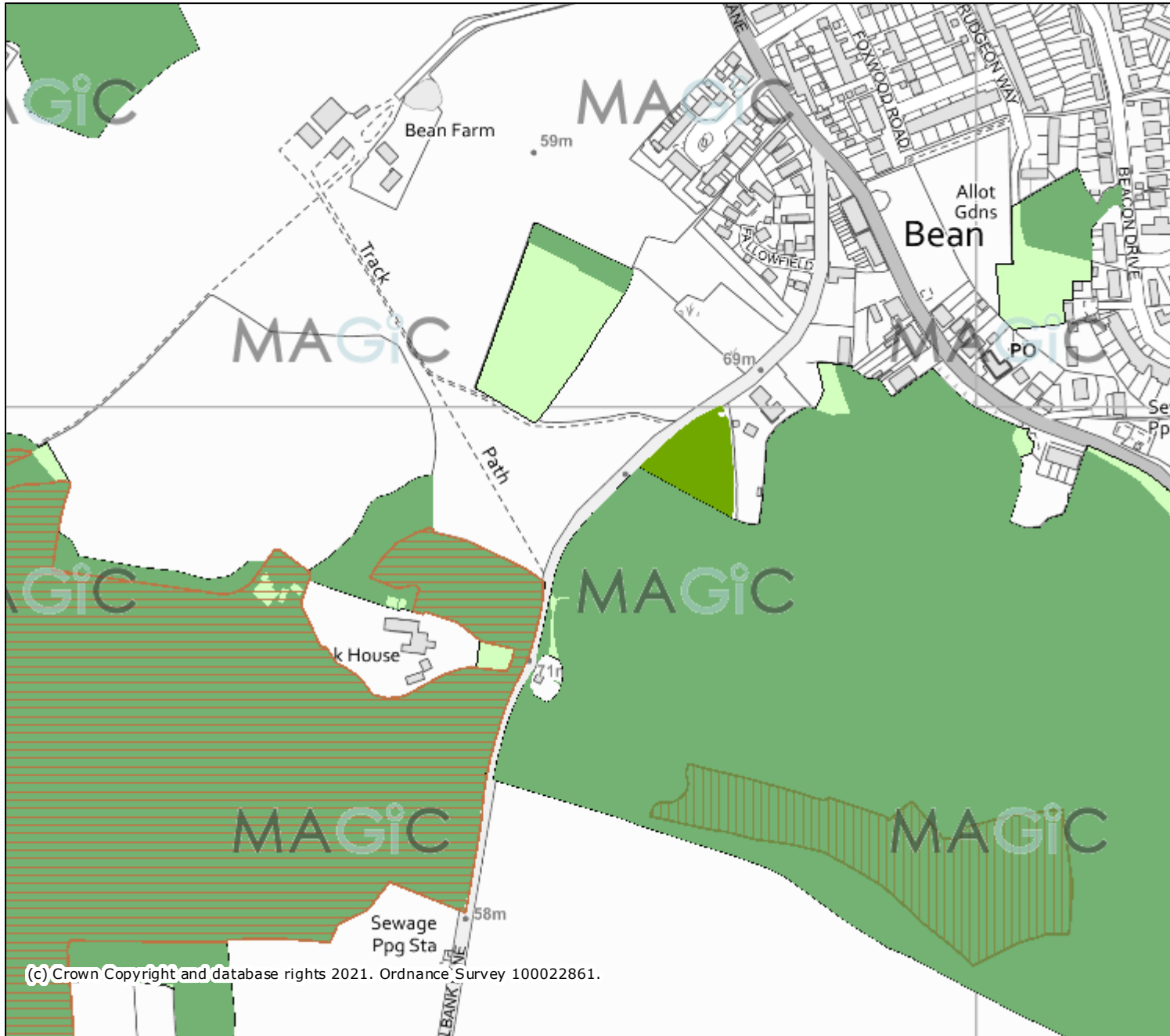
## 8. References and Further Reading

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# Appendix I: Habitat Designations

**Source:**

MAGIC (<http://www.magic.gov.uk>)



### Legend

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

Projection = OSGB36

xmin = 557700

ymin = 171200

xmax = 559700

ymax = 172600



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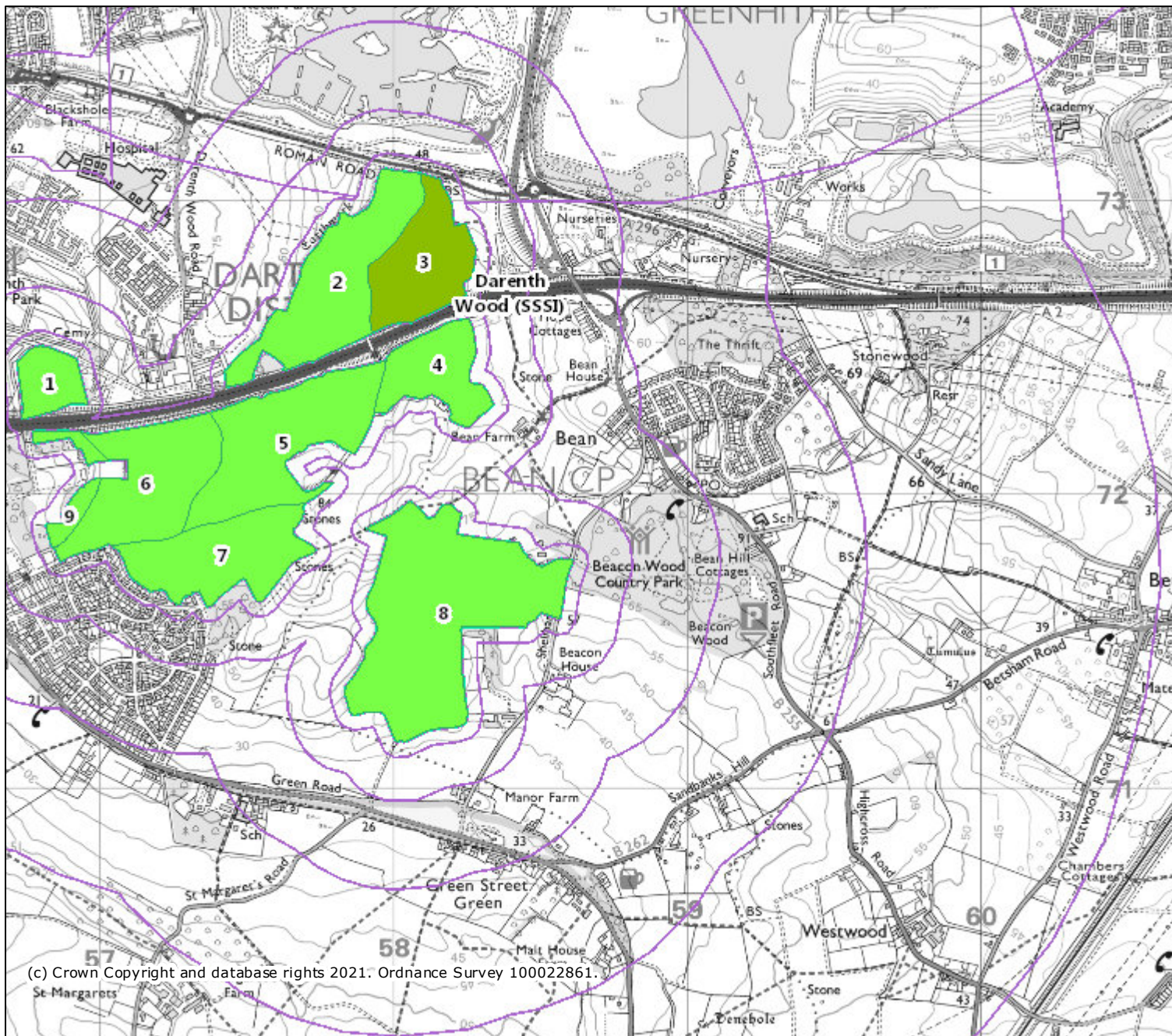
## Appendix II: Land Designations

**Source:**

MAGIC (<http://www.magic.gov.uk>)

Kent Landscape Information Land System

(<https://webapps.kent.gov.uk/KCC.KLIS.Web.Sites.Public/ViewMap.aspx>)



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### Legend

- Limestone Pavement Orders (England)
- Local Nature Reserves (England)
- Moorland Line (England)
- National Nature Reserves (England)
- National Nature Reserves (Scotland)
- National Nature Reserves (Wales)
- National Parks (England)
- Ramsar Sites (England)
- Ramsar Sites (Scotland)
- Ramsar Sites (Wales)
- Sites of Special Scientific Interest Units (England) - Favourable Condition
- Sites of Special Scientific Interest Units (England) - Unfavourable Recovering
- Sites of Special Scientific Interest Units (England) - Unfavourable no change
- Sites of Special Scientific Interest Units (England) - Unfavourable Declining
- Sites of Special Scientific Interest Units (England) - Part Destroyed
- Destroyed
- Not Assessed
- Sites of Special Scientific Interest (England)
- SSSI Impact Risk Zones - to assess planning impacts on SSSIs/SACs/SPAs & Ramsar sites (England)
- Sites of Special Scientific Interest (Scotland)
- Sites of Special Scientific Interest (Wales)
- Special Areas of Conservation (England)
- Possible Special Areas of Conservation (England)
- Special Areas of Conservation (Scotland)
- Special Areas of Conservation (Wales)
- Special Protection Areas (England)
- Potential Special Protection Areas (England)
- Special Protection Areas (Scotland)

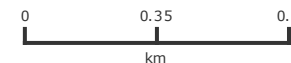
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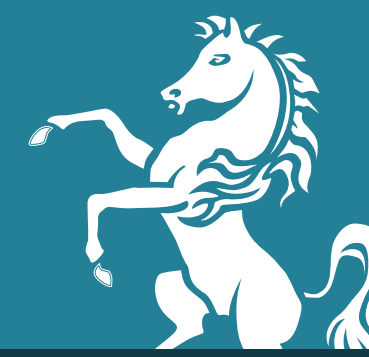
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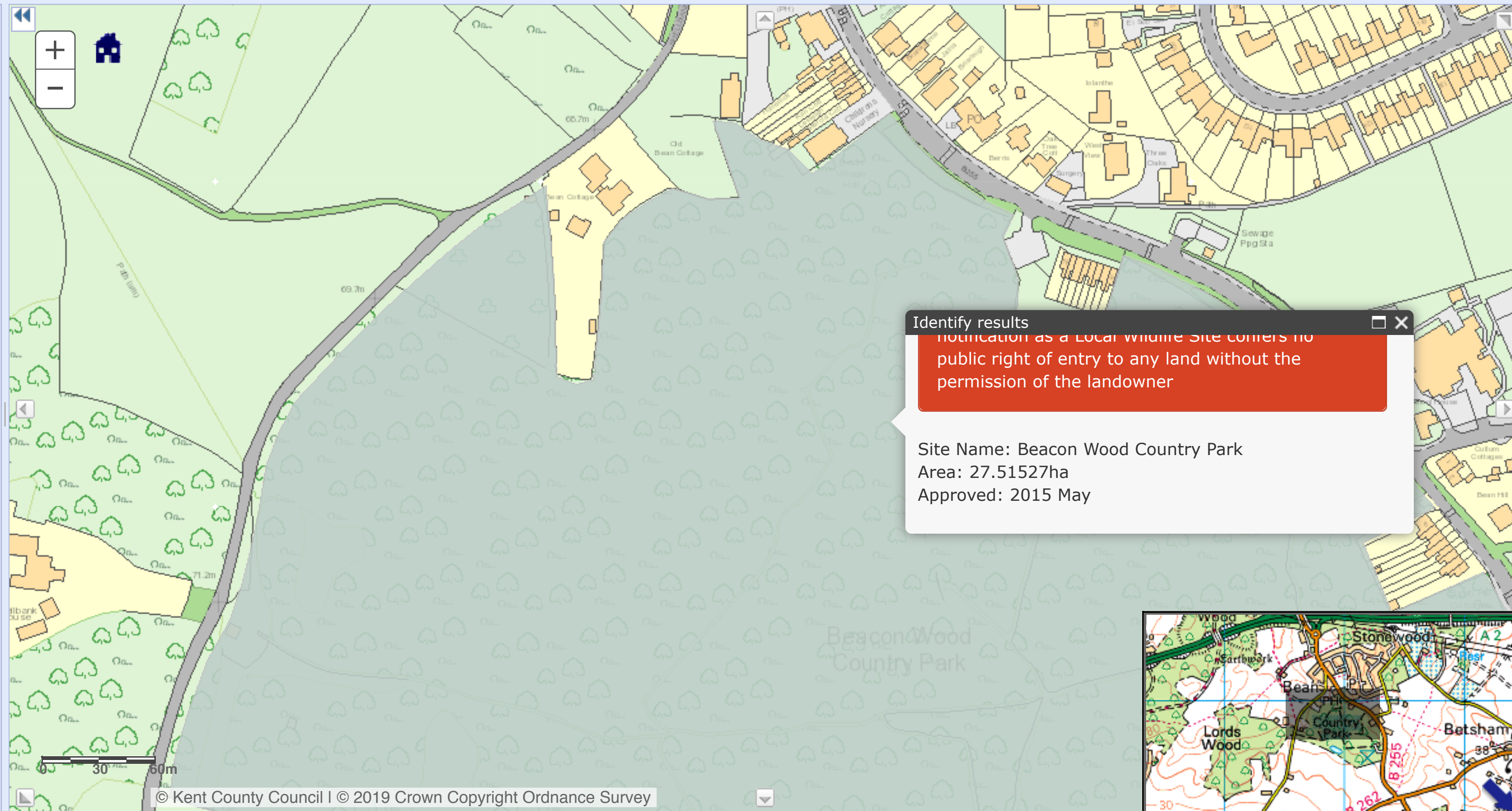
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## KLIS Map

Keyboard access | Map views | Historic map views | Share link | Legend | Print | Draw | Measure

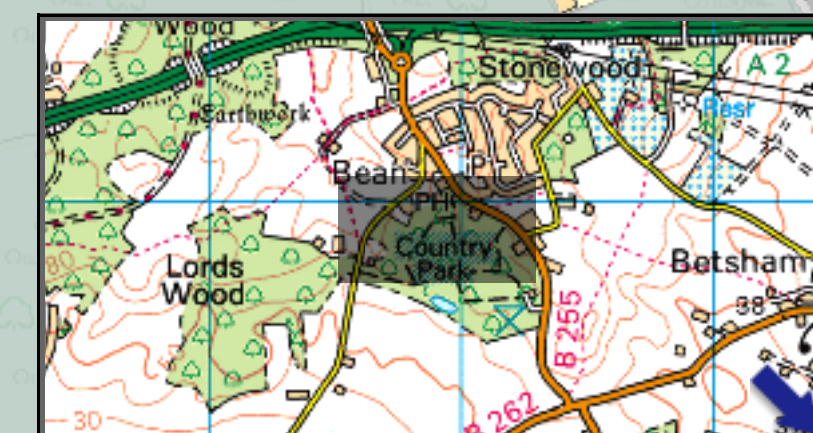
- Biodiversity Opportunity Areas
- Green Belt
- Marine Conservation Zones
- Woodland Trust Sites
- Sites of Special Scientific Interest (SSSI)
- Special Protection Areas (SPA)
- Local Wildlife Sites
- Special Areas of Conservation (SAC)
- Ramsar
- RSPB Reserves
- National Nature Reserves (NNR)
- Local Nature Reserves (LNR)
- Wildlife Trust Reserves
- Roadside Nature Reserves
- Local Nature Partnerships
- Countryside Management Partnerships
- Kent High Weald Project



**Identify results**

Notification as a Local Wildlife Site confers no public right of entry to any land without the permission of the landowner

Site Name: Beacon Wood Country Park  
Area: 27.51527ha  
Approved: 2015 May



# Appendix III: Records Search

**Source:**

Kent Reptile and Amphibian Group (Ref: CES/21/024)





## Herpetofauna Database Search Summary

**Enquiry No:** CES/21/024  
**On Behalf of:** Calumma Ecological Services  
**Search Area:** Bean  
**Grid Reference:** TQ 588 719  
**Search Radius (km):** 2

### Amphibians Recorded in Search Area:

Common Frog  
Common Toad  
Smooth Newt  
Palmate Newt  
Great Crested Newt

*list excludes historical and confidential observations*

**The closest recorded Great Crested Newt observation is a historical record located at Beacon Wood Country Park, 0.2 km to the S (record id: 5557).**

### Reptiles Recorded in Search Area:

Viviparous Lizard  
Slow-worm  
Grass Snake  
Adder

*list excludes historical and confidential observations*

**The closest recorded reptile observation is for Slow-worm, located at Beacon Wood Country Park, 0.2 km to the S (record id: 14315).**

The Kent Reptile and Amphibian Group is a non-profit making organisation that promotes the conservation of reptiles and amphibians. Although the Krag recording database contains several thousands of records, the availability of information detailed within this search is directly related to survey effort. A lack of records does not necessarily indicate the absence of a species. Krag recommends that a thorough herpetofauna survey is undertaken following the most recently published best practice guidelines.

Krag welcomes the submission of additional records from those undertaking survey work in Kent.

Kent Reptile and Amphibian Group

Search Date: 2/2/2021

info@kentarg.org  
www.kentarg.org

## Species Risk Assessment

**Enquiry No:** CES/21/024  
**On Behalf of:** Calumma Ecological Services  
**Search Area:** Bean  
**Grid Reference:** TQ 588 719

### Amphibians

	<u>Likelihood of Presence</u>	
	<u>Score</u>	<u>Dist (km)</u>
<b>Common Frog:</b>	Likely	0.50
<b>Common Toad:</b>	<b>HIGH</b>	<b>0.78</b>
<b>Natterjack:</b>	n/a	75.56
<b>Smooth Newt:</b>	<b>HIGH</b>	<b>0.20</b>
<b>Palmate Newt:</b>	<b>HIGH</b>	<b>1.20</b>
<b>Great Crested Newt:</b>	<b>HIGH</b>	<b>0.32</b>
<b>Marsh Frog:</b>	Possible	2.89
<b>Alpine Newt:</b>	n/a	6.20

Amphibian survey effort in local area is considered to be average.

### Reptiles

	<u>Likelihood of Presence</u>	
	<u>Score</u>	<u>Dist (km)</u>
<b>Viviparous Lizard:</b>	Likely	0.81
<b>Slow-worm:</b>	<b>HIGH</b>	<b>0.20</b>
<b>Sand Lizard:</b>	<i>unlikely</i>	76.95
<b>Grass Snake:</b>	Possible	1.20
<b>Adder:</b>	<b>HIGH</b>	1.50
<b>Smooth Snake:</b>	n/a	n/a

Reptile survey effort in local area is considered to be relatively high.

**# ponds within 1 km:** 9  
**distance to nearest pond (km):** 0.23

This risk assessment is based on a nearest neighbour analysis of records available at the time of this search request. The assessment considers habitat characteristics for each species at the landscape level, but does not control for the suitability of available habitat at the specified grid reference. The risk assessment does not include historical records and may underestimate likely presence of a species in areas with limited survey effort. The risk assessment is provided for guidance only and should not be used in place of a full herpetofauna survey.

For sites with no waterbodies where the analysis suggests that amphibians are likely to be present, individual animals may use suitable terrestrial habitat for sheltering, foraging and/or dispersal.

Kent Reptile and Amphibian Group

**Search Date:** 2/2/2021

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# Appendix IV: Bats and Lighting

**Source:**

Bat Conservation Trust and Institution of Lighting Engineers

## Summary of Requirements

The two most important features of street and security lighting with respect to bats are:

1. The UV component. Low or zero UV installations are preferred to reduce attraction of insects to lighting and therefore to reduce the attraction of foraging bats to these areas.
2. Restriction of the area illuminated. Lighting must be shielded to maintain dark areas, particularly above lighting installations, and in many cases, land adjacent to the areas illuminated. The aim is to maintain dark commuting corridors for foraging and commuting bats. Bats avoid well lit areas, and these create barriers for flying bats between roosting and feeding areas.

### UV characteristics:

#### Low

- Low pressure Sodium Lamps (SOX) emit a minimal UV component
- High pressure Sodium Lamps (SON) emit a small UV component
- White SON, though low in UV, emit more than regular SON

#### High

- Metal Halide lamps emit more UV than SON lamps, but less than Mercury lamps
- Mercury lamps (MBF) emit a high UV component.
- Tungsten Halogen, if unfiltered, emit a high UV component
- Compact Fluorescent (CFL), if unfiltered, emit a high UV component.

#### Variable

- Light Emitting Diodes (LEDs) have a range of UV outputs. Variants are available with low or minimal UV output.

Glass glazing and UV filtering lenses are recommended to reduce UV output.

### Street lighting

Low-pressure sodium or high-pressure sodium must be used instead of mercury or metal halide lamps. LEDs must be specified as low UV. Tungsten halogen and CFL sources must have appropriate UV filtering to reduce UV to low levels.

Lighting must be directed to where it is needed and light spillage avoided. Hoods must be used on each lamp to direct light and contain spillage. Light leakage into hedgerows and trees must be avoided.

If possible, the times during which the lighting is on overnight must be limited to provide some dark periods. If the light is fitted with a timer this must be adjusted to reduce the amount of 'lit time' and provide dark periods.

### **Security and domestic external lighting**

The above recommendations concerning UV output and direction apply. In addition:

- Lighting should illuminate only ground floor areas - light should not leak upwards to illuminate first floor and higher levels;
- Lamps of greater than 2000 lumens (150 W) must not be used;
- Movement or similar sensors must be used - they must be carefully installed and aimed, to reduce the amount of time a light is on each night;
- Light must illuminate only the immediate area required, by using as sharp a downward angle as possible;
- Light must not be directed at or close to bat roost access points or flight paths from the roost - a shield or hood can be used to control or restrict the area to be lit;
- Wide angle illumination must be avoided as this will be more disturbing to foraging and commuting bats as well as people and other wildlife;
- Lighting must not illuminate any bat bricks and boxes placed on buildings, trees or other nearby locations.



*Calumma Ecological Services* is an independent wildlife consultancy specialising in the applied conservation of amphibians and reptiles. *Calumma Ecological Services* offers a full range of specialist services to private companies, local authorities, government agencies, wildlife organisations and members of the public.

*Calumma Ecological Services* works towards the policy of 'best practice' advocated by ARG UK (formally known as Herpetofauna Groups of Britain and Ireland).

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